THE HENDERSON FAMILY OF

STAINED GLASS CRAFTSMEN

A dissertation submitted to the Caspersen School of Graduate Studies

Drew University in partial fulfillment of

the requirements for the degree,

DOCTER OF LETTERS

Committee Chair: William Rogers Ph.D., History

Steven R. Racine

Drew University

Madison, New Jersey

May 2013

ABSTRACT

The Henderson Family of Stained Glass Craftsmen

D.Litt. Dissertation by

Steven Robert Racine

The Casperson School of Graduate Studies

Drew University May 2013

The Henderson family of stained glass craftsmen is the focus of this project: their body of work, interaction with artists, architects, and other firms, and their place in the history of American stained glass. Patriarch William Henderson immigrated to the United States from Scotland, with brother Robert in 1872. William Henderson was awarded several patents for lead and hard metal glazing used in the fabrication of stained glass.

The Henderson Brothers firm was established in New York City in the mid-1890s, becoming one of the largest studios in operation embellishing the buildings of the most prominent architects until it closed in 1939. Their workcan still be appreciated in building from Massachusetts south to North Carolina, and west to Illinois. Yale, Princeton, and West Point and many commercial locations have surviving Henderson Brothers work.

William Henderson's adopted son Ernest Henderson grew up in the shop and was an accomplished worker by the age of ten. He eventually worked for several other firms including Tiffany Glass and decorating, Erkins Studios, and Pittsburgh Plate Glass before embarking on a fifty-year career as a solo stained glassman. He passed his love for the trade on to his son gordon. Gordon Henderson sat on the workbenches in his father's studio absorbing the trade from the age of six. In 1946 he entered the trade full-time with his

father and the partnership E. Henderson & Son was established. He became a solo stained glassman in 1966 working continuously in the trade until his death in 2010. Among his prominent projects was the restoration of the Henry Holiday window now set in the library entrance at Drew University.

The Henderson family is notable for their many contributions to the trade of stained glass, the remarkable fact that three generations worked in the field, and their significant associations with artists, architects, and patrons. Gordon Henderson's goal to preserve the memories and work of the old-time glassmen is carried forward in this project. The fortunate preservation and recovery of family records by Ernest and Gordon Henderson make possible this addition to the historiography of the American stained glass trade

This dissertation is dedicated to my parents Albert and Frances Racine who early awaked and encouraged interest in many things and allowed me to follow my own path.

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Acknowledgements

A project such as this, reaching back into the past, requires the assistance of many hands, minds, and eyes. Stained glass is a visual art, but much of its history is found in paper artifacts. Throughout the research process I was assisted by friends, colleagues, professional staff members in various libraries, and total strangers.

First and foremost I have to acknowledge and thank Gordon “Don” and Barbara Henderson for allowing me into their lives. Don could be difficult, or so I’ve heard. Barbara, always willing to add to the conversation, provided numerous snacks and had a drink prepared for Don and I at 4:30 (mine a bit weaker than his.) She also helped keep Don focused as we proceeded. Don graciously spent hours going through his collections of stained glass artifacts, answering questions, sharing stories, visiting installations, and advancing my understanding and skill in the trade of stained glass. Over almost a decade we recorded many hours of interviews which became the foundation of this project. He read my work and interview transcriptions adding frequent comments. I thank him for considering me his friend. I only regret that this could not be completed for them to read the finished product.

Thanks also go to their son Todd and his wife Katherine Henderson who have continued to share the Henderson family history and documents which make this more than a series of anecdotes. Their son T. J., a former student, also merits my thanks because his enthusiasm inspired me to jump back into the project after his grandparents passed.

Sally Brazil and others at the Frick Art Reference Library provided Henderson Brothers correspondence from the Frick Archives documenting Henderson Brothers work there. Librarians at the Boston Public Library assisted me in accessing documents and sketches from The Charles J. Connick Collection related to Gordon Henderson's work.

My colleagues at Kinnelon High School provided moral support and real work. Thanks to Frank Brescher for reading each chapter and sharing his thoughts. Roberta Loniewski converted VHS tapes to video and Casey deWaal produced single images for me. Dr. Wayne Merckling provided inspiration and allowed me much needed time for travel and research. Scott Rosenberg lent space in his office to work and keep materials. Thanks to the breakfast and lunch clubs for hours of mirth and merriment.

Drew University professors Christine Kinnealy and Liana Piehler provided literary and historical perspective for this project and without their thoughts and efforts it would not be the same. Dean James Pain, Emiratis, opened the door into new worlds of scholarship which informed my decision to pursue this topic. Associate Dean William Rogers has been both friend and guide through the entire journey, from my first class at Drew University through the completion of this study.

Many others deserve thanks, including those who I met online while searching for sources and who graciously shared their own artifacts and thoughts. April Brown at the Morse Museum uncovered and copied the Bruce Marcellus interview with Ernest and Gordon Henderson. Joseph Flanagan shared images and information from his own research of his great-grandfather's firm Flanagan & Biedenweg, closely related to William Henderson.

Finally, I thank my family, particularly my daughters Danielle Pieklo, Sarah Racine, and Rebecca Racine for their inspiration; everything positive that I may have accomplished as an adult is because of them.

Introduction

> The world we live in has need of beauty if it is not to fall into despair. Beauty, like truth, puts joy into man's heart, and is a precious fruit which resists the attrition of time, unites the generations, and allows them to share in the art of appreciation.[1]
>
> *Cardinal Michael Pelligrino*

> Stained glass, in strictly technical terms can be described as an assemblage of variously colored pieces of glass supported in a single flat plane by leads and fixed more or less permanently in a frame of stone, wood, or metal; the design being expressed partly by the arrangement of the shapes of glass and leads, and partly by the addition of glass paint and stains rendered impervious to erasure by being fired into the surface of the glass before leading-up (or glazing). Its essential form is two-dimensional, non-tactile mostly monumental in scale and placed normally in non-utilitarian buildings for the purpose of assisting the creation of a special atmosphere as required . . .[2]
>
> *Lawrence Lee*

A stained glass window is a utilitarian object; the purpose of which is to keep the elements out and allow light into a building's interior. Elevated in some situations to incredible works of art, in others they may be simple patches of color illuminating a staircase in a city landscape. They establish a mood, teach a story, afford privacy, and enter the lives of many through their presence in religious buildings. There are a wide variety of styles, 'schools', and quality. In most situations it is an art designed to support the architecture of a building and therefore is not the focal point. Occasionally it leaps out at us, but in most cases it is experienced as an atmosphere, one aspect of a consciously designed environment.

This study will concentrate on the history of the Henderson family and their work in stained glass. The family began their work when brothers William and Robert Henderson

[1] Cardinal Michael Pelligrino, trans. Herbert Mussurillo, SJ, "Art and Liturgy," *Liturgical Art* 36 (May 1968): 67.
[2] Lawrence Lee, *Appreciation of Stained Glass* (London: Oxford University Press, 1967), 2.

brought their skills to the United States from Scotland in 1872. William Henderson's stepson Ernest (1881-1974) apprenticed in the family business before moving on to work for some of the major American studios and eventually becoming an independent glassman. Ernest Henderson's son Gordon carried on the family name and his father's tradition as an independent glassman, completing commissions into his ninety-first year. What is rare about the Henderson family is the body of primary source material: drawings, contracts, letters, bills, interviews, and artifacts that provide an inside look at the stained glass trade. Throughout their careers, in their advertising, letterheads, letters, and statements, the Hendersons describe themselves as craftsmen. It is an important aspect of their activities in the trade, but what does it mean?

One question is often associated with stained glass—is it "art" or "craft"? Louis Comfort Tiffany, first a painter and later a major producer of decorative objects for homes and public buildings in the United States and one of the great self-promoters in any business of the time described the potential of stained glass in a 1913 company brochure:

> Architects and other connoisseurs of art have come to the realization that it is quite possible to produce a masterpiece in glass as it is upon canvas, when the commission is placed in the hands of a competent artist, who thoroughly understands not only the use of materials but also their limitations.[3]

Reading Tiffany's brochure suggests that stained glass is clearly art. Reading Lawrence Lee's description of a stained glass window does not necessarily paint the same picture. The *New Shorter Oxford English Dictionary on Historic Principles* defines art as follows:

> The application of skill according to aesthetic principles, especially in the production of visible works of imagination, imitation or design (painting, sculpture, architecture, etc.); skillful execution of workmanship as an object in itself; the

[3] Tiffany Studios, *Memorials in Glass and Stone* (New York, 1913).

> cultivation of the production of aesthetic objects in its principles, practice, and results.[4]

Craft is defined as "An art, trade, or profession requiring special skill or knowledge, especially manual dexterity."[5] In both definitions skill is a vital component. Perhaps the most significant difference is the inclusion of the concept of commercial purpose for crafts—as "trade or profession." So in craft the implied goal is sale and in art there is a focus on production of aesthetic objects, "art for art's sake." Thus we see the starving artist and the craftsman employing his "manual dexterity" to produce income, whether through art, trade or profession. It appears a fine line.

Perhaps the argument really focuses on the distinction between fine arts and everything else with fine arts often considered to be easel painting and sculpture. Where does stained glass fall? Is it art or is it craft? This is one of a few disputes existing within the communities of those producing, commissioning, and critiquing stained glass. It is important as the distinction between art and craft impacts prices, reputations, and livelihoods.

On this issue British artist and stained glass designer John Piper states, "books on the subject are listed in bookseller's catalogues among 'the minor arts'. The art is minor when it is mediocre: when it is first class it is major, like any other art. But major or minor, it always, all the time, involves a *craft* as well: which is what the booksellers really mean."[6] It is different than some forms of fine art because it is often the work of several hands: artists/designers, cartoonists, glass selectors, glass cutters, glass painters, kiln operators,

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[4] Leslie Brown, Editor, *New Shorter Oxford English Dictionary on Historic Principles* Vol.1: A-M (Oxford: Clarendon Press, 1993, 120.
[5] Ibid., 538.
[6] John Piper, *Stained Glass: Art or Anti-art* (New York: Reinhold Book Corporation, 1968), 7.

glaziers, and installers. Throughout its history, the majority of stained glass installations have been unsigned and this impacts its value in the eyes of critics, art historians and collectors who are the movers in the art markets. This particular argument disregards the fact that many of the practitioners of the 'fine arts' have studio assistants doing rough work and others basics, allowing them to develop their skills; more importantly saving the master time.

That stained glass is a craft as well as an art is recognized by the practitioners themselves. All arts involve the mastering of some mechanical process – holding a brush, striking stone or cutting wood with a chisel, firing a kiln, cutting glass. English glass artist Frederick Cole states, "Stained glass is not only a craft, it is an art and as such it is, to a large extent, the expression of an individual's conception of how his material shall be best used to solve a problem in architectural design and composition".[7] What elevates some work from craft to art are a set of ill-defined individual perceptions, interpretations, and public acceptance. Further clouding the issue is that tastes, fashions, and styles change creating totally new directions, hybrids, and the dreaded categories of 'old fashioned' or 'out of style'; which is always a matter for discussion. Stained glassman Gordon Henderson stated that styles change every twenty-five years, but anything of real quality will always come back, enjoy a revival.[8]

Another hurdle faced by stained glass artists in the world of fine arts is that the majority of their work is hemmed in by rather severe limitations. "Stained glass, as far as it is responsible to persons and places and fixed conditions, is not unlike the exacting world of so-called industrial art. All the work is commissioned work and its size and position

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[7] E. Liddall Armitage, *Stained Glass: History, Technology and Practice* (Newton, MA: Charles T. Branford Company, 1959), 181.
[8] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.

already settled."[9] The field, with a little searching, is full of concerns regarding these limitations. Katherine Lamb Tait, chief designer and rare third generation practitioner when the J & R Lamb Studios was still family owned and operated, stated:

> We do the very best we can with the task, with what the client wants. We might not particularly like the subject we are given, perhaps we are tired of it; perhaps we are asked to render in glass or mosaic a famous painting, we just have to have the utmost integrity and do the best we can.
>
> Every artist wants to do solely that which inspires him, that which is inspirational and satisfying to him or her, but if you are hired to execute a certain artistic task, then you must bring to that task your knowledge and skill. The client, and it may be a woman who wants something particular in memory of a husband, or it may be an architect who has designed a building with certain styles in mind, has a right to ask you to express his need.[10]

Gordon Henderson's collaborator, artist William Baker, states the issue more directly in a letter accompanied by a sketch sent December 11, 1975:

> I think it is a pity they have chosen this subject, taken from an old oil painting instead of an original design. I think it will spoil our series of windows. It's always considered bad taste to copy from Holman Hunt's "Light of the World" it's been done thousands of times. None of them look really well, I will have to adapt it to stained glass – It's a pity.[11]

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[9] Lawrence Lee, *Appreciation of Stained Glass* (London: Oxford University Press, 1967), 183.
[10] Barrea Lamb Seeley, *Ella's Certain Window: An Illustrated Biography of Ella Condie Lamb, An American Artist,* (BLS Corporation, 1989), 136.
[11] F. William Baker to Gordon Henderson, letter, December 11, 1975.

Figure 1. *The Light of the World,* William Holman Hunt, c. 1853-54.[12]

Figure 2. *The Light of the World,* rough sketch for stained glass window, F. William Baker, c. 1975.[13]

Among the favorite window topics are the Annunciation, Christ Blessing the Children, the Resurrection, and the Nativity. Heinrich Hofmann's *Christ in Gethsemane* is in this category. The following examples provide an apt example of the plight expressed by Lamb and Baker.

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[12] *The Light of the World,* William Holman Hunt, Original at Keble College, Oxford, http://commons.wikimedia.org/wiki/File:Hunt,_William_Homan_-_The_Light_of_the_World_-_1853-54.jpg (accessed February 26, 2013).

[13] Author's collection.

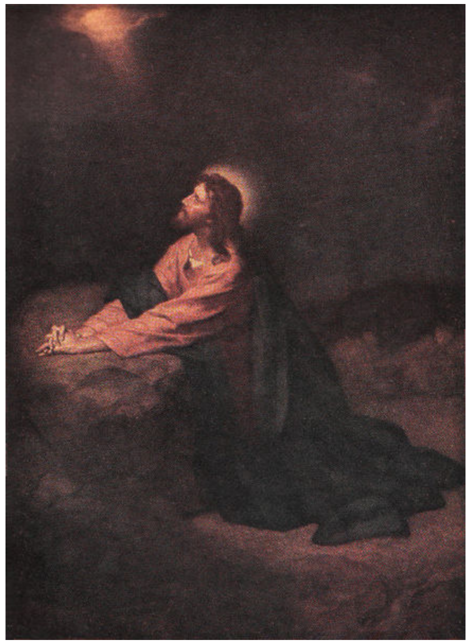

Figure 3. *Christ in Gethsemane,*
by Heinrich Ferdinand Hofmann, c. 1890.[14]

Figure 4. *Christ in Gesthemane,* from the studio of Ernest Henderson, c. 1930s.[15]

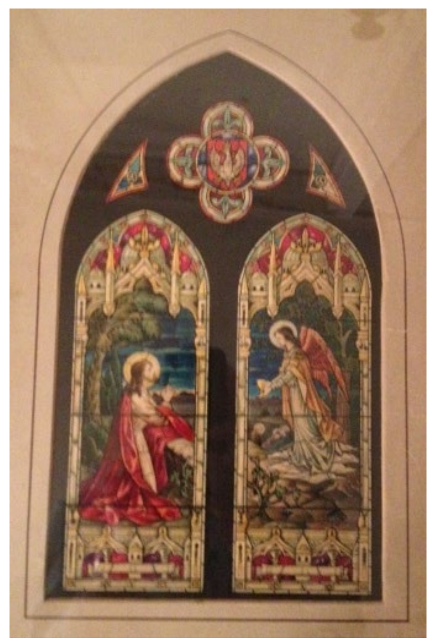

Figure 5. *Christ in Gesthemane,*
Nicola D'Ascenzo Studios.[16]

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[14] *Christ in Gethsemane,* Heinrich Hofman, original at the Riverside Church in New York City, http://commons.wikimedia.org/wiki/File:Christ_in_Gethsemane.jpg, (accessed 2/27/2013).

[15] Author's collection

[16] Nicola D'Ascenzo, one of the major stained glass artists of the early 1900s had his studio in Philadelphia, PA and a showroom in New York City during the 1920s, watercolor sketch from author's collection.

Figure 6. Two examples of *Jesus in Gesthemane*, Sharpe Brothers Studio, Newark, NJ. *On left,* image as insert, *on right,* image as full window in opalescent glass.[17]

This concern for producing what the client wants (or can afford) has also plagued the field of stained glass in the art versus craft question. Artist John La Farge, the creator of opalescent glass lamented the growing commercialization of art, in general: "Have I not seen through the enormous West any amount of the worst stained glass, all derived from what I made myself, some years ago, as a step toward a development of greater richness and delicacy in the 'art of glass'?"[18] Of course, La Farge created windows for the homes

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[17] Author's collection.
[18] Rev. John La Farge, *The Manner is Ordinary* (New York: Harcourt, Brace and Company, 1954), 113.

and churches of the wealthiest elite of American society in places including New York, Boston, and Newport.[19]

In the larger community, there was a desire to have a bit of color and interest in homes and places of business by the addition of stained or leaded glass windows; bringing some enhanced light into thousands of buildings. They were relatively mundane, and could even be ordered from pattern books. These 'commercial' windows were the object of scorn from the elite producers but they paid the bills and kept men working.

> By and large it is a problem with him of dollar and cents. Though the average craftsman has become what he is because he loves the life craftsmanship brings him, he still cannot afford to enter a field in which the return is problematical. His ideal market is one through which he receives special orders based on sample pieces, for in this way his financial future is not a gamble. Because of his very specialization and small potential output he cannot contemplate production in a specialized field unless the market is assured. Obviously, then, he will concentrate on production which promises an immediate sales acceptance, and this he finds in this modern age in decorative accessories for the home and not the church.[20]

John Piper states that stained glass as a craft "is in constant need of direction and control and nourishment of all kinds from art: from painting, sculpture and architecture. It seldom gets it. When it does, fine stained glass can happen; when it doesn't, ordinary 'commercial glass' – just another window – is added to the ghastly, vast, existing stock."[21] Piper says that even those glassmen trained in art schools eventually lose sight of their art as the demands of "delivering the required goods" becomes the focus of their endeavors.[22] Another point that he makes clear is that "there is a gulf fixed between any craft and art. It can be leaped, but anyone leaping it must do so with a clear vision and a stout heart."[23]

[19] Henry Adams, et al, *John La Farge* (New York: Abbeville Press, 1987), 199/200.
[20] Aileen O. Webb, "Modern Religious Art: A Joint Responsibility," *Liturgical Arts: A Quarterly Devoted to the Arts of the Catholic Church 16 No. 3* (May 1948): 67/68.
[21] John Piper, *Stained Glass: Art or Anti-art* (New York: Reinhold Book Corporation, 1968), 7.
[22] Ibid., 8.
[23] Ibid., 8.

The challenge of art versus craft is visited by most involved in the trade and has been a focus of criticism for more than one hundred years.

The distinction for Piper is that stained glass is art when it reaches its greatest potential but is simply "commercial glass" when it doesn't. The routine window lighting a stairway in a home or providing privacy in a bathroom is not art. Neither is a copy of a Holman Hunt or Hoffman painting art. It is a tired retread. That does not lessen the importance of that particular window to the donor or the home owner. This is a challenge and a frustration for the stained glass designer.

Another aspect of the discussion of art versus craft is the background of the individuals involved in the trade. Louis Comfort Tiffany, John La Farge, David Maitland Armstrong, Charles, Frederick, and Ella Condie Lamb were all trained, practicing, and recognized painters who exhibited nationally and internationally. They painted throughout their careers in stained glass, and after they left the trade. That they chose stained glass as their preferred medium was a personal decision. They were artists that became craftsmen, competent in every aspect of the trade.

Others entered the trade as craftsmen, producing work from the design of others. This would be the situation of the Henderson family. Gordon had this to say about being an artist, "I don't want to be no artist. Artists wash their socks in the sink, I don't want that. They're a pain in the ass; I don't want to be like that."[24] Henderson and his family advertised themselves as craftsman. He felt that artists were difficult to work with and too many of them were always broke. Yet he had a great appreciation for art and was constantly drawing, sketching, and doodling on any scrap of paper available.[25]

[24] Gordon Henderson interview, by author, Towaco, NJ, January 31, 2007.
[25] See examples Appendix F.

Perhaps the argument that should be made isn't art versus craft but artistic achievement versus commercial work. Even on that level, there is hypocrisy in play. Artists, designers, and studios commonly reused designs or portions of designs particularly for projects in different regions of the country. Beautiful windows were produced copying oil paintings from popular easel painters.

Gordon Henderson stated studios were criticized for turning out small panels when they needed to survive during the Depression. Commercial work and small jobs kept the trade alive when monumental commissions slowed down.[26] John Piper perhaps answers the question best:

> There is no bad stained glass, but some (like beer) is better than others. In fact, as in painting and sculpture, there were always a few men of genius, and the 'rest'.[27]

There is and was a hierarchy of stained glass firms. At the pinnacle are firms producing monumental work in the most prominent locations for the wealthiest patrons. In the golden era of American stained glass, the years between the late 1870s and the 1930s, some of these studios were headed by the offspring of prominent families who had the proper social and professional connections. Louis Comfort Tiffany, David Maitland Armstrong, Charles and Frederick Lamb are prime examples of this class of stained glass artisans. Their ability to mingle with potential clients in male dominated New York City social clubs, art associations, and commercial settings gave them an advantage gaining prominent work which, in itself, generated future work.

The next level of studios would include those similar to Henderson Brothers. They produced large quantities of glass in a wide variety of settings. It would not be unusual for

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[26] Gordon Henderson, interview by author, Towaco, NJ, March 18, 2007.
[27] John Piper, *Stained Glass: Art or Anti-art* (New York: Reinhold Book Corporation, 1968), 10.

this type of studio to receive a prominent commission, often fabricating the work of an important designer as did the Henderson Brothers in association with J. Scott Williams. However, much of the work of these studios was commercial or residential in nature. Similar to Henderson Brothers, these studios hired many men who were specialists in some aspect of the stained and leaded glass trade. A critical factor in making some of these studios stand out would be the ability to attract and keep a talented artists/painter on their staff for an extended period of time, allowing the studio to develop a reputation and style for their work.

At the bottom of the pyramid stands the solo stained glassman. This individual has to be skilled, or at least competent in every aspect of the trade. Ernest and Gordon Henderson are prime examples of the independent glassman. Independent glassmen often worked in association with others in their field particularly in areas in which an associate was better skilled. For example, Gordon Henderson often did installation work for other craftsmen; both Ernest Henderson and Gordon Henderson worked with a designer/painter for extended periods of their careers.

This project began inauspiciously with a reluctant visit to the home of Gordon Henderson to determine if he might have a piece of glass needed for a restoration. All of my usual suppliers pointed to Gordon as the only possible source for this glass. The visit was arranged by a friend whose family had commissioned work from Gordon previously. The reluctance was a result of Gordon's reputation as being hostile to other stained glass crafts persons.

When I knocked on the door a tall elderly man opened the door, ignored me and said hello to my female companion who had arranged the meeting. He eventually shook my hand; his hands were large, well-formed and strong. He looked at the glass and said "No one has this, not even me."[28] He then asked, "Are you here to see my collection?" rather gruffly. A humorous conversation ensued where I let him know I didn't know what he collected. After a bit of back and forth I finally told him I didn't care what he collected and if he didn't have the glass I was leaving, much to the chagrin of my companion. At that Gordon asked if I wanted to see his collection, if I was really interested in stained glass.

I spent the next four hours traveling into a world I never imaged: glass, sketches, panels, stories, and a long visit to the backyard studio perched precariously on the edge of a steep hill. Gordon Henderson and I made a connection that gradually developed into a working relationship and a friendship. His nickname was Don. He was called Donny, Gordon, Don, and some names not to be printed. I always called him Don, but will refer to him, for the purposes of this study, as Gordon, which was his professional name—Gordon Henderson, Stained Glass Craftsman.

Researching the work of the Henderson family reveals a significant body of work: commercial, artistic, and mundane. All of it had its function, whether repairing school and factory windows or ornamenting Hammerstein's Theatre, it employed many, fulfilled its purpose, and in many cases brought visual enjoyment to those commissioning the work. A rare three-generation continuation of the trade is worth studying and will add to the historiography of stained glass in the United States.

The contributions of the Henderson family merit recognition and are important in the field of stained and leaded glass work. The fact that William Henderson's patents are still referred to in recent patent applications and his elemental metal glazing products are in

[28] Gordon Henderson, interview by author, Towaco, NJ, November 28, 2004.

common use are significant.[29] Metal cames of the types introduced by Henderson are commonly found in doors and windows, increasing strength and durability.

Henderson Brothers worked with the best architects practicing in the New York metropolitan area, many of national and international renown. Much of their work involved what was often termed "common glazing" or leaded glass windows consisting of diamond or rectangular quarries of clear glass. The firm produced acres of this work according to Gordon Henderson. Stepping foot on the campuses of Yale, Princeton, Duke, West Point, and many others, the esthetic experience provided by leaded glass windows placed in neo-Gothic buildings create a visually unique and elegant environment.

Gordon Henderson often stated that the "big" or wealthy families were like the roots of a tree, supporting the architects, its trunk. Large branches moving off the trunk in many directions represented the studios of artisans, artists, and craftsmen who embellished the architects' designs. The smallest branches included many individuals who passed through the larger studios to move into their own businesses. It was a big family tree. Henderson Brothers had many men pass through its doors that went on to open their own firms and independent businesses. Many found employment with other firms after Henderson Brothers closed. They were an active and important incubator of talent.

The Henderson family is important in the rather obscure history of American stained glass as for three generations they kept alive their traditional style of work in Colonial and Georgian leaded glass, maintained important work at prominent locations, and produced commissioned work that was occasionally of the highest artistic merit. All three generations produced surviving commercial and institutional work which still lends itself to

[29] A review of listings on Google Patents (http://www.google.com/patents) identified seven instances where William Henderson's patents are referenced in other inventors patents.

creating a special environment. They also provided work for homes across the spectrum of social classes. Repair, restoration, and regular glass work filled in the gaps and augmented the businesses of the Henderson family, whose goal was survival in a competitive world.

The opportunity to preserve the work of the Henderson family is important because it may spur others to do similar studies on other local and regional studios, as well as individual craftsman and artists. Any effort to chronicle the work found in our churches, commercial and institutional buildings, and homes will be of interest to the community of those who love stained glass, American architectural history, and the various arts and crafts movements.

> Of all the visual arts there is probably none that can be so insistent and dominating as stained glass, or so inescapable as long as we are within its aura . . .[30]
>
> *Robert Sowers*

[30] Robert Sowers, *The Language of Stained Glass* (Forest Grove, Oregon: Timber Press, 1981), 199.

List of Illustrations and Documents

Chapter 3 Henderson Brother's Commissions

Appendix E

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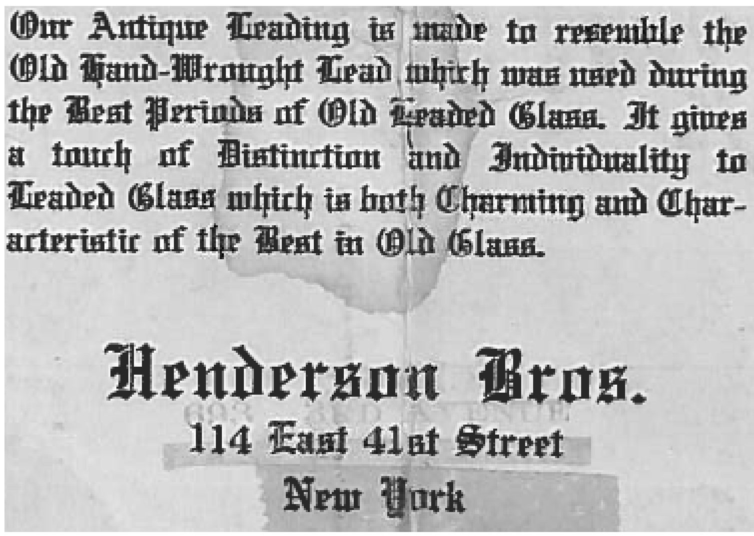
Chapter 1

Henderson Brothers Craftsmen:
Stained, Leaded, and Metallic-Set Glass

> My father was in business and we did a different type of business and we did a colonial leaded glass and my father was quite busy. We had plenty of work.[1]
>
> *Ernest Henderson*



Our Antique Leading is made to resemble the Old Hand-Wrought Lead which was used during the Best Periods of Old Leaded Glass. It gives a touch of Distinction and Individuality to Leaded Glass which is both Charming and Characteristic of the Best in Old Glass.

Henderson Bros.
114 East 41st Street
New York

Figure 7. Henderson Brothers brochure, 1922-1934.[2]

The stained glass firm of Henderson Brothers floats in and out of history having left an intriguing body of materials demonstrating the variety and quality of their work and associations. Documentary evidence includes patent records, court records, government reports, advertisements, drawings, magazine articles, and some written communication. Family lore, photographs, and rescued firm materials provide more depth and a bit of color. Birth, marriage, adoption, immigration, and death records related to principals William and Robert Henderson have not been located to date. Remaining installations provide evidence of the magnitude of the studio's work.

[1] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April, 1965

[2] Henderson Brothers Brochure, see Appendix E, Figure 237, page 415.

Examining the tangible record of Henderson Brothers in combination with family lore allows an understanding of how a large stained glass business operated during the greatest years of the trade. Certain assumptions may be drawn from the research to appreciate the impact of this particular business on the trade and its similarity to other firms operating then and now.

William and Robert Henderson came to the United States from Scotland in 1872.[3] Their first stop was Boston, though they quickly moved on to Chicago where they found work rebuilding after the Great Fire. Besides an understanding of stained glass, they brought metal-working techniques associated with stained glass – sash bars, reinforced lead came, and metal used in place of lead came. Gordon Henderson described his grandfather William as the primary mover in the firm and documents reinforce that view. It is through his patents for metal-work that William Henderson enters the historical record.

There were several quality studios in Chicago and the Hendersons decided to relocate; William and Robert Henderson went back to Boston,[4] then on to New York. According to Gordon Henderson, the move to New York was precipitated by a need for people experienced in the Georgian and Federal embellishment required for the work of Stanford White and others.[5] It is hard to pinpoint the exact dates as no specific evidence can be found as to their precise location between 1893 and 1896 when they appear in directories living and working in New York City.[6] Henderson Brothers, similar to many other firms, moved often. Rising rents, limited or too much space, traffic could all impact a move.

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[3] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[4] Ibid.
[5] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[6] See Appendix B.

Another major factor is the building of tall buildings which obstructed sunlight, so important to making stained glass windows. Henderson Brothers existed as a firm in New York City from at least 1896 until 1939, the last year they advertised in the Stained Glass Bulletin.

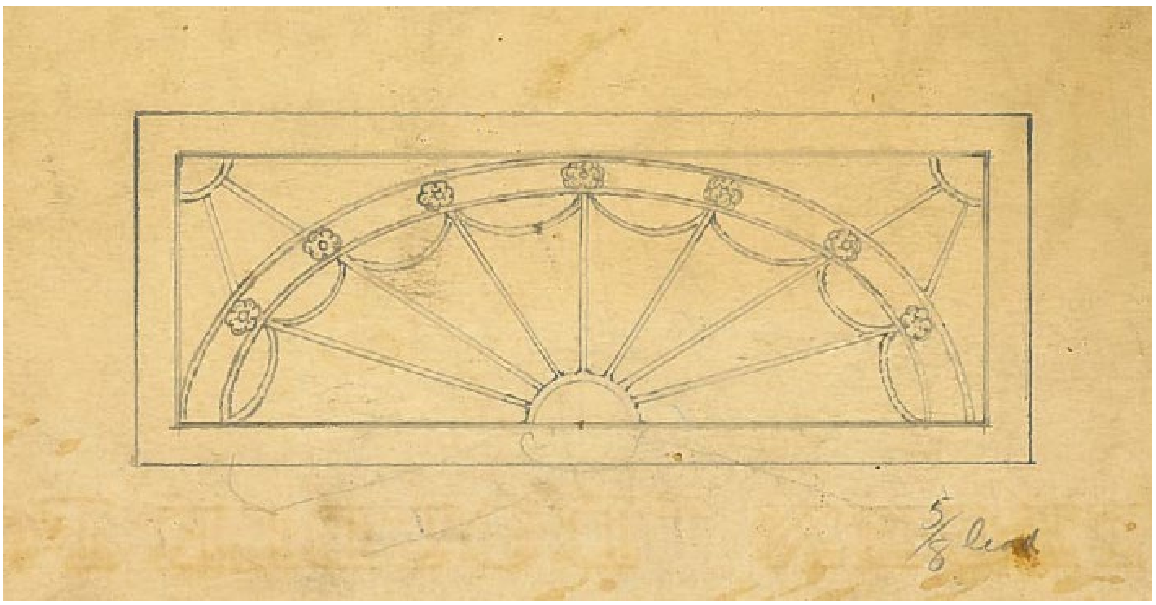

Figure 8. Henderson Brothers pencil sketch, Georgian Colonial leaded glass, with seven lead ornaments, a firm specialty; shown approximately life size.[7]

[7] Author's collection.

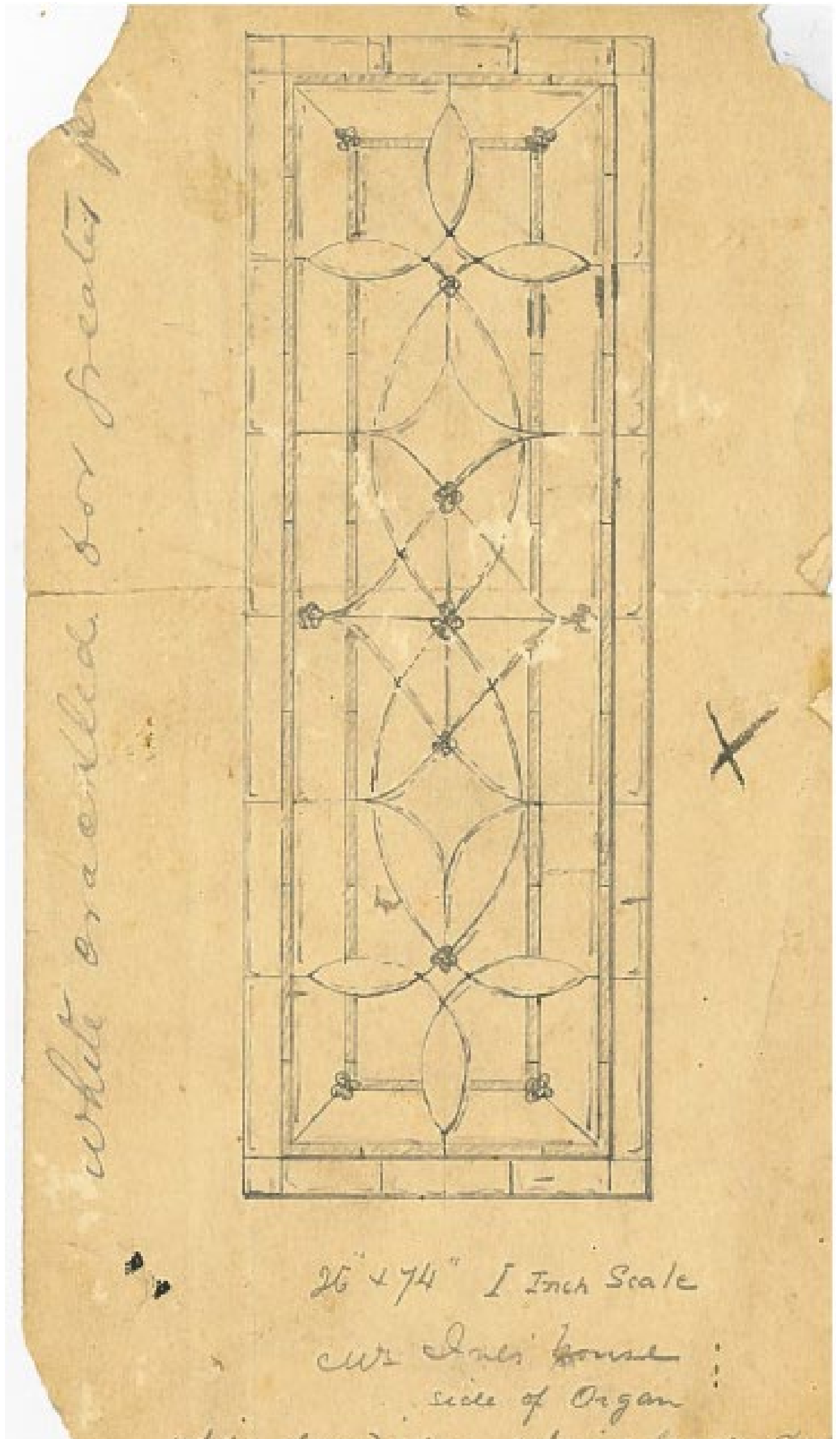

Figure 9. Henderson Brothers Georgian Colonial leading pencil sketch. Original drawing: 8 ¼ X 4 ½ inches.[8]

[8] Author's collection.

The Henderson Brothers firm managed to survive the Great Depression, when so many other businesses closed. Their versatility was an asset, but they were a much smaller firm in the 1930s than earlier. The end came when William Henderson's wife became ill and died in the hospital. Apparently this unsettled William and he became "crazy in the head" before passing on himself. Robert Henderson continued the business briefly but gave it up to become a motorman on a streetcar.[9]

The men remaining at the firm during this time were selling lead and other metals out the back door and eventually the balance of the stock was sold at auction. Birkenstock Studios bought a lead mill for studio use in Mount Vernon, New York.[10] Much was bought by Richard M. Spiers. When Spiers moved to Paterson, New Jersey, cases of glass, boxes of jewels and rondels, and sketches from Henderson Brothers went with them. Many of the glass items had originally been purchased from the firm of Leo Popper and Sons or Heidt's Glasshouse, major suppliers to the trade; both located in New York City. Ernest Henderson had tracked materials from his grandfather's firm and eventually son Gordon would acquire this cache when the firm, now Payne-Spiers, closed.[11]

Another firm that purchased Henderson Brothers' material was the Long Island firm of Jonyious & Sheppard. Sheppard had an association with Henderson Brothers.[12] A relative of the principals reached out to Gordon Henderson in the early 1980s, saying they had researched materials they possessed and found that it was from Henderson Brothers. They were living in Hackensack and made the trip out to Pine Brook to visit

[9] Gordon Henderson, interview by author, Towaco, NJ, December 20, 2004.
[10] Gordon Henderson, interview by author, Towaco, NJ, November 11, 2007.
[11] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006 .
[12] Gordon Henderson, interview by author, Towaco, NJ, November 11, 2007.

Gordon at his home. They told him that Jonyious & Sheppard acquired these items at an auction when Henderson Brothers closed. Gordon got the lot of drawings, sketches, and some photographs at that time.[13]

A series of patents for metal sash bars, manufacturing process, production machinery, and ventilators has left a partial paper trail of William Henderson's activities and city of residence between the years 1889 and 1938. Henderson identifies himself as a subject of the Queen of Great Britain in his 1889, 1890, 1892, and 1893 patents living as a resident of Chicago in Cook County, Illinois. In 1910 and 1911 he identifies himself as a subject of the King of Great Britain residing in New York, New York. In 1923 he lists himself as a citizen of Great Britain and a resident of "the city, county, and state of New York." His final patents simply identify his residences including New York City, Mineola, New York, and East Norwalk, Connecticut. The Chicago residence equates with family lore as does his New York City listings. Various New York City Directories corroborate the New York residences.

Court records from 1892 to 1897 provide information on the location and activities of William Henderson as he defended his earliest patents against infringement with mixed success. William Henderson related to step-son Ernest Henderson during the lean Depression years that defending his patents had sapped the business of money and energy.[14] However, this didn't stop him from developing more ideas and processes. Ernest Henderson stated that these expenditures were both a source of commissions and a drain of company resources.

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[13] Gordon Henderson, interview by author, Towaco, NJ, March 24, 2010.
[14] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.

Where is Robert Henderson in all of this? From New York City directories we know that he is associated most of his life with brother William. According to Gordon Henderson, Robert was the "brother you don't talk about;" his responsibility while with Henderson Brothers was the regular glass department and steel casement windows, which was certainly an important part of the business.[15] Most often though, wherever William was, Robert was. Frequently they would be living at the same address and both listed Henderson Brothers as their employment. Henderson lore has William as the principal of Henderson Brothers and Robert handling much of the production aspects of their metal work. Ernest Henderson described his father as a tyrant and difficult to work for. It would therefore not be surprising that friction would develop between two brothers who had spent a lifetime together and at least one had a difficult personality. For a period, Robert and William were not associated and are listed as working at two separate locations and Henderson Brothers is listed as "William Henderson only," making it very clear that there was a split lasting several years.[16] Eventually, Robert rejoined brother William at Henderson Brothers in New York. William Henderson resided in Mineola, New York, as recorded on his final patent application dated 1938, which was his last listed residence.

[15] Gordon Henderson, interview by author, Towaco, New Jersey, December 20, 2004.
[16] Trow's New York City Directory, various years.

Chapter 2 Life in the Shop

ESTABLISHED 1872

HENDERSON BROS., INC.

Designers and Craftsmen in Leaded and Stained Glass in the Antique and Modern Styles

TELEPHONE
Murray Hill 4-6586

771 First Avenue, NEW YORK, N. Y.

HENDERSON'S LEADED GLASS

Henderson's Leaded Glass is carefully made and fabricated by modern methods. We can economically produce the special glazing sizes and forms used in the Tudor, Spanish, Colonial and Georgian period designs.

Adequate manufacturing facilities, combined with quantity purchases of raw materials, enable us to produce quality work at minimum prices. Skilled workmanship with careful supervision from first to last, insure a finished product of uniformly highest quality and enable us to guarantee Henderson's Leaded Glass against leakage and warpage.

Leaded glass, carefully and systematically made of substantial materials, as is Henderson's Leaded Glass, will last indefinitely.

Figure 10. Henderson Brothers trade show hand-out, c. 1934.[1]

The story of the Henderson Brothers starts with the studio and the men working there. A collection of street-smart veterans, many life-long employees, it is a cast of characters worthy of cinematic exploration. The most colorful may have been William Henderson, a man noted for his volcanic temper. Stories about the different men employed by the firm made up a great deal of Gordon Henderson's "repertoire," his treasure trove of anecdotes so important to his goal of preserving the lives of these men and times. The men who worked in the shop and their stories are listed under various job categories in which Gordon Henderson identifies them working.

Understanding what happens in a stained glass studio demands examination of the various jobs and responsibilities of the workers. Henderson Brothers was a large firm

[1] Author's collection, see Appendix E, Figure 251, page 433.

and employed men with a wide variety of talents; in 1912 the firm employed 20 workers; at the time, Tiffany Glass and Decorating was one of the few larger in the country.[2] Numbers of employees, of course, went up and down with need. Some started young as apprentices; most were skilled in multiple areas. Many became noted workers in the field working for themselves and other firms.

Henderson Brothers, like many firms of the time, kept their critical employees for long periods. Some were able to work much of their career for the same firm. On the other hand, most firms did not have retirement plans so many workers were at the bench into old age. Gordon Henderson's mother said to him, "Most of the men stayed with one company for their whole career; they were family men. Later on, they moved around from company to company when times were bad."[3]

According to Gordon Henderson and city directories, William Henderson was the principal partner of the firm. As such, he not only was developing new products but handling sales. A blurb in the *National Glass Budget* stated, "Wm. Henderson, representing the Henderson Bros., lead and stained glass manufacturers of New York, was a business visitor in Pittsburgh, last Thursday."[4] This was quite a trip in 1914.

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[2] John Williams, *First Annual Industrial Directory of New York State, 1912* (Albany: J. B. Lyon Company, 1913), 196.
[3] Gordon Henderson, interview by author, Towaco, NJ, April 14, 2009.
[4] *National Glass Budget: Weekly Review of the American Glass Industry 41,* (February 14, 1914): 7.

Figure 11. Henderson Brothers c. 1911-1916, *second from right;* William Henderson.[5]

Henderson Brothers was a member of the Building Trades Employers Association of the City of New York. This association was founded in 1903 to "end 'jurisdictional' and 'hold-up' strikes and terminate the era of graft and unlawful interference with the building business."[6]

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[5] Author's collection.

[6] Samuel B Donnelly, ed., *The Handbook of the Building Trades Employers' Assoc. of the City of New York 1922*, (New York: Building Trades Employers Association, 1922), 3.

The purpose of this association is spelled out in its handbook:

ITS OBJECTS

This association exists for the promotion and the protection of the building industry of the City of New York. Its objects as set forth in its Constitution are:

1. To foster the interests of those engaged in the erection and construction of buildings and other structures.
2. To reform abuses relating to the business of persons so engaged.
3. To secure freedom from unjust and unlawful exactions.
4. To obtain and diffuse accurate and reliable information as to all matters affecting the interests of those engaged in the industry.
5. To procure uniformity, harmony and certainty in the relations existing between employers and employees, mechanics and laborers, and in all lawful ways to promote and protect the business interests of the members of the association.
6. **There is no intention nor shall there be any action on the part of the Association to control or in any way deal with prices or restrict competition.**[7]

The association also set up a board of arbitration to mediate disputes between the many and various unions involved with building in New York City; William Henderson would have interacted with several unions. The Painters and Decorators represented some members of the stained glass trade and general window glazing. Window glazing is the process of assembling the pieces of glass into a finished window and placing these or other types of glass into a frame. Glazing and repair were important parts of Henderson Brothers' business. Sheet metal unions had jurisdiction over some aspects of the following: hollow sheet metal window installations, ventilator fabrication, and skylight installations. All these were areas where Henderson Brothers worked. Most of the prominent New York builders were listed as members of this association.

Wages for various trades were listed. It was apparent that unions were improving conditions. Ernest Henderson was making sixteen dollars per week working for Tiffany

[7] Samuel B Donnelly, ed., *The Handbook of the Building Trades Employers' Assoc. of the City of New York*, (New York: Building Trades Employers Association, 1922), 3, bolded as in original.

Glass and Decorating, a raise from what his father paid him around 1897; this for a fifty-five hour week (five days and half-day on Saturday). Wages for Painters, Decorators, and Paperhangers, comparable positions to most in a stained glass studio, were nine dollars per eight hour day or forty-five dollars per week for a forty hour week. Overtime was paid at double time.[8] William Henderson the businessman had to survive in the rough and tumble world of building and unions,

The firm moved multiple times over the years. Apparently, finding suitable locations was also part of William Henderson's responsibility. Moving from location to location was a fact of life for New York City stained glass firms as perusing directories demonstrates. Studios sought new space to be close to major commissions, because space needs changed, or lower rents could be had. This 1922 blurb in the *New York Times* Realty Notes states:

> The purchaser of 228 East Forty-first Street, recently sold by Maurice Wertheim for the Neivel Realty Company, is William Henderson of the firm of Henderson Brothers, manufacturers of stained glass, who will occupy the premises for their New York headquarters on completion of extensive alterations.[9]

A fragment of a Henderson Brothers Brochure lists this address and also 114 East 41st Street. It is hard to say with any certainty how long Henderson Brothers occupied this location, if ever. This brochure also mentions exhibits at the Architects Showroom.[10]

The Architects Samples Corporation, established in 1913, was located in the Architect's Building on 101 Park Avenue, in New York City.[11] The Architect's Building held the offices of some of the most prestigious architects, builders, and allied trades in

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[8] Samuel B. Donnelly, ed., *The Handbook of the Building Trades Employers' Assoc. of the City of New York* (New York: Building Trades Employers Association, 1922), 59.
[9] *New York Times,* "Real Estate News," September 30, 1922.
10 Author's collection, Appendix E, Figure 245, page 423.
[11] *New York Times,* May 2, 1938, 32.

New York including McKim, Mead, and White. An advertisement for the Architects Samples Corporation states that it maintained "a permanent display of building materials," and "a classified draughtsman employment bureau—without fee."[12] Henderson Brothers exhibited a variety of items there over the years and it was William Henderson who was making this connection.[13]

Among the Henderson Brothers' pieces on display in the Architects Samples Showroom were two transoms, a small sample panel of Georgian lead work, and a lead overlay piece which was a specialty. At some point Ernest Henderson gained possession of the first three pieces. The lead overlay piece came into the possession of Gordon Henderson in the 1970s. Bernard Crystal (uncle of comedian Billy Crystal) maintained an antique shop in New York City named the Washington Irving Gallery. Every Monday the shop was closed but artists, fellow collectors, and a few select others would gather for conversation on all subjects including antiques, art, and architecture. Gordon Henderson would occasionally stop in when he was in the city working. Bernard Crystal, on one occasion, gave the piece to Gordon saying that though it was valuable, it was from his family and should go back to it. He never related how he got it, but Ernest Henderson verified that it was Henderson Brothers and had, in fact, been in the Architects Sample Room.[14]

[12] *Architectural League of New York Annual 1922,* 219.
[13] Gordon Henderson, interview by author, Towaco, NJ, December 20, 2004.
[14] Gordon Henderson, interview by author, Towaco, NJ, April 4, 2007.

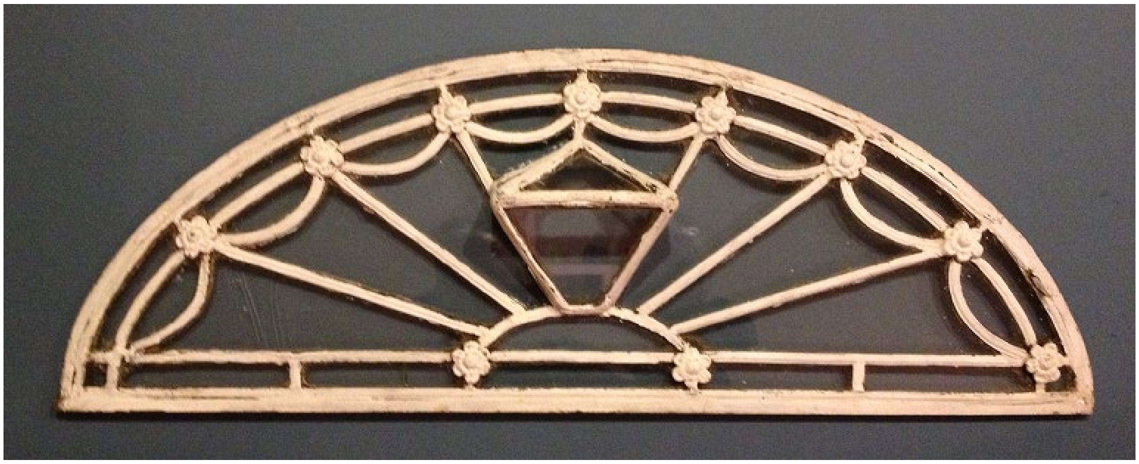

Figure 12. Transom displayed at Architects Sample Room, painted white on exterior as was traditional.[15]

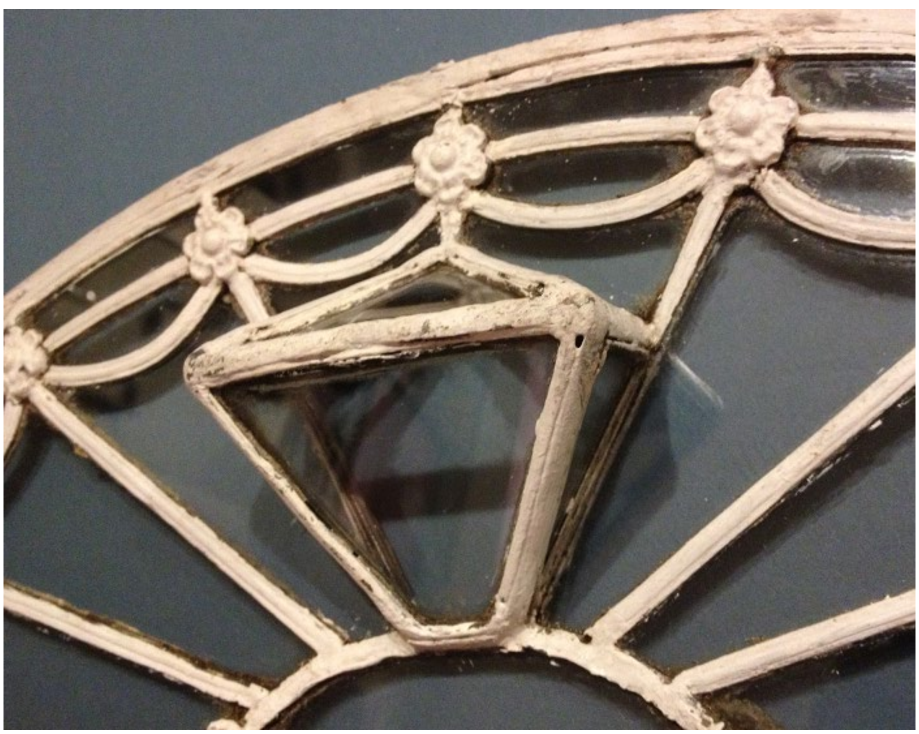

Figure 13. Transom detail.[16]

[15] Author photograph.
[16] Author photograph.

Figure 14. Reverse view of transom, unpainted on the interior, as was traditional.[17]

Figure 15. Detail of interior of transom showing leaded ornament.[18]

[17] Author photograph.
[18] Author photograph.

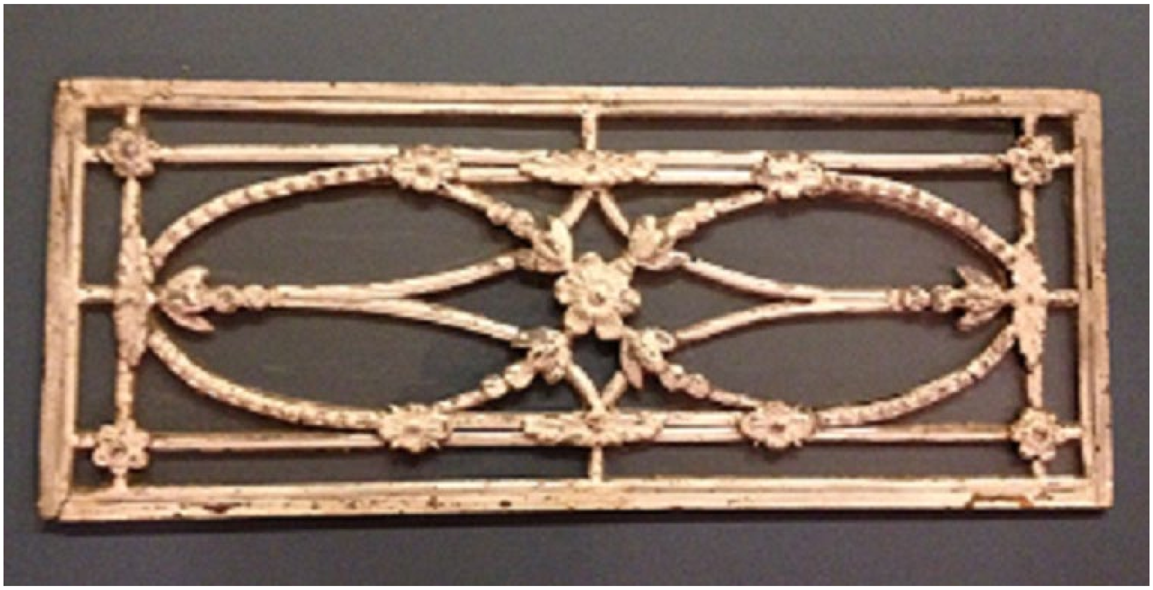

Figure 16. Display piece showing full range of Georgian Colonial leading and lead ornaments.[19]

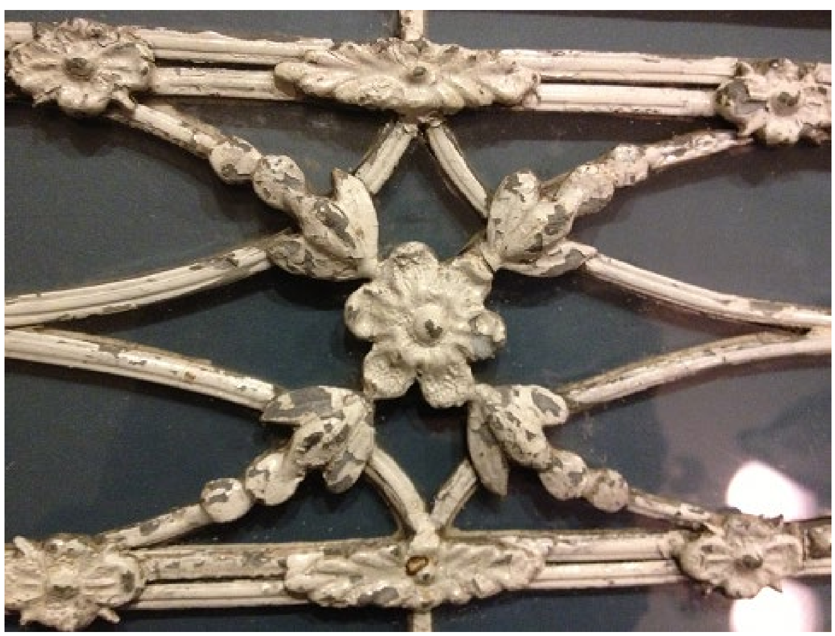

Figure 17. Detail of central portion of leaded panel.[20]

[19] Author photograph.
[20] Author photograph.

There were rules in the shop and they were strictly enforced. Working in a stained glass shop was considered a good job and, until the Great Depression, was steady work. In the major cities many of the larger firms had union workers, but certainly not all. All the workers wore white shirts, ties, and aprons in the shop—it was a respectable and professional trade. William Henderson also had a rule that no one was to wear a ring in the shop because of the danger of catching it in and losing a finger on any of the various milling machines and other production equipment for producing lead and zinc cames.[21] Cames are strips of various metals which are soldered together, holding individual pieces of glass in place forming a leaded or stained glass window. They are shaped in the form of a "U" when used on the outer edge of a window. Cames shaped in the form of an "H" are used on the interior pieces of glass. The glass fits into the openings and is held by the flanges. "H" cames are also used around the edge of windows. Lead came is pliable and shaped to various forms easily. Zinc and other hard metals don't bend as easily, but are sturdy. Cames commonly range from one eighth of an inch to one inch in width. Custom sizes and shapes are also fabricated.

[21] Gordon Henderson, interview by author, Towaco, NJ. May 2, 2009.

Figure 18. Henderson Brothers Shop – *on left,* Ernest Henderson, *at center,* George Durhan.[22]

Jobs at Henderson Brothers included: artist/designer; selector; cutter; painter; kiln man; glazier; cementer; setter; drummer (sales); accounting/business manager; engineer; machinist; and general shop help. A brief overview of the responsibilities of these jobs follows with some anecdotes about Henderson Brothers employees. Few images survive from the Henderson Brothers. Photographs from other studios are included in this study where appropriate.

Artist/designer

Henderson Brothers employed their own at times and worked with many free-lance designers as well. Fred Kurtz and J. Scott Williams are two that have been clearly identified. Noted designer/painter J. Gordon Guthrie, who later worked at George

[22] Author's collection.

Durhan Studios also worked for the firm.[23] These individuals created the initial designs for clients that would be scale watercolors, usually one inch to the foot. These could be highly detailed and incredibly intricate. The next step would be to create a full size drawing or cartoon with all detail and shading included. With final approval, a cut line drawing, indicating the specific pieces of glass to be cut, would be drawn from the full size cartoon. Two copies of this were needed, one for the glazier to work on and one to be cut into pieces for the cutters to work off.

Several challenges faced artist/designers. First was meeting the wishes of donors, architects, and building committees/owners who were often at odds. All too often a donor might have a specific image in mind: all too often, donors have no vision for their memorial or other commission. Many sketches might have to be prepared to satisfy the ideas of those paying for a window. If the job was going out to bid against other firms, hours of time and much money could be wasted, although ideas on paper could be adapted to other commissions. Another challenge is that artists/designers often did not visit the place where the work would be placed. The window they designed might not be in harmony with others already in place. For the Henderson Brothers this was not as much of a problem because the style of their work was not as seriously impacted by its surroundings as a figural church window.

The artists/designers employed by Henderson Brothers were highly skilled with pencil and brush. The detail found in the watercolor presentations are remarkable for what is portrayed in such small space. The following examples are typical of Henderson Brothers' residential work with one exceptional watercolor for a yacht. Henderson

[23] Gordon Henderson, interview by author, Towaco, NJ, March 6, 2007.

Brothers metallic glazing was particularly well suited for glass work on boats as it was more durable over the short term than leaded glass.

Figure 19. Henderson Brothers large residential window design. Original image 9½ X 6 inches.[24]

Figure 20. Detail from center panel on top.

Figure 21. Detail from center panel on bottom.

[24] Author's collection.

Figure 22. Rare marked "HB, NY", (Henderson Brothers, NY) watercolor sketch. marked as Sample "C", original image 7¼ X 4¼ inches.[25]

[25] Author's collection.

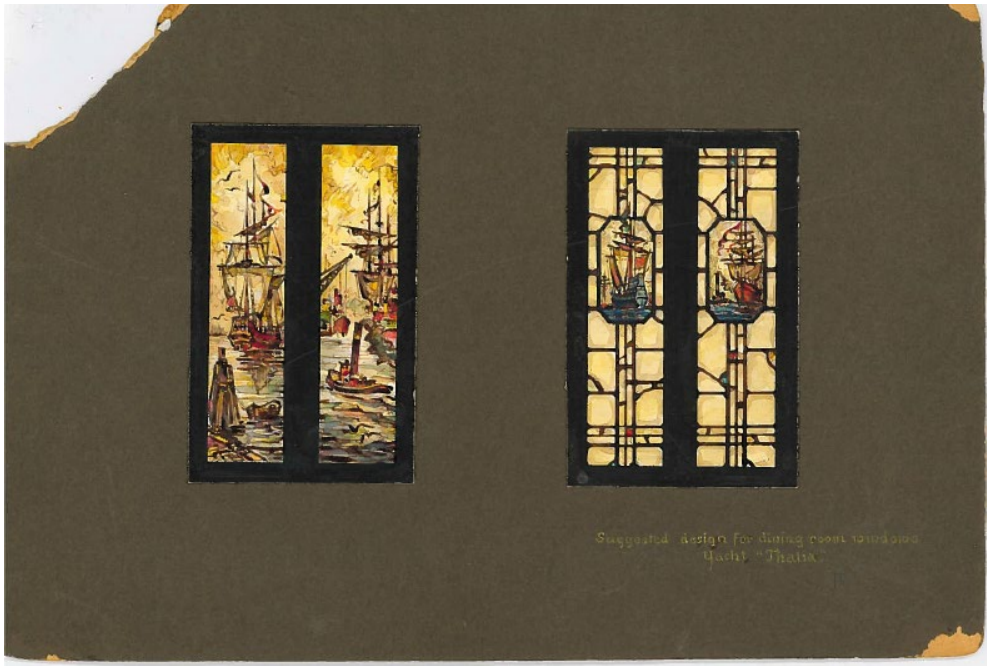

Figure 23. Henderson Brothers watercolor sketch *at top,* marked: Suggested design for dining room windows, Yacht "Thalia" and *at bottom,* center panel details; original display card 9½ X 6½ inches, details life size.[26]

[26] Author's collection.

Figure 24. Henderson Brothers watercolors for domestic windows featuring typical painted whimsies. Original images 6 ¾ X 2 ½ inches; *on right,* image marked: "Caputi, 3 Sketches, Sept 26, 1930."[27]

[27] Author's collection.

Figure 25. Henderson Brothers watercolor sketch – "Scholars," original image: 6 ½ X 4 ¼ inches.[28]

[28] Author's collection.

The artists and designers, while creating original work, were often called upon to recreate scenes from popular works of art, photographs, and other printed images. The sheer volume of work called for was a challenge at times. As most artists have a particular style, copying and adapting other work was common. The following images from Sharpe Brothers Studio, in Newark, New Jersey, detail the process. The first (Fig. 19), a page from *Dekorative Vorbilder IV*, has penciled grid marks both in squares and diagonals. From this grid, the artist would expand the image to its needed size. In Figure 20, a traced drawing has been created of the boy on the right of the original image. The large fish on the platter has been replaced by a cooked fowl. In Figure 21, the cooked fowl is now clearly a duck. Figure 22 details the boy on the left of the original image holding the boar's head on a platter. This image has the lead lines drawn in to size as well as the cut marks to place the painted image of the boy into the quarried panel.

Although the images are copied, the artist's own style is apparent in the finished product. The faces of the boys are thinner and the demeanor is less delicate than the very French-inspired original. Also, the change from the whole fish to a duck is more American in taste. What is undeniable, is the fineness of the pencil work and overall quality of these sketches. Unfortunately, the watercolor sketches and location of the window have not survived. Similar work by Sharpe Brothers can be seen at the Tilghman House on the campus of Drew University in Madison, New Jersey.

Figure 26. Page showing grid lines in pencil, original size 13 ½ X 9 ½ inches.[29]

29 Author's collection.

Figure 27. Tracing paper, fish changed to fowl, original size 17 ½ X 7 ½ inches.[30]

[30] Author's collection.

Figure 28. Finished image transforming fish to fowl to goose, original image size: 8 X 12 inches.[31]

[31] Author's collection.

Figure 29. Final image placed into lead lines, full-sized drawing.
Original size: 10 ½ X 18 inches.[32]

[32] Author's collection.

Selector

Selectors chose the glass that would be used for the window. Matching the color scheme developed by the artist, the selector would go to the racks of glass in the shop and select the various shades, densities, surface texture demanded for the job. Glass would be held up to the light with other colors or set on light tables to get the correct contrast or complementary effect.

Figure 30. Milton Irving selects glass at Detroit Glass Works, Detroit, Michigan.[33]

[33] E. Burgert, Detroit News staff photographer, (June 7, 1953; author's collection).

Cutter

Cutters would use paper patterns cut from the extra full size cut line prepared by the artists when working with dark or opaque/opalescent glass. Cutters used special sheers or pattern knives to cut the pattern. The sheers had double blades on one side that would take out a strip of the pattern paper. Pattern knives had two parallel blades that similarly removed a strip of paper from the pattern. A strip of paper had to be removed to allow for the heart of the lead when cutting the glass. If copper foil was to be used, a thinner strip was removed requiring separate sheers and pattern knives.

Figure 31. Aloysius Weiss and Margaret Bouchez mark glass to be cut using paper pattern.[34]

[34] E. Burgert, Detroit News staff photographer, (June 7, 1953; author's collection).

The paper pattern was placed upon the glass to be cut. The glass cutter was run the pattern creating a score, or slight cut in the glass surface. Pieces were then snapped off by hand or using breaking pliers following the slight cuts in the glass. Rough edges or tight inside curves were cleaned up with grozing pliers, which were made with softer metal to take small bits of glass off with each nip. Cutters often worked on light tables, particularly with light colored clear glass to avoid cutting patterns. As they could see the cut lines through the glass it saved a step. When working with opalescent or textured glass, the pattern had to be placed directly above the specific area of the glass sheet that met the needs of the window.

Skilled cutters at Henderson Brothers had to master the gauge-board, used to mass-produce quarries, repeating rectangular or diamond-shaped panes. The gauge board consists of a straight edge and an adjustable metal bar that could be set to the required angle to make repetitive cuts accurately. This was particularly useful when cutting diamonds.[35]

Painter

Painters added any needed details: faces, hands, and feet; folds in clothing; shading; building parts; and other sundry items. Working from the artist's design, things were interpreted to the best of the painter's ability. Stencil work, using pre-cut stencils used for borders and corners, was a starting point for many painters. Glass paint is actually ground glass mixed with metal oxides and is traditionally only in two colors—black and brown. During the time of the Henderson Brothers, the granular paint had to be ground to

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[35] Gordon Henderson, interview by author, Towaco, NJ, December 27, 2006.

a fine and consistent powder using a glass muller. This was a time-consuming process but had to be done in order to create a free-flowing liquid that would apply and fire appropriately.

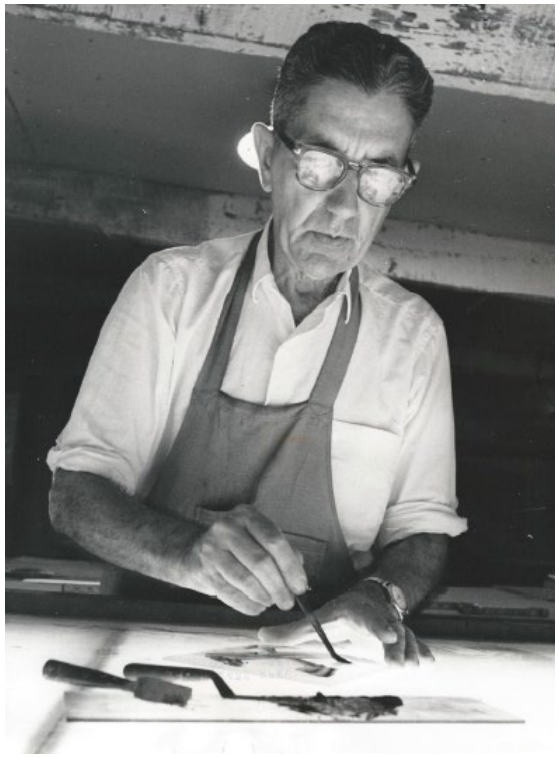

Figure 32. Stained glass artist Joseph Escuder applying vitreous material using a lightbox.[36]

Glass painting is a different process than traditional painting. Material is applied and then removed to allow light to pass through; its purpose is to obscure, reduce, or highlight the movement of light to emphasize the design. The glass powder is mixed with water, vinegar, and other liquids with a touch of gum Arabic to cause the mixture to stick to the glass. It is applied as line sometimes called trace or mat. Line is exactly what it implies – it is the major outlines that hold the composition together. Mat is a wash of paint applied loosely and brushed with a special brush called a badger blender to create a

[36] UPI Photo, (August 28, 1965; author's collection).

smooth, even surface. Mat is used to soften the lines, indicate shadows, provide depth, and reduce light flow. Highlights are then created, areas where the paint is removed using special brushes, pins, needles, combs, or whatever the painter prefers. At the turn of the century some studios began using colored enamels but unless well protected, these have not held up well to external weather conditions.

Glass paint is applied to the individual pieces of glass with light coming through the glass. In the image featuring Joseph Escuder, an individual piece of glass is being painted on a light box. This is particularly effective for line painting and allows work to be completed at all hours in all weather conditions. Many artists use a small wooden easel set in front of a window to hold individual pieces of glass to get the play of natural light. The advantages and disadvantages are obvious—real light replicates how it will actually be viewed. Cloudy conditions, though, and short winter days reduce work time.

Figure 33. Mary Ellen Irving and Raymond Hiarion place glass on easel window for final painting.[37]

[37] E. Burgert, Detroit News staff photographer, (March 24, 1953; author's collection).

After individual pieces have been painted, and sometimes the line fired, they are placed upon an easel window, often a large sheet of one quarter inch plate glass. They are held in place with bits of wax dripped between the pieces. Lead lines are painted onto the plate glass. The easel is then placed in an upright position so that it may be viewed with natural light coming through. Highlights may now be added as needed and any pieces that do not match are replaced. It is vital to view the window and finalize detail work in natural light. Large studios have easel windows that hold large windows produced by a firm.

Figure 34. Painting on easel with window in upright position, c. 1905.[38]

[38] Author's collection, glass slide.

The only stain in stained glass is silver stain. In the 1400s someone discovered that silver salts when placed on glass and fired would create a color ranging from bright yellow to deep orange depending on the glass, strength of the solution, and firing time. This allowed artists to design using pieces of glass that would end up with two colors. It was particularly useful for hair, building background, flowers, and special highlights.

Glass painting is a highly skilled part of the trade and few master it. Henderson Brothers had many glass painters over the years and some later moved on to other firms. In many cases, the artist was also the painter. Fred Kurtz, Pete Browne, Carl Bolbolski, and a man last named Hochter are some of those who painted work fabricated by Henderson Brothers. Carl Bobolski later hired Ernest Henderson to make metal bars and for other work.[39] Pete Browne later worked as a freelance glass painter and worked for many local firms including J & R Lamb.[40]

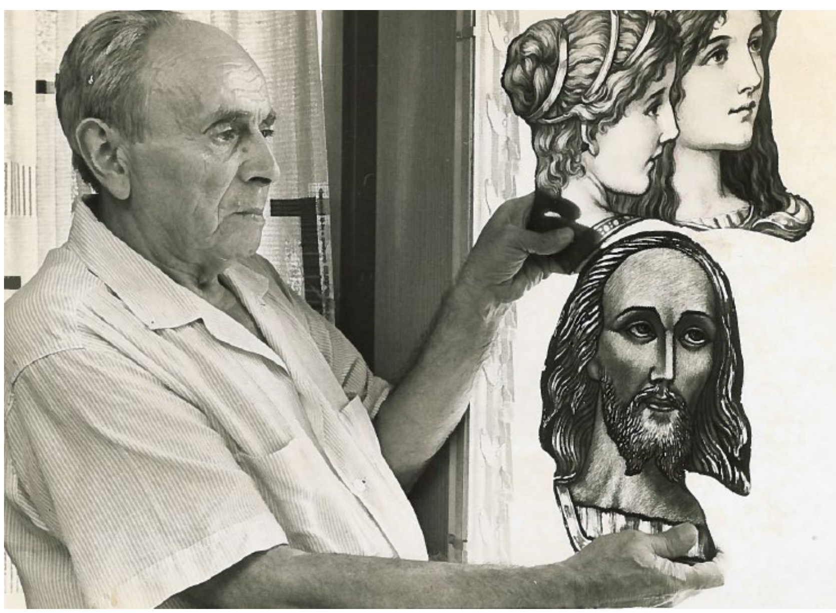

Figure 35. Leonid S. Andrejewic holds painted glass heads.[41]

[39] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[40] Gordon Henderson, Unpublished Autobiography.
[41] Photograph by Trabant, (September 5, 1961; author's collection).

Kiln man

After the pieces are painted, they have to be fired in a kiln. This is an important job and under-firing will create a condition where the vitreous paint will not hold up. Over-firing may cause the glass pieces to bend or melt. The glass paint actually becomes part of the surface of the glass and will last as long as the window does if protected from acid rain and smog. The glass must be heated to about 1200 degrees for the surface of the glass to absorb the vitreous paint. Silver stain fires at 600 to 800 degrees. The Henderson Brothers used gas kilns. One has to watch the glass until the surface is shiny and then turn off the kiln. Even if the firing is a success, cooling, or annealing the glass must be carefully done. If the glass cools too quickly, it will crack, ruining the painter's work. Generally, a gas kiln is simply turned off and the pieces removed the next day. Some firms had annealing ovens in which the glass would be placed in to lower the temperature on a schedule.

Figure 36. Preparing glass for kiln-firing.[42]

[42] Author's collection, unidentified worker and undated photograph.

Among the many challenges for the kiln man was the differences in the glass itself. Different types of glass, even from the same company, may accept heat at different rates. The thickness of the glass, structural flaws, humidity, a moment's lack of concentration could cause a problem. A good kiln man knew his glass and was vital to profits.

Glazier

After all the pieces are cut and fired, if necessary, they must be put together. A glazier essentially builds a jigsaw puzzle that will stay in one piece. Lead glazing involves the creation of a border of lead set against pieces of wood to provide support and shape. The glazier starts in a corner, places the glass in place, and surrounds it with lead. The glazier must think of the best way to place the lead and the correct thickness of lead to highlight the detail of the window. Next, the glazier selects a piece of lead and places one end in a lead vice. Using a pair of pliers, the glazier stretches the lead until it is straight. This stretching makes the lead easier to work with and stronger. It is cut with a lead knife or lead pliers, then held against the glass with nails to keep things in place. When the last piece is glazed it must be soldered wherever lead abuts lead. The window is then turned over and the other side is soldered.

Soldering involved applying a bit of flux to each joint to be soldered. This was often homemade. It always contains an acid and caused nose issues and split fingers. Early soldering irons had copper tips on iron shafts, with wood handles. These were heated in small gas heaters or in open flames. There had to be many available as they cooled quickly. Eventually soldering irons were developed that were heated using gas supplied through a hose to allow continuous soldering although this could be cumbersome. In some cases, soldering was done with a gas torch. This was difficult with lead as the came easily melted and the gas could overheat and crack the glass. The advent of electric soldering irons made the process more efficient, allowed temperature control, and reduced costs.

Figure 38. “Uncle” Weiss glazing window at Detroit Stained Glass, Detroit, Michigan.[43]

[43] E, Burgert, Detroit News staff photographer, (March 20, 1953; author’s collection).

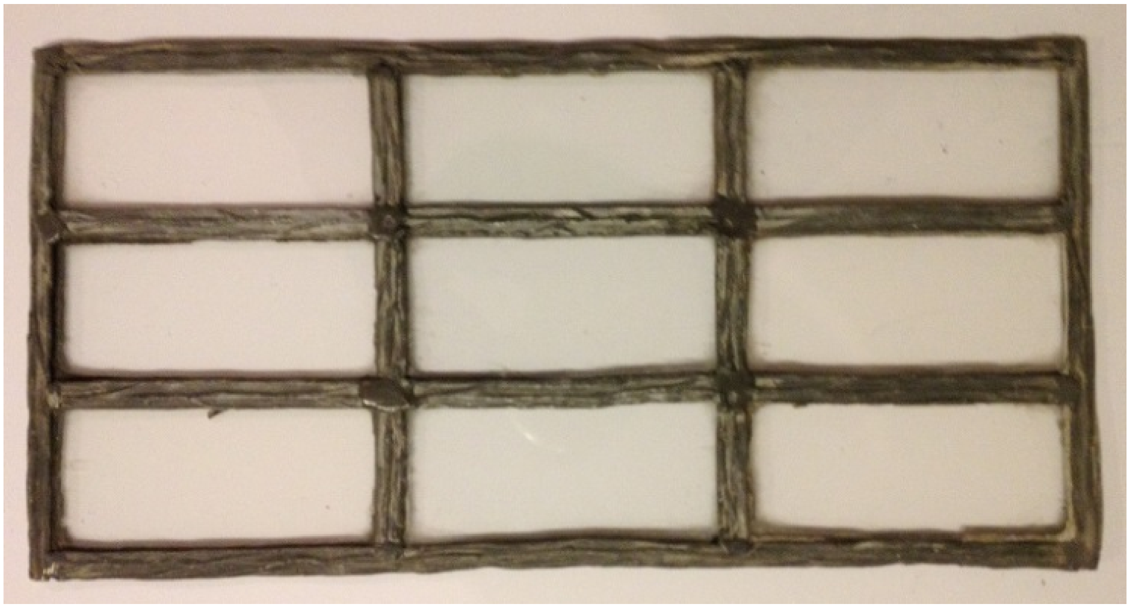

Figure 39. Typical quarry work using Henderson's Rustic Leading with sixteen solder joints.[44]

Figure 40. Detail of solder joint.[45]

If copper foil was being used, each piece had to be wrapped in a piece of copper. Strips of copper were coated with a sticky substance, applied to the edges of each piece of glass, and folded over on both sides. The pieces were then assembled on the cut line

[44] Author photograph.
[45] Author photograph.

exactly like a jigsaw puzzle, but one knew where everything went. An invention of Louis Comfort Tiffany, this process originally was used in lamps but became popular with windows. Copper foil is time consuming but creates strength greater than leaded work.

Louis and Rocco Riso, along with their father Patsy, were glaziers for Henderson Brothers. Patsy moved on to Durhan Studios and later worked with J. Gordon Guthrie and Elbinus Elskus. Gordon Henderson talked with him there about his grandfather's firm.[46] Louis Riso later worked for Rolphes Studio, and Rocco, after working for a variety of firms, died in 1976.[47]

The Lorti brothers, having shortened their name from Zapalorti, were also Henderson Brothers glaziers. Michael moved out to Staten Island and opened a firm which became Michael and Son. Frank went to work at J & R Lamb eventually managing the daily operations. He asked for a piece of the business, but Karl Lamb was not interested. He left and opened a shop with his wife in Englewood, New Jersey named The Cloisters. His wife sold art supplies and he worked on stained glass. There is a fine example of his work at St. Peter's Church in Mountain Lakes, New Jersey.[48]

Billy Portner was another glazier for the firm and he always had a scheme to make everyone rich. He had moonlighted as a cross-town horse car driver. One night he kept the collected fares and tied up the horses outside of the stable. The next day, the company sent a man to Henderson Brothers with a message for Portner thanking him for returning the horses. Later, he sold Durant Motor Car stock to Ernest Henderson which made him no money.[49] Loskie was both a glazier and outside man who, with Ernest

[46] Gordon Henderson, interview by author, Towaco, New Jersey, May 2, 2009.
[47] Gordon Henderson, Unpublished Autobiography.
[48] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[49] Gordon Henderson, Unpublished Autobiography.

Henderson, went to the Statue of Liberty to install cast iridescent glass flames into the torch.[50]

Glaziers for Henderson Brothers often fabricated the work of other firms such as work at Yale University for G. Owen Bonawit's firm. They also made and inserted leaded glass in the metal frames of The Hope Casement Company and most likely others based upon their advertising.[51]

Cementer

The cementer made and applied the cement or putty that went between the flanges of the lead cames. It was brushed on and then brushed into the edges of the came. It was cleaned off using saw dust or whiting. Both sides had to be cemented. The purpose of cementing is to strengthen the panel by making it tight and waterproofing. After the window is cemented and cleaned, it would be left in the shop for two weeks to allow for curing. After two weeks it was cleaned again with sawdust which also brightened the lead uniformly.

Tony Carboniero was a cementer for Henderson Brothers. Ernest Henderson said that Carboniero always complained about Preston Pugh's slide rule calculations that, "Your god-damned rule . . .your god-damned rule cost me twenty cents!"[52]

[50] Gordon Henderson, Unpublished Autobiography.
[51] Gordon Henderson, interview by author, Towaco, NJ, December 27, 2006.
[52] Gordon Henderson, Unpublished Autobiography.

Figure 41. Eloan Bond Cements Window at Karl Mueller Studios, Zephyrhills, Florida.[53]

Setter/Outside Men

The setter placed the window where it would finally go. Setters were often referred to as "outside" men. Another job of outside men was to take measurements and make templates of complicated openings for installations. Windows were set in stone, concrete, wood, and metal openings. These openings could be at street level or sixty feet in the air. They might have free access or they might have to work around trees, shrubs, organs, lofts, bells, and who knows what. Each application had its own set of demands, skills, and techniques. Large windows were made in sections that rested in iron framework. The panel was set on the iron frame and wooden pins were slipped into pre-drilled holes to hold it in place. After the panel was set, the entire edge was puttied. The putty was then painted black to allow it to fade from view.

Another major challenge arose if the panel or a section did not properly fit. An experienced setter worked from the top down. If a piece of a window had to be removed,

[53] Bob Moreland, *St. Petersburg Times*, (May 9, 1968; author's collection).

it came from the bottom of the window where it would be less obvious and less likely to be part of a particular design. August "Paddy" Tresch was a setter and shop worker for the firm; he lived on Washington Street, in Hoboken, New Jersey and was known as a notorious practical joker. He later went to work at Ross & Evens on South 5th Avenue glue-chipping glass, embossing, and etching. His last known employment in the glass field was for John Calvert who had managed both the stained glass arm of Gorham Company and the firm of Calvert, Herrick, and Reddinger.[54]

Brothers Tony and Freddy Casanova started working for Henderson Brothers as young boys and originally learned packing, firing, and other shop work.[55] Eventually they were both setters for Henderson Brothers.[56] The Casanovas later worked for Payne-Spiers and Marchese & Hamershma. Gordon Henderson worked alongside Tom installing windows for Payne-Spiers. He called Tony Casanova "a curious guy, always looking at how windows were installed."[57] Later, when Tony Casanova was working for Marchese and Hamerschma, he told Gordon Henderson, "If I owned this business, the first thing I would do is fire these guys."[58] The brothers retired from stained glass work in the late 1960s.[59] Setters had to have all the skills of cutter, glazier, and cementer to handle whatever happens on site. Gordon Henderson felt the various outside men he worked with were the most knowledgeable glassmen. They learned to recognize the work of different firms and individuals by seeing their finished product on site in so many

[54] Gordon Henderson, Unpublished Autobiography.
[55] Ibid.
[56] Ibid.
[57] Gordon Henderson, interview by author, Towaco, NJ, March 18, 2007.
[58] Ibid.
[59] Gordon Henderson, Unpublished Autobiography.

churches and buildings. They were clever and had to overcome all obstacles because the job had to get done.

Large firms that worked across the country and sent out their own men faced added challenges. As the Henderson Brothers files no longer exist, an example from the Boston firm of Charles J. Connick is appropriate. In a series of letters and telegrams between setter James "Jimmie" Mullaney (Gordon Henderson worked with his brother Tommy setting Connick Associates windows) and the home office many problems are detailed for an installation at St. George's Church, in Maplewood, New Jersey. The windows, packed in four wooden crates, are held up in New York City due to a truckmen's strike.[60] Mullaney then writes a letter to Charles Connick describing three days of continuous rain and a shortage of tarps to protect the scaffolding they were setting up and a "hurricane wind blowing today blowing everything over. Thought the scaffolding would go over any time."[61] After purchasing a fourteen by fourteen foot piece of canvas to cover the opening for the window he stated that "we looked like battered sailors when we were through."[62]

Things got worse as when the some of the crates arrived, there were broken pieces of glass on the borders, the support bars were missing. When the rest of the windows arrived there was no putty to seal the final setting. Finally, the men from New York working with him wanted time and a half for their overtime. On September 23, 1938, Mullaney was told to buy what he needed to finish the installation locally as the truck

[60] Orin Skinner (Charles J. Connick Studios) to Jimmy Mullaney, telegram, September 21, 1938.
[61] Jimmy Mullaney to Orin Skinner (Charles J. Connick Studios), letter, September 21, 1938. Courtesy the Charles J. Connick Collection, Boston Public Library.
[62] Ibid.

strike would hold everything up anyway.[63] So the firm is paying hotel bills, over-time, and buying extra supplies for a job that should have taken a day if all went well. In a business where margins were tight these types of issues could change a profitable job into a net loss.

Figure 42. Unidentified setters admiring their work at the Montview Presbyterian Church, Montview, Colorado.[64]

Henderson Brothers sent men to complete installations in the Midwest. According to Gordon Henderson, for an extended period, the firm had a man working out of a small shed at Princeton University due to the high volume of work they were handling, both new commissions and repair.

[63] Unsigned letter to Jimmy Mullaney, September 23, 1938. Courtesy of the Charles J. Connick Collection, Boston Public Library.
[64] David Mathias, *Denver Post,* (December 13, 1951: author's collection).

Repair work was another critical aspect of a full-service firm. Outside men had to be able to fix damage to their own installations and often were hired to do work on the installations of other firms. Gordon Henderson, an expert restorer, stated, “You can’t teach repair, it must be learned from years of work on all types and styles of windows. A good outside man knows more about leaded and stained glass than most artists and shop workers as he is subjected to it all the time and sees the windows from morning to late afternoon; in other words, at their best and at their worst.”[65]

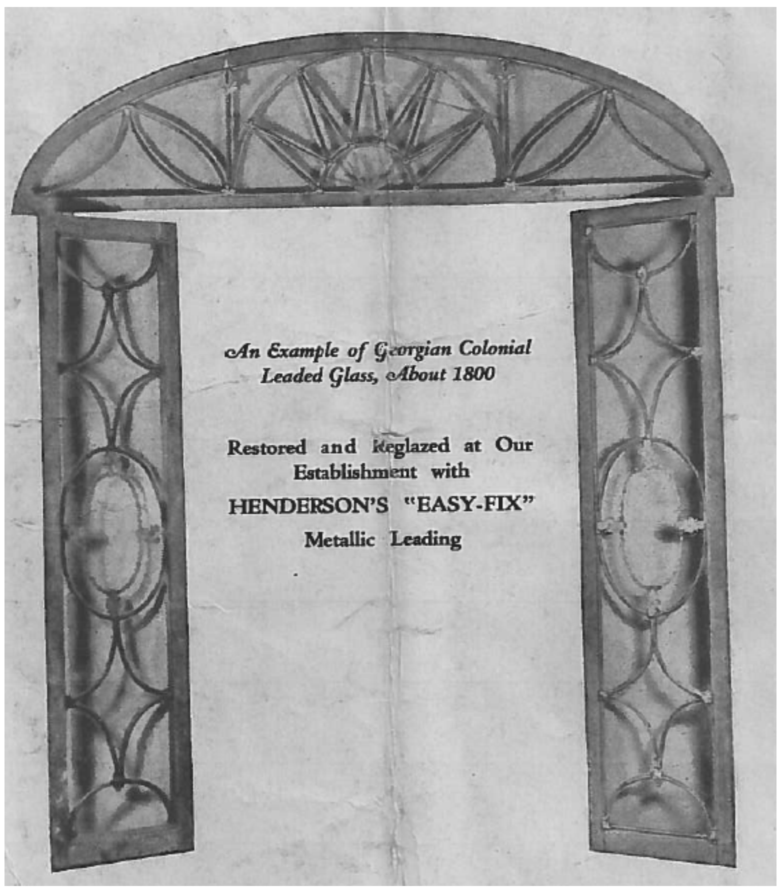

Figure 43. Henderson Brothers brochure detail featuring restoration and Georgian Colonial lead work.[66]

[65] Gordon Henderson, interview by author, Towaco, NJ, December 27, 2006.
[66] Author’s collection, Appendix E, Figure 243, page 425.

Drummer (sales)

Henderson Brothers was a full line glass shop. They advertised stained and leaded glass, metallic set glass, plate, glass, regular glass, and auto glass. Although many architects and clients went to the firm for its particular specialties, many jobs were competitive and had to be bid or pursued. To maintain a large firm, work had to be sought out. A steady flow of work had to be procured to pay the wages of twenty men and all the other over-head. Henderson Brothers advertised nationally in a variety of publications and maintained representatives in other cities. In the Henderson Brothers' photograph, Daunt on the extreme right is the salesman (Figure 11, page 10, of this chapter).[67] His job was to "drum up business" thus, "drummer." He later opened a shop selling some of the same materials as Henderson Brothers.

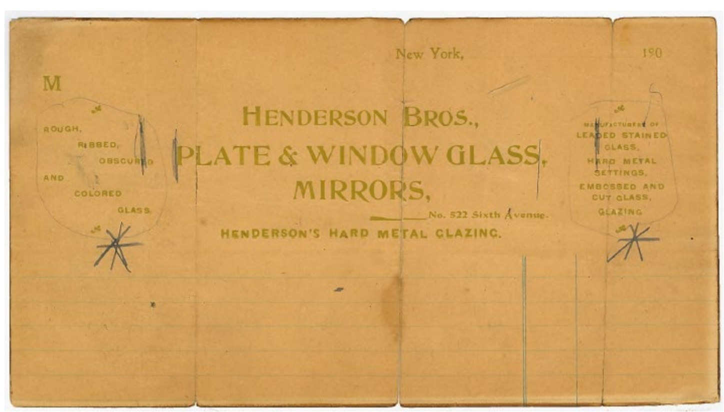

Figure 44. Henderson Brothers Billhead, c. 1898-1902.[68]

[67] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[68] Gordon Henderson collection.

Accounting/business manager

Henderson Brothers employed an accountant to handle accounts receivable, bills, and payroll. Preston Pugh was for a time employed in this position. He calculated payroll using his slide rule.[69]

Collector

Occasionally, bills were not paid and an outside collector was needed. One such was John Felton who was a collector for *Collier's Magazine*; it is said that he always got his money. He had lost an arm and four fingers on his remaining hand in an accident. It is said that he greatly respected Ernest Henderson's wife as she was willing to walk down the street with him, a disabled man. The story goes that as a part-time collector for Henderson Brothers he was trying to collect a bill from the owner of a funeral parlor that was being particularly obstinate. At a funeral, as the casket was being brought to the hearse, he grabbed onto a handle and kept asking the funeral director, "When are you going to pay Henderson's bill?" He got his money.[70]

Engineer

Developing use of metal in all types of installations and the constant improvement in product lines was primarily the work of William Henderson. At least one engineer, Warren McMann developed two patented metal products while working at Henderson Brothers. Installations at the Biltmore Hotel and Albany High School would have required complex engineering and certainly would not have been out-of-the-ordinary jobs for the firm.

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[69] Gordon Henderson, Unpublished Autobiography.
[70] Ibid.

Machinist

Henderson Brothers employed a machinist specifically to work with the metal bars they produced. The machinist would also fabricate dies used in the lead mill and in the mills used to create their patented metal bars. Cutting support bars and fabricating angle iron support systems would fall under the jurisdiction of the machinist. A man named Schaeffer was a machinist, along with Leonard Partucci for Henderson Brothers.[71] Schaeffer made the original dies for antique and rustic lead. He later opened his own shop where he made bent glass faces for Shell gasoline pumps; his partner, last name Ray, was a former Henderson employee as well.[72] Ray opened up a shop on Lafayette Street, in New York City, and started making bars and other items after William Henderson's patents ran out.[73]

A favorite anecdote of Gordon Henderson regarded the development of antique leading involving Leonard Partucci and Stanford White. White had a habit of going to the shops of the craftsmen embellishing his work. Partucci was having trouble drawing out the cames; the edges were crooked, but the heart was straight. White asked, "What's the matter Leonard?" He replied that he could not get the flanges straight. White then said, "Don't touch it, that is the look that I want."[74] Ernest Henderson had often related to Gordon Henderson that when White came into the shop he always had questions. One day William Henderson asked him why he was so inquisitive. White's replay was "Bill, my father told me if I don't ask questions, I'm never going to know anything."

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[71] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[72] Gordon Henderson, Unpublished Autobiography.
[73] Gordon Henderson, interview by author, Towaco, NJ, April 4, 2007.
[74] Gordon Henderson, Unpublished Autobiography.

An Englishman named Teats was a specialist in lead overlay and sculptured solder work produced by Henderson Brothers. Lead, copper, or other metal was cut into shape and applied over glass. In the fanciest panels where viewing would be from short distances, solder would be laid on the lead providing a sculptured appearance. This work, both plain and fancy, can be seen at both Princeton and Yale Universities.[75] All three generations of the Henderson family produced windows of this style.

Figure 45. Henderson Brothers lead overlay, *on left;* image from Henderson Brothers advertisement[76], *on right;* lead overlay at Princeton University.[77]

[75] Gordon Henderson, interview by author, Towaco, NJ, November 22, 2007.
[76] Author's collection**,** Henderson Brothers brochure, c. 1931-34. Appendix E, Figure 245, 427.
[77] Author photograph.

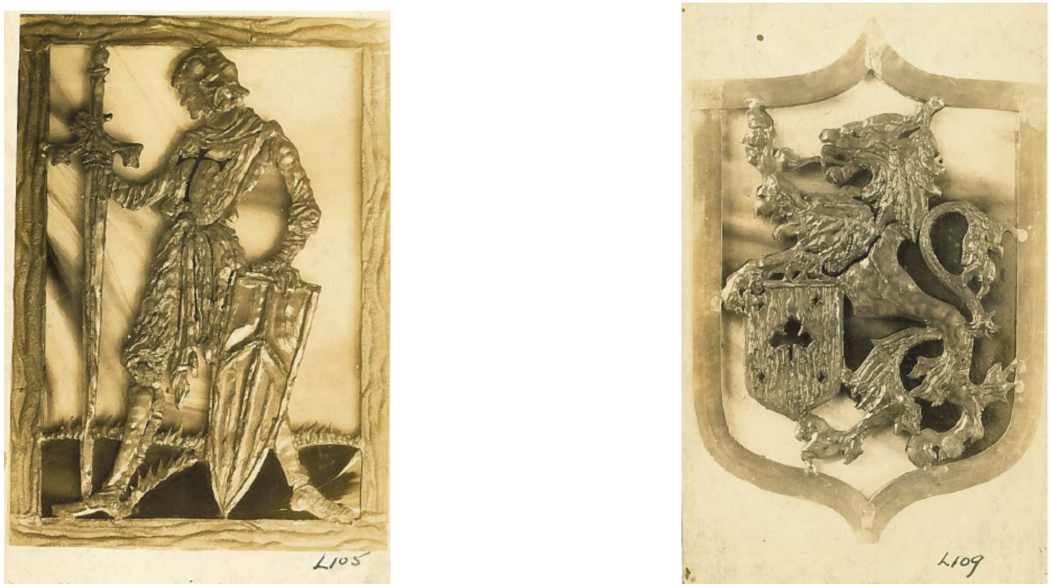

Figure 46 Examples of Henderson Brothers lead overlay, *on left;* a Knight, *on right;* the Rampant Lion.[78]

Figure 47. Henderson Brothers installation at Princeton University.[79]

[78] Schaidner Photographer, 2555 Wenster Ave., Bronx, New York, author's collection.
[79] Author photograph.

While in his late eighties, Gordon Henderson received an inquiry from a woman in Greenwhich, Connecticut about replacing a leaded panel in her door that had been broken. She was told that the original was made by Henderson Brothers. The scene of a leaping hart was faithfully reproduced by Henderson using techniques his father had taught him.[80]

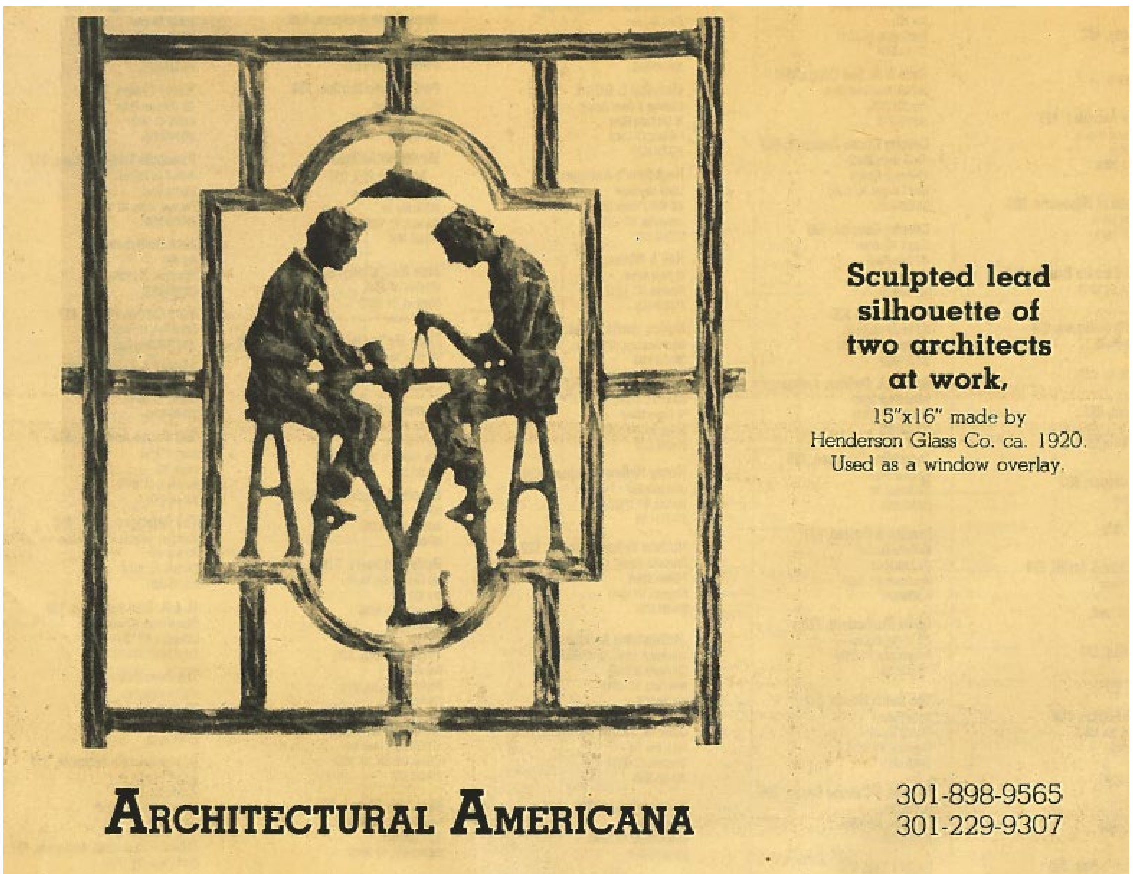

Figure 48. Sample of Henderson Brothers lead overlay, cut from window.[81]

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[80] Gordon Henderson, interview by author, Towaco, NJ, December 20, 2004.
[81] Undated advertisement, author's collection, most likely from the *Newtown Bee*.

Another aspect of Henderson Brothers' work was hard metallic settings and ornamentation. The firm worked in brass, bronze, and other alloys. Machinists and other metal workers made dies and patterns for this work, particularly appropriate for ceiling installations.

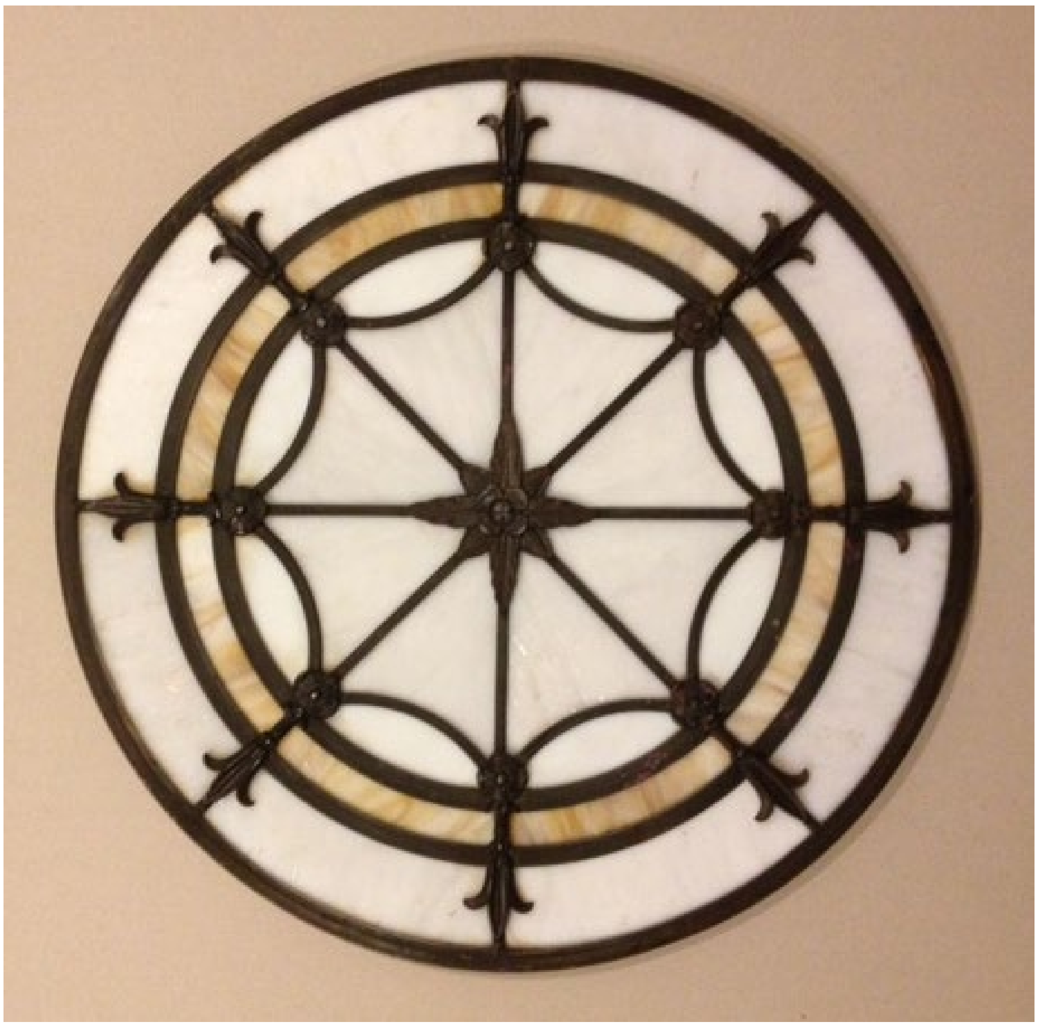

Figure 49. Ceiling light cover for Lowe's Movie Theatre, New York City. Original size: 20 ¼ inches in diameter.[82]

[82] Author's collection.

Figure 50. Ceiling light detail, note similarity to lead ornaments on page 56.[83]

General shop help

Cleaning panels, sweeping the floor, emptying the garbage, painting frames, cutting support bars, loading and unloading supplies, packing windows for shipping, and you name it. Henderson Brothers employed someone to do these routine but necessary chores. Also, at Henderson Brothers these men produced the lead rosettes and other ornaments pictured in their brochures. Lead was melted in a ladle. The brass mold was held over a candle allowing a small carbon build-up that would prevent the lead from sticking to the brass mold. Lead was poured into the mold. When cooled, the ornament would be popped out and the process repeated.

[83] Author photograph.

Figure 51. Henderson Brothers leaded ornaments shown approximately full size.[84]

[84] Author photograph.

Figure 52. Front view of brass mold for lead ornaments. Note cut to pore lead into mold on right.[85]

Figure 53. Brass mold showing handle.[86]

[85] Author photograph.
[86] Author photograph.

Chapter 3

Henderson Brothers' Commissions

Henderson Brothers worked to enhance the buildings of some of the major architects in the New York Metropolitan region; work ranging from mundane to fantastic. Henderson Brothers' advertisements in Sweet's Catalog list an impressive group of architects who commissioned their work.[1] Although it is not possible to document the specific jobs Henderson Brothers did for some of these architects, it is worth a brief review of some of these commissions to understand the quality and diversity of the firm's output. A list of documented Henderson Brothers' work, photographs, and of architects who used Henderson Brothers is located in Appendix C. This work can be found in Connecticut, Illinois, Indiana, Maryland, Massachusetts, New Jersey, New York, and Washington, D.C.; some of this has survived although typically not as well as one might hope.

Henderson Brothers also fabricated work for independent designers such as J. Scott Williams and hired artists to design for the firm, including Frederic J. Kurtz who figured prominently in the life of all the Hendersons. They also did production work and installation for other firms, including the firm of G. Owen Bonawit.[2]

Gordon Henderson recalled accompanying his father out to Long Island during the Depression years doing maintenance and repair work on the many abandoned and unoccupied mansions. Ernest Henderson had assisted his father's firm to install windows they were now protecting. In some cases insurance companies and banks were paying Henderson to keep the buildings from looking abandoned or empty to prevent vandalism

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[1] *Sweet's Catalogue of Building Construction,* (1911): 866, (1912): 842, (1915): 887.
[2] See Appendix D for individuals and firms with Henderson associations.

and looting. Gordon remembered some of the impressive windows on landings, in ballrooms, libraries, and other great rooms of these homes and the thrill of the light passing through. The Long Island work was very typical of the residential work the Henderson Brothers were noted for: traditional English-style quarries with medallions and whimsies placed throughout the work. Gordon frequently stated that it would be hard to calculate how many acres of diamond and rectangular leaded glass window panels were produced by his grandfather's firm. It was a specialty that would be continued by Ernest and Gordon throughout their entire working lives.

The following commissions represent a selection of the wide variety of work the Henderson Brothers completed: Albany High School, Albany, New York; The Biltmore Hotel, New York City; City Hall, New York City; First Methodist Church, Hartford, Connecticut; the H. C. Frick residence and Library, New York City; Gilman Memorial Hall, Johns Hopkins University, Washington, D.C.; Hammerstein's Theatre, New York City; Hotel Copley-Plaza, Boston, Massachusetts; Sterling Library, Yale University, New Haven, Connecticut; Steuben Tavern, New York City; and Vanderbilt Hotel, New York City.

Albany High School

Starrett & Van Vleck were the architects for the new Albany High School, Albany, New York. In this particular commission, Henderson Brothers provided and installed metallic set ceiling lights which provide natural lighting in the massive balconied auditorium.[3] Rectangular blocks of lights in four bays centered on circles of lights provided day-time illumination for school activities. The size of the installation and its

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[3] *Architecture and Building* 45, No. 12 (December 1913): 503.

height above the facility floor are a testament to the firm's capability. The use of metallic glazing provided needed strength in an installation that was parallel to the floor where traditional leaded glass would have required massive support.

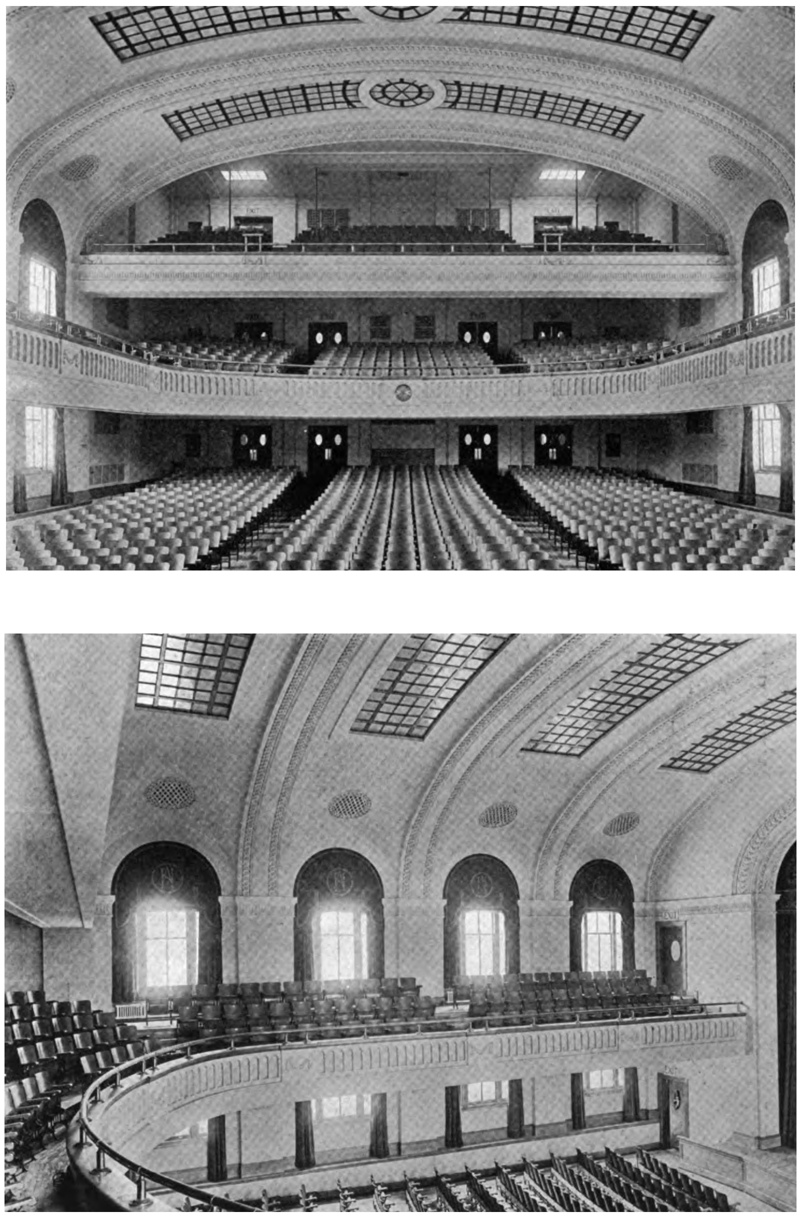
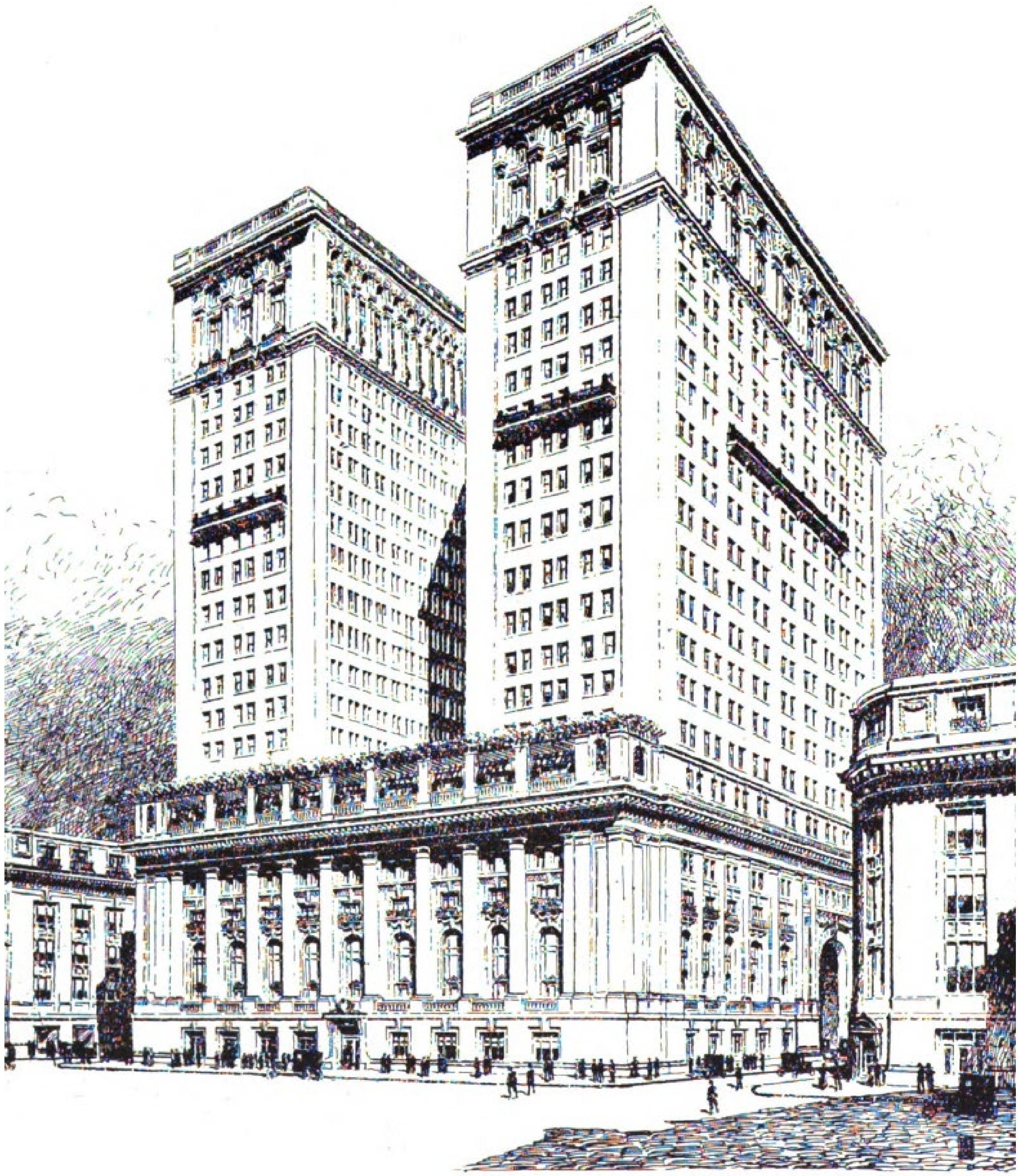


Figure 54. Metallic ceiling lights Albany High School.[4]

[4] *Architecture and Building*, 45, No. 12 (December 1913): 501.

The Biltmore Hotel



BILTMORE HOTEL, VANDERBILT AVENUE, MADISON AVENUE, 43D TO 44TH STREETS, NEW YORK.

Figure 55. The Biltmore Hotel. [5]

[5] *Architecture and Building*, 45, No. 3 (March 1913): 136.

In an un-dated Henderson Brothers advertisement, appears a black and white photograph of an interesting commission, a metal and glass ceiling installed in the Turkish Bath of New York's Biltmore Hotel. The installation uses patented Lock-Joint metallic glazing advertized in various Henderson Brothers' catalogs. The advertisement states that this is "suitable for ceilings, partitions, etc., and diffused lighting . . . is ideal for modern glass effects. It is available in all bright metals and provides unusual strength and rigidity."[6] The glass ceiling provided a clean, modern-looking and sanitary ceiling for this prominent New York destination. It is another example of Henderson Brothers' versatility.

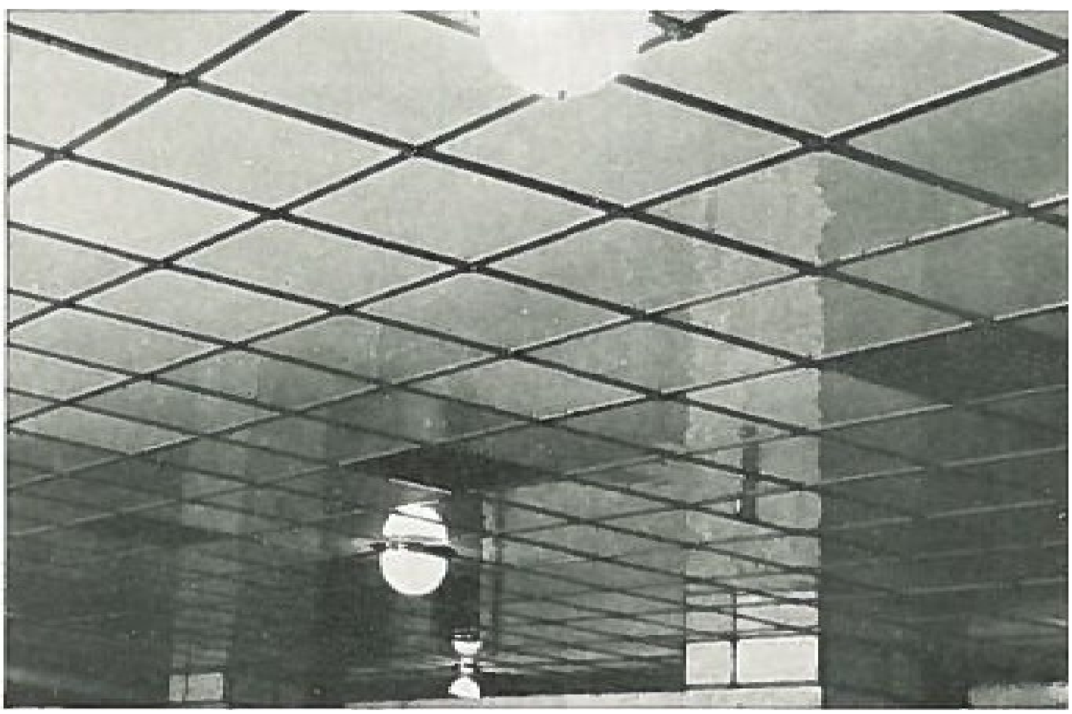


Figure 56. Henderson's metal and glass ceiling, Turkish Bath, Biltmore Hotel, New York, NY.[7]

[6] Author's collection, Henderson Brothers undated advertisement c. 1934, Appendix E, 433.
[7] Ibid.

The Candler Building, New York City

Asa G. Candler was the head of Coca-Cola and a real estate developer. He built several Candler Buildings in American cities, including this one in New York City, built in 1913.[8] Typical Henderson Brothers glass is located on the first floor.

Figure 57. The Candler Building,
220 West 42nd Street, New York City.[9]

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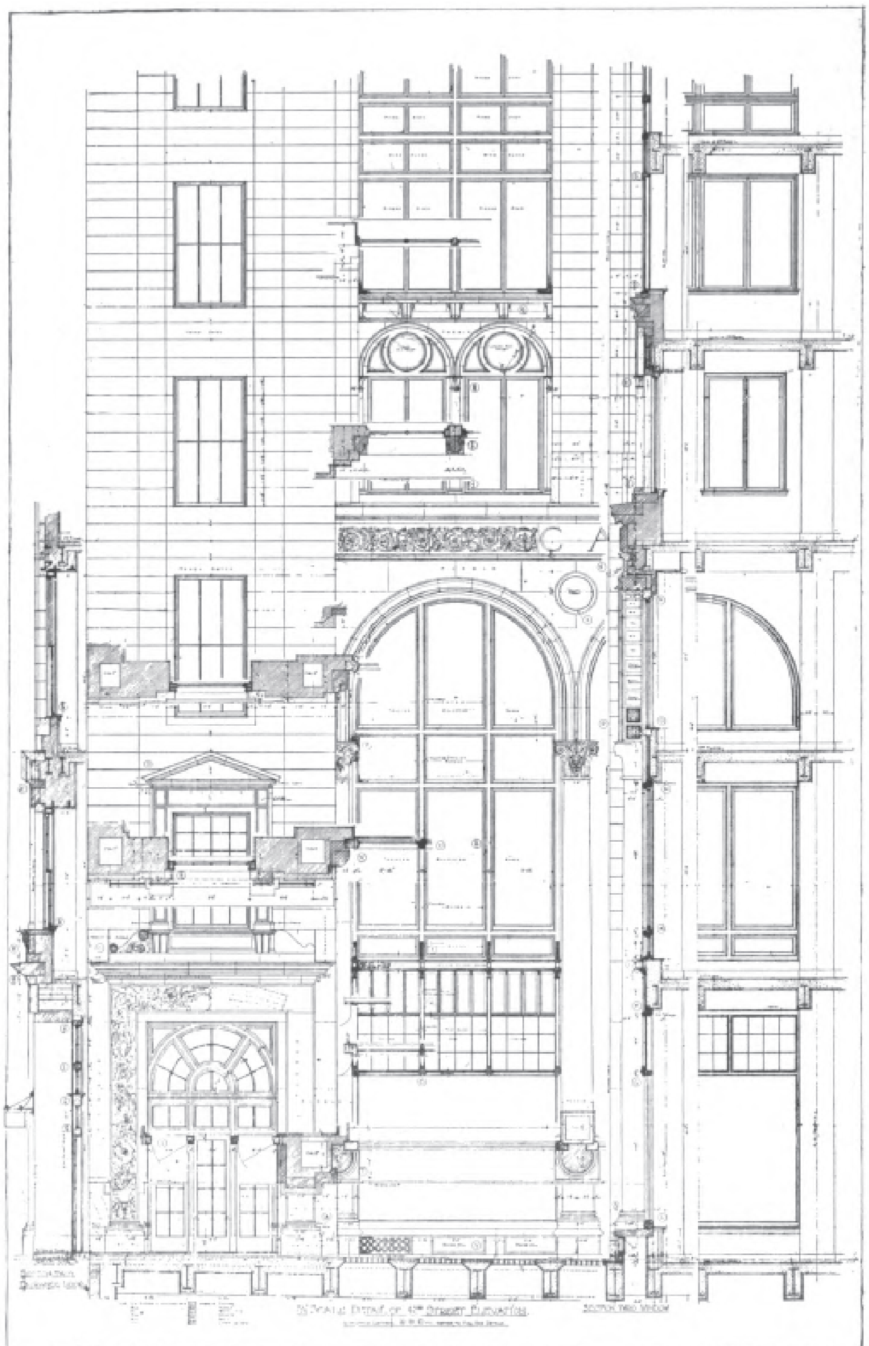
[8] "Streetscapes: The Candler Building; Amid 42d Street Renewal, a Façade in Disrepair" March 31, 1996. http://www.nytimes.co/1996/03/31/realestate/streetscapes-the-candler-building-amid-42d-street-renewal-a-facade-in-disrepair.html, (accessed May 5, 2008).
[9] *Architecture and Building* 45 No. 8, (August 1913): 347.

THE AMERICAN ARCHITECT

VOL. CIII, NO. 1950 MAY 7, 1913



CANDLER BUILDING, WEST 42D STREET, NEW YORK

MESSRS. WILLAUER, SHAPE & BREADY, *ARCHITECTS*

Figure 58. Typical Henderson Brothers lead work at entrance.[10]

[10] *The American Architect* 103, no. 1950, (New York City: Swetland Publishing Company. May 7, 1913): 448.

City Hall, New York City, New York

Architect Grosvenor Atterbury was commissioned to renovate portions of City Hall in 1915.[11] He hired Henderson Brothers to design, fabricate, and install a twelve foot diameter dome. The dome is in their typical Georgian design. The 1914 Sweet's Catalog has a black and white image of the dome and a caption stating, "Note absence of straight ribs."[12]

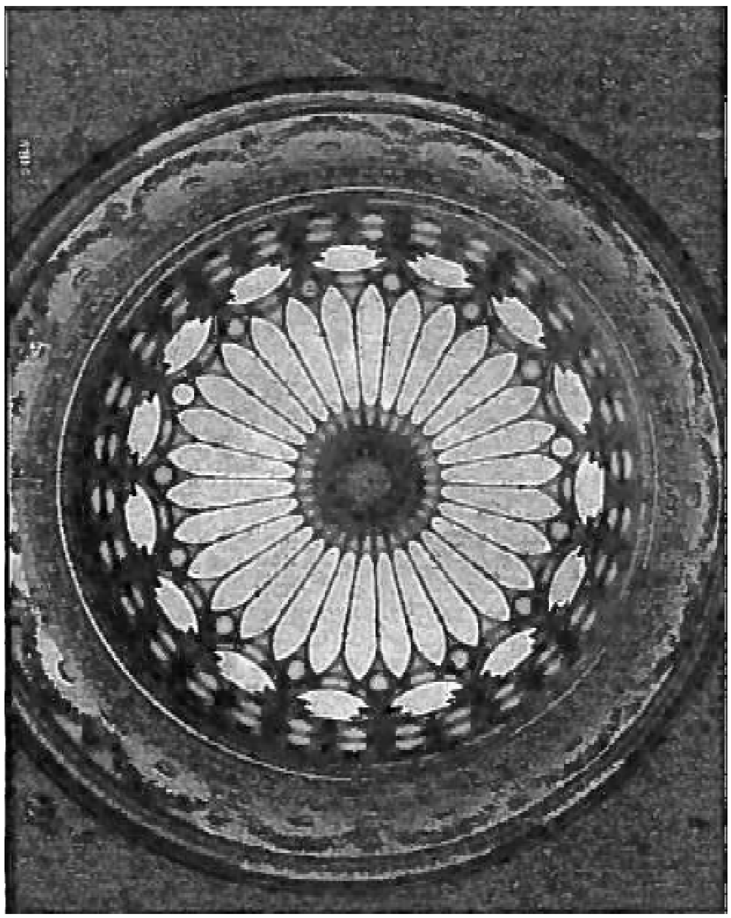


Figure 59. Dome, City Hall, New York, NY, Grosvenor Atterbury, Architect. 12 feet in diameter, note absence of straight support ribs.[13]

[11] New York City Government, "The Blue Room, City Hall: Mayor Rudolph W. Giuliani re-opens City Hall Blue Room after three-and-a-half month renovation project," The City of New York, http://www.nyc.gov/html/records/rwg/html/history.html, (accessed May 15, 2008).
[12] *Sweet's Catalog of Building Construction,* (1914): 867.
[13] Ibid., 867.

First Methodist Church, Hartford, Connecticut

It is not surprising that a large firm would make windows for a church. There is, unfortunately, only one documented installation. Architect Theodore Irving Coe was commissioned to design the First Methodist Church and parsonage in Hartford, Connecticut. Coe was notable for supervising the construction of the St. Regis Hotel designed by Trowbridge & Livingston.[14] Church records document the stained glass being "furnished by Henderson Brothers of New York."[15]

Gilman Memorial Hall, Johns Hopkins University/J. Scott Williams

Henderson Brothers fabricated and installed nineteen windows from J. Scott Williams' designs for the Hutzler Undergraduate Reading Room (the Hut) and the Memorial Hall from 1925 to 1927.[16] The windows were donated by Mary King Carey in honor of her father Francis King, a university trustee.[17] The windows are all significant in size with the largest being 15 ½ feet tall by 8 feet wide. Designs include medallions with early Renaissance printers' marks, a common library symbol and the seals of the schools attended by Francis King set into leaded glass quarries.[18] Similar designs of Williams' were used for the University of Illinois Urbana - Champaign Library also fabricated and installed by Henderson Brothers.[19] Williams' designs fabricated and installed by

[14] *New York Times,* November 13, 1960, 88.
[15] Everett C Wilke, Editor, *The Connecticut Historical Bulletin* 54, no. 1-2 (Winter/Spring 1989): 32
[16] University Library, University of Illinois at Urbana-Champaign, "Reading Room Windows: Printer's Marks," http://www.library.illinois.edu/rex/about/windows/index.html, (accessed May 15, 2008).
[17] Greg Rienzi, Krieger School of Arts and Sciences, "Diary of a Renovation: Transforming Gilman Hall," Johns Hopkins University, http://krieger.jhu.edu/gilman/archives/mmedia/slides/12-08.html., (accessed May 15, 2008).
[18] Ibid.
[19] ExploreC-U, "Printer's Marks, 1926-1927," University of Illinois Urbana-Champaign University Library, http://explorecu.org/items/show/20, (accessed May 15, 2008).

Henderson Brothers also grace windows in the main circulation room of the Indiana State Library in Indianapolis.[20]

Figure 60. View of Gilman Hall windows.[21]

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[20] National Park Service, "Indianapolis: Indiana State Library and Historical Building," U. S. Department of the Interior, http://www.nps.gov/nr/travel/indianapolis/idianastatelibrary.htm, (accessed May 15, 2008).
[21] Peter Mauss photograph**,** Architectural Record, "Gilman Hall, Johns Hopkins University," McGraw-Hill Companies, Inc., http://archrecord.construction.com/projects/Building_types_study/universities/2011/Gilman-Hall-slideshow.asp?slide=2, (accessed May 15, 2008).

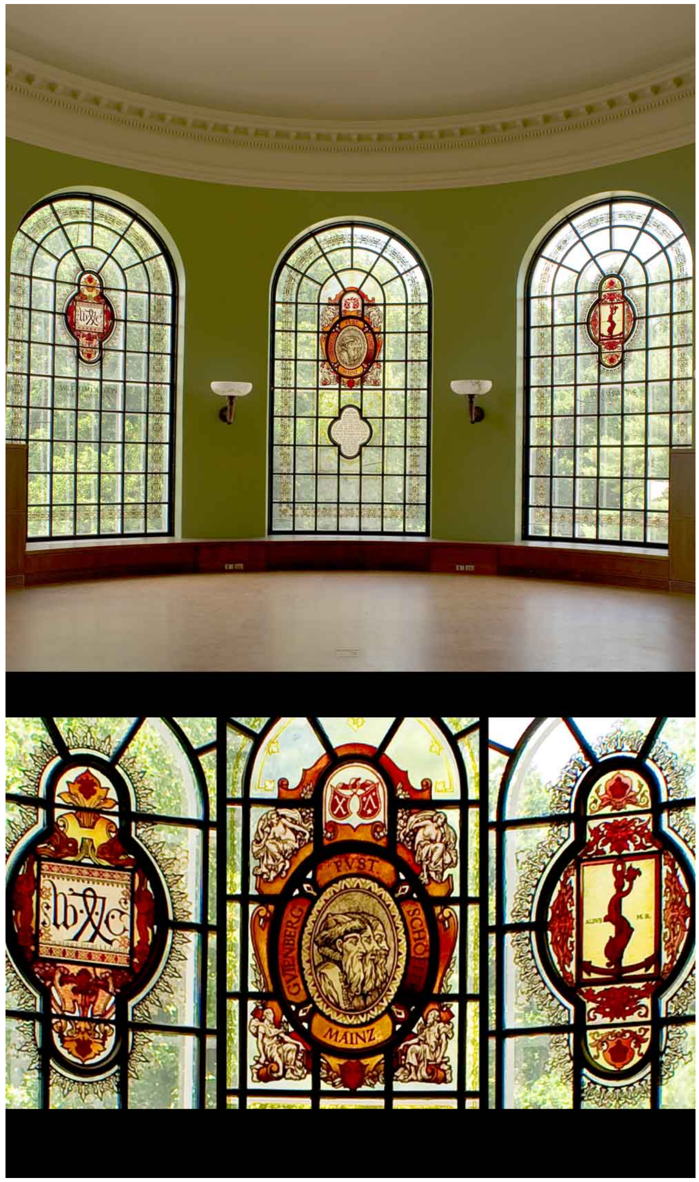

Figure 61. The central bays three single-sash, curved Windows each measure 15 ½ feet tall and 8 feet wide featuring printer's marks. O*n left;* William Caxton (1420-1491), *center:* Gutenberg, Fust and Schoffer (no date), *on right;* Aldus Manutius (1450-1515). Caxton, who launched the first English printing press, notably produced Chaucer's Canterbury Tales and Aesop's Fables.[22]

[22] University Library, "Library Windows Printer's Marks," University of Illinois at Urbana-Champaign, http://www.library.illinois.edu/learn/intro/tours/arttour/printers.html, (accessed May 15, 2008).

Figure 62. University of Illinois at Urbana-Champaign, windows with printer's marks.[23]

Figure 63. Detail of printer's marks, *on left;* Sebastion Gryphus (Lyons), *on right;* Erhard Ratdolt (Augsburg).[24]

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[23] ExploreC-U, "Printer's Marks, 1926-1927," University of Illinois Urbana-Champaign University Library, http://explorecu.org/items/show/20, (accessed May 15, 2008).
[24] Ibid.

Hammerstein's Theatre/J. Scott Williams

Henderson Brothers enjoyed a particularly fruitful relationship with designer J. Scott Williams. Several of Williams' designs were fabricated and installed by the firm in various parts of the country. In 1928, Hammerstein's Theatre opened in New York. The building was designed by architect Herbert J. Krapp who had ample space for stained glass installations. Arthur Hammerstein's theatre tribute to his father included a series of monumental windows designed by Williams who had earlier designed a series of windows for Oscar Hammerstein's Whitestone Landing, Long Island home.

> Ten windows . . . were designed as a memorial to the late Oscar Hammerstein and the motives used were taken from ten of the operas he first produced in the old Manhattan Opera House in 1908. The windows are divided into two groups of five each, placed at the right and left of the stage, and each group makes an area of about 20 feet wide by 21 feet high, the upper five feet being in Gothic tracery, leaving a color area of 31/2 feet wide by 16 feet high for each figure panel. The cartoons were drawn at full size and the originals are somewhat larger than life.[25]

Other significant sections of glass were completed by Henderson Brothers, including two "windows about 20' x 20' situated above the balcony on either side of the theatre and six small rose windows."[26] A testament to the Henderson's ability to turn out large volumes of work is that "the whole undertaking was completed and in place three and a half months from the time the first preliminary studies were made."[27]

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[25] Undated article (unidentified source), author's collection.
[26] Ibid.
[27] Ibid.

CARTOONS OF MURAL GLASS PANELS, HAMMERSTEIN THEATRE, NEW YORK
Designed by J. SCOTT WILLIAMS, New York
HERBERT KRAPP, Architect, New York

Figure 64.[28]

[28]*The Architectural League of New York: Index of Exhibits, Forty-third Annual Exhibition, February 4 to March 4, Inclusive,* (1928).

CARTOONS OF MURAL GLASS PANELS, HAMMERSTEIN THEATRE, NEW YORK
Designed by J. SCOTT WILLIAMS, New York
HERBERT KRAPP, Architect, New York

Figure 65.[29]

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[29] *The Architectural League of New York: Index of Exhibits, Forty-third Annual Exhibition, February 4 to March 4, Inclusive,* (1928).

Frick Residence and Library (1914, 1934)

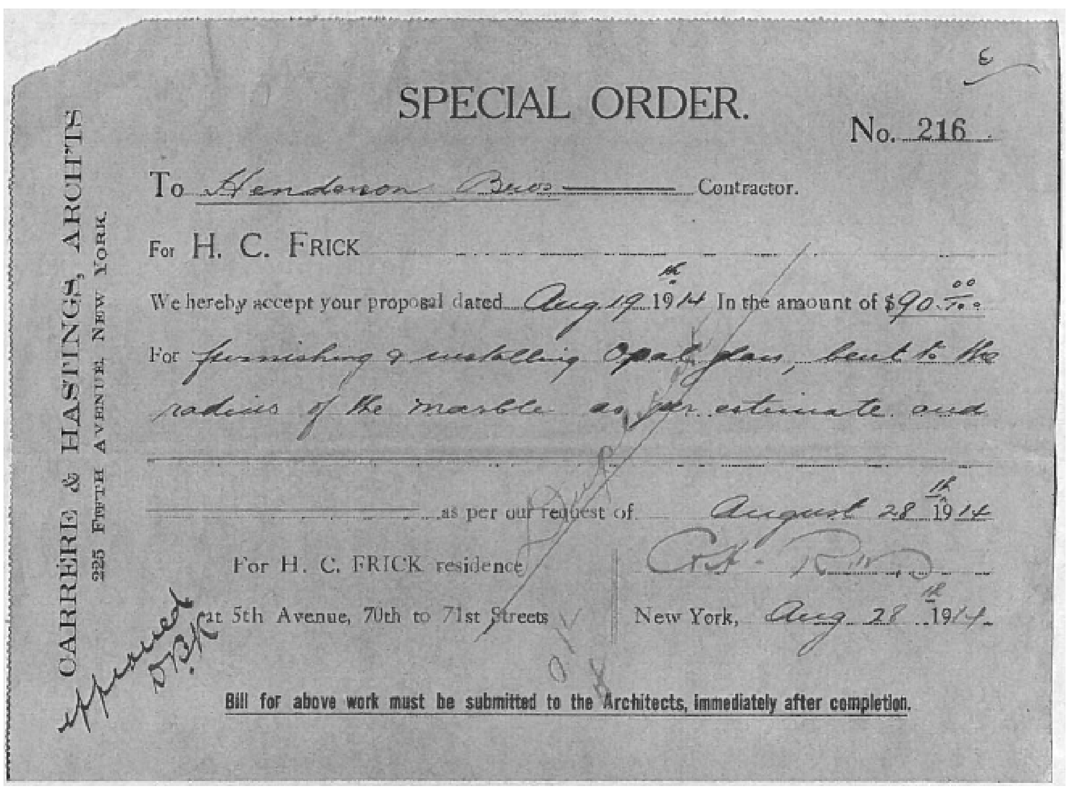
Carrere & Hastings commissioned Henderson Brothers to bend and install bent opalescent glass panels into a custom made bronze frame above the organ console of the Frick residence located on 5th Avenue and 70th Street in New York City. The installation involved bending opalescent glass to fit an existing marble framework and the creation of a bronze frame for the center opalescent oval "in order that it might be readily removed in order to get at the electric bulbs above."[30] In a series of six surviving documents from the fall of 1914, Henderson Brothers negotiated this simple installation which earned them $95.00. The creation of a "Bronze frame which would not be visible from below and at the same time be easily removable from its position"[31] is typical of the innovative metal work for which Henderson Brothers were noted. It also demonstrates Henderson Brothers' willingness to take on both small and complicated commissions other studios would not or could not handle.

Records at the Frick show the Henderson Brothers working there again on the additions created by the architect John Russell Pope. Two jobs are noted. The first, ordered November 15, 1934, involved removing antique glass from a sash in the Librarian's Room of the Old Library Building to be placed in a restroom for a sum of $49.00. The current staff is unable to identify where this may have been. The second, ordered December 18, 1934, is for "eight (8) panels of leaded glass for casement sash in Librarian's Room, Space 306 of the Library Building for the sum of $79.00."[32] The glass

[30] Henderson Brothers to Carrere & Hastings, letter, September 9, 1914, The Frick Collection Construction Files. The Frick Collection/Frick Art Reference Library Archives.
[31] Ibid.
[32] Marc Eidlitz & Son to Henderson Brothers, work order, December 18, 1934. The Frick Collection Construction Files. The Frick Collection/Frick Art Reference Library Archives.

was to be set in ½" antique steel core reinforced leading, another Henderson specialty. At least one window exists from this installation set high in a wall with no appreciable view. The selection of antique hand blown glass full of bubbles and striations in a variety of delicate shades creates a pleasing environment in the Librarian's office.

For research purposes, these commissions, though small, have great interest because these are the only documents found from the Henderson Brothers. The communication necessary even for small jobs was considerable. In the letters it is noted that verbal communication was continuous with many parties. The art/craft is also a business and the Hendersons were professionals.



CARRÈRE & HASTINGS, ARCH'TS
225 FIFTH AVENUE, NEW YORK.

SPECIAL ORDER.

No. 216

To Henderson Bros Contractor.

For H. C. FRICK

We hereby accept your proposal dated Aug. 19th 1914 In the amount of $90.00

For furnishing & installing Opal glass, bent to the radius of the marble as per estimate and

as per our request of August 28th 1914

For H. C. FRICK residence

at 5th Avenue, 70th to 71st Streets

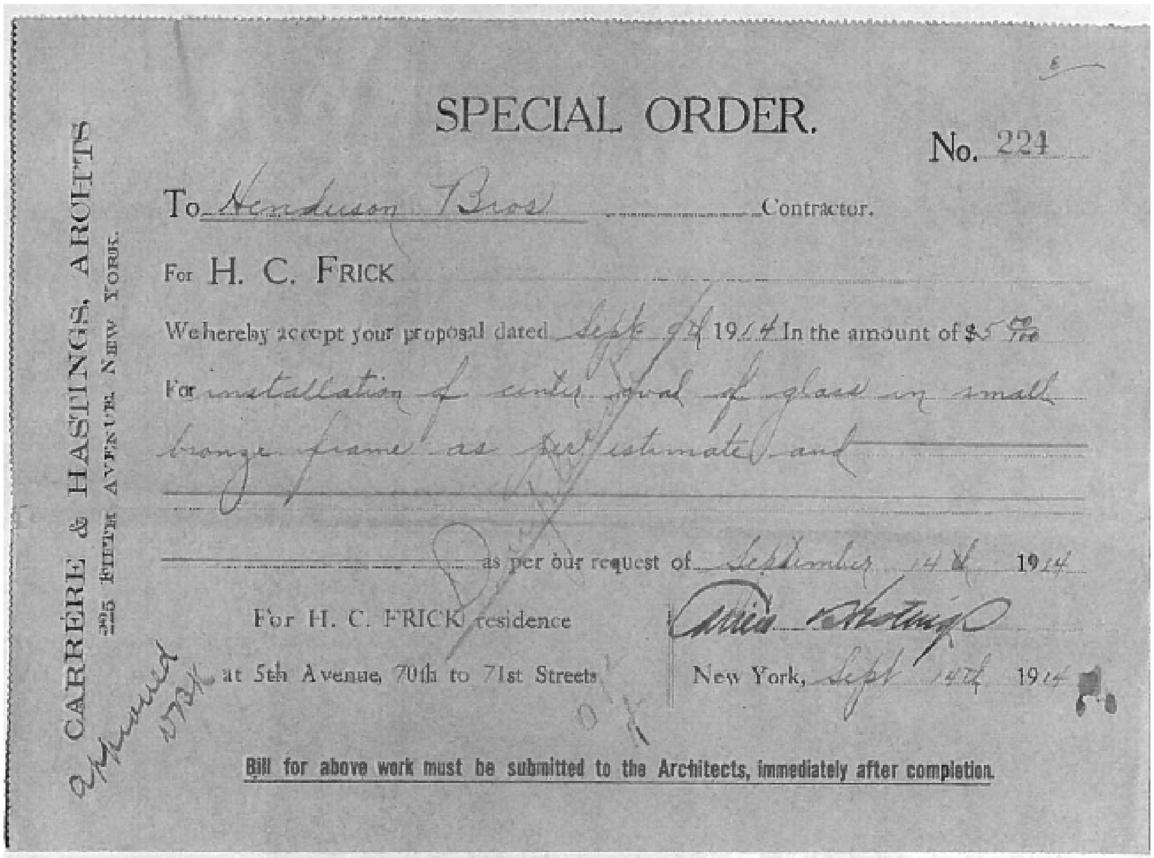
New York, Aug. 28th 1914

Approved

Bill for above work must be submitted to the Architects, immediately after completion.

Figure 66. Special Order for "furnishing and installing opal glass bent to the radius of the marble," for the H. C. Frick Residence as per Carrere & Hastings, Architects.[33]

[33] The Frick Collection Construction Files. The Frick Collection/Frick Art Reference Library Archives.



SPECIAL ORDER.

No. 224

CARRÈRE & HASTINGS, ARCHTS

225 FIFTH AVENUE, NEW YORK.

To Henderson Bros Contractor.

For H. C. FRICK

We hereby accept your proposal dated Sept 9th 1914 In the amount of $5 00/100

For installation of center oval of glass in small bronze frame as per estimate and

as per our request of September 14th 1914

For H. C. FRICK residence

at 5th Avenue, 70th to 71st Streets

New York, Sept 14th 1914

Approved

Bill for above work must be submitted to the Architects, immediately after completion.

Figure 67. Special Order for the Installation of a special brass frame allowing for easy changing of light bulb for the H. C. Frick Residence as per Carrere & Hastings, Architects.[34]

[34] The Frick Collection Construction Files. The Frick Collection/Frick Art Reference Library Archives.

Figure 68. Henderson Brothers Leaded Glass Windows in the Librarian’s Room, Frick Museum, typical of the leaded glass produced in volume by the firm.[35]

[35] Author photograph.

The Hotel Copley-Plaza (1912)

Figure 69. View of main entrance, Hotel Copley-Plaza, Boston Massachusetts.[36]

The Hotel Copley-Plaza, Boston, Massachusetts, designed by Henry J. Hardenbergh, was a major commission enjoyed by the Henderson Brothers.[37] The Hendersons are credited with leaded glass in the lobby ceiling,[38] metal-glazing in the main corridor and main dining room,[39] leaded glass ceiling in the tea-room,[40] and ornamental metal-glazed mirrors in the banquet room.[41] The range of design in this particular commission demonstrates the creative force of the Henderson Brothers firm. The metal-glazed

[36] Henry J. Hardenbergh, "The Hotel Copley-Plaza, Boston, Mass.," *Architecture and Building*. 44 no. 10 (October 1912): 13.
[37] Ibid., 394.
[38] Ibid., 394.
[39] Ibid., 395.
[40] Ibid., 397.
[41] Ibid., 401.

mirrors employ the traditional Federal design motifs the family employed over three generations. The ceiling work is similar to other design of the early 1900s. Within a single, but massive project, multiple styles and methods were employed meeting the design goals of the architect space by space. The Hotel Copley-Plaza has been fully renovated and much of the Henderson work has survived or respectfully been reproduced.

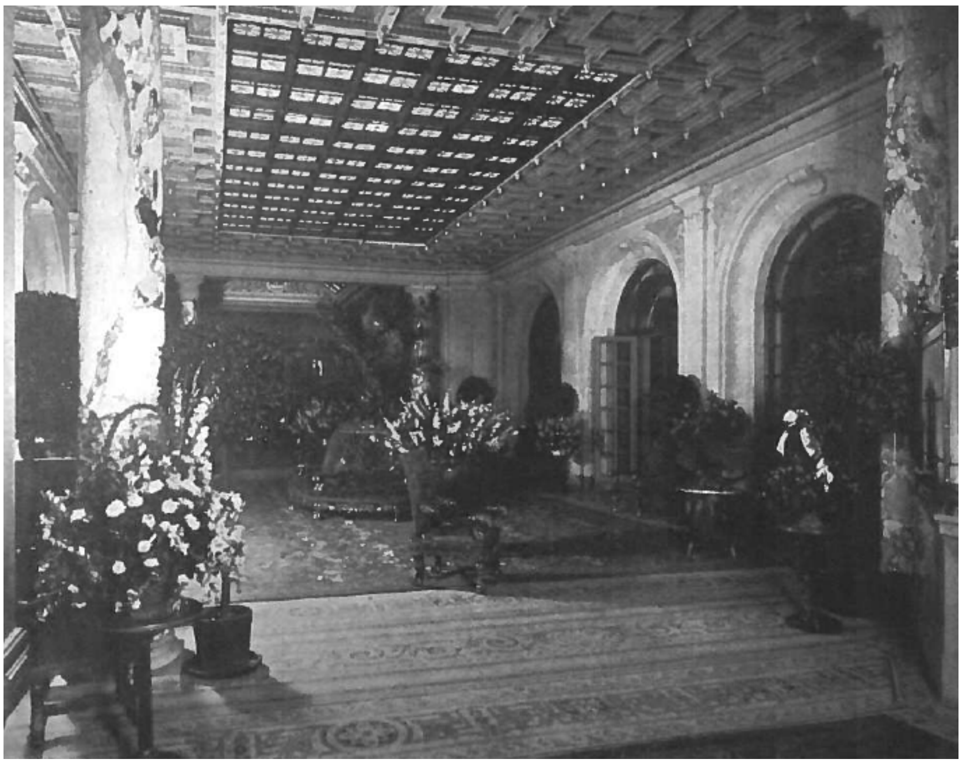


Figure 70. Ceiling Panels and Door Transoms fabricated by Henderson Brothers.[42]

[42] Henry J. Hardenbergh, "The Hotel Copley-Plaza, Boston, Mass.," *Architecture and Building*. 44 no. 10 (October 1912): 394.

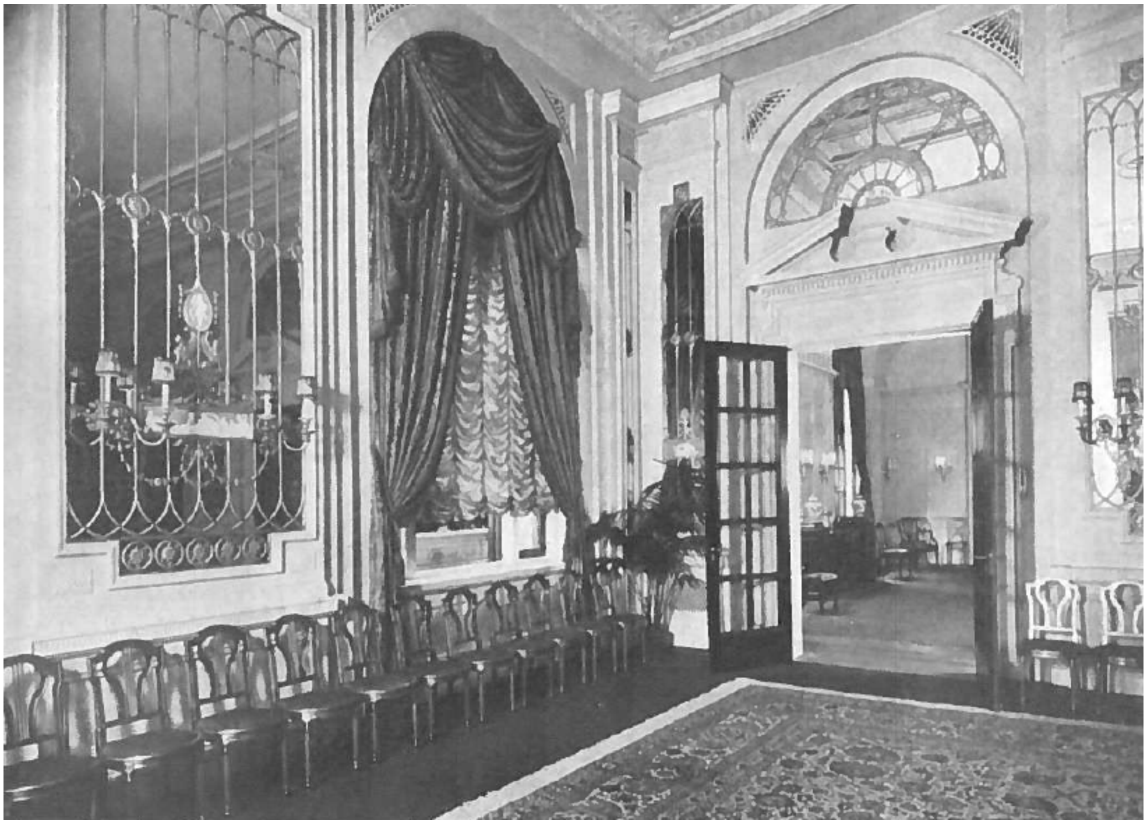


Figure 71. Metallic Glazed Mirrors fabricated by Henderson Brothers.[43]

The Montana

The twelve story Montana Apartment building on Park Avenue, in New York City was typical of the high end apartments designed by the firm of Rouse & Goldstone. Henderson Brothers leaded glass embellished street-level windows, doors, and transoms for this project. The work is typical of the leaded glazing produced by the firm and is a common form found in a wide variety of buildings from the 1880s through the period of the Great Depression.[44]

[43] Henry J. Hardenbergh, "The Hotel Copley-Plaza, Boston, Mass.," *Architecture and Building*. 44 no. 10 (October 1912): 401.
[44] David Lubell, Prewar Passion: The Quest for the Perfect New York Apartment, "The Architects: Rouse & Gordstone," http://prewarpassion.com/rouse-goldstone/, (accessed June 10, 2008).

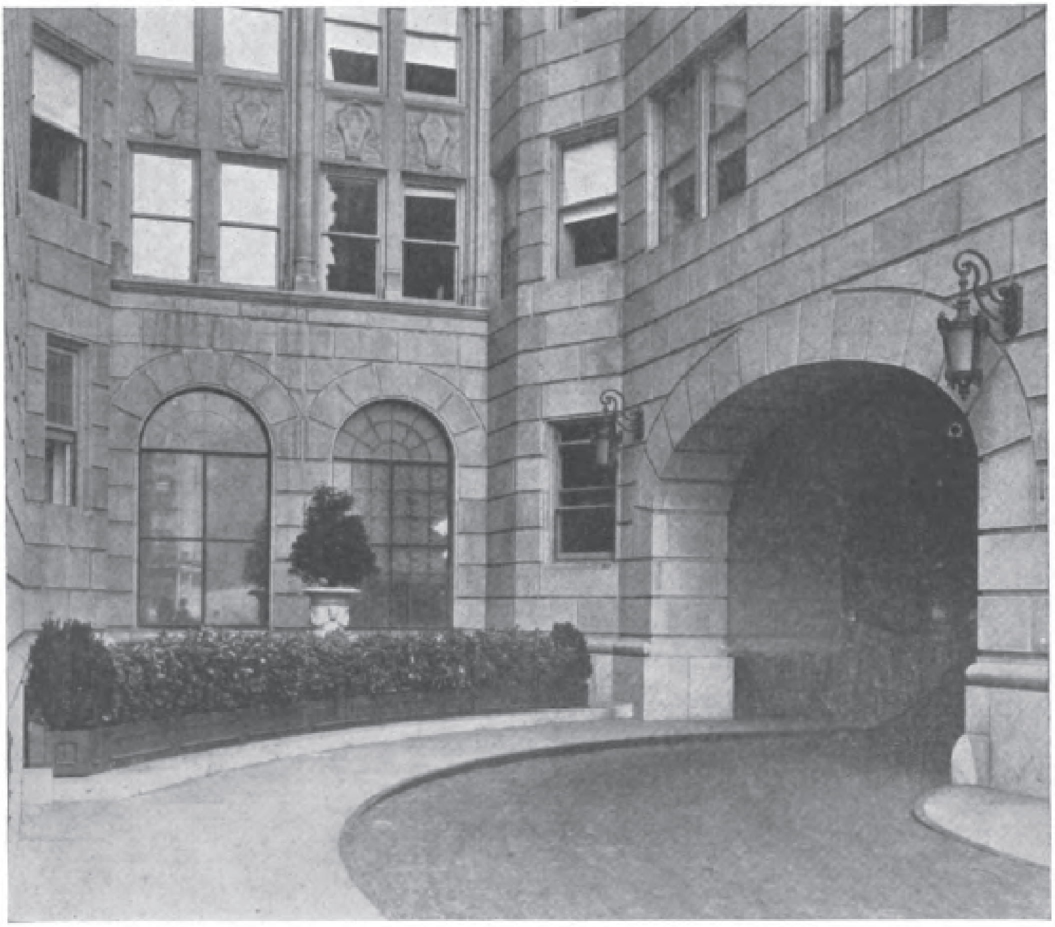
THE MONTANA, 375 PARK AVENUE, NEW YORK.

Rouse & Goldstone, Architects.

Electricians: E. J. Electric Installation Co.
Leaded Glass: Henderson Bros.
Court Brick: Hay Walker Brick Co.
Copper Cornices and Skylights: Architectural Metal Works.
Sprague Motors and Controllers.

Figure 72. Front View of the Montana Apartments.[45]

[45] *Architecture and Building* 45, no. 10 (October 1913): 415.



THE MONTANA ENTRANCE AND DRIVEWAY APPROACH.

Figure 73. Henderson Brothers leaded glass work is clearly visible in the steel casement windows and transoms on the first floor of the Montana.[46]

[46] *Architecture and Building* 45, no. 10 (October 1913): 416.

Sterling Library, Yale University

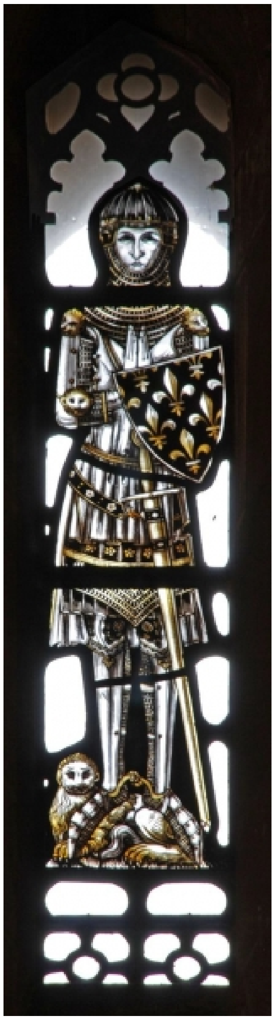


Figure 74. Knight window, typical Henderson Bros. leadwork, Sterling Library.[47]

Figure 75. Human-headed winged bull, Sterling Library, typical Bonawit of rondels glazed by Henderson Brothers.[48]

The Sterling Memorial Library was initially a commission of Boston architect Bertram Grosvenor Goodhue who died before construction actually began in 1924.[49] Final plans

[47] Near Eastern Languages and Civilizations, "Babylonian Collection," Yale University, http://nelc.yale.edu/collection-and-sterling-library, (accessed October 30, 2012).
[48] Working @ Yale, "Restoring the windows of the Sterling Memorial nave," Yale University, http://working.yale.edu/in-the-know/restoring-windows-sterling-memorial-library-nave, (accessed December 21, 2012).

and supervision was assumed by James Gamble Rogers, a Yale graduate who served as the university's Executive Architect for its building projects from 1917.[50] To embellish the new library, Rogers chose G. Owen Bonawit, the principal of his own firm. A specialist in secular glass design, Bonawit created hundrerds of medallions and panels for the library, the Hall of Graduate Studies, and many of the residential colleges.[51]

Bonawit's particular specialty was painting images in black matte and trace on clear glass, enhanced with silver stain, providing highlights ranging across all the shades of yellow to orange. It was an old technique made popular in the European Lowlands in the Fourteenth and Fifteen Centuries and was particularly suited to windows where light was at a premium. The medallions and plates contained a variety of themes. Some were scenes from great works of literature. Others were copies of images from paintings, illustrations, cartoons, and other works by noted artists. Bonawit playfully based an image of a cook by Maxfield Parrish on an 1895 *Harper's Weekly* cover.[52] A simplified version of Dante Gabrielle Rosetti's illustration for his poem "The Blessed Damozel" displays Bonawit's ability to manipulate an image to work in the medium of painted and fired glass.[53]

Bonawit playfully inserted images of birds, animals, insects, and other whimsies to entertain the students busy at their studies. Four hundred seventy-three Bonawit panels for the Sterling Library were painted and fired at his studio, transported to Henderson Brothers, and glazed into the leaded glass windows. Henderson Brothers also produced

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[49] Gay Walker, *Bonawit, Stained Glass & Yale: G. Owen Bonawit's Work at Yale University and Elsewhere* (Wilsonville, Oregon, 2000), 2.
[50] Ibid., 1.
[51] Ibid., 3.
[52] Ibid., 11.
[53] Ibid., 8.

most of the "typical" leaded glass for the library.[54] They received $28,532 for this work which occurred in 1930-31.[55]

Figure 76. Bonawit Medallion, Sterling Library.[56]

Rogers directly commissioned Henderson Brothers for decorative leaded glass for the Sterling Law Buildings when Rogers felt Bonawit might become overwhelmed by the volume of work he already had at Yale.

Many of the glass decorations varied in technique and style from Bonawit's work, but a large number of designs were indistinguishable. These included the series of 32 "Vanity Fair judges" in the main stairwell and the many playing card figures. One of Bonawit's main designers Frederick Kurtz, also worked for the Henderson Brothers

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[54] Gay Walker, *Bonawit, Stained Glass & Yale: G. Owen Bonawit's Work at Yale University and Elsewhere,* (St. Louis: Wildwood Press, 2000), 18.
[55] Ibid., 26-27.
[56] Yale University Library, "Sterling Memorial Library," Yale University, http://www.library.yale.edu/libraries/sterling.html, (accessed June 10, 2008).

during this period, which explained the similarity in style and the overall continuity between the buildings.[57]

Steuben Tavern, New York City

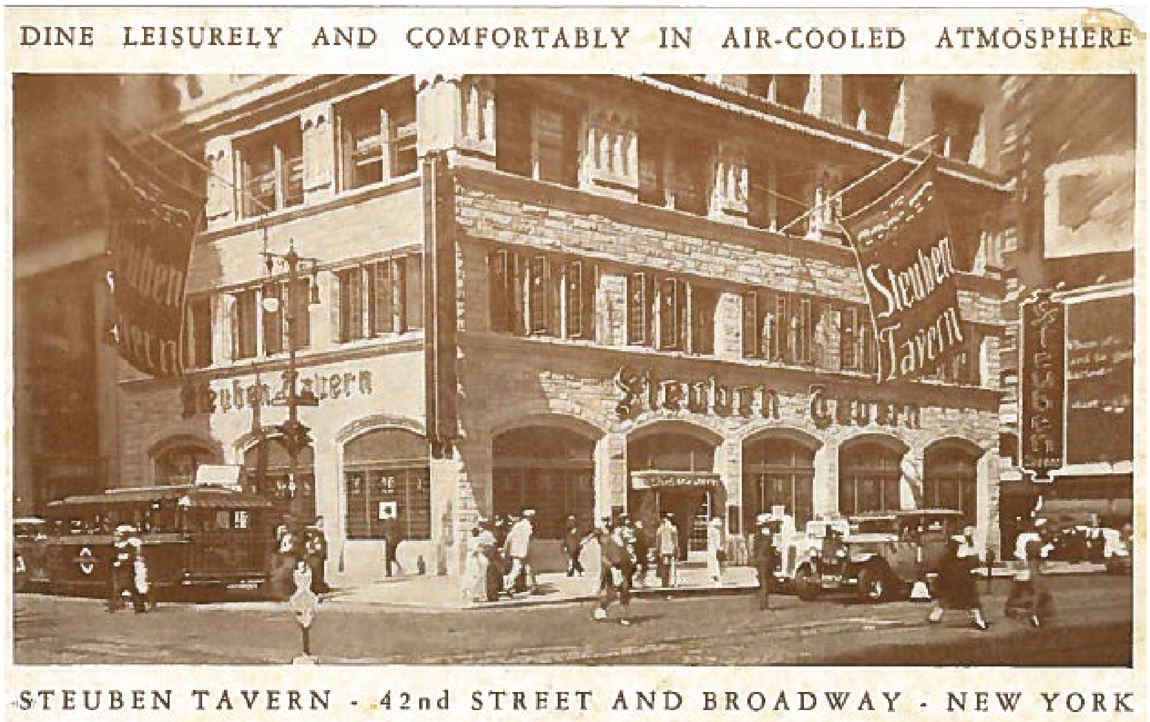

Figure 77. Post Card showing Henderson Brothers leaded glass windows on first and second floors.[58]

The Steuben Tavern chain opened their grandest establishment on May 26, 1934.[59]

> No expense was spared to make this the finest restaurant in the world. The actual construction and equipment of this three-story dining palace cost more than a third of a million dollars. It contains every facility, every equipment known to modern science for the perfect rendering of a perfect restaurant service . . . characteristic of Steuben policy.[60]

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[57] Gay Walker, *Bonawit, Stained Glass & Yale: G. Owen Bonawit's Work at Yale University and Elsewhere,* (St. Louis: Wildwood Press), 27.
[58] Author's collection.
[59] *New York Times,* May 26, 1934, 13.
[60] *New York Times,* May 26, 1934, 13.

Leaded glass windows were supplied by Henderson Brothers for the restaurant. Contemporary images show leaded glass on the first two floors. The expansive ground floor windows are quarries with multiple medallions. The second floor have quarries with simple centered designs in each. These windows are indicative of the "many acres" of leaded glass described by Gordon Henderson as being the critical element in the work of Henderson Brothers.

Vanderbilt Hotel, New York City

The Sweet's Catalog of 1914 displays a black and white image of the transom installed by Henderson Brothers in the Vanderbilt Hotel. The noted firm of Warren & Wetmore commissioned the firm for this project.[61] What is notable about this arched transom is the heavy use of lead ornaments, a specialty of the Henderson Brothers. These ornaments decorated the intersections of lead joints on the simple-looking Georgian designs favored by turn-of-the-century architects and home owners. Henderson Brothers produced many varieties of lead ornaments for their own use and other firms. Gordon Henderson was still producing lead ornaments by the hundred-count in his late eighties for firms involved with restoration work at various national historic sites including Colonial Williamsburg.

Anyone walking the streets of New York City today will notice, with little effort, the number of Georgian transoms and sidelights still decorating many buildings. These are generally unobtrusive, providing necessary light and a touch of class for vestibules and stairwells. Unfortunately, the records of the Henderson Brothers were lost and though they were the pre-eminent firm working in this style, they were not alone.

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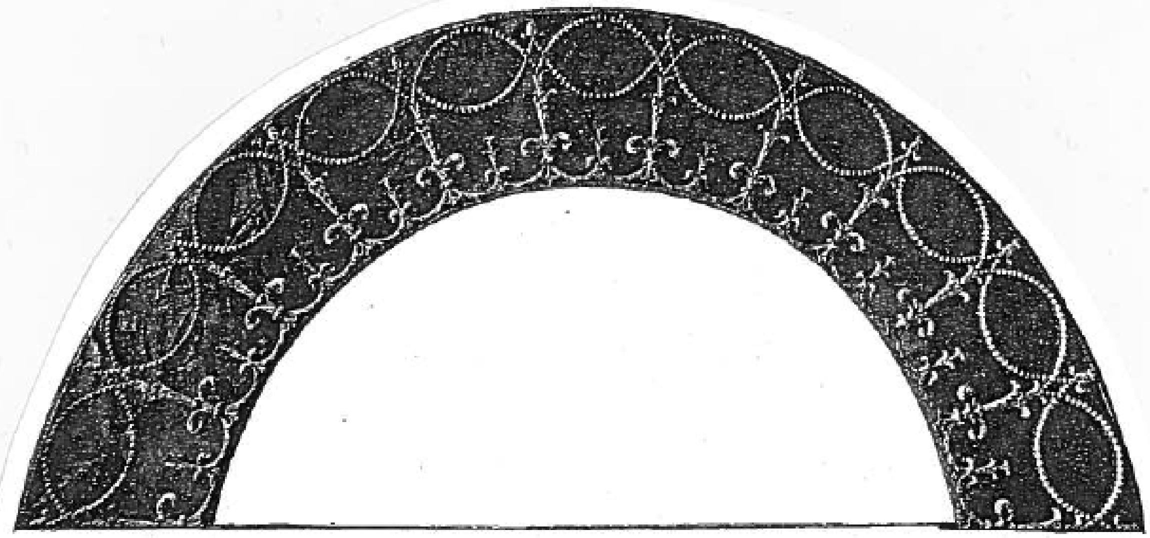
[61] *Sweet's Catalog of Building Trades,* (New York: F. W. Dodge Co., 1914), 867.



LEADED GLASS TRANSOM, VANDERBILT HOTEL, NEW YORK, N. Y.
WARREN & WETMORE, Architects
Showing Cast Lead Ornaments. We make all styles of such work to order, and carry a large stock on hand

Figure 78. Sweet's Catalogue Henderson Brothers advertisement, 1915.[62]

[62] *Sweet's Catalog of Building Construction.* (New York: Sweet's Catalogue Service, Inc., 1915): 887.

Chapter 4

Patents of William Henderson & Associates

Twelve patents assigned to William Henderson and one shared with an associate, who also is a patent holder in metal glazing detail the efforts he made to widen the use of sheet metal in window glazing, for improved strength, speed of fabrication, new aesthetic demands, and weight requirements in then modern construction techniques. Henderson also developed and patented machines to fabricate these products. He continuously worked to create cames which would allow for the fabrication of antique style glass meeting modern needs while retaining traditional appearance. William and Robert Henderson apparently arrived in the United States with knowledge of metal-work in glass glazing. How many of Henderson's patents were merely introduction and how much is true innovation is speculative. For example, a Mr. William Playfair, originally from Scotland (deceased in 1823) held a British patent for metal sashes glazed with copper and zinc.[1] Either way, metal glazing was a focus of the Henderson Brothers when working for others and in their own businesses.

Many of the patented products of William Henderson are used today with little if any modification. His patents are also referred to by modern patent holders in their applications. Many of these products were copied by large manufacturers at the turn of the century who apparently had the resources to contest Henderson's lawsuits. In the cases of some, for example National Lead, they were simply too big for Henderson to pursue in court. Reviewing patent records detail the continuous efforts of manufacturers

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[1] *The Annual Biography and Obituary for the Year 1824,* Vol. 8 (London: Longman, Hurst, Rees, Orme, Brown, and Green, 1824), 458

and individuals to improve traditional glazing techniques, products, and process. The improvements were all designed to produce finished windows expeditiously, at lower cost, and of greater strength. Although not suitable for every application, metal-glazing could be done more quickly with lesser skilled labor thereby saving cost. Rigid zinc and other sheet-metal being lighter and less flexible than traditional lead came glazing proved to be more durable in doors and frequently opened windows. Major drawbacks to metal-glazing included difficulty in repair and the potential for joint failure. Repairing lead came is simpler as the lead is easy to cut and manipulate to remove broken glass and insert new pieces; zinc is not flexible in installations and is more challenging to cut and manipulate to replace glass. Joint weakness is caused by improper cleaning or neutralizing the acid flux used to apply solder; this could lead to acid eating away at the zinc over time destroying the integrity of the window. A review of the Henderson patents brings us closer to the thoughts of William Henderson. The range of ideas is broad and it is clear that his mind was working throughout his career to improve both the glazing process and his income. (The full patents and sources appear in Appendix A in chronological order.)

<u>William Henderson Patents and Listed City of Residence</u>

No. 412,751 Pat. Oct. 15, 1889 Chicago, Illinois
Process of Manufacturing Metallic Cross Bars and Rails for Window Sashes

No. 420, 510 Pat. Feb. 4, 1890 Chicago, Illinois
Window Sash Bar

No. 482, 087 Pat. Sept. 6, 1892 Chicago, Illinois
Bar and Fastening for Sashes and Like Structures

No. 484, 590 Pat. Oct. 18, 1892 Chicago, Illinois
Rail for Securing Glass

No. 497,543 Pat. May 16, 1893 Chicago, Illinois
Metallic Bar for Window Sashes, &c

No. 978,745 Pat. Dec. 13, 1910 New York, New York
Window Came

No. 991,847 Pat. May 9, 1911 New York, New York
Window Came
No. 1,441,347 Pat. Jan. 9, 1923 New York, New York
Metallic Glazing

No. 1,631,814 Pat. June 7, 1927 New York, New York
Came Machine

No. 1,632,793 Pat. June 21, 1927 New York, New York
Came Machine

No. 1,817,494 Pat. Aug. 4, 1931 New York, New York
Ventilating Window Pane Warren R. McMann;
one half assigned to William Henderson

No. 1,858,775 Pat. May 17, 1932 Mineola, New York
Came and Protected Stay Bar

No. 1,940,862 Pat. Dec. 26, 1933 East Norwalk, Ct
Leaded Window Trussed Joint

Pat. No. 2,247,947 Pat. July 1, 1941 Mineola, New York
Window Ventilator

In addition, the following patent was issued to Warren R. McMann, an engineer working at Henderson Brothers. According to family lore, McMann worked with Henderson Brothers from the 1920s until they closed.[2]

No. 2,068,188 Pat. Jan. 26, 1937 New York, New York
Continuous Came Glazing Warren R. McMann (of the firm Henderson Bros.)

United States Patent No. 412,751 for the "Process of Manufacturing Metallic Cross Bars and Rails for Window Sashes" was issued to William Henderson, "a subject of the Queen of Great Britain, residing at Chicago, in the county of Cook and the State of

[2] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.

Illinois" on October 15, 1889.[3] A detailed description with drawings of the necessary machinery and process of producing metal bars for window fabrication is included. These metallic bars are the type later used by Frank Lloyd Wright in the production of his eponymous prairie style windows. The advantage of metallic glazing is the internal strength that zinc, copper, or brass gives a window versus lead. Although lead is easier to form into the variety of shapes needed, its inherent flexibility is a critical weakness in some applications such as doors and windows meant to be frequently opened. Wright particularly meant for his windows and doors to be regularly used.

Ernest Henderson traveled back to Chicago as a young man to work with the firms fabricating Wright's windows as they were having trouble with the metal bars. When extruded, they were bending and curling, making it difficult to produce the typical Wrightian designs in glass. Ernest Henderson instructed them to "pull" the newly extruded bars, stretching them as one stretches lead came to strengthen them making them also easier to work with.[4]

William Henderson was awarded United States Patent No. 420,510 for "Window Sash Bar" on February 4, 1890.[5] This improvement to metal sash bars would make fabrication and repair of metallic set windows easier. In his application, Henderson stated:

> My invention relates to rails or cross-bars and fastening for window-sashes, and is more especially adapted to that class of sashes which contain many small pieces of glass cut in numerous configurations and designs, such as is seen in stained-glass windows; and the objects of my improvements are to furnish a

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[3] U. S. Patent Office, "William Henderson, of Chicago, Illinois. Process of Manufacturing Metallic Cross-bars and Rails for Window-sashes." Pat. No. 412,751, Oct. 15,1889, http://www.google.com/patents/US412751 (accessed June 10, 2009), 1.

[4] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.

[5] U. S. Patent Office, "W. Henderson: Window Sash Bar," Pat. No. 420,510, Feb. 4, 1890, http://www.google.com/patents/US420510, (accessed June 10, 2009).

> strong and durable cross-bar and fastening which shall be of little weight, which will not rust or corrode, which can be easily bent into any desired form, and is readily placed in any sash and removed therefrom conveniently, and also to facilitate the operation of repairing or replacing broken parts without interfering with the other portions. I attain these objects by the peculiar constructions of the bar and the removable fastening or cap; and in order to enable others skilled in the art to which my invention pertains to make and use the same I will now proceed to describe it . . .[6]

The improvement noted here is that the metal came would be in two parts, one being a cap easily removed particularly for the repair of broken pieces of glass. By popping off the cap, the window could stay in place, neighboring sections would be unaffected, and a new piece of glass inserted. A major part of the work of any studio such as Henderson Brothers was the tavern trade. Most cities had laws requiring areas serving alcoholic beverages to be screened from view by pedestrians and diners. Many of these screens (and often doors) in such establishments contained stained glass. Mix moving patrons, wait-staff, and alcohol and you have broken glass. Anything that made the replacement of these broken pieces of glass easier would increase profitability. A product that would keep windows in place would make building and business owners happier as well.

The ever-productive William Henderson was awarded United States Patent No. 482,087 for "Bar and Fastening for Sashes and Like Structures" on September 6, 1892.[7] The purpose of this patent was to allow fabricators to bend metal bar to shape with both the cap and the base in one piece guaranteeing that the front and back of the bar would match exactly with a minimum of effort. Earlier cap-process had the metal structure laid out, bent as necessary, the glass set in, and the cap bent to fit. The last stage could be

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[6] U. S. Patent Office, "W. Henderson: Window Sash Bar," Pat. No. 420,510, Feb. 4, 1890, http://www.google.com/patents/US420510, (accessed June 10, 2009), 1.
[7] U. S. Patent Office, "W. Henderson: Bar and Fastening for Sashes and Like Structures," Pat. No. 482,087, Sept. 6, 1892, http://www.google.com/patents/US420510, (accessed June 10, 2009).

very time consuming as the upper and lower flanges had to align or visual enjoyment of a window would be marred. This new process allowed for the fabrication of metallic-glazed windows in a manner similar to lead-glazed windows, saving time and effort and creating the proper viewing affect.

United States Patent No. 484, 590 issued on October 18, 1892 was a "Rail for Securing Glass."[8] These rails would be made of sheet metal; extruded and folded into rigid shapes particularly "for the outside rail of glasswork which may have numerous bars or cames for holding the small pieces of glass in place"[9] which will be soldered to the bar. The bar will reinforce and strengthen the window and allow "the saddle-bars used in leadwork to be joined thereto, thus obviating the necessity of marring the molding."[10] In other words, support bars could be soldered directly to this frame for strength.

These rails could be used as the perimeter edge for glass signs as well as windows. They could be used with or without putty and had several designs based upon application. Figure 7 in the patent is the same design as contemporary zinc came used on the perimeter of glass panels and windows and serves exactly as Henderson stated in this patent.

On May 16, 1893 William Henderson was awarded United States Patent No. 497,453 for "Metallic Bar for Window Sashes, & c."[11] The purpose of this invention was to replace both lead cames and heavy sheet metal bars in some installations. William

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[8] U. S. Patent Office, "W. Henderson: Rail for Securing Glass," Pat. No. 484,590, Oct. 18, 1892, http://www.google.com/patents/US484590, (accessed June 10, 2009).
[9] Ibid., 1.
[10] Ibid., 1.
[11] U. S. Patent Office, "W. Henderson: Metallic Bar for Window Sashes, &c.," Pat. No. 497,543, May 16, 1893, http://www.google.com/patents/US497543, (accessed June 10, 2009).

Henderson's development was for thin, but specifically designed flexible sheet metal cames that could be worked the same as lead but with the strength of the stronger metal. A series of folds in the metal would provide the rigidity required while still allowing for manipulation of the cames "without puckering, crimping or disfiguring the metal."[12] The patent states:

> Prior to my inventions (so far as I am aware) the common means employed by glaziers for setting ornamental or art glass were lead cames which could be readily worked or made to conform to the glass. These lead cames, however, are so weak, owing to the character of the metal employed, that they furnish insufficient support to the glass, and resort must be had to strengthening bars or rods connected at their ends to the sides of the sash frame and intermediately to the cames. It was also common in the manufacture of sky lights and similar structures, to employ sheet metal bars consisting of a base and a cap piece to hold the glass . . .
>
> These bars were of considerable size to adapt them to sustain large and heavy pieces of glass, and as they were placed in an elevated position their appearance was a matter of small importance and were used only for straight lined glass. On account of their size they were entirely unfit for use in stained or cut glass work, as it was impossible for them to be bent by rolls or fingers to the glass.[13]

This Henderson patent was to replace traditional glazing techniques using lead cames and support bars which often interfere with the design. The second goal was to allow for design beyond straight-edged pieces of glass in sky lights and ceiling installations. The third goal was to be able to metal glaze smaller and smaller pieces of glass with the same design possibilities and ease that lead allowed.

This patent was developed during the height of Tiffany's popularity as a window designer and Henderson duly notes that "at present the requirements of the public taste demand glazing in which the glass forms the prominent part of the work while the bars

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[12] U. S. Patent Office, "W. Henderson: Metallic Bar for Window Sashes, &c.," Pat. No. 497,543, May 16, 1893, http://www.google.com/patents/US497543, (accessed June 10, 2009), 1.
[13] Ibid., 1.

are desired to be inconspicuous as possible."[14] Tiffany's goal was to create window images that diminished both the use and design impact of cames and support bars.

United States Patent No. 497,453 issued in 1893 presumably was Henderson's last as a resident of Chicago. The Chicago Blue Book of Selected Names of Chicago and Suburban Towns for the years 1890, 1891, and 1892 list the notable firm of Flanagan & Biedenweg as manufacturers of Henderson's Patent Adjustable Metallic Sash (Patented October 15, 1889).[15]

In 1893, Flanagan & Biedenweg are listed as "Owners and manufacturers of 'Henderson's Patent' adjustable metal sash in all kinds of metal, for all purposes in glass and fancy beveled mirror work . . ." in the listing of exhibitors at the World's Columbian Exposition/Chicago World's Fair.[16] It appears that William Henderson cashed out for what he could get before leaving Chicago. The particular reason will become apparent.

United States Patent No. 978,745 for "Window Came" was issued on December 13, 1910.[17] On the same day, Henderson applied for United States Patent No. 991,847 for "Window Came", which was issued on May 9, 1911.[18] Both patents are based upon the use of an "H-shaped sheet-metal foundation covered by an external coating of lead or

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[14] U. S. Patent Office, "W. Henderson: Metallic Bar for Window Sashes, &c.," Pat. No. 497,543, May 16, 1893, http://www.google.com/patents/US497543, (accessed June 10, 2009).

[15] *Chicago Blue Book of Selected Names of Chicago and Suburban Towns,* (Chicago: The Chicago Directory Company, 1890, 91, 92).

[16] Moses Purnell Handy, Ed., *World's Columbian Exposition 1893 Official Catalogue Part VII: Transportation Exhibits Building, Annex, Special Building, and the Lagoon,* (Chicago: W. B. Conkey, Company, 1893), 27.

[17] U. S. Patent Office, "W. Henderson: Window Came," Pat. No. 978,745, Dec. 13, 1910, http://www.google.com/patents/US978745, (accessed June 10, 2009).

[18] U. S. Patent Office, "W. Henderson: Window Came," Pat. No. 991,847, May 9, 1911, http://www.google.com/patents/US991847, (accessed June 10, 2009).

lead-imitating metal."[19] The difference in the two patents is that No. 978,745 includes "outlines of said came being wavy or irregular" and in Patent No. 991,847 is for cames "not having an irregular outline" but still having the surface altered. The patent description is otherwise essentially the same.

> The object of my invention is to produce an ornamental and artistic window came, which while preserving all the beautiful effects of the antique leaded glass, shall have sufficient strength to permit of the use of panes of glass of any desired size and weight, and to resist distortion from wind pressure and gravity.
> A further object of my invention is to furnish a leaded glass came of reasonable size and weight, thereby assuring the fine lines necessary for windows built up of small glass panes. In other words, I produce a came strong enough to use with large heavy panes, and yet so delicately lined as to be capable of employment in windows built up of small panes, without the leaded cames being too large for the glass portion, thereby marring the desired effect from the artistic standpoint. [20]

In addition the surface of the came would be altered with a coating of lead or a chemical alteration of the surface to produce an antique or aged look. Henderson hoped to encourage architects to add antique leaded windows made up of diamond, rectangular, or square quarries that would be light enough to meet then modern construction requirements and easier (quicker) to produce for the glass studios which would reduce labor costs and sale price. The advertised specialty of the Henderson Brothers was the antique style and William Henderson was doing all he could to promote the style for which the firm was noted and its principal clearly favored.

United States Patent No. 1,441,347 for "Metallic Glazing" was issued on January 9, 1923 and had as its major development a one piece came with a flat shelf and a rigid, but

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[19] U. S. Patent Office, "W. Henderson: Window Came," Pat. No. 978,745, Dec. 13, 1910, http://www.google.com/patents/US978745, (accessed June 10, 2009), 2.
[20] Ibid., 1.

pliable edge that would allow for glass to be placed in the came.[21] The edge would then be folded over. If a piece of glass broke, the shards could be removed, the edge could be lifted, and the new glass inserted. For both initial fabrication and repair, the process became much more efficient and timely. The challenge in repairing sheet-metal glazing is the nature of the cames. With lead cames, simple cutting and bending of the soft material allows for the glass shards to be removed. The flanges of traditional sheet-metal came cannot be so manipulated, and repair became considerably more complicated and time-consuming. Thus the pliable edge, which could be lifted leaving the rest of the window intact, was a significant improvement particularly when the possibility of future repair was considered.

United States Patent No. 1,631,814 for a "Came Machine" was issued on June 7, 1927.[22] The purpose of this machine was to "economically produce a variegated or irregular edge on the leaves of the came and the surface, in a way that will preserve the essential structural characteristics of the came for its purpose of holding the glass, and ready use for assembly, but will give to the came the appearance which may be called an antique finish."[23] By using a variety of matched disks straight lengths of came could be passed through this machine and "insure the edges of opposed leaves being substantially in registration so that when glazed into the window the edges will approximately register and provide a clear edge vision without seeing the cemented underside of one leaf

[21] U. S. Patent Office, "W. Henderson: Metallic Glazing," Pat. No. 1,441,347, Jan. 9, 1923, http://www.google.com/patents/US1441347, (accessed June 10, 2009), 1.
[22] U. S. Patent Office, "W. Henderson: Came Machine," Pat. No. 1,631,814, June 7, 1927, http://www.google.com/patents/US1631814, (accessed June 10, 2009), 1.
[23] Ibid., 1.

extending beyond the edge of the leaf on the other side of the glass."[24] In other words, the edges of the cames would have undulations that would be even on both sides so that the sightlines are neat and attractive.

Furthermore, the patent allows for gear ratio changes so that the pattern of undulations would not repeat itself exactly, and instead would appear to be random. By altering the gear sizes from the part of the machine that pulls the lead through and the disks impressing the pattern, randomization occurs while retaining the balance between front and back edges. "These machines are simple and may be preferably be hand operated as by the crank indicated but for large production may be power driven"[25] The machine is designed to work with both straight H-came commercially or shop produced or by using came blanks.

United States Patent No. 1,632,793 for a "Came Machine" issued June 21, 1927 is for a machine that would create a "variegated or irregular edge on the leaves of the came and the surface in a way that will preserve the essential structural characteristics of the came for its purpose of holding the glass, and ready use for assembly, but will give to the came the appearance which may be called an antique finish."[26] In other words, this machine would create the antiqued lead cames for which Henderson Brothers became noted. This machine milled the edges in an irregular manner that would match on both sides and rough up the surface simultaneously if desired. The addition of two handles, which allow

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[24] U. S. Patent Office, "W. Henderson: Came Machine," Pat. No. 1,631,814, June 7, 1927, http://www.google.com/patents/US1631814, (accessed June 10, 2009), 1.
[25] Ibid., 3.
[26] U. S. Patent Office, "W. Henderson: Came Machine," Pat. No. 1,632,793, June 21, 1927, (accessed June 10, 2009), 1.

for control over the irregularity, expands the capability of this machine to modify cames into a more random appearing antique quality. Simply squeezing and releasing the handles changes the depth of the irregular edge providing even more visual interest. Family lore has Stanford White coming into Henderson Brothers when their machinist was struggling to make some standard cames but the edges were off and the heart was normal. When telling William Henderson of his frustration, architect White said that this was exactly the antique look he wanted; thus it became important to create a machine that would allow for standard production of a product that looked old and irregular.[27]

United States Patent 1,817,494 for a “Ventilating Window Pane” was awarded to Warren R. McMann, who assigned one half to William Henderson on August 4, 1931.[28] McMann was an engineer who worked for Henderson Brothers. Family lore has McMann graduating from the Sheffield School of Engineering at Yale University. He was employed at Henderson Brothers as a machinist and metal fabricator. The patent is issued for a pane of glass to be altered so that one or both ends will have bulges to permit air to pass through. The major idea is that these panes would be massed-produced so they could be easily glazed into existing or new window frames. These panes would be produced in standard sizes so that anyone in the trade could easily glaze them into place. Metal caps and screens would regulate the air flow and keep out insects. The advantage of this ventilating pane also includes “perfectly clear visibility throughout the area of the pane,-thereby in no way diminishing the admission of light nor interfering with the view

[27] Gordon Henderson, Unpublished Autobiography.
[28] U. S. Patent Office, “W. R. McMann: Ventilating Window Pane (One Half Assigned to William Henderson),” Pat. No. 1,817,494, Aug. 4, 1931, http://www.google.com/patents/US1817494, (accessed June 10, 2009), 1.

from the window."[29] As the bulge in the ventilator could be placed facing in or out it could be used with casement, double hung, or any other variety of window without impacting the ability to open or close the window.

United States Patent No. 1,858,775 for "Came and Protected Stay Bar" was issued on May 17, 1932.[30]

> This invention relates to the so-called leaded windows which are in churches as well as public buildings and also in homes. These leaded windows in their primitive form have been used for many years. In fact, decades ago, if not centuries, the rudimentary form of church window support has existed.
>
> As it is general practice in good construction, for required strength in a stained glass window, that any area in excess of eighteen inches in width or height, must have more than the strength of the lead cames for its support, it has heretofore become the practice to add such stay bars as are fastened to the surface of the cames after the window has been assembled.[31]

This patent is for a traditional H-shaped lead came to have added to it a pocket run at a ninety degree angle to the came either internally or externally. A thin metal reinforcing bar will be inserted into this pocket to add additional strength to the window. The ends of the pocket will then be closed protecting the metal reinforcing rod from the elements. These cames can be built into the window design and because they are weather-proof, the support may by placed to the outside if that is better for the particular design. A critical element of this product is the elimination of some of the traditional stay bars which require time-consuming placement of copper wire to the cames, cutting and fitting of the stay-bar to the window frame, and the tying off and cutting of excess material when

[29] U. S. Patent Office, "W. R. McMann: Ventilating Window Pane (One Half Assigned to William Henderson)," Pat. No. 1,817,494, Aug. 4, 1931, http://www.google.com/patents/US1817494, (accessed June 10, 2009), 1.
[30] U. S. Patent Office, "W. Henderson: Came and Protected Stay Bar," Pat. No. 1,858,775, May 17, 1931, http://www.google.com/patents/US1858775, (accessed June 10, 2009), 1.
[31] Ibid., 2.

twisting the copper wires around the stay-bars. Or, as the traditional business formula has it: less labor = lower cost per unit = more potential profit = customer savings.

United States Patent No. 1,940,862 for "Leaded Window Truss Joint" was issued on December 26, 1933.[32]

> This invention relates to leaded windows, and more particularly to the construction of the joints, that is the inter-sections of the lead cames which hold the many small panes that are out of contact with the outer frame of the window sash or muntin.
>
> The object is to provide for a more economical construction with respect to the window as a whole, and to provide uniform strength at all joints, - and in particular, the invention applies to what is known in the art as diamond pattern leaded glass windows.[33]

Where shapes that are regular, such as diamonds, squares, and rectangles, this patent would provide a method of fabrication that would allow for pre-cutting of internally reinforced cames as the sides of cut pieces would be uniform. Proper fabrication would have these reinforced cames butting up against other similar cames at the joints. When soldered, a rigid and well-reinforced series of joints eliminating the need for external stay bars would be achieved making installation easier and quicker. Elimination of stay bars created a more visually attractive window particularly when installed close to view, for example, in a public, street-level application.

United States Patent No. 2,069,188 for "Continuous Came Glazing" was issued on January 26, 1937 to Warren R. McMann.[34] McMann applied for this patent in 1933 and

[32] U. S. Patent Office, "W. Henderson: Leaded Window Trussed Joint," Pat. No. 1,940,862, Dec. 26, 1933, http://www.google.com/patents/US1940862, (accessed June 10, 2009), 1.
[33] Ibid., 1.
[34] U. S. Patent Office, "W. R. McMann: Continuous Came Glazing," Pat. No. 2,069,188, Jan. 26, 1937, http://www.google.com/patents/US2069188, (accessed June 10, 2009), 1.

Henderson Brothers advertised this product in a 1934 brochure when they were located at 771 First Avenue.

> In particular, among the aims of this invention are the provision of a structure which provides simplicity and economy in assembly of the plurality of small sections of any sheet material which in the case of windows are usually of glass, the ready replacement of individual pieces, and particularly fireproofness when used in a window, greater strength in the practices heretofore employed, and other advantages that may appear from the more detailed construction hereinafter set forth.[35]

In this patent, metal glazing using all types of metal "aluminum for lightness" or "bronze for durability" would be constructed so that cames would run from top to bottom or side to side and lock in with pins to the edge pieces.[36] Cross-pieces would have holes to allow them to be interlocked with pins. A strong and relatively quickly fabricated panel could be produced with precut pieces of came by any mechanic with reasonable skills. The cames could be produced using thin sheets of various expensive metals reinforced with steel strips in the Henderson style of the Came and Protected Stay Bar, Patent No. 1,858,775; providing a required look at an affordable cost, without losing the strength of the product. The use of pinned joints and sheet metal would prevent breakdown in a fire, a problem common to windows produced using lead cames or sheet metal cames using soldered joints where the lead would melt.

United States Patent No. 2,247,947 for a "Window Ventilator" was issued July 1, 1941.[37] It was William Henderson's last. This patent is important because it was applied

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[35] U. S. Patent Office, "W. R. McMann: Continuous Came Glazing," Pat. No. 2,069,188, Jan. 26, 1937, http://www.google.com/patents/US2069188, (accessed June 10, 2009), 1.
[36] Ibid., 1.
[37] U. S. Patent Office, "W. Henderson: Window Ventilator," Pat. No. 2,247,947, July 1, 1941, http://www.google.com/patents/US2247947, (accessed June 10, 2009), 1.

for on July 14, 1938 confirming that William Henderson was alive and living in Mineola, New York at that time.[38] What is currently impossible to determine is who actually received a benefit from this patent as family lore has the firm of Henderson Brothers defunct by 1939 and William Henderson soon after deceased. Ernest Henderson was producing ventilators as part of his business and samples were passed to Gordon Henderson.

The ventilator was an important part of the Hendersons business. Its use in metallic glazed windows was particularly effective. Metal glazing was rigid enough to contain the ventilators which were designed to be opened and closed. The metal glazing of the Hendersons was delicate enough to maintain the desired appearance of antique leading. The purpose of the ventilator was to provide air circulation and fresh air through the street windows of restaurants, taverns, and other public street-level rooms. The design of the ventilators (and there are many variations) prevented rain from coming into the room, and reduced the movement of dust; screens kept the insects out, and allowed free passage of light, if desired; colored or obscuring glass could also be used. A hinged panel could be closed when it was too cold. Among the institutions using Henderson ventilators was the Biltmore Hotel.

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[38] U. S. Patent Office, "W. Henderson: Window Ventilator," Pat. No. 2,247,947, July 1, 1941, http://www.google.com/patents/US2247947, (accessed June 10, 2009), 1.

Chapter 5

Court Cases—Patent Infringement of William Henderson Patents

William Henderson spent some time in court defending patents. As stated earlier, these court cases sapped energy and money from both Henderson and later the Henderson Brothers firm. Even when successful, costs were incurred and some initial decisions were over-turned or restricted in the courts of appeal. There is a continuous history of patent application and approvals in the stained glass industry. Clever and resourceful artists, designers, mechanics, and glaziers actively working in the trade were looking for improvements in production. Those who were business owners were looked to reduce labor both in skill and time to improve profits. Alphonse Friedrick, operating at 16 and 18 Hoyt Street, Brooklyn, New York, states in his patent No. 271,697, issued February 6, 1883 for a Process of Building Lead Sash for Glazing Purposes that he wished to ". . . obviate the difficulties . . ." including ". . . the necessary requirement of much time and the services of artistic and skilled workmen of long experience . . ." in the production of leaded windows.[1] With a long tradition in glazing practice and limited options for improvements, it is not surprising that similar ideas would develop, overlap, and come into competition. The recorded cases reviewed here turn on narrow legal concepts; some that apparently escaped the United States Patent Office when Henderson's initial patents were awarded.

[1] U. S. Patent Office, "A. Friedrick, Process of Building Lead Sash for Glazing Purposes," Pat. No. 271,697, Feb. 6, 1883.

Henderson *v.* Noakes

William H. Noakes applied for a patent related to metallic bars for window sashes (December 22, 1890, No. 375,523). Within three months William Henderson filed a similar application. (March 2, 1891, No. 383,477). In the course of processing the applications it apparently became a concern as to the similarities. Noakes filed a motion on April 12, 1892 to amend his application's preliminary statements which would have superseded Henderson's. Henderson must have appealed this action and it was heard by the Examiner of Interferences who upheld Noakes' amendment.[2]

William Henderson appealed this decision to the Commissioner of Patents, the Hon. William E. Simonds. In the appeal, Noakes states his original ideas had been forgotten because his mind was impaired due to illness. Citing decisions of the United States Supreme Court, Simonds wrote:

> An amendment to a preliminary statement which takes the amending party's date back of the corresponding date of his opponent will not be allowed upon a state of facts consistent with the supposition that the party seeking to amend might have presented this earliest date in his original statement if he had used the utmost care and diligence.[3]

Noakes had attempted to push the date of his preliminary statement from "April and May 1889" to August 8, 1888," predating Henderson's preliminary statements.[4] Simonds reversed the decision of the Examiner of Interferences on May 12, 1892. Noakes was not done and he appealed the decision.

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[2] U. S. Patent Office, "Henderson v. Noakes," Hon. William E. Simonds, *The Official Gazette of the United States Patent Office* 59, no. 5, (May, 3, 1892): 1431.
[3] Ibid., 1431.
[4] Ibid., 1431.

This case, decided June 8, 1892, signed off by the Hon. William E. Simonds, Commissioner of Patents, concerned patent applications filed by William Henderson (March 2, 1891, No. 383,477) and William H. Noakes (December 22, 1890, No. 375,523). Noakes attempted to amend his application to include information that would have invalidated Henderson's application. Simonds ruled in favor of Henderson whose application became his fourth patent No. 497,543 for Metallic Bar for Window Sashes.[5]

Wells Glass Co. et al, v. Henderson (Circuit Court of Appeals, Seventh Circuit, May 11, 1895)
No. 162

The case of Wells Glass Company v. Henderson appears to have resulted from a business deal gone bad. William Henderson had been contracted to supply metal t-bars to the Wells Glass Company; bars he had previously introduced to public use. He then introduced in two patents the concept of placing a metal cap upon the edge of the t-bar to hold the glass in place without using putty. The option of bending and soldering t-bars into the proper shape was particularly effective for creating complex window designs with zinc and other hard metallic cames; greatly improving the process and reducing labor. After the design was bent and soldered, the glass could be easily cut and placed, then capped. The removable cap also speeded repairs, always a challenge with hard metallic glazing—pop off the cap, remove and replace the broken glass, and replace the cap.

Wells Glass Company apparently began making similar bars and caps, cutting Henderson out. Henderson sued and the Circuit Court of the United States, Northern

[5] U. S. Patent Office, "Henderson v. Noakes," *Decisions of the Commissioner of Patents and of United States Courts in Patent Cases for the Year 1892,* Hon. William E. Simonds, (Washington, D. C., 1893), 123.

District of Illinois, upheld his patents, declared infringement, and ordered Wells Glass Company to make an accounting to settle claims and to stop infringing Henderson's patents. Hermann Schumann, of Wells Glass Company, appealed the verdict and the case was heard by the United States Court of Appeals—Seventh Circuit; Woods, Bunn, and Seaman, Judges.[6]

Justice C. J. Wood delivered the verdict for the court. Citing a variety of previous decisions, the case was decided in favor of Schumann and Wells Glass Company. The first Henderson patent was ruled invalid as "the process of Patent No. 412, 751 is purely mechanical."[7] While stating that some mechanical processes are patentable, for example, when an entirely new process and machinery are developed, Henderson's patent did not fit these criteria. Henderson used common machinery in a manner not uncommon. Complicating the issue was the claim of Schumann that the idea for the cap was his and in fact Henderson had unfairly patented it; denied by William Henderson. Justice Wood noted that a patent can be awarded if there is a "chemical or elemental action involved," absent in this case.[8]

Henderson's second patent No. 420,510 was ruled valid but not infringed. The improvement in manufacture was covered only if someone used the exact same process, which Wells Glass Company had not. While the sash bars produced by Wells Glass Company were essentially identical to those produced by Henderson, they used a different mechanical process.

William Henderson lost this suit and Flanagan & Biedenweg no longer advertised themselves as owners of Henderson's Patent.

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[6] Wells Glass Company, et al. v. Henderson,67 F. 930 (7th Cir. Ill. 1895).
[7] Ibid.
[8] Ibid.

Chapter 6

Henderson Brothers Advertisement

William Henderson was an astute promoter; the Henderson Brothers advertised extensively in a wide variety of media. National trade magazines and *House and Garden Magazine* contain Henderson Brothers advertisements. Well-designed brochures were produced over the years and it is clear that they participated in trade associations and shows. The various versions of the New York City directories had listings for the firm. Materials were displayed in The Architects Showroom in New York City to be viewed by prominent architects, builders, and decorators.

Henderson Brothers work appears in the Architectural League of New York Annual Show and Yearbook. They were mentioned in articles discussing stained glass in magazines and newspapers. William Henderson also made a point of letting people in the trade magazines know when he was traveling on business. With documented work along the East coast from Massachusetts to Washington, D.C. and West to Minnesota, the publicity worked. The advertisements flesh out the materials described in the patents and put a face on the firm. The images in the advertisements and articles reinforce the versatility of Henderson Brothers in producing a great variety of work in many styles and diverse installations.

The first advertising found mentioning Henderson Brothers was an advertisement in the Chicago Blue Book (1890) for the firm of Flanagan & Biedenweg who list themselves as manufacturers of Henderson's Patent Adjustable Metallic Sash (Patented October 15, 1889). They mention solid copper, brass, or antique coppered zinc as options.[1] Flanagan & Biedenweg continue similar advertisement for the next two years in the Chicago Blue Book. The firm also placed an advertisement in the 1890 Directory of Architects describing in great detail Henderson's Patent Adjustable Metallic Sash.[2] Flanagan wanted to offer one hundred thousand dollars for the Henderson patent but Biedenweg thought it only worth seventy-five thousand. William Henderson, being Scottish, decided he wanted the one hundred thousand dollars. After more talk, William Henderson agreed to accept a royalty of five hundred dollars per week. The royalty didn't amount to anything.[3] In the World's Columbian Exposition catalogue (1893), Flanagan & Biedenweg list themselves as "Owners and manufacturers of 'Henderson's Patent' adjustable metallic sash in all kinds of metal, for all purposes in glass and fancy beveled mirror work . . ."[4] After 1893, Flanagan & Biedenweg no longer advertised Henderson's Patent metallic sash and it is no coincidence that William Henderson was tied up in his lawsuit against Hermann Schumann, of Wells Glass Company, for patent infringement at this time. Gordon Henderson stated that his grandfather received nothing from Flanagan & Biedenweg for his patent rights and that would only seem appropriate.[5]

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[1] *Chicago Blue Book of Selected Names of Chicago and Suburban Towns.* (Chicago: The Chicago Directory Company, 1890, 91,92) [See Appendix E].
[2] *Directory of Architects and Classified Directory of First Hands in the BuildingTrades, Issued Annually,* (Springfield, MA: Clark W. Bryan & Co., 1890,) 47.
[3] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.
[4] Moses Purnell Handy, Ed., *World's Columbian Exposition 1893 Official Catalogue Part VII: Transportation Exhibits Building, Annex, Special Building, and the Lagoon,* (Chicago: W. B. Conkey Company, 1893), 27.
[5] Gordon Henderson, interview by author, Towaco, NJ, February 7, 2008.

Figure 79. Chicago Blue Book,
Flanagan & Biedenweg advertisement.[6]

Henderson Brothers first appear in New York City as a listed firm in The Railroad, Telegraph, Electric, and Steamship Builders Buyer's Guide and Directory for 1896-97. Listed under the heading of Glass—Stained, they show their address as 534 6th Avenue, New York.[7] Most of the major firms in the Midwest and the Northeast are listed, including Tiffany, former associates Flanagan & Biedenweg, and rival Wells Glass Company. Henderson Brothers first appear in the Trow's New York City Directory for

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[6] *Chicago Blue Book of Selected Names of Chicago and Suburban Towns for the Year ending 1890,* (Chicago: The Chicago Directory Company, 1890), 648.

[7] *Railroad, Telegraph, Electric and Steamship Builders' Buyers' Guide and Directory,* (New York: The Railway Directory Publishing Co., 1896-97), 208.

the year ending July 1, 1897 at the same 6th Avenue address.[8] For most of the years forward until 1931, Trow's and its successors are the main source for information on the business and residential addresses of William and Robert Henderson.[9] Several years are missing, unfortunately. From 1933 to 1938 there are only three sources for this information. They are the letters detailing work at the Frick Library and William Henderson's final patent application filed in 1938. Importantly, the firm can be clearly located in New York City for a span of 44 years, a major accomplishment for any stained glass firm.

Various Henderson Brothers Brochures clearly show the variety of products produced by the firm. The catalogues also verify some of the firm's movements in New York City. The first surviving sample lists an address at 114 East 41st Street where the firm was located between 1922 and 1925 (no records exist from 1926 through 1930).[10] In the remaining fragments are images of two sample boards covered with various "Examples of Lead Ornaments Carried *in* Stock" (italics in original). Also are included images of windows featuring Georgian windows restored with Henderson's "Easy-fix" Metallic Leading and two panels—one from the Goshan Inn, Goshen, New York and the other a selection of small painted figures. These last panels were in the collection of Gordon Henderson and have been lost.

The firm moved to 693 Third Avenue and the new address is stamped in red over the old address. The date of this move is uncertain due to missing records. At some point, the stock of old brochures was used up and a newly designed form was introduced. The firm is identified at this address in city directories from 1932 to 1934. The latest

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[8] *Trows New York City Directory.* Vol. 110. (1896), 631.
[9] Appendix B
[10] Copy of original, author's collection, Appendix E, Figure 236, 418.

brochure lists them as “Designers and Craftsmen in Leaded and Stained Glass: Offices and Studios, 693 Third Avenue, New York, NY.”[11] There are images of panels, windows, and painted medallions as well as a sample run of various sizes of Henderson’s Antique Leading (Patent Pending) from 3/16” to 1” in width. On an interior page is an explanation of the benefits of Henderson’s “Easy Fix” Metallic Leading.

Revival of Georgian Period Leadings

> The attention of the architects and builders is called to our “Easy Fix” Metallic Leading which makes possible the type of leading used during the Georgian Period, long since abandoned, but still to be seen in old doorways, ceilings, lights, etc.
>
> By using modern materials, methods and our continuous clip which runs parallel and continuous with the glass and holds both glass and putty securely in place, a leaded sash having the exact appearance of the old work can be economically furnished. The clip can be readily turned up to allow of inexpensive repairing by an ordinary mechanic and left in its original condition, making a substantial and weather tight job.
>
> “Easy Fix” Metallic Leading can be constructed of brass, copper, zinc or sheet metal and lead coated.
>
> Lead ornaments of which we have a large assortment can be readily applied to Henderson’s “easy Fix” Metallic Leading.[12]

A small brochure for Lock-Joint Metallic Glazing, produced when Henderson Brothers had moved to 771 First Avenue (1934-?) is a classic in art-deco design.[13] The advantages of this patent applied for product are clearly spelled out. It is advertised as “shock-proof, fire-proof, and weather-proof.”[14] It is useful wherever constant use and vibration would weaken traditional lead joints. Also “to replace a broken pane or reconstruct the glass design, any one section can be disjointed without leaving a single trace of repair.”[15]

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[11] Copy, author’s collection, (Appendix E, Figure 245), 427.
[12] Copy, author’s collection, (Appendix E, Figure 243), 425.
[13] Original brochure, author’s collection, (Appendix E, Figure 250), 432.
[14] Ibid.
[15] Original, author’s collection, (Appendix E, Figure 251), 433.

This well-designed and attractive little folding brochure also highlights the cost advantages of this product "when general conditions make the price question as important as it is today."[16] The earliest possible date for this advertising is 1934, well into the Great Depression. Anything one would wish to know about this product is clearly and attractively laid out for prospective clients.

Another advertisement from the same time period is a single page printed piece which contains both line drawings and photographic images.[17] The writing is more technical and it appears to be a hand-out from a trade or technical show. The various products and capabilities of the firm are clearly stated: "Adequate manufacturing facilities, combined with quantity purchases of raw materials, enable us to produce quality work at minimum prices."[18] Of special interest is the photographic image of the glass ceiling in the Biltmore Hotel Turkish Baths. Also, the design of the leaded glass panel featuring a seated man reading repeats a facial design existing in other Henderson advertisement and in a window that adorned the dining room of Gordon Henderson's home for over forty years. Gordon Henderson retrieved this particular window from the Payne-Spiers Studio, in Paterson, New Jersey when it was closing. When the Henderson Brothers business closed it was among a multitude other items purchased by Richard Spiers.[19]

Sweet's Catalogue of Building Construction was a yearly publication of the Architectural Record Company. For any researcher interested in the early history of the building trades, it is a gold mine for information. Companies in the trades advertised their services complete with detailed descriptions, drawings, and photographic images.

[16] Original, author's collection, (Appendix E, Figure 253), 435.
[17] Original, author's collection, (Appendix E, Figure 251), 433.
[18] Ibid,
[19] Gordon Henderson, interview by author, December 26, 2004, Towaco, NJ.

Henderson Brothers advertisements have been located in four volumes: 1911, 1912, 1914, and 1915. These advertisements provided the best source of information for the work of Henderson Brothers. Under the heading References, for 1911, and 1912, it is stated, "Among many, the following architects have used and are specifying our products."[20] As noted earlier, it is an impressive list of the most noted architects practicing in the Northeast. The 1914 and 1915 catalogue fills in the blanks under the heading, "Our Scope: Henderson's Patent Metallic Leadings have been placed in some of the finest examples of architecture throughout this and other countries."[21] Again, the list is impressive with many of the installations extant.

Another important discovery from the 1915 Sweet's Catalogue was a list of representatives for Henderson Brothers.

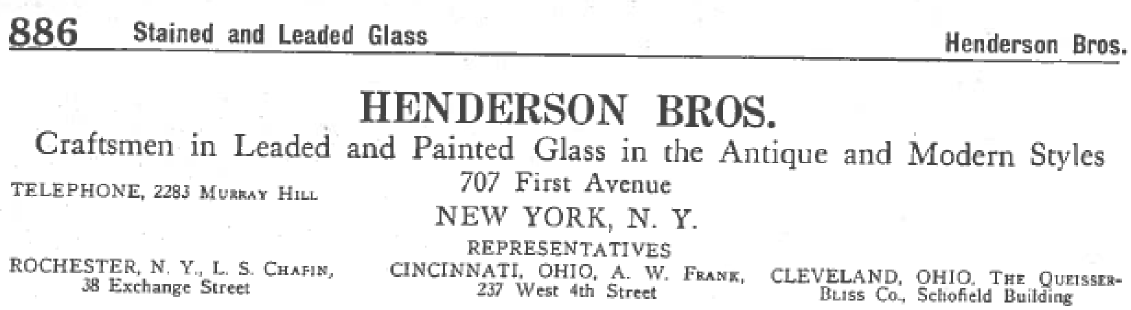

Figure 80. Sweet's Catalogue Henderson Brothers advertisement, c. 1915.[22]

In Rochester, New York—L. S. Chapin; Cincinnati, Ohio—A. W. Frank; and Cleveland, Ohio—The Queisser-Bliss Company. It is unfortunate that the Henderson Brothers records have disappeared to determine what work these representatives produced. L. S. Chapin advertised as a "Leaded Glass Worker" providing "Stained and

[20] *Sweet's Catalog of Building Construction.* (New York: The Architectural Record Co., 1911, 1912).
[21] *Sweet's Catalog of Building Construction.* New York: F. W. Dodge Co., Inc., 1914), 866.
[22] Ibid., 866.

Ornamental Glass Work of every description for House and Church."[23] He is also listed in the Rochester Directory of Manufacturers under the heading of Glass Workers.[24] In the 1915 Sweet's Catalogue, A. W. Frank is listed as an agent for the Crittall Casement Company, "Manufacturers of "Crittall" Solid Steel Casement Windows."[25] In the Cincinnati Directory, A. W. Frank is listed as the manager of the Crittall Casement Company location.[26] Steel casement windows embellished with leaded glass quarries

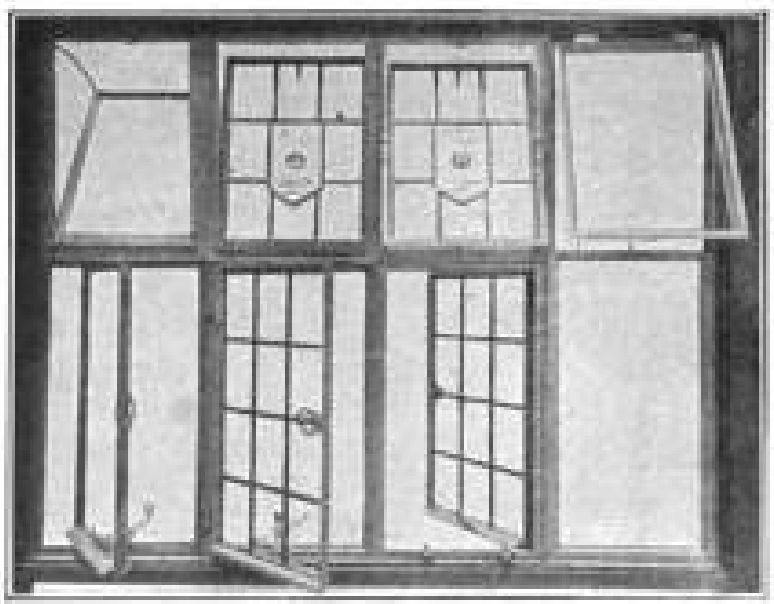

Figure 81. 1913 Critall Casement Advertisement showing work typically produced by Henderson Brothers.[27]

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[23] *Masonic Fair Souvenir: Held in Masonic Temple, Rochester, New York.* (Rochester: Central Printing and Engraving Co., 1902).
[24] *Rochester: The City of Varies Industries, Directory of Manufacturers, 1916 Edition.* (Rochester: The Rochester Chamber of Commerce, 1916).
[25] *Sweet's Catalog of Building Construction,* (New York: Sweet's Catalogue Service, Inc., 1915. Sweet's Catalogue, 1915), 644.
[26] *Williams Cincinnati Directory.* (Cincinnati: The Williams Directory Company, 1915), 646.
[27] *Sweet's Catalogue of Building Construction,* (New York: The Architectural Record Co., 1913), 716.

were a specialty of Henderson Brothers and the image in this advertisement would be very typical of the firms' work. The Queisser-Bliss Company is listed under the heading "Builders' Supplies, General" in the Classified "List for Buyers" found in the August 16, 1916 edition of *The Ohio Architect, Engineer, & Builder*.[28]

Henderson Brothers placed work in the Annual Show of the the New York Architectural League. They are listed in the Annual Catalogue in 1920 and 1928. Both confirmed exhibits were in association with J. Scott Williams. Both exhibit catalogues have images of works designed by J. Scott Williams and fabricated by the firm. The panels of the Boar Hunt were placed in the Bush Terminal Sales Building, in New York City.

Figure 82. Top of window "The Boar Hunt" designed by J. Scott Williams.[29]

[28] *The Ohio Architect, Engineer, & Builder* 28, no. 2. (Cleveland, Ohio, The Ohio News Bureau Co.), 37.
[29] *Yearbook of the Architectural League of New York and Catalogue of the Thirty-fifth Exhibition*, 1920

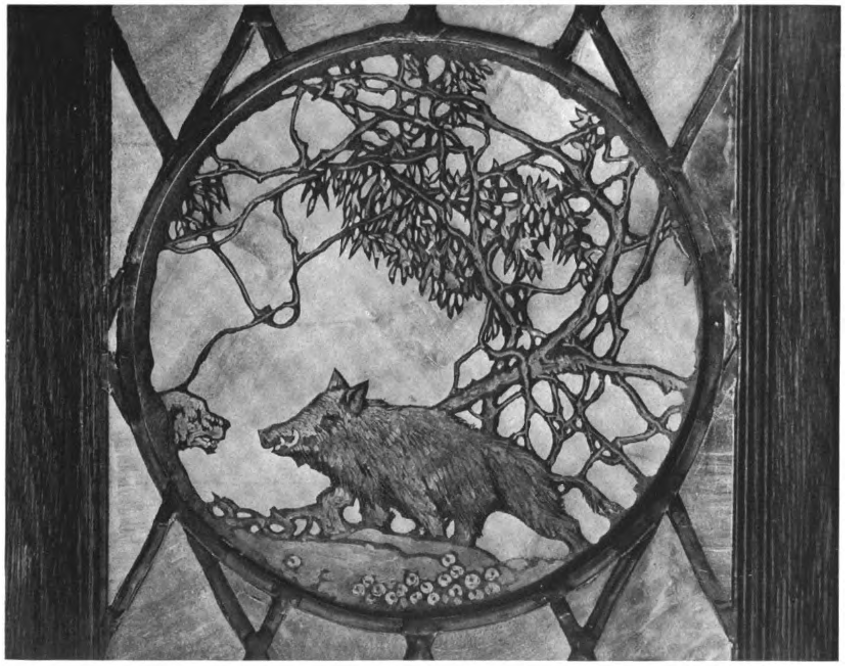

Figure 83. Bottom of window "The Boar Hunt" designed by J. Scott Williams.[30]

Henderson Brothers advertised in various national magazines and trade publications. The advertisements ran in conjunction with examples of their work in buildings in the trade publications. In the case of *House and Gardens Magazine*, Henderson's advertisement was placed in a volume featuring articles on home building including an article, "That Window Problem: The Types of Windows—The Question of Design and Utility Both Inside and Outside—The Practical Casement and Its Adaptability."[31]

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30 *Year Book of the Architectural League of New York and Catalogue of the Thirty-fifth Annual Exhibition*, 1920

31 *House and Garden* 33, no. 1, January 1913, (McBride, Nast & Company 31 East 17th St. NYC), 11.

Figure 84. Typical Henderson Brothers magazine advertisement.[32]

Henderson Brothers advertisements were usually small and featured images of leaded glass panels, often from commissions featured in the articles of that particular issue.

[32] *House and Garden*, 23, No. 1, (January 1913): 63.

pieces which do not pass through collect at the lower end, where they are taken out periodically and reburnt. If one's range is not near enough to the chimney the ashes may be taken out of the range in the usual manner and poured down a trap door in the right location. If the chimney is not found suitable, this sifting may also be done by using a galvanized iron chute instead of the chimney, in which case the ash may empty directly into one barrel, the coal into another; sifted and ready to be removed, without having been touched, or any dust had a chance to escape.

Among other labor-saving devices about the kitchens that have proved their worth are the plate warmer in the china closet. This may be either a small radiator which will also heat the closet or an electric or gas appliance. The radiator connected to the house heating plant is the simplest and least expensive, but only serviceable while the heat is on.

The china closet may also contain a safe, but if this is large we must remember its weight and provide for it.

There are innumerable contrivances and arrangements that may be inculcated into the plans for their betterment, but one of the very surest ways of getting the most satisfactory result is a very lavish expenditure—of time. Go to your architect in season, so that you will have plenty of time to mull over all the arrangements and rearrangements and re-rearrangements, so that you may feel sure that the final layout is the very best possible one, all things considered, and so rest content and immune from what we are told is the saddest of all words.

Inside the House

(*Continued from page* 43)

pies only a small amount of floor space, while in the average bathroom the wall space that it takes would most likely be turned over to one large window.

For the Butler's Pantry

AMONG the noticeable features of a recently completed house at Garden City, Long Island, is a rather new and decidedly practical form of the radiator that is furnished with a compartment for keeping dishes warm. Radiators of this description were originally designed for use in the dining-room, and in each was a compartment with one or two shelves and a door, constructed so that plates and even dishes of food could be kept hot indefinitely.

The newer scheme, as shown in the illustration, is the placing of the compartment radiator in the butler's pantry instead of the dining-room. The radiator is directly in front of the window, in what is generally conceded to be the best position for heating a room to good advantage.

Figure 85. Henderson Brothers advertisement, typical page placement.[33]

[33] *House and Garden*, 23, No. 1, (January 1913): 63.

Chapter 7

Ernest Henderson

> He (Ernest Henderson) worked out of a suitcase more or less. He knew all the glaziers in New York and he kept his stuff there. He would do this here and that there; most of his work was through Hofbraus and his work was right in front of him. He fixed swinging doors, they got broken and all this kind of thing.[1]
>
> *Gordon Henderson*

Figure 86. Business card, c. 1920.[2]

Ernest Henderson entered the world on December 22, 1881 in Chicago Illinois.[3] Exact birth records have remained elusive; according to Gordon Henderson, Ernest's father died when he was a child. William Henderson married the widow and adopted Ernest; those records too remain beyond reach.[4] Born into the glass trade, Ernest Henderson worked at it his entire life and continued to produce small panels up to his death in 1972.

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[1] Gordon Henderson Unpublished Autobiography.
[2] Author's collection.
[3] Ancestry.Com. U.S. World War II Draft Registration Cards, 1942—Draft Card.
[4] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.

Figure 87. Ship panel fabricated by Ernest Henderson, age 90, c. 1971. Original size: 10 X 7 ½ inches.[5]

[5] Author's collection.

Son Gordon called him one of the best and most versatile craftsmen of his generation. Given his heritage and later background working at other firms, it would be hard to dispute.

Figure 88. E. Henderson glazing plaque, note leaded ornaments set on copper. Original size: 7 ¼ X 3 ¼ inches. [6]

Figure 89. E. Henderson glazing plaque, with light passing through.[7]

[6] Author photograph.
[7] Ibid.

Ernest Henderson grew up in the newly rebuilding city of Chicago; then New York City. He was caught up in the incredible burst of American energy that remade the country at the turn of the Twentieth Century. As a young man, Ernest Henderson witnessed and was part of what was then the greatest period of growth and technological change in history. It must have been both chaotic and exciting for a young man with a good job. He married Isabella Veronica Mahoney, and while living in New York City daughter Alice was born in 1908. [8] Wanting a home in the suburbs he moved to Jersey City, New Jersey where sons Arthur and Walter were born.. From there, he moved to Rutherford where he bought a large two-family home with a two story carriage house. Gordon Henderson and younger brother Robert were born there. The carriage house was turned into a workshop and he had men working there.

Figure 90. Ernest Henderson's Rutherford home.[9]

[8] Ancestry.com. *1940 United States Federal Census* [database on-line]. Provo, UT, USA: Ancestry.com Operations, Inc., 2012, http://search.ancestrylibrary.com/cgi-bin/sse.dll?rank=1&new=1&MSAV=0&msT=1&gss=angs-c&gsfn=ernest&gsln=henderson&msydy=1930&msypn__ftp=rutherford%2c+NJ&gskw=census&uidh=000&_83004003-n_xcl=f&pcat=35&h=130888948&db=1940usfedcen&indiv=1&nreg=1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1&nreg=1, (accessed March 1, 2013).

[9] https://maps.google.com/maps?q=280+Carmita+Ave+Rutherford,+NJ+07070&sll=40.831555,-74.116275&cbp=13,71.52,,0,-4.85&cbll=40.831585,-74.116598&hnear=280+Carmita+Ave,+Rutherford,+Bergen,+New+Jersey+07070&t=m&panoid=RvZnLP6QNSWKFy8nlAwF9w&i

It is here that Gordon Henderson had his first conscious encounters with the trade.[10] During the Great Depression, the house was lost and the Henderson family moved into bank-owned homes; Ernest was hired to fix them and maintain them. When work was completed they would move on. This continued until they were able to buy another place and settle down. It was a transient life, but, for the family, all within the borders of Rutherford, New Jersey.

It is fortunate that Ernest Henderson left a large body of material related to his work. He was a careful businessman and kept good records of his important customers and commissions. Gordon Henderson states that he learned everything about business from his father so it may be assumed, given Gordon's practices, that there was considerable cash business "off the books". He was able to support his family through grit, determination, connections, and cleverness through the Depression years. William Henderson said to his son Ernest that he had more work than Henderson Brothers as a solo glassman, as the Depression wore on.[11]

Besides the business records and invoices, Ernest Henderson kept up a lively correspondence with potential and regular clients. After joining forces with his son Gordon, becoming Ernest Henderson and Son, Gordon's wife Barbara took on the task of typing letters and preparing bids and invoices. She meticulously maintained carbon copies filed by year. As a result, there is a fairly complete record dating from the 1940s forward.

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e=UTF8&hq=&ll=40.831671,-74.116688&spn=0.033251,0.084543&z=14&vpsrc=0&ei=YOxlUaDOJOqkxAGrlIDoBQ&pw=2 (accessed January 10, 2013).

[10] Gordon Henderson, Unpublished Autobiography.
[11] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.

In April 1965, Bruce Marcellus interviewed Ernest and Gordon Henderson at their shop located at 50 West Erie Avenue, Rutherford, New Jersey. Marcellus worked for Hugh McKean, then president of Rollins College, in Winter Park. Florida. McKean had earned a fellowship from the Tiffany Foundation and painted at Laurelton Hall, Tiffany's fantastic Long Island estate. There he met Louis Comfort Tiffany whose goal was to allow young artists the freedom to work at their chosen art in the beautiful surroundings of his vast estate. There, surrounded by the wide variety of Tiffany work, set in almost surreal surroundings, enveloped by the beauty of well-planned gardens, and over-looking the Long Island Sound, Morse painted. Tiffany took the time to view and encourage these artists in their work. Long after Tiffany's death, McKean, married to Janet Morse (one of the world's richest women), started collecting Tiffany materials. After a fire at the estate, Tiffany's daughter contacted McKean to salvage and rescue what he could.[12]

Through a complicated series of events, Gordon Henderson became involved with initial restoration of some of these items and McKean found out that Ernest Henderson had worked for Louis Comfort Tiffany. Marcellus traveled north with tape recorder and camera and a lively interview occurred. Gordon Henderson often mentioned this interview. The original tape is missing, but the Morse Museum provided a transcription which runs fifty-two double-spaced pages; an invaluable document in many ways. It brings to life Ernest Henderson and some of the men with which he was associated.

Finally, Ernest Henderson was a collector of stained glass materials, artifacts, and tales. He once owned a Tiffany Apple Blossom Lamp, of which he was very proud. During the Great Depression, his wife forced him to sell it. A local lawyer bought it and

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[12] Hugh McKean, *Lost Treasures of Louis Comfort Tiffany* (Garden City, NY: Doubleday & Company, Inc., 1980), 144.

hung it above his dining room table where it could be seen quite prominently from the street. Gordon Henderson said that his father stopped walking by that house because he was so mad he had to sell the lamp.[13] In his travels and work, Ernest Henderson kept track of family artifacts and reacquired them as he could, something Gordon would continue. Through their efforts, many Henderson Brothers artifacts were rescued; the fate of other studios' materials—the waste bin. Ernest Henderson enjoyed talking about his experiences and most likely, like Gordon, repeated many of the same stories to each new audience and often to the same old audience. Gordon never tired of those old stories and added his own detailed interactions with the men with whom he associated, the clients who commissioned him, and situations where he worked.

Ernest Henderson described his own father as a tyrant.[14] Gordon's son Todd described his grandfather Ernest as a "bastard."[15] Gordon himself has been described in similar terms. These men faced tremendous challenges in a field that was not particularly lucrative; always living from job to job and having to "Collect your money," as Gordon would say. Anyone might become a bit testy raising a family, making it through the Great Depression, surviving multiple wars, dealing with changing tastes and competition while working long hours, often seven days per week.

There was much to learn. Ernest Henderson, like many of the men in his field, was not formally educated; he developed his own extensive knowledge of art, architecture, design, and history. In studying letters and speaking with others who knew many of these men, it can be said that they were "characters" in a positive way. Unschooled as they were, they knew their trade, its history and potential; they were interesting and

[13] Gordon Henderson, interview by author, Towaco, NJ, February 24, 2007.
[14] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[15] Todd Henderson, interview by author, Towaco, NJ, November 1, 2010.

interested. Ernest Henderson passed these traits on to son Gordon who followed in his footsteps in many ways.

Ernest and Gordon Henderson were interested in preserving the history of the trade and its practitioners because of their personal connections and to create interest in their work; promoting the past was good for business. Gordon always felt that it was important to remember these men and not have their lives fade away into obscurity. One of the critical discoveries made while researching this project was the accuracy of Gordon Henderson's memory. Even if he misspelled or mispronounced an occasional name, his memory was uncanny. He told many stories which were later verified while researching this project. Ernest's habit of repeating his stories led to the oral history carried forward by Gordon, who repeated the same stories; now digitally recorded.

Ernest Henderson was in the stained glass studio from a young age, learning all the jobs a youngster would be allowed. By the age of ten he was a competent shop worker working at the lead mills and extruding machines, both of which he mastered.[16] A lead mill was part and parcel of larger firms. Dies could be changed to produce different cames as needed. Ernest Henderson stated, "In the olden days that [came] was drawn with a handle on it, like you grind an organ to draw the lead out and it was quite tedious to do the work in that day."[17] It took two people to do this job; one to turn the crank and the other to put the lead blanks in and to draw it out the other side. As a teenager, his salary reached three dollars per day, a respectable wage, but with a fifty-five hour week.

[16] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[17] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.

In his late teens, he left his father's employ over the issue of not getting paid and hours. He was required to be the first man in and the last man out.[18] Another story is that Ernest's step-brother sold a piece of glass to a glazier from down the street and kept the money, it was fifty cents or a dollar. His father found out and blamed Ernest; a dispute ensued and so he decided it was time to leave.[19]

Figure 91. Ernest Henderson c. 1900, age 19.[20]

Ernest Henderson was next employed by Tiffany Glass & Decorating Company working at the 44th Street location. He was hired because of his proficiency in gage cutting, particularly useful for creating the many pieces of glass used in lamps and mosaics. One of the jobs he worked on was the famous Dream Garden mosaic from a design by Maxfield Parrish. This mosaic is located in the Curtis Publishing Building in Philadelphia, Pennsylvania; at the time it was the largest mosaic installation in the United States. Tiffany's patented favrile glass was ideally suited to reproduce the brilliant colors

[18] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.
[19] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[20] Author's collection.

and tones of Parrish's style. While at Tiffany's establishment, Henderson made twelve dollars per week, but he got paid.[21] Ernest Henderson only worked for Tiffany briefly, stating that one could go crazy standing at the bench cutting little pieces of glass all day.[22] "I worked for Mr. Tiffany . . . I didn't work there so long because my father was in business . . . We had plenty of work but like a young fella I wanted to get over around the lampshades . . . you know and play around with that stuff which I did. I didn't work for him but a few weeks at 335 4th Avenue, in New York."[23] He did get to meet Louis Comfort Tiffany in the shop and witness his demand for perfection in every aspect of production. Ernest Henderson stated, "He wanted things right; he wanted the Tiffany way . . . he certainly knew what he wanted and if you didn't live up to expectations, why you got the shoves."[24]

Henderson worked with one of Tiffany's significant innovations—drapery glass. Ernest described the work:

> I'd have the pattern laid out of the figure, for instance, like this. I'd have to take that glass, whatever color tint that he wanted in the gown—blue, amber, or white—and I'd have to hold the pattern up to the pieces of this Tiffany glass—drapery glass, it's called—in order to . . . to get as near as I could to the fold as the artist laid out on the paper. We worked six days a week first I started at 7:00 then they changed it to 7:30 until 5:00. On Saturday we only worked until 3:00.[25]

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[21] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.
[22] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.
[23] Ibid.
[24] Ibid.
[25] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.

Figure 92. Drapery glass.[26]

Figure 93. Close-up of drapery glass. *On right;* note how iron bar is cut to allow for glass.[27]

[26] Author photograph.
[27] Author photograph.

Ernest Henderson worked as a cutter for J. A. Whaley and Company, a New York firm located at 188 5th Avenue specializing in stained glass lamps.[28] He considered these lamps to be the best produced next to Tiffany lamps. Henderson stated that, "I didn't work for him too long, I didn't work for any of them for too long, my old man was after me all the time. He needed me for making dies and what not."[29]

Figure 94. J. A. table Whaley lamp.[30]

Ernest Henderson worked at Erkins Studio, a specialist in mosaics, imitation stonework reproduced in concrete, and statuary in a variety of materials. Erkins would send to Italy for a statue. At his firm they would make a mold and reproduce the statue

[28] *The First Annual EMF Electrical Yearbook*, (1921): 644.
[29] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.
[30] Herne Hill, "J. A. Whaley Table Lamp, From an Auction by Howard Booher," leadedlamps.com, http://leadedlamps.com/howwhalettulip1.htm, (accessed 12/23/2012).

from the original design. This saved him a great deal of money on artists.[31] While there, he learned how to set glass into concrete for planters and benches. Henderson produced outdoor game/side tables and benches using this process. Gordon Henderson would later produce these items with his father and on his own. Some of these tables created by the Hendersons in the early 1940s adorned the backyard of Gordon Henderson's home at his wife's death in 2011, looking not the worse for wear.

Figure 95. Cement mosaic glass tabletop fabricated by Ernest Henderson using an original Henry Erkins pattern, c. 1946.[32]

His next move was to Pittsburgh Plate Glass, located on Hudson and Van Dam Street, New York City. They were looking for a foreman for their growing stained glass

[31] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.
[32] Author photograph.

department. Here they produced stained glass panels offered in their catalog and for sale in the Sears & Roebuck catalog. His pay jumped to twenty-one dollars per week.[33] A favorite story Ernest told to Gordon related to his intimate understanding of the cut-throat nature of the glass business—still a problem. Ernest Henderson was sent to Mount Vernon, New York to supervise a job and was gone for a few days.

> Upon returning to the shop he saw a new man at the bench. He asked him what he was doing; he said, "Me make nice." The old man said, "Get your coat and leave." He then called a meeting and explained that this fellow had a glass and mirror shop two blocks away and only came to learn. He told them that they would find him doing a job for six or eight dollars that they would get twelve or fifteen dollars for.[34]

While at Pittsburgh Plate Glass, he realized that many people were coming in to have leaded glass windows repaired, paid for by insurance companies. After some looking around, Ernest Henderson went to the offices of the Commercial Casualty Company where he spoke to a Mr. Wilkerson who after a conversation said, "You're just the man we want. We're sick and tired of this stuff going out to the regular glaziers."[35] So he quit the job at Pittsburgh Plate Glass, got a New York post office box and went into business for himself; he remained self-employed for the rest of his life. He routinely, while living in Jersey City and later Rutherford, would travel into the City with a satchel containing his tools. Glass, lead, and other bulky materials were stored in acquaintances' studios or were available to him, including work space.

Ernest Henderson received an offer from a company in California that was building California bungalows. They were opening a stained glass shop and they offered him the opportunity to move to California, open, and manage the facility. He called his wife and

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[33] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.
[34] Gordon Henderson, interview by author, Towaco, NJ, December 27, 2006.
[35] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.

said, “Bella, we’re going to California.”[36] First he had his wife Bella double his price for the insurance work. When they kept paying he said, “The hell with California, I’m staying here in my own house.”[37] The orders kept coming and he was able to support himself and his family through the 1920s and 1930s this way. When the bottom dropped out of the economy, Ernest Henderson went to work for realty companies maintaining and living in houses in foreclosure.[38]

Even though Ernest Henderson left the employment of Henderson Brothers he worked with them and used their facilities throughout the life of the business; at times working to complete Henderson Brothers commissions when experienced help was needed. Gordon Henderson remembered his father talking about this and William Henderson telling his son, “You got more business than I got now.”[39]

One of the jobs Ernest Henderson did for Henderson Brothers was the work on the Statue of Liberty torch. “I wasn’t the foreman for the old gent because I worked for myself. I figured that I could make ten dollars or twenty dollars or fifty dollars a week more than the working man, see, and he knew it too—because I worked for an insurance company.”[40]

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[36] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[37] Ibid.
[38] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.
[39] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[40] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April, 1965.

Figure 96. Ernest Henderson repairing a stained glass panel in front of Henderson Brother's shop, 707 First Avenue, New York City, c. 1911-1916.[41]

After William and Robert Henderson moved to New York, their former associates, Flanagan & Biedenweg was having trouble with the extruded metal bars. When the bars came in they were like spaghetti and they could not work with them. They contacted

[41] Author's collection.

Henderson Brothers and Ernest Henderson was sent out to fix the problem.[42] Ernest Henderson showed them how to pull the bars and stretch them, the same you had to do with lead. He stayed on in Chicago as there was work in the shops of the Pullman Palace Car Company making stained glass for Pullman Cars.[43]

Flanagan & Biedenweg was located on the second floor of a building above a tavern which employed dancing girls. The girls changed in the downstairs bathroom. One day, Ernest noted that one could look along the steam pipe opening and see the girls changing. As he left to go home, he told one of the other men who promptly went to investigate. While peering through the hole, a glass cutter fell out of his pocket, through the opening, and the girls below heard it hit the floor. The hole was soon closed and the fun was over. Gordon Henderson always loved the stories told by the old-timers who were young men on their own, usually single, and with a few dollars in their pockets.[44]

Another trip to Chicago found Ernest Henderson working for Louis J. Millet. Millet, with earlier partner George L. Healy, had fabricated much of the stained glass work designed by noted architect Louis Sullivan. He maintained a solo studio from 1900—1923. During the 1903—04 St. Louis World's Fair, he served as chief of mural and decorative painting.[45] Ernest Henderson recalled that . . .

> I altered some windows for him for the St. Louis Exposition (the World's Fair in 1904.) One he wanted to lower the wing on it about one half inch and he said to me, "Henderson, be careful there, that wing is worth, that painting of that part of the wing is worth five hundred dollars." I'll never forget that there. So be careful with it because five hundred dollars wasn't FIVE CENTS in them days. So I fixed it all right. My father was also in the World's Fair.[46]

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[42] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[43] Ibid.
[44] Ibid.
[45] Sharon S. Darling, *Chicago Ceramics & Glass: An Illustrated History From 1871 to 1933* (Chicago: Chicago Historical Society, 1979), 105.
[46] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.

Ernest Henderson enjoyed a life of varied experiences and travel through his father's firm and his own work. He worked for and with some of the major names in American glass and decorating. Few young men of his generation and social class would have had the opportunities to have such experience. His stories and work influenced son Gordon to enter the trade and Gordon Henderson was able to meet and interact with many of the men with whom his father worked, some who had also worked with his grandfather.

Chapter 8

The Work of Ernest Henderson

> My old man knew how to get work. He'd patch something up, repair it. The nature of his work, particularly the tavern trade, things would get broken again and he'd get the same job over and over again.[1]
>
> *Gordon Henderson*

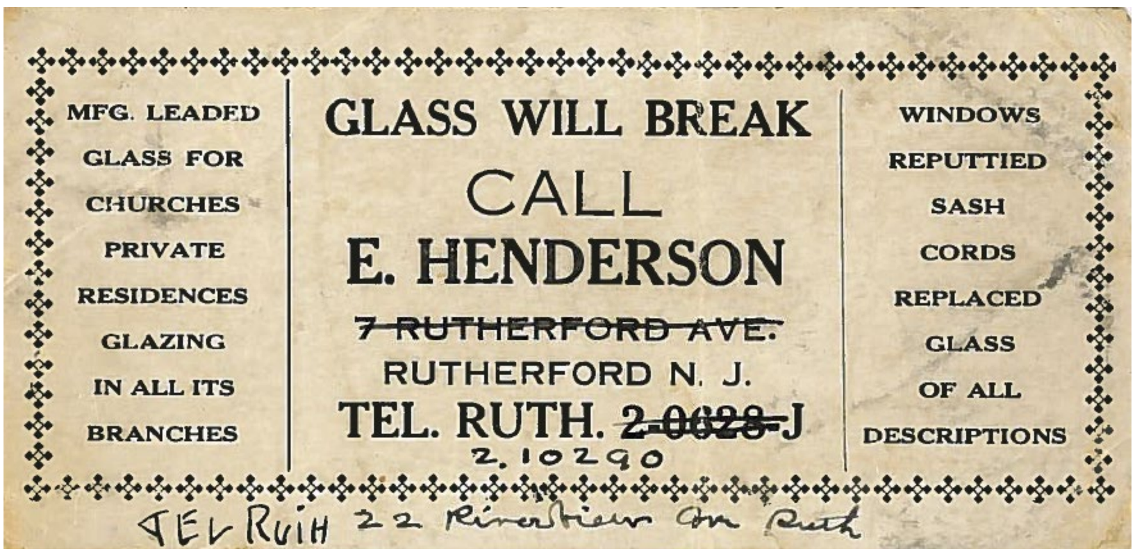

Figure 97. Advertising blotter, prior to 1940. [2]

Much of Ernest Henderson's work was initially in repairs. His full range of skills allowed him to take all types of work for all types of clients. He specialized in the same styles he learned working at Henderson Brothers and shared some of the same clients. His commissions came from the City of New York, churches, commercial builders and real estate concerns, architects, schools, and private residences. He worked with different artists and designers developing a life-long association with Frederic J. Kurtz. When he started out on his own, through the end of World War II, the majority of his work was in

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[1] Gordon Henderson, interview by author. Towaco, NJ, January 27, 2010.
[2] Author's collection.

New York City. Gordon Henderson stated, "I remember Benowitz, the hardware store man (in Rutherford, New Jersey) telling me years later, after my father passed, that he used to come down at 8:00 in the morning to put his awning down and every morning who comes down the street but your father, with his satchel, going to the train to New York."[3]

There was a lively trade with restaurants and taverns. Most cities and towns had ordinances requiring spaces where alcohol was served to be screened from the view of those in public areas and the street. Stained glass screens were very popular. Combining alcohol, stained glass, and crowds was good for the stained glass business. One of Ernest Henderson's significant clients in this field was August Janssen. Janssen's Hofbrau House on Broadway and 30th Street in New York was a favorite of his.

> He Made Famous the Slogan*, "Janssen Wants to See You,"* for His Hofbrau Haus From 1898 to 1938, the famous slogan, "Janssen Wants to See You," drew thousands of New Yorkers to the Hofbrau Haus at Broadway and Thirtieth Street, opposite the old Daly's Theatre. It was Mr. Janssen's custom to sound a bell whenever a new keg of beer was tapped, and as many as thirty were kept on tap at one time. In 1938 the historic Hofbrau Haus was merged with new quarters in the Graybar Building at Lexington Avenue and Forty-fourth Street, which had been opened in 1935. Mr. Janssen also had restaurants at Broadway and Fifty-second Street and in New Haven, Conn.[4]

In the family collection is a menu signed by August Janssen, "To My friend Ernest—Thanks for all of your good work!" Gordon Henderson remembers going to the Hofbrau House with his father and to Janssen's home for installations. Ernest Henderson installed and repaired glass at all of Janssen's locations.

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[3] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010
[4] "August Janssen Obituary," *New York Times,* November 17, 1939, 21.

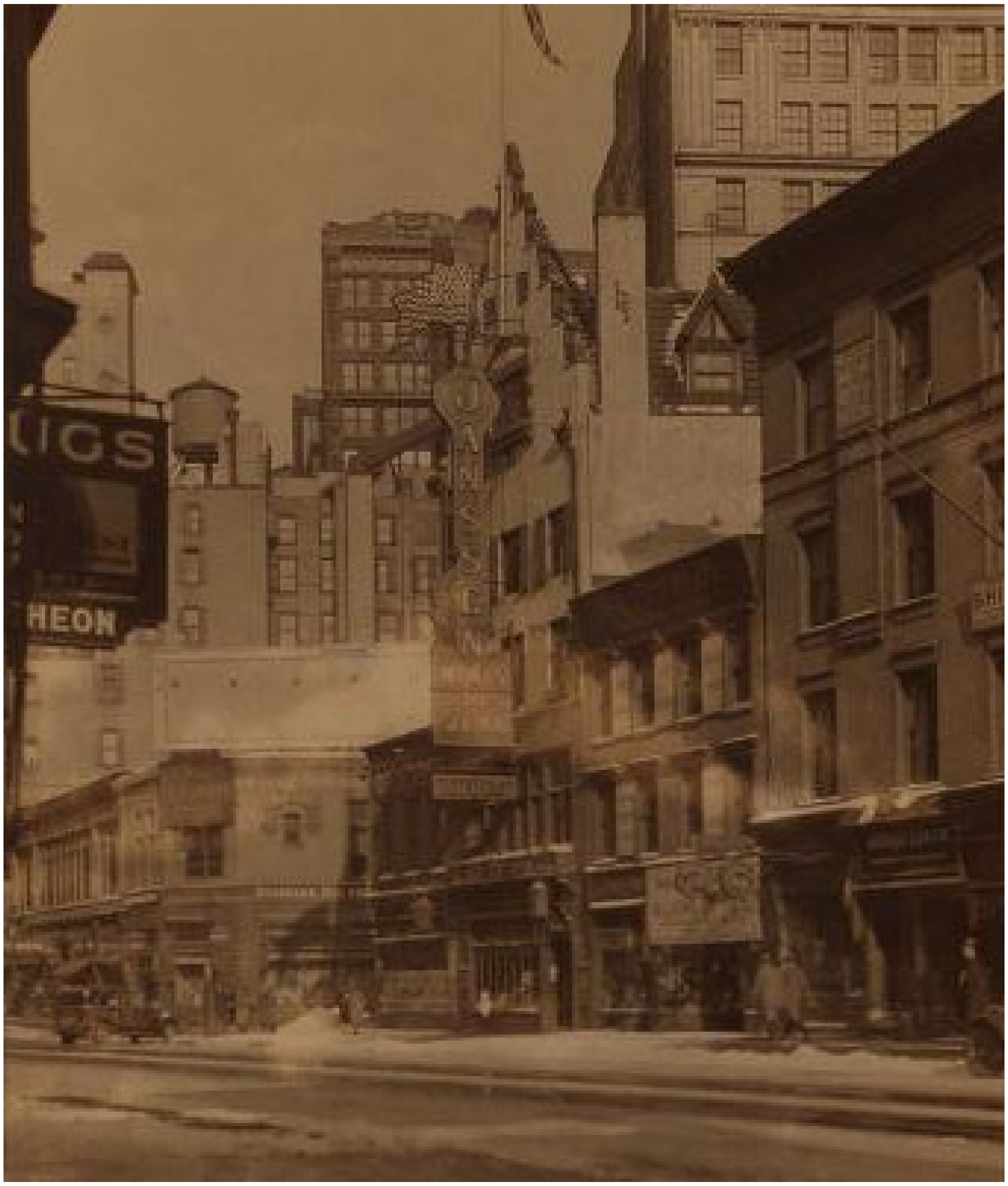


Figure 98. Janssen's Hofbrau House "Wants to See You", Broadway and 30th Street, New York City, Percy Loomis Sperr Photograph, c. 1928.[5]

[5] New York Public Library Digital Gallery, "Manhattan: Broadway – 30th Street (1928)," The New York Public Library, http://digitalgallery.nypl.org/nypldigital/id?717380f, (accessed October 21, 2011).

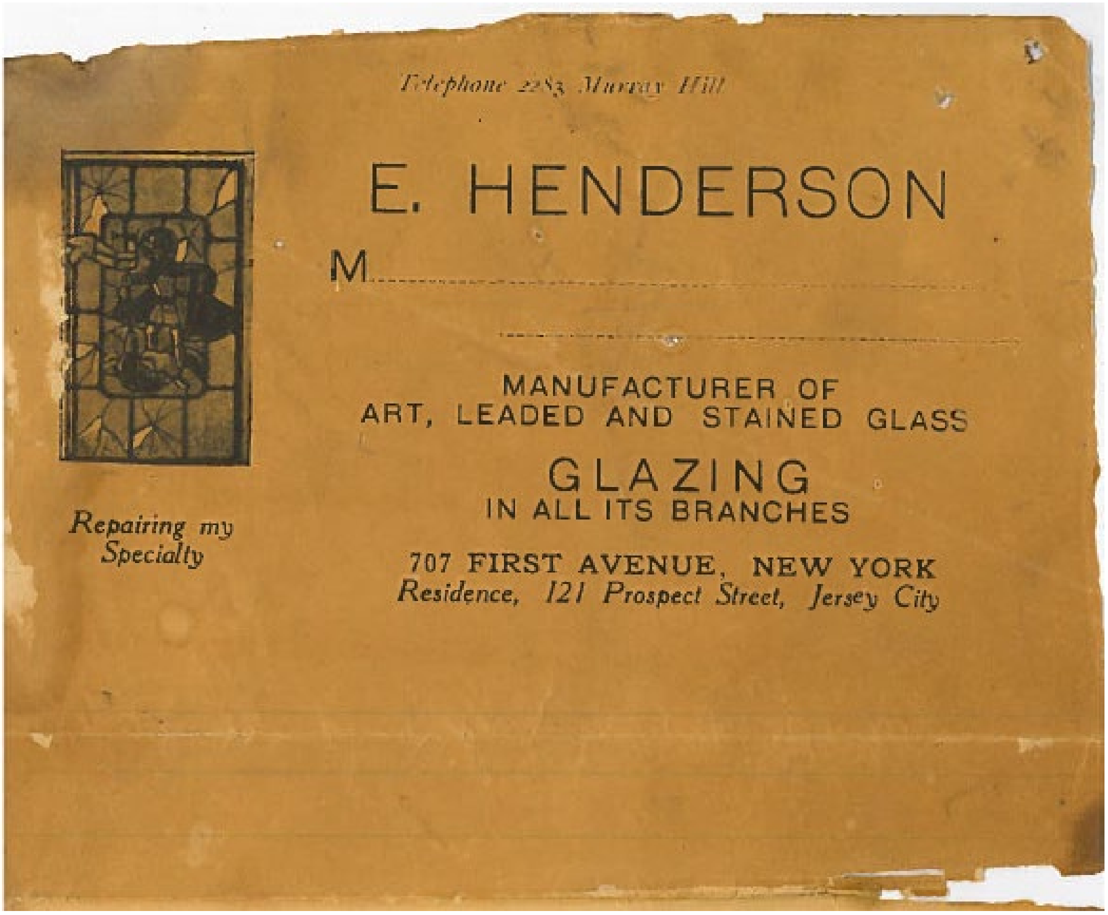


Figure 99. Ernest Henderson Top Half of Billhead, c. 1914.[6]

Ernest Henderson spent much of his early life in the cities of Chicago and New York. After marrying Isabella Veronica Mahoney, he moved to Jersey City because he wanted to get into the countryside to have a family. At this time he commuted into New York City and listed his father's business address as his own. Clearly, despite disputes, they managed to work together. Gordon Henderson, who never met his grandfather, said, "My old man never talked about his early years, for some reason or another there may not have been good feelings."[7]

[6] Gordon Henderson collection.
[7] Gordon Henderson, interview by author, Towaco, NJ, February 7, 2008.

Jersey City didn't provide the environment Ernest Henderson wanted for his family so he moved again, this time to Rutherford, New Jersey. There he found a big old house with a large carriage house; the horse stalls were still there. There was a second floor with an apparatus for grain storage; one pulled a rope and grain poured right into the feeder in the stall below. Builders would stop into the shop Ernest Henderson created there, bringing wooden sash. He would make a leaded glass window and glaze it in for them. He had a rule that each panel had to have at least twenty-four pieces of glass in it to make the money he wanted.

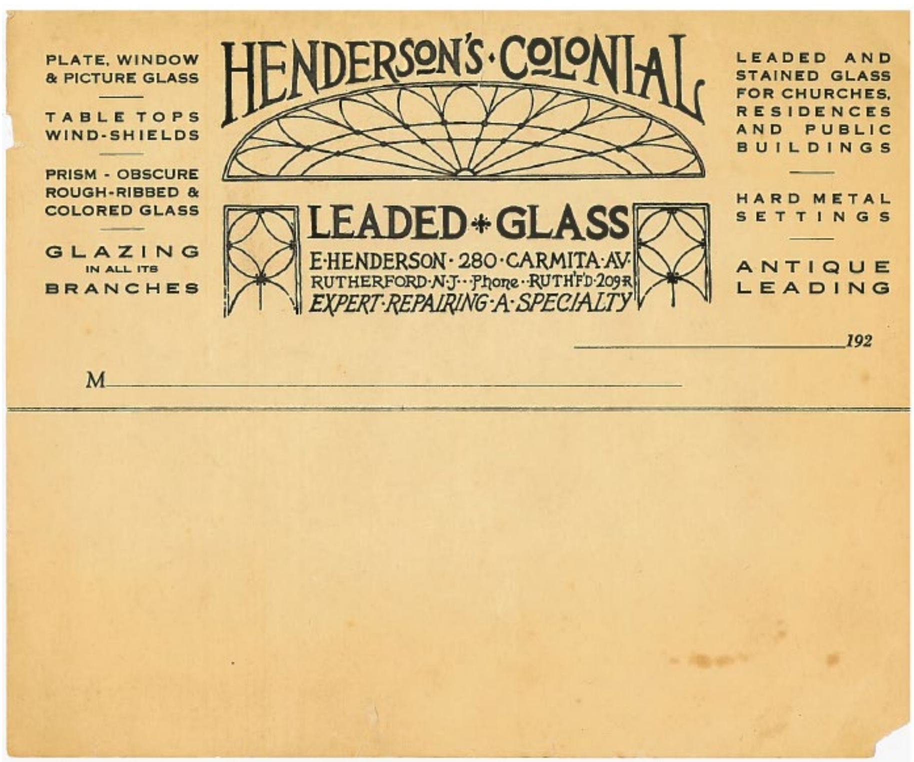


Figure 100. Ernest Henderson's billhead, c. 1920.[8]

[8] Author's collection.

It is here that Gordon Henderson had his first experiences with stained glass, sitting on a glazing bench, watching the men work, and playing with bits and pieces of things. At the age of six he began collecting drawings, little things that were discarded. Sometimes these things would be used to start the fire in the old metal drum on cold mornings. He later stated, “As a child I thought this was a waste. I still have some of those drawings and sketches.”[9]

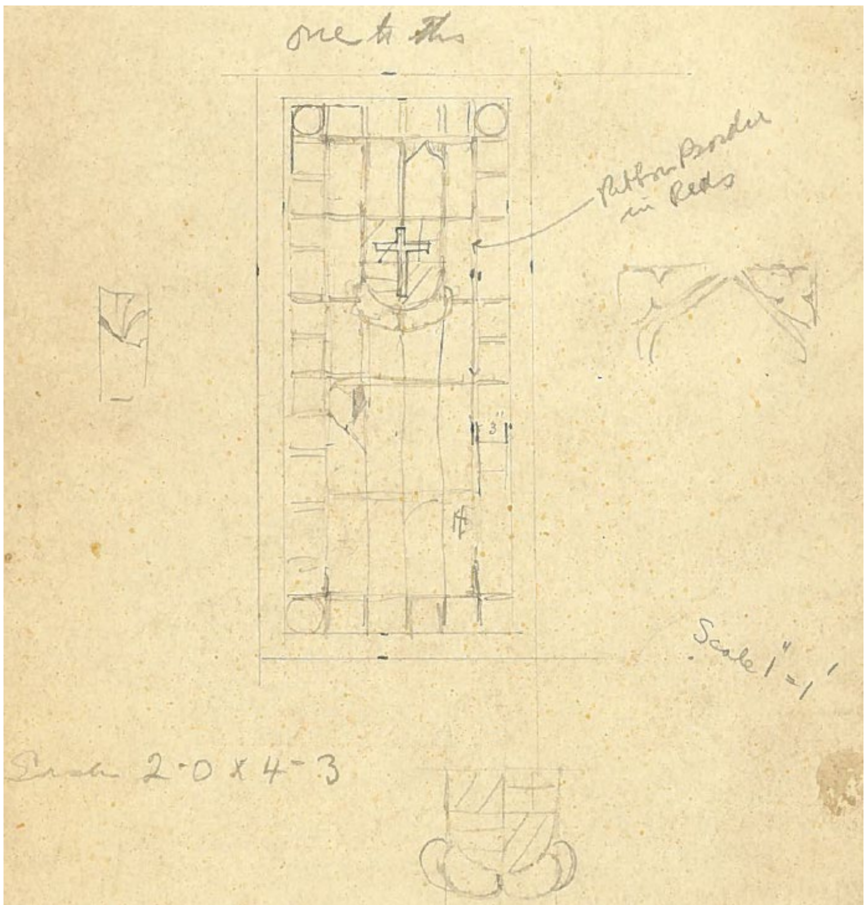


Figure 101. Sketch for church window, original size: 6 ½ X 9 ¼ inches.[10]

[9] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[10] Author’s collection.

Figure 102. Sketch for windows, labeled on back: Justin Mc Aghon, Architect 247 East 43rd St, New York School—St. John's. Original size: 6 X 6 ¼ inches.[11]

[11] Author's collection.

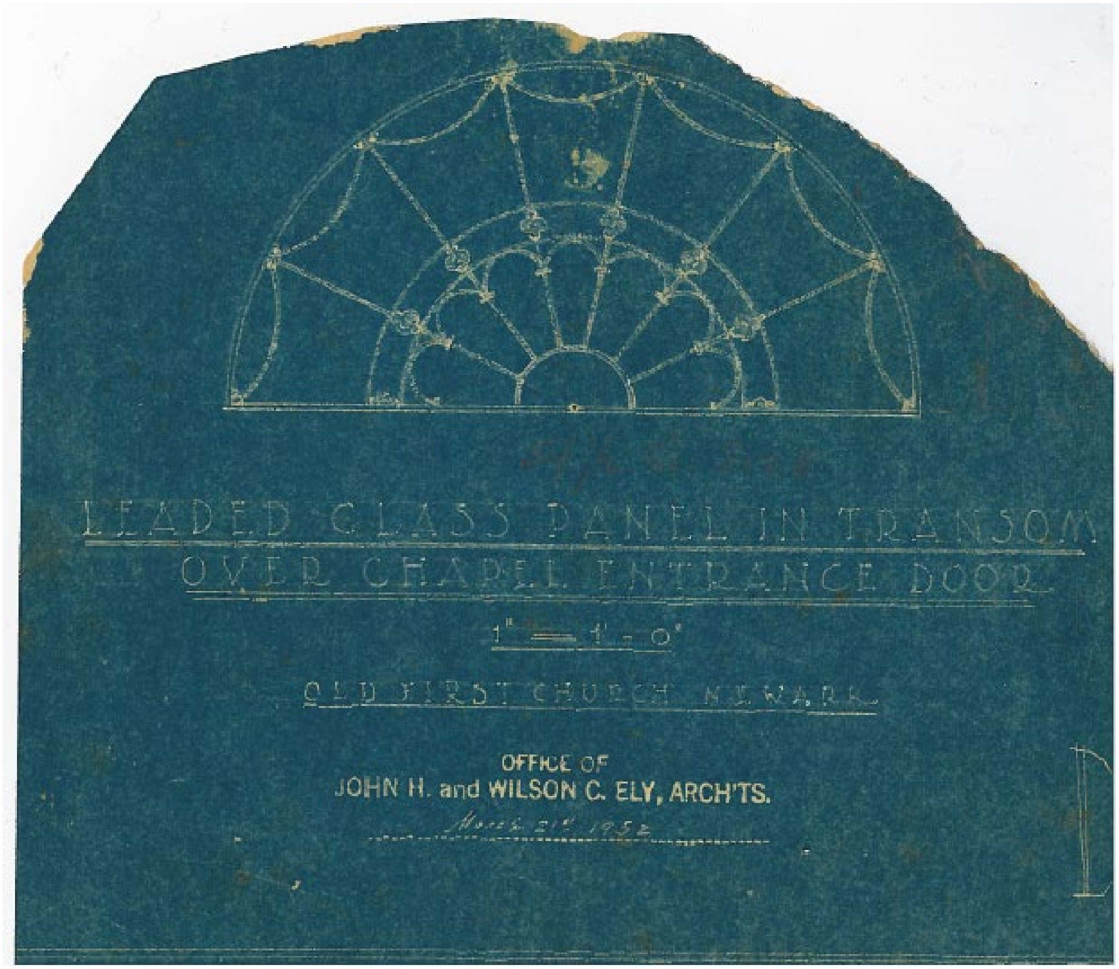
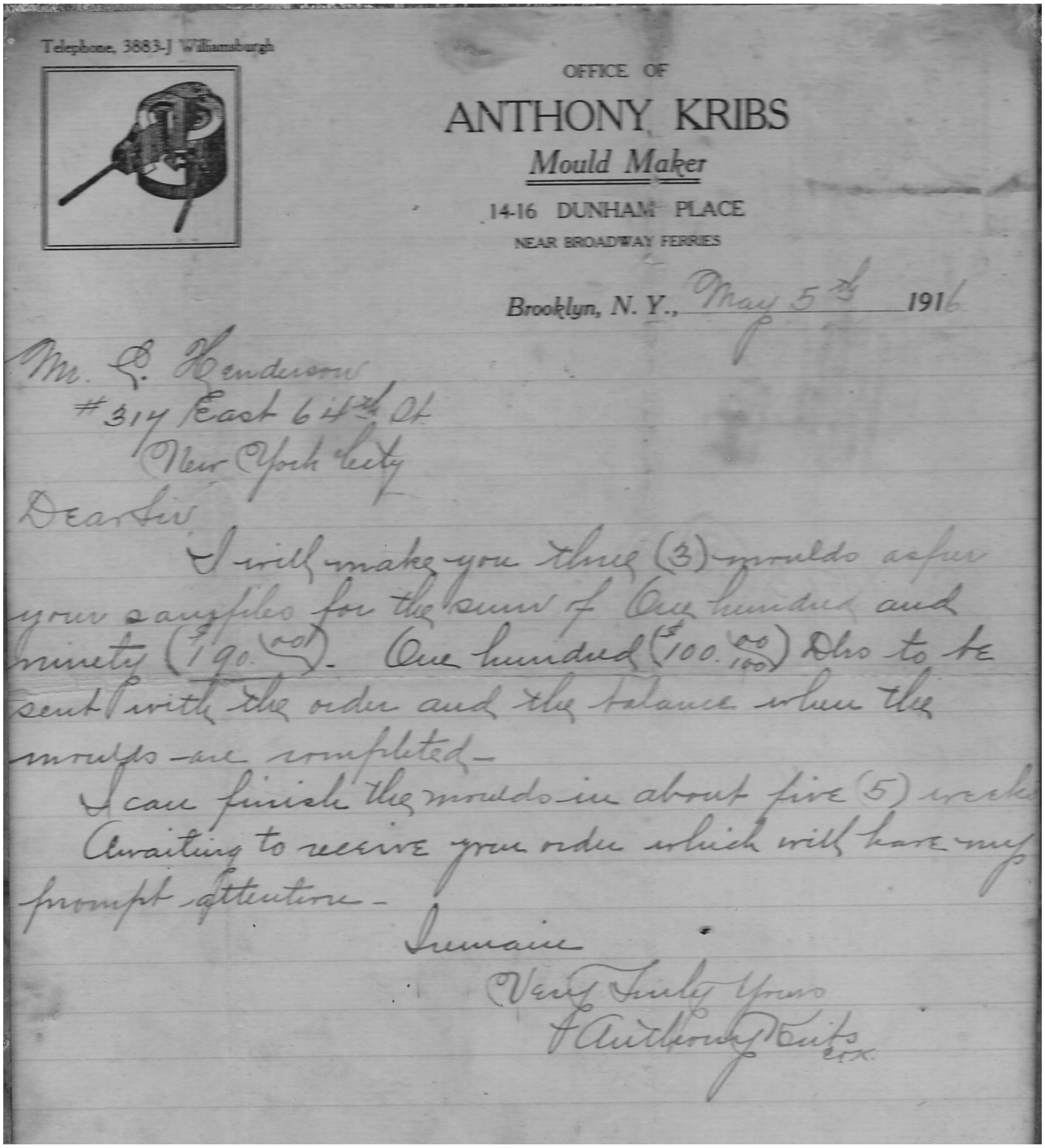


Figure 103. Blueprint fragment, leaded glass transom, Old First Church, Newark, New Jersey, c. 1932.[12]

The above transom is typical of Henderson Brothers Georgian Colonial produced by Ernest Henderson throughout his career. The style remained important until the start of World War II. After the war, it largely fell out of favor. Repairing leaded glass of this style remained a specialty of both Ernest and Gordon Henderson.

Ernest Henderson, out on his own, built up his stocks of materials. He was skilled in creating the patterns for lead ornaments and needed his own molds. In 1916, he sent samples to be produced into molds.

[12] Gordon Henderson collection.



Telephone, 3883-J Williamsburgh

OFFICE OF

ANTHONY KRIBS

Mould Maker

14-16 DUNHAM PLACE

NEAR BROADWAY FERRIES

Brooklyn, N. Y., May 5th 1916

Mr. E. Henderson
#317 East 64th St
New York City

Dear Sir,

I will make you three (3) moulds as per your samples for the sum of One hundred and ninety ($190.00). One hundred ($100.00/100) Dlrs to be sent with the order and the balance when the moulds are completed—

I can finish the moulds in about five (5) weeks

Awaiting to receive your order which will have my prompt attention—

I remain

Very Truly Yours

Anthony Kribs

Figure 104. Letter confirming order for lead ornament molds.[13]

[13] Gordon Henderson collection.

Figure 105. Plaster molds created by Ernest Henderson for the mold-maker in a favorite theme—the spider and the fly. Original size: 6 X 3 ½ inches.[14]

[14] Author photograph.

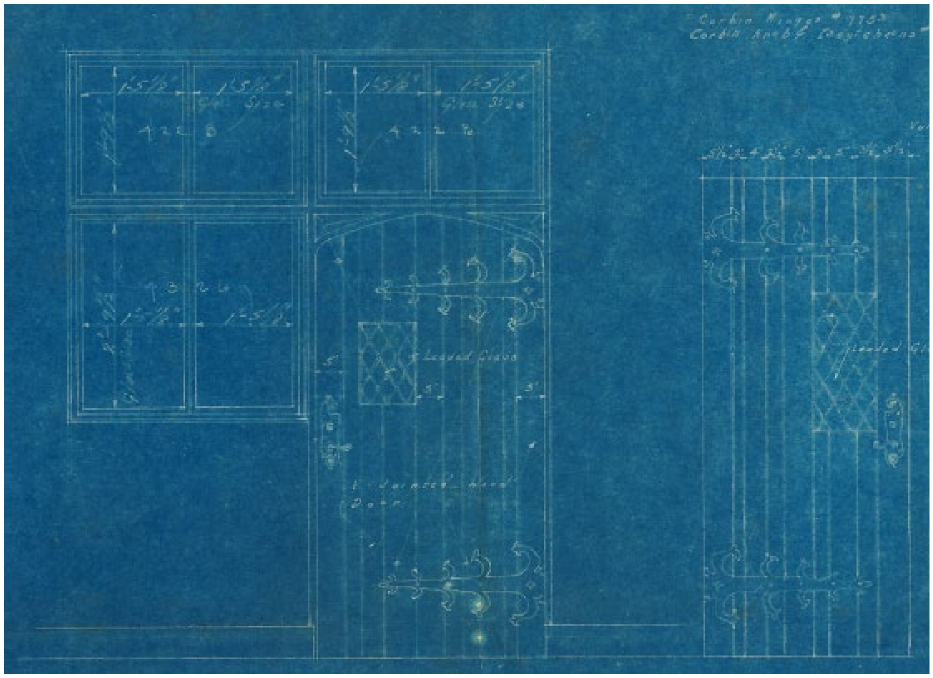


Figure 106. Blueprint, doors with leaded glass inserts, c. 1928.[15]

A charming story told by Gordon Henderson involved a visit to Robin Hood Village, a community of homes in the English Tudor style being developed in Short Hills, New Jersey. On this occasion, Fred Kurtz accompanied Ernest and Gordon Henderson to a building site. Each of the doors had a small leaded glass panel. The entryways were also embellished, some with little scenes designed by Kurtz. While Ernest Henderson conversed with the developer, Gordon's curiosity got the best of him and he wandered over to the edge of a foundation excavation. The top of the excavation gave way and down he tumbled into the mud and water at the bottom—in his only set of good clothes. Needless to say, Ernest Henderson wasn't too pleased but Gordon remembered him

[15] Author's collection.

laughing with the others as they used a ladder from the site to fish him out of the foundation hole.[16]

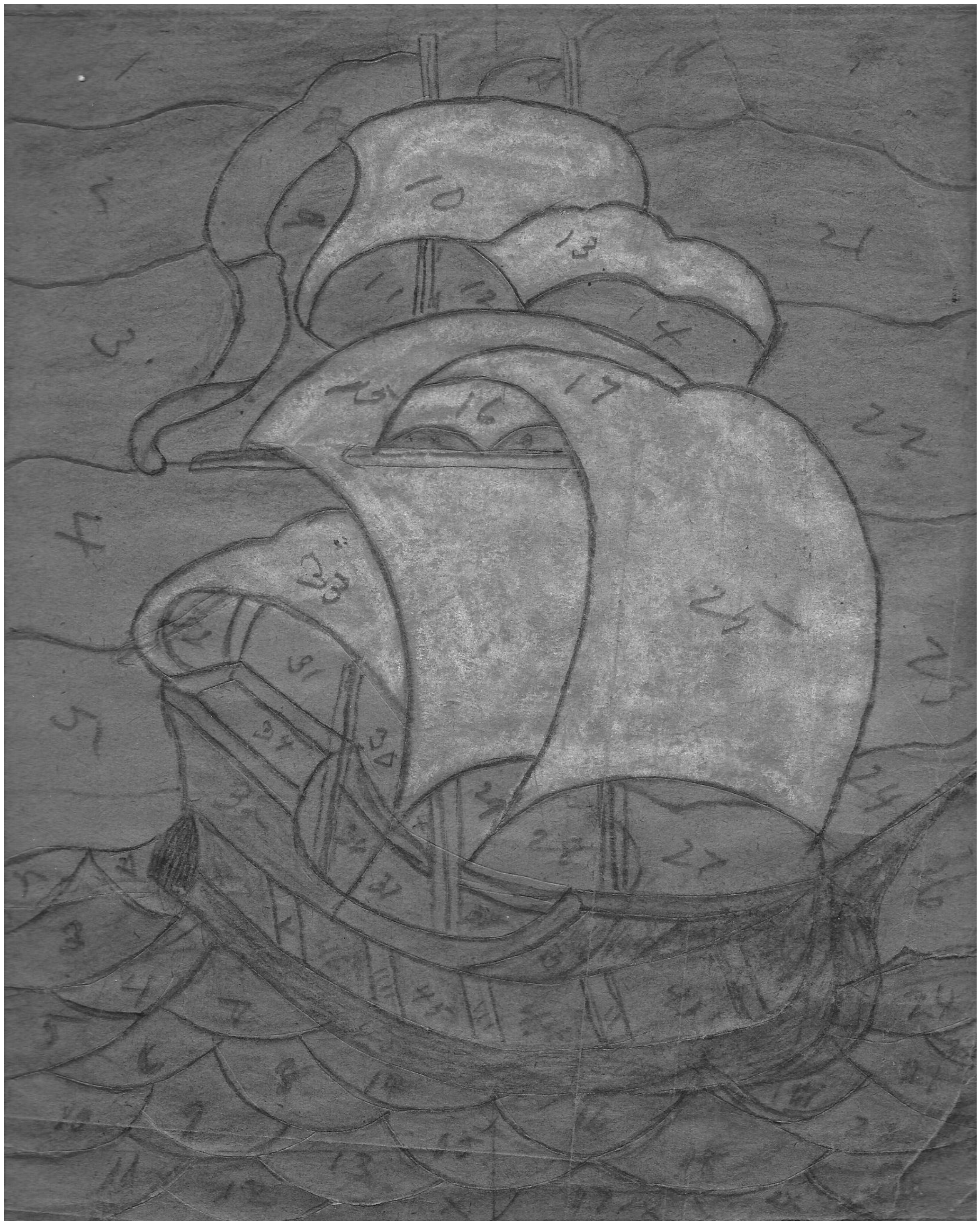


Figure 107. Sketch for leaded glass panel similar to what might be placed in an entryway, from the studio of Ernest Henderson, artist unknown, c. 1920s. Original size: 11 ½ X 9 ½ inches.[17]

[16] Gordon Henderson, interview by author, Towaco, NJ, March 18, 2007.
[17] Author's collection.

Figure 108. Vent for the Biltmore Hotel,
New York City, c. 1915.[18]

Ventilators were an important part of Ernest Henderson's business, an aspect of the trade he learned working for his father. In the second decade of the Twentieth Century, Ernest Henderson installed and maintained ventilators at the Biltmore Hotel. He glazed them in both lead and hard metallic settings. Ventilators had to be custom designed for each installation to match the current or new glazing. Some were designed to be unobtrusive and some were decorative. Ernest Henderson developed a ventilator using "bubble glass" or bent and curved glass for ventilators.

[18] Ernest Henderson photograph, author's collection.

Figure 109. Bent and curved glass ventilator designed and fabricated by Ernest Henderson.
Original size: 16 X 9 inches.[19]

Ernest Henderson associated with some of the finest stained glassmen, artists, and studios of his era. A sampling of names creates a sense of his place. He grew up in the Henderson Brothers' shop with George Durhan, moonlighting with him on jobs. J. Gordon Guthrie later worked for Durhan Studios, where Ernest Henderson came to know him. Ernest Henderson associated with Montague Castle, whose self-named studio (and a great name at that) produced excellent work which can still be found in metropolitan area churches. He produced a window that was in the office of Charles Dana Gibson, an

[19] Author photograph.

acquaintance of Ernest Henderson. The decorated circles below are three of a panel consisting of flowers, plants, and insects that Gibson's wife later gave to Ernest Henderson. Over time, the panel was damaged. Gordon Henderson re-glazed the window and it was on display in his sitting room. These pieces were left over.

Figure 110. Decorative circles, Charles Dana Gibson office window, designed and fabricated in the Montague Castle Studio, New York. Original size: 2 inches in diameter.[20]

The most important collaborator in the career of Ernest Henderson was Frederic J. Kurtz. Kurtz was the same age as Ernest and had the distinction of working with all three generations of the Hendersons. He designed for Henderson Brothers, worked closely with Ernest Henderson as a designer and painter, an association and friendship that would later be mirrored in the relationship between Gordon Henderson and William F. Baker.[21] He also served as a mentor to Gordon, and an inspiration to his work. Ernest Henderson spoke of Fred Kurtz:

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[20] Author's collection.
[21] Gordon Henderson, interview by author, Towaco, NJ, May 9, 2007.

> He could take a pencil and in ten minutes he'd have you sketched. Maybe half an hour and he'd have the whole of you sketched with that pencil, he was fine at it. He was a wonderful man. Bernard Gimball, he told him, "You want to go out there, Fred, to Gettysburg," he said.
>
> He could do anything. He could design and cut glass and make the window himself. He had a place on 44th Street on . . . off Third Avenue. He had a store there and he was an economical fella and he . . . uh . . . didn't give anything away, but whatever I wanted, he . . . uh . . . I was welcome to it.[22]

Fred Kurtz moved to Gettysburg, Pennsylvania in the early 1930s; opening a little studio in his home he called The Corner Shop. He made pottery in two home-made wood-fired kilns using local clay, restored furniture, painted water colors and oil paintings, made silhouettes, and produced stained glass.[23] Ernest Henderson sent him glass to be painted after he moved; Kurtz continued to design for him from a distance. Fred Kurtz designed a window for a church after an explosion at the Hercules Powder Plant in Kenvil, New Jersey blew out many windows in the surrounding towns on September 12, 1940.[24] Gordon Henderson possessed a sketch signed by Kurtz of these, but was unsure of the location of the church.[25]

The Hendersons sent supplies such as lead and solder, not easily obtained in rural Pennsylvania. He also requested in a letter that:

> I could use some ½ - ¼ flat and ¼ round lead if it is possible to get some. Do you know where I could get some light tints of glass to paint on—like antique or smooth cathedral. Also some darker blues, greens, ruby and purple and ambers. I wonder if Popper's would have some small sizes of these—much of the things I do are small and I do not need full sheets.[26]

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[22] Ernest Henderson, interview by Bruce Marcellius, April,1965.
[23] Frederic J. Kurtz to Ernest Henderson, letter, January 10, 1949.
[24] "The Explosion at the Hercules Powder Factory of Kenville, New Jersey on September 12, 1940," *RoxburyNewJersey.com*, The Roxbury New Jersey History Website, http://www.roxburynewjersey.com/hercules.htm, (accessed October 21, 2011).
[25] Gordon Henderson, interview by author, Towaco, NJ, April 4, 2007.
[26] Frederic J. Kurtz to Ernest Henderson, letter, November 3, 1949.

Figure 111. Last surviving windows by Fred Kurtz at his “Corner House.”[27]

Figure 112. Details of painted rondels by Fred Kurtz at his “Corner House.”[28]

[27] Author photograph.
[28] Author photograph.

Fred Kurtz was quite a character; in a letter to Ernest Henderson he inquired about purchasing a kiln because he had glass to fire. “In the meantime,” Kurtz stated, “Do you know where I could have some glass fired—not Spiers—He very kindly done some firing but would not accept payment so I’d rather have some one who would do it as a business proposition.”[29] Eventually they shipped out a kiln so he could fire glass.

Kurtz occasionally travelled to New Jersey to visit a brother living in Lyndhurst and his son living in Wayne. Gordon recalls him visiting with his father during those trips. Kurtz was a versatile artist but his favorite painting style was very Medieval and traditional, although he was not limited in what he produced by this. Kurtz was very well known in the New York art circles and frequently had works in City galleries.

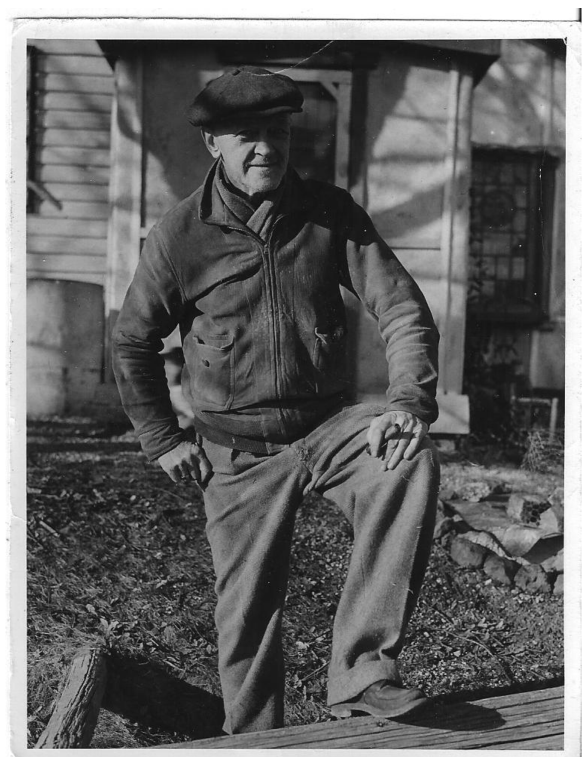

Figure 113. Fred Kurtz in Front of the Corner House, c. 1950.[30]

[29] Frederic J. Kurtz to Ernest Henderson, letter, November 3, 1949.
[30] Photograph used by permission of Emily Matthews.

Figure 114. Parrots, designed by
Frederic J. Kurtz, c. 1950. Original size:
17 ¼ X 19 inches.[31]

Ernest Henderson stated, "I told Fred that I wanted to make a couple of parrots and he drew that out."[32] His skill and comedic sense are given full play. The panel survived in the collection of Gordon Henderson. The collaboration between Ernest Henderson and Frederic J. Kurtz continued until Kurtz's death in 1963.

During World War II, Ernest Henderson continued his work, mainly in repairs. Little new work was being commissioned and resources were scarce. Lead and solder (60/40 and 50/50, lead to tin ratio) were in short supply. Old-time glassmen knew how to find materials haunting junkyards and scrapyards searching for materials discarded by plumbers and builders. Old sheet lead was cut into strips and fed through the lead mills. Solder, lead joints, and lead packing for plumbing and piping was retrieved, melted, and

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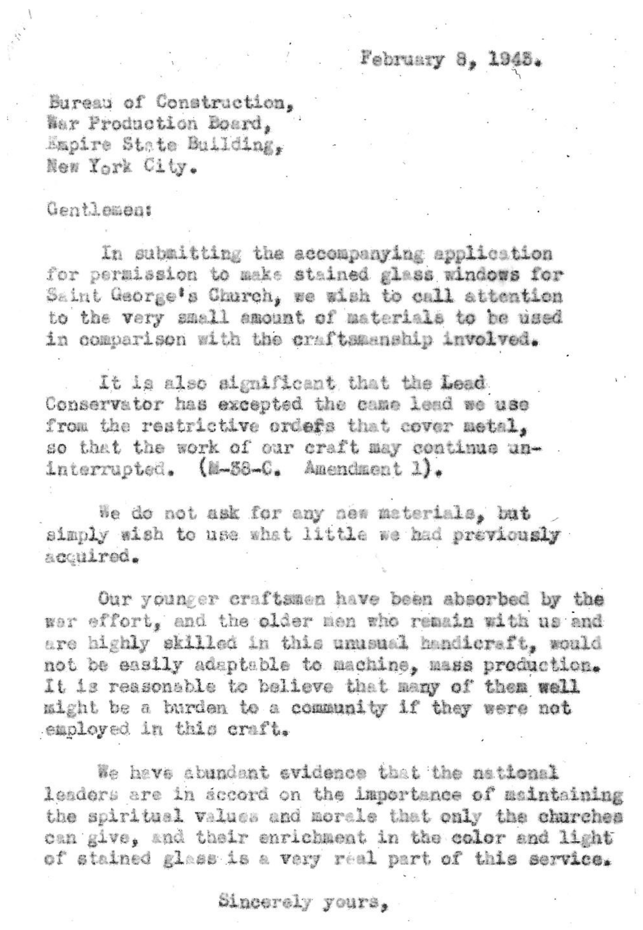
[31] Author photograph.
[32] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April 1965.

poured into strip molds to make new solder. All new work had to be approved by the War Productions Board.

Of course, dealing with a government agency during a world war was a challenge. Even the large firms had to overcome bureaucratic roadblocks. In 1941, Charles J. Connick was trying to complete windows for St. George's Church, in Maplewood, New Jersey (a job on which Gordon Henderson would later work). Two years passed and approvals were still on hold. A letter from Connick to the War Production Board certainly provides insight to the challenges faced during the war.



February 8, 1943.

Bureau of Construction,
War Production Board,
Empire State Building,
New York City.

Gentlemen:

In submitting the accompanying application for permission to make stained glass windows for Saint George's Church, we wish to call attention to the very small amount of materials to be used in comparison with the craftsmanship involved.

It is also significant that the Lead Conservator has excepted the came lead we use from the restrictive orders that cover metal, so that the work of our craft may continue uninterrupted. (M-38-C. Amendment 1).

We do not ask for any new materials, but simply wish to use what little we had previously acquired.

Our younger craftsmen have been absorbed by the war effort, and the older men who remain with us and are highly skilled in this unusual handicraft, would not be easily adaptable to machine, mass production. It is reasonable to believe that many of them well might be a burden to a community if they were not employed in this craft.

We have abundant evidence that the national leaders are in accord on the importance of maintaining the spiritual values and morale that only the churches can give, and their enrichment in the color and light of stained glass is a very real part of this service.

Sincerely yours,

Figure 115. Letter from Connick Studios to War Production Board.[33]

[33]Courtesy of the Charles Connick J. Collection, Boston Public Library.

For many studios this type of delay could be fatal. As Gordon Henderson often stated, World War I, Prohibition, the Great Depression, and World War II almost killed the glass trade. As Connick's letter indicated, the younger men had been absorbed into the war effort, many never to return. Older experienced hands left the trade to seek other work. For Ernest Henderson, being a savvy independent glassman who knew how to find work and resources, survival with local repair work and a few steady clients was possible.

After the war was over, a new era of Henderson involvement in the glass trade began when Gordon Henderson decided to follow his father into the trade.

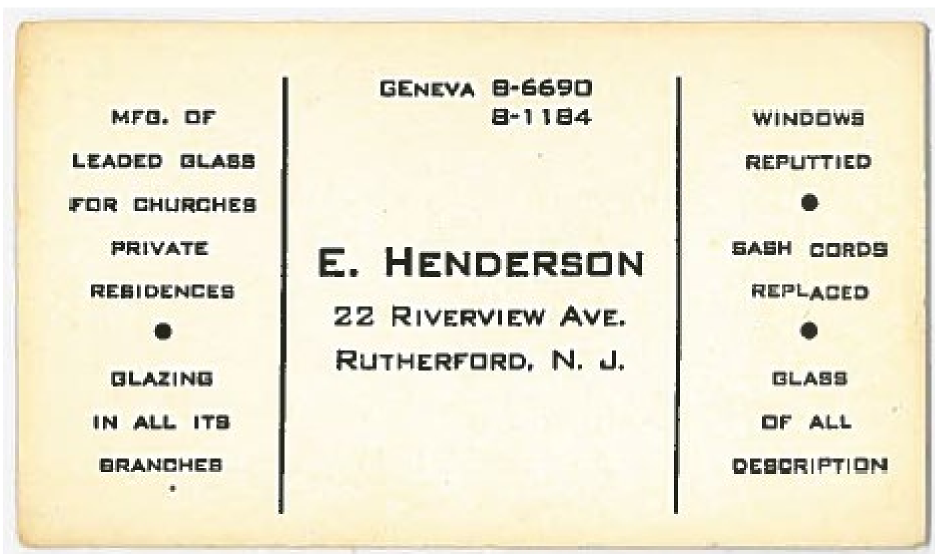


Figure 116. Last business card before E. Henderson & Son partnership, c. 1940.[34]

[34] Author's collection.

Chapter 9

Ernest Henderson & Son Overview

Figure 117. Letterhead, c. 1946 with Ernest Henderson's home address.[1]

After World War II was over, Gordon Henderson went to work with his father. In 1946, he asked Ernest to show him everything he knew about the trade. He left his job with Oosdyck Trucking Company, located in Paterson, New Jersey, to enter the uncertain world of leaded and stained glass. It was the right time. Building and development was coming back after the double-whammy of the Great Depression and World War II; local stained glass businesses were overwhelmed with commissions for memorial windows. Formerly scarce supplies of lead and solder were no longer restricted. The firm of Payne-Spiers, located in Paterson, New Jersey, reached out to Ernest Henderson. In a phone call, George Spiers said, "Henny, can you come up here and help us out?"[2] The firm had more work than it could handle with its usual staff. As an old-time firm, they kept a book of all the workers still alive and what they could do; so-and-so was a good painter; this guy is a good glazier; and the like. Ernest went to work for the firm as a freelancer and

[1] Author's collection.
[2] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.

Gordon, following his heart, decided it was the time to start a new career; Ernest Henderson & Son was formed.

Many of the men hired by the firms after the war were in their sixties and seventies; they had no pensions, sometimes no social security, and they were happy to have work. It was also a good time for younger men, and really the last time, that studio training could be found under the watchful eyes of seasoned veterans. Not only would Gordon learn everything his father had to offer, he would work alongside many other old-timers particularly when doing installations for the various firms.

Figure 118. Ernest Henderson in Dodge pick-up purchased by Gordon Henderson from Oosdyck Trucking Company, the first of many pick-ups.[3]

Gordon Henderson left his job driving tractor trailers for Oostdyck, a local trucking company. They had bought a pickup to plow their truck yard but it was two-wheel drive

[3] Author's collection.

and couldn't handle the work. Gordon found out it was for sale and bought it. He would have a pick-up truck for the rest of his life proudly lettered for business. With their truck, a wonderful Dodge, the Hendersons took repair jobs and worked free-lance for all the local studios. Initially, they worked in those shops also enhancing Gordon Henderson's learning experience. For J & R Lamb they fabricated and installed diamond lights and glazed other windows. They did installations for everyone.[4]

Figure 119.   Ernest and Gordon Henderson in front of their Rutherford Glass Shop.[5]

The experience of Ernest Henderson and the exuberance of Gordon proved a good match. There was plenty of work after the war. Ernest Henderson had made a solo career doing repair work mixed in with Henderson style leaded glass, carrying on the

[4] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.
[5] Author's collection.

family tradition. He also never ignored regular glass work; replacing broken windows, installing plate glass store fronts, and installing automobile glass. Gordon pushed to get commissions for new windows; the new firm gathered steam.

Gordon Henderson purchased a group of garages on Erie Avenue, in Rutherford, New Jersey. There they opened the Rutherford Glass Shop which was a local staple for over thirty years. They continued to free-lance but now could do the work in their own shop. The shop became both a storehouse and a showcase for the vast and growing collection of Ernest and Gordon Henderson: old sheets of glass, jewels, panels, bits and pieces of salvaged windows, Henderson Brothers artifacts, drawings, sketches, and the odd and unusual. Visitors were always enthralled and occasionally overwhelmed by the cacophony of shapes and colors as the daylight streamed through the many glass objects filling the windows of the shop. Bruce Marcellus, when visiting the shop to pursue objects for the growing Tiffany collection of Hugh McKean, said, "I think this whole shop ought to sit right inside of our museum."[6]

Gordon Henderson responded:

> I think so too; I've been advised by some great artists of today not to move anything or change anything in the shop. They think it's fascinating and I've kept it more or less like a museum and I've often said to Pop, "Say, if we were ever in New York, around the Village with this shop, you couldn't keep the people out of it. They'd be just fascinated."[7]

One of the lessons taught by Ernest Henderson to Gordon Henderson was the value of advertising yourself and your services. Single sheet broadsides were printed and mailed out to churches and other prospective clients. Some of this was done blindly, simply

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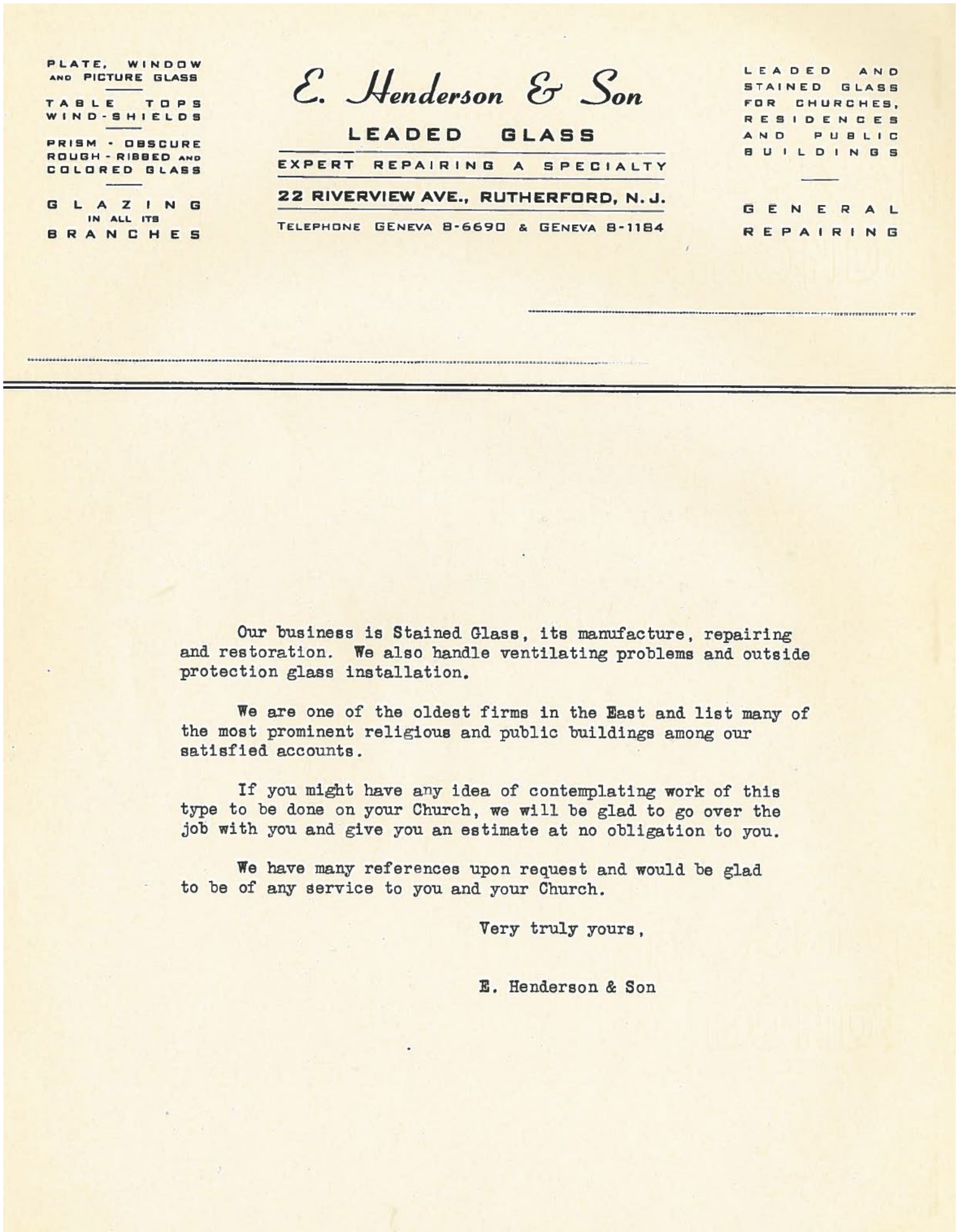
[6] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April, 1965.
[7] Ibid.

sending a mailing; some because they saw broken windows as they went to and from other jobs.



PLATE, WINDOW AND PICTURE GLASS
TABLE TOPS WIND-SHIELDS
PRISM - OBSCURE ROUGH - RIBBED AND COLORED GLASS
GLAZING IN ALL ITS BRANCHES

E. Henderson & Son
LEADED GLASS
EXPERT REPAIRING A SPECIALTY
22 RIVERVIEW AVE., RUTHERFORD, N. J.
TELEPHONE GENEVA 8-6690 & GENEVA 8-1184

LEADED AND STAINED GLASS FOR CHURCHES, RESIDENCES AND PUBLIC BUILDINGS
GENERAL REPAIRING

Our business is Stained Glass, its manufacture, repairing and restoration. We also handle ventilating problems and outside protection glass installation.

We are one of the oldest firms in the East and list many of the most prominent religious and public buildings among our satisfied accounts.

If you might have any idea of contemplating work of this type to be done on your Church, we will be glad to go over the job with you and give you an estimate at no obligation to you.

We have many references upon request and would be glad to be of any service to you and your Church.

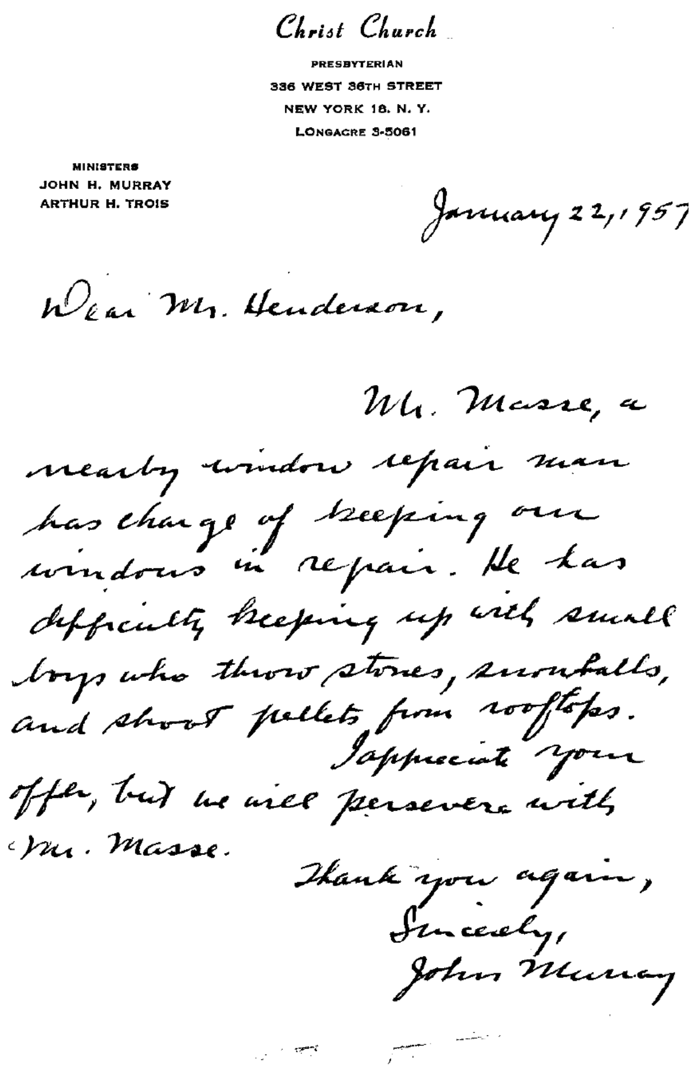
Very truly yours,

E. Henderson & Son

Figure 120. E. Henderson & Son advertising letter.[8]

8 Author's collection.

Ernest Henderson saw himself as carrying on the family trade and always advertised being one of the oldest firms in the business, in fact a continuance of his father's work in the United States beginning in 1872. Gordon carried on the tradition. Aggressively pursuing jobs, having a visible storefront, advertising in various media, maintaining a New York City phone number, and word of mouth allowed the firm to grow; as in all forms of advertising, there was varied success.



Christ Church
PRESBYTERIAN
336 WEST 36TH STREET
NEW YORK 18, N. Y.
LONGACRE 3-5061

MINISTERS
JOHN H. MURRAY
ARTHUR H. TROIS

January 22, 1957

Dear Mr. Henderson,

Mr. Masse, a nearby window repair man has charge of keeping our windows in repair. He has difficulty keeping up with small boys who throw stones, snowballs, and shoot pellets from rooftops.

I appreciate your offer, but we will persevere with Mr. Masse.

Thank you again,
Sincerely,
John Murray

Figure 121. Response to solicitation letter.[9]

[9] Gordon Henderson collection.

John Murray, minister at Christ Church, Presbyterian, in New York City sent a rather humorous letter stating that a local repair man was doing their work even though “He has difficulty keeping up with small boys who throw stones, snowballs, and shoot pellets from rooftops.” Thanking the Hendersons for their offer of services, Murray continues and states, “We will persevere with Mr. Masse.” [10]

Gordon Henderson became a master of the press. This example of a feature article in the *South Bergen News* is the first of many that would follow when he was working on his own. The article features conversation with both Ernest and Gordon Henderson regarding their family history and involvement with stained glass. The piece states that Ernest Henderson had already been operating his business in Rutherford for forty-nine years at the time of the article.

FRAGILE, HANDLE WITH EXTREME CARE—Ernest Henderson and his son, Donald ready the 200 year old window from the Zimmermann Hall in Carlstadt. A small piece of glass was reinforced by the craftsmen and then the window was wrapped for safe storage. (Staff Photo by Ed Farlie).

Figure 122. Front page photograph *The South Bergen News*.[11]

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[10] John Murray to Ernest Henderson, Letter, January 22, 1957.
[11] “Ageless Impressions: Artist’s work is just heavenly,” *The South Bergen News,* Ed Farlie photograph, August 12, 1965.

One of the assets of the Rutherford Glass shop is described in a paragraph on the front page.

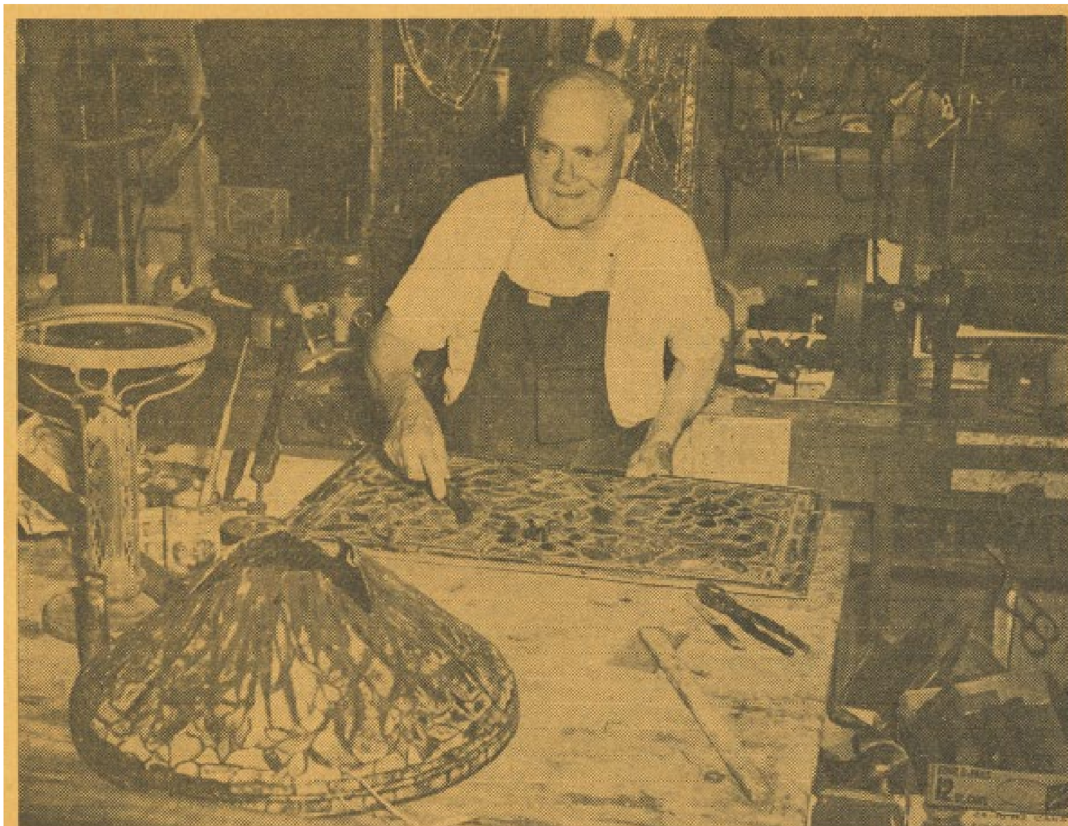
> Many of the area churches including just about all in Rutherford have had their stained glass windows repaired by these artists. One church here needed glass replaced. The matching glass could not be found anywhere because it was over 60 years old. Mr. Henderson replaced the glass with some of the pieces left over from the original which he installed many years ago.[12]

DESIGN FOR BEAUTY—Donald Henderson, third generation of a family of glass craftsmen, holds the original artist' drawings in front of the life size sketches for the windows which are now in the Rutherford Congregational Church. Note how each piece must be matched once glass has been glazed with the image. (Staff Photo by Ed Farlie).

Figure 123. Page 3 photograph, *The South Bergen News*.[13]

[12] "Ageless Impressions: Artist's work is just heavenly," *The South Bergen News,* August 12, 1965.
[13] "Ageless Impressions: Artist's work is just heavenly," *The South Bergen News*, Ed Farlie photograph, August 12, 1965.

Ernest Henderson and Gordon Henderson always had stocks of antique glass, jewels, rondels, and other materials on hand. Some were rescued from renovations. Often when a church was putting in new windows, they gave the old windows to the Hendersons as they had no use for them. Both men actively sought salvaged materials and used them in repairs. They were noted suppliers of vintage glass, jewels, and rondels for firms, collectors, churches, and dealers who wished to have authentic materials in damaged lamps and windows.



MASTER CRAFTSMAN AT WORK—Ernest Henderson installs new glass in a window for one of the area churches. In the foreground is a Tiffany lampshade which also will be repaired by the Hendersons. (Staff Photo by Ed Farlie).

Figure 124. Page three photograph, *The South Bergen News*.[14]

[14] "Ageless Impressions: Artist's work is just heavenly," *The South Bergen News,* Ed Farlie photograph, August 12, 1965.

Chapter 10

The Work of E. Henderson & Son

Their connection with Payne-Spiers Studio provided Ernest and Gordon Henderson the work necessary to start a partnership. Contract work for J. and R. Lamb Studios and others allowed the business to grow. There, Gordon Henderson worked with George DiRiis on a few jobs. DeRiis was an architect who became managing designer for the firm. He had worked for noted Neo-gothic architect Ralph Adams Cram and "was a very smart guy."[1]

Other local firms sought out the services of both Hendersons; some had long term connections such as Frank Lorti, who maintained the Studio, in Englewood, New Jersey. Lorti had worked at Henderson Brothers and was well-known to Ernest Henderson. Gordon made lead rosettes for him and noted that he had a good business producing windows for local churches and small panels for sale. Like Ernest Henderson, Gordon stated, "He (Lorti) knew where the work was."[2]

Passaic firm Marchese & Hamersma figured prominently in the business activities of E. Henderson and Son. They had a long-term association with the firm that lasted until Gordon and Bill Baker formed their unofficial partnership. Most likely, Ernest Henderson had interacted with John Hamersma. After the war Gordon Henderson, through E. Henderson and Son was doing repair work and some installation work for them. He also started getting commissions from churches in Rutherford, New Jersey. Tommy DiGiacomo, who Gordon knew well, had worked at Henderson Brothers and was now part owner at Marchese & Hamersma. Gordon would have him paint and fire work

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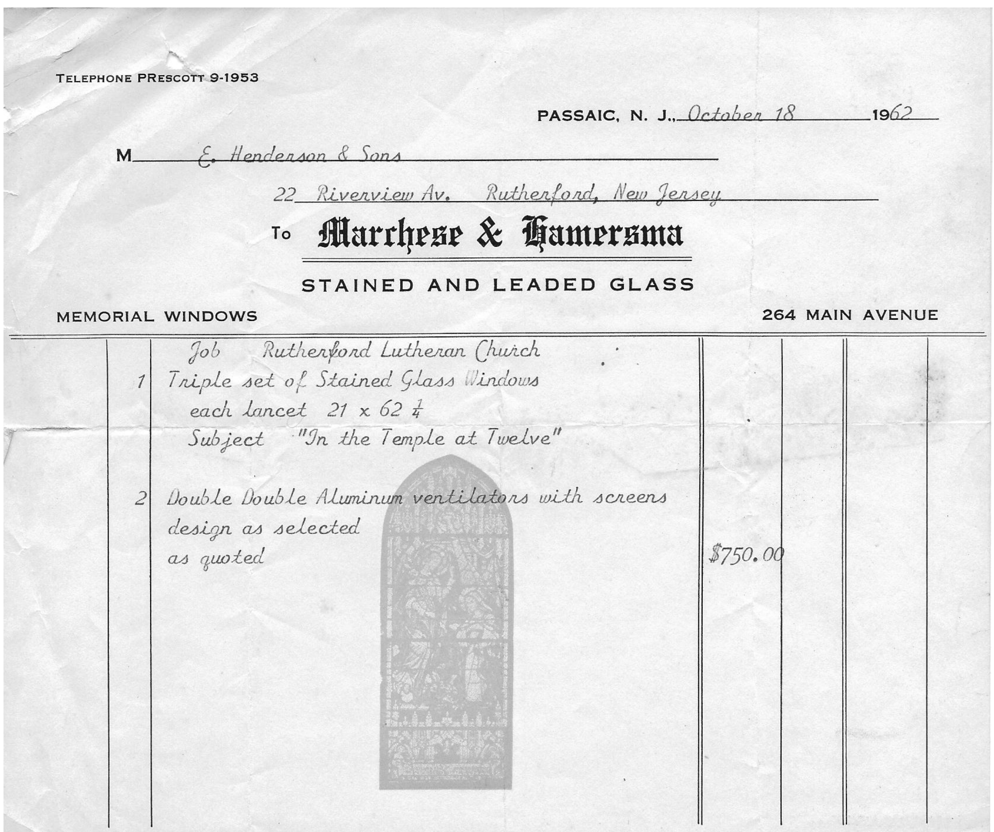
[1] Gordon Henderson, interview by author, Towaco, NJ, September 9, 2008.
[2] Ibid.

for him. He would also have the firm make entire windows for him. They would charge him six or seven hundred dollars for windows, for which Gordon was getting twice as much. Hamersma always said to Gordon, “It’s a pleasure to do business with you.”[3]

Gordon Henderson related that:

> Hamersma brought in some good guys and some young ones. One was art student Eddie Gurka who wanted to use good antique glass to paint on. Hamersma was frugal and told him that if you are going to paint it up why not use $2.50 per square foot glass instead of $12.50 per square foot glass. There are some places where the light coming through antique glass justifies its use. Small studios had to use more of the rolled glass because they couldn’t afford the antique. Marchese & Hamersma did work in the smaller churches mostly, like Bosland, a window here and there.[4]



TELEPHONE PRESCOTT 9-1953

PASSAIC, N. J., October 18 1962

M E. Henderson & Sons

22 Riverview Av. Rutherford, New Jersey

To **Marchese & Hamersma**

STAINED AND LEADED GLASS

MEMORIAL WINDOWS 264 MAIN AVENUE

	Job Rutherford Lutheran Church	
1	Triple set of Stained Glass Windows	
	each lancet 21 x 62 ¼	
	Subject "In the Temple at Twelve"	
2	Double Double Aluminum ventilators with screens	
	design as selected	
	as quoted	$750.00

Figure 125. Invoice for window produced for E. Henderson and Son by Marchese & Hamersma.[5]

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[3] Gordon Henderson, interview by author, Towaco, NJ, March 31, 2007.
[4] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[5] Gordon Henderson collection.

Later, Eddie Gurka bought the firm and was professionally jealous of the work Gordon Henderson was getting: church windows locally; lots of work from New York; and windows that needed repair. Gordon Henderson stated that in working with Marchese & Hamersma,

> I was paid and went on my way. I had done some windows in the Rutherford Episcopal Church. I had Tommy DiGiacomo make them. . . There was one window left to do "Christ Feeding the Multitudes." Eddie Gerka went there, the minister had changed and under bid my price. They made the window and installed it. The people didn't like it and the church made them take it out. He got less money for the window then I would have paid him and he had to take it out. Plus, the guy taking it out butchered the frame and they had to have that fixed. Next time I was there Freddy Casanova said, "You get the last laugh, they made them take the window out, they didn't like it." I knew it was time to do something different and that's when I started working with Bill Baker.[6]

In a four year period, Marchese & Hamersma produced ten triple lancet windows for E. Henderson & Son that would be installed in the Rutherford Lutheran Church. Lancet ranged in size from 21 by 62 ¼ inches to 22 by 52 inches. Twenty-three other windows of various sizes were produced as well.

Freddy Casanova, another Henderson Brothers hand, went to work at Marchese & Hamersma after Payne-Spiers closed. Gordon Henderson told a story about John Hamersma complaining that in the morning before work:

> Freddy would buy a paper and sit on the corner across the street reading it. Then he would go in to work at 8:00 am and go to the toilet for fifteen minutes. Hamersma would complain, "You'd think he'd come in and sweep the shop or something while I'm paying him."[7]

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[6] Gordon Henderson, interview by author, Towaco, NJ, March 31, 2007.
[7] Ibid.

Figure 126. Window design by Tommy DiGiacomo for E. Henderson & Son, fabricated by Marchese & Hamersma. Installed in the Rutherford Congregational Church, Rutherford, New Jersey.[8]

In the 1970s Marchese & Hamersma was purchased by Alexander O. Cronin, a glassman who had previously worked at Heimer Studios, in Clifton, New Jersey. Heimer did all the church work for the Roman Catholic churches of the Diocese of Paterson. They also did work for churches all along the east coast. Gordon Henderson rekindled a working relationship when the firm was owned by Cronin until he passed away in 1980 doing installations and repairs.

Marchese & Hamersma, like other firms, handled outside work for Charles J. Connick, the prominent Boston firm.[9] Connick used various metropolitan area firms to

[8] Author's collection.
[9] Marchese & Hamersma invoice, October 22, 1947, Charles J. Connick Collection, Boston Public Library.

take measurements, install windows, and handle repairs. Among the firms included The Decorative Glass Studios, Inc. Company, New York City and Sharpe Brothers from Newark, New Jersey. Letters in the Charles J. Connick collection held at the Boston Public Library confirm the association. In the 1940s Marchese and Hamersma seem to have taken over this work, also based upon invoices in the Connick collection. John Hamersma handled the correspondence and arrangements. Gordon Henderson indicated that he had set Connick windows in the 1940s, working occasionally with Tommy Mullaney, long-time setter for Connick. Although there are no records, this adds up given Gordon Henderson's close relationship to John Hamersma. In 1964, a letter from Orin Skinner (who took over the firm after Connick's death) to Gordon Henderson stated that he had been recommended by John Hamersma to do outside work.[10] Gordon Henderson worked in association with Connick until the firm closed in the 1980s.

In the early 1950s, Ernest Henderson & Son were approached by Rev. Christopher Snyder to examine windows at the Chapel of the Holy Communion in Fair Haven, New Jersey. In a letter he stated, "These windows I am told are Mosaic glass (30) in all and of beautiful design but in a state of disrepair and need attention."[11] The church had thirty Belcher Mosaic windows, a patented process using small pieces of pre-cut glass set into a matrix of molten metal in a mosaic style. Henry F. Belcher of Irvington, New Jersey received a patent for "Mosaic of Glass and Lead Glazing" No. 317,077 dated May 5, 1885.[12]

The "Michigan Stained Glass Census Featured Window of the Month for July, 2005" focused on Belcher windows. Gordon Henderson is quoted as remembering talking with

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[10] Orin Skinner to Gordon Henderson, letter, November 2, 1964.
[11] Rev. Christopher Snyder to Mr. E. Henderson, letter, November 29, 1952.
[12] Copy of original Belcher Metallic Mosaic patent, author's collection.

former Belcher employees who knew his father.[13] He also mentioned that one of the reasons the firm went out of business was the difficulty of repair.

Figure 127. Section of Belcher Metallic Mosaic window, actual size 8 X 5 ½ inches.[14]

[13] Barbara Krueger, Michigan Stained Glass Census, "Featured Windows, July, 2005," Michigan State University Museum, (accessed July 10, 2006).
[14] Author's collection.

Rev. Snyder had called in representatives from all the larger firms, including J & R Lamb. None of them wanted to touch the job. A representative for J & R Lamb indicated to the Reverend that Ernest Henderson could do the job. Ernest Henderson stated regarding the Belcher windows:

> I had worked at them as a boy . . . I saw this reverend and he was undecided and I said, "Now, I'll tell you what you do, Reverend," I says. "You let me take one or two of the windows out and I'll repair them and if I can't repair them to your satisfaction, then," I said, "Don't pay me, that's all." I says. "I can make you a first class job." And I did that. They gave me the worst one. I took it out and brought it to the shop right here on the bench and repaired it and made it like new.[15]

After the work was completed, Reverend Snyder wrote a letter recommending the work of Ernest Henderson:

> This statement is intended to express the complete satisfaction and delight with the restoration of our Mosaic windows (30) in all done by E. Henderson, 22 Riverview Avenue, Rutherford.
>
> These windows are of a special type construction made over 60 years ago and can never be duplicated. On all sides, words of appreciation and compliment are being received by our officials, and we unhesitatingly and without mental reservations recommend the work of Mr. Henderson.[16]

Letters of recommendation such as this became an important part of Ernest Henderson & Son's portfolio, as in any business. Gordon Henderson kept a binder of letters and used copies of them when soliciting work.

An interesting characteristic of some of the work of E. Henderson & Son is the long term associations and repeat work that it produced. Because of missing records it is not possible to determine exactly when some of these jobs started. Gordon Henderson indicated that some of their New York work was established by his father working as an independent glassman; some stretched back to Henderson Brothers. Ernest Henderson

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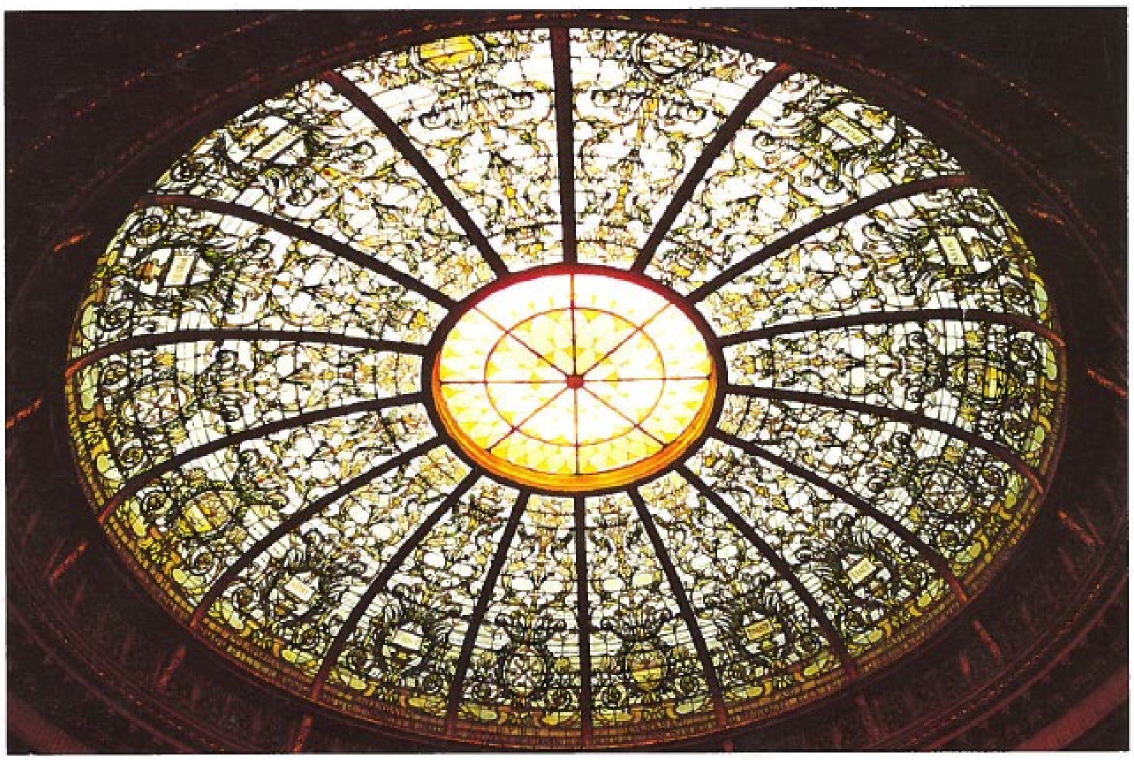
[15] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April, 1965

[16] Rev. Chistopher H. Snyder to E. Henderson, letter, postmarked June 28,1953.

had stated that the name meant something in New York. [17] Two of their long term commissions are particularly interesting, Grace Church and the City of New York.



Stained Glass Dome in Courtroom: By Maitland Armstrong Co.

Figure 128. Dome of the Appellate Court, New York City, judges' names along bottom rim.[18]

The first surviving document for work at the Appellate Division of the Supreme Court, 25th Street and Broadway appears in Ernest Henderson's 1949 accounts ledger

[17] Ernest Henderson, interview by Bruce Marcellus, Rutherford, NJ, April, 1965.
[18] Author's collection.

during the month of January. The Dome of the Appellate Court was designed by The Maitland Armstrong Company. David Maitland Armstrong was a major figure in the boom years of American stained glass. He was associated with both John La Farge and Louis Comfort Tiffany before starting his own firm.

> Mr. Healy was in charge of the maintenance of the building. He and his wife had an apartment in the building, when he died, they let her stay on. The dome was supported by wires. The whole thing was sagging and pieces of glass were falling out. We made thin metal rods to hold up the dome. We used sheet metal strips that the sheet metal guy cut for us. We could bend them and solder them around the curves. It was a Rube Goldberg thing but it worked. I stood underneath with a broom or a mop and pushed sections up. My old man was up there with a soldering iron between his legs soldering the things in place.[19]
>
> *Gordon Henderson*

Whenever a judge passed away, they had their name put up in the dome. Ernest Henderson painted and fired the name and they then installed it in the rim of the dome.[20]

Other work for the City of New York included repairing the ceiling light in the Hall of Records Building, 50 Chambers Street, in Manhattan. In 1951, Ernest Henderson sent in a bid for this job and Walter J. Gillen, Chief of the Bureau of Building Maintenance called him in to discuss the work.[21] The work consisted of cleaning and repairing the twenty-four big ceiling lights that had been neglected for many years. The frugal Henderson bought a new vacuum cleaner for the job which Gordon said was a really big deal.[22]

Gordon Henderson also did repair work at the Women's Court, and later remembered reading police reports about arrests of young German and Irish servant girls at the turn of the century that were laying around up in the dormers where he was working. One

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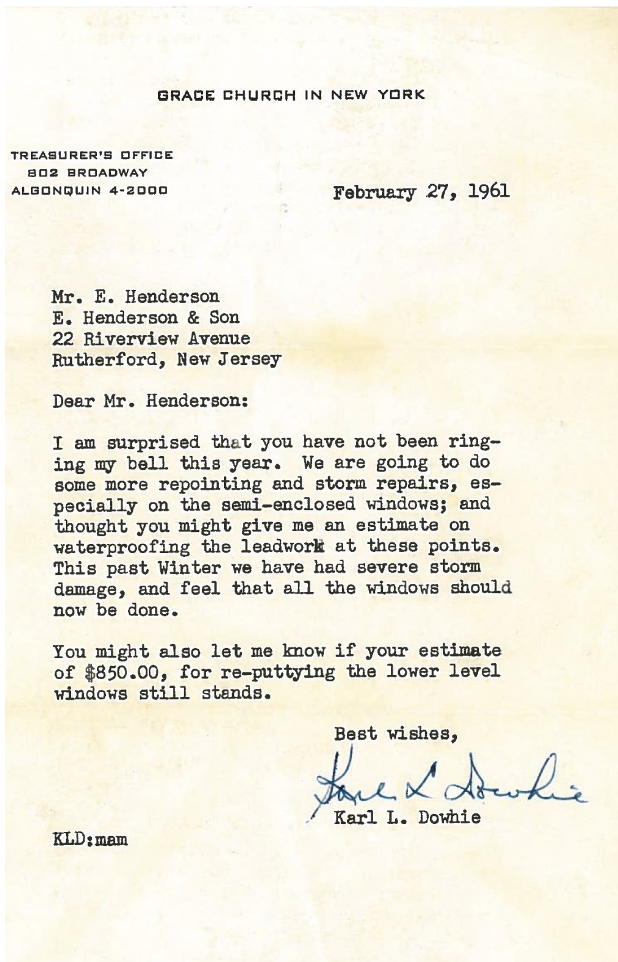
[19] Gordon Henderson, interview by author, Towaco, NJ, April 4, 2007.
[20] Ibid.
[21] Walter J. Gillen to E. Henderson, letter, February 6, 1951.
[22] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.

particular report was a record for "Mary O'Flarrity arrested for vagrancy. A court employee told Henderson that this was a euphemism for prostitution."[23] Gordon Henderson maintained a working relationship with the City of New York, the final invoice in business records is dated 1992. As he entered his seventies he travelled into New York City less often for work. The City of New York was his last major account in the City.

Grace Church



GRACE CHURCH IN NEW YORK

TREASURER'S OFFICE
802 BROADWAY
ALGONQUIN 4-2000

February 27, 1961

Mr. E. Henderson
E. Henderson & Son
22 Riverview Avenue
Rutherford, New Jersey

Dear Mr. Henderson:

I am surprised that you have not been ringing my bell this year. We are going to do some more repointing and storm repairs, especially on the semi-enclosed windows; and thought you might give me an estimate on waterproofing the leadwork at these points. This past Winter we have had severe storm damage, and feel that all the windows should now be done.

You might also let me know if your estimate of $850.00, for re-puttying the lower level windows still stands.

Best wishes,

Karl L. Dowhie

Karl L. Dowhie

KLD:mam

Figure 129. Letter to Gordon Henderson from Karl Dowhie, Business Manager, Grace Church.[24]

[23] Ibid.
[24] Author's collection.

Grace Church, located at 802 Broadway, is one of the iconic New York City houses of worship. Gordon Henderson developed a long-lasting and personal relationship with Karl Dowhie, the business manager of the church. Their friendship included visits to each other's homes, family events, and dinners, often in New York. Gordon called Karl Dowhie the most honest man he ever worked with. Many other business managers padded bills or asked for money on the side, but never Karl Dowhie. Karl Dowhie was loyal to the Hendersons, he sought them out when there were things to do, and they produced quality work and repairs. The Grace Church was the longest lasting commission of the Henderson family. Ernest Henderson indicated that Henderson Brothers had done work at Grace Church as well.[25] That would give the Henderson family at least sixty years of work at the church. Based upon surviving invoices there was much repair work to be done. Ernest Henderson & Son also fabricated new leaded glass diamond-paned windows for Grace Church.

PLATE, WINDOW AND PICTURE GLASS

PRISM - OBSCURE ROUGH - RIBBED AND COLORED GLASS

GLAZING IN ALL ITS BRANCHES

E. Henderson & Son

STAINED GLASS CRAFTSMEN

EXPERT REPAIRING A SPECIALTY

410 EDGEWOOD PLACE
RUTHERFORD, N. J. 07070
PHONE 201-438-1184

LEADED AND STAINED GLASS FOR CHURCHES, RESIDENCES AND PUBLIC BUILDINGS

Figure 130. Letterhead listing Gordon Henderson's address, c. 1965.[26]

By the 1960s, Ernest Henderson, though actively involved in the business was leaving the heavy lifting and most of the jobs requiring travelling to other states to son Gordon.[27]

[25] "Ageless Impressions: Artist's work is just heavenly," *The South Bergen News,* August 12, 1965.
[26] Author's collection.
[27] "Ageless Impressions: Artist's work is just heavenly," *The South Bergen News,* August 12, 1965.

The change is indicated by the new address on the letterhead. Gordon Henderson was now running the business and wife Barbara fully managed the accounting.

Chapter 11

Gordon Henderson Overview

I had one thing going for me—I had energy and I knew how to work. I learned from my father in them days how to cut and glaze and all that stuff; and outside. I was strong, young, and everything else. I had a nice studio there but I worked here (home) in the nighttime.[1]

Gordon Henderson

Figure 131. Gordon Henderson setting window, Grace Church, Haddonfield, New Jersey, c. 1982.[2]

So without the big family, you don't have the big architect. Without the big architect you don't have the craftsmen. To lose the ancient craft to a lot of idiots today; it's the ancient craft, that's what they call it. You can't throw these things down the drain. Our politicians are devoid of culture, you know. Generally speaking, politically minded people lack culture or expertise. The ones who don't go into politics go into real estate. That's my opinion.[3]

Gordon Henderson

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[1] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[2] Photograph, Gordon Henderson collection.
[3] Gordon Henderson, interview by author, Towaco, NJ, October 5, 2008.

Gordon Henderson was born in the year 1919, in Rutherford, New Jersey, the fourth child of Ernest and Isabella Henderson. Gordon was always tall for his age but suffered from asthma. He still managed to be a typical rough and tumble boy in a New Jersey suburban community. He loved playing baseball and football. He also loved to hang around the workshop his father created in the old carriage barn behind the family home. He vividly remembered sitting on the glazing benches, watching the men work; being fascinated by the beautiful colors of the finished product and the nimbleness of the craftsmen.

As a youngster, in the 1920s, Gordon remembered going to Leo Popper's, a major wholesaler of glass, jewels, and rondels, in New York City. At the time, they had a horse and wagon to make local deliveries, run by a black man who was a minister on the weekends. The glass came in crates packed in straw. Gordon loved to sit on the loading dock and feed the straw to the horse while his father was in buying glass. The trips into New York City were very exciting to a little boy and helped fuel his life-long love of its excitement and the work to be found there.[4]

During the same time period, Gordon Henderson would ride out to the Gold Coast, Long Island, where his father would be doing repairs. Ernest Henderson owned a Model T pickup truck at the time. Gordon remembered being mesmerized by the diamond-paned windows with medallions that drew his attention. It was an image that would stay with him his whole life and one he would credit for his interest in leaded glass.[5]

When the Stock Market Crash occurred, the stained glass trade suffered. Gordon Henderson worked with his father on bank-owned houses. He white-washed old cellars,

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[4] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.
[5] Gordon Henderson, interview by author, Towaco. NJ, December 15, 2006.

fixed old wooden cellar doors and made new ones, fixed broken windows and replaced rotted sash-cords, and cleaned and repaired gutters. Throughout his life, even as he maintained other employment, he accompanied his father to jobs assisting him as needed. He said that he was employed in glass his entire life.[6]

Isabella Henderson was a devote Roman Catholic; Gordon was not. As a child, it was his sister Catherine's responsibility to bring him to church. He recalled hating the smell of incense and the Latin he could not understand. One Sunday he had had enough and he ran out of the church swearing never to come back. He didn't, later remarking how ironic it was that he made a living in churches and never went. Gordon Henderson was a deeply spiritual man, closely connected to the natural world around him and a believer in God. He considered himself a man of faith. His ability to have faith was evident early in his life. He stated:

> Faith is a word that I like. When I was little I was asthmatic. I used to coat myself with Vicks here and breathe it in. My mother said to my aunt, "Don thinks it's the Vicks making him better. It's not the Vicks, it's the faith he has in it. That's what we have to have today is faith.[7]

During a winter snow storm, when Gordon was ten years old, he, his brothers, and some friends were sleigh-riding. They liked to grab hold of a passing car or truck and "hook" a ride. He lost control, careened under a parked car and split open his skull. He was carried home and the doctor came to the house saying leave him home, he was not going to make it. He did, was brought to the hospital the next morning, and a plate inserted into his skull. Years later this would prevent him from being drafted into a combat role in World War II. Instead he was assigned to work at Curtiss-Wright where

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[6] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.
[7] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.

his excellent hand-eye coordination led him to a position balancing B-17 aircraft engines.[8] This is where he would also meet his future wife.

Gordon Henderson's goal growing up was to play baseball and football for the high school. He was a tall, skinny kid, near six feet in height heading into eighth grade, competing successfully against the older boys. However, the Great Depression intervened and he never finished the eighth grade. There were two immediate results. He never got to play for his high school team, a life-long regret. He knew he still had to learn. Later he stated, "You see, I never stopped searching for knowledge. I've got all those books at home and I just stop and pick one up, open it up, and read whatever page comes out. I'm lucky I can retain what I read."[9] Gordon read the sports pages and then became interested in the news. He later read everything he could get his hands on related to stained glass, architecture, and art. Like many of the stained glassmen of his generation, he became self-educated far beyond what he would have learned in school. He remained an avid reader until his death.

He went to work and helped support the family. He worked for a local builder, Billy Burke, as a helper, initially carrying things that needed to be moved about, as well as slate and nails up to the roof. Soon he was doing basic work and he learned the ins-and-outs of the trade. No one asked too many questions and soon Gordon was driving a truck to pick up lunch and supplies locally for the crew; by the age of fourteen, he was an experienced driver and tall enough, now over six feet, to not arouse suspicion behind the wheel.[10]

[8] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.
[9] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[10] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.

At the age of sixteen, Gordon worked for the Civilian Conservation Corps driving a truck. He delivered materials and moved men in northern New Jersey. Eventually, he was driving big trucks with high-low gears and tractor trailers. On and off, until he went to work full time in glass, Gordon drove tractor trailers.

As a youngster, Gordon loved to hunt and fish, spending as much time as he could outdoors, in nature. He had an intimate knowledge of the natural world and an appreciation of its beauty. The constants in his life were a good hunting dog, a working pick-up truck with his name on it, stained glass, his family, and the outdoors. Late in life he loved to watch the sun rise and set outside of his Towaco, New Jersey home. No matter the weather, he got out of doors every day to breathe fresh air, take a walk, play with his dog, and experience the changes of the seasons. Gordon loved to watch birds come to his feeders, hawks circling on an updraft, bear and deer meandering through his back yard, and the occasional fox slinking through. His enthusiasm for the outdoors was boundless and many visitors to his home were treated to share his enjoyment, even in freezing cold and snow.

Gordon Henderson, at six foot two inches, met Barbara Todd, all of five foot two inches. It was an odd match. Gordon, an eighth grade drop-out and son of a craftsman struggling to support a family through the Great Depression and war years, and Barbara Todd, daughter of a wealthy English industrialist, well-educated, and widely travelled. Gordon, rough and tumble, almost a caricature of a tough, foul-mouthed “Jersey” guy, and Barbara, petite and refined. It was the defining moment of Gordon Henderson’s life. He had to impress a sharp and spirited young woman and her sharp and successful father.

He did; in 1952 they were married, and purchased a house in Rutherford, where they started a family. Three children were produced: Ronald, Sandy, and Todd.

"I had to be something for that girl" is what Gordon Henderson often said when asked to explain his work ethic.[11] Gordon and Barbara Henderson shared sixty-three years of marriage, three children, dogs, cats, horses, and the challenges of an independent craftsman. He later said, "She hung out with me for sixty-three years. I must have done something. I look at television and I say, 'Aren't you glad you married me after you see all these nuts on here?'"[12] Barbara did the books, paid the bills, and kept the house. She was strongly English and Gordon had to learn a new set of manners. Her presence and support was as important to the success of Gordon Henderson as his work ethic and skills. Although in many ways polar opposites, they were a match that worked.

Barbara Henderson was an active participant in her husband's career in other ways as well. They went to antique shows and auctions together. She also found things on her own. One day she came home from a shopping trip, having found something she thought was interesting in an antique shop in Caldwell, New Jersey. It was a Belcher Metallic Mosaic window, in two wooden sashes, in bad shape, but only twenty-five dollars.[13]

When Gordon Henderson came home he was quite pleased by the find, but it would prove a challenge. Having worked on Belcher windows with his father he knew how delicate they were. He laid the windows on his bench. There were bulges and a few missing pieces and someone had tried to stabilize it using glue. He flattened the bulges gently with the palms of his hands so as to not loosen any more of the small pieces. He meticulously cleaned the glue off the panels. He put new wires and support bars and

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[11] Gordon Henderson, interview by author, Towaco, NJ, April 7, 2007.
[12] Ibid.
[13] Gordon Henderson, interview by author, Towaco, NJ, November 29, 2007.

replaced the missing pieces using copper foil to set them into the metal matrix of the panels.[14]

Henderson decided to glaze the window into one frame making it much more attractive. It is a remarkable example of Belcher work. The gentle gradation of colors mixed with a variety of jewels creates a stunning but peaceful impression in the sunlight. It was a masterful restoration and today is on display in the main entrance to the Jane Voorhees Zimmerli Art Museum on the campus of Rutgers University.

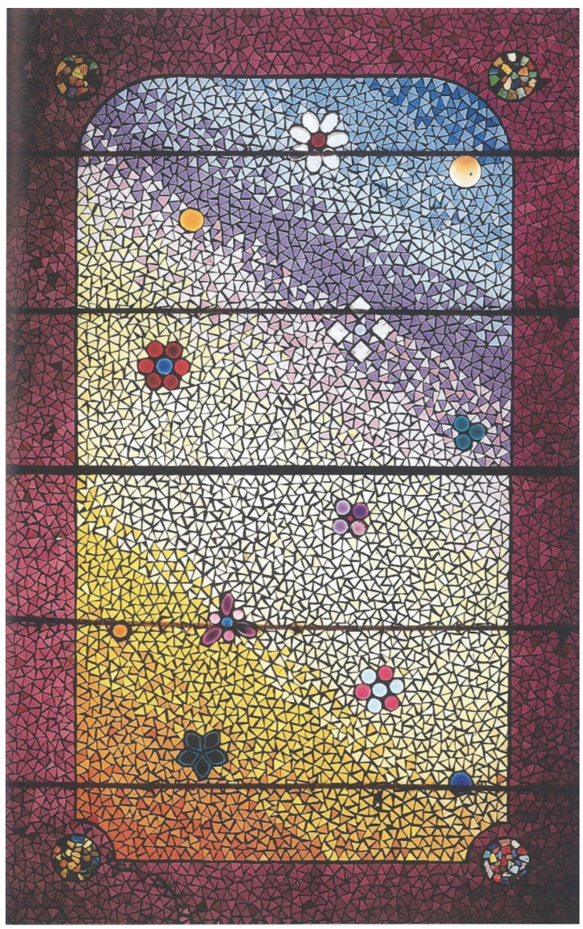

Figure 132. Belcher Metallic Mosaic window restored by Gordon Henderson.[15]

[14] Gordon Henderson, interview by author, Towaco, NJ, November 29, 2007.
[15] On display in front entrance of the Jane Voorhees Zimmerli Art Museum, Rutgers University, New Brunswick, New Jersey, image courtesy Gordon Henderson collection.

After World War II was over, Gordon Henderson went to work for Oostdyk Trucking Company located in Paterson, New Jersey. A series of events led him to a decision to enter the glass trade full time. He approached his father and asked him to teach him everything he knew about the trade. From 1946 until 1966, they operated as E. Henderson and Son. In the later 1950s, Gordon took on more and more of the responsibility and Barbara took over the finances for the partnership. In his eighties, Ernest Henderson "retired". Gordon Henderson became a sole proprietor in 1966, and the final phase began.[16] Ernest Henderson would continue to work in the shop for a few more years and continued to make small autonomous panels until his death at the age of ninety-one.

Figure 133. Another Gordon Henderson pick-up truck, outside of Rutherford home, c. 1960s.[17]

[16] John J. Campione, Public Accountant to Gordon Henderson, letter, July 1, 1966.
[17] Gordon Henderson collection.

Gordon Henderson actively worked as a solo stained and leaded glass craftsman from 1966 until his death, a forty-four year career. In the mid-1960s, Gordon and Barbara Henderson were driving through the then rural area of Towaco, New Jersey. They saw a "for sale" sign on a house, inquired and ultimately purchased the property at 67 Two Bridges Road; home until their deaths.

Figure 134. Barbara and Gordon Henderson outside their new home, prior to additions, c. 1972.[18]

Gordon would add on two garages and build a workshop perilously hanging on the edge of an incline on the back of the property. Many hours would be spent working in this shop, heated with a woodstove, in the garages with the leaded glass windows, and in the basement, glazing on a board placed across the washing machine.

[18] Gordon Henderson collection.

Figure 135. Added garages at Gordon and Barbara Henderson's Towaco, New Jersey home with five of six leaded glass windows visible.[19]

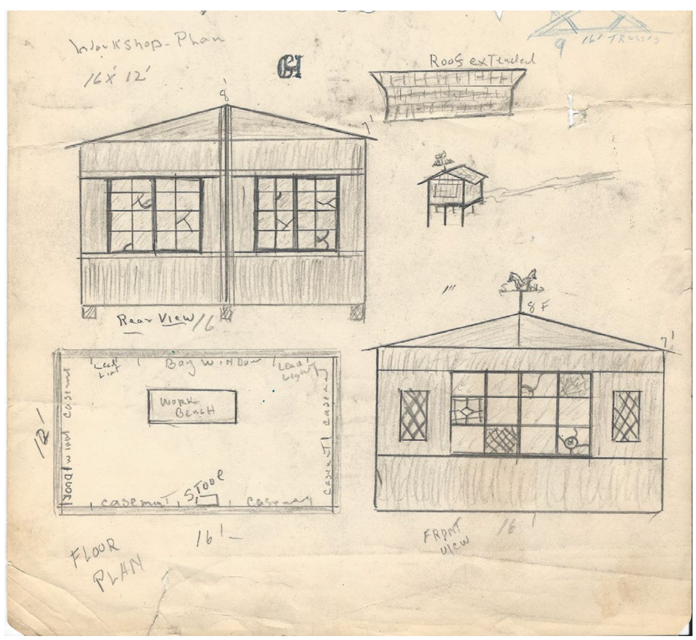

Figure 136. Original Plan, Gordon Henderson's backyard studio.[20]

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[19] Author photograph.
[20] Author's collection.

Figure 137. Gordon Henderson's backyard studio.[21]

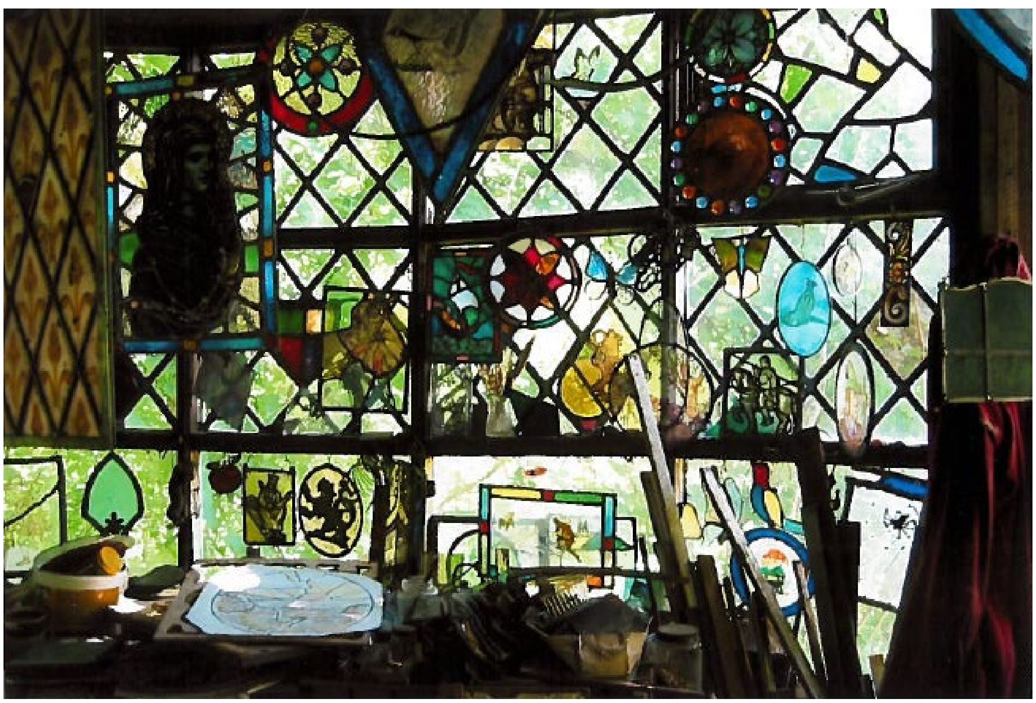

Figure 138. Interior of Gordon Henderson's back yard studio.[22]

[21] Author photograph.
[22] Author photograph.

Figure 139. Door window in Gordon Henderson's backyard Studio, "Robin Hood."[23]

Figure 140. Detail, "Robin Hood" window, designed and painted by Bill Baker.[24]

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[23] Author photograph.
[24] Author photograph.

It was a house the Hendersons loved, surrounded by nature, private, but close to friends and easy for clients to find. Here they entertained some of the most noted people in the stained glass trade, authors, museum curators, and collectors. Many letters in the Gordon Henderson collection recall the hospitality of the Henderson home and all express the great enjoyment shared.

Not long after settling in Towaco, Gordon Henderson found an old manufacturing building located next to the Rockaway River in Boonton Township, New Jersey. He purchased the building and moved his shop from Rutherford to be close to his new home. He maintained his New York and Bergen County connections but more of his work was centered in the general area of Morris County, New Jersey.

Figure 141. Gordon Henderson's Shop, North Main Street, Boonton Township , New Jersey.[25]

[25] Gordon Henderson collection.

Figure 142. Interior of shop, a collector's and historian's paradise.[26]

Figure 143. Gordon Henderson working at the light table, Bill Baker designs on wall.[27]

[26] Gordon Henderson collection.
[27] Ibid.

Figure 144. Gordon Henderson glazing a panel.[28]

Figure 145. Gordon Henderson's business card.[29]

[28] Gordon Henderson collection.
[29] Author collection.

Gordon Henderson worked out of his Boonton Township location until the latter 1990s, when he sold the building. Now in his seventies, he was slowing down. He no longer was producing the volume of work to justify maintaining the shop, paying property taxes, and utilities. Even without the shop, his reputation and connections drew clients. He continued to produce new commissions for a select few and small repair jobs until his death in 2010. He vowed never to end up in a hospital like so many "old people" and he died at home on a Saturday morning. Wife Barbara survived him by a year. As a couple, they enjoyed a long life filled with friends and acquaintances in their community and from Gordon Henderson's professional career.

Much of his adult life Gordon Henderson worked at the trade of stained and leaded glass. Part of his life's goal was to promote the memories of past men in the trade, their lives and stories. He was a natural raconteur and loved an audience. His New Jersey accent, turn of the century street-slang, and vigorous hand motions made story-telling an active experience for all. He ended many sentences with the words "And this here and that there" when the details were obvious to him. His stories were a collection of tangents, never linear. It could be exhausting to get him to stay on a topic to completion. Towards the end of his life, he wanted to create a historical record. He shared his vast collection, personal writings, and submitted to hours of interviews becoming more and more focused allowing access to his life for posterity.

I asked God for help—He sent me a dog![30]
Gordon Henderson

[30] Gordon Henderson, interview by author, Towaco, NJ, April 14, 2009.

Chapter 12

The Work of Gordon Henderson

> My old man told me when I was a kid, you know, he said, "Keep away from bidding; keep away from the architect. They only take your stuff and they low bid it 'till you get no place." He said, "Play your own game, get your own little clientele and be humble about it. Work by yourself and the money is yours."[1]
>
> *Gordon Henderson*

The output of Gordon Henderson is astonishing. Working with his father from 1946 until his last commissions in 2010, he produced thousands of windows of all types and dimensions, from monumental to mundane. Working seventeen hour days, working seven days per week, working without a break, Gordon did what was needed to complete a commission and get paid. Surviving drawings and sketches, contracts, and invoices paint a picture of a man who knew how to work. It is exhausting to look at the records. Gordon initially focused on repairs and installations for other firms. This provided a background on different styles of work and put him in a position to work under every possible condition. Working on site with a variety of experienced men from various firms besides his father proved invaluable to his career.

> As far as repairing, this is a very specialized line. Men who have spent their time glazing on the bench can't repair as I know how. You must be part ironworker, carpenter, glazier, leaded and flat glass man, ladder and scaffold man, setter in stone, wood, or metal, plus have a good knowledge of ventilators, in other words, one hell of a mechanic. You also must know how to deal with people on the job. You can't teach repair, it must be learned from years of work on types and styles of windows. A good outside man knows more about leaded and stained glass than most artists and shop-workers as he is subjected to it all the time and sees the windows from morning to late afternoon; in other words, at their best and worst.[2]

[1] Gordon Henderson, interview by author, Towaco, NJ, March 1, 2007.
[2] Gordon Henderson, interview by author, Towaco, NJ, December 27, 2006.

Gordon Henderson stated, “It got so I could look at a window and tell pretty well who made the window by the style and this here.”[3] He said of himself . . .

> Well, in the first place, I don’t know if I was better than anybody else but . . . there weren’t that many guys around to handle that kind of stuff you know there. The companies were worrying about new work and all.[4]

Henderson worked with the largest, most prominent firms as well as individuals who today are little known. He worked with well-known designers with national reputations and with those whose names have all but disappeared. At his death, he was one of the most knowledgeable glassmen left and one of the few living men of the trade with connections to the golden era of American stained and leaded glass. The task of describing all the commissions of Gordon Henderson is beyond the scope of this project. Therefore, focus will be placed on those specific jobs or associations about which he most talked.

New York City was the location of some of Gordon Henderson’s most significant work. He handled most of the work at Grace Church and Saint Patrick’s Cathedral, continuing a family tradition. Many important churches and synagogues saw the hands of Gordon Henderson repairing damaged windows and setting new ones. Gordon loved New York City and enjoyed the connection to his family history and the exciting surroundings. It was prestigious work and he was proud of it. Of course, repairs and installations are not of themselves necessarily exciting, but the tales that go along with the work are. Gordon was a good story teller; his enthusiastic telling, even when repetitious, made them fresh and alive.

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[3] Gordon Henderson, interview by author, Towaco, NJ, February 24, 2010.
[4] Gordon Henderson, interview by author, Towaco, NJ, March 20, 2007.

The Church of the Ascension (New York City)

There is a wonderful three-section set of windows, of angels, by John La Farge in the clerestory of The Church of the Ascension. Gordon Henderson described them, holding out his arms, "They were this big and this high," or about three feet by five feet each.[5] At some previous time, while repairing a leaking roof, and perhaps the windows as well, someone had covered the bottom of the windows over the ventilators with roofing paper and tar. The windows were not only a mess, one could no longer see light through the covered portions, ruining their beauty. Upon removing them, Gordon marked each section so that they could be properly returned. The windows were taken to his home where he put gasoline on them to break down the tar. He hosed them off, scraped up the remaining damage and sealed the ventilators that had been leaking.

The windows were returned to the church and Gordon Henderson put them back in but the marks and the setting didn't match.

> When I went to put them in, the marks I made didn't make any sense, the left and right were wrong. I knew that I had marked them and I could initially figure it out. I put them in, went inside to look at them and the organist said, "That's the first time I've seen those windows in all my years here right."[6]

Someone had worked on the windows previously and put the outside panels back in the wrong place, not an entirely uncommon occurrence. Someone else's mistake created a job for Gordon Henderson but this could be a cause of job-site stress as he said, "Well, I knew that I had marked them and I was going crazy because it didn't make any sense."[7]

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[5] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[6] Ibid.
[7] Ibid.

Grace Church (New York City)

Figure 146. Gordon Henderson at Grace Church, New York City.[8]

As stated previously, all three generations of Hendersons worked at Grace Church. There is a steady stream of work documented from 1957 through 1986. Most of it was repairs, not surprising for a well-known and easily accessed church in New York City.

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[8] Author's collection.

Dear Gordon:

This summer a "bum" threw a bottle at our protective glass covering the chantry window facing Braodway and smashed it.
It is a small job, but we would appreciate having it replaced when you are in the area since it looks neglected.
Best wishes.
Sincerely yours,

Karl[9]

Another request from Karl Dowhie, the Treasurer of Grace Church, stated, "We have had a serious burglary with two of the small stained glass windows destroyed . . . plus damage to a leaded glass window. The protected glass on all three has also been destroyed."[10]

Gordon Henderson enjoyed a close relationship with Karl Dowhie built upon decades of family service to the church. Their relationship developed into personal friendship between the families. Dowhie clearly trusted Gordon Henderson and Gordon called him a "Very, very, honest man."[11] Dowhie frequently reached out to Henderson for advice on the windows of the church and clearly trusted his input. This trust included recommendations on repairs to irreplaceable windows and all aspects of care.

In 1959, Ernest Henderson was asked if his firm could recommend someone to appraise the windows of Grace Church. He stated that the windows had been appraised but the vestry was not happy.[12] Otto W. Heinigke, son of one of America's noted stained glass artists, now working for Frederick L. Leuchs, Incorporated, another New York City firm, produced the report suggesting that the church make a record of all the windows, including color photographs to be used in future restorations. He also recommended

[9] Karl L. Dowhie to Gordon Henderson, letter, September 19, 1978.
[10] Karl L. Dowhie to Gordon Henderson, letter, January 21, 1980.
[11] Gordon Henderson, interview by author, Towaco, NJ, November 11, 2007.
[12] Karl L. Dowhie to Mr. E. Henderson, letter, May 19, 1959.

moving some unpopular windows to less prominent locations. Also, as wages and materials costs continued to rise, this had to be considered in the replacement value of windows. His report updated an appraisal from 1938.[13] In 1976 Gordon Henderson produced an updated valuation for the Grace Church windows, noting that some hadn't been previously included.[14]

The relationship between Dowhie, a refined accountant and manager, and Henderson, rough around the collar and self-educated, was important for Gordon's business in New York City. Dowhie was generous with his praise and wrote recommendations for his work.

> Greetings:
>
> Sent a good recommendation to the Unitarian Church uptown for you. If you don't get the job it won't be my fault![15]

Grace Church, a traditional English Gothic Episcopal church, is full of leaded glass windows with diamond quarries. There was constant work repairing and replacing these windows as many of them were in frequent use, being opened and closed, and many were panels in doors. Beyond this, Grace Church contains windows by some of the greatest makers of the modern stained glass periods. These too needed care and the Hendersons were entrusted with this work. In the mid-1960s, Gordon Henderson commissioned Marchese & Hamersma to paint, fire, and glaze sections being repaired for Grace Church. This was some of the work that made Eddie Gurka professionally jealous of Gordon Henderson and helped push him to work independently with Bill Baker.[16]

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[13] Otto W. Heinigke to Karl L. Dowhie, letter and appraisal, November 12, 1959.
[14] Gordon Henderson to Karl L. Dowhie, letter, April 14, 1976.
[15] Karl L. Dowhie to E. Henderson & Son, letter, February 25, 1964.
[16] Marchese & Hamersma to Henderson & Son, invoice, October 4, 1965.

There were many later major restorations of entire windows or damaged sections after Gordon Henderson teamed up with artist Bill Baker. Baker, trained in England, was particularly well suited to the work. A major restoration of windows in the 1980s included "Restoration of stained glass window in the Chantry. Original by 'Powell' of England. Window rebuilt from photo in exact manner with all detail kiln fired. Labor and material $3,500.00."[17]

It was late winter and Gordon Henderson was supposed to go to Grace Church to install a window. The weather was terrible, a mixture of sleet and snow, and Henderson was going to have to be on the exterior of the building on a ladder. He told his wife he was not going to go into the City in this weather. She changed his mind telling him that they needed the money and Karl Dowhie would give him a check today. Henderson went into the City and prepared to work in the inclement weather. What happened that day is best related in Henderson's own words:

> I'm at the back of the truck parked at Broadway and 10th Street or 12th Street. I was standing at the back of the truck and I looked across the street and I saw this little old lady standing there with a walking stick under her chin like and she was wrapped in like some heavy winter coat. It was kind of nasty weather. I know something about bag ladies and such but there was something different about her, the way she was looking at me so intently made me stop and wait. So I went around with the window on the tailboard of the truck and I got my ladder up there against the church and she waddles across the street and she got up with the walking stick under her chin and kept looking at me. She said, "I saw the name on your truck, would you be related to that wonderful firm of the Henderson Brothers?" "Why yes, I am the grandson" She looked at me intently—this is indelible. "I want to tell you that your grandfather loved your grandmother very much." Then she paused . . . she said, "My name is Mrs. Warren McMann. My husband Warren graduated Sheffield School of Engineering at Yale University in 1926. He was with your grandfather until he died. He said when your grandfather closed the shop there, they both took five dollars out of the till, shook hands, and walked their separate ways." She said, "We have never had anything but the highest respect for your family." She stood there and said, "Young man,

[17] Gordon Henderson to Grace Church, invoice, August 27, 1980.

> I'm getting cold now and I'll be going on—Good Day!" and she went around the corner and I never—now this is New York!—I never even planned to be there that day. I didn't have any idea of going to the damned place over there to install that thing, but the wife chased me out. It was in the 70s, I guess.[18]

This poignant story connected McMann to Henderson Brothers and later research uncovered the patent shared with William Henderson (as detailed in the first chapter). Gordon Henderson often marveled at the unexpected moments in life, the coincidences that made the days interesting. He said, "There's something in this Universe, strange things happen to us. Sometimes we don't govern the paths of our lives."[19] He felt that certain people came into our lives and certain situations; it was up to the individual to recognize the opportunities these seemingly random occurrences presented.

During the year 1986 Karl L. Dowhie retired from his position as Treasurer for Grace Church. He was replaced by Mr. Robert Doyle. Gordon Henderson, now in his seventieth year, ended his association with the church soon after. His relationship with Karl Dowhie nurtured for more than thirty years had kept him travelling into the City and he felt it was time to give up the work.

St. Patrick's Cathedral (New York City)

In the 1950s, Gordon Henderson assumed the role of glazier at St. Patrick's Cathedral for E. Henderson and Son. Ernest Henderson and Henderson Brothers had worked at the Cathedral from at least the 1920s. Similar to Grace Church, there was much repair work, particularly on the leaded glass diamond paned windows. Vandalism, breaking and entry, and over-use kept Henderson busy over the years. Gordon Henderson was particularly proud of one project for which he received the following letter:

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[18] Gordon Henderson, interview by author, December 15, 2006.
[19] Ibid.

Dear Mr. Henderson:

The stained glass window panel, which you made for the Cathedral, has now been in place for several months.

I am writing to express my own deepest appreciation of your most careful artistry. I think you will be interested in the fact that no one now is aware that the panel was broken late last year. It is a perfect blend.

With renewed deepest thanks and best personal regards.

Sincerely,

Monsignor James F. Rigney

Rector[20]

The last existing invoice for work at the Cathedral was in 1987 for labor and material, a cost of four hundred sixty-five dollars for work completed on entrance doors, the Candle Room, and Sacristy;[21] thus ended an association lasting over sixty years, spanning three generations of Hendersons.

Wilber Herbert Burnham Studio (Boston, Massachusetts)

The Boston firm of Wilber Herbert Burnham hired Gordon Henderson to do outside work in the mid-1960s; taking measurements, making templates, installing, and making repairs. A series of letters for two specific job sites detail some of the challenges faced by Henderson while working with a distant firm. Before the internet age, communication was by telephone and mail. It was often inconvenient and slow. After setting a Burnham window in the Crescent Avenue Presbyterian Church in Plainfield, New Jersey, Gordon Henderson received a letter from the firm regarding the next installation. Burnham stated in regards to the minister of the church and the work:

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[20] Monsignor James F. Rigney to Gordon Henderson, letter, May 9, 1980.
[21] Gordon Henderson to St. Patrick's Cathedral, invoice, January 16, 1987.

> . . . he has asked that we remind you not to make so much dust when installing this window because the last time you were working on the windows it cost over $300.00 to have the organ cleaned because of the dust caused by working on the windows. This amount was charged to the Lamb Studios, etc.[22]

Henderson replied immediately:

> As to the dust in the organ of the Crescent Avenue Presbyterian Church, Lamb Studios men did the repairs to the windows above the alter and clerestory. My work consisted of the twenty nave windows which were completely covered while work was in progress; resulting in a minimum of dust.
>
> I had nothing but compliments as to my workmanship and am sure that had I been liable I would have heard about it before this. You can be assured that I will handle your job in a professional manner and satisfactory to all concerned.[23]

Gordon Henderson noted that working in a church was always a challenge. Changing leadership, committees, and donors all were a factor. Other firms doing work in all of the trades were liable to leave a mess or cause damage and pass on the blame as noted in this exchange.

Burnham asked Henderson to install a three-lancet window in the Church of St. Mary of the Virgins in Chappaqua, New York. He asked for an estimate of the work and provided sketches of the current setting.[24]

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[22] Wilbur Herbert Burnham to Gordon Henderson, letter, April 13, 1965.
[23] Gordon Henderson to Wilbur Herbert Burnham, letter, April 14, 1965.
[24] Wilbur Herbert Burnham, Jr. to Gordon Henderson, letter, August 4, 1965.

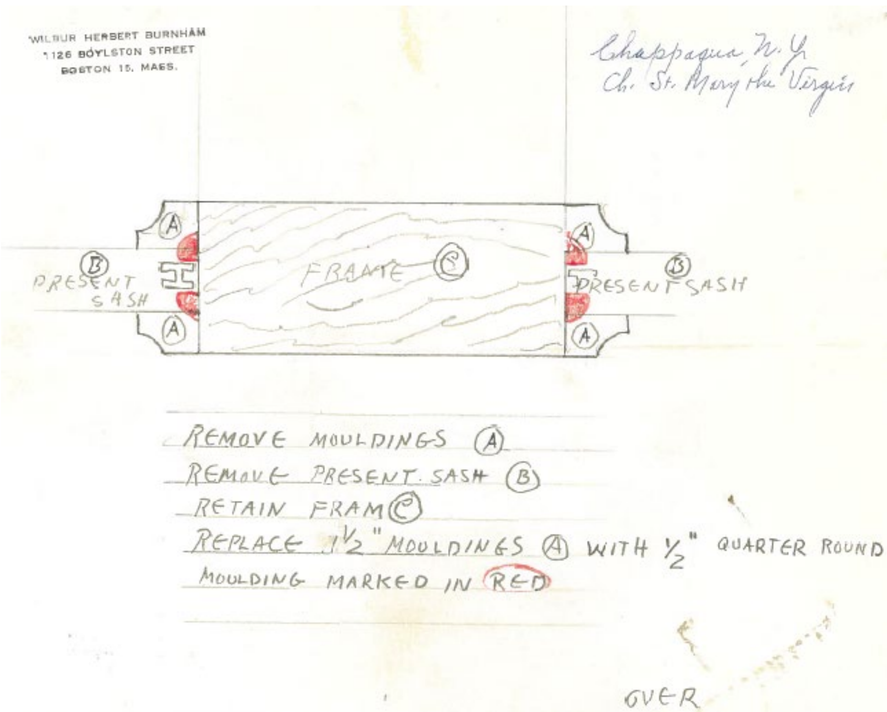

Figure 147. Instructions for setting a window at Church of St. Mary's the Virgin, Chappequa, New York.[25]

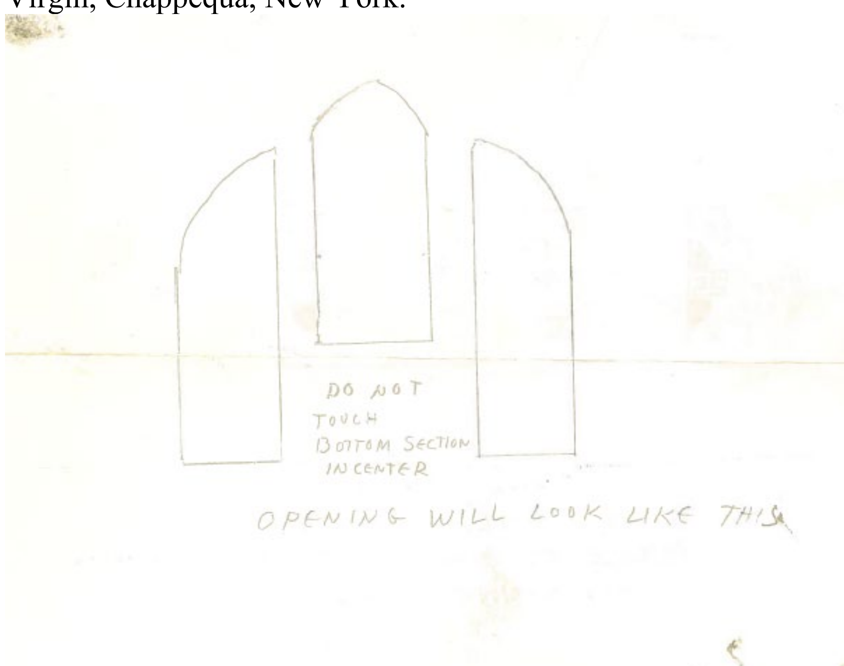

Figure 148. Back of instruction sheet from Burnham Studios.[26]

[25] Gordon Henderson collection.
[26] Gordon Henderson collection.

Henderson replied that he could set the windows but,

> It is difficult for me to give a set price for this work without being able to see the actual setting. You have described the windows quite accurately but have not given me the sizes on the Chappaqua job.
> All I can quote is that I usually charge $75.00 a day including labor and equipment.[27]

Burnham replied in a letter that he would meet Henderson at the church with the windows on September 13, 1965, and go over the installation. At the same time he would "Bring the six lancets for Christ Church, Bronxville with me and turn them over to you for installation the following week."[28]

Charles J. Connick Associates (Boston, Massachusetts)

The Boston firm of Charles J. Connick Associates was the source of much work for Gordon Henderson.[29] Hubert L. Pierson, Warden at St. George's Episcopal Church in Maplewood, New Jersey, wrote, "We heard through our secretary that you had been doing work around St. George's since 1944."[30] Charles J. Connick, the firm's founder, wrote a book *Adventures in Light and Color: An Introduction to the Stained Glass Craft* that greatly influenced Henderson's historical understanding of the trade and its history. The book contained one of his favorite quotes as Connick speaks of his early mentor, Horace Rudy saying, "I sensed at once he was lonely."[31] Gordon Henderson always spoke of the isolation involved with stained glass work, particularly in small firms, or as in his case, as a solo glassman.

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[27] Gordon Henderson to Wilbur Herbert Burnham, Jr., letter, August 16, 1965.
[28] Wilbur Herbert Burnham, Jr. to Gordon Henderson, letter, August 19, 1965.
[29] See Appendix D, Charles J. Connick Associates.
[30] Hubert L. Pierson, Warden, St. George's Episcopal Church, Maplewood, NJ to Gordon Henderson, letter, September 15, 1987.
[31] Charles J. Connick, *Adventures in Light and Color* (New York: Random House, 1937), 3.

During the 1940s and 1950s Marchese & Hamersma handled Connick work in New Jersey. Gordon Henderson did freelance work for the firm and as earlier mentioned, they produced windows for E. Henderson and Son. Appropriately, a 1943 telegram has Jim Mullaney, Connick's chief setter, working at St. George's Church in 1943.[32] Gordon Henderson recalled working with him on installations including the First Presbyterian Church in Passaic, New Jersey around 1949.[33] An Marchese & Hamersma invoice from 1947 for setting windows in Maplewood and Essex Fells (at $2.50 per hour) for the type of work Gordon Henderson provided for the firm, at two locations he later continued to work, provides another connection.

In a series of letters from November 1964, between Orin Skinner, President of Charles Connick Associates, and Gordon Henderson created a working relationship. From this point forward, Gordon would handle measurements, making templates, setting, and repairs for the firm in the New York metropolitan area. Gordon Henderson maintained a lively correspondence with Orin Skinner, who lived to one hundred and three years of age, for many years after the firm closed.

Amongst the New Jersey Churches Gordon Henderson worked on included: St. George's Church, Maplewood; Grace Church, Plainfield; Church of the Holy Innocents, West Orange; Grace Church, Haddonfield; and St. Peter's Church, Essex Fells. At St. George's:

> It was a day that was at least ninety degrees. The church had a slate roof and it was heating up fast. I had to crawl up onto the roof to set the window and it was so hot it was burning my hands. A glass man has to be

[32] Orin Skinner to James Mullaney, telegram, October 1, 1943, Charles Connick Collection, Boston Public Library.
[33] Gordon Henderson to Orin Skinner, letter, November 6, 1964.

creative, so I took the floor mats out of my pickup truck and I slid them up the slate to protect my hands and knees.[34]

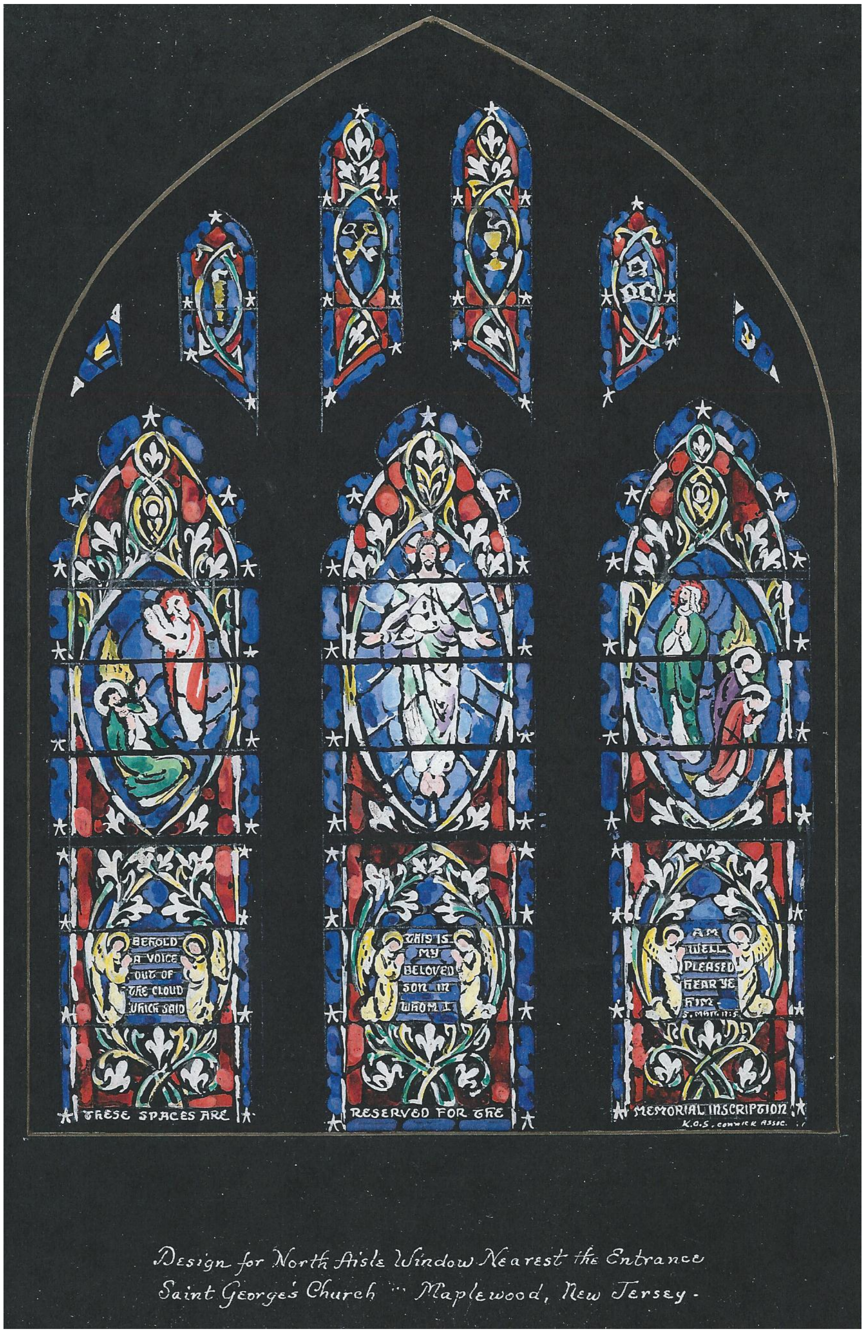

Figure 149. Watercolor for *The Transfiguration Window,* North aisle window, St. George's Church, Maplewood, New Jersey. Set by Gordon Henderson in 1966.[35]

[34] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[35] Image courtesy Charles J. Connick Collection, Boston Public Library.

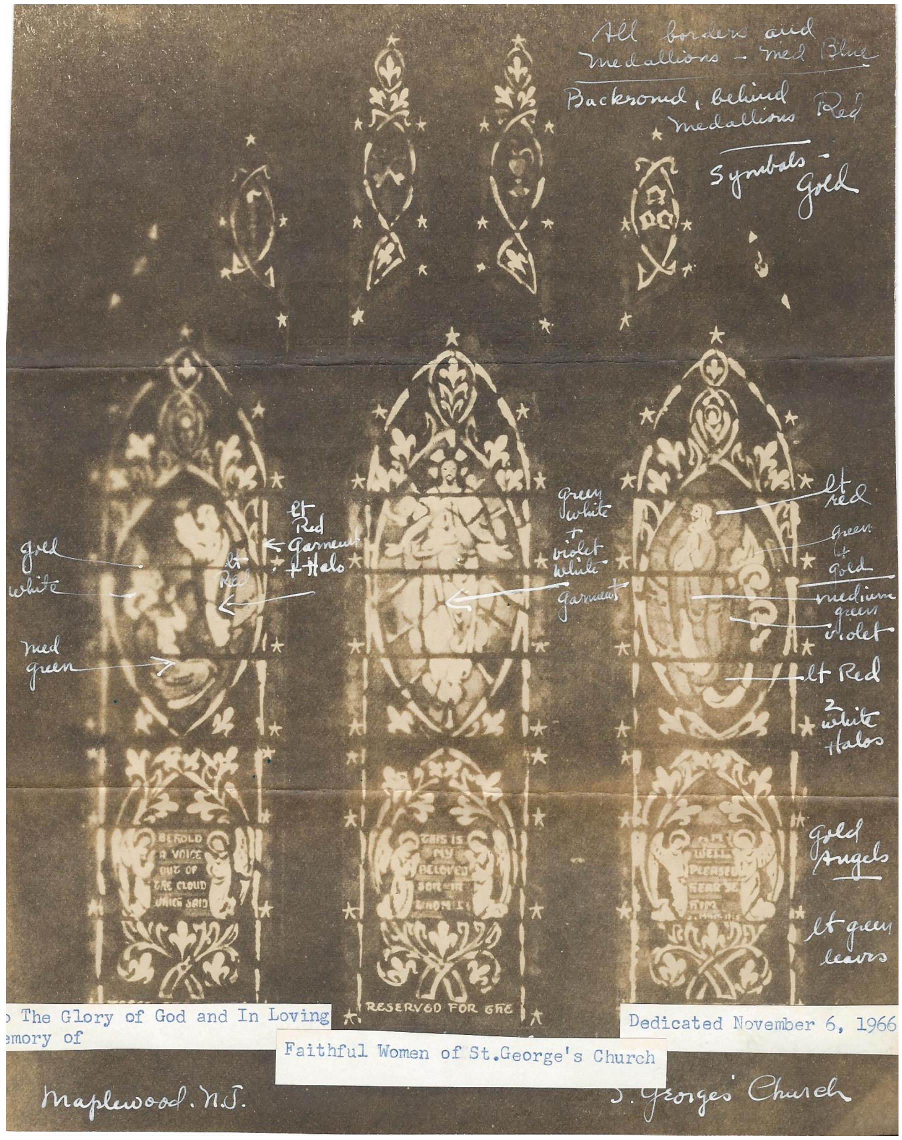

Figure 150. Photostat sent to Gordon Henderson from Connick Associates. Directions on back as to window placement, St. George's Church, Maplewood, New Jersey.[36]

At St. Peter's Church, Essex Fells, New Jersey, Gordon Henderson set more than twenty windows in a ten year period starting in 1964. On this job a set of windows were delivered with their borders in the wrong sequence of colors. After unpacking them,

[36] Courtesy Charles J. Connick Collection, Boston Public Library.

Gordon had to pack them back up and help arrange shipping back to Boston for correction.

In 1979 Gordon Henderson started doing Connick's work in New York when his local man could no longer climb scaffolding due to injury. He worked at St. John's Episcopal Church in Huntington, Long Island, All Saint's Episcopal Church, in Briarcliff Manor, and St. Batholomew's Church in White Plains.

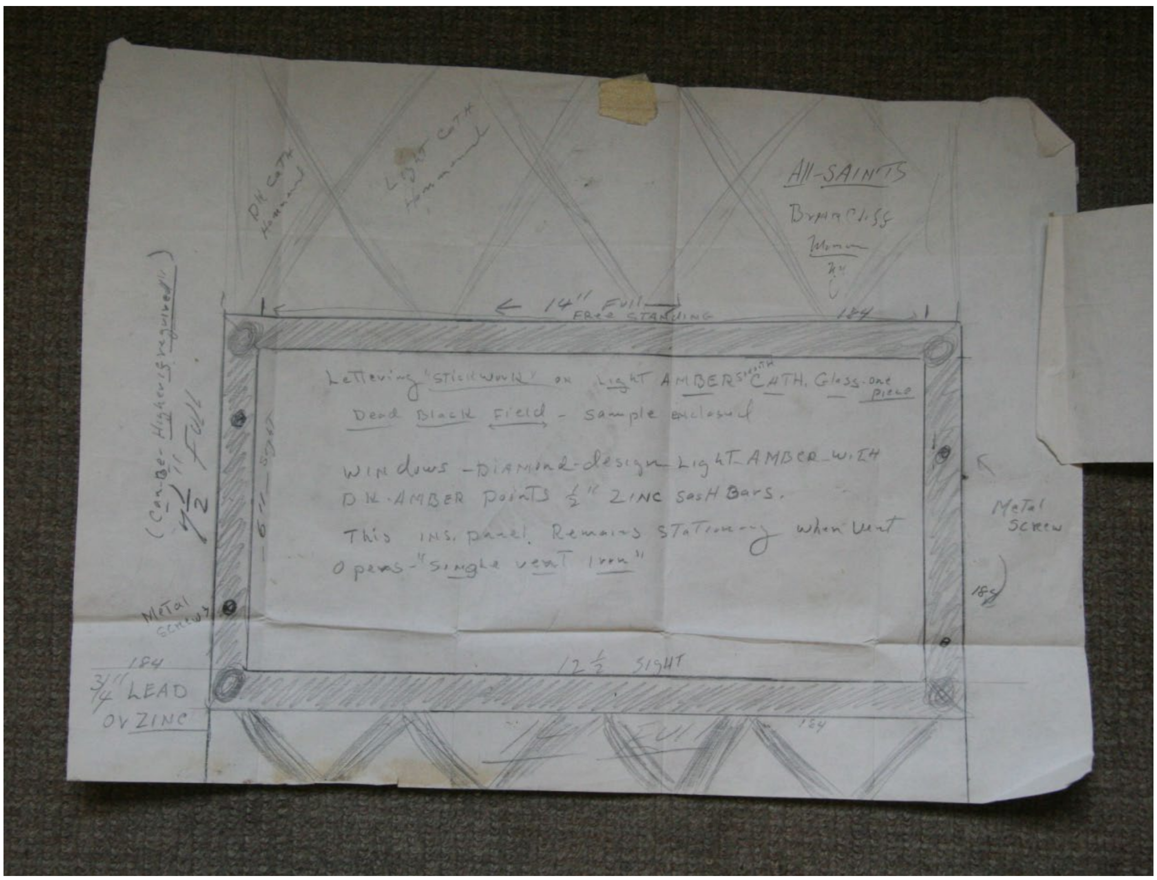

Figure 151. Gordon Henderson's measurements and notes for inscription installation at All Saint's Episcopal Church, Briarcliff Manor, New York.[37]

[37] Author photograph, material courtesy Charles J. Connick Collection, Boston Public Library.

Many of these churches, both in New York and New Jersey, later used Gordon Henderson to install protection glass over their windows and general repair. For installing a set of Connick windows at St. Bartholomew's Church, Gordon Henderson charged $320.00 per day. The four day job including labor, materials, and scaffolding earned him $1,280.00.[38]

Particularly touching was the letter Gordon Henderson wrote to Orin Skinner after setting a window at St. Bartholomew's in 1986, the year Charles J. Connick Associates closed its doors.

> Dear Mr. Skinner,
>
> Well, I guess I have set my last Connick windows in St. Bartholomews, White Plains, New York. I have been proud to have been of service to you these many years . . . It is a sad time to end an era so to speak, but this is the way it is written in the big book and rightfully so.
> I want to wish you the best of life from now on and also your associates.[39]

Gordon Henderson's last two letters to Orin Skinner do not survive, but Skinner's responses do.

> Dear Mr. Henderson,
>
> Yes, indeed, I am still around, and enjoyed your letter to the editor in the recent Stained Glass Quarterly.
>
> Cordially,
>
> Orin E. Skinner
>
> P. S. November 5th I am going to be 99.[40]

[38] Gordon Henderson to St. Bartholomew's Church, invoice, November 4, 1983.
[39] Gordon Henderson to Orin Skinner, letter, October 27, 1986.
[40] Orin E. Skinner to Gordon Henderson, letter, October 19, 1991.

His last letter to Gordon Henderson was sent in 1993:

> Dear Mr. Henderson,
>
> I am happy to have your message recalling old times.
> Merry Christmas and Happy New Year.
>
> Cordially,
>
> Orin S.[41]

Repair of Tiffany Windows (Winter Park, Florida)

Louis Comfort Tiffany had built Laurelton Hall, a grand estate in Long Island, to entertain and showcase the finest examples of his companies' production of stained glass windows and lamps, blown glass vases and lamps, pottery, and metal-work. After his retirement and death it served as his home and, through a foundation he established, a retreat for promising artists to come and work and live surrounded by the beautiful environment he had created. Hugh McKean, a promising painter, had earned an internship through the foundation. He painted at the estate and developed a love for Tiffany work.

After World War II, the estate was in tatters and was eventually vandalized and an arsonist burned part of the main mansion. Tiffany's daughter reached out to McKean, now a noted collector of Tiffany works and married to Janet Morse McKean, heiress to one of the great industrial fortunes in the United States. McKean went to the estate and salvaged major works.

[41] Orin E. Skinner to Gordon Henderson, letter, December 19, 1993.

McKean had the windows shipped to Florida in a moving truck, along with the Tiffany Chapel, originally located in the Cathedral of St. John's, in New York City. There was a spare tire in the back of the truck and it wasn't properly tied down. It rolled around and damaged many of the pieces. Lamb Studios were called in for the repairs. Gordon Henderson had been doing much of their repair work for them and they contacted him to see if he would do it. He accepted the work and travelled to Rollins College, Winter Park, Florida, where McKean had the materials shipped. Travelling with him was daughter Sandy, who was a little girl. "I had a nice enjoyable time working there," said Gordon Henderson.[42]

Gordon Henderson's mother-in-law lived not too far from Winter Park, so he and his daughter could combine a family vacation with his work. Gordon stated, "I brought a bunch of stuff down, odds and ends of glass, bits and pieces some as big as my hand (Don had large hands), strings of lead, strings of copper, copper foil, solder, acid. I had to bring a lot of stuff because I was away from my sources of supply."[43]

Gordon Henderson worked on the Gourd window, the Butterfly window, Spring of the Four Seasons series, and The Lady Feeding the Flamingoes. His philosophy was to do as little as possible, to stabilize the windows so that they could be displayed without further damage to their integrity. The Lady Feeding the Flamingoes window has a lead-line running through the shoulder. Henderson stated that he could have glued it, which was becoming a popular method of repair, but he preferred to work in the traditional manner.

McKean gave Henderson a classroom at Rollins College and they brought him windows, many with bulges and cracks. He ate in his private dining room during lunch,

[42] Gordon Henderson, interview by author, Towaco, NJ, January 23, 2008.
[43] Gordon Henderson, interview by author, Towaco, NJ, April 2, 2007.

which he greatly enjoyed. He knew his repairs were somewhat primitive and he was not in his own shop.

> I pulled the bulges back to the crossbar or whatever was there. Where there was a broken piece, I put a piece of copper foil through there and soldered it over. I did what I could to make things look presentable. Everything had to be able to be worked on in the future.[44]

Figure 152. *Lady Feeding the Flamingoes* window.
On right; note lead repair through shoulder, traditional repair by Gordon Henderson.[45]

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[44] Gordon Henderson, interview by author, Towaco, NJ, April 2, 2007.
[45] Postcard image, copyright 1976, Charles Hosmer Morse Foundation, Inc.

While in Florida, Henderson dealt mainly with Bruce Marcellius who would remain in contact with him leading to the 1965 interview so important to the Henderson family history. Their interaction led to McKean purchasing a host of items from Gordon Henderson, many now on display at the Morse Museum, in Winter Park, Florida.

Among the items sold to McKean were a cache of glass-plate negatives from Tiffany Studios. Louis Comfort Tiffany was an early advocate of photography for artistic purposes and record keeping. He took many photographs of dragonflies, flowers, and other objects he would later reproduce in his works. These glass-plate negatives were rescued from a cellar at the Payne-Spiers Studio, in Paterson when it closed. Many of images from these plates were reproduced in McKean's book *The Lost Treasures of Louis Comfort Tiffany*.

Drew University (Madison, New Jersey)

According to Gordon Henderson, his father had worked at Drew University as early as the 1930s. E. Henderson and Son and Gordon Henderson business records detail a steady request for their work from 1959 through the 1980s. Much of their work was repairs. Gordon Henderson related fixing leaded glass windows, doors, and transoms damaged by daily use and the rough-housing of college students. The yellow glass in Bowne Hall was hard to find but the Hendersons had it in their stock of old glass. Gordon Henderson recalled that, "Great Hall at Drew, it was a real mess when I got there, ivy all over the windows, growing into the building."[46]

In 1964, Gordon Henderson repaired the skylight in the Tilghman House Art Gallery. At the time, Gordon Henderson recommended the whole window be removed, properly

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[46] Gordon Henderson, interview by author, Towaco, NJ, May 3, 2007.

restored, and protective glazing be set over the panels to prevent water damage in the future. This was not done and, presently, the skylight is covered by roofing material and light no longer passes through it. Also present in the Tilghman House are wonderful figural leaded glass windows produced by Sharpe Brothers, the defunct Newark, New Jersey firm. Gordon Henderson had the original drawing for these windows in his collection that he salvaged from their studio before the building was demolished.

The year 1979 saw Gordon Henderson and artist Bill Baker collaborating on two windows in Craig Chapel. After a series of drawings were prepared, two were accepted. The two windows were installed by Gordon Henderson and son Todd, who often worked along with him.

> Paired, the windows illustrate the Drew motto: "Freely ye have received, freely give." Here, set in a circle representing the sun, a chalice, grape vine, and stalks of wheat depict God's bounty. In the companion window, a ship representing the church sails forth with the Christian message.[47]

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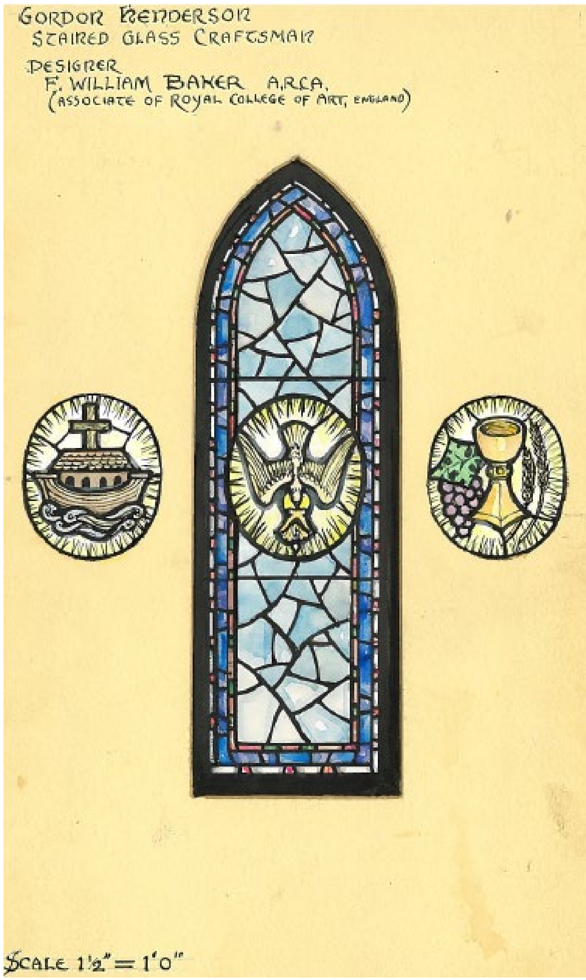
[47] Drew: News from Drew University (Madison, NJ: Office of Public Relations, Drew University, September/October 1979): 7.



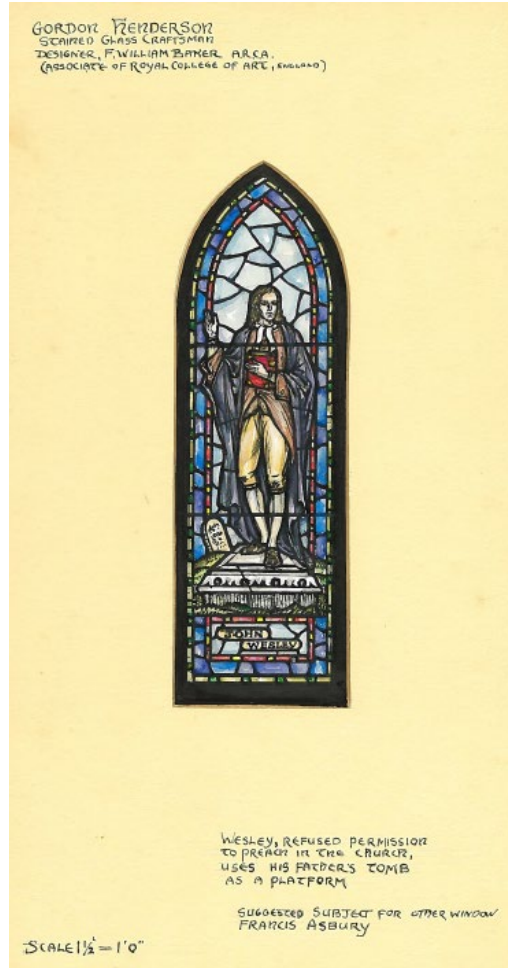


Figure 153. *On left;* Bill Baker water color for Craig Chapel Windows, accepted center medallions on left and right. *On right;* rejected design for Craig Chapel, Drew University, written bottom right: "Wesley refused permission to preach in the church, uses his father's tomb as a platform". Suggested subject for other window: Francis Asbury.[48]

[48] Author's collection.

Figure 154. Gordon Henderson and son Todd installing Window in Craig Chapel, Drew University, Madison, New Jersey.[49]

Famed English stained glass designer Henry Holiday was commissioned to design a window for the Cornell Library at Drew University, in the late 1800s. The window was entitled "Theology." Holiday reused the design of a window already installed at Manitoba College. When the original Drew library was torn down, this window was taken out, placed in a wooden crate, and stored in the attic of the Hall of Sciences; it essentially disappeared from the record. A series of fortunate events led to the restoration and reinstallation of this window.

[49] Drew: News from Drew University (Madison, NJ: Office of Public Relations, Drew University, September/October 1979): 7.

CORNELL LIBRARY.—DEDICATED 1888.

Figure 155. Image from undated Drew Theological Seminary booklet, "Cornell Library—Dedicated 1888.[50]

Alice Hamilton, Associate Professor of English at the University of Winnipeg (formally Manitoba College), when, in England, visited London and read Henry Holiday's book *Stained Glass as an Art*. On page fifty-two is a picture of a window with the caption "In Theological College, New Jersey. From full-sized coloured cartoon." Hamilton notes in a letter to Mrs. Helene Martin, head librarian at Willet Stained Glass Studios in Philadelphia, Pennsylvania that an almost identical window exists on her campus. She was looking for information on the window pictured in Holiday's book. Martin sent the letter to the *Stained Glass Journal* with a request for information.

[50] Author's collection.

Figure 156. Interior view of Cornell Memorial Library, Holiday window at end of hall.[51]

Simultaneously, at Drew University, according to local newspaper the *Daily Record* archaeology and church history professor Robert Bull found a window in the attic of the Hall of Sciences.[52] Director of Facilities Eric Sandberg called in Gordon Henderson to examine the window. Upon pulling the window out of its packing crate, Henderson recognized the Holiday window stating, "Holy cow, do you know what this is?"[53] Having read the letter in the *Stained Glass Journal* under the heading "Does This Holiday Window Look Familiar?", Henderson was fully aware of the significance of the discovery.

[51] Postcard, postmarked 1908, author's collection.
[52] Linda Roman, "Resurrected Window Ties Library To Past," *Daily Record (Morristown, NJ)*, May 8, 1982.
[53] Gordon Henderson, interview by author, Towaco, NJ, March 24, 2007.

Reverend Simpson was in charge of the Methodist Archives at the time and pressed to have the window restored, a decision Drew University approved. The Hilier Group, an architectural firm that has frequently been called upon by Drew University, was designing the new Rose Memorial Library and created a space for the newly recovered window over the main entrance.

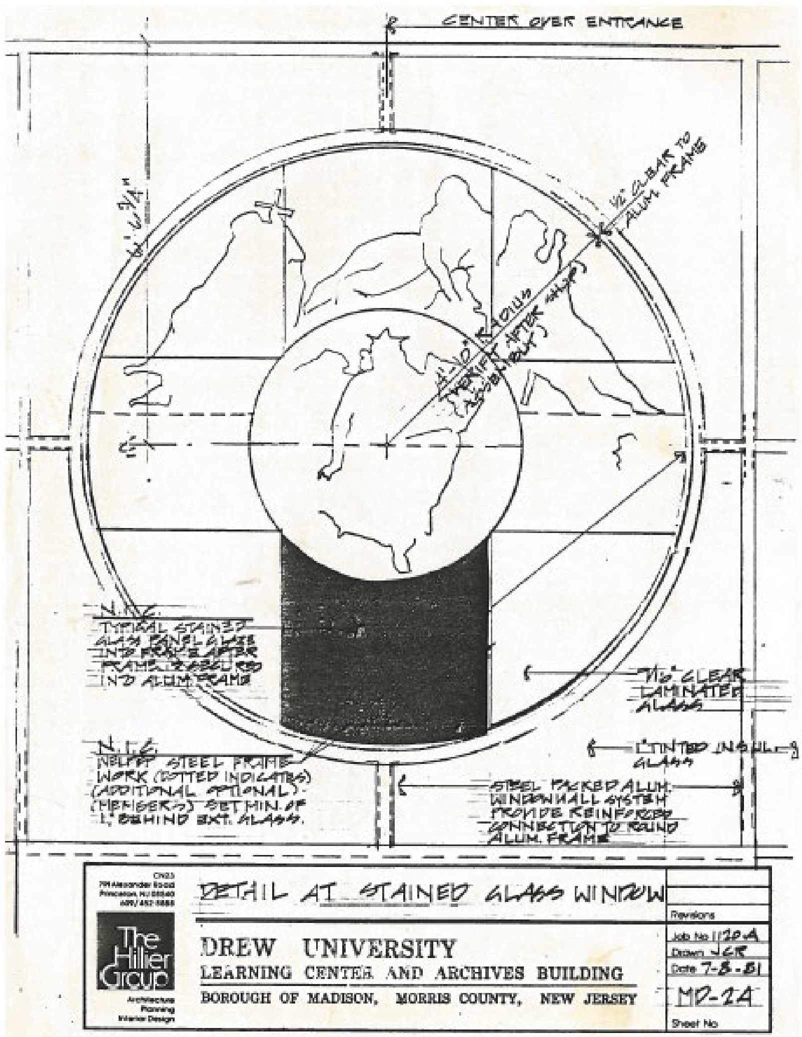


Figure 157. Photocopy of Hilier Group sketch for Henry Holiday window frame.[54]

[54] Author's collection.

Gordon Henderson was contracted to complete this project. Henderson stated, “I got them down (from the attic) and took them to the shop and laid them all out, repaired and re-leaded them. I had to replace some glass. Some of the lead was like spaghetti, just hanging there, you know.”[55] It took six months of work to restore the window; working without the original cartoon, Henderson described the process as putting together a jigsaw puzzle. One of the painted heads was cracked. Henderson, using similar traditional methods as he used on the Tiffany “The Lady Feeding the Flamingoes” window, ran a thin lead through the break, which is not visible in the installed window.

When the window was on the workbench in Henderson’s Boonton shop, Eric Sandberg brought the project architect from the Hillier Group along with the head glazier of the firm hired to install the plate glass windows in the new library to inspect the progress on the job. The original frame designed by the architectural firm was going to cover the fillets in the original design and Gordon Henderson objected to this.[56] After some further suggestions by the group, Mr. Henderson politely asked the architect to let him handle frame design as to not ruin his work. Further, in his inimitable manner, he said to the group, “If you gentleman will leave me alone, I’ll fix your window for you.”[57] The window was fully restored. This constituted a complete leading, replacement of missing pieces of glass, and designing and having fabricated a new iron framework.

Gordon Henderson knew of an old-time wheelwright in Paterson, New Jersey who was still in possession of bending equipment. Working from cardboard templates made by Henderson, the wheelwright created an iron t-bar frame which would sit inside of the

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[55] Gordon Henderson, interview by author, Towaco, NJ, March 24, 2010.
[56] Fillets are thin borders of complementary or contrasting colored glass that set a window off from the frame creating a perception that the window is floating within the structure, highlighting the finished work.
[57] Gordon Henderson, interview by author, Towaco, NJ, July 25, 2005.

massive aluminum one designed by the architect; the frame would have ten sections. This interior frame would allow for the fillets to be seen as designed.

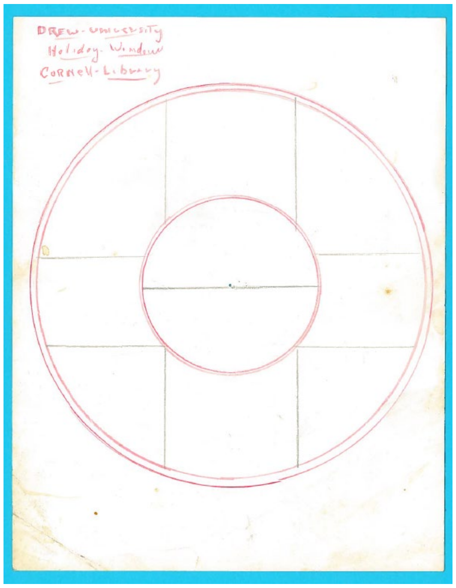

Figure 158. *On left;* Gordon Henderson sketch of frame for the Rose Window, Drew University Library.[58] *On right;* exterior view of installation showing iron frame.[59]

This workshop was located behind the municipal court house in Paterson. While waiting for the frame to be made, a police car with two officers and a prisoner arrived at the back entrance. They got out of the car and entered a garage to the holding area. As the garage door closed, the prisoner slid under and ran away, right past Henderson and the two officers were stuck inside the building.[60] Gordon Henderson recalled seeing many interesting events as he worked, things that often livened up an otherwise routine day.

The next challenge was to get the frame, which was twelve feet in diameter, from Paterson to Drew University. Gordon Henderson's pickup truck had only an eight foot

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[58] Author's collection.
[59] Author photograph.
[60] Gordon Henderson, interview by author, Towaco, NJ, July 25, 2005.

bed and he had to travel on major highways. A shipper was hired and the frame was moved for a fee of eighty-five dollars.[61]

During the next week Gordon Henderson arrived at Drew University to begin installing the frame and window. As he began to set up his scaffolding, union workers approached him and told him that they might cause a problem if he did not have a union card. He came back on the weekend when the union crews were not there. With the help of a laborer that happened to be on site, he was able to set the frame using a block and tackle. Even then the union was not finished. Unhappy that he had put the frame in place over the weekend, the glazier's union representative stated, "What happens if your pretty window gets broken?" Mr. Henderson replied that the window didn't belong to him; it belonged to Drew University so the union would have to answer to them.[62]

The head of the union local called Henderson at his shop and complained to him. Henderson told him to back off, that he wasn't taking any work from them and he had as much right to make a living as they did. The union insisted on having one of their own men on the job so the next day they sent someone to Drew University. Henderson told the man to stay "fifty feet away from my work so nothing happens by accident."[63]

There is no union representing stained glass workers; the closest is the glazier's union and they generally avoid stained glass installation. After settling the union issue with the assistance of Drew University personnel, he came back on the weekend again to complete most of the installation. When the union man came back on the following Monday, the window was installed except for the two center panels; these were purposely left out.

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[61] Gordon Henderson, interview by author, Towaco, NJ, March 24, 2007.
[62] Ibid.
[63] Ibid.

These would be later installed at a dedication ceremony, much to the chagrin of Gordon Henderson.

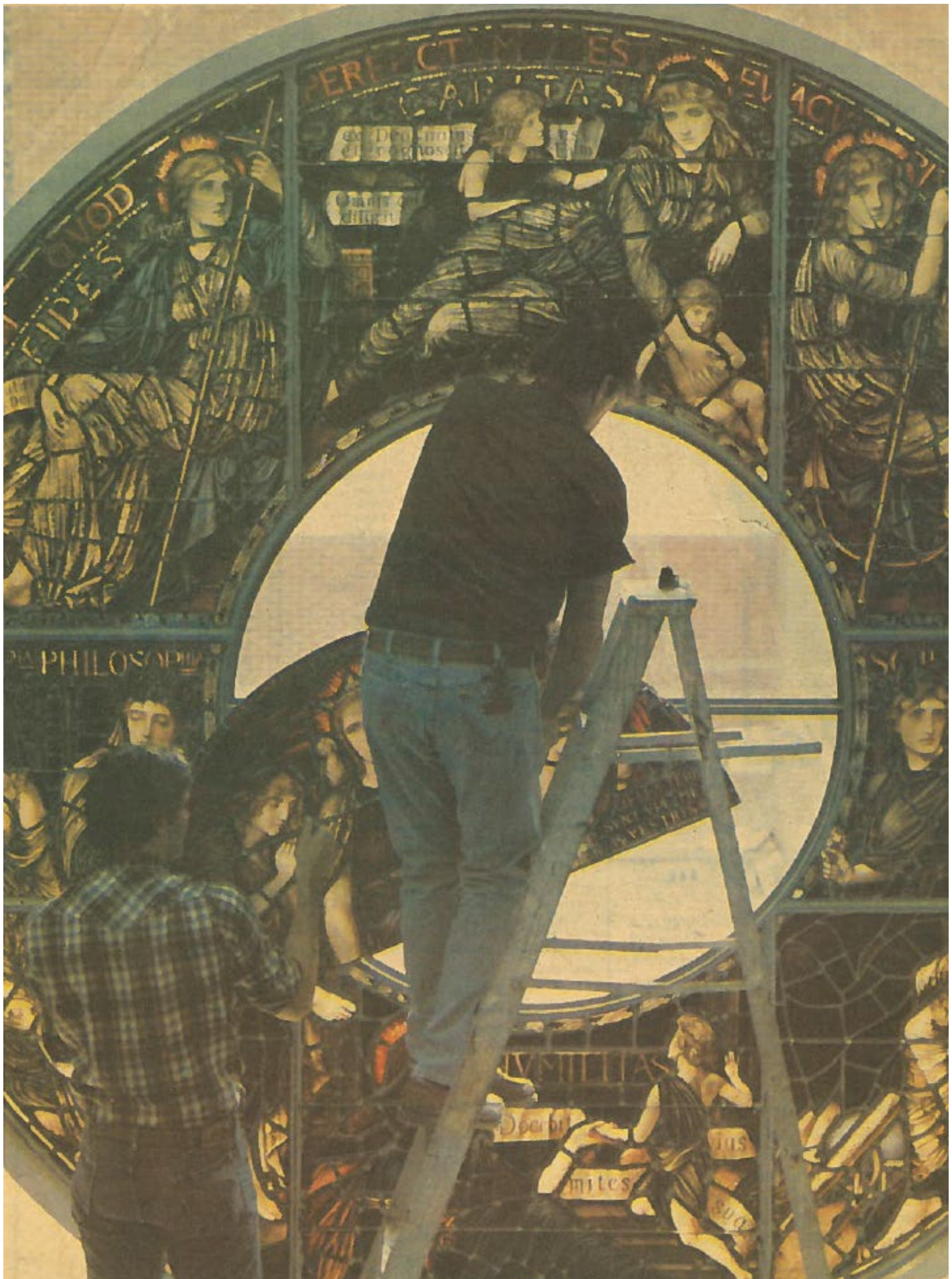
Figure 159. Gordon Henderson ready to install last of two exterior panels, Holiday window.[64]

[64] Image courtesy Gordon Henderson collection.

Figure 160. Gordon and Todd Henderson installing Henry Holiday window; note narrow ledge.[65]

Friday, May 8, 1982 saw the completion of the window installation. The final two sections of the window, the center panels were installed during a cocktail party enjoyed by the Drew University Board of Trustees and invited dignitaries.

[65] "Did You Know? (Should You Care?) #116," *Drew Magazine* 20, no. 1, (Madison, NJ: Office of University Relations, Drew University, Fall 1992): 39.



Staff Photo by ROBYN CRAIG

Piecing It Together

Putting the final touches on a stained glass window at Drew University's new learning center in Madison yesterday were Todd Henderson, left, and father Gordon. Linda Roman tells how the window was lost in storage for 40 years.

Figure 161. Gordon and Todd Henderson working under the spotlight.[66]

[66] Robyn Craig, *Daily Record (Morristown, NJ)*, May 8, 1982.

Standing on a narrow ledge, up on an aluminum ladder, under the glare of watchful eyes and cameras, was particular stressful for a man used to working alone and unobserved. Henderson stated, “I’m sweating, what happens if it doesn’t fit and I can’t get it back out? I set the window with a couple of sheet metal screws, we climbed down the scaffolding, and we got the hell out of there.”[67]

Staff Photo By ROBYN CRAIG

Drew University trustees pose beneath the Cornell window, whose installation was completed yesterday.

Figure 162. Celebration after Gordon Henderson “Got the Hell out of there.”[68]

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[67] Gordon Henderson, interview by author, Towaco, NJ, July 27, 2005.
[68] Robyn Craig, *Daily Record (Morristown, NJ)*, May 8, 1982.

The installation was toasted with champagne. Mr. Henderson and his son came back later to secure and putty the window properly after all the dignitaries left. Today, the window continues to glow gloriously to be enjoyed by all who enter the Rose Memorial Library.

Figure 163. Henry Holiday window at Drew University.[69]

In 1989, Gordon Henderson was contacted by Dean Ogletree in regards to stained glass windows in the Methodist Chapel, Tuxedo, New York. The original charter for the chapel stated that the windows were to be donated to Drew University if the building was now longer used for worship. The corporation managing Tuxedo Park decided to sell the building; the church was closing and the windows now belonged to Drew University.

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[69] Author photograph.

There was a five foot by nine foot window purportedly produced by Louis Comfort Tiffany and two smaller circular panels. Gordon was asked to evaluate the windows and determine the possibility of moving them.[70]

Gordon Henderson traveled to Tuxedo Park. Afterwards, in his estimate he wrote:

> As per the Tiffany type alter window, I find that this window is a fine example of Tiffany style. It has the glass of Tiffany the same being copyrighted by Tiffany Studios at that period. As it is not signed by Tiffany Studios and I find no record of this Church in my research, I can not go on record as to its authenticity, especially since it was restored; the hand and hands were replaced by a modern artist. The same being well done. My cost to remove these windows and deliver to the University would be $6,500.00.[71]

Figure 164. Window set in Methodist Archives lobby.[72]

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[70] Gordon Henderson to Dean Ogletree, Drew University, Letter, Madison, NJ, August 21, 1989.
[71] Gordon Henderson to Dean Ogletree, Drew University, Letter, Madison, NJ, September 18, 1989.
[72] Author photograph.

Gordon Henderson removed and delivered the windows to Drew University in May 1990. The *Garden of Gethsemane* window was in relatively bad shape and proved difficult to move. The heavy drapery glass, although stunningly beautiful, made the job a challenge. Today, the viewer can appreciate the nature of this glass originally designed to imitate folds in clothing and drapery without the use of paint. The placement of this window on the floor of the Methodist Archives lobby allows an unusual opportunity to see and touch this uniquely American glass in an installation. The depth of the undulations is surprising when viewed up close. Gordon Henderson believed that the large window was probably produced by J & R Lamb Studios, located in New York City as it is the appropriate style, similar to those produced by Tiffany Studios.[73]

F. William (Bill) Baker, A. R. C. A.
(Associate of the Royal College of Art, London, England)

> The main thing was, I added his name onto the windows. I didn't try to say I did everything here and all. I'd explain that there's two mediums—an artist and a glazier—in stained glass. One guy can't do it all; well, some guys are proficient, like Kurtz, who could work both ways and like that stuff. Mostly the glass painters, that's all they did.[74]
>
> *Gordon Henderson*

[73] Gordon Henderson, interview by author, Towaco, NJ, February 16, 2009.
[74] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.

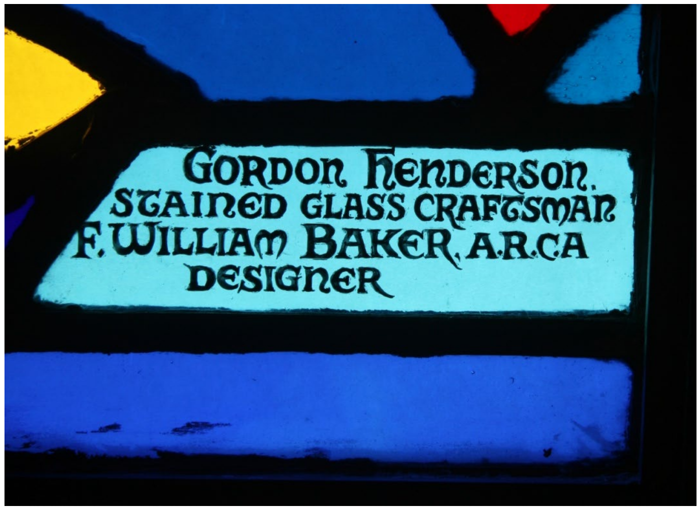

Figure 165. Henderson/Baker signature on window at Chatham United Methodist Church, Chatham, NJ.[75]

The person with whom Gordon Henderson enjoyed the longest professional association, besides his father, was F. William Baker, who was called Bill by all. Bill Baker, like Gordon Henderson, was raised in the trade. His father was a glass painter and designer in England and with McClausen Studios in Canada. Mr. Henderson stated that, "He was a good designer, particularly in the William Morris style. As a kid Bill used to bring his father's work to a public kiln that was set up in their town to have it fired, like me he was in it in his youth."[76]

Bill Baker was further educated in his chosen trade at the Royal Academy of Art in London, England. There he worked beside noted painter and glass designer John Piper. He had two major instructors and he told Gordon Henderson that, "My teacher was a fellow like me and the glazier was a fellow like you."[77] As a result, Baker had the ability

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[75] Author photograph
[76] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[77] Gordon Henderson, interview by author, Towaco, NJ, March 6, 2007.

to produce windows on his own. In fact, Bill Baker was to Gordon Henderson what Fred Kurtz had been to Ernest Henderson—designer, painter, and friend.

Bill Baker was employed for a time at J. Whipple & Co., LTD, of Exeter, England. There he worked as a designer and painter.   George L. Payne, a third generation glass man with a studio in Paterson, New Jersey, was Whipple's agent in the United States. Besides windows, Whipple created all the objects for church interiors. Windows would be shipped to the United States and Payne's men would set them. Payne went over to Whipple's and there met Bill. He invited Bill to come back to the United States and work for him. When Payne went out of business, Bill was stuck without steady employment. He started doing freelance work for Marchese & Hamersma, Lamb Studios, and others. Gordon Henderson met Bill Baker at Marchese & Hamersma's shop. He saw his work and said to him "Hey Bill, work with me and we'll work up something here—the two of us. I can do the cutting and glazing and we can handle a lot of work here."[78]

Figure 166. Bill Baker, c. 1995.[79]

Gordon Henderson became friendly with Baker and his wife Win who did the painting on the watercolors after he drew in the designs. Bill Baker would draw full-size cartoons for Gordon Henderson to work from selecting and cutting the glass. Henderson made

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[78] Gordon Henderson, interview by author, Towaco, NJ, April 2, 2007.
[79] *Gordon Henderson and Bill Baker and the Chatham United Methodist church Windows,* VHS, (Boonton Township, NJ), 1995.

wood trays about two feet by four feet—shallow trays; in them he would place the pieces of glass Baker would paint. Henderson stated, "I would pick up the trays cut the glass and bring it back to him to paint. I would pick it up again, fire and glaze it. Sometimes my wife would do the running if I was busy. I would pay him for his work and that was that."[80]

The Bakers moved from Pompton Lakes, New Jersey to Jefferson, New Jersey, the Oak Ridge section. There, they could have a large garden and studio. Gordon Henderson had a big five foot by six foot plate glass window at his shop. He went to his house and opened up a space in the cellar wall and installed it so he could have an easel window for painting. Henderson stated that, "Bill was good at everything and open to new things. He had never done bar room work or domestic windows and he became very good at flowers. He was also a great letterer and did some sign painting as well. He designed the sign that was on my Boonton shop."[81]

Figure 167. Bill Baker at Gordon Henderson's Boonton shop,[82]

[80] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[81] Ibid.
[82] *Gordon Henderson and Bill Baker and the Chatham United Methodist church Windows,* VHS, (Boonton Township, NJ), 1995.

Gordon Henderson described what he liked about the work of Bill Baker. He said, "Bill was really versatile. His figures were excellent, strong. He had a certain crudeness about his work, it's not sweet."[83] Baker was a master of iconography, which was important when designing windows for churches. He was also a master of the female form. He designed and painted several windows for Gordon Henderson of mermaids, Cleopatra, and other similar images.

Figure 168. Bill Baker designs, *On Left*; private residence, Brooklyn, New York, *on right;* Mermaid panel.[84]

Baker had a strong influence on Gordon Henderson's work and vice versa. He visited Baker at home often and Baker came to his shop. He began to learn the nuances of glass painting and began drawing some of his own work. He became skilled enough so that he didn't need to work on every job with Baker, which allowed him to earn more money.

[83] Gordon Henderson, interview by author, Towaco, NJ, April 2, 2007.
[84] Gordon Henderson collection.

The Bakers, though, were mostly stay at home people and very frugal. Bill Baker loved to work in his flower gardens. They also grew most of their own vegetables. Gordon Henderson stated that, "I never had a bad word with Bill."[85] In many conversations over the last decade of his life, after Bill Baker had passed away, the loss was clear on both a professional and personal level. One of Gordon's proudest possessions was a small panel of two intertwined hands made by Baker for him. In describing the panel Henderson said, "What you have is the artist/designer and the craftsman, one hand rubs the other. Without one hand you cannot use the other and that's the way it should be."[86] The panel hung in his bedroom window where he could see it every morning.

St. Peter's Church (Mountain Lakes, New Jersey)

"It is the best job I ever did"[87]
Gordon Henderson

When Lamb Studios was in transition from family ownership, manager Norman Graham approached Gordon Henderson regarding a commission at St. Peter's Church in Mountain Lakes, New Jersey. He knew that the church was located near to where Mr. Henderson lived and he knew that Bill Baker was working with him. Gordon Henderson went to the church, looked at the space, and realized that he had never worked on a space of this magnitude. Gordon, while awed, "wasn't the kind that was going to back off on it."[88] The window large Gothic was filled with industrial wire glass. There were other windows from prominent studios already there. Whitefriars, from England, had two

[85] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[86] Ibid.
[87] Ibid.
[88] Ibid.

windows already in place. Frank Lorti's Cloisters Studio had produced another beautiful window.

Whitefriars had produced a design for the window that was never commissioned. It was found in a window seat in the church. Bill Baker was initially unwilling to reproduce this window as he felt, having worked at Whitefriars, that it might be copyright infringement. Gordon reminded him that Whitefriars was out of business and, besides, who would ever know?

A new design was created based on the original and presented to the church committee. One of the committee members was local real estate and insurance agent Thomas Bracken, with whom Gordon had his business and personal insurance. Bracken vouched for Gordon's work and he got the job. The total price was over fifteen thousand dollars which included Norman Graham's commission, Bill Baker's design and painting, and Gordon Henderson' costs being the lion's share. As with most of these commissions Gordon purchased the glass, lead, solder, iron bars, and handled all installation expenses. His share also included the labor for firing and glazing.

Gordon went to the church and measured the openings with son Todd; there were three sections across and each was topped by a two-light top. The original design was modified and Bill Baker created his own figures for the three scenes from the Life of Christ placed in each panel in a traditionally Gothic format. The major design change was in the top panels where four beautiful angels were placed, designed in a manner similar to William Morris.

St. Peter's wanted the windows installed in time for Easter. Henderson and Baker had only a few months to complete the job. Gordon Henderson would cut glass every day and bring it to Baker to paint. He would pick up the trays of glass and fire them in his workshop kiln. In the morning, when the glass had cooled he would start glazing. Whatever he couldn't get done during the day Henderson would do at night. He often glazed the window sections on a piece of plywood laid across the washing machine in the basement, working until 11:00 at night. At one point, the relentless pace caused Bill Baker to say, "Blind me Don, you're going to blind me here"[89] Baker told Gordon Henderson that he would have to complete the border painting himself if they were to meet the deadline. Baker told Henderson to "badger them and then take your finger and run it down the middle, that's all you need, take off some paint with your finger or a stiff brush."[90] Gordon completed the borders and Bill painted the major figures and scenes.

The combined effort of the team of Henderson and Baker was stretched to its limits but the men completed the commission. The window was installed by Gordon Henderson and assistant Jimmy Lammers in time for Easter and the ceremony consecrated the finished work. It holds forth beautifully in the church. The design of the church has worshippers entering from the front and the window in the back of the church catches one's attention immediately. As mentioned, Gordon Henderson considered this commission the best job he ever worked on and it was the work of which he was most proud in his association with artist Bill Baker.

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[89] Gordon Henderson, interview by author, Towaco, NJ, January 27, 2010.
[90] Ibid. Badgering is a painting process where pigment is spread evenly over a piece of glass using a specialized brush called the badger blender, about four inches in width, made of soft badger hair.

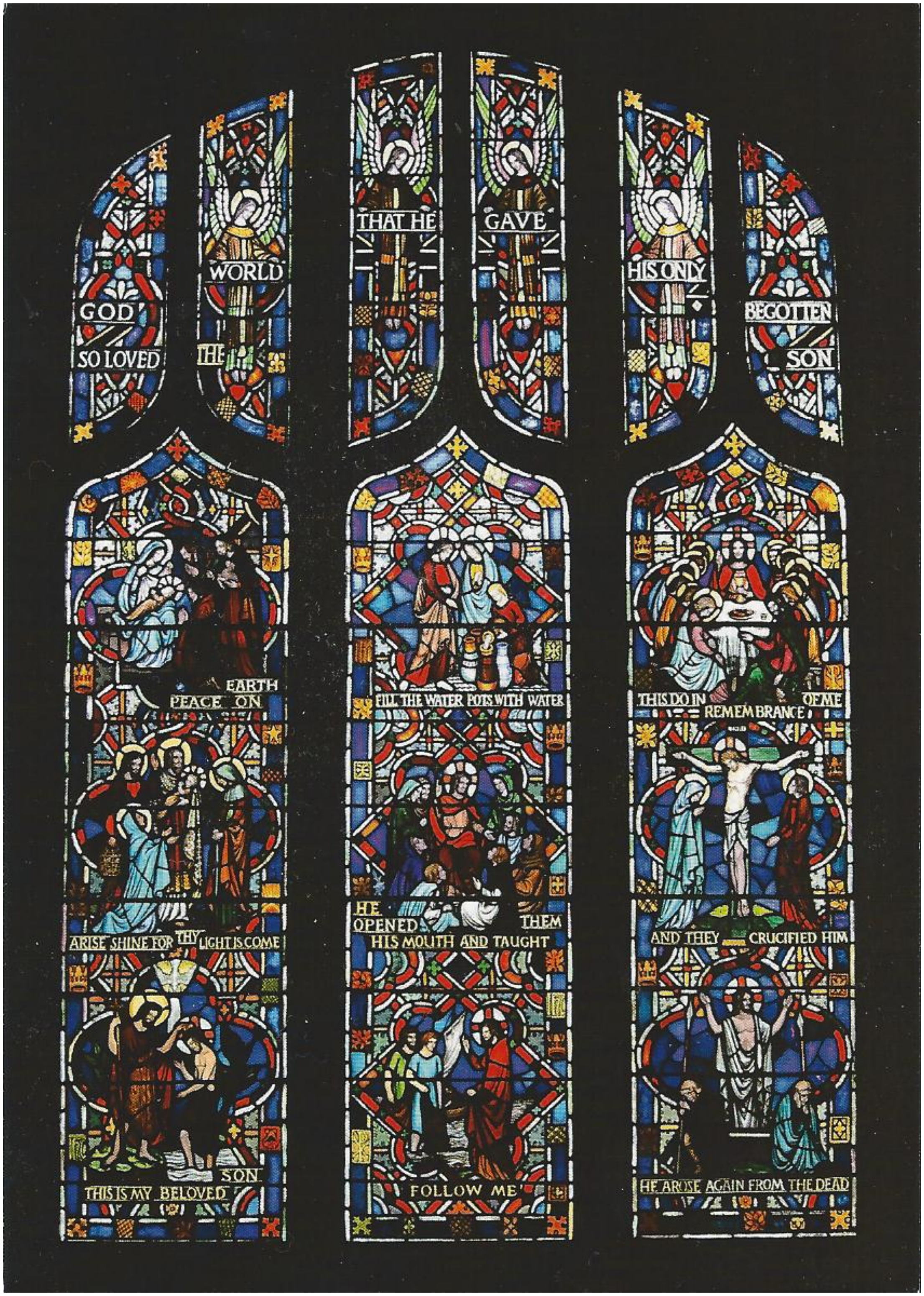

Figure 169. St. Peter's, Mountain Lakes, New Jersey, Gordon Henderson's Masterpiece.[91]

[91] Photograph courtesy Todd and Katherine Henderson.

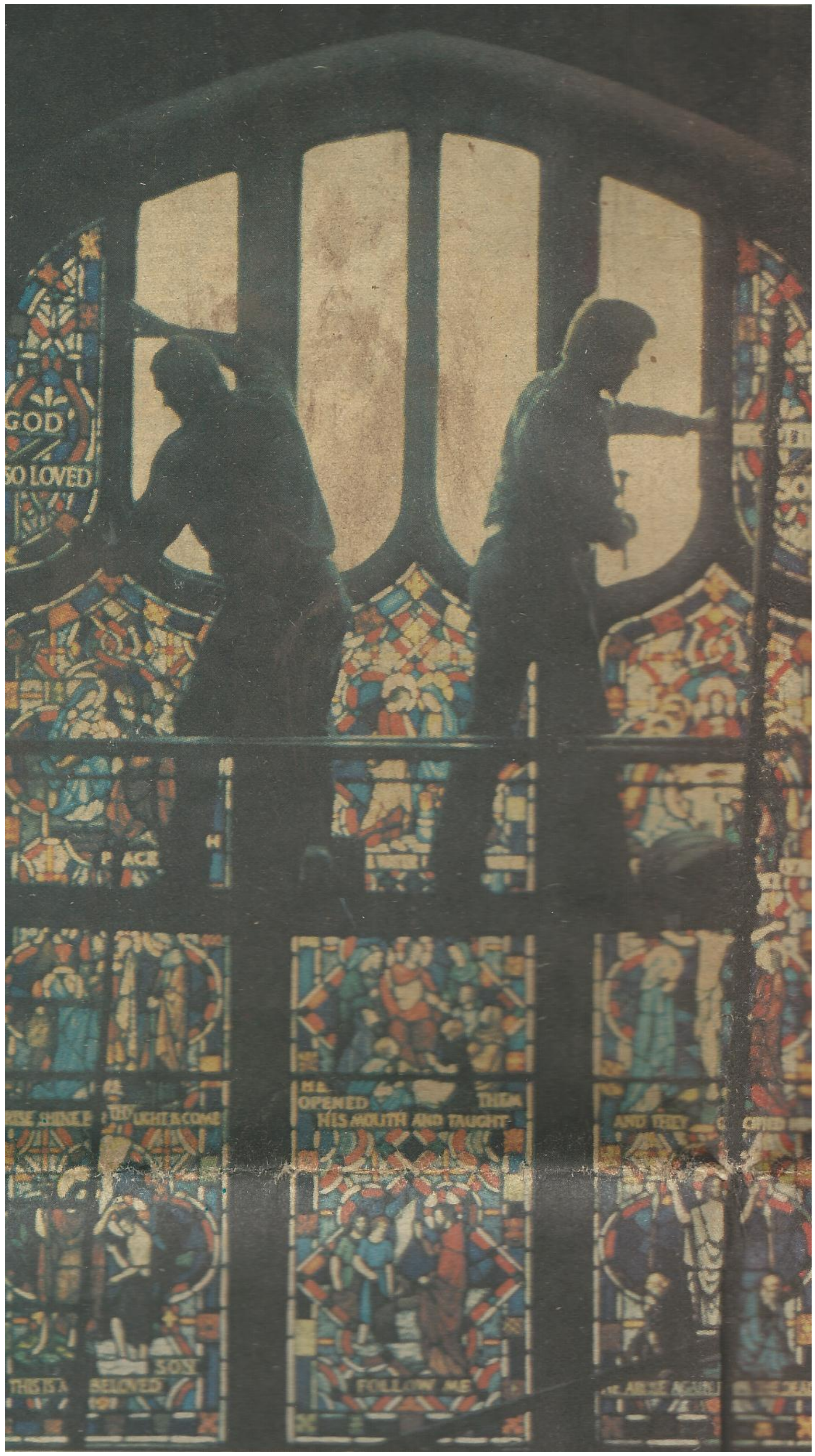

Figure 170. Gordon Henderson and Jimmy Lammers setting window in St. Peter's Church, Mountain Lakes, NJ. [92]

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[92] Stuart Davis, *Daily Record* (Morristown, NJ), March 20, 1978.

Chatham United Methodist Church (Chatham, New Jersey)

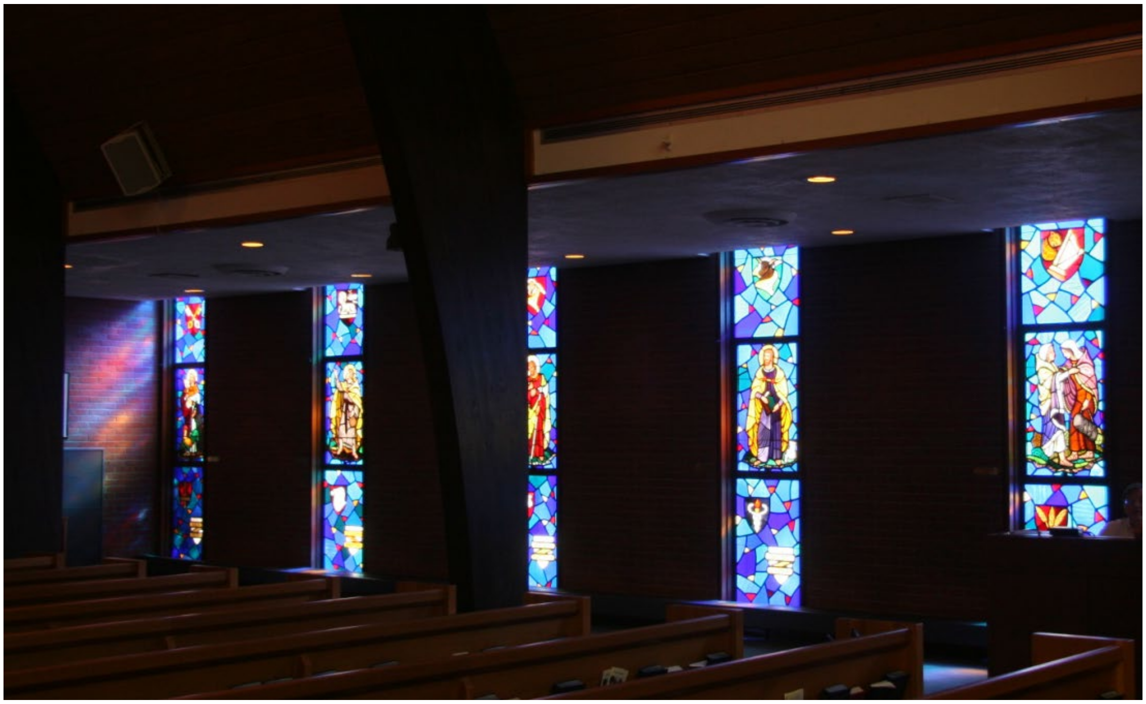

Figure 171. Partial view of right side interior, Chatham United Methodist Church, Chatham, New Jersey.[93]

> How many craftsmen get to do a whole church? Not many get that opportunity. It's because I told him his church looks lousy and they had a lot of windows in there. He said, "I never thought about that before." It tells a story in there. There's a sermon for every window, there's no end of sermons for the minister there. When you look at the windows, the figures are all looking in the same direction, towards the minister. Bill really knew his business.[94]
>
> *Gordon Henderson*

[93] Author photograph.
[94] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.

Figure 172. Gordon Henderson glazing panel for Chatham United Methodist Church.[95]

Gordon Henderson received a phone from someone at the Chatham United Methodist Church regarding their windows. It was near Eastertime, he recalled, and he met Reverend Simpson there. The church windows were filled with clear colored glass placed in the frames by the glazier when they built the church; put in in random combinations. Henderson stated, “Dr. Simpson, I couldn’t find my feelings for the Lord in this church.” Dr. Simpson said, “What do you mean, Mr. Henderson?” Who replied, “This glass is terrible.” He looked at Henderson and asked why it was so bad. Henderson, said, “If you give me a chance, I’ll make your church beautiful.”[96] About two weeks later he got a call from the church at his shop in Boonton. They asked him to come back and look at one of the big windows in the front of the church. Bill Baker made a design and a watercolor and they accepted it.

[95] Gordon Henderson collection.
[96] Gordon Henderson, interview by author, Towaco, NJ, February 9, 2009.

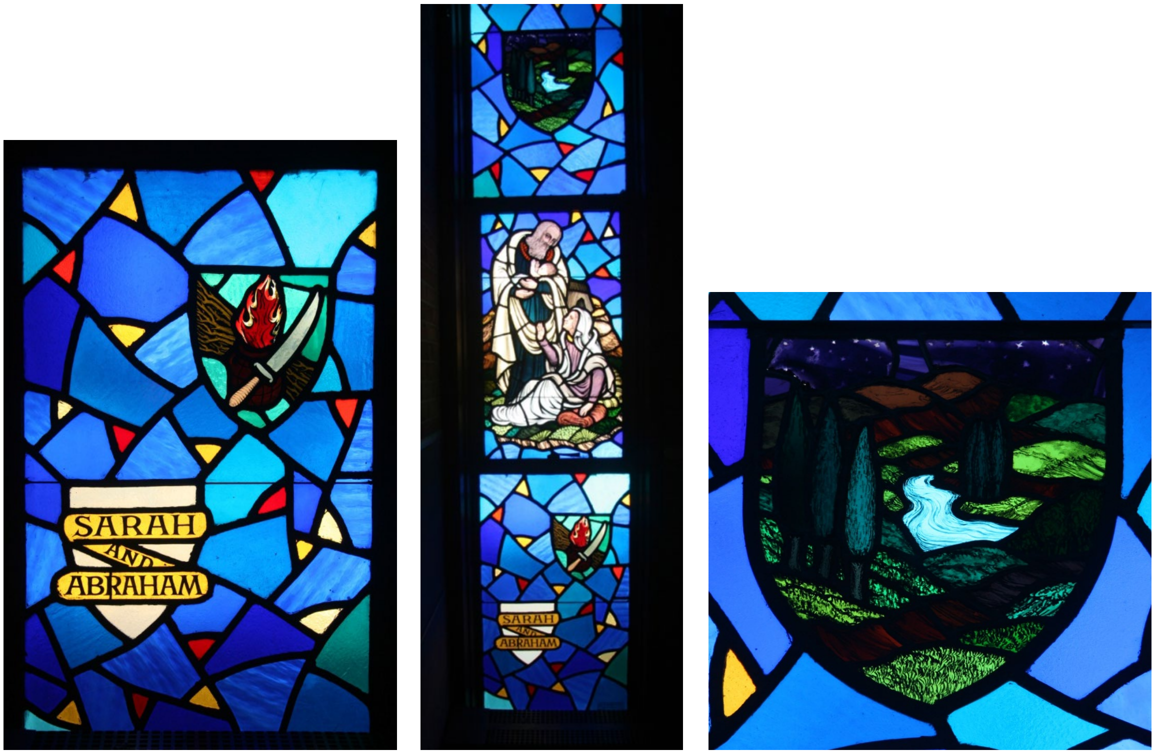

Figure 173. *On left:* Sarah & Abraham window, detail of section being glazed in Figure 172, *in center;* full window, *on right;* detail of William Morris style medallion, celebrating Bill Baker's heritage.[97]

Gordon Henderson recalled that the first window designed and installed was *The Nativity*. He felt that this was a particularly strong and unique interpretation of the scene and the community was inspired by it to commission more work. The price of the window was $13,000.00, the most expensive of the windows in this series.[98] Bill Baker's fees to Gordon Henderson were $585.00 for the original design and $2,400.00 for full size drawings and glass painting.[99]

[97] Author photographs.
[98] Gordon Henderson to Chatham United Church, Chatham, NJ, invoice, March 29, 1991.
[99] Bill Baker to Gordon Henderson, invoice, dated simply 1990.

Figure 174. Nativity window, Gordon Henderson's and Bill Baker's first of seventeen windows at Chatham United Methodist Church, Chatham, New Jersey. *On left:* full view, *on right;* detail.[100]

The next windows commissioned by the church were The Four Evangelists. Several decisions accompanied the design and placement of these windows. First it was decided to place two on each side of the church, rather than have four in a row on one side. This would create a balance. From Gordon Henderson's perspective the experience of the four windows placed in this manner would enhance the viewing impact and his chances of producing the rest of the windows. The second decision was to place plaques on the

[100] Author photographs.

woodwork below the windows so as not to interfere with Bill Bakers' design by inserting memorials into the windows themselves. These next four windows cost $7,500.00 each.[101] Bill Baker charged Henderson $385.00 for the design and $880.00for full size drawings and painting of glass.[102]

Over a five year period, Henderson and Baker would team up and produce sixteen windows for the church. The price of the smaller interior windows average $7,500.00 hundred dollars. Gordon Henderson fabricated his last window for the church in 2007 using a background design originally produced by Baker who was now dead.

When entering the sanctuary of this church, one is immediately struck by the cool blues of the window backgrounds and the strong figures portrayed. Henderson stated, "This is so unique. Mostly you get one or two windows and you put them in with other people's windows and they don't match."[103]

Later, after the last window was installed, Henderson recalled his work and related a typical story:

> I can't believe I did all that work in Chatham, cutting and glazing, I worked fast. "I remember a guy from Rutherford who got in trouble for stealing chickens. He got caught running away and said to the judge 'Everything I do I do fast' and the judge, he says, "Let's see how fast you do thirty days."[104]

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[101] Gordon Henderson to Chatham United Methodist Church, Chatham, NJ, estimate, May 17, 1990.
[102] Bill Baker to Gordon Henderson, estimate, March 13, 1990.
[103] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[104] Ibid.

Other Work

A complete list of the work of Gordon Henderson and his various collaborators does not exist. Hundreds of residential windows, countless churches, and untold businesses hold Henderson work. He kept good records of many jobs, but not all of the commissions paid in cash. Gordon enjoyed bartering when his cash flow was positive. One other church must be mentioned—The United Church of Christ, Union, New Jersey. In this church working closely with Reverend Nancy Forsberg, Gordon Henderson completed, with Bill Baker, a series that sets the interior tone of the new section of the building. Henderson said that Reverend Forsberg was one of the best clients he worked with.

Gordon Henderson worked for many other studios and individuals during his career as an independent glassman and in partnership with his father besides those already mentioned.[105] Among the studios included: Willet Studios in Philadelphia, Pennsylvania, McLaughlin Brothers from New York City, and Lamb Studios from New Jersey. Individuals included: A. Raymand Katz from Chicago and New York City, and Albinus Elkus from New York City, Rudy Buence from Newton, New Jersey, James Bosland from Paterson and Midland Park, New Jersey, Rivell from Newark, and many others.

Much of this work was taking measurements, making templates, setting windows, and repairs. Because of his skill he was in demand. Because he would accept challenges, he received a wide variety of requests from studios large and small. Gordon Henderson made it a point to meet the responsible parties in the churches where he worked so that they would contact him directly for future work. When protection glass made of plate

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[105] See Appendix D.

glass, plexiglass, and later Lexan became necessary, Henderson was hired by many of these churches to install it.

There are a few notable individuals with which Henderson worked over the years in non-religious settings that are significant and deserve mention. Two of these are antique dealer Lillian Nassau and Alice Connie 'Nonnie' Frelinghuysen, curator at the Metropolitan Museum of Art in New York City.

Lillian Nassau was an early proponent of the Tiffany revival. Gordon Henderson used to repair Tiffany lamps for her, sometimes two or three per week. One of his favorite repairs was a Tiffany Dragonfly lamp, the one where the head protrudes below the edge of the lamp. The head was broken and had to be reproduced. The eyes of the dragonflies were red. "I couldn't find the glass to replace the eyes. I had old-time fishing tackle and I found a fishing plug in there with the same kind of eyes that were right in the dragonfly. She never forgot that."[106] Henderson had the old glass and she wanted that in the lamps she sold.


Figure 175. *On left:* Dragonfly Lamp Shade Similar to one repaired by Gordon Henderson, *on right;* detail showing head hanging below lampshade rim.[107]

[106] Gordon Henderson, interview by author, Towaco, NJ. March 15, 2007.
[107] Alastair Duncan, Martin Eidelberg & Neil Harris. *Masterworks of Louis Comfort Tiffany* (New York: Harry N. Abrams, Incorporated, 1989), 51.

Lillian Nassau had donated a fountain produced by Tiffany Studios to the Metropolitan Museum of Art where it was displayed in the American Wing. Nonnie Frelinghuysen, possibly through Nassau, contacted Gordon Henderson to repair some missing glass. There was no similar glass left in existence so Henderson related, "I chunked clear glass, thick clear glass and I got it with silver stain and I made it match perfect."[108] Frelinghuysen later visited with the Hendersons at their Towaco home, viewed portions of his collection and enjoyed lunch.[109]

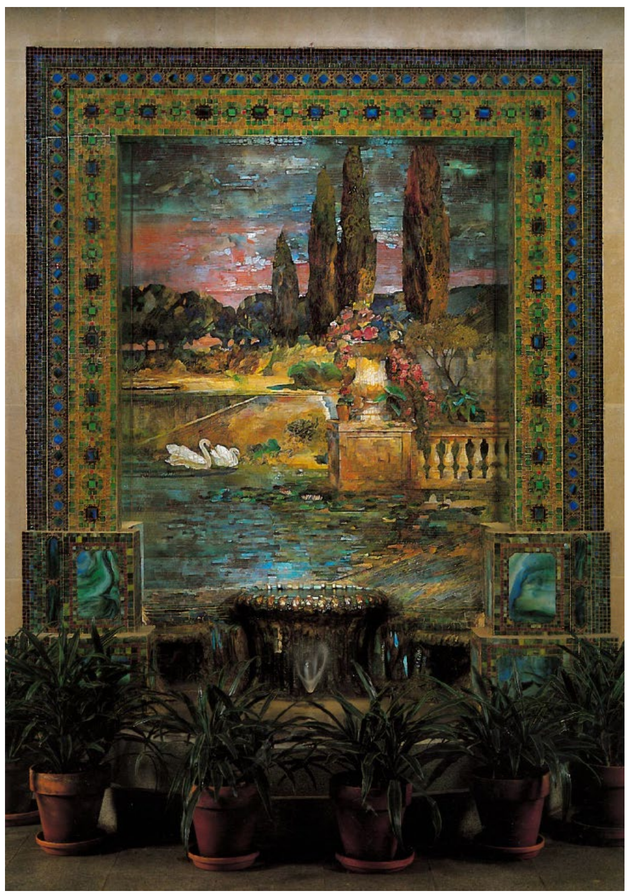

Figure 176. Tiffany mural and fountain at the Metropolitan Museum of Art.[110]

108 Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
109 Alice Cooney "Nonnie" Frelinghuysen to Gordon Henderson, letter, August 16, 1979.
110 Alastair Duncan, Martin Eidelberg & Neil Harris. *Masterworks of Louis Comfort Tiffany* (New York: Harry N. Abrams, Incorporated, 1989), 67.

Chapter 13

Gordon Henderson: Collector, Dealer, Promoter

> I'm like an elephant, I remember where stuff is and I went and got it when guys died or went out of business. Nobody wanted it anyway.[1]
>
> *Gordon Henderson*

Gordon Henderson, like his father, was a collector. He collected anything he found interesting, unusual, or related to his personal interests. He had hunting and fishing materials. He had harmonicas and knives. He had, more than anything else, the remains of lost stained glass studios and forgotten men (and some women) who were involved in the trade. His first focus was on artifacts from his family. He then gathered what he could from those he knew or with whom he personally worked. Finally, if he knew someone was retiring or had died that was in the trade, he went to negotiate with them or their families. In some cases, he simply helped himself to what had been abandoned.

Part of his effort was to continue his quest to preserve the memory of those preceding him in the trade. Other practical implications existed—many of these studios or men left supplies and materials no longer readily available that could be used for restoration and repair. Workbenches, kilns, metal-working machinery, and other large objects were often left behind. Ever frugal, Henderson never passed by something he could get for a greatly reduced price or free. He stated, "You've got to make something out of nothing, especially when you don't have nothing to begin with."[2]

Paying a fair price was also part of Gordon Henderson's practice. He had an eye for quality and the belief that these items would cycle in and out of style. Buying quality

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[1] Gordon Henderson, interview by author, Towaco, NJ, March 18, 2007.
[2] Gordon Henderson, interview by author, Towaco, NJ, March 2, 2010.

items when out of style was always a good investment in his book. He related how, in the early 1950s, he bought three lamps from a dealer in New York for eighty-five dollars. One was a Duffner & Kimberly flower pattern lamp, one was a J. A. Whaley where his father worked, and one was a Tiffany Acorn pattern table lamp, “All for eighty-five dollars.”[3] Tiffany had gone out of style in the 1950s along with other similar work by contemporary firms. Henderson would turn these items over in later years to dealers and collectors at a good profit.

There were three major sources of materials that Gordon Henderson acquired in bulk: the studio of Payne-Spiers in Paterson, New Jersey, the studio of Sharpe Brothers in Newark, New Jersey, and the wholesale glass distributer Leo Popper & Son, New York City. All the firms were closed or closing; Payne-Spiers was removing and selling some of the contents, much was sold as scrap or buried on site as garbage. Sharpe Brothers studio was simply abandoned after the Archdiocese of Newark purchased the building. The last of the Popper family were simply liquidating their stocks of glass, jewels, rondels, and other objects.

Henderson had worked extensively for and at Payne-Spiers and was aware of what was there. His father had worked in association with Sharpe Brothers at some point, so it was more of an exploratory, take-a-chance operation. Gordon Henderson had frequented Leo Popper & Son since childhood and was a customer with a good eye. In all cases, these materials would be significant for Henderson and many others over the ensuing years.

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[3] Gordon Henderson, interview by author, Towaco, NJ, March 15, 2007.

> I'm ninety years on this earth and seventy-five of them I'm wheeling and dealing with junk and every other god-damned thing.[4]
>
> *Gordon Henderson*

The firm of Payne-Spiers had run its course in the late 1960s. Brothers George and Munroe Spiers had run the business after the death of their father, the firm's founder. They had particularly struggled after George Payne left and opened his own studio; he was the real glassman. Complicating matters was the untimely death of staff artist/painter/designer Albrecht Holtz, one of the finest in the business. He proved to be irreplaceable. Many freelance artists worked for the firm including Bill Baker and Tommy Di Giacomo. Towards the end a couple of talented younger men were employed by the firm but the interests of the Spiers brothers waned.

George Spiers had a heart attack and decided to liquidate the business. Monroe had taken a buyout and opened an ice cream shop in Paramus, on the highway. Gordon Henderson related, "I stopped in and saw him there. His son-in-law wanted to run that kind of business. I lost touch with him."[5] George Spiers moved to Florida, had another heart attack later on and died there.

As the business was closing, George Spiers offered Gordon Henderson the chance to buy it. Henderson had neither the money nor the inclination. He did not want the responsibility of a big payroll and the overhead. He offered Spiers what money he had to salvage what he could. Gordon Henderson recalled that he "Gave George $250.00, all I had, and he said to take what I wanted."[6] There was plenty there that Gordon Henderson wanted. There were watercolor and pencil sketches, crates of glass, kilns, benches, tools, and a prize more important—a cache of materials from Henderson Brothers.

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[4] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[5] Gordon Henderson, interview by author, Towaco, NJ, November 9, 2008.
[6] Ibid.

Norman Spiers was an astute businessman. When his firm was located in New York City, he would purchase materials from firms going out of business. In this manner, he acquired a wide variety of items at auction from Tiffany Studios and later from Henderson Brothers. Ernest Henderson was aware that Spiers had bought items from his father's firm and followed them to Paterson when Spiers relocated there in the 1940s. Gordon, ever the snoop, had located a small cellar where his grandfather's materials had been stored, remaining untouched for decades; it had a trap door and no stairs. When given permission to salvage what he could, he did.

Gordon Henderson arrived at the studio of Payne-Spiers with daughter Sandy who was about eleven years old. He lowered her down into the dark damp cellar. He rigged up a box with rope and lowered it down to her to load up the cases of jewels and roundels that were there. Also down in the cellar were small long boxes of glass plate negatives. These turned out to be from Tiffany Studios and Duffner and Kimberly. Many of the negatives were damaged by the dampness, but many were in excellent condition.[7]

Also in the building were many display panels and cases of glass. Henderson made trip after trip loading this material. He was racing the garbage men who were cleaning out the place. He set aside several cases of drapery glass but when he returned for it the next day, the cleanup crew was burying crates of glass in a pit they dug on the site. The garbage men had hauled off many of the panels he had set aside.

Of the sketches and drawings at the studio many were sold to a collector, some went to another studio, and many were destroyed. "I rescued many of the sketches from the garbage, mostly ones I knew were from my family and any non-religious ones that I

[7] Gordon Henderson, interview by author, Towaco, NJ, November 9, 2008.

could. Some of the ones by Holtz were folded in half to fit in the garbage," said Gordon Henderson.[8]

The materials salvaged from Payne-Spiers would prove a financial windfall for Henderson. He sold some of the windows to Lillian Nassau, others to collectors and customers at his shop. Some remained part of his personal collection for the rest of his life.

The glass plate negatives from Louis Comfort Tiffany were sold to Hugh McKean and many were published in his book *The Lost Treasures of Louis Comfort Tiffany.* Henderson received thousands of dollars for these but was a bit peeved when McKean did not mention him in his book.

Writer and scholar Phyllis B. Partridge somehow became aware that Gordon Henderson also had glass plates from Duffner & Kimberly. This firm is most noted for its lamp production but they also made some excellent windows. In an undated letter she apologized that an editor had removed a reference to Henderson in an article, "Duffner & Kimberly Lamps," published in the magazine *Spinning Wheel*, March/April, 1980.[9] She kept a running correspondence with Henderson and visited him while researching the company. She sent him information she uncovered and kept working to find a way to purchase the plates. In 1994 she was finally able to do so and thanked him in a letter.[10]

As for the other materials from Payne-Spiers, Henderson estimated that he made more than twelve thousand dollars off the jewels selling them to a variety of restorers and

[8] Gordon Henderson, interview by author, Towaco, NJ, November 9, 2008.
[9] Photocopy, author's collection.
[10] Phyllis Partridge to Gordon Henderson, letter, February 8, 1994.

individuals, many he used in his own work.[11] Even with that volume of sales, more than half of the inventory of jewels from Payne-Spiers was still in his possession when he died.

A major salvage opportunity for Henderson occurred at the studio of Sharpe Brothers. Gordon Henderson knew the men that had been operating the studio. When circumstances led to the demise of the business, the building was sold and family members apparently had little interest in the materials. Henderson took the initiative to stop by the building before it was demolished. What he saw both appalled and amazed him. Everything was left; they simply walked away. There was glass, benches, cabinets of drawings, sketches, and stencils used for borders, glass paints, silver stain, a whole studio. Henderson took many of the drawings and smaller items and loaded them into his truck. He could not get back for a few days and in that time vandals had come in and broken much of the glass and scattered expensive silver stain, glass paints, and drawings around the studio. He again grabbed what he could including a large workbench with extensions that would open to more than twelve feet in length. This he used in his Boonton studio until he closed the building and sold it to a client. He decided that the neighborhood was too rough to make more trips so his last load was a full one.

Sharpe Studios had originated in New York City before the turn of the century. They were an old firm with a long list of prestigious commissions in churches and public buildings. They also did extensive residential and commercial work including the Tilghman House of Drew University windows for which Gordon Henderson had the drawings. Henderson rescued hundreds of drawings and sketches from certain destruction and they became an important part of his collection and business.

[11] Gordon Henderson, interview by author, Towaco, NJ, November 9, 2008.

Leo Popper & Son was liquidating their stock as there were no family members left to run the business and the current owner wished to retire. Gordon Henderson had been coming to their establishment since childhood. The firm often bought materials from studios who were going out of business. They had purchased items from Henderson Brothers and G. Owen Bonawit to name a few. From Henderson Brothers they purchased jewels, rondels, and metal-working equipment. Bonawit sold small glass panels that would easily be inserted into larger windows. Popper kept these locked in an antique cabinet and Gordon Henderson was able to purchase many of them.[12] Popper was also selling old rondels for two dollars each, many from Henderson Brothers and in the original boxes. Gordon Henderson bought many of them for his own use and collection.[13]

New York restaurateur Warner Le Roy found out through the grapevine that Gordon Henderson "Had a lot of stuff."[14] He went to Henderson's home and shop and picked through things until he found what he liked. Gordon liked to tease some of his collectors; he likened it to fishing. He stated, "I left some things around for him to find and held some things back."[15]

Le Roy was in the process of decorating his iconic New York City restaurant Maxwell's Plum. He wanted Gordon Henderson to do the extensive glasswork he had planned. Henderson was not interested in working in the City so he agreed to sell him what he wanted. Le Roy, like many of Henderson's clients, wanted the best that he had. Gordon Henderson did not sell to anyone. He was selective in his own way. Le Roy

[12] Gordon Henderson, interview by author, Towaco, NJ, November 11, 2007.
[13] Gordon Henderson, interview by author, Towaco, NJ, November 9, 2008.
[14] Gordon Henderson, interview by author, Towaco, NJ, January 23, 2008.
[15] Ibid.

came by quite frequently and like many others enjoyed the friendly hospitality of the Henderson home provided by Barbara Henderson and the folksy manner of Gordon Henderson in his studio.

Henderson stated of Le Roy that, "He would look at the antique sheets of glass. I would tell him $500.00 he would say 'My money can only go so far.' I would put the sheet of glass back. He would pay."[16] Le Roy bought large quantities of jewels that Gordon Henderson had acquired from Payne-Spiers. Also, Gordon Henderson had purchased a significant lot of old rondels from New York supplier Leo Popper when they went out of business.[17] Warner Le Roy also bought many of these. The glass, jewels, and rondels purchased by Le Roy were placed in the stained glass of the trendy and decadent Maxwell's Plum. Gordon Henderson went to the restaurant, enjoyed the visit and the stained glass.

Another major collector with whom Gordon and Barbara Henderson became friendly with was Bruce Randall, Mr. Universe. Henderson related, "I'm in my shop and a big guy walks in, you know, it was Bruce Randall, Mr. Universe. He bought a couple of things. Whenever he travelled he went to antique shops looking for Tiffany."[18] Randall had a contract with Billard Barbell Company to promote weight-lifting sets.[19] As such, he periodically travelled the country on endorsement tours and frequented antique shops when he had free time. He came back to the shop later on with his wife and they became friends with Gordon and Barbara Henderson joining the circle of those enjoying their hospitality.

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[16] Gordon Henderson, interview by author, Towaco, NJ, January 23, 2008.
[17] Popper's father had bought materials from Henderson Brothers and G. Owen Bonawit which Gordon Henderson acquired when Popper's closed.
[18] Gordon Henderson, interview by author, Towaco, NJ, April 2, 2007.
[19] Bruce Randall to Gordon Henderson, letter, November 11, 1962.

Henderson showed him where Tiffany was available. He helped him buy some lamps he was trying to get his brothers to buy because they were so inexpensive. Gordon Henderson got a Tiffany desk set at Shanahan's Junk Yard for ten or twelve dollars one day on a visit there with daughter Sandy. Henderson related, "He would say to me 'Henderson's got an early Shanahans'."[20] Randall would later buy this from Henderson.

Randall would become a major collector, collaborating on Dr. Egon Neustadts' book *The Lamps of Tiffany*. For this iconic work, published in 1970, Randall wrote the introduction. It remains an important book for any library of Tiffany scholars and collectors. Randall gave an autographed copy to Gordon and Barbara Henderson with a touching inscription. Later, Randall would purchase the damaged remnants of Laurelton Hall for his home. At the end of his life, Gordon Henderson lamented that he had not heard from Bruce Randall in some time and that he had heard that his health was failing.

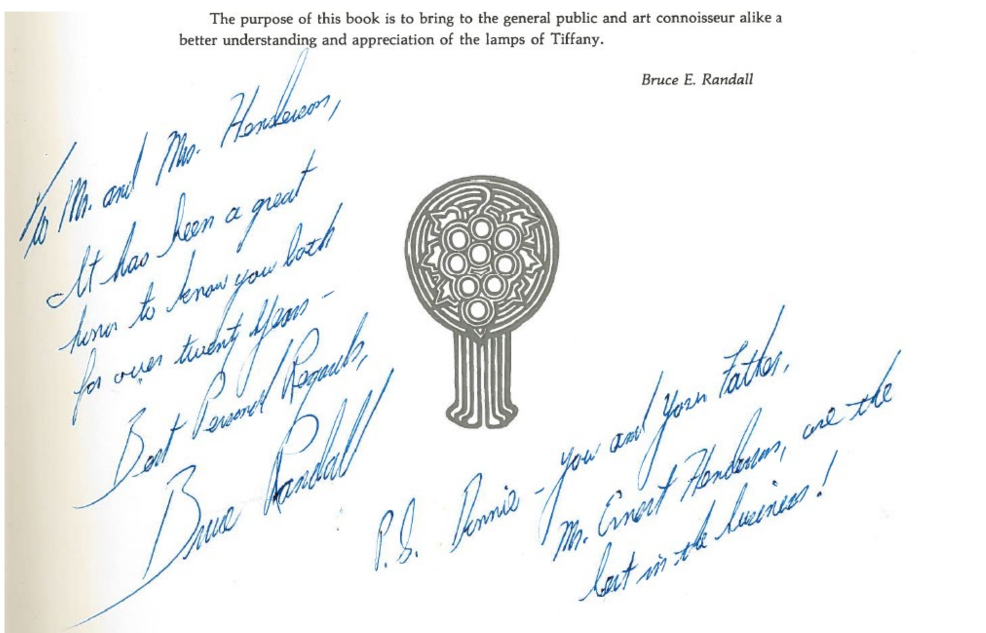

Figure 177. Inscription to Gordon and Barbara Henderson from Bruce Randal at the end of the forward in *The Lamps of Tiffany* by Dr. Egon Neustadt.[21]

[20] Gordon Henderson, interview by author, Towaco, NJ, January 23, 2008.
[21] Author collection.

Gordon Henderson's Exhibits & Talks

> I tried the best that I could to preserve the past. You could say that the old artists that I grew up with were at the end of the trail, sort of like I am now. These guys were dying off and their collections were being sold or thrown out like garbage. I went where I could and salvaged whatever I could get my hands on.[22]
>
> *Gordon Henderson*

Gordon Henderson worked tirelessly throughout his career to promote the trade; he had an angle.[23] He spoke constantly about those who he knew as a boy and influenced him. He researched the men who had worked for his grandfather, seeking them out and speaking with them. His own father was a storehouse of information and introduced Gordon Henderson to many of the men he knew. Over time it became an obsession, in a positive sense. He hoped his efforts would rekindle public interest in the history of stained and leaded glass and that this interest would create more business as well.

He was an excellent interview subject—expressive, opinionated, and photogenic. Gordon Henderson could delight a reporter and an audience. His homespun humor, old New Jersey accent, and anecdotes about the trade could be spell-binding. People were drawn to him. As protective and crotchety as he was about working in the trade, he was as generous and genuine in sharing its local history. It was hard to not be drawn in by his charismatic storytelling. Over a forty-five year period, Henderson appeared regularly in the local newspapers. He was featured in interviews, photo-shoots at installations, and arts columns. His story was usually fairly consistent: it was a dying trade, my family has worked at it since 1872 in America, my father taught me everything I know, and I am the last of the real glassmen. His shops were a photographers' dream and nightmare—so

[22] Gordon Henderson, interview by author, Towaco, NJ, October 23, 2005.
[23] See Appendix G, Interviews, Articles, and Exhibits of Gordon Henderson.

much to see and so much clutter. He was proud of his newspaper exposure and it verified the importance of his work in stained and leaded glass.

Henderson also exhibited portions of his collection wherever appropriate. He had exhibits in local, regional, and university museums. The Jane Vorhees Zimmerli Art Museum at Rutgers University maintains a permanent exhibit of materials purchased by sponsors and donated by Gordon Henderson. A common feature of these exhibits was the work of his family and the other studios and individuals with whom they worked.

Above all, Gordon Henderson wanted to be remembered. He did not wish to share the same fate as so many other glassmen. He hoped to leave a legacy of which future generations of his family would be aware and proud. Numerous windows in churches and restoration work in prominent places will appreciated by many for decades to come. The windows he fabricated are all signed and remain a significant legacy.

Figure 178. Gordon and Barbara Henderson in front of *Bathsheba* window by Albrecht Holtz , Jane Voorhees Zimmerli Museum, Rutgers University.[24]

[24] Author photograph, 2005.

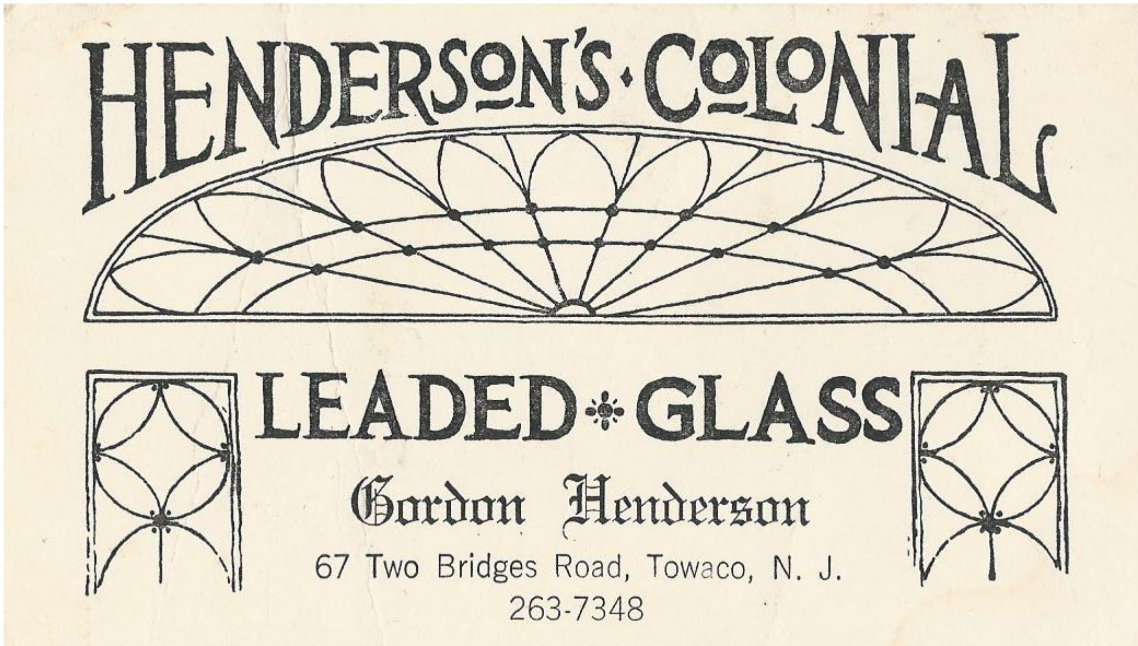

Figure 179. Gordon Henderson's business card, in the family tradition.[25]

I lived this life as I saw fit
And never stopped to give a shit
I'll love one woman until I die
And hope someone says "Hey, he was a good guy.[26]

[25] Author's collection.
[26] Gordon Henderson, interview by author, Towaco, NJ, May 9, 2009.

Conclusion

The Henderson family, through their work in stained and leaded glass, has left a legacy owing to the embellishment of many buildings public and private. The atmosphere provided by their windows in college libraries, residence halls, and public spaces adds quiet dignity. Many of these windows are part of the background and though not always consciously enjoyed, their removal would permanently and negatively alter the spaces. These windows fulfill the purpose for which they were designed; they are part of the architectural scheme and not the focus. Other Henderson windows enjoy greater prominence, draw the viewer's attention, and actively engage them; some of these enter the realm of art. They too achieve their purpose.

The patents of William Henderson represent an important aspect of contemporary glasswork as his metallic glazing is still commonly used. His patents are referred to in recent patent applications. Although William Henderson never realized the financial windfall he hoped, metallic glazing was an important aspect of the work of all three generations.

Each generation had work which could be called representative. Henderson Brothers produced leaded glass windows of simple quarries well suited for the neo-Gothic architecture popular for churches and colleges of the early years of the Twentieth Century. Their specialty work in Georgian and Colonial transoms and sidelights fit well in the mansions of the Gilded Era, restaurants, and apartment buildings. The manpower employed by the firm allowed them to produce large volumes of work quickly and to do contract work for other firms.

Henderson Brothers, while employing their own artists/designers over the years, worked collaboratively with prominent individuals (particularly Frederic “Fred” J. Kurtz and J. Scott Williams) to produce windows of individual significance and artistic merit.

Ernest Henderson became a specialist in repairs, restorations, and all other aspects of glass work using the skills he developed in his father’s shops. A skilled mechanic at a young age, he further enhanced his expertise while employed by other firms before striking out on his own. Using the prominence of the family name in the New York metropolitan area, he was able to support his family in his trade. Following family tradition, Ernest Henderson worked collaboratively with artist/designers to produce individual windows of artistic quality.

The business cards distributed by Ernest Henderson all display examples of Georgian and Colonial lead work. Certainly, leaded glass of this nature complete with lead rosettes was part and parcel of his work. Working with his contemporary Fred Kurtz, he fabricated windows still found in English Tudor style homes in Short Hills, New Jersey among other locations. These windows feature simple quarry work and painted scenes enhancing entry doors and hallways in suburban homes.

Gordon Henderson, similar to his father, spent childhood time in the workshop where he developed a love of the work produced. He was fascinated by the little sketches and working drawings that were often discarded. Saving these, a lifelong interest in artifacts of the trade and the men and women producing them was established. Gordon learned the trade from his father and considered Fred Kurtz to be a mentor, thus a connection through all three generations was drawn.

Gordon Henderson proved to be a scholar of stained glass. Through his work in repair and restoration he was exposed to the production of studios and individuals whose windows grace buildings in the New York metropolitan area. Reading voraciously, he studied the life and work of individuals and studios. As a result of the wide variety of influences, Gordon Henderson could produce work in many styles, besides those traditionally associated with his family. Working with artist/designers he produced significant windows in many churches. He enjoyed a long collaborative relationship with artist/designer F. William "Bill" Baker similar to the one enjoyed by his father with Fred Kurtz. With Bill Baker, Gordon Henderson created beautify windows in traditional and modern figural styles.

Gordon Henderson is the most difficult member of the family to categorize due to his versatility. He worked in Colonial and Georgian styles producing his own lead rosettes. He particularly enjoyed working with metallic glazing in the style of Frank Lloyd Wright. He produced monumental church windows with his associated artists. Gordon Henderson considered his father to be the finest all-around glassman he knew. Gordon Henderson was equally skilled and had the distinction of producing all the stained glass windows in two churches, a claim only he, out of the family could make.

The Henderson Brothers were craftsmen, they advertised themselves as such.[1] Both Ernest and Gordon Henderson made that claim; they were craftsmen and not artists. Gordon Henderson who worked closely with a few artists stated:

> I always figured there were two mediums—the mechanic and the artist, they work together. I never wanted to infringe on his work except for repairs or something like that. But, I figured the artist had his job and then the glazier put it together and had

[1] Henderson Brothers Brochure, c. 1931—1934, Appendix E, Figure 247.

> his job and they worked together and that's how you complete a good piece of work or a bad piece, sometimes.[2]

Speaking of his own father's relationship with Fred Kurtz, he emphasized the same point: "He worked with my father for years, you know, Fred and him. As you know, my father was a craftsman and all and the craftsman and the artist are two different people."[3]

Continuing this thought Gordon Henderson examined one of the challenges in the trade:

> The architect of yesterday sought out the individual to enhance his work—what he felt. The architect can only lay out his designs and his drawings. He has to have somebody to put them into motion. It's the same way with the craftsman and the artist. The artist can draw but he needs a craftsman to put it into motion, or to stabilize it.[4]

Hanging in his bedroom window, Gordon Henderson had a small panel made by Bill Baker portraying two hands shaking, one representing Gordon the craftsman, the other, Bill, the artist. Although, some, like Bill Baker and Fred Kurtz were highly proficient in both the art and craft of stained glass, most are not as adept. As earlier stated, though, both Gordon and Ernest Henderson sketched constantly and Gordon's goal was to be able to design some windows on his own, without becoming an artist. There they both succeeded.

The idea of stained glass as an art or a craft will continue to be a discussion in some circles. Stained glass is rarely found in exhibits or competitions for "fine" art. This seems unfortunate. However, it is also apparent by the number of new books being published focused upon individuals and firms involved with stained glass, that there is interest and value in stained glass as its own category. For the purposes of this study, some glass is art and some glass is not. Some glass will leave a conscious impression, some will simply be

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[2] Gordon Henderson interview by author, Towaco, New Jersey, March 6, 2007.
[3] Gordon Henderson interview by author, Towaco, New Jersey, May 9, 2007.
[4] Ibid.

part of the background, and that would appear to fulfill its purpose. Great studios and artists produced lesser quality windows and reproduced their own designs. Small studios and individuals were capable of producing wonderful artistic windows of great merit. As quoted in the introduction from John Piper's book *Stained Glass: Art of Anti-art,* "There is a gulf fixed between any craft and art. It can be leaped, but anyone leaping it must do so with a clear vision and a stout heart."[5] Although the Hendersons were craftsmen first, they, in association with others occasionally made the leap.

The rare circumstance of three consecutive generations working in stained glass and the good fortune that many artifacts were preserved made this study possible. Gordon Henderson frequently spoke of his goal to preserve the memory of those who came before him in the trade, particularly those associated with his family. This study is an attempt to fulfill part of that objective. There is more to be done. Each bit of research uncovered more potential. Reaching out to individuals holding related artifacts opened new avenues for exploration. Collecting the work of the past is important when it can be put to use. Gordon Henderson understood that the work of each generation can be synthesized by the next. If this study spurs further research, it has proved its worth. Gordon Henderson wrote:

> After my father died, I continued alone. It was then that I realized that my early frustrations of men taking their talent and knowledge with them to the grave was the working of the world or nature. Each person must be unto himself. He will never be or know his real self if he follows another. One must create his own style to be successful and to do this one must know many people as I have and add the best of them to his repertoire. All of their works and designs are about to study and add a bit to oneself so they have not lived in vain. One must go back in time and learn from their heritage; for their like will never be known again, the world moves on.[6]

[5] John Piper, *Stained Glass: Art or Anti-art* (New York: Reinhold Book Corporation, 1968), 7.
[6] Gordon Henderson, Unpublished Autobiography.

Appendix A

Patents of William Henderson and Warren McMann

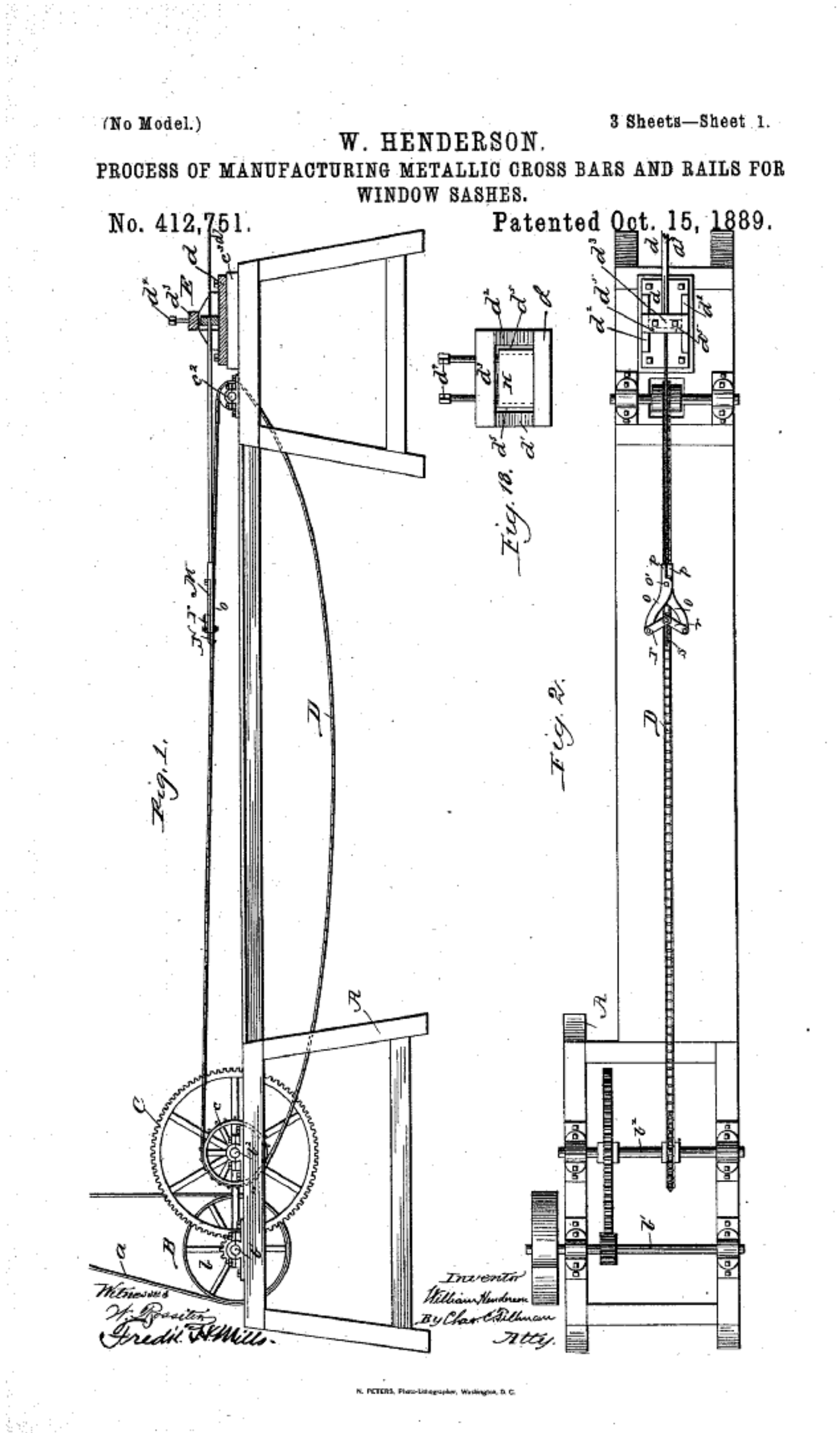


Figure 180. Sheet 1, William Henderson Pat. No. 412, 751—Process of Manufacturing Metallic Cross Bars and Rails for Window Sashes.

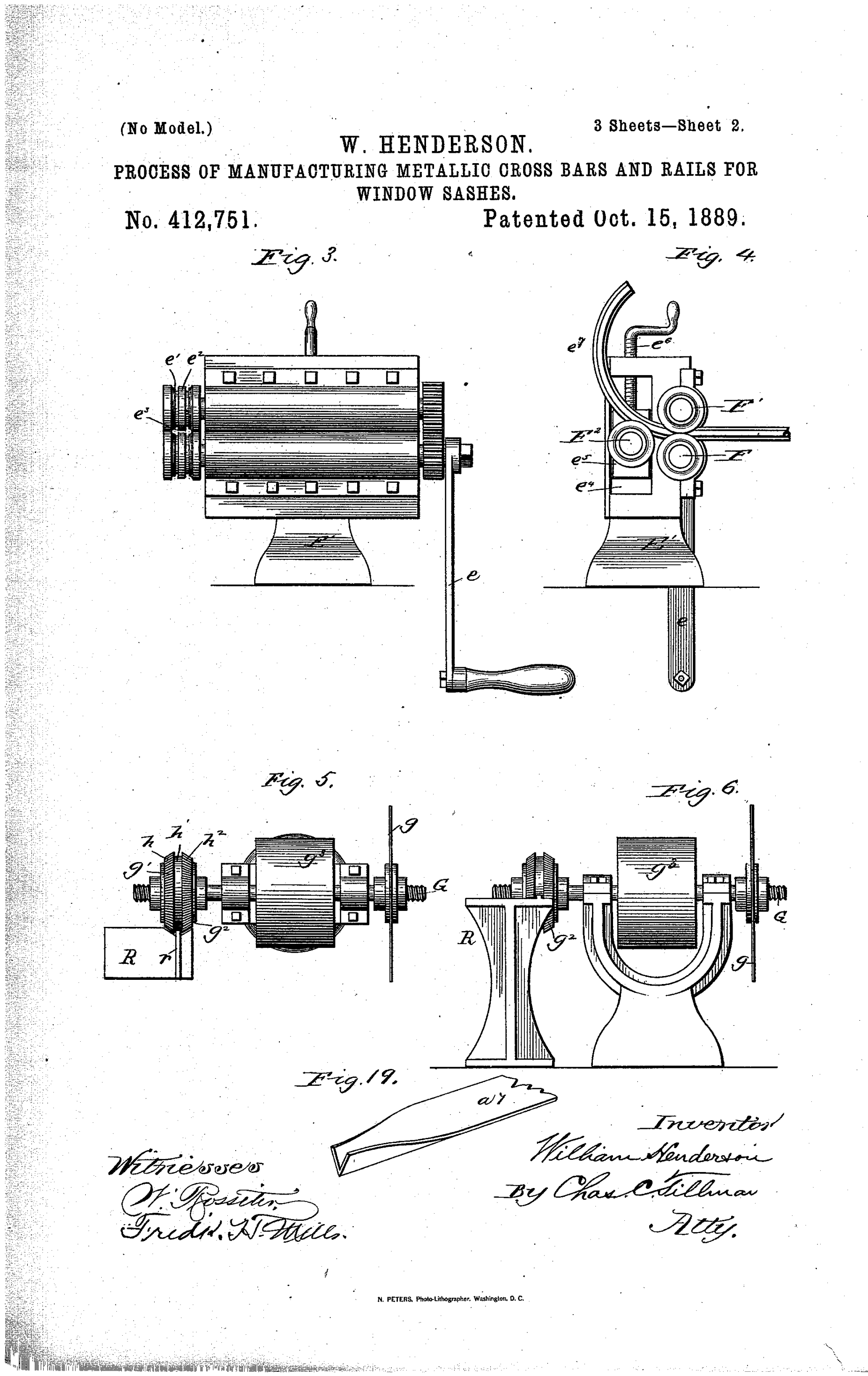


Figure 181. Sheet 2, William Henderson Pat. No. 412, 751—Process of Manufacturing Metallic Cross Bars and Rails for Window Sashes.

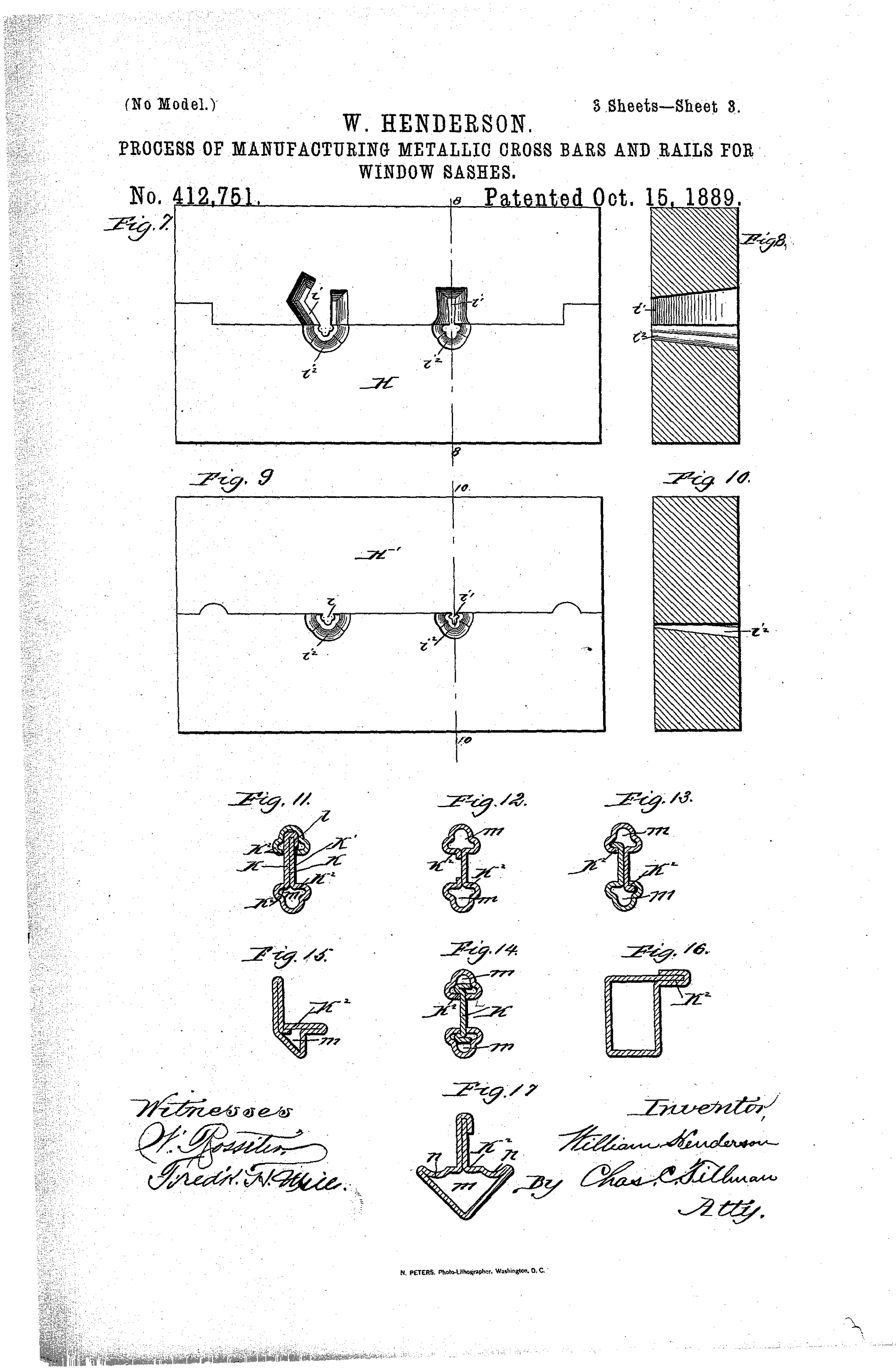


Figure 182. Sheet 2, William Henderson Pat. No. 412, 751—Process of Manufacturing Metallic Cross Bars and Rails for Window Sashes.

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF CHICAGO, ILLINOIS.

PROCESS OF MANUFACTURING METALLIC CROSS-BARS AND RAILS FOR WINDOW-SASHES.

SPECIFICATION forming part of Letters Patent No. 412,751, dated October 15, 1889.

Application filed April 29, 1889. Serial No. 309,055. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a subject of the Queen of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Process of Manufacturing Metallic Cross-Bars and Rails for Window-Sashes and Analogous Structures, of which the following is a specification.

My invention relates to improvements in the process of manufacturing metallic cross-bars and rails for window-sashes, skylights, and other structures; and it consists in certain peculiarities of the method of operation, as will be hereinafter more fully set forth and specifically claimed.

In order to enable others skilled in the art to which my invention pertains to use the same, I will now proceed to describe it, referring to the accompanying drawings, in which I have illustrated the machine or devices I prefer to use, and which show how the process is carried on.

Figure 1 is a side elevation of my machine as it appears when in operation. Fig. 2 is a plan view of the same. Fig. 3 shows a view in side elevation of my bending or conforming device. Fig. 4 is an end view of the same. Fig. 5 is a plan view of my machine for forming or notching the ends of the bars. Fig. 6 is a view in side elevation of the same. Fig. 7 shows a face view of a die for making the lower portion of the bar. Fig. 8 is a cross-section of Fig. 7, taken on line 8 8. Fig. 9 is a face view of a die for forming the cap or upper portion of the bar. Fig. 10 is a cross-section of the same on line 10 10. Figs. 11, 12, 13, 14, 15, 16, and 17 show end views of modifications of the bars or rails when completed. Fig. 18 is an end view of the die-retaining device, and Fig. 19 is a view of a strip of metal with end formed for insertion into the opening of the die.

Similar letters refer to like parts throughout the different views of the drawings.

A represents the main or supporting frame of my machine, on and near one end of which the pulley B and a small pinion b, mounted on and rigidly secured to a suitable shaft b', are journaled in the ordinary manner.

To the pulley B, and by means of a belt a or otherwise, is applied the power for operating the entire machine.

On the frame A, at a proper distance from the shaft b', rigidly mounted on a shaft b^2, is journaled a cogged gear-wheel C and a sprocket-wheel c. Near the other end, and on the frame A, is journaled a suitable pulley c^2, over which the endless chain D freely passes, being drawn over said pulley by engagement with the sprocket-wheel c, as will be clearly seen by reference to Figs. 1 and 2 of the drawings.

At the end of the frame and near the pulley c, I provide the frame with a table or platform c^3, upon which is secured the die-retaining device or frame E, which consists of a base-plate d, two upright side pieces d' d^2, and a cross-bar d^3 at the top, provided with set-screws d^4, the whole forming a hollow for the reception and retention of the die-plate H or H', which is firmly held in place by the set-screws and prevented from being drawn through the hollow of the frame by the inwardly-projecting lugs d^5, as shown, or otherwise. Within this hollow frame or retaining device the die-plate H or H', provided with desirable apertures i and i', is removably secured, and a strip of metal a^7, having its end formed tapering, so as to be easily inserted in said aperture, is forced through until it projects sufficiently to allow the gripper m to grip the same, as will be presently explained.

In Figs. 7 and 9 I have shown two dies H H', preferably made of steel and of two pieces, which I use in forming the metallic bar and cap. They may be formed with openings or apertures i i', of any form to produce a bar of any desired contour or shape and in numerous styles of configuration; but the present forms of apertures shown in the die-plates are adapted to produce a bar with form as illustrated in Fig. 11, which is my preferred construction; yet it is apparent that I may employ a form of die to produce any of the forms shown in Figs. 11 to 17, inclusive, or, in fact, almost any conceivable shape.

In the present instance I have shown the dies H and H' formed with two openings i and i' each through the same, said openings being made with a wide flaring mouth i^2 on the face of the plate for the easy insertion of the end of the metal strip. The opening i in each of the dies is for giving to the metal the first formation, and the other opening i' the finished or completed form, the die H forming the lower portion or bar and die H' the cap or fastening or upper portion, which, when joined together, produce a bar of the form shown in Fig. 11.

Figs. 11 to 17, inclusive, may represent either modifications of the form of the aperture in the die or the end views of bars produced by the respective dies, and I shall refer to them as either.

Fig. 11 shows the end of a bar formed by a die of that shape, having a rib K, and on one or both sides of the said rib a groove K' for the reception and retention of the edge of the glass formed by the shoulders, ledges, or rests K^2. In this construction, as well as others, the die forming the rib K may be made so as to form a flange or enlargement l at the top, as shown, or without the same; or in forming a bar of three separate pieces of metal, as shown in Fig. 14, I may use a die of such shape as to form it with or without enlargement at the top or bottom of the rib; but I prefer a flange or enlargement, as it affords a more secure fastening. In the different modifications I have shown them with a hollow m above and beneath the shoulders or rests K^2; but of course this could be dispensed with and a die used to form the bar with a flat top and bottom surface, yet having the shoulders and grooves as before, or one may be used to form a cap with an opening having parallel sides for the rib, or a projection having parallel sides, so that the joint can be made at any point on the rib.

Fig. 17 shows the product of a form of die especially adapted for skylight bars, and it is made to form the bar with a rib K and shoulder or shoulders K^2, as before, and in addition a trough n on one or both sides of the rib, which trough is designed to catch the condensed moisture which may accumulate on the under surface of the glass.

In Figs. 1 and 2 will be seen my gripping device M, connected to the chain belt D, and grasping the end of the bar as it appears when being drawn through the die. The gripper is made of two pieces o, pivoted together near one end by a pin o', and has the inner surfaces of its jaws p p roughened, so as to prevent slipping. To the other ends of the pieces o is secured a toggle-joint r, and at the elbow of this joint I loosely provide a hook S, which hooks into the link of the chain belt and is drawn along by said belt, the toggle-joint thus forcing the upper ends of the pieces o o apart and closing more tightly the jaws p p on the bar, as is obvious.

In Figs. 3 and 4 I have shown my bending or conforming device or machine, which I use after the bar e^7 has been formed as desired on the die-machine; and it consists of a suitable frame E', upon which is journaled a series of rollers (preferably three in number) F, F', and F^2, two of which F and F' are geared together at one end by suitable cogged gears and are operated by means of a handle e, secured to one of them, or otherwise, if desired. At the opposite end of the rollers and outside of the frame I provide each roller on its surface with a groove or grooves of a form to conform to the shape of the bar after it has been finished by the dies. In the drawings the groove is shown as formed in the roller; but I may use suitable collars formed with any desired form of groove and adjust them to the rollers and accomplish the same result. Of course the form of the grooves may be of any shape that the bar may be; but I have shown in the drawings at e^3 the same formation illustrated in the dies and at Fig. 11. To the rear of these rollers, in a suitable recess e^4, vertical in length, I place the roller F^2, which is provided with a similar groove to those just described. This roller is journaled on a vertically sliding or adjustable bearing e^5, which is adjusted to any point by means of the screw-threaded crank-rod e^6. It will be seen that by inserting the end of the bar into the opening e^3 between the rollers F and F' and revolving the rollers it will be drawn through and will pass over the roller F^2, the raising or lowering of which will produce any degree of a curve desired, and at the same time will fit the cap and bar to each other when they are made in separate pieces.

Figs. 5 and 6 illustrate my device for cutting the bar into proper lengths and for notching or finishing the ends of the same; and it consists of the shaft G, journaled in suitable bearings on a frame, and having mounted on said shaft near one end an ordinary circular saw g and on the other end a plurality of circular disks, but preferably three in number, h h' h^2. Two of these are beveled at an angle, as shown at g' in Fig. 5, and are provided on their beveled peripheries with sharp oblique teeth g^2. The disk h' is located between the disks h and h^2 and has a smooth periphery, thus acting as a guide or stop to the bar.

Between the disk h^2 and the saw g, upon the shaft G, is secured a pulley g^3, to which is applied the power for operating the device.

On one side of the disks and adjacent thereto I provide a suitable table or support R, provided with a raised bead r on its upper surface, as shown. The table serves as a support when the ends of the bars are pressed against the disks, and the bead r, fitting in the groove of the bar, serves as a guide in this operation.

The operation and process of my improvements are simple and as follows: The die is placed in the retaining device and is firmly secured there by the set-screws at the top of this device for this purpose. The gripping device M is then hooked to the chain belt, and the end of the metal a^7 is forced through the die until it projects far enough to allow the gripper to take hold of the end of the bar.

The power is then applied to the pulley B, and the chain belt, engaging with the sprocket-wheel, tightens the gripper on the bar and draws it through the die. When this process is completed, the bar is applied horizontally to the saw and cut into proper lengths, after which the ends of the same are notched by holding them against the revolving disks, after which the bar is passed through the bending or conforming device and formed into any desired curve, when the bar is complete and ready for the sash.

The drawings illustrate my bending or conforming device and cutter and end-notching machine as separate devices from the die or bar forming machine; but it is evident that they may all be mounted on the same frame and operated by the same power, and I sometimes so construct it that after the metal is drawn through the die and given any desired form it may be cut in suitable lengths and have its ends notched, and then passed through the rollers and curved or bent in any form or shape.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The herein-described process of manufacturing cross-bars, rails, and fastenings for window-sashes, &c., consisting, first, in passing the strips of metal through a die or dies giving the bars the desired conformation or shape, then cutting or sawing the formed strips into proper lengths, then notching the ends of the strips, and then passing the notched strips through a device for bending the same into suitable shape or curve ready for use, substantially as and for the purpose set forth.

2. The herein-described process of manufacturing metallic cross-bars, rails, and fastenings for window-sashes, consisting, first, in drawing the strips of metal through a die or dies making the proper conformation or shape, then placing the strips horizontally against a revolving circular saw and cutting them to proper lengths, then notching the ends of the formed strips by placing them longitudinally against a series of revolving disks, then passing the notched strips through a series of rollers, thus bending them to a proper curve ready for use, substantially as shown and described, and for the purpose set forth.

3. The herein-described process of manufacturing metallic cross-bars, rails, and fastenings for window-sashes, consisting, first, in passing strips of metal through a die or dies forming a bar and cap of desired conformation, then placing the cap on the rib of the bar and cutting them into proper lengths, then notching the ends of the strip, and then passing the notched strips through a device for bending the same to a desired curve, then removing the adjustable cap and clipping the ends of the rib of the bar at a desired angle, substantially as shown and described, and for the purpose set forth.

4. The herein-described method of manufacturing hollow metallic cross-bars, rails, and fastenings for window-sashes, consisting, first, of forming a metallic bar and cap in separate pieces, then adjusting the cap on the rib or web of the bar, then bending, cutting, and notching the same as a whole, then removing the adjustable cap and cutting the ends of the web or rib of the bar, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand and affixed my seal this 24th day of April, 1889.

WILLIAM HENDERSON. [L. S.]

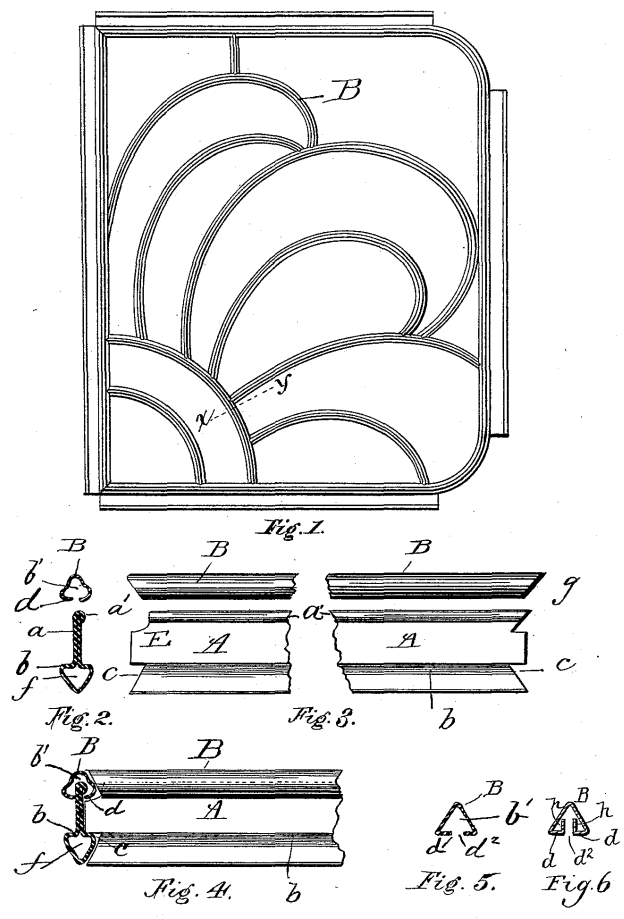
In presence of—
ROBERT HENDERSON,
CHAS. C. TILLMAN.

(No Model.)

W. HENDERSON.

WINDOW SASH BAR.

No. 420,510. Patented Feb. 4, 1890.



Witnesses
Thos. Regensteiner
D. A. Ray

Inventor
William Henderson
By his Attorney Chas. C. Tillman

N. PETERS, Photo-Lithographer, Washington, D. C.

Figure 183. Drawings for William Henderson Pat. No. 420,510—Window Sash Bar.

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF CHICAGO, ILLINOIS.

WINDOW-SASH BAR.

SPECIFICATION forming part of Letters Patent No. 420,510, dated February 4, 1890.

Application filed March 15, 1889. Serial No. 303,485. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a subject of the Queen of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Window-Sash Bars, of which the following is a specification.

My invention relates to rails or cross-bars and fastening for window-sashes, and is more especially adapted to that class of sashes which contain many small pieces of glass cut in numerous configurations and designs, such as is seen in stained-glass windows and other ornamental windows; and the objects of my improvements are to furnish a strong and durable cross-bar and fastening which shall be of little weight, which will not rust or corrode, which can be easily bent into any desired form, and is readily placed in any sash and removed therefrom conveniently, and also to facilitate the operation of repairing or replacing broken parts without interfering with the other portions. I attain these objects by the peculiar construction of the bar and the removable fastening or cap; and in order to enable others skilled in the art to which my invention pertains to make and use the same I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a front view of my bar and fastening as it appears in a window-sash. Fig. 2 is a transverse section of the bar and cap. Fig. 3 is a side elevation of the bar and cap with the latter removed, showing the notched ends. Fig. 4 is a sectional view taken at the line x y, Fig. 1, and shows the manner of securing or locking one bar to another. Figs. 5 and 6 are views of modified forms of the cap.

In the drawings, A represents my bar, formed of one piece of material, and preferably made of metal.

a is the rib thereof, having its upper part made with a flange a', as seen in Fig. 2 of the drawings, for securing more firmly the cap or fastening, as will be presently explained. The lower part of this stem or rib is formed with shoulders *b b* at right angles with the rib, for supporting the glass, and beneath said shoulders I preferably form a hollow *f* of any desired form. It will be readily understood that the hollow portion of the bar can be dispensed with, thus leaving it with a flat surface, or that portion may be solid; but I prefer to form it hollow, as shown, thereby gaining strength without materially increasing the weight of the bar. It is also evident that this form affords a better surface for finishing.

At each end of the bar A, I provide notches *c c*, preferably of an acute-angle form, as shown in Fig. 3. The lower notches are adapted to connect with and fit over the shoulder of the transverse bar, as seen, and will be more readily understood by reference to Fig. 4 of the drawings. By clipping off a portion of the upper notch on the rib *a* the bar is formed as seen at E, which form permits the cap to rest upon the surface of the glass and hold it securely in place.

B is a cap, made of one piece of material and preferably of metal shaped to form a hollow b', which may be of any form, but preferably of triangular form, as shown in Fig. 5. It will be observed that at the bottom of the cap and opposite the apex of the hollow b' I provide a longitudinal slot d^2, which extends the entire length of the securing-cap. Into this slot the rib *a* is inserted, and the cap is pressed down over the same until the lips *d* rest upon the surface of the glass. Of course the cap may be made of any size and the exterior of any form which may be found to be best adapted to receive a polish or finish. While I prefer to form the cap with a triangular hollow and have found from experience that such a form is more desirable, yet I may use a hollow of the form shown in Fig. 2 or any other shape without departing from the spirit of my invention.

In Fig. 6 I have shown a modified form of a cap which I may sometimes use, and in this modification I form the cap of one piece of material, as before, with the longitudinal slot d^2, and lips *d* at right angles with the slot, as shown. The edges of the lips *d* are bent upward within the hollow of the cap at substantially right angles with the lips, and form the parallel sides *h h* of the groove or slot. These parallel sides will clasp the rib *a* firmly and prevent a rocking or lateral movement of the cap on the rib, as will be understood by reference to the drawings.

In bending the cap B to conform to the curve of the bar, and so that the adjustment of the cap on the rib of the bar can be easily effected, I place the rib a within the groove d^2 of the cap and bend both cap and bar at the same time, and in order to prevent the cap slipping from the rib while thus working the material I sometimes form the rib with a slight enlargement a' at the top thereof. This enlargement also assists in retaining the cap in place after the glass is in position, and gives additional strength to the whole bar; but it is not absolutely necessary to hold the cap in place, as this is done by soldering the ends of the cap to its transverse cap, which it overlaps and interlocks, as is seen in Fig. 4 of the drawings. It will be further noticed that each end g of the cap is cut at a suitable angle to conform to the side of the cap with which the end meets, thus allowing it to fit snugly against the transverse cap and to press against the surface of the glass. In forming the notches on the ends of the bar the cap is placed over the rib a, and with a suitable machine the notches are made. The cap is then removed, and the portion of the upper notch is clipped off to form the ends, as at E. By this operation I am enabled to cut the cap and bar of corresponding length, thus making the adjustment of the cap an easy matter.

My object in clipping the upper end of the rib a, as seen at E in Fig. 3, is in joining the parts together the lower portion of the transverse bar will fit in the angular notch c, and the transverse cap will rest on the glass when it (the glass) is thick; but when thin glass is used the cap will rest on the clipped end E of the rib a.

In manufacturing my bar and cap I may use a die of proper form and "draw" the metal through the same, or I may take strips of metal of suitable dimensions and form the same as desired by folding or otherwise. It is also evident that I can make them of various kinds of sheet metal and other material, and that the contour of the cap and of the lower portion of the bar may be made in numerous designs.

In use my bars and caps are easily applied to any window-sash, and are especially adapted to be used in doors or windows where sudden shocks or jars occur, as my construction secures the glass very firmly. The application is evident. The bars and caps are cut in suitable lengths and bent into any desired form. The cap is then removed, and the edge of the glass rests upon the shoulders of the bar. The cap is then placed on the rib a and pressed down until the lower portion rests upon the surface of the glass. The ends of the caps may then be soldered to the connecting one, thus making the fastening more secure.

It is readily understood that I can form the cap B with a groove or channel having parallel sides, or may form it with a core; but I prefer the formations above named. It is also obvious that I may form the rib a with a flange on each side of the same at the top, or I may use only one flange, as shown.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The cross-bar A, having the shoulders b b and rib a at right angles therewith, the hollow projection f beneath the shoulders, the ends formed as at c c and E, and the vertically-adjustable cap B, substantially as shown and described, and for the purpose set forth.

2. The combination of the cross-bar A, having the rib a and shoulders b b at right angles with the rib, the hollow projection f, the ends formed as at c c and E, with the vertically-adjustable cap B, having slot d^2 and lips d d at right angles with the rib when in the slot, substantially as shown and described.

3. The combination of the cross-bar A, having the rib a and shoulders b b at right angles with the rib, the hollow projection f, the ends formed as at c c and E, with the vertically-adjustable cap B, having slot d^2, lips d at right angles with the slot, and parallel sides h h, substantially as shown and described.

4. In window-sash and analogous structures, the cross-bar A, having the notches c c, shoulders b b, and rib a, having its ends formed as at E, in combination with the cap B, having the hollow b', lips d d, slot d^2, and both ends cut at an angle, as at g, substantially as and for the purpose set forth.

5. In window-sash and analogous structures, the cross-bar A, having the notches c c, shoulders b b, and rib a, having the flange a' and ends formed as at e, in combination with the cap B, provided with a triangular hollow b', and having lips d d, slot d^2, and angles g, substantially as shown and described, and for the purpose set forth.

In testimony whereof I have hereunto set my hand and affixed my seal, at Chicago, Illinois, this 12th day of March, 1889.

WILLIAM HENDERSON. [L. S.]

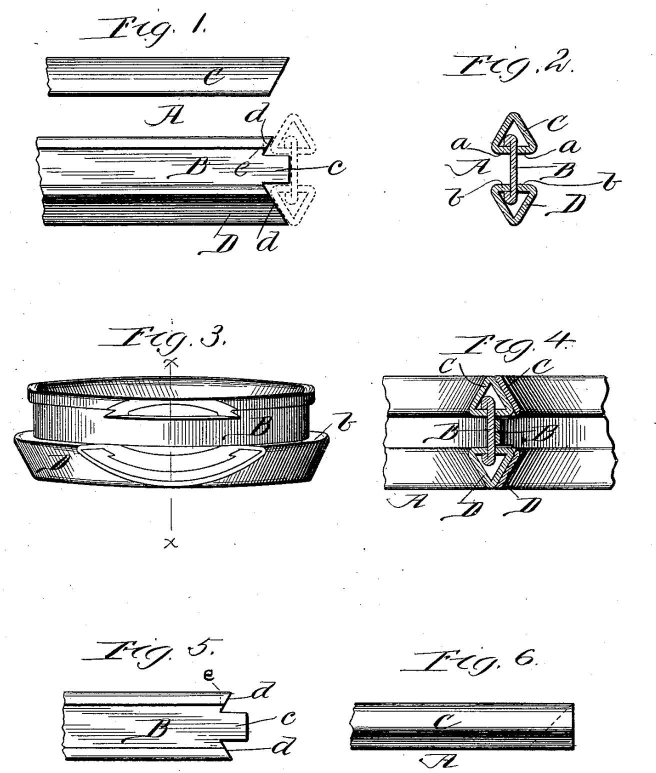
In presence of—
CHAS C. TILLMAN,
W. P. SHAW.

(No Model.)

W. HENDERSON.

BAR AND FASTENING FOR SASHES AND LIKE STRUCTURES.

No. 482,087. Patented Sept. 6, 1892.



Witnesses.
Fredk. H. Miller
E. Dugan

Inventor.
William Henderson
By Chas. C. Tillman
Atty.

Figure 184. Drawings for William Henderson Pat. No. 482,087—Bar and Fastening for Sashes and Like Structures.

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF CHICAGO, ILLINOIS.

BAR AND FASTENING FOR SASHES AND LIKE STRUCTURES.

SPECIFICATION forming part of Letters Patent No. 482,087, dated September 6, 1892.
Application filed March 2, 1891. Serial No. 383,478. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a subject of the Queen of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bars and Fastenings for Sashes and Like Structures, of which the following is a specification.

My invention relates to improvements in bars and fastenings for sashes and like structures, and more especially to that class of sashes and bars which are designed for stained-glass windows, in which the pieces of glass are cut into a variety of forms, sizes, and configurations and necessarily require that the bars shall be so bent, placed, and united to conform to their forms and to hold them in position; and it consists in certain peculiarities of the construction of the bars and in the novel and peculiar method of uniting them, as will be hereinafter more fully set forth and specifically claimed.

Heretofore it has been generally customary in constructing window-sashes to first place and unite the bars proper in the required positions and then glaze the glass in the sash, after which the caps or fastenings which fit on the ribs of the bars and secure the glass in place are put in position, and in so doing every transverse cap or fastening must be cut in two or deeply recessed on its under side at the point where it meets the transverse bar, while by using my bars and fastenings I am enabled to clasp the cap or fastening to its respective bar proper, either by hand or machinery, thus permitting the cutting, bending, or notching to be done as in a bar or fastening composed of one piece, and also to construct or build up the sash piece by piece, the joining and glazing being done simultaneously, as in lead glazing.

It will be distinctly understood that it is essential in all bent work to have the cap or fastening and its respective bar proper of the same curve, and it is obvious that in lateral bending if the cap and fastening was bent separately and apart from the bar proper the slot in the cap or fastening would be closed or otherwise defaced; but in cutting, bending, or notching the bar as one, as above described, I avoid this difficulty. It is apparent that it is not necessary to perform the cutting, bending, or notching in the order named, but in any desired order, or the notching may be omitted.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a side view of a portion of a bar with one of the caps or fastenings removed, showing the manner in which it is united with the transverse bar, an end view of which is shown in dotted lines. Fig. 2 is an end view of the bar with the caps or fastenings in position. Fig. 3 is a view in side elevation of the bar slightly tipped, with one of the caps or fastenings removed, bent circularly or into a circle, and showing the manner of forming the bar to unite with the transverse bar. Fig. 4 is a vertical sectional view taken on line X X of Fig. 3 and showing portions of two pieces of circular bars as they appear when united. Fig. 5 is a view in side elevation of the rib of the bar with the caps or fastenings removed; and Fig. 6 is a plan view of the bar, showing the manner of beveling the end.

A represents the bar proper, which is made of three or more pieces of material.

B is a rib which unites the upper or lower caps or fastenings C and D, respectively, which caps or fastenings are formed by bending the metal back upon itself, with shoulders *a* and *b*, which form a support for the sheet of glass, which is held between the two parts C and D. The ends of the bars are formed with notches *d* of any formation; but I prefer to form them with angular ones, as seen in Figs. 1 and 5, thus allowing the projecting portion *c* of the rib B to fit into the space between the shoulders *a* and *b* of the transverse bar and permit the caps or fastenings C D thereof to fit snugly in the notches *d*, and also to allow the cap or fastening C, which is a distinct and separate piece from the rib B and takes the place of putty or other fastening, to hold the glass in place.

By reference to the drawings it will be seen that the caps C and D have no seams on their outer surfaces, and thus present a smooth and attractive appearance adapted to receive a suitable finish and polish.

In Figs. 3 and 4 I have shown the manner of joining curved or circular bars, in which one of the circular pieces is cut away at the point of contact with the other and formed with notches at said point, into which the fastening or cap C and the lower cap D will snugly fit in a like manner, as shown in Fig. 1. It will therefore be understood that I do not desire to limit myself to form the bar with the notches at the ends of the bars, for I may form them at any point thereon that may be desired, or may dispense with said notches entirely, and I may also bevel the notched ends of the bars, as shown by dotted lines in Fig. 6, so that they will unite snugly with the transverse bar when not running at right angles or otherwise therewith, be they circular or otherwise.

On account of the readiness with which the caps or fastenings C can be removed from the bar proper to permit of repairing I use the construction shown, and when it is necessary to remove the caps or fastenings of the bar to insert a piece of glass instead of a piece which has been broken the end of the rib B may be cut, as shown by dotted lines, as at *e* in Figs. 1 and 5, when the transverse fastenings may be removed without hinderance by the upper notch.

I am aware that it is old to provide the upper and lower portions of the ends of the bars with notches, so that in "tenoning" one of the notches will receive the shoulder of the transverse bar and the projection or tenon *c* will fit into the mortise in the rib of the transverse bar, thus closely uniting the ribs and preventing the fastening coming down on the glass without being cut in two or deeply recessed.

While it is necessary for me to use the notch for the reception of the shoulder of the transverse bar and to mention the same in my claims, yet I do not tenon my bars, nor do I claim the notches to permit tenoning of the bars. I usually construct my bars of three pieces of metal—that is, the caps C and D and the rib B, each being a separate and distinct piece; but I may sometimes reinforce the rib by making it of two or more pieces.

One of my objects in constructing the bars of three or more pieces is to enable me to use for the upper and lower caps or fastenings thin sheets of precious metals—such as silver, German silver, copper, brass, &c.—and a cheap and thicker or stronger metal for the rib.

I claim—

1. A bar and fastenings consisting of the marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them, said caps or fastenings being separate and distinct pieces from the rib, substantially as and for the purpose set forth.

2. A bar and fastenings consisting of the marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them and forming the bar A, having the notches *d*, said caps or fastenings being separate and distinct pieces from the rib, substantially as and for the purpose set forth.

3. A bar and fastenings consisting of the marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them, and the ledges or shoulders *a* and *b* on each side of the rib and substantially at right angles therewith, said caps or fastenings being separate and distinct pieces from the rib, substantially as and for the purpose set forth.

4. A bar and fastenings consisting of the marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them and forming the bar A, having the notches *d*, and the ledges or shoulders *a* and *b* on each side of the rib and substantially at right angles therewith, said caps or fastenings being separate and distinct pieces from the rib, substantially as and for the purpose set forth.

5. A bar and fastenings consisting of the hollow marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them, and the ledges *a* and *b* on each side of the rib and substantially at right angles therewith, said heads being separate and distinct pieces from the rib, substantially as and for the purpose set forth.

6. A bar and fastenings composed of three pieces, consisting of the hollow marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the ribs B, connecting them, said caps or fastenings being separate and distinct pieces from the rib, substantially as and for the purpose set forth.

7. A bar and fastenings composed of three pieces, consisting of the doubled marginal caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them and forming the bar A, having the notches *d*, and the ledges or shoulders *a* and *b* on each side of the rib and substantially at right angles therewith, substantially as and for the purpose set forth.

8. A bar and fastenings composed of three curved pieces, consisting of the hollow marginal doubled caps or fastenings C and D, without seams on their outer surfaces, and the rib B, connecting them, and the ledges and shoulders *a* and *b* on each side of the rib and substantially at right angles therewith.

WILLIAM HENDERSON.

Witnesses:
CHAS. C. TILLMAN,
DIXIE DOYLE.

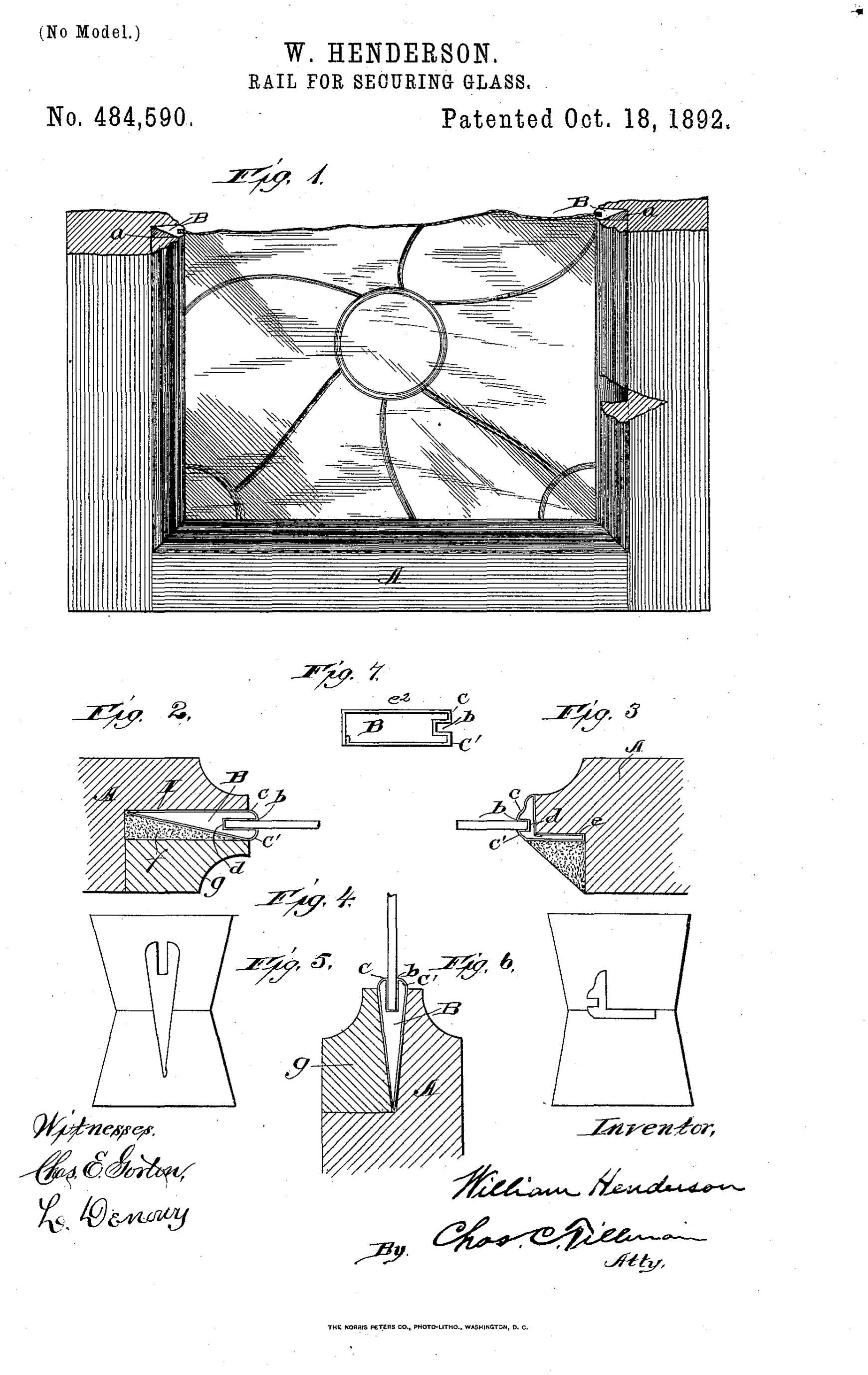


Figure 185. Drawings for William Henderson Pat. No. 484,590—Rail for Securing Glass.

United States Patent Office.

WILLIAM HENDERSON, OF CHICAGO, ILLINOIS.

RAIL FOR SECURING GLASS.

SPECIFICATION forming part of Letters Patent No. 484,590, dated October 18, 1892.

Application filed July 6, 1891. Serial No. 398,588. (No model.)

To all whom it may concern:

Be it known that I, William Henderson, a subject of the Queen of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rails for Securing Glass, of which the following is a specification.

My invention relates to devices for securing glass in a frame, and is especially adapted to be used for the outside rail of glasswork which may have numerous bars or cames for holding the small pieces of glass in place, and which said bars are united at one end to the rail by solder.

The objects of my invention are to afford a rail or frame for glass which can be readily applied thereto and will retain the same without the use of any fastenings—such as putty, glazing-points, tacks, and the like—and also a rail or frame for the exterior of stained or ornamental or other glasswork which shall be attractive in appearance on each side, and is adapted to be used as a frame for signs, &c., or to stiffen the network of small bars or cames used in stained glass or other structures, and to furnish a frame which not only embraces the glass with its groove, but can be readily bent, and also allows the saddle-bars used in leadwork to be joined thereto, thus obviating the necessity of marring the molding.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a view in side elevation, partly in section, of the lower portion of a wooden frame, showing my device in place as it appears when employed for stained glasswork. Fig. 2 is a plan view, partly in section, of a portion of the wooden frame, showing my preferred construction of the rail in place and securing a piece of glass. Fig. 3 is a similar view of a modification of the rail. Fig. 4 is plan view, partly in section, showing a modified manner of securing the rail or frame in the wood. Figs. 5 and 6 are rear views of dies used to form my rail, and Fig. 7 is an end view of another modification of the rail.

In the drawings, A represents a wooden frame or window-sash, which has formed therein the ordinary rabbet *a* to receive and retain the edge of the glass, but as shown in Fig. 1 is the receptacle or seat for my metal rail or frame B, which embraces the edge or edges of the glass.

The rail B is preferably made of one piece of material which is formed in a manner to produce a bar or rail B, preferably of a wedge shape having in its front or receiving portion a longitudinal groove or channel *b* for the reception of the glass. This channel is preferably formed in substantially a rectangular shape by bending the metal back upon itself, thus forming the double marginal heads *c c'* on each side of the channel and uniting them by a rib *d*, which rib acts as a stop to the glass, as is clearly seen in the drawings.

In Figs. 2 and 4 I have shown my bar or rail constructed of one piece of metal formed into a wedge-shaped rail, the tapering portion I thereof extending into the rabbet of the sash or wooden frame, and while I prefer this construction on account of its simplicity, yet I may sometimes use a rail of the form illustrated in Fig. 7, which is of similar construction, except that the rail is rectangular in cross-section instead of being wedge-shaped. It will be noticed that in each of these constructions the bar or rail is hollow, which form increases the strength thereof, as is a well-known fact; but I may form them solid.

In Fig. 3 I have illustrated another modification which I may employ and in which the result obtained is the same as with the wedge-shaped rail or rectangular one. In this style of rail I form the front or receiving portion, as before, with a longitudinal groove or channel *b*, having double marginal heads *c c'*, and unite them with a rib *d*; but instead of placing the projection *e*, which fits into the rabbet of the sash and which assumes the place of the tapering portion I of the wedge-shaped rail or the elongated part e^2 of the rectangular rail at the center of the receiving part of the rail, it may be placed, as shown in Fig. 3, opposite one of the marginal heads or at any other suitable point, and may be made double, as illustrated, or of single thickness or otherwise, if desired, the essential features of my invention being to provide a bar having a longitudinal channel having doubled marginal heads and a projection at the rear to fit into the rabbet of a sash, that can be readily applied to the glass and requires no brazing or independent fastenings to conceal or unite the seams or sections when made of more than one piece.

In Fig. 2 I have shown my rail secured in a portion of a sash by means of putty *f* and a piece of molding *g*, while in Fig. 3 I use putty only and in Fig. 4 molding only. Of course any of these methods may be employed. Fig. 7 represents an end view of the rail, which can be used in the rabbet of a sash or as a frame for signs, pictures, &c.

Figs. 5 and 6 show the draw-dies which I use in constructing my rails and giving them their compact form and desired configuration.

In the drawings I have shown the rails formed hollow, and while it is not always necessary to do so, yet I may in order to augment the strength of the rail insert a piece of metal, wood, or other substance in the hollow without departing from the spirit of my invention.

By reference to the drawings it will be seen that the different modifications of the securing-rail present a longitudinal channel or groove toward the interior of the sash-frame and that the projection which extends into the rabbet of the sash is of less thickness than the exterior of the channel or the receiving portion of the rail, with the exception of the construction illustrated in Fig. 7, in which modification the projecting portion is of the same thickness as the front or receiving portion of said rail.

My object of forming the rail with a projection narrower than the exterior of the receiving or front portion is to allow the said projection to fit into the narrow rabbet and the front or receiving portion to rest on the daylight side of the sash, as is distinctly shown in Fig. 3 of the drawings.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. As an improved article of manufacture, a rail having a longitudinal groove or channel to receive the glass and having a doubled marginal head on each side thereof, and a rib at the rear of said channel connecting the heads to check the glass, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being of a thickness not greater than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

2. As an improved article of manufacture, a rail having a longitudinal groove or channel to receive the glass and having doubled marginal heads without seams on their outer surfaces, and a rib at the rear of said channel connecting the heads, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being of a thickness not greater than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

3. As an improved article of manufacture, a rail having a longitudinal groove to receive the glass and having a doubled marginal head on each side thereof, and a rib at the rear of said groove connecting the heads, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being of a thickness less than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

4. As an improved article of manufacture, a rail having a longitudinal groove to receive the glass and having a doubled marginal head on each side thereof, and a rib at the rear of said groove connecting the heads, and a projecting rear portion to fit in the rabbet of the sash, said projecting portion being wedge-shaped and of a thickness not greater than the thickness of the exterior of the receiving portion of the rail, substantially as set forth.

WILLIAM HENDERSON. [L. S.]

Witnesses:

CHAS. C. TILLMAN,

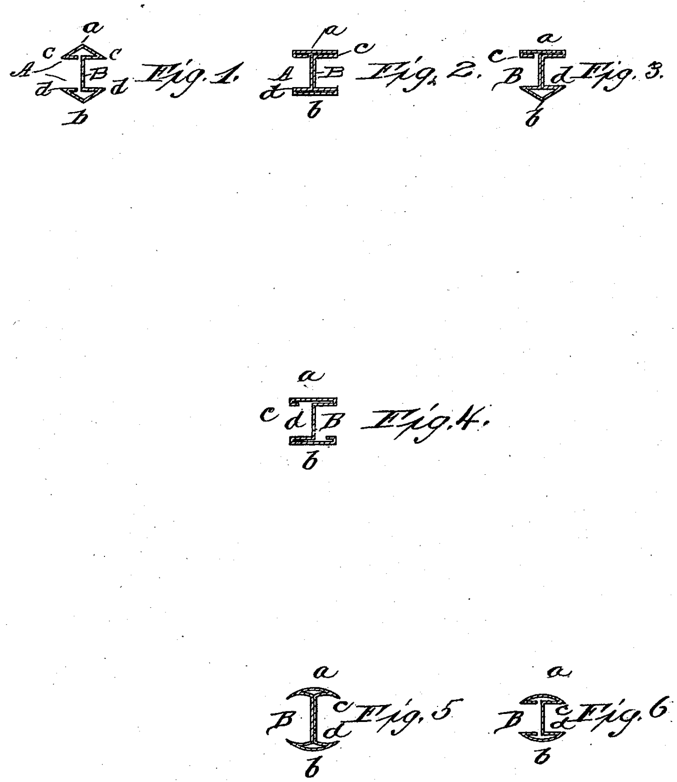
MAY JUDGE.

(No Model.)

W. HENDERSON.

METALLIC BAR FOR WINDOW SASHES, &c.

No. 497,543. Patented May 16, 1893.



Witnesses
Chas. E. Gorton.
Ruth G. Gorton.

Inventor
Wm. Henderson
By his Attorney Chas. C. Tillman

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

Figure 186. Drawings for William Henderson Pat. No. 497,543—Metallic Bar for Window Sashes.

United States Patent Office.

WILLIAM HENDERSON, OF CHICAGO, ILLINOIS.

METALLIC BAR FOR WINDOW-SASHES, &c.

SPECIFICATION forming part of Letters Patent No. 497,543, dated May 16, 1893.

Application filed March 2, 1891. Serial No. 383,477. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a subject of the Queen of Great Britain, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metallic Glazing Bars or Cames, of which the following is a specification.

My invention relates to improvements in metallic glazing bars or cames for ornamental or stained glass windows, and consists in certain peculiarities of the construction and the form thereof, as will be hereinafter more fully set forth and specifically claimed.

Prior to my inventions (so far as I am aware) the common means employed by glaziers for setting ornamental or art glass were lead cames which could be readily worked or made to conform to the glass. These lead cames, however, are so weak, owing to the character of the metal employed, that they furnish insufficient support to the glass, and resort must be had to strengthening bars or rods connected at their ends to the sides of the sash frame and intermediately to the cames. It was also common, in the manufacture of sky lights and similar structures, to employ sheet metal bars consisting of a base and a cap piece to hold the glass, the latter being placed upon the base and the cap piece afterward applied, and in some instances the glass was slipped in from the ends of the bars. These bars were of considerable size to adapt them to sustain large and heavy pieces of glass, and as they were placed in an elevated position their appearance was a matter of small importance and were used only for straight lined glass. On account of their size they were entirely unfit for use in stained or cut glass work, as it was impossible for them to be bent by rolls or fingers to the glass and to be worked to, and built up with the same, which is the essential feature of my invention.

In my patent, No. 420,510, I have described a sheet metal sash bar, composed of a base and cap piece, for use with ornamental or art glass. In this construction a frame was first built up out of the base pieces and the glass put in and then the caps afterward applied. This was an improvement upon any methods theretofore existing, as the sheet metal bars, while small and therefore not unsightly, furnished the proper lateral support for the glass and rendered unnecessary the use of the strengthening bars or rods. But the method of this patent is slow. I have discovered that by making these bars or cames from a hard sheet metal doubled to form marginal heads and connected by a web of less width than the heads, in order to provide a seat to receive the edges of the glass, such bars can be bent laterally so as to be built up or worked with the glass in the same manner as the lead cames have previously been worked.

Another advantage of my invention is that I am enabled to use a lighter or more delicate bar and yet obtain the desired strength or rigidity in the structure; and also enables me to work the bar to a much smaller piece of glass or design. At present the requirements of the public taste demands glazing in which the glass forms the prominent part of the work while the bars are desired to be inconspicuous as possible.

My invention therefore consists in a hard sheet metal bar or came for ornamental glazing having marginal heads formed by doubling the metal upon itself with a seat or recess between said heads to receive and hold the edges of the glass, the doubled heads furnishing sufficient strength to the bar or came to permit it to be bent laterally and fitted to the edge of the glass without puckering, crimping or disfiguring the metal, and thus enabling the bar or came to be worked or fitted to the glass and built up therewith.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 represents an end or sectional view of one form of my bars, and the remaining six figures illustrate similar views of modifications thereof.

Similar letters refer to corresponding parts throughout the different views of the drawings.

A, represents the entire bar which is made of hard sheet metal, and is formed as shown with rib B, connecting the upper and lower portions *a*, *b*, of the bar which form shoulders, *c*, *d*, between which the edge of the sheet of glass is held. Both the upper portion *a*, and lower portion b, may be formed hollow as shown in Figs. 1, and 6, and the lower portion may be made hollow and the upper portion compressed as shown in Fig. 3, or vice versa; or both upper and lower portions may be compressed as illustrated in Figs. 2 and 4.

By reference to the various figures of the drawings, it will be seen and readily understood that the essential feature of my invention is to so form the upper and lower portions of the bar, that in the lateral bending thereof to adapt them to the various curves and shapes of the glass which they are to receive and retain they will not kink, crinkle or pucker, but will present a smooth face or outer surface. I attain this object or result by forming the said portions of the box double or bent back upon itself; that is, I take a piece of sheet metal of the proper dimensions and form it into a strip or bar A, of any desired length, having upper and lower parts a, b, united together by a rib B, the parts a, b, forming shoulders c, d, on the rib with a space between each, of sufficient size to readily admit the sheet of glass. The entire bar may be made of one or more pieces of metal.

I may form the bar into any of the shapes illustrated, and perhaps others, but those shown are sufficient to demonstrate my invention. It will be seen in each of the Figs. 1. to 6. inclusive, that the top and lower portions of the bar are formed double or partially so, or are entirely or partially bent back upon themselves, while the rib B, may or may not be so constructed. It is therefore evident that when the bar is thus made of one piece of metal with the upper and lower portions made double the juncture of the edges of the metal may be at any point, and also that where the upper and lower parts are double or bent back upon themselves and the rib is single as shown in Figs. 1, 4 and 6. that the parts a, and b, may be either partially or wholly double as illustrated. It is also apparent that one or both of the upper and lower parts may be concavo-convex as shown in Fig. 5. or convex as shown in Fig. 6. and that the rib B, may be either single or double as desired.

It will be seen by reference to the drawings that the bar in each view, is constructed without a seam on its outer surface, and will thereby present a more attractive appearance when placed in position in the sash.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A bar or came, made of one piece of metal and consisting of the hollow marginal doubled heads a, and b, without seams on their outer surfaces, the rib B, connecting the heads and the ledges c and d on each side of said rib and substantially at right angles therewith.

2. A bar or came, made of one piece of metal and consisting of the marginal doubled heads a and b, without seams on their outer surfaces, the rib B connecting the heads, and the ledges c and d on each side of said rib and substantially at right angles therewith.

WILLIAM HENDERSON.

Witnesses:

CHAS. C. TILLMAN,

DIXIE DOYLE.

W. HENDERSON.
WINDOW CAME.
APPLICATION FILED JULY 23, 1909. RENEWED NOV. 12, 1910.

978,745. Patented Dec. 13, 1910.

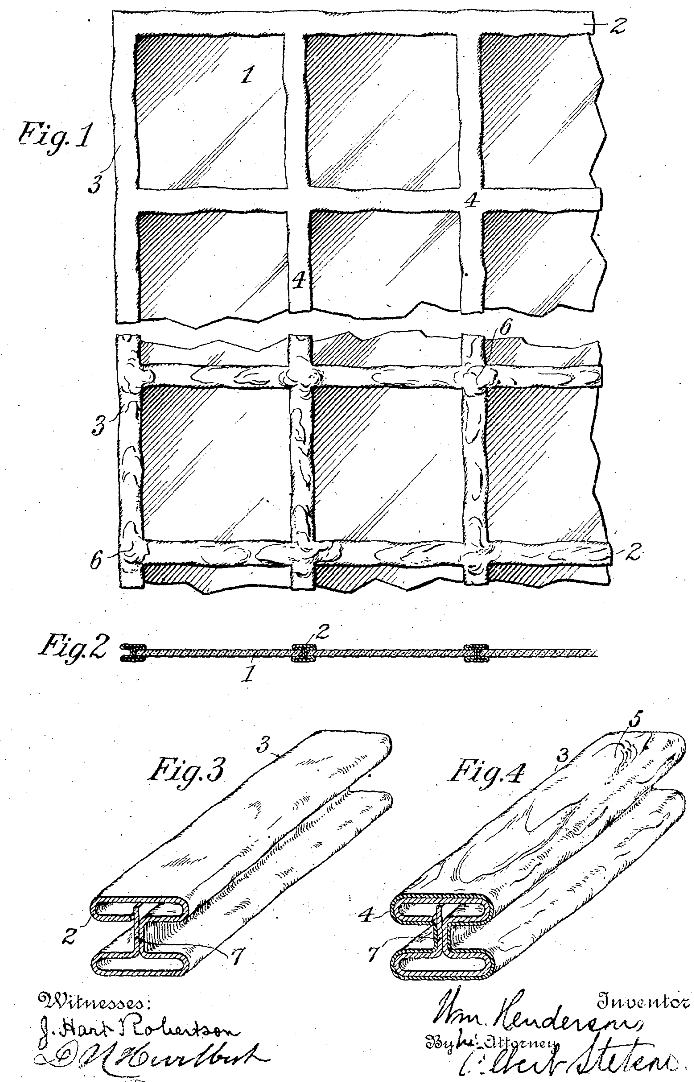


Figure 187. Drawings for William Henderson Pat. No. 978,745—Window Came.

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF NEW YORK, N. Y.

WINDOW-CAME.

978,745. Specification of Letters Patent. Patented Dec. 13, 1910.

Application filed July 23, 1909, Serial No. 509,179. Renewed November 12, 1910. Serial No. 592,077.

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a subject of the King of Great Britain, residing at New York, county and State of New York, have invented certain new and useful Improvements in Window-Cames, of which the following is a specification.

My invention relates to improvements in metallic glazing bars, or cames employed in leaded glass work for ornamental or stained glass windows.

It relates particularly to leaded window cames designed to imitate the antique handiwork, one of whose beauties is the artistic irregularity of the outline.

The object of my invention is to produce an ornamental and artistic window came, which, while preserving all the beautiful effects of the antique leaded glass, shall be sufficiently strong to permit of use with the large panes in some modern windows, and yet so fine-lined as not to be out of proportion with the small glass panes often employed in such windows.

Another and chief object of my invention is to furnish a window came, easily, quickly and economically produced, having the distinguishing wavy outlines, thereby placing the same within the reach of all lovers of antique leaded glass windows.

To carry out my invention, I may take a strip of sheet-metal and by means of a die impart an H-shape thereto. Passing it then through a second, or finishing die, I give it the desired wavy irregularity of outline, by moving at right angles to the direction of its motion the part of the came about to pass through the die. As an alternate method, I may impart the wavy or irregular outline by means of one or more pairs of properly fashioned rolls. In either method, the amount of irregularity is entirely under the control of the one operating the rolls or dies.

In the accompanying drawings:—Figure 1 shows two samples of leaded glass windows formed of panes inclosed by cames with irregular outlines, the lower section showing an artificially roughened surface; Fig. 2 is a cross-section through pane and came, showing manner of setting; Fig. 3 is a perspective view, with end section, of a one-piece came having wavy irregular outlines, and Fig. 4 shows a composite came with wavy irregular outlines, and built up of an internal sheet-metal foundation covered with a lead or lead imitating coating.

In the drawings:—1 is the glass pane inclosed by the came 2, bounded by irregular outlines 3.

4 is a coating, preferably of lead or lead imitating metal; 5, a roughening of the surface artificially impressed upon the came to heighten the artistic effect and more closely imitate the antique handiwork.

6 are drops of solder, or the like, applied to the junctions of the cames for the same purpose.

The ancient glaziers were accustomed to cast lead cames, and then reduce the weight and size by hand tools. This manipulation left the irregular artistic outlines. The ancient cames thus formed, were lacking in the strength requisite for modern work, and were besides too weighty and bulky. To meet modern requirements, the lead mill and the hydraulic press were introduced, but at the expense of the effect so desirable and at the sacrifice of durability and strength. By my invention the old leaded glass effect is restored, strength and durability are added, the cost materially reduced, and the weight and size adapted to modern requirements.

To enable those skilled in the art to practice my invention, I will now describe my preferred method of making the came forming the subject of this invention.

I take a strip of sheet-metal and passing it through a die, impress thereupon the H-shape, such as is shown in my U. S. Patent No. 494,543, of May 16, 1893. Passing the came through a second, or finishing die, I move it at right angles to the direction of motion through the die, and thus impress upon the finished came any desired irregularities of outline. Of course, rolls may be used to give the desired wavy outline, and that whether the came is a single metal, as in Fig. 3, or composite, as in Fig. 4. In giving the irregular or wavy outline to the came, should the rib 7 become unduly bent, it may easily be pressed back into shape straight, without disturbing the irregular edges 3. My came with its comparatively straight rib and its irregular outlines, enables the glazier to secure the irregular outline effect, without the necessity of having to cut his glass irregular to follow an irregularly curved came rib. This is a great saving of time and skill required.

The preferred construction of my improved came is an H-shaped sheet-metal, either simple, as in Fig. 3, or a came composed of an inner metal foundation covered by a layer of lead or lead imitating material.

The external lead or lead simulating surface may be applied by heat, brazing, dipping, or by any of the well known methods of coating one metal with another, and the surface may be rendered uneven by a soldering iron, for example, or by means of metal applied to the came junctions, as at 6.

Having thus fully described and illustrated my invention, what I claim, is:—

1. A window came having an H-shaped sheet-metal foundation covered by an external coating of lead or lead imitating metal, the outlines of said came being wavy or irregular, as and for the purpose set forth.

2. A sheet-metal H-shaped window came having an irregular or wavy outline.

3. A composite window came having irregular outlines and an exposed surface coated with lead or lead imitating material.

4. A composite window came having irregular outlines and a surface artificially roughened, as and for the purpose set forth.

5. A window came having irregular edges and a substantially straight rib.

6. A composite window came having irregular outlines, a substantially straight rib, and a metal surface roughened and increased by added metal at the junctions of the cames, substantially as set forth.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 22d day of July 1909.

WILLIAM HENDERSON.

Witnesses:

A. STETSON,

ALFRED R. HENDERSON.

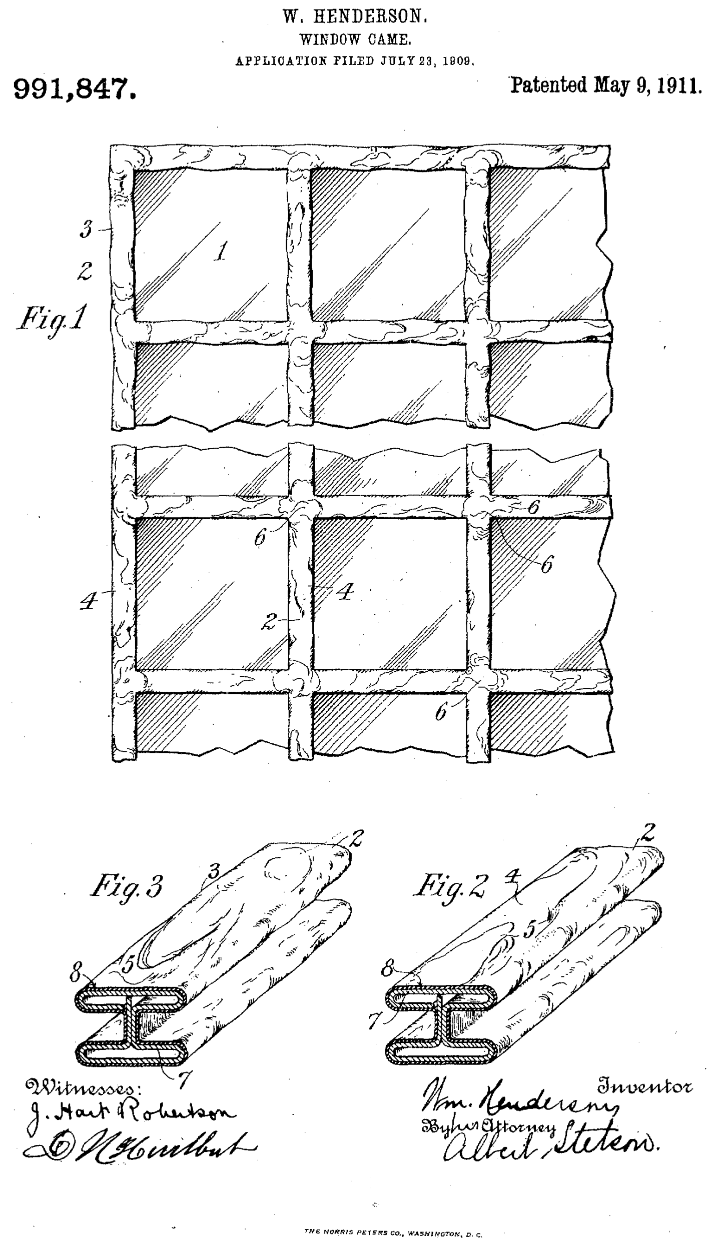


Figure 188. Drawings for William Henderson Pat. No. 991,847—Window-Came.

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF NEW YORK, N. Y.

WINDOW-CAME.

991,847. Specification of Letters Patent. Patented May 9, 1911.

Application filed July 23, 1909. Serial No. 509,178.

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a subject of the King of Great Britain, residing at New York, county and State of New York, have invented certain new and useful Improvements in Window-Cames, of which the following is a specification.

My invention relates to improvements in metallic glazing bars employed in leaded glass work for ornamental or stained glass windows.

It relates further to window cames or bars built up with an internal stiffening frame whose exposed surface is covered wholly or in part with a layer of metallic lead or lead simulating material.

It relates particularly to the class of metallic window bars of the kind set forth in my U. S. Patent No. 497,543, of May 16th, 1893, in which is described a hard sheet-metal bar having marginal heads, with a seat or recess between said heads to receive and hold the glass panes.

The object of my invention is to produce an ornamental and artistic window came, which, while preserving all the beautiful effects of the antique leaded glass, shall have sufficient strength to permit of the use of panes of glass of any desired size and weight, and to resist distortion from wind pressure and gravity.

A further object of my invention is to furnish a leaded glass came of reasonable size and weight, thereby assuring the fine lines necessary for windows built up of small glass panes. In other words, I produce a came strong enough to use with large heavy panes, and yet so delicately lined as to be capable of employment in windows built up of small panes, without the leaded cames being too large for the glass portion, thereby marring the desired effect from the artistic standpoint.

Another and important object of my invention is to produce a composite lead or lead imitating came, which shall be durable, easily, rapidly and economically manufactured, and capable of being installed without the necessity for such skilled labor as has hitherto been the case in high grade glass glazing.

My invention is designed to restore to architecture the antique leaded glass windows, which on account of their artistic effect are so much admired, but which having been hitherto fashioned slowly and laboriously by hand, are seldom seen in modern structures, on account of the time and expense involved.

The ancient method of making leaded glass cames was to cast the lead into an H-shape, and then to reduce the casting to the required size and weight by means of hand tools. This manipulation gave the great charm to leaded glass, and the effect was heightened by a certain artistic irregularity of outline that the ancient lead glazier impressed upon the cames, which artistic leaded effect I easily and cheaply reproduce. The old method was slow and costly, the cames too weak, and the finished article too weighty and bulky for modern use. To meet modern requirements as to weight and size, the lead mill and the hydraulic press were introduced, but at the expense of the effect so desirable and at a sacrifice of durability and strength.

By my invention the old leaded glass effect is restored, strength and durability are added, the cost very materially reduced, and the weight adapted to modern requirements.

In the accompanying drawings:—Figure 1 shows portions of a window built up with my improved cames, the upper part showing irregular, the lower, practically straight outlines; Fig. 2 is a perspective view, with end section of a straight edged came provided with the leaden coating, and Fig. 3 is a similar view of a like came having artistically irregular outlines.

Referring to the drawings:—1 is the glass pane inclosed by the came 2, bounded by irregular lines 3, or by practically straight lines 4. To further increase the artistic antique effect, the surface of the composite came 2 is roughened by heat or chemical action to produce the irregular surface 5, and lumps of solder 6, or the like, are added at the junctions of the cames.

To carry out my invention, I form a sheet-metal H-shaped came, 7, preferably (for reasons of strength and economy in manipulation) of one piece substantially as set forth in my U. S. Patent No. 497,543, of May 16, 1893. To the stiff sheet-metal came thus provided, I apply by dipping, heat, brazing, or chemical action, an external coating 8, of lead or lead imitating material, to the outlines of which I can give irregular or substantially straight form, and the surface of which may be artistically roughened as before set forth.

I do not desire to limit myself to the use of a one-piece came, the essential feature being the H-shape, the light, strong sheet-metal foundation and the lead or lead imitating layer covering the entire surface of the came, or only the portion exposed to view. The external coating may be lead, tin, zinc, or alloys thereof, or any lead simulating metal.

I do not herein desire to claim a metal came having an irregular outline, that forming the subject matter of an application filed simultaneously herewith, Serial No. 509,179.

Having thus fully described and illustrated my invention, what I claim, is:—

1. A sheet-metal came whose exposed surface is covered with lead or lead imitating metal.

2. A sheet-metal came having an external layer of metallic lead artificially roughened, as and for the purpose set forth.

3. A came for leaded glass windows having an H-shaped internal structure to which is externally applied a layer of lead artificially roughened and whose irregularities are increased at the junctions of the cames by added amounts of deposited metal.

4. A sheet-metal H-shaped came whose exposed surface is covered with lead or lead simulating metal.

5. An H-shaped, one-piece sheet-metal came whose external surface is covered with a layer of lead or lead simulating metal.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses, this 22d day of July 1909.

WILLIAM HENDERSON.

Witnesses:
A. Stetson,
Alfred R. Anderson.

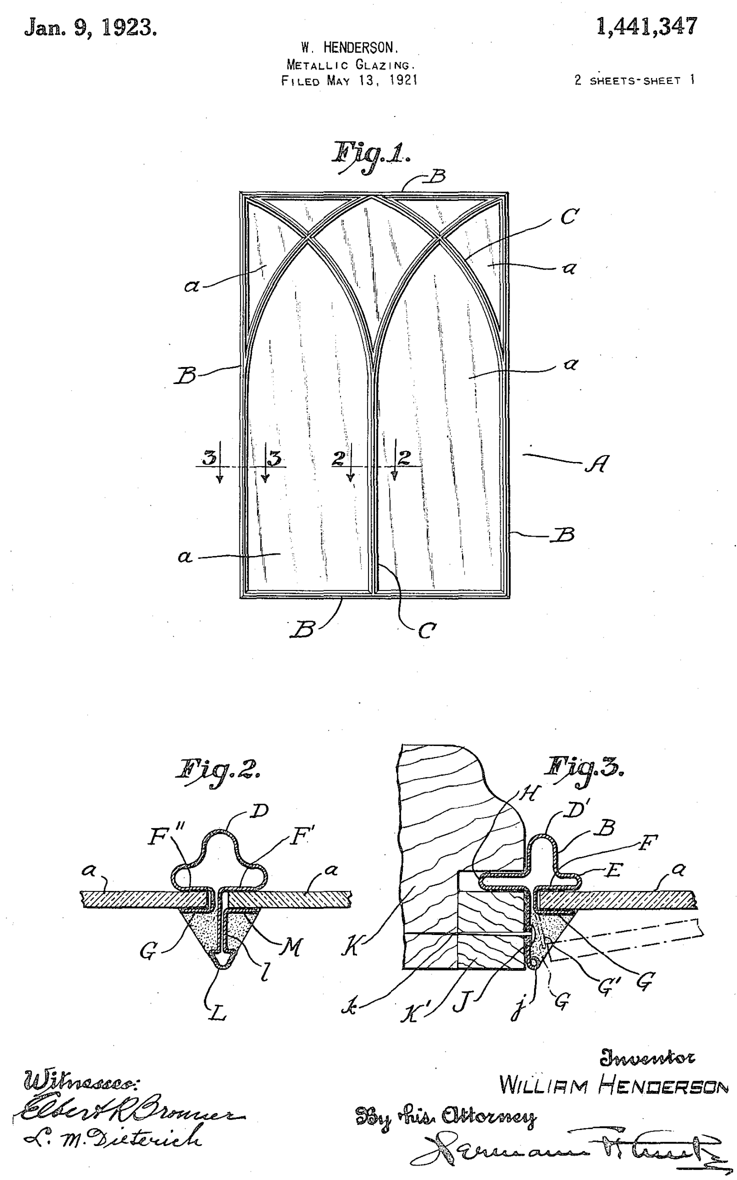
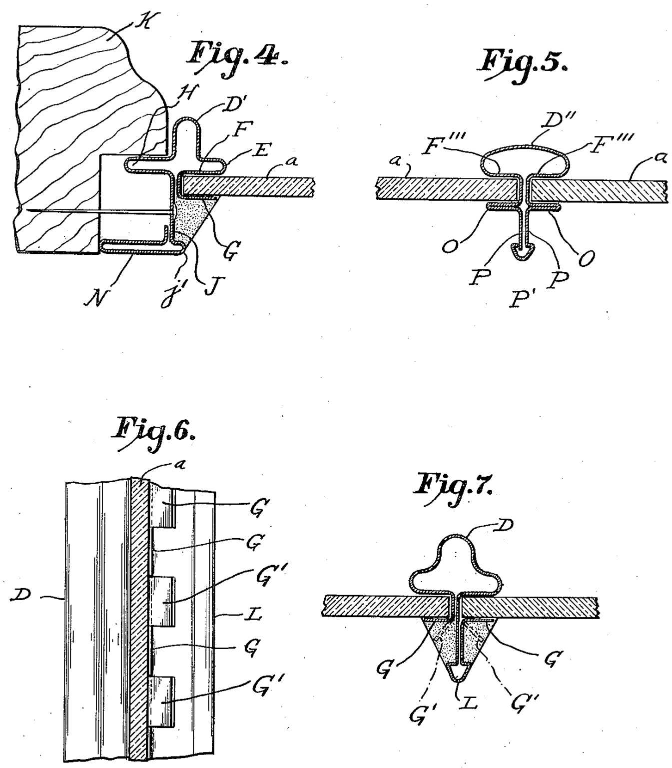


Figure 189. Drawings (Sheet 1) for William Henderson Pat. No. 1,441,347—Metallic Glazing.

Jan. 9, 1923. W. HENDERSON. 1,441,347

METALLIC GLAZING.

FILED MAY 13, 1921. 2 SHEETS-SHEET 2



Witnesses:

Inventor
WILLIAM HENDERSON

By his Attorney

Figure 190. Drawings (Sheet 2) for William Henderson Pat. No. 1,441,347—Metallic Glazing.

Patented Jan. 9, 1923. 1,441,347

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF NEW YORK, N. Y.

METALLIC GLAZING.

Application filed May 13, 1921. Serial No. 469,256.

To all whom it may concern:

Be it known that I, WILLIAM HENDERSON, a citizen of Great Britain, resident in the city, county, and State of New York, have invented certain new and useful Improvements in Metallic Glazing, of which the following is a specification, reference being had to the accompanying drawings, illustrating particular embodiments of my invention.

This invention relates to window glazing, such as is sometimes referred to as "leaded" window panes, as for Gothic windows, and generally to glazing in which a window pane is made up of a number of separate pieces of glass or in which the pane is subdivided by ledges or glazing bars. More particularly this invention relates to the glazing bars or ribs or ledges which subdivide the pieces of glass which are secured together to make up the complete window pane.

In building up the pane from a number of pieces it is an advantage and economy in work to have the glazing bars properly hold the pieces in position, and this invention provides glazing bars to most effectively serve this purpose and at the same time effectively provide for holding the pieces in position and permit their being permanently secured in the completed frame and providing for the required air-tight joints. Among the further objects of the invention are the provision of features of construction which permit the removal of a broken piece of glass and the replacement of a pane or a section of a pane without permanently marring or breaking the glazing bar, and accomplishing this repair of a window quickly and economically.

In particular forms certain features of my invention are specially adapted to provide a frame that will fit the sash, with or without the sash top, providing a perfect joint with the sash, with concealed attaching means readily removable in emergency without destroying the parts or permanently marring them.

Particular embodiments of my invention are shown in the accompanying drawings in which—

Figure 1 is an elevation of a window sash with a Gothic divided pane.

Figure 2 is a cross-section of the glazing bar on line 2—2 of Figure 1, on an enlarged scale.

Figure 3 is a cross-section of the sash frame and a side glazing bar on line 3—3 of Figure 1, on an enlarged scale.

Figure 4 is a cross-sectional view of a sash side frame similar to Figure 3, but modified to eliminate the necessity of an additional stop member on the sash or window frame.

Figure 5 is a cross-section of a modified form of glazing bar adapted to be used between adjacent pieces of the pane.

Figure 6 is a fragmentary portion of a glazing bar in side elevation.

Figure 7 is a cross-section of the bar shown in Figure 6, indicating in dotted lines different positions of the pliable, securing ledges.

The window "A" has the sash frame B and the pane sections or pieces *a*, *a* supported by the glazing bars C. The sash frame member B may be formed as shown in Fig. 3 and is preferably a drawn piece of zinc or copper or other metals or alloys, such that standard sections may be formed with economy, and with stock construction the required lengths can be cut with which to make up any size of sash. Likewise, the glazing bar used for the interior area of the pane can readily be drawn in the sectional form shown in Fig. 2 of zinc or copper or other material, as desired, and economically produced in lengths which can be cut and bent to the required size and curvature.

In the sectional views the rib D on the double bar and the rib D′ on the side sash frame bar are formed as a stiff rib member to give the glazing bar a rigid and permanent form on one side of the pane. The sheet metal forming this rib continues in a bend E and a reverse bend section F forming a fixed ledge against which the rim of the glass rests. The sheet metal continues with a bend from this ledge F to a reverse bend section G in the forms shown of sash sides, providing a pocket between the ledge F and leg G to fit the edge of the glass of the required thickness. As the leg G constitutes the edge of the sheet metal strip, it is pliable and may be bent as shown at G′, permitting the insertion of the piece of the pane of glass as in the manner indicated in dotted lines in Fig. 3, and after insertion of the glass this pliable edge is bent down by hand and smoothed down by tool to a position firmly holding the glass against the ledge F, and thereafter the corner formed between the pliabie leg and the adjacent frame or other parts is filled with putty to provide a finished crevice, air-tight, and closing the gap to prevent an accumulation of dust and dirt and give the desired finish to the glazing. This glazing bar, which is sometimes called a "glazing came", has the sheet metal from the rib D′ bent into the loop H to form a rib providing lateral stiffness and also a ridge adapted to engage the window frame, and the same integral sheet metal is further bent to form a leg J, providing thereby a face to accommodate the window sash stop K′ which fits into the corner of the sash moulding K and into which brads such as *k* can be driven to hold both the came or bar and the stop rigidly secured to the moulding of the window frame or sash, as desired. The sheet metal edge beyond the leg J may be turned, as shown, at *j* to form a finished roll or beading, thereby stiffening the edge to preserve its form and finish, and providing an overchanging crevice to assist in holding the putty finish.

In the intermediate cames or bars, the form shown in Fig. 2 is drawn of sheet metal with the ridge D and the two ledges F′ and F″, the metal of the latter being bent beyond to form the pliable ledge G to clamp the opposite side of the rim of the glass. The metal from the ledge F′ is bent at right angles and extended to and bent double to from the rib L and the return bend *l* is again bent at right angles so that the edge of the sheet forms the pliable ledge M, which is complementary to the ledge F′, to form the pocket in which the adjacent glass rim is held. Both pliable rims or ledges G and M being formed as the two edges of the metallic strip constituting a glazing bar and having no stiffening crimp or bend, are pliable so that they may be bent out of position sufficiently to permit the insertion of the edge of the glass section, without causing any distortion in the abutting or fixed ledges F′, F″ or the rib portions D or L. After the glass has been inserted the pliable edges or ledges G and M are bent down and peened or smoothed down by means of any convenient tool, forming a secure hold for the edge of the glass, and then the corners formed by them and the sides of the rib L suitably accommodate and hold the putty finish, as may be desired, with an assured uniformity in completing the glazing operation.

In the side bar member shown in modified form in Fig. 4, the leg or face J is bent to form the rib *j*′ with a right-angled bend doubled back to form a rib N, thus providing a stiff inside face adapted to fit into the mortice in the corner of the sash or window frame without the necessity of an additional stop. By this modification the strip constituting the came or bar has one edge concealed in the finished structure while the other edge is on the member G, thereby providing the pliable ledge adapted to be bent out and in for the purposes of repair and replacement of broken pieces of the pane.

A modified form shown in Fig. 5, has the rib D″ in modified form with the desired stiffness but with symmetrical return bend sections F‴, the sheet metal then being bent at right angles to form the pocket for the rim of the glass and symmetrically bent in opposite directions in a close fold O on either side and continuing in parallel sections P, P, one of which has its edge P′ bent into a head to form a stiff extremity to the rib and closing over the edge of the other side to form a finished structure adapted to maintain its shape in installation and use. The pliable ledges in this form comprising sections O, O have their double bend closed tight, so that with the suitable thickness of pliable metal the two portions of the bend can be distorted without distorting the rib or stiff portions of the bar or came to in any material way affect the uniformity of the structure after repair or after the original assembly of the sectional bend.

As shown in Figs. 6 and 7, the pliable ledge G shown in dotted lines in distorted position G′ may be serrated as shown in the elevation, Fig. 6, so that each section can be bent up and back into clamping position with more facility and evenness. As so made, the many edges of a serrated pliable ledge provide additional holding crevices for putty which is later applied to finish the job. These sectional or serrated portions of the pliable ledge on the glazing bar may be of many forms and may be in the form of a few prongs or may constitute half or more of the length of the ledge. Being integrally formed with the sheet metal, they are readily made and form a strong and permanent means of attachment of the edge of the glass and may be bent in and out for purposes of repair to any extent that may be required in usual or in extreme cases where the facilities for replacement or repair are required.

It will thus be seen that the side frame and the sash or window pane can be secured at one corner and an adjacent section of glass pushed into position snugly fitting into the pocket formed by the fixed edge and the pliable edge and an improved bar or came is then placed over the other edge of the glass section and on its opposite side the next piece of glass is inserted, with a further section of the glazing bar placed in position, until all sections of bar and glass are in their proper position, and during the operation this improved glazing bar provides for securely holding the sections, thereby greatly facilitating the assembly of leaded panes or the operation of assembling Gothic window glazing and minimizes the chance of breakage and assures protection in producing the finished pane or window. When all parts have been assembled, the corners and joints of the metallic side members and intermediate glazing bars are connected by soldering in the usual way or as may be otherwise desired.

In the case of breakage, the splinters are removed from the broken section and the pliable ledge quickly bent back to clear the edge of a new piece of glass which is inserted without straining the glazing bar or frame or without distorting and marring the finish and appearance of the ribs or bars, and when inserted the pliable ledge is bent into holding position and, where desired, the putty finish is added, completing the operation with great economy and perfection. In form shown, as for example, in Fig. 5, the securing can be effected leaving the pane in perfectly finished condition without the addition of putty, while still providing a finished and neat appearance, both air-tight and without objectionable crevices for the accumulation of dirt and without leaving any ragged edges to the came or bar.

The various sections of glazing bar can be readily drawn from sheet metal of any desired thickness necessary to provide rigidity and still leave pliable the ledge or ledges which it is desired to distort for purposes heretofore set forth.

The folds of the metal constituting a rib on one side may be so arranged as to permit the insertion of a straight or other suitable strip of metal when the glazing bars have been assembled or when the window has been completely assembled, thereby providing a stiffening of the structure. This may be a steel strip which would provide strength far beyond the pliable or soft zinc sheet used to readily form a manifolded special section. The hollow rib on one side may likewise accommodate a stiffener bar, as, for example, a steel rod; thus, the steel rods or bars let into or passed into the glazing bars of special conformation heretofore described, serve to give great rigidity to the window and may furthermore be interlocked to increase the structural advantage. Such bars may also serve by insertion to spread the parts of the pliable came or glazing bar after the glass has been positioned, thereby taking up any slack in the pockets which might exist owing to clearance necessary for its original insertion. Such bars or rods may be varied by insertion of sections, particularly at the joints of the glazing bars, and by iuterlocking the same by perforations in one member, penetrated by the bar passing through the transverse member, or in many other ways.

By the use of the invention heretofore described, it will, thus, be seen that this glazing bar involves a weatherproof structure, all seams being covered or blind, none being exposed to permit the entrance of the elements, which likewise applies when the stiffening bars are inserted inside of the specially formed glazing bar, thus preserving a durable and uniformly lasting exterior, irrespective of any possible rusting that might be involved in the use of steel or other interior metal, which however is protected against the weather.

The various forms of this article of manufacture in its main features involve the sheet metal strip with the different ledges, legs and ribs formed by drawing it through a die but with such ledges or legs and pliable beadings integral with the main portion of the structure.

The resulting article of manufacture lends itself to various modifications based on engineering considerations and, in particular, in conformation to all the artistic requirements of windows of the class for which this is intended.

With respect to the question of fire resistance, the weakening or partial destruction of zinc or other metals having a low melting temperature, it will be seen that the supplementing or modification by adding the interior bars or rods, permits the use of steel of relatively great heat resistance, thereby providing a window that will withstand the effects of fire to a far greater extent, besides providing the strengthening heretofore mentioned, to resist greater wind pressures.

While my invention may be variously modified from the particular embodiments herein described in detail and illustrated in the accompanying drawings, without departing from my invention, what I claim and desire to secure by Letters Patent is:

1. A glazing bar comprising a continuous strip of metal having a lateral pocket adapted to receive and hold a sheet glass edge, a stiff rib formed as part of the one piece strip by a bend on one side, a fixed ledge forming one side of said pocket and a pliable ledge of the integral metal strip forming a yielding, complementary side to said pocket.

2. A glazing bar consisting of a strip of metal with continuous bends having a pocket on one side to accommodate the edge of a piece of glass, a fixed ledge forming one side of said pocket in combination with an integral stiff rib bent portion, an edge of said metallic strip constituting a pliable ledge on the opposite side of said pocket.

3. A glazing bar consisting of strip of sheet metal and drawn into a section forming a stiff rib, stiff integral ledges adjacent said rib and a bent section forming an oppositely disposed stiff rib and a return bend from said second rib terminating in a pliable glass-holding ledge at the edge of the strip.

4. A glazing bar comprising a strip of sheet metal having a pocket formed by a groove bend on one side and having a stiffening rib projecting from the opposite side of said pocket, a pliable section on one side of said pocket formed by the edge of the strip adapted to be bent for the purpose described.

5. A glazing bar comprising a sheet metal strip drawn to a uniform section, consisting of a stiff wide rib on one side and a stiff narrow rib projecting in the opposite direction, two laterally disposed intermediate bends forming a pliable ledge adapted to form a pocket in conjunction with a base ledge on one of said stiffening ribs.

6. A glazing bar comprising sheet metal strip drawn into continuous uniform section having a stiff rib section on one side with a base thereof to form a fixed ledge or pocket side, a pliable ledge formed from the edge of the sheet in serrations, sections of said serrations integral with the metal sheet, individually pliable and independent of each other.

7. In a window having a sub-divided sectional pane, a sash rail of continuous uniform section of single-piece drawn sheet metal, intermediate glazing bars of single-piece uniform section integral sheet metal, including a strip portion of said sheet metal formed on the rails and bars with a pliable juncture with the main body portion whereby the same are pliable and may be opened to permit the insertion of the glass edge and rebent to hold the same in position.

8. An article of manufacture consisting of a deformable metal sheet drawn to a uniform section of folds including in the integral continuity of the structure a stiff box rib section, a permanent ledge to accommodate an abutting edge of a glass plate, and an integral portion pliable with respect to the structure along a line close to the axial plane of the glazing bar, whereby said section may be bent to and over to hold said glass plate in co-operation with the permanent ledge.

9. An article of manufacture, a glazing bar with portions formed of integral uniform sheet metal section including a rib bend forming a rib section with the sides brought adjacent to each other to form an abutment for the juxtaposed glass pieces, and a strip projecting from the adjacent parts to form a pliable beading and a bent part forming a closure for the space intermediate the adjacent members, whereby a finished and weatherproofed joint is formed on the portions extending in the opposite direction from the rigid rib.

10. A glazing bar consisting of a single strip of sheet metal formed into a section comprising a pocket to receive the edge of a glass plate with a ledge abutting one side of said glass edge, an integral stiffening rib disposed at right angles to said ledge, and a terminal edge of said sheet metal strip laterally projecting from said stiffening rib to form the complementary pocket side.

11. A glazing bar consisting of a drawn strip of sheet metal the longitudinal bends of which strip are formed to constitute a section with a head, a stiff rib disposed at right angle to said head, a terminal strip edge of said strip laterally projecting from said stiff rib forming with the head a pocket for the edge of a glass plate.

12. A T section glazing bar comprising head and web formed of a continuous strip of pliable sheet metal, a single ply of said strip projecting from said web intermediate the head and the outer edge of the web and forming a lip parallel with said head.

13. A T-shaped glazing bar comprising head and web formed of a continuous strip of pliable sheet metal, a ply of said strip bent back from the edge of said web with an integral portion projecting laterally from said web and forming a pocket in conjunction with the head.

14. A window came or bar of one piece of sheet metal comprising a head and a bent forming a stiff rib and a contiguous pliable edge of single thickness of said sheet metal projecting at right angles intermediate the head and web edge, said rib serving to hold the edge of a glass pane.

15. A window came consisting of a one piece sheet metal strip bent to T-shape section forming a stiff web and a stiff head, and a pliable sheet edge projecting laterally from said stiff web substantially medial of the side of the web.

In testimony whereof, I have signed my name to this application, in the presence of two subscribing witnesses, this 6th day of May, 1921.

WILLIAM HENDERSON.

Witnesses:
HERMAN F. CUNTZ,
M. F. WINSLOW.

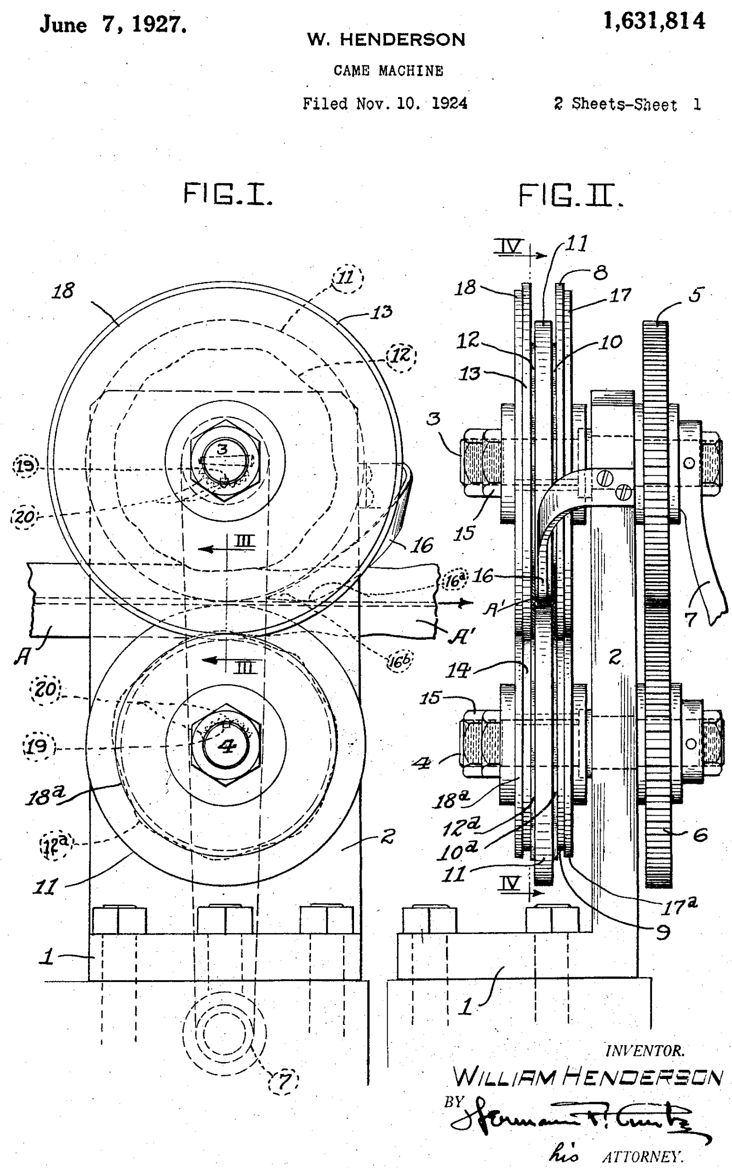


Figure 191. Drawings (Sheet 1) for William Henderson Pat. No. 1,631,814—Came Machine.

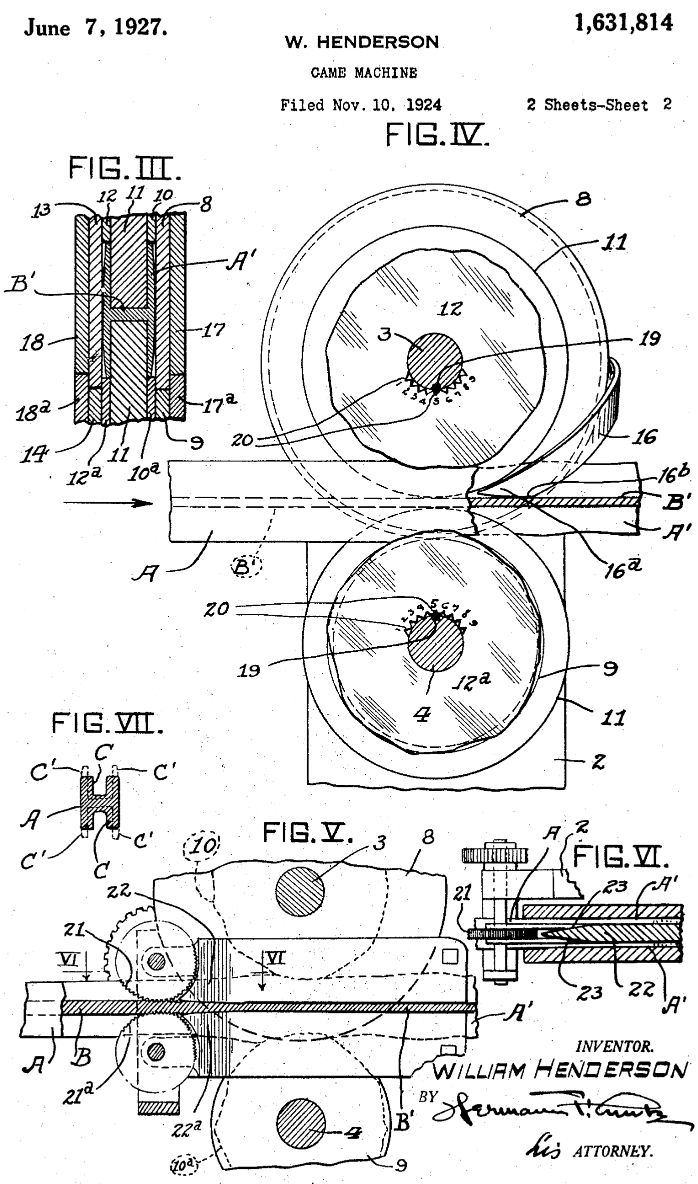


Figure 192. Drawings (Sheet 2) for William Henderson Pat. No. 1,631,814—Came Machine.

Patented June 7, 1927. 1,631,814

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF NEW YORK, N. Y.

CAME MACHINE.

Application filed November 10, 1924. Serial No. 748,878.

This invention relates to machines for producing a finish on cames, and more particularly one of its particular applications is for the purpose of giving a particular character of leaf edge or surface to the general form of lead cames made in an H section. Among its objects are to economically produce a variegated or irregular edge on the leaves of the came and the surface, in a way that will preserve the essential structural characteristics of the came for its purpose of holding the glass, and ready use for assembly, but will give to the came the appearance which may be called an antique finish. Such particular objects involve the changing of a perfectly straight extruded, or the old fashioned cast lead came, into a came with constantly irregular edges, or irregular widths of leaves, or irregular surface, or any of these irregularities for appearance, in combination, and to do so with economy and with a result that produces in the various lengths of came used in a leaded window, irregularities throughout the lattice of the came. Another object is to produce such irregularities in a way that will insure the edges of opposed leaves being substantially in registration so that when glazed into the window the edges will approximately register and provide a clear edge vision without seeing the cemented underside of one leaf extending beyond the edge of the leaf on the other side of the glass.

While such lead cames, sometimes called calms, are mostly used in short sections, the entire irregularity, to produce the effect and artistic finish, need extend usually over a short section of came, but should it be desired to make the irregularities vary over considerable length, modifications of the machine, as hereinafter described, also provide therefor to any length of came that might be used in practically all glazing work.

In the preferred form of such machines, I feed a straight extruded length of came between two plain rollers fitting between the leaves on each side, and touching the heart, passing which the heart is kept straight, while the outer sides of the leaves pass close to cheeks which prevent undesired distortion, and discs with irregular edges engage the edges of the leaves, providing enough resistance to pull the came through the machine and impress the irregularities upon the leaves limited to the edges and the outer surface. The centre rolls engaging the heart may be disposed to assist in the driving engagement to pull the came, or in some cases may be fed free or may be stationary and polished. Different sets of discs with irregular edges may be readily implaced, that is assembled into the machine, in order to secure a greater degree of irregularity, or for different sizes of original came section. These irregular edged discs are driven by having their shafts connected by inter-engaging gears, so that driving one of the shafts turns both. Ordinarily both of the shafts are turned at the same speed, and the irregularities will thus be impressed upon the came leaves to the full extent of a complete revolution of the discs which may be of any desired size, to give lengths of irregularity for an extent of any usual section of came when cut for glazing. Such irregularity may be continuous for many revolutions of the shafts by varying the speed of one shaft compared with the other, and this may be done in several ways, one of which involves a slight difference in size between the two gears on the two driving shafts, so that with every revolution of one shaft the irregularities impressed on the other edge of each of the leaves will advance or creep with each revolution, and thereby prevent the irregularities on the two sets of juxtaposed discs from registering at any time, except at a point after a considerable number of revolutions depending upon the ratio of the gears. Such differential gear drive usually requires only a slight variation in size, so that the creeping of one set of irregular discs with respect to the other is very slight, and in no sense to a degree which would tear the metal in the leaves.

In a modified form of machine it may in some cases be advisable to have the means for driving the came blank include a driving engagement of the central rolls on the heart of the came, and to permit the edge of the leaves to be deformed irregularly by engaging surfaces capable of irregular displacement for upper and lower leaves, and to that may be added the provision of rollers to assure irregularity on the outer surfaces of the cames. The lead in such cames is very ductible and liable to misformation in the handling, so that difficulties arise in making specially formed leaves as to surfaces or edges that will still meet the requirements for artistic purposes, and will likewise provide a came meeting the structural requirements for use and ready assembling. This invention aims to provide such machine in simple form, adapted to the required variations for production, and for high speed of operation, as well as a machine that may be used in any shop to provide small quantities of cames having the particular characteristics of finish for a particular window, or for each particular set of windows that go into one structure.

While particularly adapted to special effect of leaves on cames, in various forms the simple mills may be used to reduce came blanks either cast or so-called hydraulic extruded blanks, into the precise size and any shape desired by the glazer. It will be noted that the multiple part rolls provide for the lateral contact with the leaves to draw the came through the mill, and that the central heart-engaging member may be a die or inside mandrel, or on a roller, or may be a stationary circular part of the mill, for conveniece. By having the outside roll members engaging the leaves, either such or combined with the disc members engaging the edge of the leaves, either plain, uniform or irregular, the mill serves to draw the came blank, and therefore force the reduction or variation in shape desired, while the parts engaging the heart and the inside of the leaves may be a mandrel or reduction die or guide in a stationary position, thus providing an efficient mill or machine for making cames in shops as desired, from the blanks of larger sizes or straight conformation.

Various arrangements of mills may be used, with some of the parts herein shown and described, or other modifications without using the particular entire combination, and for producing a great variety of finished product, without confining this invention to the specific embodiments herein described.

Particular forms of these machines will now be described with reference to the drawings showing particular embodiments, in which:

Fig. I is a side elevation of a preferred form of the machine.

Fig. II is an elevation viewed on the axis of movement of the came being rolled.

Fig. III is a cross-section on enlarged scale, of the rolls with came, fragmentary, on the section III—III of Fig. I.

Fig. IV is an elevation showing the irregular rolling discs and principal adjacent parts in operative relation to a came being rolled.

Fig. V is a fragmentary view of a modified form of machine showing the rolls and other parts engaging and fashioning the came.

Fig. VI is a fragmentary cross-section on line VI—VI of Fig. V.

Fig. VII is a cross-section of a came blank as in a cast came, with dotted lines indicating sectional reduction when manipulated by my machine.

The machine in Figs. I to IV comprises a base 1, a frame or bearing support 2, with shafts 3 and 4 supported in the frame or in bearings carried thereby. Gears 5 and 6 are keyed to the shafts and engage each other so that turning one shaft by crank 7, turns the other shaft in the opposite direction, and in the form shown, at the same speed.

On the other side of the frame 2 the projecting shaft ends support a number of cooperating rolls, which at their adjacent peripheries form a clearance in H section of the desired size and configuration, to provide for the rolling of the came for the finishing characteristics desired. These came rollers comprise the inner disc 8 registering in the plane of the inner disc 9, but one larger than the other so as to form a side resisting plate for the passage of the came leaf on one side. The next member of the rolls is an irregular disc 10 and irregular disc 10^a set flat against 8 and 9, respectively, and each one engaged by the central heart rolls 11—11 of the same diameter, and therefore engaging the heart of the came, while their outer faces form straight inner surfaces for the leaves. Tight against the central heart rolls are leaf edge rolls 12 and 12^a, the irregular peripheries of which provide for the irregular formation of the edges of the leaves. Outside of these edged disc rolls are plates 13 and 14, one larger than the other to an extent that provides for the outer margin forming a tight abutment to resist the bulging of the surface of the leaf of the came. All of these rolls are securely locked together by nuts 15 threaded on the free ends of the shafts 3 and 4. A guide 16 rigidly secured to the machine frame 2, has a toe 16^a projecting close to the periphery of the heart roll on one side, with a guiding surface 16^b adapted to contact with one side of the heart and cooperate with the rolling contact of the heart rolls, for the purpose of straightening the heart as it emerges from the rolls and prevent its curling. Extra plates 17—17^a and 18—18^a may be used to provide registering interengaging edges of the outside confining rolls, or the edges of the outside confining rolls may be stepped in order that a resistance against lateral pressure be provided for the rolls 8 and 13, at the point where the pressure on the came tending to compress it requires lateral resistance to prevent distortion of the leaves where not desired.

The discs with irregular peripheries are in pairs 12 and 10 and 12^a and 10^a. By having the pair on one shaft uniform as to the irregular periphery, the resultant edges of the leaves which they engage, will substantially register on the finished came on one side of the heart, so that when glazed into the window there will be clear vision, although irregular from the outside or inside of the glass, without seeing any overlapping of the opposite leaf, or the cement used to secure the glass therein. These irregular disc rolls of the leaf edges are preferably held by a key 19 in each shaft, but engage in one of a number of keyways or notches, which in the figures are numbered from 1 to 9. With a number of setting positions, resulting from having the key engage one or the other notch, the pair of top disc rolls will have different irregularities opposed to the pair of bottom disc rolls by simply changing the registering of the discs on the shaft, when the gears 5 and 6 are kept in mesh in the same position. Variations of the relations of the disc rolls may also be accomplished by withdrawing one of the gears 5 or 6 and shifting it a few teeth, which will advance the upper or lower disc rolls with respect to the others, thus changing the juxtaposition of the irregularities.

In the modification shown in Figs. V and VI, provision is made for handling a came blank, such as shown in Fig. VII, as, for instance, the cast blanks, or drawn blanks thicker than is required for the finished section of heart and leaves, in producing the product of my machine. For this purpose the came in section A is reduced to the lighter section and irregular finish A′, with the thick heart B reduced to B′, and the general section thick leaves C reduced to the lighter section C′, shown dotted in Fig. VII. Starting with such a thicker came, the rolls 21—21ª having toothed or roughened faces are positively driven by suitable gears, and drive the stiff came A by gripping the thick heart B so as to force the came between reducing guides 22—22ª, which are separated and held rigidly in position the desired distance apart so that the forced entry or feeding of the came between the guides will force a reduction in the thickness of the heart, while the sides 23—23 of the guides force the reduction in the thickness of the leaves C—C. While effecting this reduction in general sections, the parts of the machine are associated with rolls forming the general H section, as heretofore described, and in particular may embody the irregular disc rolls 10 and 10ª mounted on shafts 3 and 4, so that simultaneously with the squeezing of the came leaves, the material of the leaves spread so as to engage the periphery of the irregular disc rolls, and the irregularities of the leaf edges are thereby impressed, and at the same time the irregular disc rolls cooperate to pull the leaves and thereby the came through the machine.

The irregular contact of the disc rolls with the edges of theleaves buckles the leaf slightly at times, varying with the irregularity, but this spread effect causes irregularities on the outer surface where there is leeway before the surface comes in contact with the adjacent confining rolls 11 and 13, as shown in Fig. III. This varying buckling provides a constantly irregular outer surface, which is combined with the irregular edges of the leaves, and thus produces the antique appearance and still preserving the most essential characteristics with respect to the heart inside of the leaves, resulting in a finished product which has now become most commended and desired for the particular effect produced.

It will thus be seen that these machines or mills serve to provide a simple device for manipulating cames, particularly such as lead or other soft metal, for the purpose of producing an irregular and constantly varying relation of leaf margins, and variations of the leaf surface as well. These machines are simple, and may preferably be hand operated as by the crank indicated, but for large production may be power driven. In this art the production of special came effects and finish usually involves the treatment of lengths of blanks and of a different finish or character for different jobs, such as a set of windows or the particular glazing for one window, and these mills supply in particular a compact, convenient and durable machine for the glazer's shop use. A series of sets of irregular discs, as for the machines shown in Figs. I and IV, may be kept in stock in sets of two pairs each, and of different sizes to manipulate different sizes of cames. The irregularities of the finish on the leaf edges may be varied by different setting of the disc rolls on the shafts, and the assembly and arrangement of the machine are such as to readily permit the shifting of discs for such changes. Should it be desired to produce a constantly varying irregularity over a long strip of came, the two gears 5 and 6 may be made of slightly different size, as, for example, one having one or a few teeth more than the other, the result of which will be to drive one shaft 3 differentially faster or slower than the other shaft 4, and as each pair of irregular disc rolls is keyed to its respective shaft, one of the pairs will creep slightly ahead of the other at each revolution, and for a large number of revolutions the same irregularities on one pair will never again register with the irregularities on the other pair of disc rolls. In the normal size of mill for this work, such a differential drive would provide constant irregularities for a sufficient number of revolutions to extend entirely throughout the length of the usual came blank used in commerce and as delivered in the straight, smooth form to glazers, or as made by them in their other came blanking machines.

Such differential driving will tend also to cause the leaves on one side to creep a little beyond those on the opposite side of the heart, which, however, will be absorbed by the ductility of the material, and simply serves to increase the desired irregularities for both leaf edges and outer surfaces.

The manipulation of these mills or machines will be readily understood from the aforegoing description, which consists in feeding a plain came blank into one side of the rolls or mill, and by turning the crank the rolls bite the end and draw the heart and leaves through the cross-sectional space provided, while during its passage the engagement with the irregular disc rolls provides the irregularities and the other portions of the mill suitably support the ductile material in its passage, resulting in the delivery at the other side of the mill in the finished product with the much desired characteristics.

While various modifications may be made from the particular form of the embodiments of my invention herein shown and described, without departing from my invention,—what I claim and desire to secure by Letters Patent is:

1. A mill for rolling glazing bars or cames, comprising multiple rolls having roll sections engaging the edges of the came leaves with irregular peripheries.

2. A came mill consisting of positively driven shafts, came-engaging rolls on each shaft including irregular edged discs adapted to compress the edges of the leaves of the came whereby an irregular edged product is produced.

3. A came mill consisting of two positively driven shafts, a plurality of cooperating rolls on said shafts to engage the came section, a central member on each adapted to fit the heart and inside surfaces of the leaves, pairs of irregular disc roll sections adapted to engage the edges of the leaves, and means for varying the registration of irregularities on said discs on the two shafts.

4. A came mill comprising two driving shafts, cooperating rolls on said shafts to engage the heart of a came blank, means for engaging the edges of the cames in their passage through the mill and to irregularly compress the edges of the leaves, and cooperating means laterally supporting the came surface in proximity to the heart.

5. A machine for irregularly forming the leaves of cames, comprising driving rolls engaging the heart of a blank, guides for reducing the section of the came, and cooperating means for forming irregular edges on the came in its passage through the mill.

6. A machine for irregularly forming the leaves of cames, comprising reduction guides in combination with reduction rolls having a set of irregular rolls engaging the leaves of a came, whereby on leaving the machine the edges of the leaves on one side of the heart will be constantly irregular with respect to the edges of the leaves of the opposite side of the heart.

7. A came machine or mill having a set of roll shafts with bearings rigidly supporting the same, means for simultaneously driving said shafts from one source, cooperating rolls on said shaft adapted to form and drive a came blank between their juxtaposed peripheries, a plurality of sections of said rolls having irregular peripheries adapted to engage the leaves of a passing came, whereby an irregularly shaped came leaf is produced on the finished article.

8. A machine or mill for finishing cames for window glazing, comprising driving shafts carrying cooperating rolls, sections of said rolls adapted to resist lateral bulging of a passing came blank, and other roll sections adapted to engage the leaves of said rolls with irregular pressure, and roll sections adapted to limit the section formed by the inside walls of the leaves and the face of the heart on each side of the heart, whereby an irregular finished product is produced as to the leaves, with uniform heart sides and inside surfaces of the leaves.

9. A machine or mill for forming cames, comprising cooperating rolls and a common driving means for said rolls, a plurality of discs forming each roll including a central heart-engaging disc or member having a non-driving fit or engagement, and adjacent driving roll members engaging the edges of the leaves of the came being rolled.

10. A came mill having two interconnected driving shafts, cooperating multiple part rolls on said shafts, lateral members in one roll overlapping the sides of the came being rolled and having associated therewith a shoulder part adapted to engage the edge of the came leaves.

In testimony whereof, I have signed my name to this application this 30th day of October, 1924.

WILLIAM HENDERSON.

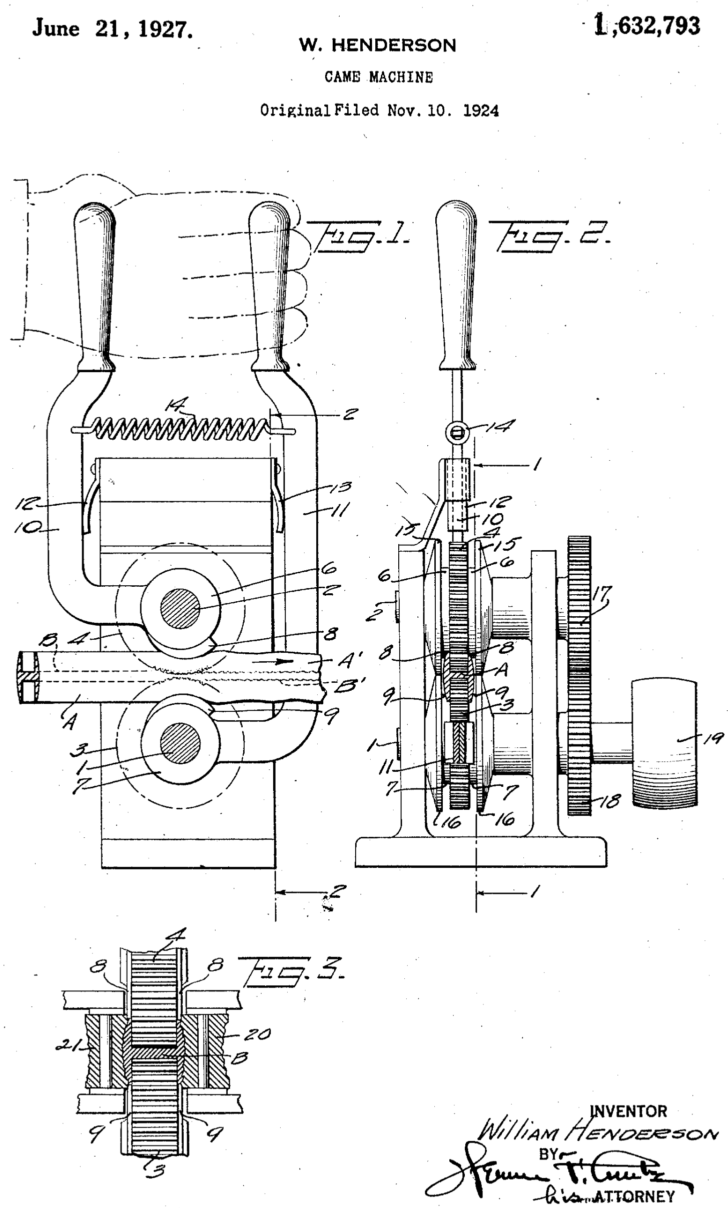


Figure 193. Drawings for William Henderson Pat. No. 1,632,793—Came Machine.

Patented June 21, 1927. 1,632,793

UNITED STATES PATENT OFFICE.

WILLIAM HENDERSON, OF NEW YORK, N. Y.

CAME MACHINE.

Original application filed November 10, 1924, Serial No. 748,878. Divided and this application filed June 16, 1926. Serial No. 116,313.

This invention relates to machines for producing a finish on cames, and more particularly one of its particular applications is for the purpose of giving a particular character of leaf edge or surface to the general form of lead cames made in an H section. Among its objects are to economically produce a variegated or irregular edge on the leaves of the came and the surface, in a way that will preserve the essential structural characteristics of the came for its purpose of holding the glass, and ready use for assembly, but will give to the came the appearance which may be called an antique finish. Such particular objects involve the changing of a perfectly straight extruded, or the old fashioned cast lead came, into a came with constantly irregular edges, or irregular widths of leaves, or irregular surface, or any of these irregularities for appearance, in combination, and to do so with economy and with a result that produces in the various lengths of came used in a leaded window, irregularities throughout the lattice of the came. Another object is to produce such irregularities in a way that will insure the edges of opposed leaves being substantially in registration so that when glazed into the window the edges will approximately register and provide a clear edge vision without seeing the cemented underside of one leaf extending beyond the edge of the leaf on the other side of the glass.

While such lead cames, sometimes called calms, are mostly used in short sections, the entire irregularity, to produce the effect and artistic finish, need extend usually over a short section of came, but should it be desired to make the irregularities vary over considerable length, modifications of the machine, as hereinafter described, also provide therefor to any length of came that might be used in practically all glazing work.

In the preferred form of such machines, I feed a straight extruded length of came between two plain rollers fitting between the leaves on each side, and touching the heart, passing which the heart is kept straight, while the outer sides of the leaves pass close to cheeks which prevent undesired distortion, and variable members engage the edges of the leaves, providing enough resistance to pull the came through the machine and impress the irregularities upon the leaves limited to the edges and the outer surface. The centre rolls engaging the heart provide driving engagement to pull the came.

In the forms covered by this divisional application I prefer to have the means for driving the came blank include a driving engagement of the central rolls on the heart of the came, and to permit the edge of the leaves to be deformed irregularly by engaging surfaces capable of irregular displacement for upper and lower leaves, and to that may be added the provision of rollers to assure irregularity on the outer surfaces of the cames. The lead in such cames is very ductile and liable to misformation in the handling, so that difficulties arise in making specially formed leaves as to surfaces or edges that will still meet the requirements for artistic purposes, and will likewise provide a came meeting the structural requirements for use and ready assembling. This invention aims to provide such machine in simple form, adapted to the required variations for production, and for high speed of operation, as well as a machine that may be used in any shop to provide small quantities of cames having the particular characteristics of finish for a particular window, or for each particular set of windows that go into one structure.

This is particularly provided in the case of a machine that may be hand manipulated to produce artistic irregularities on the leaves but with power means to facilitate driving of the came through the mill, although with hand-driven mill the irregularities may likewise be produced when very small quantities are desired or power is not conveniently applicable to the machine.

Various arrangements of mills may be used, with some of the parts herein shown and described, or other modifications without using the particular entire combination, and for producing a great variety of finished product, without confining this invention to the specific embodiments herein described.

Particular forms of these machines will

now be described with reference to the drawings showing particular embodiments, in which:

Fig. 1 is a view on line 1—1 of Fig. 2 of a preferred form of the machine.

Fig. 2 is an end view, a view of some of the members being shown in section on line 2—2, Fig. 1.

Fig. 3 is a fragmentary end view, on enlarged scale, of a came section at the point it passes through the mill, showing a modification regarding the "surface-forming" of the leaves.

The machine as shown in Figs. 1 and 2, comprises a base with supports for the shafts 1 and 2, which respectively carry the members 3 and 4 having juxtaposed irregular faces adapted to engage the heart of the came on the bottom and top, so that by the driving through the pulley 19 of the gears 17 and 18, the members 3 and 4 force the came blank between these members.

Loosely mounted on the shafts 1 and 2 are also the bosses 6 and 7, which respectively carry the cam surface members 8 and 9, subject to slight oscillation so that the two cam surfaces may be approached or spread away from each other more or less, but always in a position in the plane of the came leaves, there being one boss and cam in each case on either side and adjacent to the driving members 3 and 4 respectively. In the case of cam 8, the arm 10 is bifurcated so that it engages each of the two bosses 6, and by its bifurcation clears the driving member 4, while the spring 12 serves to normally hold the lever 10 and thereby the cam 8 in its most retractive position away from the came. Similarly the arm 11 is offset and also bifurcated so as to engage both parts 7, and thereby manipulate the cams 9—9, while it also is spread by the spring 13 to normally keep the cams 9—9 at their most retracted position, the arm 11 in any event being so offset as not to interfere with the passage of the finished came.

Both levers 10 and 11 are then connected by a spring 14 so as to normally hold them in a balanced position against the pressure of springs 12 and 13, while the handles at the top provide for means to manually grip both handles and pull them together with one hand and vary thereby the positions of the cams 8—8 and 9—9. The cheeks 15—15 and 16—16 prevent the bulging laterally of the leaves while being pressed into irregular edge shapes by the cams 8—9. But in the modified form shown in Fig. 3 additional rollers 20 and 21 are provided for engagement with the outer faces of the came leaves, instead of the cheeks 15 and 16 so that during the passage through the mill the outer surfaces will be supported and also given irregularity in accordance with the engagement of the irregular surface of the roll 20 or the roll 21. In this form the edge varying cams 8—8 and 9—9 are similarly provided for manipulation by hand and constant fluctuation as desired, in order to produce the iregularities in the edges of the cames.

At all times one hand serves to rock both levers in either direction or to tighten them together, or let them spread apart, and thereby produce untold variations and constant irregularities of the edges of the leaves and irregularities between the upper two edges and the lower two edges, but owing to the positive control of both cams 8—8, the irregularities of both leave edges on that side of the heart will be uniform, and the same result is assured on the lower two edges on the other side of the heart.

Thus a straight came blank A with the straight heart B passes through the mill and emerges as an antique came with the irregularities shown at A′, and with certain irregularities in the surface of the heart as shown at B′, and if the irregular face rolls 20 and 21 are used, then the surface as well as the edges of the cames have the complete antique finish by this simple hand-controlled mechanism.

While a belt may drive pulley 19, any suitable power-drive may be used, and also hand-drive may be resorted to provided that the driving of one of the shafts correspondingly drives the other in the same direction, so that the heart-engaging members 3 and 4 uniformly grip the heart and assure the proper driving of the blank through the mill to subject it to the manipulation which provides the antique finish.

While various modifications may be made from the particular forms of embodiment of my invention herein shown and described, without departing from my invention,—what I claim and desire to secure by Letters Patent is:

1. A came mill having cooperating rolls to drive and reform a came blank, associated hand-manipulated means adapted to instant and irregular manipulation controlling leaf edge engaging members whereby constantly varying formation of the leaves can be made during the driving of the came through the mill at the will of the operator.

2. A came mill having cooperating rolls to drive a came blank, associated hand-manipulated means adapted to constant variation, leaf-engaging members subject to said constant variation for greater or less impingement upon the leaves, whereby varying formations of the two leaves on each side compared with the two leaves on the other side of the came are effected at the will of the operator.

3. A came mill having power-driven means to force a came blank through leaf-

manipulating members, a pair of cams adapted to operate simultaneously and forced to varying pressure against the edge of the came leaves on one side of the heart, means for normally holding both said cams in the position of least pressure and hand-manipulated means for giving a constant variation of the pressure or displacement at the will of the operator during the movement of the came blank through the mill.

4. A came mill having hand-manipulated means for causing constant irregularity of leaf finish to convert a came blank into an antique finished blank, including means for driving the blank by engagement with the heart, means for causing irregular contraction of the leaf edges, and means to prevent lateral bulging of the leaf faces simultaneous with surface deformation thereof.

5. A came mill having hand-manipulated means for causing voluntary irregularities of leaf finish to convert a came blank into an antique finished blank, including means for driving the blank by engagement with the heart, means for causing irregular edges on the leaves and means to cause irregularities on the leaf surface simultaneously.

6. A came mill having cooperating rolls to drive and reform a came blank, manually-controlled means adapted to instant and irregular manipulation to vary the position of the leaf edge engaging members, for the purpose described.

In testimony whereof, I have signed my name to this application this 14th day of June, 1926.

WILLIAM HENDERSON.

Aug. 4, 1931. W. R. McMANN **1,817,494**

VENTILATING WINDOW PANE

Filed July 28, 1928 2 Sheets-Sheet 1

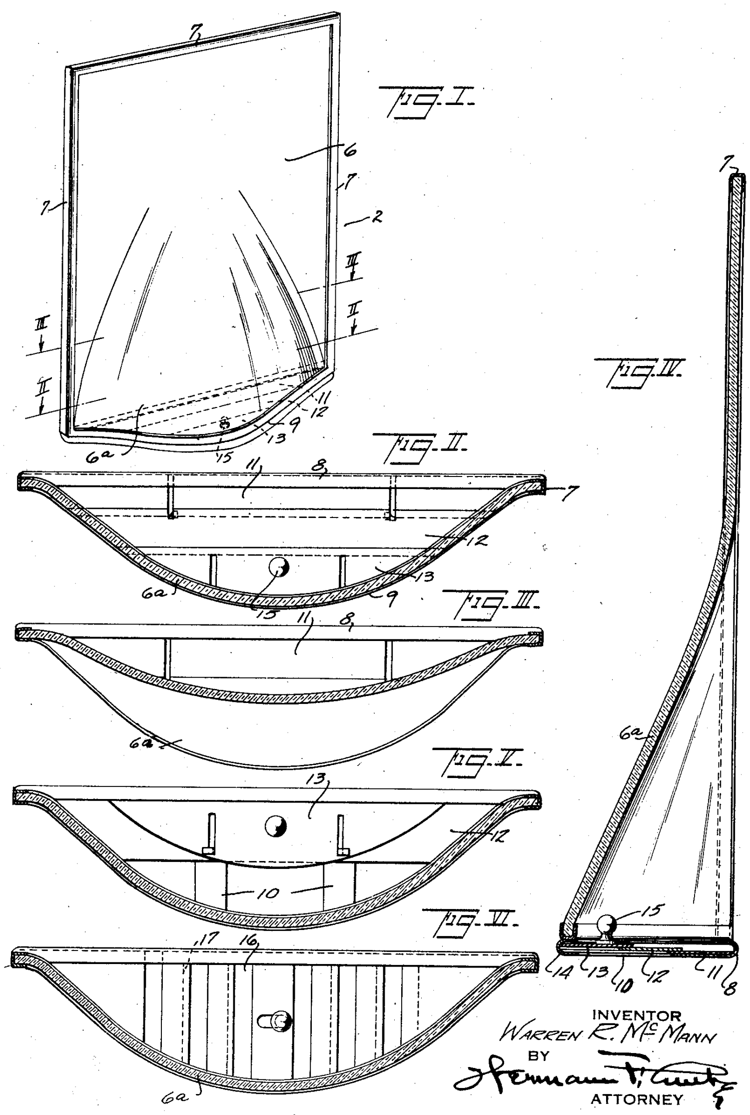


Figure 194. Drawings (Sheet 1) for Warren McMann Pat. No. 1, 817,494—Ventilating Window Pane.

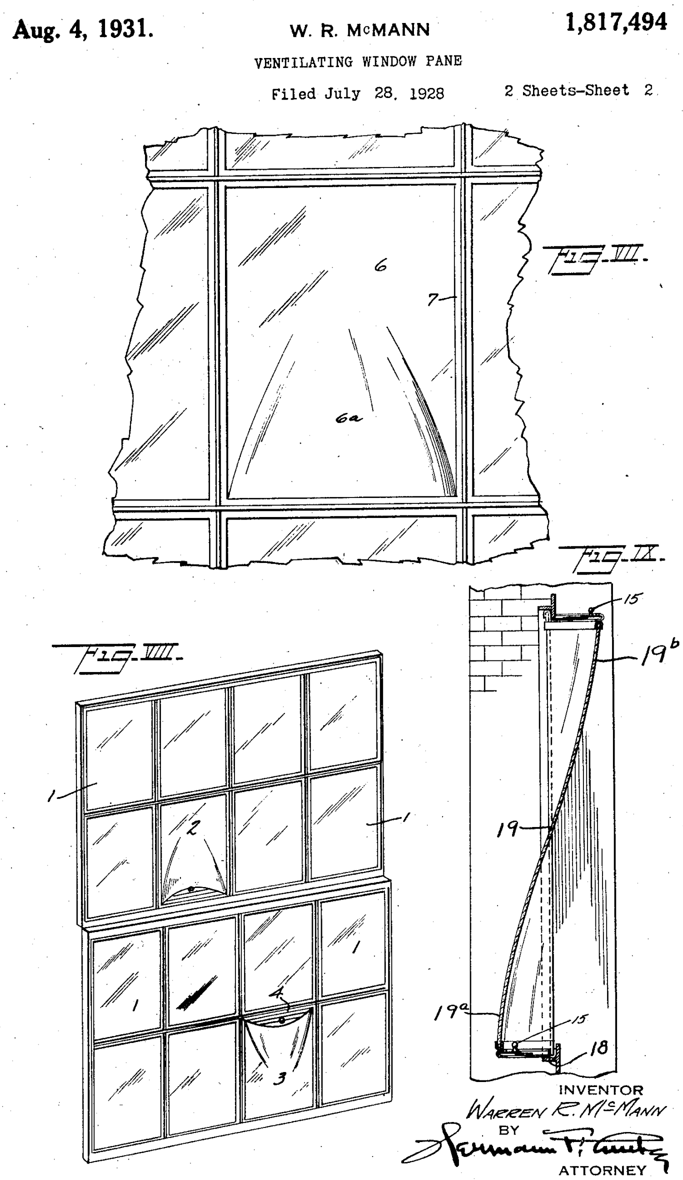


Figure 195. Drawings (Sheet 2) for Warren McMann Pat. No. 1, 817,494—Ventilating Window Pane.

Patented Aug. 4, 1931

1,817,494

UNITED STATES PATENT OFFICE

WARREN R. McMANN, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO WILLIAM HENDERSON, OF NEW YORK, N. Y.

VENTILATING WINDOW PANE

Application filed July 28, 1928. Serial No. 295,933.

This invention relates to ventilators in windows, and more particularly is of greatest advantage for ventilation without movement of the window sash. The invention in its particularly advantageous form may be designated as a stationary glass ventilator unit for windows, so devised that as a single pane of glass it can be fitted and puttied into the muntin forming a perfect seal as an ordinary pane of glass, and at the same time provide perfectly clear visibility throughout the area of the pane,—thereby in no way diminishing the admission of light nor interfering with the view through the window.

The practice of my invention provides, furthermore, a stock article which may be cut to size for each individual pane opening, is inserted in the muntin with all joints for weather protection engaging the muntin in the same manner as panes of glass are fitted, secured and puttied, with the adjustable ventilating means inconspicuous and entirely sealed from visibility by the muntin bar, though always readily accessible for manipulation. It may be applied to double-hung sashes with wood or metal muntins, and to the outer sash or inner sash without interference with the movement of the sashes, or without interference to any adjacent objects such as shutters on the outside, or inside shutters or curtains.

The ventilator portion of the pane is embodied in such a manner that the weatherproofness of the window in no way depends upon additional joints in the glass of the pane, nor any additional crosspane brace which would cause additional chance of leakage or breakage.

In the case of various types of windows, this invention is of more particular advantage in some than others, providing in each case the clear-visibility feature and one hundred per cent. light admission. In the case of certain forms of tilting windows, the ventilator pane offers no interference whatsoever in operating the sashes and may be put in a single pane with the lower outside and an upper inside ventilator. Likewise, in the matter of casement windows, one or more panes are made with this invention having in a single pane an outward swell providing the ventilating aperture at the bottom, and an inward swell providing the ventilating aperture at the top. Thus with a minimum of offset of the glass pane a maximum of ventilating area is attained still preserving the full advantage of one hundred per cent. visibility.

Particular forms of embodiment of my invention are shown in the accompanying drawings, in which:

Fig. I is a front elevation in perspective, of a single pane of glass for the outside of a window with bottom ventilator.

Fig. II is a section on the line 2—2 of Fig. I, showing plan view of the ventilator.

Fig. III is a section at 3—3, of Fig. I, showing the reduction in swell or bulge or bend of the pane surface.

Fig. IV is a vertical section on the middle of Fig. I, showing the bend of the pane, and details of ventilator.

Fig. V is a plan view on larger scale, of the shiftable ventilator portion of the pane in opened position.

Fig. VI is a plan view of a modified form of the shiftable ventilator element of the pane.

Fig VII is an elevation of a section of a window, showing the ventilating pane inserted in a framing of metal muntins.

Fig. VIII is an inside view in perspective of a double-hung window sash showing the glass ventilator pane inserted in the top sash, with ventilating opening at the bottom and a pane in the bottom sash with the crown of the glass bent inward and the ventilating shutters or slides on the top.

Fig. IX is a vertical section in the middle of a pane having both outer and inner offsets for bottom and top ventilators, showing the relation of the pane to the adjacent muntin.

As shown, the window panes 1 in Fig. VIII, are plain panes of glass giving the usual full visibility or one hundred per cent light and visibility between the muntins. The pane 2 fits into the entire space of an ordinary pane, and is secured in the muntins identically the same as an ordinary pane, but embodies my invention having the glass crowned or bulging outward a sufficient extent at the bottom to provide a gap between the muntin at the bottom into which is secured he ventilator opening downward, and therefore inaccessible to ingress of falling rain, but with the gap spanned by a ventilating shutter with means of manipulation from the inside of the window. None of the structure interferes with the movement of the inside sash, nor does it project downward enough to interfere with shutters, nor does it provide any fragile or otherwise objectionable excrescence on the outside that would be liable to injury or to damage by weather.

In the lower sash a pane 3 contains the invention and has the bulge or crowning bent inward, so that the gap between the upper edge of the pane 3 is a horizontal aperture which is shielded by the muntin 4 against ingress of weather, and still provides the advantageous support of a ventilating shutter 5 which is substantially horizontal and therefore non-leaking, but accessible from the inside of the window for opening and closing. This pane 3 bulging inward in no way interferes with the movement of the sash, and as more particularly hereinafter described it in no way interferes with visibility or light.

As shown in Figs. I to IV, the window pane 2 comprises the glass plate 6 with the metallic cap or edging 7 on three sides of the glass, and with a corresponding cap or bar 8 straight across the lower side, and a cap or edging 9 on the lower bulging edge of the glass. Horizontal strips 10 extend between the cap 9 and the member 8, and are permanently secured to both and may support the partial closure plate 11, and together support the shutter members 12 and 13. The metal cap 9 preferably has a groove 14 into which the outer edge of the sliding shutter member 13 fits when the ventilator is closed. Its manipulation is effected by a suitable knob 15, or any other readily shifting means which will not protrude in any way to interfere with the operation of the window, nor be an objectionable excrescence to in any way interfere with visibility, and which may also embody any suitable device to rigidly lock or clamp the ventilating members open or closed, which I prefer to accomplish by tight-fitting parts.

The pane 6, as shown in Figs. II, III and IV, has a lateral bulge in the lower portion, and this I provide by bending the pane, namely, sheet window glass, and it may readily be accomplished by crowning the glass when hot so as to give a gradual bend as the crown portion merges in the flat portion of the pane, thereby eliminating any sharp angle, and entirely avoiding any corners or abrupt recesses in the surface of the glass, which I do for various reasons. Such a gradual bend in the glass in the first place sheds the water when the bulge is on the outside, it avoids any accumulation of dust and dirt, it permits the washing of the pane of glass the same as an ordinary flat pane, and it avoids entirely any refraction or visibility interference in the material of the glass,—thereby assuring clear visibility and the maintenance of clear visibility, and a clean, perfectly water-shedding pane, thus maintaining the one hundred per cent. visibility and light characteristics of an ordinary pane of glass.

This bulge 6^a is of a sufficient extent to offset the lower edge, and the extreme lower edge of the glass in the horizontal plane of the muntin, so that the cap and ventilator mechanism is in the line of vision of the muntin. The exact curvature of the glass may be varied to suit different conditions and the extent of ventilator area desired, but the curvature is gradual from the flat portion of the glass and leaves the sides of the glass pane near the bottom in their normal flat plane, so that the sides from top to bottom of the pane fit into the straight muntins exactly the same as an ordinary pane of glass.

The glass plate can be made with the required bulge curvature, and may thereafter be cut to size leaving the bulged end of the plate extending fully to the horizontal plane of that margin of the ordinary pane of glass so that the field of glass of the bulged pane will extend throughout the aperture between the muntins framing or sash into which it is assembled.

In the ventilator modified form shown in Fig. VI, the lower horizontal members serve to engage the bulged lower edge of the pane, and also provide the straight transverse member in the same plane as the other three sides or edges of the pane, and having the space provided by the offset of the pane glass spanned by the shutter members 16—16 as a grid or slotted plate, with a movable grid 17 shiftable a limited degreed to either close the openings in 16, or to have the openings in both plates register and provide for the passage of air for ventilation.

It will be apparent that the particular forms of construction shown and described may be varied, there may be more or less metal capping, the ventilating pane may readily apply to wood muntin, or may be inserted in metal muntin, and may be puttied, or in any other approved form secured in position.

It will be understood that the construction shown in Fig. IX lends itself particularly to casement windows, or other forms not having close parallel-sliding sashes. The pane 19 is offset toward the outside with the bulge 19^a at the bottom, and offset to the inside with the bulge 19^b at the top, while the frame edge 18 still is rectangular throughout the field and forms the periphery of the ventilator pane so that it fits into the muntins and may be readily secured and sealed exactly the same as a plain pane.

These bulges or excrescences or offsets formed in the glass may of course vary in shape. Depending upon the area for admission of air, the shape of the offset edge either top or bottom, to provide a horizontal gap for the ventilator mechanism, may be curved or generally rectangular at the end of the pane, but preferably has a curvature throughout to prevent the accumulation of dust, to assure washing conveniently, and in all with a formation of surface that insures the visibility and the entrance of light throughout the pane. In particular, this is distinguished from any construction involving cutting out a portion of the pane with the attachment of ventilator parts, all of which would bar light and interfere with visibility within the field of the space occupied by the pane between the muntin edges, and would be defective in other respects, such as leakage, durability and liability to breakage. The particular ventilating means shown and described may, of course, be varied, and in some cases I prefer to use glass-plate or plates to span the gap. Also, as shown in Fig. IX, the lower and upper ventilator arrangement may be combined in a single pane, while still having the complete unit pane in form as an article ready for insertion in the muntins and secured in the usual way, as by puttying.

While in its most accessible form it is adapted for use as one of a plurality of small panes in sashes of standard window construction, it thereby provides an article of commerce which may be readily and economically embodied in new construction work, and, on the other hand, as a standard size pane it may be substituted in any and all old house construction by simply removing the ordinary flat plate of glass and substituting in the muntins the ventilating pane without any change whatsoever.

I am aware that it has been heretofore proposed to employ a box-like structure composed of a plurality of differently shaped parts of flat window glass set in an elaborate window or metal structure to produce a ventilating air passage, and that it has also been proposed to employ a built-up assembly formed of a plurality of strips of thick pressed glass to form a composite free-ventilating structure when these have been cemented into a window frame, but these prior art structures lack the unimpaired visibility and simplicity of my invention which also produces a simple, weatherproof, standardized unit which can be cheaply made in a shop by methods of quantity production and sold to the trade to be installed easily by a glazier in any window frame having openings of usual sizes, and in the same manner as an ordinary, flat pane would be set therein.

As to size, quality of glass and other details of construction, various modifications may be made without departing from my invention, but what I claim and desire to secure by Letters Patent is:

1. A window pane of a size to fill one entire space in a window frame, comprising a sheet of window glass or like transparent material with at least two edges lying in the same plane and having a crowned or bulged area tapering down to an unbulged portion of the pane from an offset edge one end of said pane, thereby providing a ventilation aperture, combined with means to control the passage of air through said aperture formed by the offset edge of said pane.

2. A combination such as defined in claim 1 in which the edge of another end of said pane, and a portion thereof adjacent said end edge, also lie in the same plane as the first two mentioned edges.

3. A combination such as defined in claim 1 in which said ventilating means comprises a frame curved to fit the offset edge of said bulged out portion of said pane and a movable shutter mounted in said frame.

4. A combination such as defined in claim 1 in which said ventilating means comprises a frame having one side curved to fit the offset edge of said bulged out portion of said pane and a movable shutter mounted in said frame, said frame being also extended up along the side edges of the pane to a substantial extent; whereby said pane may be firmly gripped and held by said frame.

5. A window pane of a size to fill one entire space in a window frame, comprising a sheet of window glass or like transparent material having at least two edges lying in the same plane and having a crowned or bulged area toward one end gradually tapering down to the flat area of the sheet of glass, the other end of said bulged portion forming an offset edge from the plane of the pane at that edge of the pane, combined with a curved frame secured to said offset edge of the pane and which said frame is curved to merge its extremities into the same plane in which the other edges of the pane lie, whereby the ends of said offset edge frame and the two adjacent edges of the pane lie flat in the window frame for ready attachment in the ordinary manner.

In testimony whereof, I have signed my name to this application this 17th day of July, 1928.

WARREN R. McMANN.

May 17, 1932. **W. HENDERSON** **1,858,775**

CAME AND PROTECTED STAY BAR

Filed Nov. 12, 1929

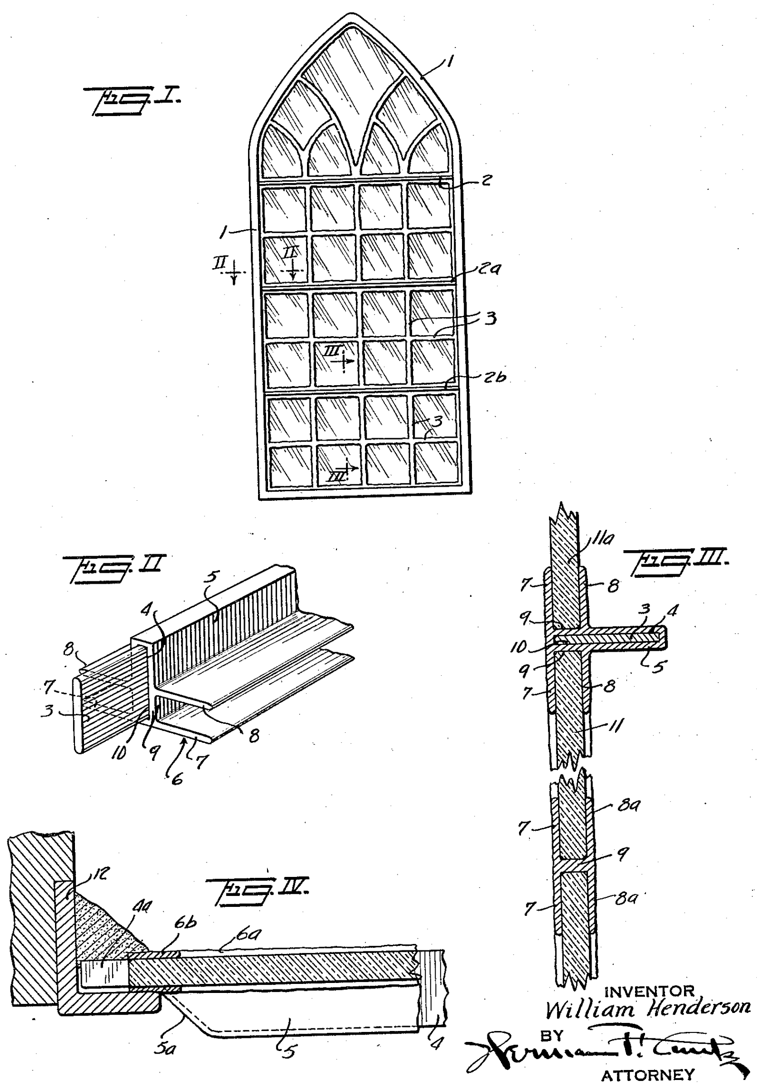


Figure 196. Drawings for William Henderson Pat. No. 1, 858,775—Came and Protected Stay Bar.

Patented May 17, 1932 **1,858,775**

UNITED STATES PATENT OFFICE

WILLIAM HENDERSON, OF MINEOLA, NEW YORK

CAME AND PROTECTED STAY BAR

Application filed November 12, 1929. Serial No. 406,546.

This invention relates to the so-called leaded windows which are in churches as well as public buildings, monumental buildings and also in homes. These leaded windows in their primitive form have been used for many years. In fact, decades ago, if not centuries, the rudimentary form of church window support has existed.

The present invention relates to a more durable construction of such windows as are known as leaded windows, to provide a particular the more substantial support for large windows in order to assure their permanency and durability.

The particular construction involved is, on the one hand, the came which provides for the insertion, at convenience, during construction of a stiffening member on large areas, and, on the other hand, provides for the general construction of large area leaded windows, in order to give them ample support coupled with permanency by resistance against corrosion, and other advantages, as will hereinafter be more particularly set forth.

As one embodiment of my invention, I have shown in the accompanying drawings constructions as follows:

Fig. I is an elevation of a window in which my invention is embodied.

Fig. II is a perspective of one of the specially constructed combined stay bars and came end, fragmentary.

Fig. III is a section on line 3—3 of Fig. I.

Fig. IV is a section on line 4—4 of Fig. I.

In the particular example of the invention illustrated there is shown the window frame 1 and transverse combined came and stay bars 2—2ª—2ᵇ, with ordinary cames 3.

The ordinary leaded window, as shown in Fig. I, contains a variety of figures, and usually part involves illuminated glass sections with leaded connections, details of which are not pertinent to this invention. The leaded window sections involve necessarily a weak supporting framing of lead between the rigid window framing 1, and with the glass connections to the soft lead cames exert a weight which, in my construction would be resisted by the uppermost transverse came combined with stay bar 2. A further section thereunder would be in addition supported by the second stay bar came 2ª. The glass and lead cames below would in turn be supported by combined came and stay bar 2ᵇ. This affords the opportunity of not alone substantially supporting the illuminated or otherwise, leaded window in its sections where as a whole the lead cames would not have sufficient strength, but in addition my invention provides for the most economical provision for this support, and a permanent structure for support embodied with the original structural installation parts, without additional hand labor on the job, which today is otherwise required for an improvised means of additional strengthening during construction or after construction.

I provide for this improvement in leaded window panes, a lead came which is not alone a window sheet holding came, but is extended beyond the old requirements to provide a thin excrescence for inside or outside use of the window, in the form of a pocket. I form this pocket which thereupon constitutes simply a lead sheathing extraneous to the leaves of the came, projecting either outwardly or inwardly from the plane of the window, in order that a relatively rigid metal member may be pushed into the pocket at the time of final assembly of the window, and being pushed into the pocket and having the ends of the pocket preferably of lead, sealed, it remains as a rigid transverse support, in a protected non-corrosive cover, and being completely enclosed makes possible the use of this excrescence of a stay bar equivalent, on the outside of the window, or on the inside of the window.

In the figures, stay bar 3 projects into a pocket 4 formed by the excrescence 5 forming a socket above the came 6. The came 6 comprises the leaves 7—8 and the heart 9 separated by a slot 10. The glass members 11—11ª have their edges enter between the leaves 7—8 of the came, while the stay bar plate of steel, or any desired strong, stiff material 3 may be slipped into the pocket 4, with walls 5—5 formed as an integral excrescence or ridge on one side of the came.

It will thus be seen that the socket 4 is formed by the lead, or similar metal walls 5—5 constituting an integral part and strengthening the structure of the came heart 9, but, on the other hand, not requiring for this protection of the insertable and releasable stay bar strip, any additional work of assembly, nor any additional fabricating work.

As shown in the lower part of Fig. III, the ordinary came leaves 7—8 and the heart 9, with the came leaves 8^a—8^a constitute the ordinary leaded window came, and such cames may constitute all of the leaded window structure except the particular members, such as 2—2^a and 2^b, where the large area for wind resistance of the window require strengthening. It is well known the improvised structures of the past have involved the addition of soldered on copper wires and transverse bars held by the copper wires, or they have involved ribs standing out from the leaded came and soldered at the junctions in order to resist the transverse strain due to wind pressure on the windows.

What I aim to achieve by my construction is the added strength against wind resistance necessary for most large windows beyond areas of eighteen inches, and to accomplish this by stay bars originally inserted in the interior of the cames so that they will be permanently protected against corrosion as well as to aid in the support of the superposed leaded window construction, when my combined came and stay bar construction is placed in horizontal position.

But more particularly my invention involves the production of a leaded came in which the desired construction is initially embodied by providing a socket as an excrescence, or partly an excrescence of the leaded came, into which a rigid steel band or flat bar may be inserted at any time during the assembly of the window structure. This means that in the practice of my invention I produce a came with the additional lead projecting from it to form a pocket, and such cames usually extruded, are easily worked and cut into lengths as readily as the ordinary cames. Upon the assembly of a window the stay bar in the form of a strip exactly fitting the socket of the came, may be cut to the desired length, and the end of the stay bar formed or machined to the desired fit for its support or contact with the outer rigid window frame, and thereafter such stay bar is inserted in the socket came, and ends of the lead socket can be peened down or pressed to a tight fit on the surface of the stay bar, and thereby protect the stay bar against ingress of moisture into the socket. This, it will be seen, avoids the difficulties and expanse involved by the glazer who otherwise would have to cut an old fashioned bar rolled as a combined piece of sheet metal and lead, for example, such as shown in my patents of December 13, 1910 and May 9, 1911.

It also assures a great saving of time and expenses as compared with using a galvanized bar fastened to one side of the window at the intersections of the ordinary came, by wires soldered on to the came, which previous use of stay bars is often objectionable due to some rusting and the rust running down on to the stained glass windows. In addition, the prior methods of application of stay bars attached to the outside of cames are supported only at the intersection of the cames, and therefore are practical only on the inside of leaded glass windows because if on the outside they would catch leaves and material blown by the wind, would be subject to quick deterioration by the weather, and preclude ready cleaning of the outside of the windows.

In my combined stay bar socket and came, the complete enclosure of the stay bar against injury by weather or other objections, is in addition an ornament and preserves the perfect appearance on the inside or the outside, as well as assuring the complete waterproofing of the entire window structure.

As it is general practice in good construction, for required strength in a stained glass window, that any area in excess of eighteen inches in width or height, must have more than the strength of the lead cames for its support, it has heretofore become the practice to add such stay bars as are fastened to the surface of the cames after the window has been assembled. Such operation is expensive relatively, and by my combined socket and insertable stay bar there is great saving in the production of leaded glass windows in addition to the advantages heretofore set forth, and the support of the came having the excrescence socket, is throughout instead of only at the intersections of the cames. It will also be noted that cames may be made with sockets of different sizes, so that the particular window requirements may be met with a broad stay bar, or a narrow one to best suit the question of strength for wind resistance, as well as the support of the window to prevent the weight of the glass causing sagging, which otherwise frequently occurs in large leaded windows.

As shown in Fig. IV, the staybar 4 is cut down at its end 4^a so that it will rest in the window rabbet 12, with the end 6^a of the came fitting the vertical came 6^b fitting flush into the window frame so that the entire edge, as well as the staybar end may be puttied into permanent position as usual. As here shown, the socket 5 is battered down, or peened down at 5^a, so as to form a watertight joint with the cut down edge of the staybar 4.

Various other embodiments may be made to accommodate the ends of the staybar, but in particular the hard metal of the staybar may be fashioned separately from the lead into the required length and shape, while, on the other hand, the combined came and socket lead can be as easily handled as any lead came in cutting and forming, and thereafter the rigid staybar member inserted and closed in particularly when it is allowed to project on the outside of the window. If the projecting socket is on the inside of the window the ends of the staybar may be attached and supported in various other ways, should it not be necessary to completely protect them against corrosion or rust. On the outside of windows the cames in leaded glass structures are as flush as possible, to shed water and to prevent leak or the accumulation of snow and ice, and this condition is met by the staybar being completely enclosed in lead, which, in fact, may be formed with a slightly inclined excrescence to shed water, and may be variously formed in shape and dimension to suit the particular requirements of strength and durability, as well as appearance. The absence of all seams assures waterproofness throughout, and with the advantages above set forth it will be seen that my invention affords, for the first time, the opportunity of effectively bracing leaded glass windows on the outside as well as the inside, at will, which heretofore has not been practical with any of the usual practice of compromise constructions. In fact, the thin wall forming the excrescence may project on the opposite side of the came, in certain forms of my construction, so that the integral thin wall excrescence forms a pocket or socket in which the finished window would have a seamless ridge part on the inside and part on the outside of the window.

Various other forms of construction may be made without departing from my invention, but what I claim and desire to secure by Letters Patent is:

1. A leaded glass window, formed by the assembly of the glass sections and cames having leaves substantially flush with their surface, and having on the outside of the window and across the entire window one or more protruding sockets integral with the material of the entire came and forming therewith a moisture-proof casing and a staybar inserted in said socket completely encased with the integral material of the came and supported at both sides of the window.

2. A combined window came and staybar support, consisting of the leaves and heart of a came and a hollow excrescence forming a socket outwardly projecting from one side of the came and contiguous and airproof therewith, whereby an integral staybar may be inserted after fabrication to form in the finished article a combined staybar and came with complete weatherproof encasement of the staybar by integral metal of the came and socket.

3. A combined staybar and came consisting of a stiff flat metal member, a lead casing fitting closely over one edge thereof and forming a substantially protruding weatherproof excrescence from one side of and merging into the integral leaves of the came whereby a complete air-seal is provided integral with the came and a staybar having a width substantially exceeding the part of the came.

4. An article of manufacture, a lead came having leaves and a partly hollow heart, a hollow integral excrescence extruded a substantial extent beyond one side of and produced with the formation of the came and extending as an airtight casing beyond one side of the came and forming with the part hollow heart a socket adapted to receive and fit a staybar of a width substantially in excess of the size of the heart of the came, whereby a window wide staybar of stiff material may be inserted after completion of the came completely protected against weather.

5. An article of manufacture, a completely formed single piece lead came having leaves, and having airtight thin walled excrescence projecting beyond and integral with the leaves on one side forming a socket opening contiguous with a longitudinal opening in the heart, whereby after completion and manipulation a rigid staybar of stiff material conforming to the section of the socket aperture may be inserted.

6. A came comprising an integral structure consisting in part of an ordinary lead came having in the heart a slot, a staybar or rigid strip of metal partially in said slot and projecting a substantial extent laterally from the integral leaves on one side of the came proper, a lead sheathing formed integral with the adjacent side of the came proper and forming an air-tight thin wall about the laterally protruding extension of the staybar and forming therewith a protecting contiguous casing of the staybar with integral junction with the lead of the came proper.

In testimony whereof, I have signed my name to this application, this 9th day of November, 1929.

WILLIAM HENDERSON.

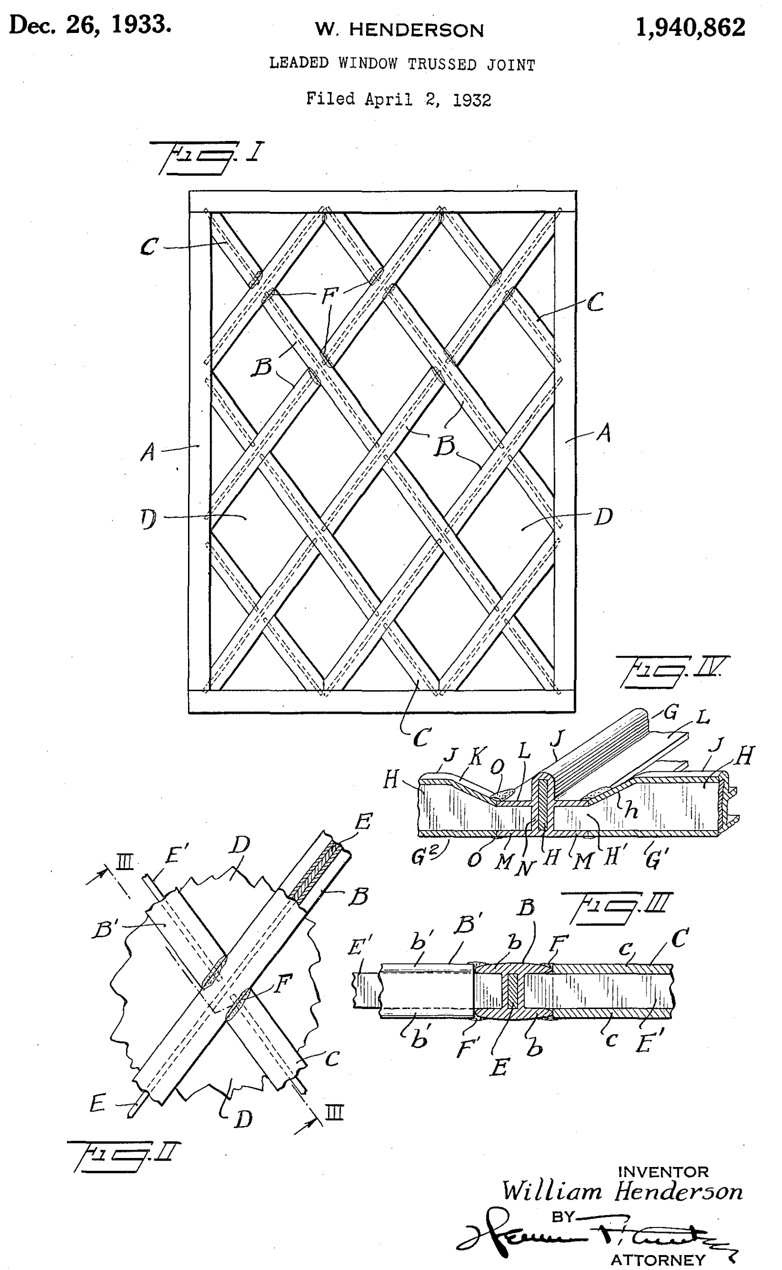


Figure 197. Drawings for William Henderson Pat. No. 1, 858,775—Leaded Window Trussed Joint.

Patented Dec. 26, 1933 1,940,862

UNITED STATES PATENT OFFICE

1,940,862

LEADED WINDOW TRUSSED JOINT

William Henderson, East Norwalk, Conn.

Application April 2, 1932. Serial No. 602,731

9 Claims. (Cl. 189—77)

This invention relates to leaded windows, and more particularly to the construction of the joints, that is the inter-sections of the lead cames which hold the many small panes that are out of contact with the outer frame of the window sash or muntin.

The object is to provide for a more economical construction with respect to the assembly of the window as a whole, and to provide uniform strength at all joints,—and in particular the invention applies to what is known in the art as diamond pattern leaded glass windows.

In the accompanying drawing a specific embodiment of my invention is shown in a diamond pattern leaded glass window, in which:

Fig. I is an elevation of a complete window frame.

Fig. II is an elevation, on an enlarged scale, of a joint showing the construction at the intersection of two of the came or glass-holding members.

Fig. III is a section on line 3—3 of Fig. II, on an enlarged scale, showing in more detail the internal construction at a typical joint.

Fig. IV is a section, part perspective, of a stay-bar came joint.

In this embodiment the frame or muntins A surround the window section which is sub-divided into a large number of diamond shaped panes which may be plain or stained glass in any usual desired character. These glass sections are held by cames of which B—B—B are each of a length spanning one intersection, that is bordering four of the diamond shaped glass panes. The came sections C—C—C are half or less the length of came members B, and extend from joints at the middle of one of the came members B to the muntin. Thus the entire area of the window section, except around the edge adjacent the muntin, has the individual diamond panes supported by cames which in every case extend through one of the inter-sections, and therefore form what may be termed a trussed joint.

The cames used for this construction have the usual reinforcing steel member preferably a strip, steel, iron or other hard metal, embedded in the core or heart of the came, but such reinforcing steel bars, for use in my invention, are slid into a socket into which they fit tightly, which is a preformed pocket or opening in the came heart. This steel or reinforcing bar is preferably of a width exactly equal to the space between the inside surfaces of the leaves of the came, so that at each joint the laterally abutting came section will have its bordering reinforcing bar fit snugly between the leaves of the continuous came member at the intersection or joint, and abut tightly against the sides of the lead of the heart.

Thus in Figs. II and III, bar B is continuous with its reinforced steel insert through the joint, and came B' abuts one side, while came C abuts the other side of the joint or intersection, while the glass panes D—D—D fit into the cames at the joint corners. Each of the came sections having the reinforced strip E, it will be seen that came section B has the reinforcing continuous through the joint, and by the arrangement, as described in Fig. I, every joint in the window has one double pane length came continuous through the joint. In addition, it will be noted that at each intersection or joint the continuous double pane length came is in opposite direction. Thus each joint is spanned by a double pane length came, which in turn is supported at its ends at the middle of another similar length of came at its middle where it joins at the intersection abutting the contiguous reinforcing bar in the heart of the other came section.

In this way an entire window is made up of came sections equal to the length of two panes, the lead came with its socket being readily cut to this uniform length, and the reinforcing strips being cut to their uniform exact length,—thus giving only one length of came and one length of reinforcing bar for the purpose of the entire assembly of the pane, except for the few short border sections abutting the muntin or frame of the window. This means that the assembly of such a window is made by the glazier with uniform length cames with the lead easily cut to length, and into which the separately cut-to-length flat strips are inserted by the glazier—and with those reinforced came sections the entire window is assembled with the glass panes, with the greatest simplicity and economy. It will be seen, furthermore, that the leaves of the cames bordering each pane register so that the glass panes D fit into the corners formed by the intersecting cames at the weatherproof joint, and as each came bordering each glass has the reinforcing bar reaching to the junction of the intersection, a rigid came support is assured along all sides of the glass panes, thereby assuring the much desired strength that provides for durability in windows of this type. On account of such combination in the construction, the required strength of the window is attained without the necessity of outside staybars, or any of the other devices heretofore employed.

The section of joint, Fig. III, shows how the came B' has the lead portion cut away near the end with the protruding stiff bar end E' closely fitting into, that is between the leaves b—b of the came member B. So soon as assembled with the panes, that is the individual glass sections, the abutting end of the leaves c—c are soldered as at F, to the edge of the leaves b—b, and likewise the abutting ends of the leaves b' are soldered to the edge of the leaves b—b of the truss length B came forming the lateral supporting member for that joint. This soldering need in no way touch the glass, but immediately creates an integral joint as far as the lead came leaves are concerned, thereby holding each abutting came member with its reinforcing strip in its core permanently into the socket formed by the truss-length came at that joint.

It will be noted that the lead came with its pocket can be cut in uniform lengths with the exact bevel desired for the needs, as required for the particular design of the diamond pattern of the window, and that these need not be rights and lefts, because each lead came section being similar on each side, can be reversed to fit its position in the assembly of the job. Likewise the exact length of the rigid reinforcing strip, such as a steel bar, can be readily provided by cutting them in quantity to the required length and cutting them separate from the lead, and without in any way distorting the came these reinforcements can be made very economically, and in fact the ends can be finished if desired in order to make the desired accurate fit at the point of their engagement with the side of the lead bar between its leaves when being assembled.

It will also be noted that the advantages incident to this invention, are not dependent upon the exact diamond pattern or its angularity, and that rectangular patterns may be built up with similar advantages in production and strength of the finished window. Should the patterns be oblong, or if in any way the sides of panes are of uneven length, though uniform throughout the window, it would only mean two uniform lengths of came sections and reinforcing strip sections, still providing the economy in production and assuring the advantages in uniform finish and strength of the assembled window.

A modified form of the invention is shown in a part perspective sectional view of a joint, Fig. IV, in which each of the cames is of staybar construction. This is illustrated with respect to applicant's invention of a protected staybar set forth in his pending United States application Serial No. 406,546, issued Patent No. 1,858,775. It may be desirable in certain cases to use cames of applicant's staybar construction form, in which the staybar, instead of a small reinforcing in a came heart, protrudes far above the leaves on one side of the came and as an integral lead casing forming a considerable protrusion on that side of the came. As illustrated in Fig. IV, the intersection when using such encasing came staybar structure, requires modification at the joint. Thus the staybar H is cut down at H' so that the end of the staybar ends between the leaves L and M of the intersecting came member G. As shown, the similar members G' and G^2 are joined at the intersection, and the integral casing J on the member G' and G^2 are cut away so as to permit the restricted end H' of the staybar H to fit the joint, while the lead portion of G' and G^2 are pinched as at K, around the beveled portion *h* of the staybar H, so as to enclose the staybar and make the seal weatherproof, with the soldering O at the junction between the lead of the lateral cames with the leaves L—L of came G. The staybar H is so cut as to permit its end H' to enter and abut the heart end of the came G, and the lead on its sides may also enter between the leaves, so that the pane inserted between the leaves of the intersecting cames will be closely enclosed with lead at its corners.

It will thus be seen that should staybar enclosed cames be desired for this type of window the intersecting joints may be completely weatherproof, and in the assembly of the window the staybars, such as H—H on the lateral cames, abutting the joint, may be cut and fashioned entirely separate from the lead portion of the staybar came. Likewise, the lead portion of the cames may be so cut to length as to provide for the insertion of the pre-cut staybar section, so that the assembly will be quick and economical, and still provide for all necessary soldering without the chance of cracking the glass, and with convenience for soldering and manipulating the lead casings during the assembly, without any difficulty whatsoever.

Various other modifications may be made in the practice of my invention, and it must be noted that among the variations my invention lends itself to form the joints with the lead leaves overlapping so that they provide an appreciable surface contact for soldering them together. Thus the members C and B', in Fig. II, may have the lead extend the same length as the reinforcing E', and the leaf or leaves b—b, may be easily spread where the lateral cames abut, and after spreading them may be bent down to form an appreciable surface contact with the top of the lead leaves of the abutting came ends. The leaves of the lateral came sections may also be slightly beveled in order that the came and its reinforcement shall fit snugly between the leaves on the through section of came, and still assure the reinforcing end substantially abutting the heart of the through came.

In the case of staybar construction in which one leaf on each side extends from the middle of the staybar pocket casing, a further modification may include an incision in those leaves, so that the laterally abutting reinforced staybar came is let into the through section of came to a sufficient extent for the staybar end of full breadth to abut against the heart of the through member and against the entire casing of that member which surrounds its staybar portion. Such form permits the casings of both through and abutting came sections to be on the same level, and the adjacent ends of the lead leaves may be bent to effect the close union at the joint, and then peened down for a desirable contact for most effective soldering.

It will be noted that in the modifications described, the overlapping ends of the leaves assure soldering with a minimum chance of the solder reaching the glass, thereby assuring efficiency in the glazing of windows in accordance with my invention. It will also be noted that when an encased staybar came is used with its leaf projecting from the side, and not from the top and bottom of the heart, I may, if desired, cut the end of the staybar sections with a notch, instead of beveling them as in Fig. IV, and in so doing I preserve the full width of the lateral came sections to abut the entire casing of the through came section, with the lead leaves suitably pried or bent and peened to finish the joint. This is particularly practical in view of my staybar cames being formed so that the staybar may be inserted after the lead came has been cut to length, so that the machining of the hard metal may be done separately just as conveniently as cutting it to length.

Various other modifications may be made without departing from my invention, but what I claim and desire to secure by Letters Patent is:

1. A structure for leaded glass windows having border members, interior generally diamond pattern leaded glass having sub-divided panes supported by cames in which each intersection of cames has one continuous came with the lateral cames abutting substantially at its middle, and having for the continuous came section a continuous reinforcement within the leaded came through one joint and having the end of the reinforcement abutting and held by engagement between the leaves of the abutting cames at the proximate joints.

2. A leaded window having generally regular diamond or like shaped panes, cames supporting said panes having substantially throughout the window uniform sections of came each spanning one intersection and abutting an adjacent intersection or joint, and having a stiff reinforcing core in said came lengths projecting beyond the lead casing of the came and between the leaves of the adjacent came casing with which it abuts.

3. A came structure for leaded glass windows comprising a came-intersecting or joint structure in which a leaded came with heart and leaves incorporating a rigid reinforcing bar extends through each joint and abuts the proximate joints, and has at the inter-section an abutment of lateral reinforced cames, the abutting reinforced cames having their reinforcements protruding into the leaves of the through came and having their leaves soldered to the leaves of the through came.

4. A leaded glass window having a quadrilateral pattern series of glass panes, the entire field of which except the border comprises uniform length came sections with reinforced hearts, and having at each intersection one continuous heart reinforcement and laterally abutting came reinforcement ends engaging the leaves of the through came and held rigidly therein by soldering the came casing junctions.

5. In a leaded glass window a came joint or intersection comprising a came with a heart reinforcement extending continuously through the joint, and lateral heart reinforcing members abutting the through came member, the terminal of the lateral came reinforcements forming a close union with the interior of the leaves and the side of the heart of the through came section, and soldered joints uniting the through came leaves and the lateral came lead casing.

6. In a leaded glass window, a came intersection or joint comprising a junction of encased came staybar structure having a continuous encased staybar came extending through the joint, lateral staybar member structures abutting the through staybar member and having their staybar member restricted at the joint, whereby the lateral encased staybar cames have their staybars fit between the leaves of the through staybar section, and having their lead encasing constricted and soldered to the edge of the through staybar leaves forming a weatherproof joint.

7. A leaded glass window having an exterior frame with channels facing the field of the window, a sub-divided field having a series of parallel cames to support the individual panes, came sections having sockets adapted to receive reinforcing bars, the lead portion of said cames being cut to uniform determined lengths to substantially provide for the entire window field structure, reinforcing bars for said cames precut as to substantially uniform length to fit the sockets in the lead cames, and assembled whereby uniform reinforcing strip lengths serve substantially to provide the reinforcement for cames throughout the field of the window, including intersections whereby the end of each uniform reinforcing bar abuts the middle of a came having a continuous reinforcing bar throughout the joint, as and for the purpose described.

8. In a leaded glass window, a came intersection or joint comprising a came section passing through the joint having a lead casing and a rigid reinforcement enclosed therein, an abutting came section terminating at the joint comprising a lead casing and a rigid reinforcement in the heart thereof terminating between the leaves and adjacent the heart of the through came section, the lead casings of both of said came sections being formed to abut and be soldered forming a weatherproof flush joint at the intersection.

9. In a leaded glass window, a came joint formed with two came sections one having its lead casing and rigid reinforcement through the heart extending through the joint, the other came section having a rigid reinforcement through the heart terminating in engagement between the leaves of the other section and having its lead casing abutting the members of the lead casing of the through section, whereby a weatherproof joint is formed at the intersection completely encasing the reinforcements in both sections of came forming the joint.

WILLIAM HENDERSON.

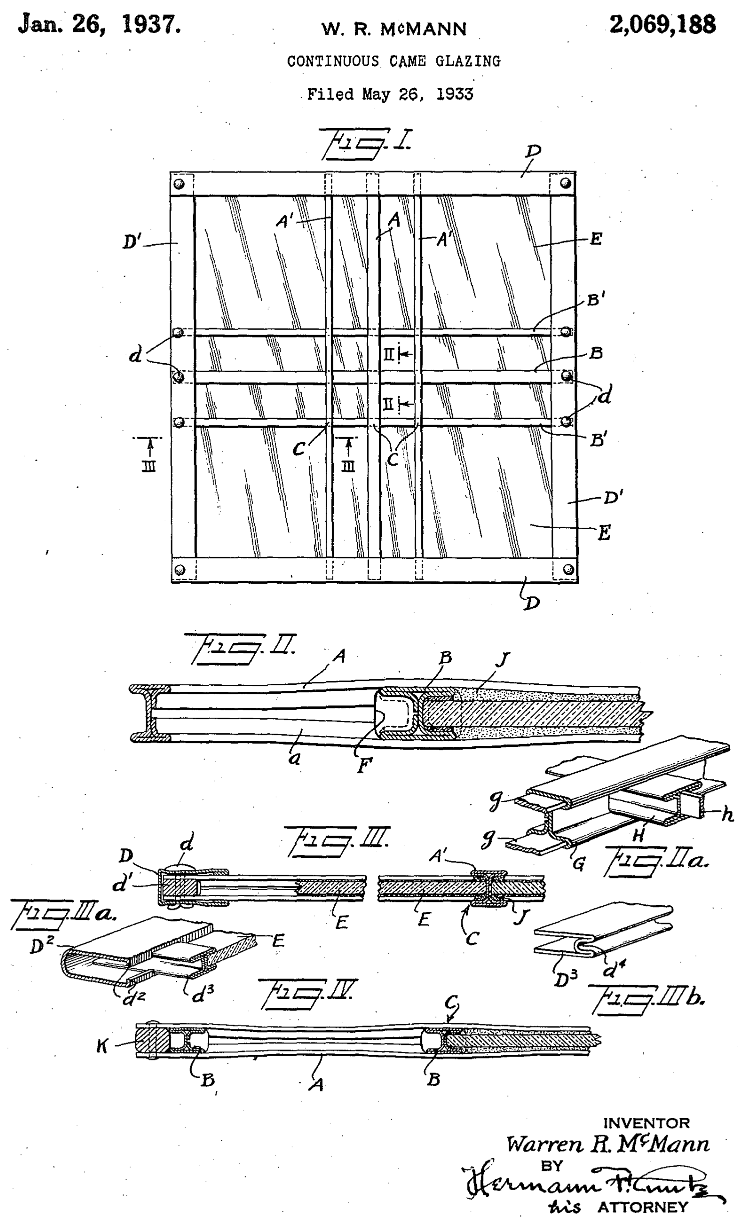


Figure 198. Drawings for Warren McMann Pat. No. 2,069,188—Continuous Came Glazing.

Patented Jan. 26, 1937 2,069,188

UNITED STATES PATENT OFFICE

2,069,188

CONTINUOUS CAME GLAZING

Warren R. McMann, New York, N. Y.

Application May 26, 1933, Serial No. 672,937

8 Claims. (Cl. 189—77)

This invention relates to the construction of panels or panes being sub-divided into a plurality of small sections supported at their joints by cames interconnected to form a unit in a frame, such as would be set and secured in the usual way in the muntins of a window or other frames or structural places.

In particular, among the aims of the invention are the provision of a structure which provides simplicity and economy in assembly of the plurality of small sections of any sheet material which in the case of windows are usually of glass, the ready replacement of individual pieces, and particularly fireproofness when used in a window, greater strength than in the practices heretofore employed, and other advantages that may appear from the more detailed construction hereinafter set forth.

In the preferred form in the practice of my invention, stiff metal cames, as distinguished from the pliable lead heretofore used, constitute the holding members for the plurality of small sectional sheets of material. These stiff metal cames constitute a lock joint metallic glazing of a panel, in which the intersections of the cames are so fashioned as to provide continuous cames extending from side-to-side or end-to-end of the frame, thereby providing lateral strength against the panel or pane and still assuring simplicity of assembly as well as the advantages of replacement, and fireproofness. While such panels or panes heretofore have been built up and assembled with metal cames with break-joints, and as such metal cames have required soldering at the joints or at the junctions of the individual came members, such structures are subject to practical ruin in the case of fire and a sufficient heat that causes the solder to run, with the attendant collapse of the assembled parts. The utility of this invention is evident when considering that the present invention permits of the use of stiff metal cames such as aluminum, copper or bronze, and that each came member extends from the substantial bordering frame member from side-to-side or end-to-end of the panel, thereby resisting strains and resisting any heat that would ruin a soldered came assembly. It permits the use of aluminum for lightness. In the case of bronze for durability, it permits the lightest possible structure, thereby saving in cost, still preserving durability and appearance, and in the case of bronze very thin sheet may be drawn into the came formation with spacing left in the leaves of the came so that stiff rigid steel strips may be put into such spaces, or sockets in the leaves of the came to add to the desired strength, while having the exposed surfaces of bronze or other relatively expensive metal for durability and appearance.

A feature of the construction may involve the two-elevation arrangement of intersecting cames, that is at the joints the cames in one direction have their leaves overlapping or at a greater elevation from the surface of the section of sheet material,—than the leaves on the cames extending in the cross direction, but it also permits of the depression of the leaves on the higher elevated or slightly deeper section cames between the intersections, so that such leaves may be depressed to more closely contact with the adjacent edges of the sheet sections. In any event, the series of cames in one direction having the lesser sectional depth provide the desired groove or pocket to snugly engage the edge of the thin sheet pieces and hold them with all the required rigidity in the assembled structure. For the slight inequality of engagement of leaves of some of the cames with the glass or other sheet surface, suitable material such as putty or the like, assures the air-tightness of the joints, while on the other sides of the glass or other sheet pieces the close engagement with the stiff cames provides for rigidity of the entire panel or pane.

While in the preferred form each panel or pane has a substantial border frame, and the traversing members have their ends rigidly secured where they join the bordering frame by a rivet or the like, the frames may be made up without rigid connection of the came members to the border, but by assembling the entire came and glass structure progressively and then adjusting the frame border members and riveting the outer frame members at their intersections or at the corners of the pane. This is shown as to the set of transverse members as herewith illustrated, being riveted, whereas the vertical members are shown without any riveted or positive connection, and in the practice of the invention both sets of came members may be assembled in either one way or the other.

In a modified form the cames extending in one direction may be continuous, forming stiff strain-resisting members extending from one frame member to the other, while the cames in the transverse direction may be in sections. In such form each transverse section of came may abut the heart of the through stiff cames and be clipped or pinned to the heart of the came extending from border-to-border of the frame. In such form the short sections of transverse came may form a slotted heart through which a double strip passes forming a reinforcement with the ends of the strip extending beyond the came proper and through a positioning slot on the through cames where the ends of the reinforcement are turned over, so that they hold the short came section rigidly positioned and rigidly assembled with the through cames.

In another form of the invention, one set of cames, that is the cames going generally in one direction, are provided with reinforcing strips in sockets in the leaves, and at the intersection with the transverse cames the web is cut away letting through the transverse came which is provided with a reinforcing strip in the heart,—thus insuring continuous rigidity and strength by the reinforcing strips or by the cames, with the strength-aiding member, namely, the reinforcing strip of each set of cames being continuous past the intersection or joint. In such form the cames may have the same dimensional section or depth, and at the intersection or joint the came passing through is assembled by cutting the web of the other came and spreading the leaves slightly at the joint,—so that except at the joint the came members in both directions have the same size grooves between their leaves for the accommodation of the edges of the small sectional sheet pieces.

Various modifications of the preferred and modified forms will be evident from the more detailed description hereinafter set forth. It will be understood that the came structure of the panel or frame is herein essentially involved, irrespective of the many variations of the small sectional pieces supported thereby, and while transparent or opaque glass may be thin sectional sheet material, the structure is equally applicable for the support of other sheet material in small sections such as tiling, wood, celluloid, or otherwise, in connection with which the inherent advantages of the structural coordination apply.

The specific embodiment of my invention will be described with respect to window panels with their plurality of sheet glass sections, while in no wise limiting what I claim as my invention to such particular embodiment.

Particular forms of the invention are shown in the accompanying drawing in which:

Fig. I is an elevation of a panel or pane containing one form of the metallic glazing.

Fig. II is a section on the line **2—2** of Fig. I, showing one form of the construction of the stiff cames at one intersection or joint.

Fig. II*a* is a perspective showing another form of intersection or joint.

Fig. III is a cross-section on line **3—3** of Fig. I.

Fig. III*a* is a perspective, fragmentary view, of a cross-section of the border member of the frame.

Fig. III*b* is a perspective, fragmentary, showing a section of a modified form of border member of the frame.

Fig. IV is a cross-sectional fragmentary view showing border member and intersection of cames.

As shown in Fig. I the stiff metallic cames A, A′, extend completely across the frame or glazed panel with transverse stiff metallic cames B, B′, also extend transversely, and having their came leaves under the came leaves of A and A′, that is at the joint the surfaces of the cames are at different elevation, one above the other on both faces of the panel. The cames A, A′ engage at the ends the frame border members D, D, and the cames B, B′ engage the frame members D′, D′, and are secured thereto at *d* by a rivet or clip or screw. The stiff came members hold the subdivided glasses or glass sections E by the came leaves, so that the entire structure when assembled is firm and solid, all slight crevices between the glass members being filled in the usual manner by putty, or some other weather-proof material.

In Fig. II the came member A has its web *a* cut away forming the hole F, through which came member B passes with the leaves of came A spread apart slightly to permit came B to pass through, and when in position to be held tight by the stiff came structure of member A. The incision or opening F may be made by punching the web of came member A to form a hole shaped like and slightly larger than the section of came B, as shown dotted on one side in Fig .II or it may be substantially larger in order to allow slight relative movement of the two cames, in order to adjust themselves to accommodate any slight inequalities of the glass sections assembled with these cames in the glazing operation, or expansion in case of fire.

In the case of Fig. II*a*, the came G has reinforcing strips *g* passing through the leaves, and came H has a reinforcing strip *h* passing through the heart of the came. In this form the heart of came G is cut away without severing the reinforcing strips *g*, and therefore leaves the major strength of the came intact. In particular embodiments of the construction, the major strength of came H may be preserved by carrying the reinforcing *h* through the web or heart of came G, thereby minimizing the cut in the heart of came G.

In Fig. III, border D is shown as having rivets passing through it and passing through a filler or spacer *d′*, and also passing through the leaves of came B′ which at its end has its heart cut away to accommodate the filler or spacer *d′*. As illustrated in this figure the came A′ being of deeper section at the joint C has its leaves spaced slightly away from the surface of the edge of the glass section E, and filling material such as putty or suitable cement J waterproofs the crack.

Fig. III*a* shows a border member D^2 in box form adapted to receive the edge of the glass E, and with inturned edges d^2 adapted to engage the glass surface, but with incisions d^3 provided for the accommodation of came members such as B^1. In Fig. III*b* a frame member is shown D^3, which has a recess d^4 on its inner side adapted to receive the edge of the glass.

In Fig. IV, the came A spans the came B shown in section, with its leaves, but between the border and the came intersection C the leaves of came A are pressed in or constricted so as to more closely approach and engage the surface of the glass at its edge, thereby adding to the stiffness of the entire glazed panel and minimizing the space required for waterproofing by putty or the like. In this form a came B may be embodied adjacent the margin of the panel in order to accommodate the edge of the glasses, while the intersecting came A has its heart cut out to an extent permitting the leaves to project laterally over a filler or spacer K, to which the leaves are riveted. This form may be used when no solid border frame member is required, or for particular accommodation of other features of construction.

In the case of excessive temperature change, as in the case of fire, a portion of the panel or the entire window will be subject to expansion by the heat, and this may be uneven, so that a local strain may cause cracking of glass, which may be avoided by features of this invention. For such purpose where one came passes through the heart of another at a joint, the hole in the heart is made larger than the section of the traversing came, in order to permit automatic adjustment at the joint to relieve of any strain due to unequal relative expansion of the parts of the glazed panel, and thereby minimize the chance of breakage.

The use of this invention makes possible came glazing without soldered joints, and practical as to economy, durability and in all respects it solves the problem of using aluminum for cames in glazing.

It will thus be seen in the various embodiments of this invention a glazed panel structure is provided, which permits of simple assembly with the came members engaging the glass pieces to secure them, while the cames may extend continuous in both or in one direction, in any event from side-to-side of the glazed panel, thereby providing rigidity throughout the pane. As shown, the cross-sectional structure of each came is preferably drawn or extruded, and sheet metal drawn to the form admirably provides for such came structures applicable to the invention, in zinc or copper, aluminum or bronze, and the like, all forming a stiff and wind-resisting strength from lateral pressure on the pane or panel of the window. The came structures may be wholly of the stiff metal, or may be formed of stiff metal or stiffeners, with a lead coating for the benefits of weatherproof sealing on the glass surface, and also protection by lead portions of the came structure over the other metal.

While shown in Fig. I with the came members in one direction being let into the border or frame member without rigid attachment, it will be understood that upon progressive assembly of the cames with the glasses the entire panel structure is complete when frame or border members are attached, and in many cases no additional rigid clipping or clamping or bolting of the cames to the frame members at their junction are required, beyond the firm connection of the several frame or border members at the corners, or at their intersections.

The invention provides for quick assembly and secure holding of the assembled structure with economy of construction, simplicity, and facility for repairs in case of breakage of individual sectional sheet pieces. The rivets or bolts or screws, or the like, securing the corners of the frame members are preferably separable for the purposes of repair or replacement of the entire panel or pane. The panel or pane as a whole is set into the muntin, or frame or into the sash, and secured in any usual manner. It will be seen that the assembled structure provides for rigidity against lateral pressure on a panel, and against warping, irrespective of the small sectional sheet pieces, which therefore may be of any material. Small sheet sections of material which heretofore have been used in large pieces and subject to warping, or otherwise, lack durability when used architecturally in large areas, lend themselves admirably to application in a plurality of small sections, readily assembled and admirably supported by the structure involved in this invention. It will also be evident that the assembly of small sections of any material whether transparent or opaque provides for covering the adjacent edges of the small sections completely and effectively, which if otherwise assembled would require expensive and some times difficult work in joining of the edges and preservation of the joints.

While various modifications may be made in many features of the construction or material herein described without departing from the invention, what I claim and desire to secure by Letters Patent is:

1. A leaded-glass window panel having outside border members with two inwardly projecting came leaves, a series of cames with their leaves on both sides extending continuously from border to border in two intersecting directions, intersections of the series of cames extending in opposite directions forming joints in which the leaves on both sides of the cames in one direction pass through holes in the hearts of the series of cames extending in the transverse direction, so constructed and arranged whereby the leaves of the cames in both series of cames extend continuous between the panel border members with the leaves on the outside and inside of the cames overlapping and holding the surface of the supported panes of glass or other material against removal laterally in either direction by their substantially overlapping the inside and outside border surface of the glass.

2. Metallic came structure for panels in leaded-glass windows, doors or similar areas including unbroken joints of came leaves at intersections of two series of cames extending transversely of each other, comprising cames in one direction having a heart with leaves closely fitting over the outside of the leaves of the transverse intersecting cames, a hole in the heart of each came extending in the opposite transverse direction slightly greater than the section of the came passing therethrough, whereby the metallic came structure is substantially flush on the outside and inside of the panel.

3. Came structures for leaded-glass panels for structural areas such as windows, doors or the like, comprising stiff metallic cames extending in transverse directions forming intersection joints having all the leaves of both cames at each intersection continuous, and having both outside and inside leaves of cames extending in one direction spread at the joint, whereby the cames in opposite directions overlap the glass edges on inside and outside preventing their lateral insertion or removal.

4. Glazing for leaded-glass window panes comprising stiff metallic cames of equal depth, two series of said came members extending in intersecting directions, the intersections of the cames in opposite directions having at each joint an incision in the heart of one came and adjacent thereto a permanently spread portion of both of the leaves of the other intersecting came, whereby the panel provides continuous leaves on the inside and outside of the panel border-to-border and with the cames extending in both directions having their leaves adapted for normal holding on inside and outside of the panel with a flat engagement with the surface of the interposed glass sections against lateral removal and providing a substantially flush inside and outside metallic panel structure.

5. A came glazed window panel comprising metallic cames extending in relative transverse directions between the borders of the panel, one came at each intersection with a transverse came having an incision in its heart, the intersecting came having both its leaves extending through said incision and having the outer surface of

both of its leaves in contact with the inner surfaces of the leaves of the intersecting came, so constructed and arranged whereby the came leaves on both of the intersecting cames provide the overlapping support on the outside and inside of the panes of glass or other material supported between the cames to prevent their lateral removal.

6. A leaded-glass window panel formed of a plurality of metallic cames and intervening glass sections, series of said cames extending in two directions resulting in one series traversing the other, the traversing joints of different cames including cames in one direction having holes formed in their hearts and having continuous leaves on outside and inside, the cames extending transversely at the joint passing through said holes and having both inside and outside leaves continuous at their intersections and permanently in surface contact with the leaves of the came extending in the transverse direction, whereby the cames are securely held in contact with the outside and inside surfaces of the intervening glass sections on at least two sides thereof and closely confined to hold cement on the other sides.

7. A came structure panel for leaded-glass windows, doors or like architectural apertures having a surrounding metallic border and intermediate cames extending from border-to-border with the leaves of the cames continuous from border-to-border, inserts in the cames relatively rigid compared with the metallic leaves of the cames and extending continuous through the intersections of the cames in different directions.

8. A came structure panel for leaded-glass windows, doors or like architectural apertures having a surrounding metallic border and intermediate cames extending from border-to-border with the leaves of the cames continuous from border-to-border, inserts in the cames relatively rigid compared with the metallic leaves of the cames and extending continuous through the intersections of the cames in different directions, and having the ends of the relatively rigid inserts supported in the panel border, whereby glass or other sectional supported plating members are held throughout by the inside and outside leaves of the cames overlapping their border surfaces throughout and preventing their lateral insertion or removal.

WARREN R. McMANN.

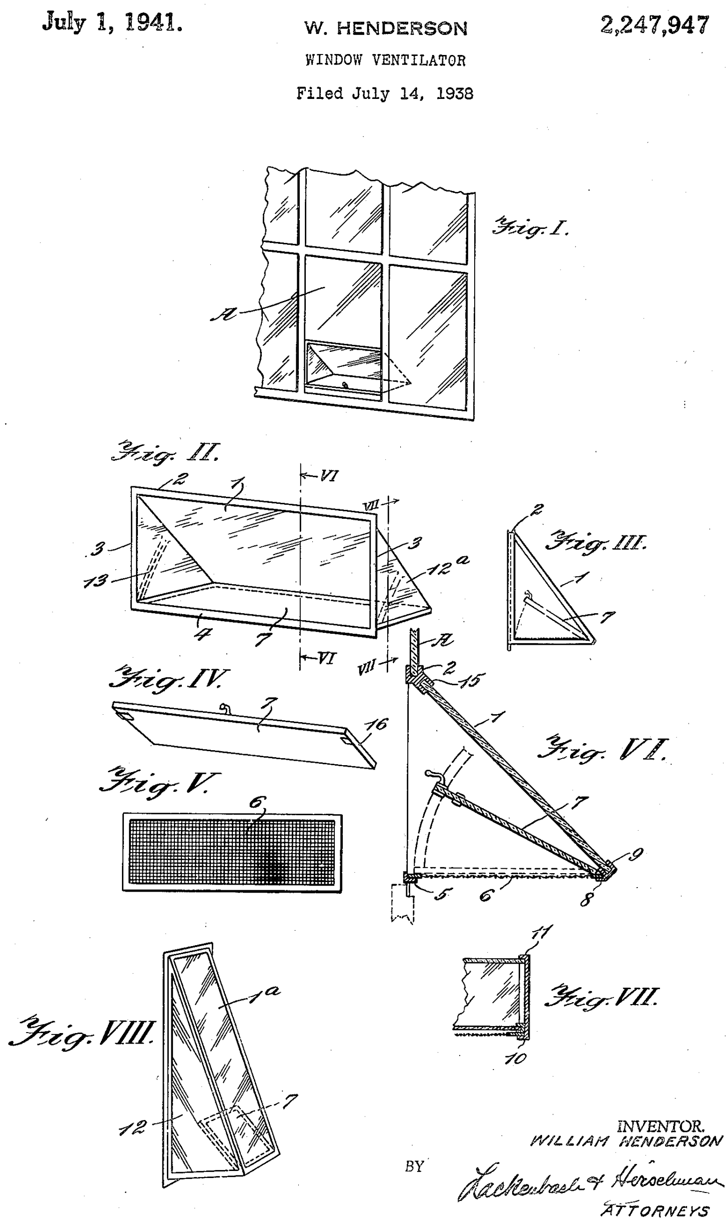


Figure 199. Drawings for William Henderson Pat. No. 2,247,947—Window Ventilator.

Patented July 1, 1941 2,247,947

UNITED STATES PATENT OFFICE

2,247,947

WINDOW VENTILATOR

William Henderson, Mineola, N. Y.

Application July 14, 1938, Serial No. 219,115

3 Claims. (Cl. 98—88)

My invention relates to ventilators in windows, so constructed and arranged that controlled ventilation may be provided without moving a window sash. More particularly, I provide a construction and an article of this character which has important advantageous characteristics compared with constructions which have heretofore been suggested. My invention involves improvements to provide ventilators that may be universally installed, without change in existing window panes and muntins, that will provide simplicity of construction, assure the screening of the air when the ventilator is open, permit of any desired adjustment of the volume of air, provide for manufacture of the several parts in the combination at far less cost, involve no obstruction to the light penetration, involve glass parts of simple and economical form not liable to breakage, nor difficult to produce,—and in all a most economical, durable and easily manipulated ventilator which may be combined with a portion only of a window pane, or supplant one entire pane of glass, and in case of accidental damage, permit of simplicity and economy of replacement.

Furthermore, my construction involves part glass and part metal framing, and connections made of the metal parts of the structure made in a relatively simple and economical manner, and permit of assembly by simple implacement of parts. Also, there is obtained, by my invention, connection of the ventilator with the window pane or the muntins, in the simplest form of the glazing art, insuring the same permanent weatherproofness as attained in the glazing of a plane sheet of glass in the muntins of the sash without mechanical devices.

My construction furthermore permits of the production of the complete assembled article that may be installed by any glazer, and therefore an article of practically universal use of manufacture and distribution for installation in any predetermined standard sizes.

My ventilator may be installed in casement windows as well as sliding sash windows. In particular, it provides for a suitable volume of air-flow which is prevented from blowing directly into the room, and therefore eliminates the disadvantages necessitating the partial opening of a casement window, or the partial lifting or lowering of a sliding sash window with a draft blowing through the full width of the window. With the air flowing through my ventilator, the current of air is close to the plane of the window, and thus affects the vertical strata of air lying close to the window, and prevents or minimizes condensation on the window surface. By simple regulation of the volume of air, and as my ventilator affords a large volume of air if desired, the advantages of temperature regulation in the room involve uniformity, without draft or condensation, on any metal parts or on the otherwise clear window panes.

In a preferred form of my construction, I provide a frame to set in the plane of the window pane, occupying a portion, preferably the lower portion of the window pane, and with a came top to engage an edge of a window pane. When my device is intended for the upper sash, a bottom frame extends substantially horizontal outward approximately the same distance as the height of the first frame, and from the top edge of the first frame to the outer edge of the horizontal frame a plate of glass is glazed by suitable came, or other frame members connecting it at its top and bottom to the other frames with a weatherproof joint, and at both horizontal ends it is connected or glazed to the inclined edge of the end-closing members of the ventilator. These end-closing members may be triangular pieces of glass connected to the first vertical frame member and the inclined glass plate, but as the light penetration is essentially provided by the inclined plate of glass, the end members may be formed of sheet metal, and in so doing the sheet metal members may be most economically formed with the came or like connections, for assembly and support of the other members.

Having thus a triangular light penetrable ventilator structure with an open frame bottom substantially horizontal and protected from the weather by the inclined glass plate, the opening at the bottom is formed with border ledges, on which is placed and supported a wire screen or air filter member, preferably with marginal binders to stiffen it and permanently hold the screen by its weight in its functioning position when the air current is permitted to enter. The control of the air current is provided by a glass plate, substantially horizontal in its closed position, slightly larger than the screen member, and preferably loose to the extent of permitting the inner edge of this closing member to be raised by a knob or handle extending conveniently inside the edge of the muntin.

Cooperating with this tiltable plate, I provide for cooperating members between the inside of the triangular members of the ventilating box, and the ends of the tiltable plate, yielding means of engagement so that the inner edge of the tilting plate may be raised to any degree desired, and by the functioning of the end-engaging means it is held at the voluntarily placed inclined position for the desired degree of opening of the bottom of the ventilator box for the passage of air. This control plate, I preferably make of a plate of glass which therefore adds to the light penetration by reflection of light from the inclined glass plate. The outer edge of the plate may be rounded, and is of dimension and form so made as to loosely fit into the recess formed between the outer edge of the wire screen mat and the outer lower edge of the inclined glass plate,—which therefore constitute, in effect, a hinged connection for the outer edge of the air-control plate and permit its ready adjustment to any angle desired for ventilation, and, in particular, permits its insertion without detail mechanism of any sort, and therefore of simplicity and the avoidance of any detail mechanism of obvious disadvantage.

Thus, the air screen member as a unit, and the controlling adjustable tilting plate for air regulation, may be completely made separate, packed, shipped and handled separately, and inserted by simple implacement in their functioning positions, after the main member of the ventilator has been installed. Furthermore, it permits the replacement of the wire screen, or the cleaning of the screen and tilting control plate with the greatest convenience.

In another form of my construction, I provide a main vertical frame adapted to fit and be glazed directly to the muntins, in place of the ordinary simple plate of glass. With this frame I embody a glass sheet glazed to the top edge and extending at a slight angle, to provide the full light penetration of the area between the muntins. At the bottom of the frame I extend a substantially horizontal frame to the outer edge to which the inclined sheet of glass is glazed, and the bottom frame has, as in the previous form, the surrounding ledges adapted for the reception of the wire screen simply placed therein, and on top of the screen the tilting air-flow-control plate which is manipulated from the inner accessible edge, and hinges at its outer edge in the angle formed by the inclined plate and the bottom frame. As in the previous form, the ends of the control plate interengage with end walls between the main frame and the lateral edges of the inclined glass sheet, in such a manner as to permit the automatic holding in position of the air-flow-control plate, at any desired angle when voluntarily raised by a suitable and convenient handle in the form of an overhanging hook or knob attached at the inner edge of the control plate.

In either form, a metal plate may be substituted for the tilting air-control plate, with suitable, and preferably friction inter-engaging means at its ends to firmly hold it at any angle to which it has been voluntarily moved in setting the ventilator into action.

It will be understood that when my ventilator is disposed with the inclined plate extending outwardly of the window, the controlled screen and ventilating provide for up-draft, with all the mechanism protected.

In the form shown and described, it will be noted that when I use glass or light pervious material for the inclined face or wall of my ventilator box, the fact that I may use ordinary stock plate glass simplifies and cheapens the construction compared with any specially formed glass panes, which have heretofore been suggested in some constructions. Likewise, when I use glass for the tilting plate it need only involve ordinary stock window glass, greatly cheapening and simplifying my construction. In some forms of my construction, however, I may use sheet metal, particularly aluminum is advantageous, and permits me to stamp or press out the different members, both the inclined side or face, the tiltable air-flow-control shutter, and the triangular ends of the box, and thereby in some or all of these parts the construction is further simplified, and is applicable in cases where ample light volume is attained through the balance of the window, and only ventilation and durability are required of the ventilator. In further simplifying, for certain uses, I may omit the wire screen, and, in any event, the air-control plate provides for the full opening of the bottom of the ventilator, and therefore the practically 100 per cent passage of air when the plate is open to permit ventilation, which it will be recognized is a characteristic differing entirely from sliding plates with perforations or slots, which at best can only provide for a maximum of one-half the air-flow area, and in other respects are disadvantageous and are relatively expensive.

While in preferred forms I have shown my air-control plate as fitting on its outer edge in a recess, which in effect is a hinge without detail mechanism, I may embody my invention with the inner edge of the air-control plate suitably fitting into a recess, or under an overhanging catch or two, and lift the outer edge of the plate upward to secure the ventilation. In such construction I preferably have the lower supporting or bottom frame for the plate inclined so that it attaches to the inclined plate or face more nearly at right angles, thus permitting the free upward swing of the plate without striking the inclined face of the ventilator box. I may also have a wider supporting margin at the outer edge of the bottom open frame, and in that way the outer edge of the tiltable plate freely moves upward and may be swung to the vertical positions at the inner side of the ventilator box, with suitable means for holding it in any predetermined position for the desired degree of air-flow. Or in some forms I may have the outer inclined protecting plate of glass, or otherwise, extend from the bottom and curve inward until it joins with the other portion of the ordinary window pane, or fits into the muntin, to which it is glazed. This also permits the free swinging of the air-flow control plate about its inner edge with the outer edge of the plate rising clear of the outer inclined protecting face of the box.

Forms of my invention are shown in the accompanying drawings, in which:

Fig. I is a fragmentary view of a lower corner of a sash in which my ventilator device is shown embodied in the lower portion of one of the panes.

Fig. II is a perspective view, on a larger scale, of the unit device with all the ventilator mechanism made as an article ready for insertion in a window.

Fig. III is an end view of Fig. II.

Fig. IV is a perspective view of the air-flow-control shutter separated from the ventilator box.

Fig. V is a plan view of the air filter screen, also shown as a separate part, ready for insertion in the ventilator box.

Fig. VI is a sectional view, as indicated by line

VI—VI, Fig. II, showing on an enlarged scale various connections of the different members of the box with the air screen and the air-controlled cover or lid in open position.

Fig. VII is a fragmentary view, of a section on line VII—VII of Fig. II, showing particularly details of one form of the end of the box when made of metal.

Fig. VIII is a perspective view of a modified form in which the inclined light offset pane extends to the top of the opening for direct connection to the muntin.

As shown in the drawings, the complete assembled ventilating unit comprises the inclined glass member **1**, which is secured at its top edge to the horizontal frame member **2** of a frame which has the side members **3—3** to engage and be glazed to the muntins. A bottom member of the frame **4**, provides for glazing at the bottom to the lower muntin edge, and on its inside is formed with a rib **5** which provides a ledge to hold the wire screen **6**, and, in turn, the air-flow-control plate **7** when the same is closed to stop ventilation. The offset **5** need not be used when the construction takes a form in which the border next to the window has the muntin in proper position to support the screen and the tiltable air-flow-control plate.

The tilting plate engages at its outer end the recess formed between the bottom edge of the inclined plate **1** and a rib **8** extending from the border member **9**, which engages and is glazed to the lower edge of the inclined plate **1**. At the ends of the box, should the ends be made of metal, they can be offset at the bottom **10** to form a ledge to support the wire screen mat, as well as the air-flow shutter. The ends also may be bent over to form an engaging border **11** to be glazed to the lateral edges of the inclined plate forming a weatherproof joint.

As shown in Fig. VIII, the inclined plate **1a** is secured to the top border of the pane opening and the triangular box ends **12**, when made of glass, are sealed at the inclined edge of member **1a**, so as to form a weatherproof joint, without the necessity of any metal binder, came or the like, thus simplifying the construction in the extreme. The glass end may also be used in like manner at **12a** in the box form shown in Fig. II, etc.

When making the box ends of metal, I may provide an offset rib **13** which presses against the end edges of the tiltable shutter. This may be a separate spring member, or spring pegs may be attached to the shutter to form a yielding and friction contact, particularly when the box ends are made of glass. These serve to hold the air-flow-control shutter at an angle when open, and securely closed when down against the wire screen.

It will be noted that the construction provides all the required tight-fit for the ventilating shutter, without the necessity of mechanism, such as metal hinges, but the inner edge of the glass shutter when rounded fits into the recess at the bottom of the inclined glass member, so that in effect it hinges at that point, and when closed it fits against the muntin or rib on the inside, and therefore is securely held and makes an air-tight closure for the bottom.

As shown in Fig. VI, the part of an ordinary glass pane A fits into a grooved member **2**, and the same grooved member forms a pocket **15** across the entire pane, and into it is glazed the upper end of the inclined glass member. Similarly, the lower edge of the inclined flat glass **1** is engaged by a longitudinal socket member **9**, which can be formed with the extension **8** underneath inwardly to support the screen.

While I prefer to make the ventilating air-flow-control plate of a single flat piece of glass, I may have border members around its edges in order to attach the handle, and also to attach any members for friction contact in its adjusted position. When of glass, I attach on the inner side, for its operation, a clip which may be cemented to the glass, or more positively held by a drilled hole and pin, to which the knob or a lateral extending spring-operating clip **16** may be attached. A spring clip assures the yielding contact when suddenly opening the glass, so as not to break the inclined glass plate, or a rubber handle or latch can be suitably cemented to the glass. In some cases I may make the tilting control shutter of metal with suitable yielding means to positively hold it in its predetermined position, which in some cases is necessary in view of its lightness and possible displacement by the up-draft.

In all, it will be noted that my invention involves a combination of constructions of extreme simplicity. It may be made as a box which any glazer can readily insert in the corresponding, standard size of window pane opening. I may also make it a full size of a pane as a substitute to fit directly into the muntins.

When using a flat glass sheet, and glass end members to the triangular box, I have a full light penetration not in any way deducting from the volume of light attained through the ordinary window pane. The same is substantially true of any modifications, but should it be desired to make some of the parts of metal the substitution for equivalent advantages may be made.

The particular advantages in the features of construction, for simplicity, cleanliness, ready assembly, and the very economical manufacture and installation, have heretofore been cited, and will hereinafter appear in my claims as important features of my invention.

Many variations may be made without departing from my invention, but what I claim and desire to secure by Letters Patent is:

1. A window ventilator adapted for glazing in place of a portion or all of a window pane, comprising a main frame for juxtaposition with the muntins of the window, an inclined flat glass plate glazed to one horizontal edge of said frame, vertical end members engaging said frame at the edge thereof to which said inclined flat glass plate is glazed, and extending substantially in the same degree of inclination to said frame as does said inclined flat glass plate, said end members engaging also the ends of the inclined flat glass plate, an auxiliary frame extending substantially at right angles to said main frame and defining a bottom opening to the space between said main frame and said inclined flat glass plate, a readily insertable air screen for the bottom opening, a tiltable control plate readily insertable and removable into said space to completely close said opening, and means for adjusting the tilting of said control plate to any desired degree and to automatically maintain it in such tilted position to permit ingress of air through the screen into the space defined by said main frame, and inclined flat glass plate.

2. A window ventilator as claimed in claim 1, in which the means for adjusting the tilting of the control plate comprises a pair of leaf springs secured at the ends thereof to the control plate

in proximity to the edge of such control plate, adapted to contact the interior surface of the inclined flat glass plate, whereby said control plate is retained in any position of tilting, and thereby control the flow of air through the screen.

3. A window ventilator adapted to be inserted in place of a pane in a window structure, having a main frame to engage the muntins, a horizontal bottom air flow aperture frame, glass plates glazed to said frames forming a protecting triangular box, and a readily removable air-control plate, fitting over the aperture of said horizontal frame with one of its edges freely engaging the outer side of the bottom frame, said air-control plate being readily insertable into and removable from said triangular box and being provided with means for maintaining the same in any angular disposition with respect to the horizontal frame by frictional engagement of said means with the glass plates constituting the sides of the protecting triangular box.

WILLIAM HENDERSON.

Appendix B

Henderson Brothers Confirmed Places of Business & Residences

Year	Source	Business Address	Listed Business	William Residence	Robert Residence
	U. S. Patent 412,751			Chicago, Cooks County	Missing
1890	U. S. Patent 420,510			Chicago, Cooks County	Missing
	Flanagan & Biedenweg Ad				
1891	Flanagan & Biedenweg Ad			Missing	Missing
1892	Flanagan & Biedenweg Ad			Missing	Missing
1893	Missing			Missing	Missing
1894	Missing			Missing	Missing
1895	Missing			Missing	Missing
1896-97	Railway, Telegraph, Electric, and Steamship Builders' Buyers' Guide and Directory	534 6th Ave (Glass – Stained)		Missing	Missing
1897	Trow NY		Glass	526 6th Ave.	534 6th Ave.
1898	Trow NY	522 6th Ave	Glass	522 6th Ave.	522 6th Ave.
1899	Trow NY	522 6th Ave	Glass	522 6th Ave.	522 6th Ave.
1900	Trow NY	522 6th Ave	Glass	522 6th Ave.	522 6th Ave.
1901	Trow NY	522 6th Ave	Glass	522 6th Ave.	168 W. 25th St.
1902	Trow NY	522 6th Ave & 122 W. 29th St	Glass	623 6th Ave.	130 W. 31st St.
1903	Trow NY	343 W. 37th & 1133 Broadway	Glass	522 6th Ave	337 8th Ave.
1904	Trow NY	13 E. 30th St. (William)	Glass	Whitestone Brooklyn Queens	
	Trow NY	122 W. 29th St (Robert)	Glass		Whitestone Brooklyn Queens
1905	Trow NY	13 E. 30th St. (Tel)	Glass	Missing	Missing
1905-06	Thomas Reg.	343 W. 37th St.	Leaded/Ornamental	Missing	Missing
1906	Trow NY	13 E. 30th St. / 327 E. 34th St.	Glass (William)	Whitestone Brooklyn Queens	
	Trow NY	122 W. 29th St (Robert)	Glass		Whitestone Brooklyn Queens

1907	Trow NY	342 E. 38th St (William)	Glass	Whitestone Brooklyn Queens	
	Trow NY	117 W. 30th St (Robert)	Glass		Whitestone Brooklyn Queens
1907-08	Trow NY	342 E. 38th St	Glass	Whitestone Brooklyn Queens	
		117 W. 30th (Robert)	Glazier		359 W. 29th St
1909	Trow NY	342 E. 38th St	Glass (Wm. Henderson only)	343 Crimmins Ave	359 W. 29th St (Glassmaker)
1910	Trow NY	342 E. 38th St	Glass	Whitestone Brooklyn Queens	No Listing
1911	Trow NY	707 1st Ave.	Glass	No listing	No listing
1912	Trow NY	707 1st Ave.	Glass	79 S. Boulevard	
	Trow NY		Glazier		1521 3rd Ave
1913	Trow NY	707 1st Ave.	Glass	318 E. 62nd St	
			Glazier		347 W. 25th St
1914	Trow NY	707 1st Ave.	Glass	228 E. 50th St	No confirmable listing
		Ernest lists 707 First Ave	Home Jersey City		
1915	Trow NY	707 1st Ave.	Glass(Wm. Henderson)	14 Beekman Pl	235 E. 80th (glazier)
1916	Trow NY	707 1st Ave		510 W. 171st St	
		340 E. 40th St.	Glass	510 W. 171st St	No listing
1917	Trow NY	317 E. 64th St.	Stained Glass (Wm. Henderson)	122 East End Ave.	No listing
1918	Trow NY	372 Lexington Ave.	Stained Glass (Wm. Henderson)	322 East 66th St	No listing
1918-19	White, Orr Ref. Reg.	317 E. 64th St.		Missing	Missing
1919	Missing			Missing	Missing
1920	Polk NY	372 Lexington Ave.	Glass	Missing	Missing
1920-21	Polk	372 Lexington Ave.	Glass	Missing	Missing

1922-23	Polk	114 E. 41st St. & 219 E. 30th St	Glass (Wm. Henderson)	219 E. 30th St	Can't read
1924-25	Polk	114 E. 41st St.	Glass	Missing	Missing
1925	Polk	114 E. 41st St.	Leaded Glass (Wm. Henderson)	Mineola, LI	No Listing
1926	Missing			Missing	Missing
1927	Missing			Missing	Missing
1928	Arch. League Index of Exhibits 1928	228 East 41st St.		Missing	Missing
1929	Missing			Missing	Missing
1930	Missing			Missing	Missing
1931	Manhattan & Bronx Dir. Pub	693 3rd Ave	Leaded Glass (Wm. Henderson)	208 E. 36th St	Missing
1932	Missing			Missing	Missing
1933-34		693 3rd Ave.	Leaded Glass (Wm. Henderson)	208 E. 36th St	Missing
1934	Frick Letters	771 First Ave		Missing	Missing
1935	Missing			Missing	Missing
1936	Missing			Missing	Missing
1937	Missing			Missing	Missing
1938	US Pat Ap. 7/14/1938	Mineola, NY	Serial No. 219,115	Mineola, NY	Missing

Henderson Brothers
534 6th Ave - 1 - 1897
522 6th Ave – 6 - 1898, 1899, 1900, 1901, 1902
343 W. 37th St. and 1133 Broadway – 1 – 1903

William
13 E. 30th St. – 3 – 1904, 1905, 1906
327 E. 34th St. – 1 – 1906
342 E. 38th St. – 4 – 1907, 1908, 1909, **1910**
707 1st Ave. – 6 – 1911, 1912, 1913, 1914, 1915, 1916
340 E. 40th St. – 1 – 1916
317 E. 64th St. – 2 – 1917, 1918
372 Lexington Ave. – 3 – 1918, 1920, 1921
219 E. 30th St. – 1 – 1922
114 E. 41st St. – 3 – 1922, 1923, 1924, 1925
693 3rd Ave. – 2 – 1931, 1933, 1934
771 1st Ave. – 1 – 1934
14 locations in 43 years 10 years missing

Robert
122 W. 29th St. – 3 – 1902, 1904, 1906
117 W. 30th St. – 2 – 1907, 1908

Appendix C

Henderson Brothers Documented Work and Associated Architects

Connecticut
First Methodist Church, Hartford
Yale University, New Haven
Electrical Laboratory
Laboratory of Zoology
Mason Laboratory
St. Elmo Club
Sloane Laboratory
Sterling Law School Buildings
Sterling Memorial Library
Trumbull College

Illinois
Library University of Illinois Urbana – Champaign

Indiana
Indiana State Library, Indianapolis

Maryland
First Church of Christ, Scientist, Baltimore

Massachusetts
Bates College
Hotel Copley-Plaza, Boston, MA

Minnesota
Kitchi Gammi Club, Duluth

New Jersey
Princeton University
Cuyler Hall
The Graduate College

New York
Albany High School Auditorium, Albany
The Candler Building 220 West 42nd Street, New York City
City Hall, New York City, New York
Crossroads of the World Restaurant
The H. C. Frick Residence and Library, 5th Avenue, 70th – 71st Streets, New York City, NY
The Goshen Inn, Goshen, NY
Arthur Hammerstein, Esq, Home at Whitestone Landing, L.I.
Hammerstein's Theatre , 1697 Broadway at 53rd Street, New York City
Horne & Hardart's various New York City locations

The Montana, 375 Park Avenue, New York City
Steuben Tavern, Broadway and 42nd Street, New York City
Vanderbilt Hotel, New York City, New York
Vassar College, Poughkeepsie, New York
West Point Military Academy

North Carolina
Duke University

Washington, D.C.
Johns Hopkins University Gillman Hall

Costa Rica
Banco Anglo Costariccenze

Architects Working with Henderson Brothers

Allen & Collins (Boston)

[Vassar College, Poughkeepsie, New York]

Francis R. Allen studied at the Ecole des Beaux-Arts. With Collins, he designed eight buildings at Williams College, twelve at Vassar, and Union Theological Seminary's buildings in New York City.[1] Henderson Brothers embellished buildings for the firm at Vassar College, Poughkeepsie, New York.[2]

Charles Collins, serving as Secretary of the Boston Society of Architects, expressed the concern of many, regarding housing conditions for workers. In response to the expansion of factories during World War I and the housing problems that existed, he stated, "A man will come to work every day with a new zeal and his output will be correspondingly increased if he lives in an environment of neat, clean houses, architecturally placed and architecturally treated, houses

[1] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 3.
[2] *Sweet's Catalog of Building Construction,* (New York: Sweet's Catalogue Service, Inc., 1915), 886.

with gardens if possible and on streets with green trees, occasional park spaces, and with such amusements places, clubs, churches and stores as are essential to any self-respecting community."[3]

Grosvenor Atterbury (New York City)

[City Hall Rotunda and Vanderbilt Hotel New York City, Johns Hopkins University]

Grosvenor Atterbury graduated from Yale University and studied at the School of Architecture of Columbia University as a special student in building. While there, between 1892—1893, he also worked at the firm of McKim, Mead, and White. Stanford White was a family friend.[4] He completed his studies at the Ecole des Beaux-Arts. He designed many Long Island homes for families including Robert de Forest and Henry O. Havermeyer. Later, he focused particularly on industrial housing inventing pre-fabricated concrete block construction techniques used in the development of Forest Hills Gardens, in Queens. He was architect on many significant restorations including New York's City Hall, the American Wing of the Metropolitan Museum of Art, and the Russell Sage Foundation building. He served as consulting architect at Johns Hopkins University. Atterbury served as a supervising architect for the United States Expeditionary Forces in World War I.[5] For Atterbury, Henderson Brothers completed a twelve foot in diameter dome in City Hall, New York City advertised in Sweet's Catalogue with the description, "Note absence of straight ribs." Also noted is work for Johns Hopkins University, about which more will be said.[6] The Long Island homes designed by

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[3] Avery Architecture and Fine Arts Library, "Correspondence between Robert Brent Keyser and Grosvenor Atterbury about remodeling Keyser's house, Dunlora (Pikesville, MD), 1912-1914." Columbia University Libraries, http://www.columbia.edu/cu/lweb/archival/collections/ldpd_9452424/, (accessed 4/12/2012).
[4] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940* (New York and London: W. W. Norton & Company, 1997), 49.
[5] "G. Atterbury, 87, Dead: Pioneer in Prefabrication Was Designer of Forest Hills Gardens Community," *New York Times*, October 19, 1956, 27.
[6] *Sweet's Catalog of Building Construction,* (New York: Sweet's Catalogue Service, Inc., 1915), 886-87.

Atterbury precisely fit the mold of Henderson Brothers, residential work and their connection to the architect makes it likely that some of their Long Island work came through his office.

Bates & How (Bronxville, New York)

William Augustus Bates studied architecture in the offices of Herter Brothers, one of the primary decorating and design firms in New York City. After establishing his own practice, William Lawrence brought him to Bronxville, New York to design homes, apartments, and an artist's colony, "an Ideal Suburb" on land he owned.[7] During this time he also designed a home for Elizabeth Custer, widow of George Armstrong Custer. The Century Association said this of Bates' work, "In his country houses, his buildings were so admirably adjusted to their surroundings as perhaps to symbolize the grace and harmony of his own unspoken meditations."[8]

In 1910, Kenneth G. How joined the firm. Little is known of How but he did publish articles about the firm's work in the *Architectural Record* and *The American Architect* focused on their community housing projects. In the article entitled "Housing Problems in Small Suburban Developments," How mentions fresh air, lack of monotony, and easing the "drudgery of housekeeping" as factors making community housing attractive.[9]

Cady & See (New York City) also Cady, Berg & See

Josiah Cleveland Cady graduated from Trinity College in 1860.[10] Charles I. Berg graduated from the Ecole des Beaux-Arts. Milton See, Cady, and Berg formed a productive partnership and designed the Metropolitan Opera House, the American Museum of Natural History, fifteen

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[7] Bronxville, "Prominent Village Architects: William Augustus Bates," Village of Bronxville, http://www.villageofbronxville.com/sube2_arch1.htm, (accessed June 23, 2012).
[8] Ibid.
[9] Kenneth G. How, 'Housing Problems in Small Suburban Developments," *The American Architect* 110, no. 21, (August 16, 1916): 91.
[10] "Obituary: J. Cleveland Cady," *The Journal of the American Institute Of Architects* 7, no. 5, (May 1919): 226.

buildings for Yale University, and buildings for Williams and Trinity Colleges and Tufts University.[11] The firm also designed Long Island homes including "Moorelands" the residence of John Chandler Moore, chairman of Tiffany & Company.[12]

Carrere & Hastings (New York City)
[Frick Residence, 5th Avenue, New York City]

The partnership of John Mervin Carrerre and Thomas Hastings began in 1888 and ended with in 1911 when Carrere was killed in an automobile accident. Carrere attended the Ecole des Beaux-Arts from 1877 – 1882 where he first met Hastings. Thomas Hastings graduated from the Ecole des Beaux-Arts in 1884.[13] These men both initially worked at the firm of McKim, Mead, and White where their mutual work led them into a business relationship that was also a friendship. The commission that catapulted the new firm to national prominence was the Ponce DeLeon Hotel in St. Augustine, Florida, a project of Henry Flagler (now Flagler College). Other work included the New York Public Library and fourteen Carnegie-funded libraries in New York, the House and Senate Office buildings in Washington, D.C., various city halls, banks, and rail terminals, city townhouses, and buildings at Yale and Cornell Universities.[14] The firm also had an impressive clientele for their country homes in the New York metropolitan area including William K. Vanderbilt, Frank Goodyear, and William Rockefeller.[15] Henderson Brothers

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[11] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 115.
[12] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940* (New York and London: W. W. Norton & Company, 1997), 71.
[13] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 61.
[14] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A25
[15] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940* (New York and London: W. W. Norton & Company, 1997), 98/99.

completed work for the Henry Clay Frick home on Fifth Avenue and the Frick Library designed by Carrere & Hastings.

Charles E. Cassell (Baltimore, Maryland)
[First Church of Christ, Scientist, Baltimore, Maryland]

A prolific Baltimore architect, Cassell graduated from the University of Virginia with a degree in engineering at age fifteen. He first served in the United States Army and later in the command of General George Pickett after succession attaining the rank of captain in the engineers. After the war he fled to Chile to avoid treason charges and attained the rank of Admiral in the Chilean Navy. After being pardoned he returned to Baltimore and set up practice first with his son and later his nephew. He designed many homes, public buildings, and churches.[16] Henderson Brothers' work may be found in First Church of Christ, Scientist, Baltimore, Maryland built in 1911.[17]

Coolidge & Carlson (Boston, Massachusetts)
[Bates College]

J. Randolph Coolidge received the degrees of A.B., Harvard, 1883; A.M., 1884; Dresden Poly, 1884; University of Berlin, 1885; Massachusetts Institute of Technology, 1888-90; and the Ecole des Beaux-Arts, Paris, 1891-94.[18] Harry John Carlson graduated from the Massachusetts Institute of Technology in 1892. He partnered with Coolidge in 1903.[19] Among their noted work included: the Girls' Latin and High School, the Boys' Latin School and the Normal School groups for Boston, the Harvard freshman dormitories, office buildings, churches, and private

[16] James T. Wollon, Jr., "Charles E. Cassell: c. 1842-1916," Baltimore Architectural Foundation, baltimorearchitecture.org/biographies/charles-e-cassell/, (accessed March 21, 2012).
[17] *Sweet's Catalogue of Building Construction,* (New York: Sweet's Catalogue Service, 1915), 886
18 "Joseph R[andolph] Coolidge Jr.: architect (*1862 †1928)," archInForm, http://eng.archinform.net/arch/27691.htm, (April 12, 2012).
[19] "Class Notes, 1892," *The Technology Review: A Quarterly Magazine Relating to the Massachusetts Institute of technology* 12, no. 1, (Boston: The Alumni Association of MIT, January 1922,): 93.

residences.[20] Some of their buildings at Bates College are embellished by the Henderson Brothers.[21]

Cram, Goodhue & Ferguson (Boston & New York City)

[Kitchi Gammi Club, Duluth, Minnesota, West Point Military Academy, Princeton University]

Ralph Adams Cram was the leading proponent of Gothic Revival architecture in the United States through his work, writing, and lectures. He was critically important in the careers of several stained glass artists including Charles Jay Connick, Henry Lee and Annie Williet, and Harry Eldrige Goodhue who embellished many of his buildings. These stained glass firms worked in the Gothic Revival style as opposed to the American opalescent style popularized by Louis Comfort Tiffany. Cram particularly disdained this style of work and went out of his way to keep it out of his buildings. Cram published numerous books on various aspects of architecture and government. He also published science fiction. He lectured frequently and taught at the Massachusetts Institute of Technology. His influence on ecclesiastic and collegiate architecture cannot be underestimated.

Frank Ferguson started as a draftsman in Cram's early firm. He later became partner and was responsible for many of the elevation sketches for the firm. Among the specific projects that he worked on were: the United States Military Academy; St. Thomas Episcopal Church, New York City; the Rice Institute in Texas; and various buildings at Princeton University, Williams College, and Richmond College.[22]

Bertram Grosvenor Goodhue entered the field of architecture by apprenticing with James Renwick. His family was so poor that Renwick secretly paid the cost of this apprenticeship

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[20] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 143.

[21] *Sweet's Catalogue of Building Services,* (New York: Sweet's Catalogue Service, 1915), 886.

[22] *New York Times*, October 5, 1926

himself.[23] He joined Cram but worked mostly from New York City. He eventually went on his own as he found it difficult for two mercurial architects to collaborate when their styles were moving in different directions.

Day Brothers & Klauder (Philadelphia)
[Cuyler Hall – Princeton University]

Frank Miles Day, brother of H. Kent Day, and Charles Z. Klauder practiced together in various combinations. They did work for a full range of private, public, and church clients. Princeton University, Pennsylvania State University, the University of Pennsylvania, University of Pittsburgh, Wellesley College, Yale University, and Cornell University. The Undergraduate Dormatories at Princeton University are considered their masterwork and is one of the prime examples of "Collegiate Gothic."[24] Henderson Brothers' work, particularly leaded glass with lead overlay medallions, embellishes much of this work. They specifically list Cuyler Hall in their Sweet's Catalogue Advertisement.[25]

Delano & Aldrich (New York City)

William Adams Delano and Chester Holmes Aldrich entered into a partnership that became "*the* quality country-house architectural firm in the United States."[26] Both men started their careers at Carrere & Hastings and were socially prominent from birth. Airports, schools, universities, museums, private clubs, and a variety of public buildings were important aspects of the firm's portfolio. In advertising, the firm listed 243 individual commissions. Thirty two Long Island

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23 David Garrard Lowe, "Lectures and Other Events: Bertram Grosvenor Goodhue: Master of Gothic and Art Deco," http://www.nylandmarks.org/events/lectures_and_other_events/bertram_grosvenor_goodhue_master_of_gothic_and_art_deco/ , The New York Landmarks Conservancy, (accessed June 23, 2011).
24 Philadelphia Architects and Buildings, "Day & Klauder (1913 - 1927) Architects," The Athenaeum of Philadelphia, http://www.philadelphiabuildings.org/faids/aaup/DayKlauder.pdf, (accessed April 12, 2012).
25 *Sweet's Catalogue of Building Services,* (New York: Sweet's Catalogue Service, 1915), 886.
26 Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940* (New York and London: W. W. Norton & Company, 1997), 127.

country homes, out of 110 homes listed in the advertising became the firm's lasting legacy.[27] A 1930 *Time Magazine* article stated, "D. & A. designs are never spectacular. Praised by other architects for their finesse, their nicety in detail, their discreet erudition, they may be truly said to constitute an architectural aristocracy."[28] Among their individual clients were prominent names including: Astor, Havermeyer, Kahn, Rockefeller, Vanderbilt, and Whitney. Almost any home and many of their other commissions were suitable for Henderson Brothers work.

J. H. Duncan (New York City)

John Hemenway Duncan practiced in New York City for about fifty years. He designed Grant's Tomb and the entrance arch at Prospect Park.[29] He also designed private homes, hotels, and other commercial buildings. He became a specialist in townhomes redoing the home of James C. Fargo, head of Wells Fargo, and designing a New York City home for banker Philip Lehman. Also in New York City, the Knox Hat Building on Fifth Avenue and the Wolcott Hotel are two of his notable commercial commissions.[30] Duncan's town houses were particularly suited for Henderson Brothers work as so many incorporated sidelights and transoms that contained Federal or Colonial style adaptations of leaded glass.[31]

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[27] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 129.
[28] Ibid., 127.
[29] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 41.
[30] *New York Times*, April 24, 2011
[31] Avery Architectural & Fine Arts Library, "John H. Duncan architectural records and papers, circa 1890-1930," Columbia University Libraries, http://www.columbia.edu/cu/lweb/archival/collections/ldpd_3464746/, (accessed June 12, 2011).

G. Howard Chamberlain (Yonkers, New York)

Chamberlain enjoyed a thirty year career as an independently practicing architect. He served as the architect for the Yonkers Board of Education for over twenty years; designing, altering, and maintaining community schools.[32]

Another important commission was the Philipsburg Building which included the still popular Roosevelt Hall, a large ballroom with thirty foot ceilings which was a center for social life in Yonkers and remains a popular banquet facility.[33]

Ewing & Chappell (New York City)

Charles Ewing and George Sheppard Chappell formed their partnership in New York City in 1904; it lasted for thirteen years. They designed Long Island homes although their major commissions do not survive.[34] Both graduates of the Ecole des Beaux-Arts, they were selected to design the buildings for the Connecticut College for Women.[35] Another important client was Alfred G. Vanderbilt for whom they designed a home in Newport, Rhode Island.[36] In cooperation with the firm of La Farge & Morris, Ewing & Chappell designed the Architect's Building which was located at 101 Park Avenue. The sixteen storey building housed some of New York City's elite firms including McKim, Mead, & White and Kenneth Murchison.[37] It also contained a first floor showroom (The Architects' Sample Room) displaying the work of

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[32] National Park Service Historic American Buildings Survey Mid-Atlantic Region, Philadelphia, PA, "Yonkers Public School No. 4, HABS No. NY-6298: Written Historical and Descriptive Data," Department of the Interior, http://memory.loc.gov/pnp/habshaer/ny/ny1500/ny1598/data/ny1598data.pdf, (accessed April 12, 2012).
[33] "About the Grand Roosevelt Ballroom," Grand Roosevelt Ballroom, http://www.rooseveltballroomny.com/aboutus.php, (accessed April 12, 2012).
[34] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 156.
[35] *The Day*. New London, CT, July 15, 1913, 3.
[36] *The Worcester Magazine: Devoted to Good Citizenship and Municipal Development* 18, no. 2, (Worcester, MA: The Chamber of Commerce, February 1915): xiv.
[37] Digital Murray Hill, "Architects Building, 1913," Mina Rees Library, CUNY Graduate Center, http://library.gc.cuny.edu/murrayhill/items/show/266, (accessed April 12, 2012).

craftsmen who embellished the architect's work. Henderson Brothers displayed ventilators, lead over-lay samples, colonial leading, and other ornamental glasswork there.

Ewing & Chappell employed Rockwell Kent as a renderer for a period prior to World War I. Kent, using his pseudonym "Hogarth Jr.", also illustrated humorous verse penned by Chappell.[38]

C. Charles Haight (New York City)

[Mason Laboratory, Sloane Laboratory, Laboratory of Zoology – Yale University]

Charles Coolidge Haight graduated from Columbia University in 1861, later studying law there. He designed buildings for Columbia University, the New York Cancer Hospital, and the Havemeyer House in New York City. At Yale University he designed Vanderbilt and Phelps Halls, the University Library, and the Mason, Sloane and Osborn laboratories, and dormitories for the Sheffield School of Engineering.[39] Haight also built country homes in Long Island. Henderson Brothers' leaded glass work can be found in several of these buildings with Mason and Sloane noted in the Sweet's Catalogue advertisement.[40]

H. J. Hardenbergh (New York City)

[Hotel Copley Plaza, Boston]

Henry Janeway Hardenbergh established his practice in 1870 and is most noted for his luxury hotel and apartment designs including: the Dakota Apartment House (1884), Waldorf Hotel (1892), and Plaza Hotel (1906) in New York City and the Copley Plaza Hotel in Boston where there exists documented Henderson Brothers work. Hardenbergh produced several designs for row houses which still exist in the Upper West Side/Central Park West Historic District. He is

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[38] Scott R. Ferris, "Essays on Rockwell Kent: The Bestowal," http://scottrferris.com/Essays/bestowal.html, (accessed April 12, 2012).

[39] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 57.

[40] *Sweet's Catalogue of Building services,* (New York: Sweet's Catalogue Service,1915), 886.

recognized for his "picturesque compositions, practical planning, and innovative use of historical style.[41] Hardenbergh also designed at least one Long Island home which is no longer standing.[42]

Hoppin & Koen (New York City)

Francis L. V. Hoppin and Terrence A. Koen worked together at McKim, Mead, & White before establishing their partnership in 1904. They were part of a partnership until Koen's death in 1923. Hoppin studied at the Massachusetts Institute of Technology and the Ecole des Beaux-Arts. One of their notable public commissions was the New York City Police Headquarters. They designed city and town homes for the social elite including at least seven on Long Island. In a 1903 interview published in *Scientific American Building Monthly*, Hoppin stated that the "design of a country home must proceed from 'a specific scheme . . . decided upon at the outset' encompassing both house and garden. It was an 'architectural garden' that Hoppin preferred, 'laid out on axial lines,' facing south with high walls."[43] Hoppin & Koen were in great demand along the East Coast for their residential work; one of their first commissions was for The Mount, the home of Edith Wharton.[44] Images of the Long Island homes designed by the firm detail the type of leaded glass work in which the Henderson Brothers specialized.

Hunt & Hunt (New York City)

Richard Morris Hunt is the first American to study architecture at the Ecole des Beaux-Arts in Paris. Many of the leading American architects of the next generations would follow him

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[41] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A61.

[42] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 206—207.

[43] Ibid., 218—219.

[44] Kay Davis, "The Mount: Edith Wharton and the American Renaissance," The University of Virginia, http://xroads.Virginia.edu, (accessed April 12, 2012).

there.[45] Son Richard Howland Hunt a graduate of the Ecole des Beaux-Arts entered the practice at the end of his father's career and later added his brother Joseph Howland Hunt, as partner. Richard Hunt's accomplishments included the completion of a new wing of the Metropolitan Museum of Art from a small sketch left by his father and buildings at Sewanee and Vanderbilt Universities.[46] Also a graduate of the Ecole des Beaux-Arts, Joseph Hunt's particular accomplishments included the East Wing of the Metropolitan Museum of Arts, 69th Regiment Armory, Castle Gould on Long Island, and Alumnae Building at Vassar College.[47] Among the clients of Hunt & Hunt were various members of the Vanderbilt family and Howard Gould. The firm designed country homes and city dwellings. They designed in a broad variety of styles and their Colonial Revival and Tudor work would have been ideally complimented by the skill of Henderson Brothers.

Kirby, Petit & Green (New York City [Kirby – Capri, Itlay])

Henry P. Kirby studied at the Ecole des Beaux-Arts and later became draftsman for George Browne Post, a pioneer in the development of skyscrapers. He most likely worked on the designs of the New York Stock Exchange and the Cornelius Vanderbilt house on Fifth Avenue 57th Street. After twenty years he was promoted to the position of head designer but left a year later to found his own firm. He partnered with John Petit and James Green. They designed a wide array of buildings including the Belle Terre Clubhouse in Port Jefferson, New York the Carnegie Institute Biological Laboratory in Cold Spring Harbor, New York, and the Hearst

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45 Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 223.
46 Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 69.
47 Ibid., 69.

Building in San Francisco, California.[48] A major client was Frank Nelson Doubleday for whom the firm designed Long Island country homes and his magazine's headquarters, the Country Life Press Building in Garden City New York.[49] They were noted for their "shingle-style" homes. Images from several of these homes detail the type of leaded glass in casement windows ubiquitous to the Henderson Brothers.

Ludlow & Peabody (New York City)

William Orr Ludlow received degrees in engineering and architecture from Stevens Institute of Technology and designed hundreds of buildings throughout the world before partnering with Charles Samuel Peabody. At Harvard, Peabody studied architecture and graduated from the Ecole des Beaux-Arts in 1908. The partnership of Ludlow & Peabody was started in 1909 and lasted until 1930. An interesting commission was buildings for the Sheldon Jackson School, now the Sheldon Jackson College in Sitka, Alaska. Ludlow was active in the Presbyterian Church and that is likely why the firm received this commission and for four churches in New York. Some other commissions included buildings for Peabody Teachers College (Nashville, Tennessee), Stevens Institute of Technology, and Skidmore College (National Historic Landmark Nomination.) The firm was also actively designed commercial skyscrapers including the seventy-eight story Johns-Manville Building and the Chase Tower in New York City.[50]

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[48] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 237.
[49] Ibid., 238.
[50] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 99/100.

E. H. Lyall (New York City)

Earl Harvey Lyall graduated from Amherst College and studied architecture at Columbia University and the Ecole des Beaux-Arts. He designed the Summit, New Jersey Public Library. Lyall was an architectural advisor to the United States government on building construction.[51] He is also noted for the illustrations for the children's book "The Cubies' ABC" written by his wife Mary Mills Lyall. The book was published after the Armory Show of 1913 which introduced modern art to the American public and it is a celebration of that art.[52] Lyall designed homes in New Jersey.[53]

McKim, Mead, and White (New York City)

Although there is no documented work by the Henderson Brothers from the firm of McKim, Mead, and White, they are a vital part of this project and an important part of Henderson family lore. As noted, many of the architects mentioned in this section passed through the offices of the firm. As the dominant architectural firm in the United States at the turn of the Twentieth Century, this is no surprise. With more than 1,000 designs in their portfolio, many people were kept very busy. With Stanford White, one of the mercurial figures in American architecture and society, the firm garnered press in many areas, not always good.[54]

Charles Follen McKim was the senior partner and thinker of the firm. He studied briefly at Harvard and then left for the Ecole des Beaux-Arts for three years. In 1870 he went to work for H. H. Richardson and worked on the plans for the iconic Boston Trinity Church. He eventually

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[51] *New YorkTimes,* June 10, 1932, 19.
[52] "The Cubies," Amazon, http://www.amazon.com/The-Cubies-ABC-Francis-Naumann/dp/0980055644, (accessed 8/19/2012).
[53] "Libraries and Museums," *American Contractor: The Business Journal of Construction* 37, no. 17, (Chicago: The American Contractor Publishing Co., April 22, 1916): 21, http://books.google.com/books?id=Ni9YAAAAYAAJ&printsec=frontcover&dq=editions:5TLXr6aXAzgC&hl=en&sa=X&ei=dflxUYSyM5Wo4APg5YHQCg&ved=0CEMQ6AEwBA#v=onepage&q&f=false. (accessed April 12, 2012).
[54] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 273.

came to New York and entered a partnership with William Mead in 1877. McKim supervised 1906 additions to the White House.[55]

William Rutherford Mead graduated from Norwich University and Amherst College, apprenticed in the offices of architect Russell Sturgis for three years, and then studied at the Academia delle Belle Arti in Florence. In 1872 he partnered with McKim.[56] He served as administrator and office manager for the firm.[57] In 1902, for his work in introducing Roman and Italian Renaissance design into America, King Victor Emmanuel decorated Mead as a Knight Commander of the Crown of Italy.[58]

Stanford White wished to become an artist but family friend John La Farge talked him out of it with tales of the "starving artist". White entered the practice of H. H. Richardson. He joined the partnership of McKim & Mead in 1879 after a year of European travel. He was murdered by socialite Harry K. Thaw in a lover's quarrel regarding actress Evelyn Nesbitt. Ironically, the murder occurred in the rooftop garden of Madison Square Garden which White had designed.[59]

The firm of McKim, Mead, and White became synonymous with the "shingle-style" country home. Although their output stylistically went much beyond this style, it became their signature. They also designed in the Federal and Colonial Revival styles and incorporated those elements into their homes and other buildings.

Among the major works completed by the firm were: the Boston Public Library, buildings at Columbia University, the Morgan Library, Madison Square Garden, the New York Herald

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[55] Mary Ann Siano, Bronx Architecture, "Biographies: McKim, Mead, and White," Lehman College Art Gallery/CUNY, http://www.lehman.edu/vpadvance/artgallery/arch/bio/mead_white.html, (accessed April 12, 2012).
[56] Ibid.
[57] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 274.
[58] Mary Ann Siano, Bronx Architecture, "Biographies: McKim, Mead, and White," Lehman College Art Gallery/CUNY, http://www.lehman.edu/vpadvance/artgallery/arch/bio/mead_white.html, (accessed April 12, 2012).
[59] Elizabeth Lorin, Public Art in the Bronx, "Stanford White," Lehman College Art Gallery/CUNY, http://www.lehman.edu/vpadvance/artgallery/publicart/bio/white.html, (accessed April 12, 2012).

Building, the New York Racquet Club, Pennsylvania Station, the Rhode Island State Capital, and the American Academy in Rome.[60]

Gordon Henderson stated that his father remembered Stanford White coming into Henderson Brothers' shop to meet with the craftsmen and observe their work. Some stories survived. In one case, machinist Leonard Partucci was having difficulty pulling the lead through the came mill; the heart was straight but the flanges were uneven. White is purported to have said that that was precisely the look that he wanted for his Colonial and Federal style work. Thus was Henderson's Colonial Leading born. The second story has one of the men asking Stanford White why he always asked so many questions when he came in the shop. White answered, "My father told me if I don't ask any questions, I'll never learn anything."[61] White was putting a lead roof on a house and he mentioned to William Henderson that he wanted it to look four hundred years old as soon as it was installed. The firm came up with a system to flow lead in wooden trays filled with sand that created lead sheets appearing pitted and ancient, exactly the look White wanted.[62]

Henry G. Morse (New York City & Philadelphia)
[Electrical Laboratory – Yale University]

Henry G. Morse graduated from the Massachusetts Institute of Technology and had a professional association with Herbert Dudley Hale. Although primarily working in New York, he shared a Philadelphia office with Hale for more than five years.[63] Morse specialized in institutional buildings including the Carnegie Institute, the United States Engineers Building in

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[60] Mary Ann Siano, Bronx Architecture, "Biographies: McKim, Mead, and White," Lehman College Art Gallery/CUNY, http://www.lehman.edu/vpadvance/artgallery/arch/bio/mead_white.html, (accessed April 12, 2012).
[61] Gordon Henderson, interview by author, Towaco, NJ, December 15, 2006.
[62] Ibid.
[63] Sandra L. Tatman, Philadelphia Architects and Buildings, "Morse, Henry G. Architect (1884 - 1934)," The Athenaeum of Philadelphia, http://www.philadelphiabuildings.org/pab/app/ar_display.cfm/26250, (accessed April 12, 2012).

New York.[64] Henderson Brothers provided leaded glass windows for the Electrical Laboratory at Yale University.[65]

Kenneth Murchison (New York City)
[St. Elmo Club – Yale University]

Kenneth Murchison graduated from Columbia University with a philosophy degree in 1894. He studied at the Ecole des Beaux-Arts between 1897 and 1900. Among his many projects were rail stations in Hoboken, New Jersey, Buffalo, New York, and Havana, Cuba, the Dunes Club in Narragansett, Rhode Island, the Sands Point Bath Club, Long Island, New York, and the Beaux Arts Apartments at 310 East Forty-fourth Street. He designed many hotels, office buildings, clubs, and apartment buildings.[66] He also built one Long Island Country home in an English country style.[67] Murchison was honored by the French government on January 28, 1931 by being named a Chevalier of the Legion of Honor for his work promoting the "educational principles of the Ecole des Beaux-Arts of Paris in connection with the student work of the Beaux-Arts Institute of Design" in the United States.[68] Henderson Brothers embellished his St. Elmo Club building at Yale University.[69]

W. H. Orchard (Rochester, New York)

William H. Orchard was partners in the firm of Gordon, Bragdon, and Orchard. Notable commissions included many railroad stations, the new building for the Rochester Atheneum, and

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[64] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 92—93.
[65] *Sweet's Catalog of Building Construction,* (New York: Sweet's Catalogue Service, Inc., 1915), 886.
[66] *New York Times*, December 16, 1938.
[67] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 306.
[68] *New York Times*, January 28, 1931.
[69] *Sweet's Catalogue of Building Services,* (New York: Sweet's Catalogue Service, 1915), 866.

the Rochester Mechanics Institute.[70] The firm also won the competition for a new City Hall for New York City and the accompanying prize of two thousand dollars; this design was not used.[71]

Pell & Corbett (New York City)

Francis Livingston Pell graduated from the School of Architecture at Columbia University.[72] In 1899 he won the McKim Travelling Scholarship in Architecture and studied in Paris and Rome. When he returned to the United States he entered the firm of George B. Post and worked on designs for the buildings of City College.[73]

Harvey Wiley Corbett graduated from the University of California at Berkeley and the Ecole des Beaux-Arts. He was an early champion of the skyscraper both in the United States and England. He was also associated with the planning and design of Rockefeller Center. Corbett stated "that utility, light, and air" were requirements of modern building that could be supplied by skyscrapers.[74]

The partnership of Pell and Corbett won the AIA Medal of Honor for their design for the Maryland Institute in Baltimore. They designed the building of the New York School of Applied Design for Women, completed in 1908, among their many New York buildings.[75]

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[70] River Campus Libraries, "Bragdon Family Papers: Claude Bragdon Architectural Drawings," University of Rochester Libraries, http://www.lib.rochester.edu/index.cfm?page=802, (accessed April 12, 2012).
[71] Erville Costa, "Claude F. Bragdon, Architect, Stage Designer, and Mystic," *Rochester History* 29, no. 4 Blake McKelvy, Ed., www.rochester.lib.ny.us/~rochhist/v29_1967/v29i4.pdf, (Rochester: Rochester Public Library, October 1967): 5.
[72] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 100.
[73] *New York Times,* September 8, 1945, 15.
[74] *New York Times*, September 22, 1954, 29.
[75] "New Home for Women's School," *New York Times,* July 26, 1908, C4.

John Russell Pope (New York City)
[Frick Museum 70th Street & 5th Avenue, New York City]

A graduate of Columbia University, Pope also studied at the American Academy in Rome and the Ecole des Beaux-Arts. He established an independent practice in New York City in 1903. In Washington, D.C. he designed the National Archives Building, the National Gallery of Art, and the Jefferson Memorial. New York City commissions included the Roosevelt Memorial Wing of the American Museum of Natural History, the Mrs. Graham Fair Vanderbilt home, and the Frick Reference Library which has casement windows installed by Henderson Brothers.[76]

Pope was also a notable designer of country homes in Long Island and commissions came from William K. Vanderbilt, William L. Stow, J. Seward Pulitzer, Marshall Field III, Charles A. Gould, and many others.[77]

Radcliffe & Kelly (New York City)

No personal information could be found on this partnership. They designed a ten story apartment building on Riverside Drive (The Sun). At the turn of the Twentieth Century, the firm is listed many times in the *New York Times* Building Department News designing and altering buildings from four to ten or more stories as residential units.

Renwick, Aspinwall & Tucker (New York City)

James Renwick graduated from Columbia College in 1836; he earned his M.A. in 1839 from the same institution. He was selected architect for the iconic Grace Church with little

[76] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A115.
[77] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 357—62.

experience, but it cemented his reputation and earned his firm fantastic commissions.[78] J. Lawrence Aspinwall practiced for more than sixty years; among his major accomplishments with the firm were assisting with St. Patrick's Cathedral and designing the stone spire of Grace Church.[79] There is little information about Fitz-Henry Faye Tucker. He was in independent practice for at least a year prior to partnering with Renwick & Aspinwall in 1904.[80] The firm was also noted for the diversity and quality of its residential commissions on Long Island.

C. A. Rich (New York City)

Charles Alonzo Rich practiced with Hugh Lamb and later with Frederick Mathesius. Between 1899 and 1903 he maintained a solo practice. Among the designs completed by his firms were: the Pratt Institute Main Building, Brooklyn, New York; Millbank, Brinkerhof and Fiske Halls at Barnard College, New York City; the Harlem Club and Harlem Free Public Library; and buildings at Colgate, Dartmouth, Smith, Williams, and Amherst Colleges. Rich and his associates were also very active in residential design, both in individual homes and in row housing in a wide variety of historically derived styles.[81]

Rouse & Goldstone

William L. Rouse graduated from Stevens Institute of Technology in 1904. He specialized in apartment buildings. Lafayette A. Goldstone apprenticed with a variety of firms after moving to New York City at the age of fifteen. He became a talented draftsman ultimately gaining

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[78] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 372.
[79] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 5.
[80] Jay Shockley, "American Express Company Building: LP—1932," Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/amerexpress.pdf, (accessed April 12, 2012).
[81] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, (accessed April 12, 2012), A86—87.

employment with the prominent construction firm Norcross Brothers. Rouse & Goldstone was formed in 1909 and continued as a partnership until 1933. They both continued working independently afterwards. The firm is most noted for its opulent Renaissance Revival apartment buildings; they also designed theatres, hotels, and Long Island country houses.[82]

Starrett & Van Vleck (New York City)

[Albany High School]

Goldwin Starrett graduated from the University of Michigan in 1894. His first experience came in the office of famed architect Daniel Burnham, in Chicago.[83] Starrett and Ernest Alan Van Vleck formed a partnership in 1907. The firm specialized in commercial buildings, skyscrapers, and schools. Among their major notable commissions included: Lord & Taylor; Saks Fifth Avenue; Bloomingdales; and the Downtown Athletic Club.[84] The Henderson Brothers produced work for this firm at the Albany (New York) High School.[85]

Robert Stephenson (New York City)

Robert Storer Stephenson graduated from Amherst College and entered the practice of McKim, Mead and White. He then created a partnership Stephenson & Wheeler.[86] Their firm designed small apartment buildings, renovations, and alterations throughout New York City as evidenced by records from the City Building Department. Larger projects included the 400,000 square foot Brewster Automobile Factory in Long Island City, New York. It was noted for its

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[82] David Lubell, "The Architects: Rouse and Goldstone," Prewar Passion: The Quest for the Perfect New York Apartment, http://prewarpassion.com/rouse-goldstone/, (accessed April 12, 2012).

[83] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 121.

[84] *New York Times*, August 9, 1956.

[85] *Sweets Catalogue of Building Services,* (New York: Sweet's Catalogue Service, 1915), 866.

[86] *New York Times*, May 28, 1929.

high clock tower.[87] Stephenson designed many churches but the bulk of his work was residential.[88] Transoms and Colonial leaded arched windows are synonymous with the type of residential work done by this firm, some of which survives and contains leaded glass of the style of Henderson Brothers.

Alfred H. Taylor (New York City)

Taylor left his imprint in the Upper West Side/Central Park West Historic District with new façade designs for a store and apartment building.[89] Taylor also converted a a dwelling on West Sixty-fifth Street into offices for his firm, retail space, and bachelor apartments. With this conversion he increased the income of the building from $1,600.00 to $7,404.00 per month, which attracted interest from adjacent building owners in an area under encroachment from commercial interests.[90] The windows pictured in this remodel are consistent with Henderson Brothers leaded glass work.

W. B. Tubby (New York City)

William Bunker Tubby graduated from Brooklyn Polytechnic Institute in 1875; he then worked for architect Ebenezer L. Roberts. In 1883 he opened his own firm which he continued for fifty-nine years. Among his major non-residential commissions were the library at Pratt Institute; Brooklyn's 83rd Police Precinct House; the Nassau County Court House in Mineola, Long Island; and five Carnegie funded libraries in Brooklyn. A home designed for William H.

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87 Christopher Gray, "Streetscapes/Long Island City, Queens: After Hard Times, 1910 Auto Factory Gets New Life," *New York Times*, July 22, 2001.
88 Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 390.
89 Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A145.
90 *New York Times*, September 27, 1908, 14.

Childs is now used as the Brooklyn Ethical Culture Society Meeting House.[91] The Nassau County Court House was an unusual design for its time because of its extensive use of reinforced concrete.[92] This was part of his efforts to make safer, fire-proof buildings. Tubby buildings with reinforced concrete for fireproofing included: the Wool Exchange Building; Brooklyn Warehouse and Storage Company's building; and the Pratt Institute Library.[93] Tubby was a noted designer of middle class homes and country estates, many for people living in Brooklyn. His designs for the Pratt residences and out-buildings in Long Island along with other commissions were a highlight of this part of his work.[94] Henderson Brothers work would clearly have been appropriate in any of the renovations or newly designed Brooklyn or country homes from William Tubby's drawing board.

Walker & Gillette (New York City)
[The Goshen Inn, Goshen, New York]

Alexander Stewart Walker graduated from Harvard University. Leon N. Gillette attended the Ecole des Beaux-Arts. He worked for Warren & Wetmore before partnering with Leon Gillette. Gillette attended the University of Minnesota and earned a degree in architecture from the University of Pennsylvania in 1899. He then studied at the Ecole des Beauz-Arts.[95] They earned commissions and awards in all areas including: private residences; banks, apartment and

[91] Virginia Kurshan, "Brooklyn Public Library, DeKalb Branch: LP—2054," Landmarks Preservation Commission, The City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/dekalb.pdf, (accessed April 12, 2012).
[92] "Old Nassau County Courthouse," Society for the Preservation of Long Island Antiquities, www.splia.org/newsletter/fall2002/oldnassau_court.htm, (accessed April, 12, 2012).
[93] "The Nassau County Court House," *Insurance Engineering: Devoted to the Science of Diminishing Hazards to Property and Life* 3, no. 2 (New York: The Insurance Press, February 1902): 140.
[94] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 413.
[95] Ibid., 423.

office buildings; hospitals, clubs, museums, and hotels.[96] The firm designed the Fuller Building in New York City and the Havana branch of New York's National City Bank.[97] Walker & Gillette produced many Long Island homes with Ralph Pulitzer as a client. Their residential work was award-winning.[98] The Henderson Brothers produced leaded and stained glass for the Goshen Inn, Goshen, New York for the partnership.[99]

Warren & Wetmore (New York)
[Vanderbilt Hotel, New York City]

Whitney Warren studied at Columbia University and the Ecole des Beaux-Arts. When he returned to the United States he entered the practice of McKim, Mead, and White.[100] Partner Charles Delavan Wetmore graduated from Harvard Law School and practiced law. Wetmore consulted Warren on a design for his home and they became partners in 1898. Their first commission as a firm was for the New York Yacht Club building.[101] Warren & Wetmore designed Grand Central Terminal and specialized in railway stations, hotels, and commercial buildings.[102] The firm designed numerous Long Island country homes and their clients included the Vanderbilts and Guggenheims.[103] The firm commissioned Henderson Brothers to produce an

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[96] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A157.
[97] Christopher Gray, Havana's New York Accent, *New York Times*, March 18, 2012
[98] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 422.
[99] *Sweet's Catalog of Building Construction,* (New York: Sweet's Catalogue Service, Inc., 1915), 191, 886.
[100] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 434.
[101] Ibid., 434.
[102] Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 137.
[103] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 435, 437.

arched leaded glass transom for the Vanderbilt Hotel. It is heavily decorated Henderson project using a variety of cast lead ornaments in a Georgian design.[104]

Werner & Windolph (New York City)

August P. Windolph graduated from Columbia University in 1892.[105] Harold Hallowell Werner graduated from the College of the City of New York and then graduated from the Columbia School of Mines with a degree in architecture. Werner and Windolph were Columbia classmates; in 1894 they entered into partnership.[106] The large German-American population in Brooklyn and Manhattan turned to this firm for their suburban homes. They designed buildings associated with the Croton Aqueduct, schools, and homes in Connecticut, New Jersey, and New York.[107] Images of residences in Far Rockaway, New York detail the half-round leaded windows commonly shown in Henderson Brothers advertising.[108]

Willauer, Shape & Bready

Arthur Ebbs Willauer graduated from the University of Pennsylvania in 1897. His first professional experience was in the offices of New York architect George B. Post. Later he formed the firm of Waid & Willauer. After that firm dissolved he became the principal in the firm of Willauer, Shape & Bready. He died unexpectedly in 1912 during a hospitalization.[109]

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104 *Sweet's Catalog of Building Construction,* (New York: The F. W. Dodge Co., 1914,) 167.
105 Earle G. Shettleworth, Jr., "Brief Biographies of American Architects Who Died Between 1897 and 1947," www.sah.org/.../brief-biographies-of-american-architects-who-died-between- 1897-and-1947.pdf, Society of Architectural Historians, (accessed December 23, 2011), 140.
106 General Joshua L, Chamberlain, LL.D., Ed., *Universities and Their Sons: History, Influence and Characteristics of American Universities with Biographical Sketches and Portraits of Alumni and Recipients of Honorary Degrees, 1900, 158.,*
107 Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 440.
108 Ibid., 441.
109 Walter Alexander Davis, Ed., *The Scroll of Phi Delta Theta* 37, no. 5, (Menasha, WI, May 1913): 476/77.

Robert Louis Shape graduated from Cornell University. His studies were in engineering. He served as a construction superintendent on the New York Stock Exchange designed by George B. Post. He worked on government ship building during World War I, served as an engineer and architect for government projects in the Works Progress Administration, and helped design numerous Long Island country homes with his various partners.[110]

There is a paucity of information regarding George I. Bready. He was partners in various firms, working for an extended period with Robert Louis Shape. In an article by nephew James Bready, it is noted that he retired in the 1920s and retired to the French Riviera with his wife. The work for which he was most proud was the Candler Building, in New York City.[111]

York & Sawyer (New York City)

Edward Palmer York graduated from Cornell University and served as personal assistant to Stanford White at the firm of McKim, Mead, and White for eight influential years. Phillip Sawyer trained and worked as an engineer with the United States Geological Survey eventually completing drainage surveys at Yellowstone. He then studied architecture at Columbia University and the Ecole des Beaux-Arts. He went to work at the offices of McKim, Mead, and White where he met Edward York. In 1898 they went into partnership and after winning a competition for the Rockefeller Recital Hall at Vassar College, Poughkeepsie, New York, their reputation as a firm was established.[112]

Their firm designed in a classical style and they had commissions at Vassar College among their many college or school buildings. They also designed more than two dozen hospitals,

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[110] Robert B. MacKay, Anthony K. Baker, and Carol A. Traynor, eds., *Long Island Country Homes and Their Architects, 1860—1940,* (New York and London: W. W. Norton & Company, 1997), 207.
[111] James Bready, "A Memorable Place," Special to the *Baltimore Sun,* http://articles.baltimoresun.com/2000-06-11/travel/0006280340_1_menton-bready-virgin-islands, June 11, 2000.
[112] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A165.

many office buildings and almost fifty banks. In New York City they designed the buildings of the New York Historical Society, the Federal Reserve Bank, and many elegant townhouses.[113]

[113] Margaret M. Pickart, Upper West Side/Central Park West Historic District Designation Report Volume I: Essays/Architects' Appendix, April 24, 1990, Landmarks Preservation Commission, City of New York, www.nyc.gov/html/lpc/downloads/pdf/reports/UWS_CPW_Vol1.pdf, A166.

Appendix D

Individuals and Firms Associated With Henderson Bros., Ernest, and Gordon Henderson

S. A. Bendheim

Passaic, New Jersey & New York City

In 1927, Seth Bendheim started his firm to wholesale imported German sheet glass for the stained and leaded glass trade. Soon after, the country fell into the Great Depression and many firms were struggling. Bendheim went door to door to the local studios and offered glass on credit, unheard of for smaller studios.[1] Gordon Henderson said that Ernest Henderson told him regarding Seth Bendheim:

> He catered to individual makers and was willing to sell small amounts of glass. He was a man of great integrity and was responsible for the success of many small studios by supplying them with quality glass. His business acumen allowed many small businesses to survive and built a loyal customer base for his own.[2]

In the 1940s, Fred Jayson married into the family and eventually became a salesman for the firm. He travelled often to visit major studios and worked all the trade shows. He eventually took over the reins of the firm. Under his leadership, the warehouse facility was moved to an old factory building in Passaic, New Jersey. The company maintains showrooms in their New York building and rents the remainder of the space, a more wise use of space than storing glass for the bottom line. Today, Jason's three sons are all involved with the firm which has a distribution center on the West coast and has expanded into many other areas of architectural and structural glass products.[3]

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[1] Fred Jayson, interview by author, Passaic, NJ, June 6, 2011.
[2] Gordon Henderson, interview by author, Towaco, NJ, December 20, 2004.
[3] Bendheim, "The World of Bendheim—The Resource for Specialty Glass Since 1927," S. A. Bendheim, LTD., www.bendheim.com, (accessed January 3, 2012).

G. Owen Bonawit (See Henderson Brothers Chapter)

G. Owen Bonawit was a specialist in secular stained glass with work found in major universities including Yale, Duke, and Northwestern. He specialized in painted medallions most often using simple outline and mat highlighted with silver stain to produce complex images set into diamond and rectangle quarries of plain glass. Bonawit apprenticed in the shop of his uncle Owen Bowen who was partners with Otto Heinigke, a pioneer neo-gothic stained glass artist in New York City. He opened his own studio after a brief partnership with Henry Wynd Young, an almost legendary figure in the neo-gothic glass movement (at least partly because so little is known about him.)

From 1918-1941 Bonawit operated his studio. He abruptly quit the trade at that time, destroyed his studio records, and became a photographer. He left an important body of work in prominent locations both in secular and ecclesiastic work. Gay Walker published an excellent work *Bonawit, Stained Glass & Yale: G. Owen Bonawit's Work at Yale University & Elsewhere.*

James A. Bosland

Gordon Henderson described James Bosland as a "Hollander from Midland Park, he did most of his work for small Dutch churches in Bergen county and surrounding areas."[4] Working in a traditional method he integrated bright colors into his lettering and backgrounds, bringing a contemporary look to his design. Gordon Henderson did some outside work for Bosland and visited him often at his Paterson studio.

[4] Gordon Henderson, interview by author, Towaco, NJ, March 1, 2007.

Figure 200. James A. Bosland business card.[5]

Figure 201. James A. Bosland's window
Christ Blesses the World, on display in his studio, c. 1954.[6]

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[5] Author's collection
[6] North Jersey Images,
http://northjersey.mycapture.com/mycapture/enlarge.asp?image=22786424&event=704260&CategoryID=50979, Album ID: 704260 Photo ID: 22786424, (accessed January 3, 2013).

Figure 202. *Christ Blesses the World* window, c. 1954, Reformed Church, Boonton, New Jersey, Restored in 2010 by Racine Art Glass.[7]

Peter Browne

Pete Browne was a painter for Henderson Brothers; he worked on the J. Scott Williams designed windows for Hammerstein's Theatre, now the Ed Sullivan Theatre, in New York City. He did some work for Ernest Henderson. Gordon Henderson kept in

[7] Author photograph.

touch with him and conversed with him about his experiences working at Henderson Brothers.[8]

Figure 203. Business Card, P. J. Browne, formerly of Henderson Brothers.[9]

Rudy Buenz

Rudy Buenz came to the United States from Germany in 1925. In Germany he was trained in the art of stained glass through his schooling.[10] When he came to New York he worked briefly for A. L. Brink, a firm that specialized in flesh painting for other firms—heads, hands, and feet. He also worked for Calvert, Herrick, and Reddinger, another New York firm.[11] He worked briefly for Tiffany. Gordon Henderson stated that Buenz was one of many who passed through Tiffany Studios but found the artistic constraints limiting.[12] In 1933 he went into business on his own. He bought an old barn in Newton, New Jersey which he converted into a studio. He produced work locally and in churches around the country. Gordon Henderson stated that Buenz made an important contribution

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[8] Gordon Henderson, interview by author, Towaco, NJ, November 9, 2008.
[9] Author's collection.
[10] Maribell Rhodes, "Newton man is master at the art of making stained glass windows," *Sunday Herald,* April 6, 1980.
[11] Gordon Henderson, interview by author, February 16, 2009.
[12] Gordon Henderson, interview by author, March 6, 2007.

to the trade by bringing in young local apprentices to learn the trade, some of whom became prominent in their own right.

Henderson visited the Newton studio many times and did some work for him as Buenz aged. At the end of his career, he worked alone, doing his installations mostly by himself. Henderson stated that he custom built extra high workbenches so he could work straight out in front of himself because after so many years of tedious work he had trouble bending over, a common ailment among glassmen. According to Gordon Henderson, Rudy Buenz was responsible for bringing Albrecht Holz over from Germany who found a career with Payne-Spiers.[13]

Figure 204. Rudy Buenz design for window, gift to Fred Jason, S. A. Bendheim, Co.[14]

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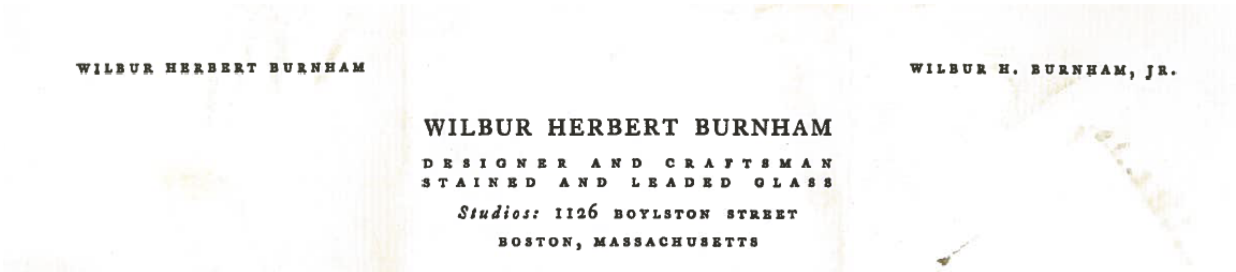
[13] Gordon Henderson, interview by author, Towaco, NJ, March 6, 2007.
[14] Author photograph, office of Fred Jason, S. A. Bendheim, Inc., Passaic, New Jersey.

Burnham Studios (Boston, Massachusetts)


WILBUR HERBERT BURNHAM

WILBUR H. BURNHAM, JR.

WILBUR HERBERT BURNHAM

DESIGNER AND CRAFTSMAN

STAINED AND LEADED GLASS

Studios: 1126 BOYLSTON STREET

BOSTON, MASSACHUSETTS

Figure 205. Letterhead, Burnham Studios, c. 1965.[15]

Boston, Massachusetts stained glass design firm, Wilbur H. Burnham Studios, was founded by master stained glass craftsman Wilbur H. Burnham, in 1922. Together with Charles J. Connick and Joseph G. Reynolds, Burnham studios became recognized as one of the most prominent stained glass design companies in the United States. Burnham took early commissions from influential American architect Ralph Adams Cram, and believed strongly in the medieval stained glass tradition. In the late 1930s his son, Wilbur H. Burnham, Jr., who had received an informal education on tours of Europe with his family, and a BFA from Yale University, joined the firm.

Some of the studio's most notable commissions included seventeen windows for the Washington National Cathedral in Washington, D. C., all the windows and murals for Saint Mary's Cathedral, Peoria, Illinois, ten windows for the Cathedral of Saint John the Divine in New York City, and five for the Riverside Church, also in New York City. Both Wilbur Herbert Burnham and Wilbur Herbert, Jr., served as presidents of the

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[15] Author's collection.

Stained Glass Association of American. Burnham, Jr., took over the studio in 1968 when his father retired, and sold the studios in 1982.[16]

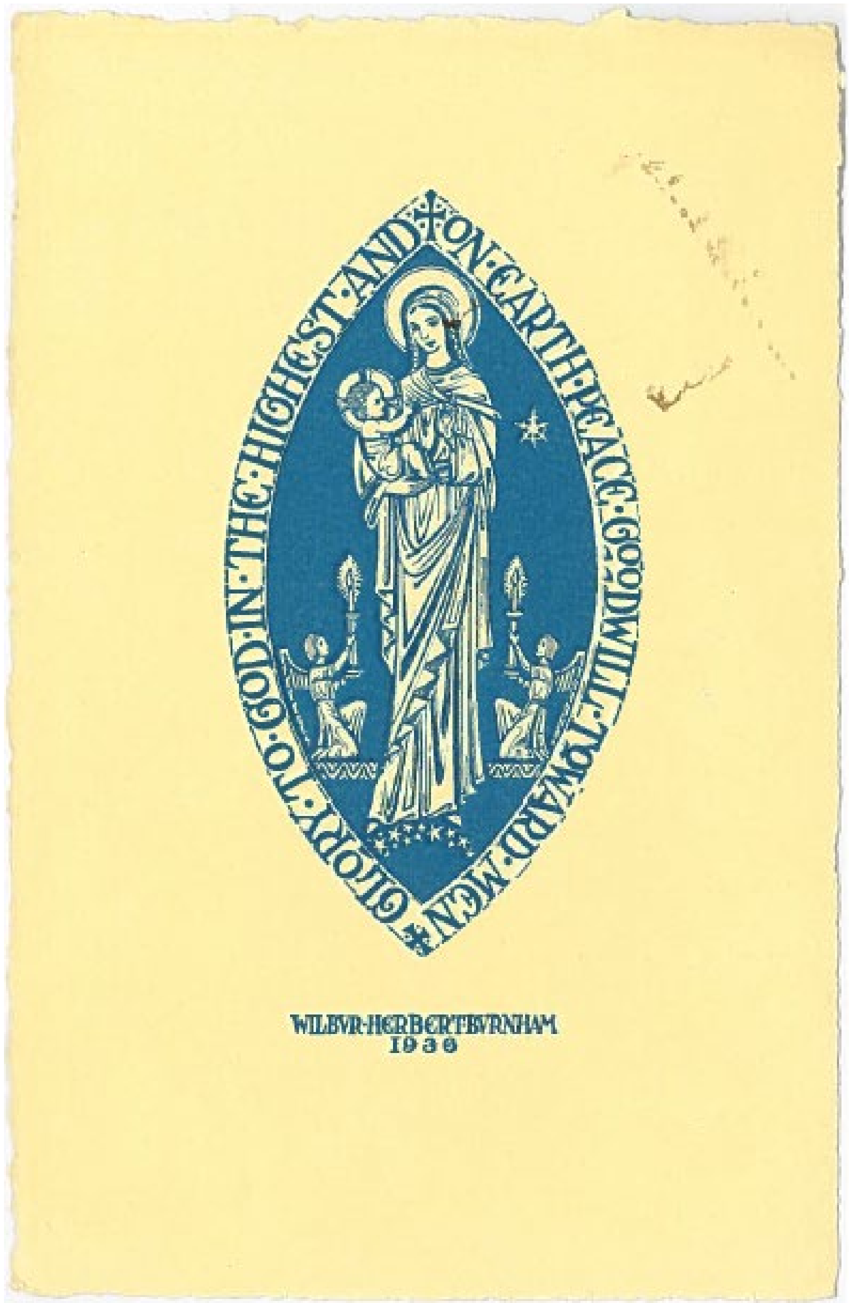

Figure 206. 1936 Christmas card, Wilbur Herbert Burnham, an example of neo-Gothic style.[17]

[16] Wilbur H. Burnham Studios records, circa 1904-1991. Archives of American Art, Smithsonian Institution. http://www.aaa.si.edu/collections/wilbur-h-burnham-studios-records-9766/more, (accessed January 13, 2012).
[17] Author's collection.

The Burnhams designed in a modern gothic style that bridged traditional layouts with contemporary features. It was a style shared, in part, with the other Boston masters.

Figure 207. Burnham Studios window design, c. 1944.[18]

[18] Associated Press Wirephoto. (May 10, 1944, author's collection). This unusual design of The Virgin Mary holding a destroyer escort instead of the Christ Child is installed in the Chapel of Our Lady of Victories, Norfolk, Virginia Naval Base[18]

Charles J. Connick Associates (Boston, Massachusetts)

> When he stopped me on a busy street one Saturday night, he said rather timidly, "You're an artists, aren't you? I saw you this afternoon at the Athletic Meet and I saw your stuff in the *Press* tonight. I'm an artist too; I'm from Philadelphia; my name is Rudy, my place is upstairs here, and if you'll come up I'll show you something interesting."
> He was a little nervous and so was I, although greatly pleased to be called an artist . . . of course I followed him upstairs, above Davis' real estate office.
> I sensed at once he was lonely. As he searched for a match, he talked about the Philadelphia Academy and his friends there. He mentioned names like Eakins, Henri, Sloan and Glackens; but when a match flashed and he lighted the gas, I was transported into a fairyland so strange and lovely that I heard little he said.
> I thought of crisp flowers glistening in frosty light, of unnamed jewels in dusky caves, of a quotation about undiscovered loveliness, and of hasty surmises I've since forgotten, but I've never forgotten that burst of uncertain color in a flickering half-light. It was my introduction to the stained glass craft, and I wish everyone could meet it in some such fashion.[19]

Charles J. Connick spent a year as an apprentice to Horace Rudy in Pittsburgh before moving to New York City, finally settling in Boston. He opened his firm located at 9 Harcourt Street, Back Bay, Boston in 1913.[20] There was ample light and the firm had a multi-story easel window on which they could work and display even the largest of their commissions. Connick was a leader of the neo-Gothic glass movement; he gained many commissions from the architectural firm of Ralph Adams Cram, the leading proponent of the style in the United States. His work adorns churches all over the United States. This new style helped usher the end of the predominant opalescent style made popular by Louis Comfort Tiffany and others. He used much blue glass in his design and was criticized for it by English critics who nicknamed him "The Blue Glazier."[21] When viewing Connick's work in places like the Chapel at Princeton University the criticism

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[19] Charles J. Connick, *Adventures in Light and Color,* 3.
[20] "Connick Studio History," The Charles J. Connick Stained Glass Foundation. http://www.cjconnick.org/studio-history/ (accessed March 9, 2007).
[21] Gordon Henderson, interview by author, Towaco, NJ, May 9, 2007.

doesn't hold up. The cool blues mesmerize the viewer and create an environment both moving and peaceful. Charles Connick stated:

> If churches are made radiant and beautiful places of worship, we can have a spiritual regeneration without anyone knowing what is going on. Beauty can preach as very few men with bundles of words can preach. I want to make beautiful interiors for both churches and souls. I want people to hear my windows singing..."[22]

Charles Connick wrote *Adventures in Light and Color: An Introduction to the Stained Glass Craft* in 1937. It is still considered one of the seminal works on stained glass. He published numerous articles in magazines and journals of all sorts and his studio was the focus of many features. The firm produced thousands of stained glass windows and was the largest manufacturer of its period. Charles J. Connick died on December 28, 1945.

> Mr. Connick continually maintained that his windows should have been signed by many names for the men and women who worked with him "were like an extension of his spirit as well as his hands and brain."[23]

Orin Skinner joined Connick in 1920 and became known as his "Left-handed right hand man."[24] Skinner became president of the firm in 1945 after Connick's death and remained in that position until the doors were finally closed in 1986.[25] They were forced to close the workshop because it was "Impracticable for them to continue; the workers were growing older and the modern high-rises of Copley Square threatened the light source essential to their work."[26]

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[22] Gordon Henderson, interview by author, Towaco, NJ, May 9, 2007.
[23] *New York Times,* December 29, 1945, 13.
[24] Fundraising letter, The Charles J. Connick Stained Glass Foundation, LTD to members, November 5, 1991.
[25] Ibid.
[26] "Studio History, "The Charles J. Connick Stained Glass Foundation. http://www.cjconnick.org/studio-history, (accessed March 9, 2007).

The workers that were left decided to donate the drawings, designs, and documents of the studio to the Boston Public Library where they are housed as the Charles J. Connick Collection and are available for use by scholars.

Paul Crist (Paul Crist Studios Santa Fe Springs, California)

Paul Crist, studio owner and scholar, corresponded with Gordon Henderson regarding the history of American stained glass. They exchanged information and Crist visited Henderson in the mid-1990s. His focus, in his business and research, was lampshades and Gordon knew the field well. The results of his research were published in *Mosaic Shades: Volume II* listed as a comprehensive guide to the lampshade makers of New York City.[27]

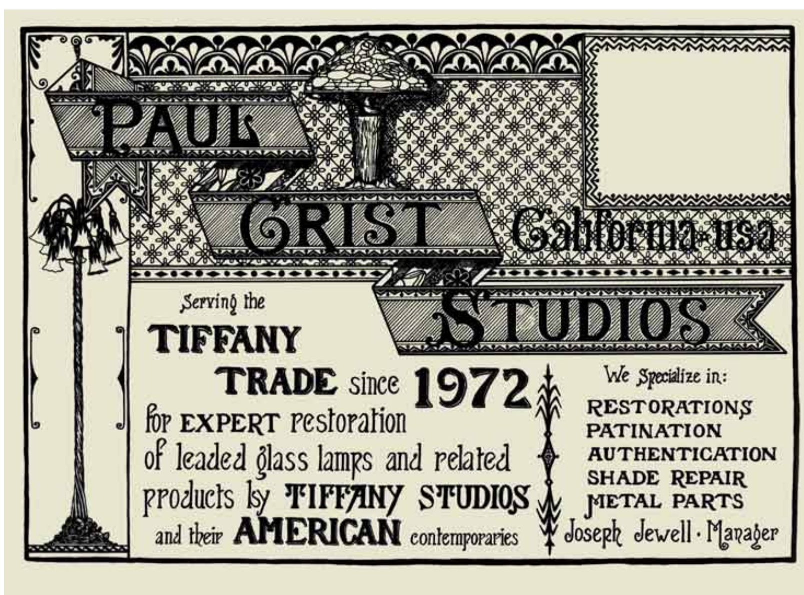

Figure 208. Front piece, Paul Crist Studios webpage.[28]

[27] Paul Crist, "*Mosaic Shades II, The Book*,"Paul Crist Studios, http://mosaicshades.com/book2005/index.html, (accessed December 2, 2012).
[28] Paul Crist, Paul Crist Studios, http://www.mosaicshades.com/pcs2005/index.html, (accessed December 12, 2012).

Wilhelm Derix (Derix Glasgestaltung, Stuttgart, Germany)

Derix Glasgestaltung is the world's largest fabricator of stained glass windows today. The studio was established in 1866.[29] They work with artists and designers worldwide. They are specialists in all aspects of stained glass work including: design, fabrication, installation, restoration, and project management. In the early 1980s Gordon and Barbara Henderson visited the firm while on a tour of Germany.

A series of letters were exchanged, with the firm asking Henderson to handle some of their work in the New York City metropolitan area. He had just sold his scaffold to Lamb Studios and wasn't really interested. After meeting with Wilhelm Derix in New York City, Derix offered to design and fabricate any new work Henderson received. He wrote:

> You mentioned that up until now you had always decline(d) new and larger windows because you wished to remain alone. Our suggestion is that you pass on any enquiries for such windows to us and we would then deal with them promptly.[30]

Henderson never did work with the firm, although they continued to stay in contact with him over the next decade.

Tommy DiGiacomo (Artist/painter)

Artist Tommy DiGiacomo designed and painted work for Ernest and Gordon Henderson when he worked at Marchese & Hamersma and Payne-Spiers. He did most of Gordon Henderson's work between 1946 and 1965 when he began working with Bill Baker. They had a good working relationship over that period.

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[29] "Welcome to Derix Glasstudios—Architectural Art Glass," Derix Glasstudios, http://www.derix.com/en/about.php, (accessed November 30, 2012).
[30] Wilhelm Derix to Gordon Henderson, letter, August 21, 1985.

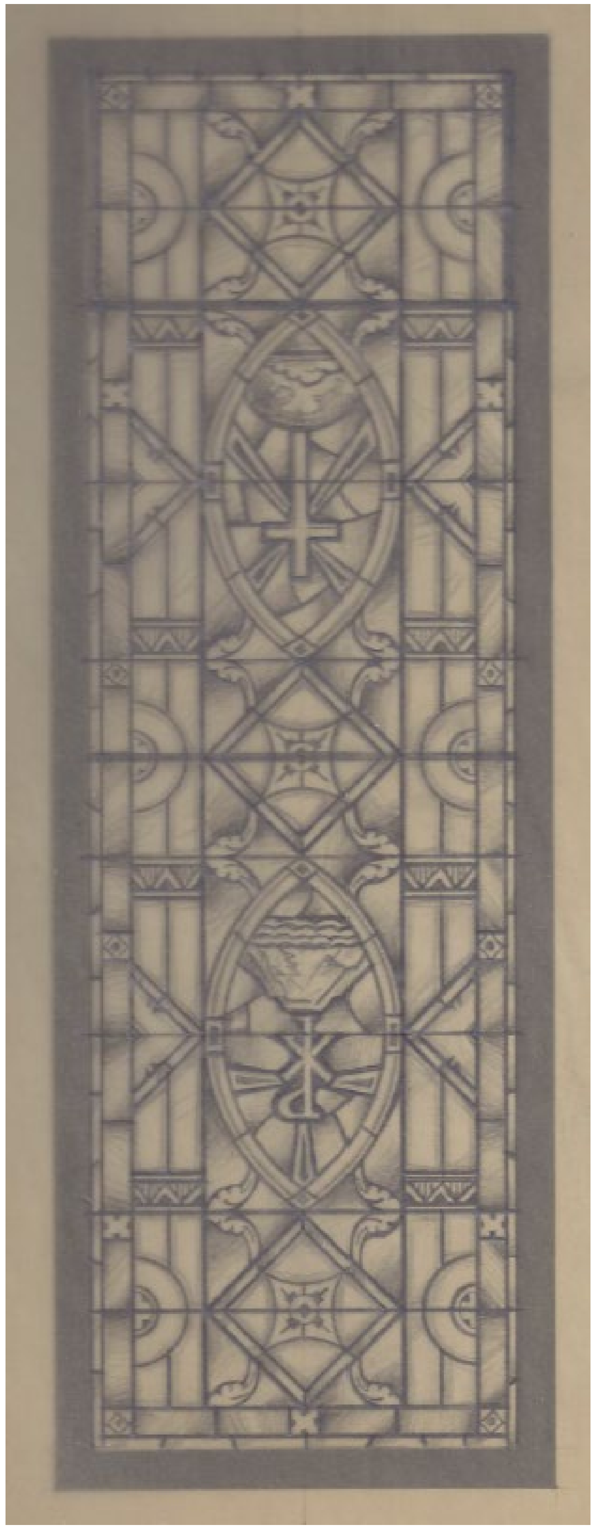

Figure 209. Tommy DiGiacomo pencil sketch, original size: 3 X 8 inches.[31]

[31] Author's collection.

Alistair Duncan (Christie's Fine Art Auctioneers, Vice President, Art nouveau/Art Deco, author)

Alistair Duncan is one of the great experts on Tiffany Studios in the world. He worked for years at Christie's New York City auction house reaching the position of Vice President for Art Nouveau/Art Deco. He corresponded and visited Gordon Henderson regularly while doing research for his many books on Louis Comfort Tiffany and his work. He sent an inscribed copy of his book *Leaded Glass: A Handbook of Techniques* to Henderson saying, "Nothing here I can teach you!"[32] Henderson lent him original prints from Tiffany Studios, which were published and never returned.

Duncan was later arrested and convicted for selling stolen Tiffany windows to customers in Japan who were willing to outspend American collectors. He had opened his own business consulting on the authenticity of Tiffany and other related work as well as selling these items. "Admitted career grace robber"[33] Anthony Casamassina actually stole the windows from New York City graveyards and sold them to Duncan. Although Duncan stated at trial that he was unaware that the windows had been stolen, he was convicted after an investigation and the testimony of Casamassina and his associates.

According to Gordon Henderson and others, there was a debate on the issue. Many of the windows had been vandalized, or the tombs in which they were set had been. Other mausoleums were in bad repair. Many thought that Duncan was, in fact, rescuing valuable windows from wanton destruction, from family plots unvisited for decades in rundown cemeteries.[34]

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[32] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[33] David Rohde, "Expert Guilty in Scheme to Steal Tiffany Glass From Tombs," *The New York Times* August 13, 1999.
[34] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.

George Durhan & Son New York City)

George Durhan was born in Gottingen, Germany, moving to New York City in 1891.[35] Soon after he was employed by Henderson Brothers, he took Ernest Henderson under his wing. Together, they free-lanced on some jobs.

Gordon Henderson loved to tell two tales about George Durhan and his father. One involved work, the other a girl. Gordon Henderson detailed how the two men had very different temperaments at the time—"George was ill-tempered and quite shy; the opposite of my father who was outward going and a devil with the ladies."[36]

Durhan and Henderson had moonlighted a job with a restaurant on 4th Avenue making a door light. The owner was holding up the bill. They went to collect the bill and the owner still refused to pay so Durhan kicked out the window. They all ended up down at the local precinct where they were let off but they did not collect. Ernest Henderson was mad; being more diplomatic he felt he might have gotten their five dollars.[37]

Another time, the two young men were sent to a repair job around Central Park East. At the time, many Irish and German servant girls were working there. Gordon Henderson related:

> It seems George saw this girl and was smitten with her. Being shy he pestered my father to approach her for a date; she did not want anything to do with him. George pestered my father for days. In desperation my dad finally went to see her and pleaded with her to come downstairs and tell him herself. She did—and low and behold—she agreed to go out with him. George went to a tailor and had a suit made with pants tailored so as to hide his bow-legs. In time he married the girl.[38]

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[35] *New York Times,* September 13, 1939, 32.
[36] Gordon Henderson Unpublished Autobiography.
[37] Ibid.
[38] Ibid.

Durhan opened his own firm in the early part of the twentieth century. His firm employed many prominent individuals in the trade including J. Gordon Guthrie and later Elbinus Elskus. Guthrie's hand may be seen in many of the firm's later designs. In 1927, son William became partners with his father in the firm George Durhan & Son. William continued to run the firm after his father's death in 1939 until his own death in 1963.[39] The firm was sold out of the family and presently continues under another name.

Erkins Studio (New York City)

Figure 210. Erkins Studios Advertisement.[40]

Ernest Henderson had employment with Erkins briefly. The firm specialized in reproductions of classical ornamentation and stonework. They would reproduce items in

[39] *New York Times*, June 8, 1963, 25.
[40] *House and Garden* 23, No. 6, (June 1913): 516.

cement and manufactured stone materials. It is here that Ernest Henderson learned how to set glass into cement for decorative purposes.

Henry Erkins produced a book titled *New York Plaisance: An Illustrated Series of New York Places of Amusement.* In the first volume, published in 1908, are images and descriptions of places to see and why. Most interesting are the eight pages of Erkins Studios advertisement featuring their various products with photographs of some monumental work. On one page is listed Stained Glass and Mosaics; on another there are stained glass lamps. These were all areas in which Ernest Henderson would be able to work.

Flanagan & Biedenweg   (Chicago)

Joseph Flanagan worked in several major Chicago glass firms before starting his own in partnership with William Biedenweg in 1885. The firm continued in the Flanagan family until it changed ownership in 1942. It became the largest producer of stained glass windows in the Chicago area. The firm won the Grand Prize for American Glass at the 1904 St. Louis World's Fair. Flanagan was instrumental in the formation of the National Ornamental Glass Manufacturers Association, now the Stained Glass Association of America.[41]

As noted earlier, the firm produced Henderson's Metallic Leading. William Henderson signed a contract with the firm on June 25, 1889.[42] Also as noted, the firm no longer advertised Henderson's Patent after the Wells Glass lawsuit. Ernest Henderson was sent by his father to help the firm with metal work.

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[41] Sharon S. Darling, *Chicago Ceramics & Glass: An Illustrated History from 1871 to 1933* (Chicago: Chicago Historical Society, 1979), 115.
[42] Joseph Flanagan (great-grandson) to Steven R. Racine, e-mail, April 2, 2013.

Figure 211. Centerfold of 1904 Flanagan & Biedenweg Co. Brochure with Details.[43]

William Henderson unsuccessfully sued Flanagan & Biedenweg in 1898 and 1925 trying to regain money he felt owed.[44]

[43] Image courtesy Joseph Flanagan.
[44] Joseph Flanagan (great-grandson) to Steven R. Racine, e-mail, April 2, 2013.

Alice Cooney Frelinghuysen
Metropolitan Museum of Art   New York, New York

Alice Cooney "Nonnie" Frelinghuysen, while serving as Andrew W. Mellon Fellow, American Decorative Arts at the Metropolitan Museum of Art, developed a relationship with Gordon Henderson. They came to the Hendersons' home looking for glass to fix the fountain donated by Lillian Nassau. After the visit she wrote:

> Steve and I are very encouraged about the possibilities of using glass in color and character similar to the pieces you kindly lent us. It really looks very well with both the mosaic and the fountain. I only hope we can find glass large enough to fit our need.[45]

Henderson gave Frelinghuysen and her associate Tiffany jewels from his collection. She later wrote the excellent and well-illustrated book *Louis Comfort Tiffany and Laurelton Hall: An Artist's Country Estate*, a critical and vital study of his Long Island home and showplace.

J. Gordon Guthrie

Scotsman J. Gordon Guthrie began working in the family stained glass firm as a youth. He came to the United States and worked for Louis Comfort Tiffany between 1896 and 1906. He moved to Duffner & Kimberly: then, in 1915, to Henry Wynd Young Studio. He ran this studio between 1923 and 1925 after Young died. He finally opened his own firm in 1925 which he ran until 1944.[46]

Ernest Henderson met Guthrie when they were young men, possibly at Tiffany Studios. They maintained a long-term friendship. Gordon Henderson did some outside work for Guthrie including work in mausoleums. He said to Henderson when designing

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[45] Alice Cooney Frelinghuysen to Gordon Henderson, letter, August 16, 1979.
[46] Robert O. Jones, *The Biographical Index of Historic American Stained Glass* (Stained Glass Association of America, 2002).

a window, “When in doubt use white in regards to color.”[47] The Hendersons stayed in touch with Guthrie after he became a consultant with George Durhan & Son Studios from the mid-1950s until he died in 1961.

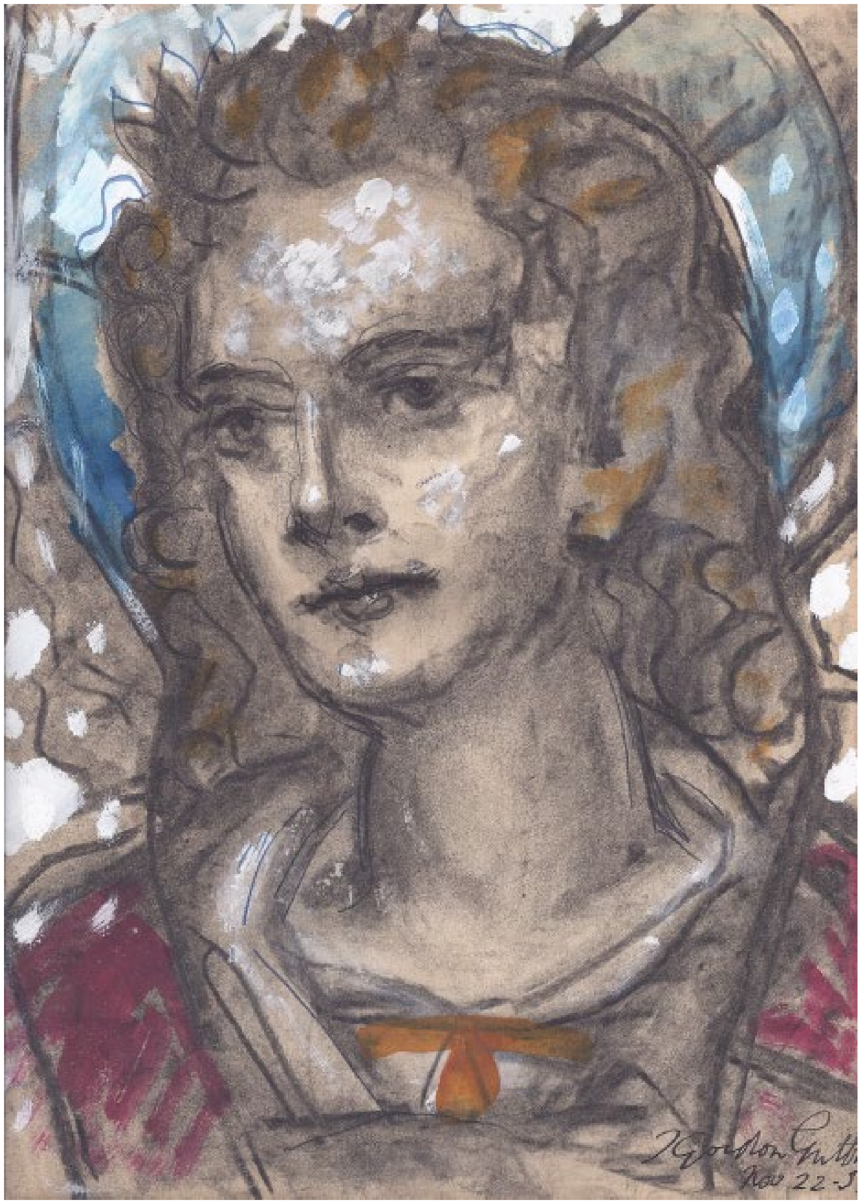


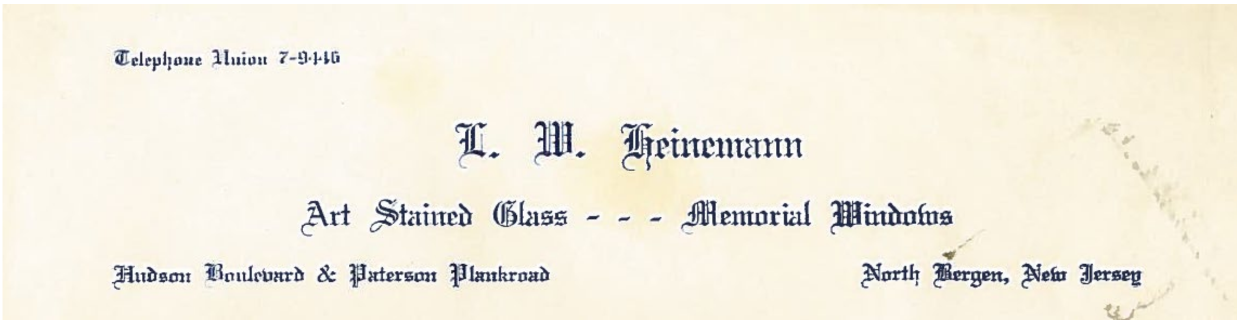
Figure 212. Mixed media head study, J. Gordon Guthrie, original size: 9 X 12 inches. [48]

[47] Gordon Henderson, interview by author, Towaco, NJ, March 18, 2007.
[48] Author’s collection.

Figure 213. J. Gordon Guthrie watercolor for diHumy Memorial window, Ferncliff Mausoleum, New York. Original image size: 5 X 11 inches.[49]

[49] Author collection.

L. W. Heinemann



Telephone Union 7-9446

L. W. Heinemann

Art Stained Glass - - - Memorial Windows

Hudson Boulevard & Paterson Plankroad

North Bergen, New Jersey

Figure 214. L. W. Heinemann billhead.[50]

L. W. Heinemann had a studio in North Bergen, New Jersey. Early in his career, he had worked in association with John La Farge, as a painter. Ernest Henderson had done some work for him, and he and Gordon Henderson maintained a cordial relation with Heinemann. He purchased the framed head pictured on the following page and a lead mill, among other items from him. Henderson said of Heinemann:

> He was a very good stained glassman. He came from La Farge and had two La Farge windows there, a bust figure of a girl; it was nice and all. I wish I could have got them. He was going blind and he was working in this place and I was friendly with him and I bought a lot of stuff from him, you know. He did churches in North Bergen there because he was a German, you know. He got into the German and Lutheran churches. His work is still there in the opalescent style.
>
> He was on Four Corners in Jersey City there; what they call Four Corners. He had a building there and he had on the top of his building, it was one story there, was a little solarium where the artists could work with their paint and glass up there and all. It's all gone now.
>
> And in the cellar—what I wish I had—he had all opalescent glass laying there and he had a wheelbarrow there with all Tiffany molds there, wood molds in the wheelbarrow. I didn't get them—I wish I had got them. But they were original molds for lampshades out of pine and he had a whole wheelbarrow down in the cellar. They may still be there, I don't think so.[51]

[50] Author's collection.
[51] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.

Figure 215. Panel purchased by Gordon Henderson from L. W. Heinemann.[52]

Hope & Ragg Casement Windows

Henderson Brothers did contract work for this English firm whose metal casement windows were used in upscale homes and commercial buildings. The firm provided leaded glass for this windows. These were among the finest and most expensive windows available.[53]

Lyn Hovey Studio

Lyn Hovey has worked at stained glass for more than fifty years. He is a gifted painter and designer and teaches, speaks, and writes about stained glass. He studied at the Cleveland Institute of Art. His first apprenticeship was with the Phillips Stained Glass Studio, believed to be the first in the United States owned by an African American. The

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[52] Author photograph.
[53] Gordon Henderson, interview by author, Towaco, NJ, December 27, 2006.

second was with the Sandon Stained Glass Studio.

Hovey started his professional career working as a painter at two of Boston's iconic studios, Wilber Herbert Burnham and Joseph G. Reynolds. He opened his own studio in 1971.[54] Gordon Henderson took measurements and installed windows for Hovey at St. Peter's Church, in Essex Fells, New Jersey in the late 1980s. Henderson had previously done work there for Charles J. Connick Associates and independently beginning in the 1960s.

A. Raymond Katz

A. Raymond Katz was a Jewish designer and painter. Coming from Chicago to work with Payne-Spiers; he also did design work for J & R Lamb. He was able to design in the changing, more modern style becoming popular. Gordon Henderson related, "He told me to never change my style keep everything just like it was in my little shop in Rutherford, he really liked it. He liked the chunk-glass stuff I made. He wanted to make eternal lights like that."[55]

Katz was interested in working with the new idea of chunk glass set in epoxy. Knowing that Gordon Henderson had worked in this manner, he asked him for assistance. Henderson took him to the local DuPont plant to learn about epoxies. In the early 1960s E. Henderson & Son fabricated a window of Katz design for the Passaic Park Jewish Community Center Chapel.[56]

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[54] Lynn Hovey Studio, Inc.: Artists in Stained Glass, Lynn Hovey Studios, Inc. http://www.lynhoveystudio.com/crew.html. (accessed December 1, 2012).
[55] Gordon Henderson, interview by author, Towaco, NJ, March 20, 2007.
[56] Irving Vogel, Chairman of the Building Committee to E. Henderson & Son, letter, May 6, 1963.

Figure 216. Stained glass window design, A. Raymond Katz, c. 1953, original size 6 X 6 inches.[57]

Barbara E. Krueger

Custom Stained Glass, Stained Glass Historian, Conservation Consultant
Hartland, Michigan

Barbara Krueger corresponded with Gordon Henderson in her role as a research assistant with the Michigan Stained Glass Census, which has a website devoted to stained glass windows within the state and nationally. In a surviving letter she shares information about J. Scott Williams and others associated with Henderson Brothers.[58]

Frederic J. Kurtz

See details in Ernest Henderson Chapter

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[57] Author's collection.
[58] Barbara Krueger to Gordon Henderson, letter, December 6, 2007.

J & R Lamb

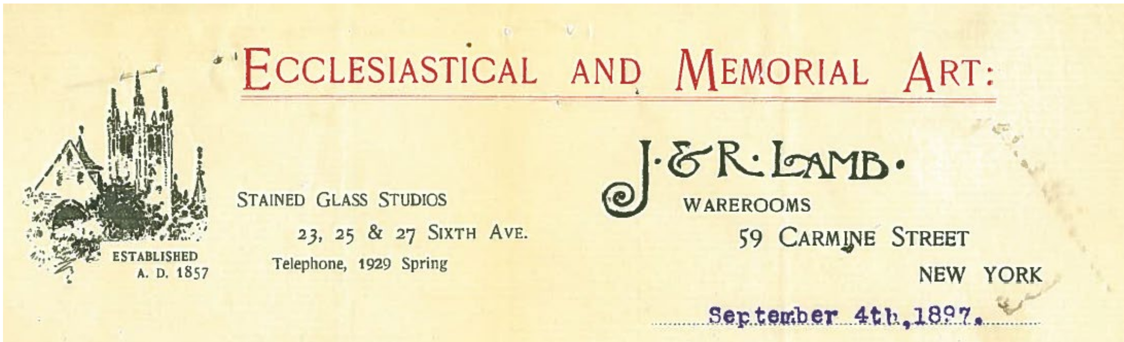

Figure 217. J & R Lamb letterhead dated September 4, 1897.[59]

The J & R Lamb Studios was established in 1857 by brothers Joseph and Richard Lamb who were born in Kent, England.[60] From the beginning, the firm was involved with all aspects of the interior decoration of churches including stained glass, mosaic, metal work, metal, stone, and wood work. Under their direction in became prominent winning awards at national and international shows and exhibits.

> "I believe to holding all that is beautiful and harmonious in the ancient arts and crafts, but in applying them for the betterment of modern life in a thoroughly practical way," said Mr. Lamb. "I can think or no more concise and beautiful way of expressing what I mean than by quoting a line of the poem *To France*, by Rudyard Kipling, 'First to follow truth, and last to leave old truths behind.' It is only by appreciation of the art of the past that we can build an art of the future."[61]
>
> *Charles Rollinson Lamb*

> If art is to aid religion, it is most essential that it shall conduct itself appropriately and this means that the church interior shall induce the religious thought for which the building is supposed to be erected and contribute to the religious service which it is to house . . . As our cities grow, our churches become more and more places of refuge from the hurry and hustle of the busy world; places where solitude and reflection are alone possible.[62]
>
> *Frederick Stymetz Lamb*

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[59] Author's collection.
[60] Barrea Lamb Seeley, *Ella's Certain Window: An Illustrated Biography of Ella Condie Lamb, An American Artist,* 133.
[61] Ibid., 304.
[62] Ibid., 155.

The sons of Joseph Lamb took over the studio bringing it to its most prominent phase. It became the second largest producer of monumental stained glass windows in the United States. Charles Rollinson Lamb, noted architect and president of The Arts Students League, became president of the firm. He married Ella Condie Lamb, an accomplished painter and the second woman to become a full member of the male-dominated National Society of Mural Painters. She became a major design partner of the firm. Brother Frederick Stymetz Lamb was also an accomplished painter. As an associate of John La Farge, he introduced opalescent glass to the firm's palette of glass. The pressures of running a large business with several production workshops to handle a wide variety of products was enormous:

> Money had to be earned, commissions secured, a payroll met, and several families supported. Materials of highest quality had to be searched for and purchased, often in Europe: marble, Venetian mosaic, carved wood, oak, brass, and antique glass. Workers and craftsman of skill and experience had to be found or trained. The finished works, not only immense windows but also entire interiors made of mosaic, carved wood, and marble works had to be crated and shipped to every state in the union, and to national and international exhibitions.[63]

Eventually Frederick Lamb retired to paint and Charles ran the company alone through failing health and into the Depression. Son Karl Barre Lamb came in to run the firm; his only stipulation was that all the other family members who held ownership shares turn them over to him, including the no longer active members of Richard Lamb's branch of the family. Many family members continued to work for the firm, even if just briefly over the next decades. Karl Lamb was not an artist, but was a good businessman and pulled the firm through the Depression.

---

[63] Barrea Lamb Seeley, *Ella's Certain Window: An Illustrated Biography of Ella Condie Lamb, An American Artist,* 142.

Katherine Lamb Tait, Karl Lamb's sister, served as chief designer for the firm for over forty years. She designed many prominent windows and returned to a more Gothic use of glass, moving away from opalescent glass in her work. She was one of many women employed as artists/designers by the firm.

Karl Lamb died in 1969 after thirty-eight years at the helm of the firm. The family made a decision to sell the firm with strict conditions on the use of the family name and the type of work produced. Without the support and financial backing of the Lamb descendents, the firm would have died. Donald Sammick, an employee of the firm, became the owner and remains so today. Lamb Studios is the oldest continuously active firm in the United States. The Lamb family sold the studio records, sketches, and drawings to the Library of Congress where much of the material has been digitized for public view.

The professional life of Ernest and Gordon Henderson included a great deal of interaction with J & R Lamb. Repairs, glazing, taking measurements, making templates, installation, and contract work of all types was undertaken. Dozens of invoices, purchase orders, check stubs, and letters exist in the business records of Ernest and Gordon Henderson covering the period from the 1940s through the 1980s. Gordon Henderson was providing pieces of old glass from his stock and filled a special order for 450 lead rosettes which he made for Lamb Studios during the last years of his life.[64]

Roland LeCompte (New York City)

Roland LeCompte is most noted for his forty-five stained windows he designed for the Washington National Cathedral in Washington, D.C.; he created his first stained glass

[64] Gordon Henderson interview, by author, Towaco, New Jersey, April 4, 2007.

window there at the age of sixteen.[65] His work at the cathedral was also immortalized on the April 16, 1960 cover of *Look Magazine* featuring the artwork of Norman Rockwell.

Figure 218. Original print of Roland LeCompte installing window at Washington National Cathedral, signed by Norman Rockwell. Original size: 12 X 16 inches.[66]

Gordon Henderson met LeCompte while working in New York City. LeCompte sought him out when he found out he was working in the neighborhood to learn some old-time skills in which Henderson was proficient.

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[65] Eddie Nickens, "On a canvas of glass," *AARP Bulletin* 38, No. 11, (December 11, 1997): 15.
[66] Author's collection.

> He came to meet me when I was doing a job for McLaughlin Brothers who were down the street from his studio. He wanted to make his own lead. He had purchased a lead mill from Leo Popper that my father had sold to him years before, a hand-crank machine. I showed him how to cut strips from sheet lead to feed through the mill. He was very good technically—a stained glassman.[67]
>
> *Gordon Henderson*

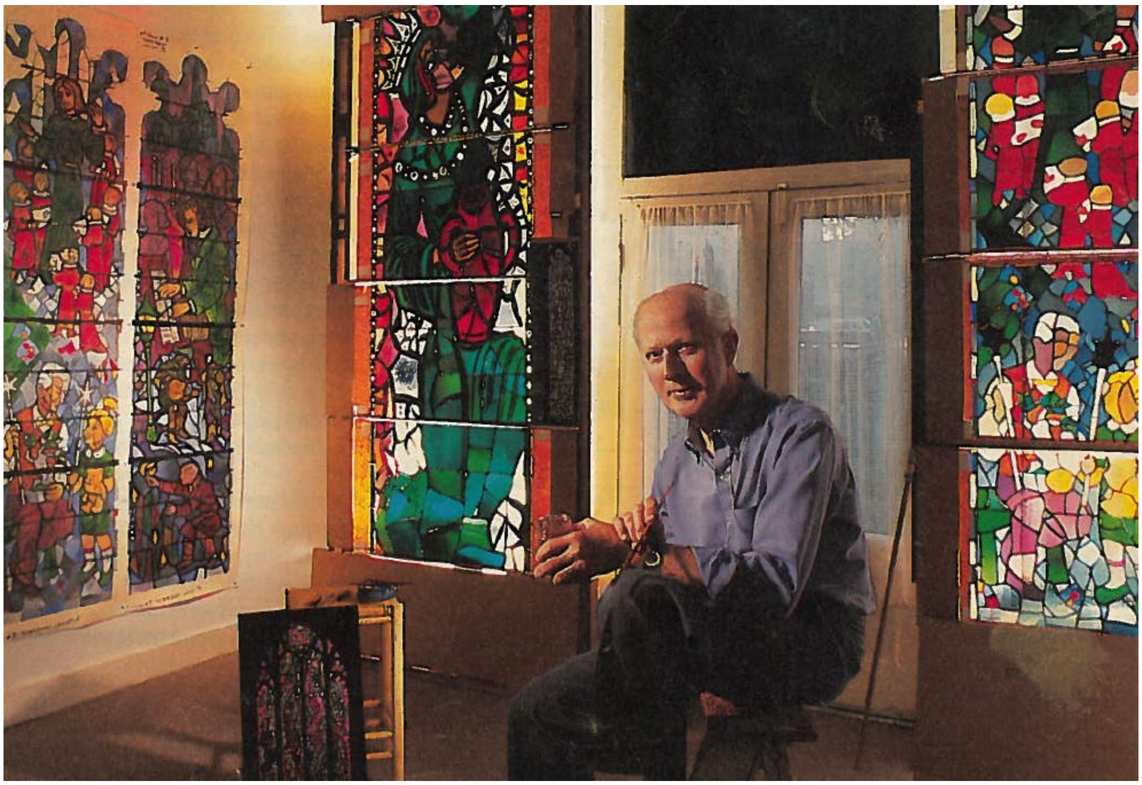


Figure 219. Roland LeCompte in his Wilmington, North Carolina workshop.[68]

Luther Stained Glass (Paterson, New Jersey)

This firm was established in the 1920s and is still operating today. Luther purchased items from Tiffany when they auctioned off the studio contents. Gordon Henderson

[67] Gordon Henderson, interview by author, Towaco, NJ, March 20, 2007.
[68] William Geiger photograph, "On a canvas of glass" *AARP Bulletin* 38, No. 11, (December 11, 1997): 15.

repaired some windows that he had purchased for some clients from the sale. Henderson visited the studio often.[69]

Marchese & Hamersma

Figure 220. Marchese & Hamersma business cards.[70]

According to Gordon Henderson, Marchese had been employed making lamps in Perth Amboy, New Jersey. John Hamersma had worked in a lumber yard running a team of horses. They got together and began making leaded glass windows in 1933. They hired good workers and many men from other studios—Payne-Spiers and Luther Studios,

---

[69] Gordon Henderson, interview by author, Towaco, NJ, May 12, 2008.
[70] Author's collection.

moonlighted for them on Saturdays.[71] Ernest and Gordon Henderson had long-term relationships with the firms' various owners.

McLaughlin Studios

Michael and John McLaughlin were Irish brothers who opened a stained glass studio in New York City, taking over the space once occupied by Richard N. Spiers. They were both good artists and painters. Gordon Henderson did installations, took measurements, and handled some repair work for them. Henderson recalled that John McLaughlin occasionally lived in the office of the shop. According to Gordon Henderson, the brothers retired and moved back to Ireland in the early 1970s.

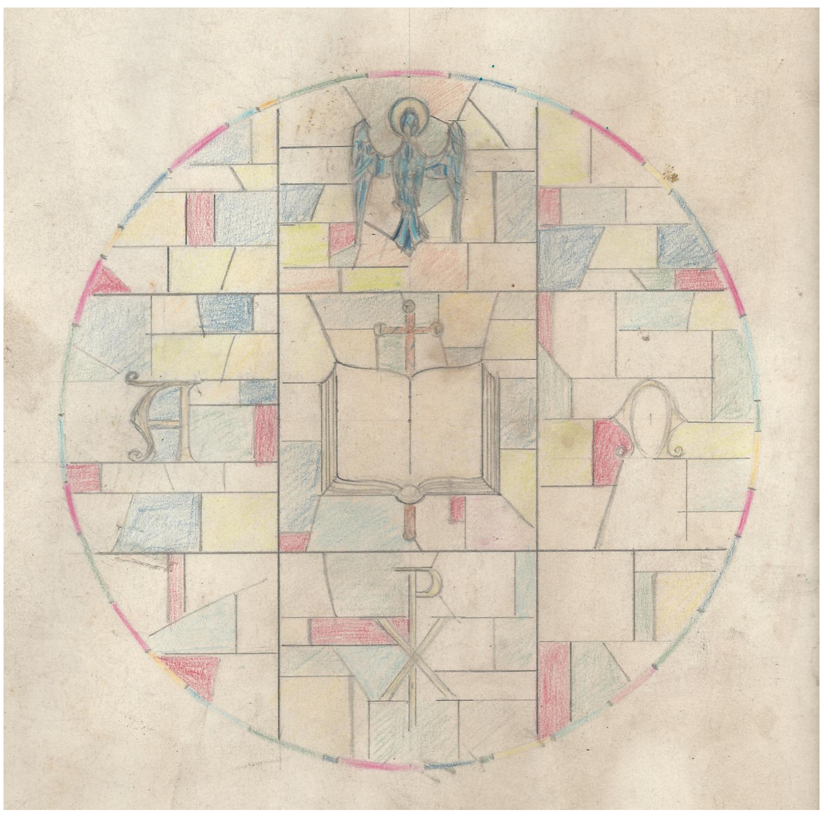


Figure 221. Michael McLaughlin sketch, for Rutherford Congregational Church. Original size: 8 X 8 inches.[72]

[71] Gordon Henderson, interview by author, Towaco, NJ, March 1, 2007.
[72] Author's collection.

Louis Millet

Louis Millet formed a partnership with George Healy in Chicago which lasted from 1880 to 1899. They met while attending the L'Ecole des Beaux Arts, in Paris. Millet was the nephew of French sculptor Aime` Millet. Healy was the son of noted portrait painter G. P. A. Healy.[73] Their most noted work came from the architectural firm of Adler and Sullivan. Louis Sullivan had known the two in Paris. He became a major influence on the development of skyscrapers and was the first to employ Frank Lloyd Wright professionally.

Millet had a solo career after his partnership ended. He also founded and served as head of the Department of Decorative Design with the Art Institute of Chicago. He was associated with the Institute for twenty-two years. He served as chief of mural and decorating painting for the St. Louis World's Fair.[74] It was at this time that Ernest Henderson did work for him.

Karl Mueller

Figure 222. Karl Mueller letterhead, c. 1953.[75]

[73] Sharon S. Darling, *Chicago Ceramics & Glass: An Illustrated History from 1871 to 1933.* (Chicago: Chicago Historical Society, 1979), 104.
[74] Ibid., 105.
[75] Author's collection.

Ernest Henderson had a working relationship with Karl Mueller, a German-born stained glass artist. Mueller had a studio in Belleville, New Jersey but relocated to Zephyrhills, Florida in the early 1950s. In a letter Mueller stated, "First I had in mind to rent out my shop in Belleville as a Stained Glass shop, but as you know none of this Glass Artist have money they making good money but they have none."[76] He also had a kiln to sell and wanted to know if Henderson might know of a buyer. Gordon Henderson had sold Mueller a large kiln he had picked up at Payne-Spiers Studio in Paterson, New Jersey that was unused. Henderson stated, "It was a big one and it had a big wheel on the side and the tray went in and you turned the wheel and the tray went in and out. You put the whole window in there."[77] Mueller built a large showroom and studio in Florida and made windows in many churches in the region.

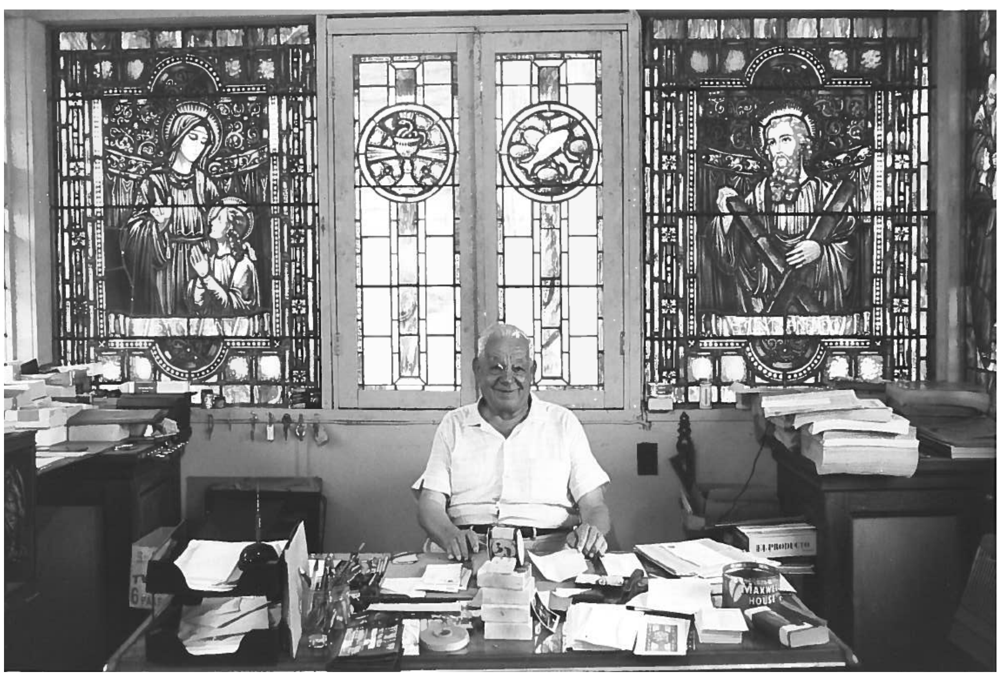


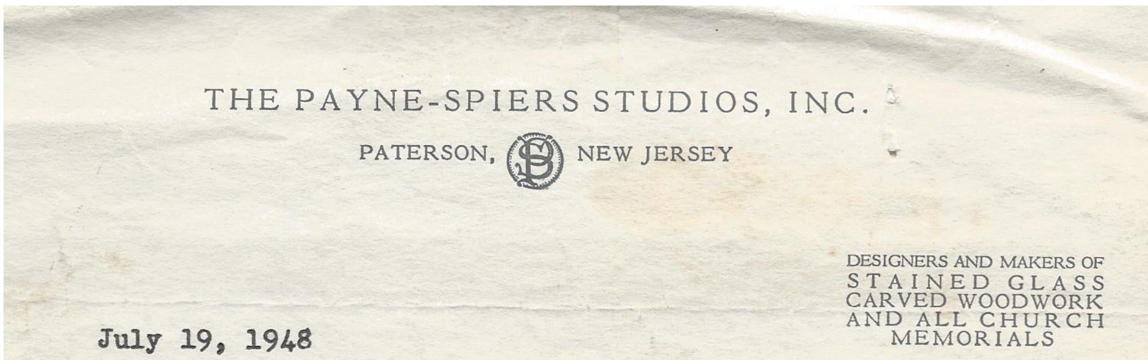
Figure 223. Karl Mueller in his office, Zephyrhills, Florida, c. 1966.[78]

[76] Karl J. Mueller to Ernest Henderson, letter, May 30, 1953.
[77] Gordon Henderson, interview by author, Towaco, NJ, March 14, 2007.
[78] Bob Moreland, *St. Petersburg Times*, (May 9, 1966, author's collection).

Phyllis Partridge
Author/researcher on Duffner & Kimberly   Berkeley, California

See Gordon Henderson Chapter

Payne-Spiers


THE PAYNE-SPIERS STUDIOS, INC.
PATERSON, NEW JERSEY

DESIGNERS AND MAKERS OF
STAINED GLASS
CARVED WOODWORK
AND ALL CHURCH
MEMORIALS

July 19, 1948

Figure 224. Payne-Spiers Studios letterhead.[79]

Richard N. Spiers started his business at the turn of the twentieth century with a little mirror shop, in New York City. He was interested in entering the stained glass business. At that time there were very few Jewish people in the stained glass business. They were in the regular plate glass business with the insurance companies and working at plain glazing. Gordon Henderson said that his son George told him that his father often said, "I wish I stayed in my little mirror business instead of monkeying around with stained glass . . ."[80] He was working with the synagogues in New York. Henderson stated, "So, anyhow, my father told me, he was an English Jew. He has a little goatee and he smoked Turkish cigarettes and every lunchtime he'd be hanging out in front of the stores where Henderson's men were having their lunch out in front of the shop and listening and

[79] Author's collection.
[80] Gordon Henderson, interview by author, Towaco, NJ, May 3, 2007.

finding out any knowledge."[81] Richard N. Spiers had been acquainted with Ernest Henderson for years. In fact, my father sold him his first saw and bench for metal glazing when Spiers wanted to start in the art glass trade.[82]

George Payne inherited his business from his father, also George Payne. Often short of money, he merged with Spiers Studio in 1934.[83] He was the glassman and George and Munroe Spiers had money, credit, and business acumen. Gordon Henderson called it an "unholy alliance."[84] Payne would travel to drum up business. He would be gone for extended periods. He came back one time with an expense account bill of close to six thousand dollars and a dispute occurred between the partners. Henderson stated that the Spiers brothers "didn't know potential. He might have twenty-five thousand dollars worth of work coming from that six thousand dollars."[85] In spite of the contention, Payne-Spiers, throughout its history, produced excellent windows all throughout the eastern United States.

In 1940, the firm moved from Richard N. Spiers' old location at 50 West Fifteenth Street in New York City to 50 East Thirteenth Street in Paterson. The move was made for significant reasons including:

> traffic congestion, making it difficult for trucks to get in and out of the plant and for customers to park; lack of sufficient daylight for the delicate work of making stained glass; the lack of any corporate income or sales tax in New Jersey, and lower freight rates for most shipments.[86]

Payne eventually split from the Spiers brothers and opened his own studio. What made it possible for Payne-Spiers to survive was that they had bought the big building

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[81] Gordon Henderson, interview by author, Towaco, NJ, May 3, 2007.
[82] Gordon Henderson, Unpublished Autobiography.
[83] *New York Times*, February 23, 1940, 17.
[84] Gordon Henderson, interview by author, Towaco, NJ, May 12, 2008.
[85] Gordon Henderson, interview by author, Towaco, NJ, November 16, 2008.
[86] *New York Times*, February 23, 1940, 17.

and they had rental income. They rented half of it out to a chemical factory.[87] Eventually Munroe Spiers took a buyout and the George ran the firm for a little while longer. Albrecht Holz, one of the finest stained glass artists ever to work in New Jersey, carried the firm, but he had an unexpected heart attack and he was difficult to replace. George Spiers had a heart attack and that fostered the liquidation of the firm from which Gordon Henderson profited.

Figure 225. Albrecht Holz sketches, Payne-Spiers Studios, original image sizes: 8 ½ X 3 inches.[88]

[87] Gordon Henderson, interview by author, Towaco, NJ, May 2, 2009.
[88] Author's collection.

18
10

THE PAYNE-SPIERS STUDIOS, INC.

Fine Stained Glass Craftsmen for Fifty Years
Memorials in Bronze

50 West 15th Street, NEW YORK, N. Y.

Telephone: GRamercy 7-5626

Products

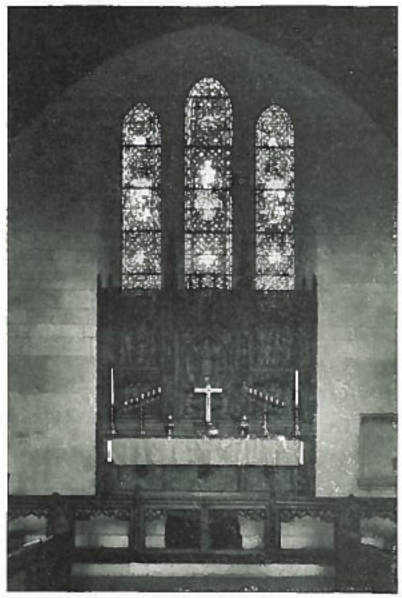
CHURCH and MAUSOLEUM WINDOWS.
BRONZE MEMORIALS, TABLETS, MARKERS, etc.
GLASS MOSAICS.
LEADED GLASS for residences and institutions.
ANTIQUE MEDALLIONS.
HAND WROUGHT LEADWORK.
CAST LEAD ORNAMENTS.
WINDOW FRAMES and CHURCH VENTILATORS.

Experience and Service

This firm is a combination of the 62-year-old Payne Studios of Paterson, N. J., and Richard N. Spiers & Sons of New York established 1889, with the finest designers and craftsmen of each firm. We have executed church windows in 42 States in the Union and numerous foreign countries including Canada, France, India, Japan, Central America, Haiti and the West Indies.

Special water color sketches, samples and estimates, submitted without obligation upon receipt of information giving quantities, sizes, style and subject matter desired.

Window setting details also furnished.



Chancel—Church of the Ascension
Montgomery, Ala.
CRAM & FERGUSON, Architects

A list of nearby churches or other buildings where our windows may be viewed will be sent on request

Suggested Specifications

General—All leaded glass shall be executed to conform with patterns shown on drawings or special design submitted and approved by architect. (The width of lead, plain, irregular or antique and the type of glass, imported or domestic, antique, cathedral or opalescent should be specified.)

Leading shall be soldered thoroughly on both sides and all flanges filled with a cement containing 50% pure white lead putty, 30% whiting, 10% litharge and 10% red lead mixed with pure linseed oil so as to make glass perfectly watertight.

Reinforcing and Setting—For setting in wood sash, use pure white lead putty for bedding and beading after sash has been primed.

Reinforcing to be formed of galvanized steel bars inside the leads or soldered to face of lead as determined by the width and design of the lights. The maximum width for inside reinforcement to be 18 in.

For setting in steel sash, use an approved steel sash putty. Reinforcing as noted above to apply here also. (Sash should be furnished with mouldings for most substantial construction.)

Where glass is set in stone reglet, it shall be bedded thoroughly in white lead putty after shellacing stone, and a margin of lead must show evenly around edge of opening. It shall be reinforced by means of galvanized iron bars sunk deeply into the stone groove and tied to glass with a sufficient number of copper wires. Grooves are to be pointed up thoroughly, both inside and out.

Leave glass clean and whole on completion.

St. Anthony's R. C. Church, Hawthorne, N. J.

Bishop Weed Window, St. John's Episcopal Church, Jacksonville, Fla.

St. Theresa's R. C. Church Providence, R. I.

Figure 226. Payne-Spiers promotional material, c. 1911-15.[89]

[89] Author's collection.

Pittsburg Plate Glass

Pittsburg Plate Glass became the largest producer of plate and float window glass in the United States. Throughout its early history they produced finished windows as part of their product line. They produced windows for order for Sears factory-built houses, builders, and homeowners. They advertised religious windows as well. Ernest Henderson worked as a foreman at their New York City location.

Figure 227. Pittsburg Plate Glass transom window sample watercolor from their Philadelphia location, shown ¾ original size.[90]

Leo Popper & Sons

Leo Popper was located on Franklin Street, in New York City. Originally the firm specialized in glass, pearl, and cellulite buttons and glass eyes for taxidermists. They eventually expanded to handle all the various types of glass needed in the stained and leaded glass trade. The firm, run by a long list of Poppers, lasted from 1880 until finally

[90] Author's collection.

closed by Edwin Popper in 1971.[91] Twenty years before closing, Edwin Popper related in an interview that "the business is inefficient in every way, but we like it."[92]

Gordon Henderson recalled:

> They had all types of Tiffany style glass—like drapery glass, all in racks and they were up on the second floor up there. They used to have an elevator there, just a flat platform and a rope, Joe, he told you that.[93] The drapery glass they sold by the pound, like Tiffany's drapery it was in a fan shape with ripples in it and all. The butt end of it was dense, you couldn't see through it; the guys didn't want that. In order to cut it they would sharpen their glass cutter here and make what we call a rough cut—a digging cut. They would cut the good part out and leave the other there. Later on Popper went up and and "Oh. Jesus" he said. He had all this stuff up there that you couldn't see through, the butt end and these guys had been going away with the best part of it—they were wise guys—they were very frugal.[94]

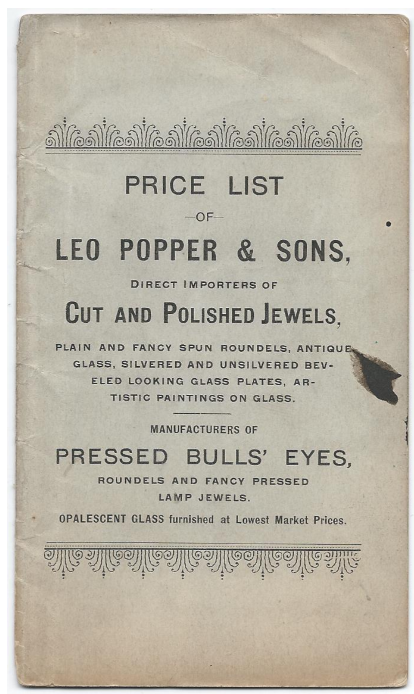


Figure 228. Leo Popper & Son price list, October 20, 1890.[95]

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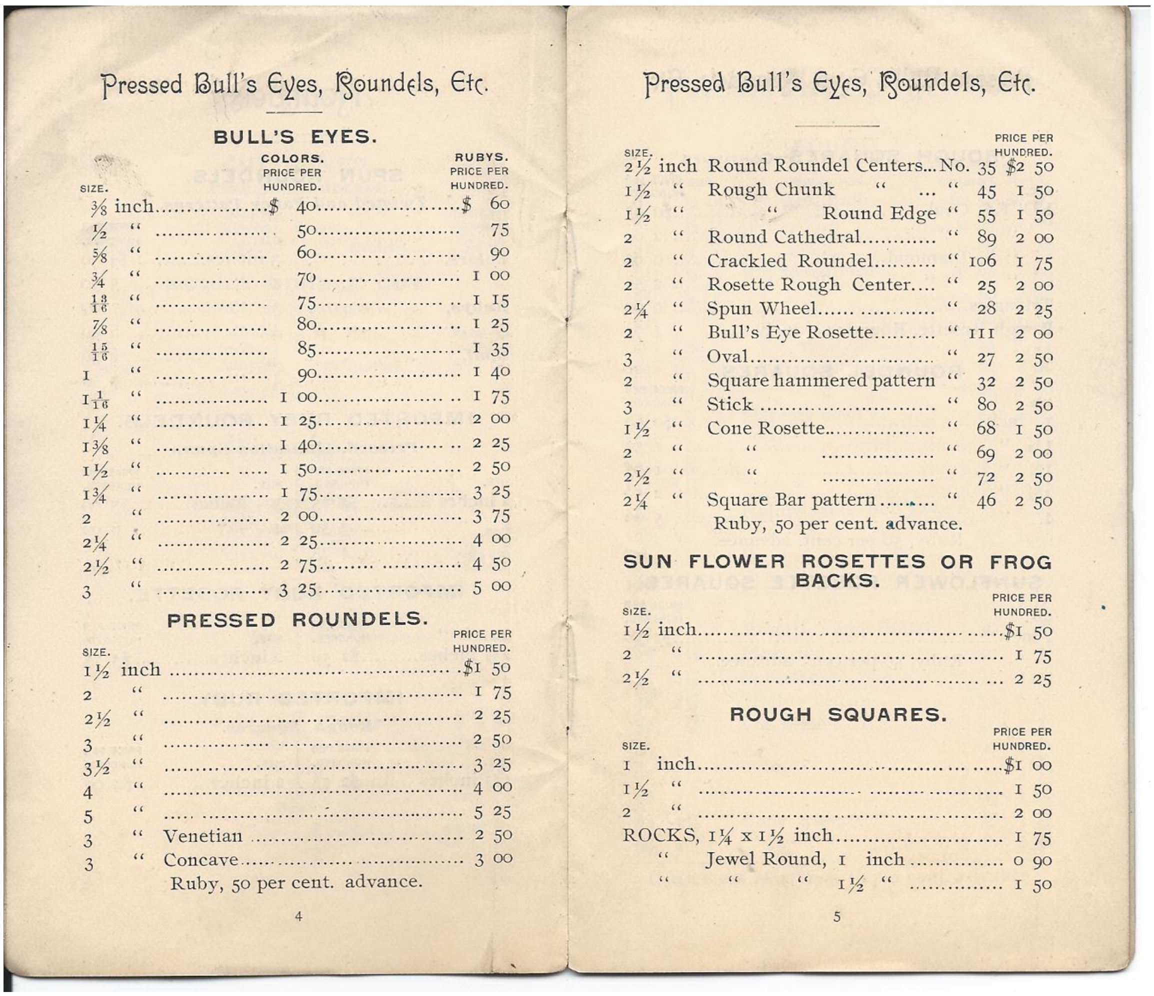
[91] "Leo Popper and Sons Timeline," *glassian,* http://www.glassian.org/Prism/Popper/timeline.html, (accessed November 30, 2012).
[92] "Leo Popper and Sons Reference," *glassian,* http://www.glassian.org/Prism/Popper/reference.html, (accessed November 30, 2012).
[93] Gordon Henderson is referring to Joe Barnes, former employee of Leo Popper and recently retired from S. A. Bendheim with whom I have had many conversations.
[94] Gordon Henderson, interview by author, Towaco, NJ, April 7, 2007.
[95] Author's collection.

> I knew the old man, he wore a celluloid collar. I talked to him about La Farge. “You want La Farge?” he said, “He was a crazy man. If he didn’t like a piece of glass he smashed it; he smashed my glass!”[96]
>
> *Gordon Henderson*



Pressed Bull's Eyes, Roundels, Etc.

BULL'S EYES.

SIZE.	COLORS. PRICE PER HUNDRED.	RUBYS. PRICE PER HUNDRED.
3/8 inch	$ 40	$ 60
1/2 "	50	75
5/8 "	60	90
3/4 "	70	1 00
13/16 "	75	1 15
7/8 "	80	1 25
15/16 "	85	1 35
1 "	90	1 40
1 1/16 "	1 00	1 75
1 1/4 "	1 25	2 00
1 3/8 "	1 40	2 25
1 1/2 "	1 50	2 50
1 3/4 "	1 75	3 25
2 "	2 00	3 75
2 1/4 "	2 25	4 00
2 1/2 "	2 75	4 50
3 "	3 25	5 00

PRESSED ROUNDELS.

SIZE.	PRICE PER HUNDRED.
1 1/2 inch	$1 50
2 "	1 75
2 1/2 "	2 25
3 "	2 50
3 1/2 "	3 25
4 "	4 00
5 "	5 25
3 " Venetian	2 50
3 " Concave	3 00

Ruby, 50 per cent. advance.

4

Pressed Bull's Eyes, Roundels, Etc.

SIZE.		No.	PRICE PER HUNDRED.
2 1/2 inch	Round Roundel Centers	No. 35	$2 50
1 1/2 "	Rough Chunk "	" 45	1 50
1 1/2 "	" Round Edge	" 55	1 50
2 "	Round Cathedral	" 89	2 00
2 "	Crackled Roundel	" 106	1 75
2 "	Rosette Rough Center	" 25	2 00
2 1/4 "	Spun Wheel	" 28	2 25
2 "	Bull's Eye Rosette	" 111	2 00
3 "	Oval	" 27	2 50
2 "	Square hammered pattern	" 32	2 50
3 "	Stick	" 80	2 50
1 1/2 "	Cone Rosette	" 68	1 50
2 "	"	" 69	2 00
2 1/2 "	"	" 72	2 50
2 1/4 "	Square Bar pattern	" 46	2 50

Ruby, 50 per cent. advance.

SUN FLOWER ROSETTES OR FROG BACKS.

SIZE.	PRICE PER HUNDRED.
1 1/2 inch	$1 50
2 "	1 75
2 1/2 "	2 25

ROUGH SQUARES.

SIZE.	PRICE PER HUNDRED.
1 inch	$1 00
1 1/2 "	1 50
2 "	2 00
ROCKS, 1 1/4 x 1 1/2 inch	1 75
" Jewel Round, 1 inch	0 90
" " " 1 1/2 "	1 50

5

Figure 229. Centerfold, 1890 Leo Popper & Sons pricelist.[97]

Joe Porcelli

Joseph Porcelli Studio Brooklyn, New York

Joe Porcelli is a studio owner, stained glass expert, magazine editor, and author of two books, *The Lamp Making Handbook* and *Jewels of Light, a History of Stained Glass.* He

[96] Gordon Henderson, interview by author, Towaco, NJ, November 22, 2007.
[97] Author’s collection.

speaks and exhibits extensively. He has also served as an expert witness including the case of Dave Bellis vs. Tokyo Marine, a case in which Gordon Henderson was also a witness.[98] The case involved damage to two iconic Tiffany windows that Henderson had in fact stored for Dave Bellis at his Towaco, New Jersey home for many years. The windows were damaged when being shipped to an exhibit in Japan.

Porcelli had reached out through the Stained Glass Association of America for information on windows being restored. Gordon Henderson was able to supply the information on the Groves and Steil firm that had manufactured the windows in question.[99]

Virginia Raguin
Director, The Census of Stained Glass in America,
Professor of Art History College of the Holy Cross Worcester, Massachusetts

Virginia Raguin researches, speaks, and writes about stained glass, one focus of her teaching and scholarship. Professor Raguin visited Gordon Henderson at his house in the course of her research on American stained glass.[100] In 1999, Raguin arranged for an exhibition and accompanying book entitled *Glory in Glass: Stained Glass in the United States—Origins, Variety, and Preservation*. Gordon Henderson supplied items from his collection for the exhibition held at The Gallery of the American Bible Society between November 12, 1998 and February 16, 1999. The book also features a brief essay with photographs by Patricia Pongracz, *Experiences With Glass: The Gordon Henderson Workshop.*

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[98] "Resume," *Joseph Porcelli*, www.josephporcellistudio.com/resume.html, (accessed November 30, 2012).
[99] Joe Porcelli to Gordon Henderson, letter, July 8, 1986.
[100] Gordon Henderson, interview by author, Towaco, New Jersey, May 3, 2007.

Bruce Randall, Mr. Universe


From the desk of . . . .
Mr. Universe
November 11, 1962

Figure 230. Letterhead provided to Bruce Randall by Billard Barbell Company.[101]

See Gordon Henderson Chapter pages 8-9.

Rivell Studios

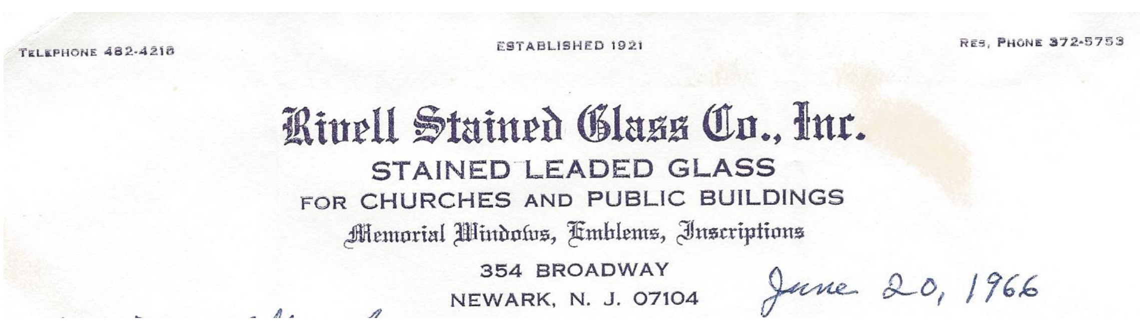
TELEPHONE 482-4218
ESTABLISHED 1921
RES. PHONE 372-5753
Rivell Stained Glass Co., Inc.
STAINED LEADED GLASS
FOR CHURCHES AND PUBLIC BUILDINGS
Memorial Windows, Emblems, Inscriptions
354 BROADWAY
NEWARK, N. J. 07104
June 20, 1966

Figure 231. Rivell Studio letterhead.[102]

John Rivell was an old time glassman with a studio in Newark, New Jersey. The firm was established in 1921.[103] It was incorporated in 1925.[104] Gordon occasionally did outside work for Rivell. In 1966, through a series of letters, Henderson assisted Rivell in

[101] Author's collection.
[102] Author's collection.
[103] Rivell Stained Glass Company billhead, author's collection.
[104] *New York Times*, September 9, 1925, 40.

a lawsuit brought by a disgruntled client by examining, "Two stained glass windows we installed in Rosehill Crematory Chapel, Linden, New Jersey and they are done in the finest technique of the trade and good workmanship."[105] Henderson sent a letter to Rivell's lawyer with his report and he was thanked by Rivell "for past favors."[106] Churches where Rivell work may be seen include Our Lady of Mount Carmel Church in Montclair, New Jersey and Our Lady of Sorrows Church in Jersey City, New Jersey.[107]

Julie L. Sloan
McKernan Satterlee Associates, Inc. (President) Consultants, Stained Glass
Brewster, New York

Julie Sloan is a major figure in stained glass research, restoration, and conservation. She reached out to Gordon Henderson while researching glass used in windows designed by Frank Lloyd Wright. She stated in a letter that she had "been given your name through someone who works for S. A. Bendheim as someone who knows about Tiffany Studios."[108] In a follow-up letter she went into further detail about the challenge of finding a particular shade of green glass. She also wrote, "I would be delighted to meet you; I have heard from many people that you are a treasure trove of little known facts. May I be so bold as to invite myself to see you at your convenience?"[109]

A final correspondence between Sloan and Henderson took place two years later. Sloan was consulting with Grace Church on the restoration of several windows. She wanted to know what Henderson may have done while working on them. She wrote in regards to one window in particular designed and painted by Mary Tillinghast:

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[105] John Rivell to Gordon Henderson, letter, June 20, 1966.
[106] Ibid.
[107] "Churches of the Archdiocese of Newark:Architecture and Art," Seton Hall University, http://blogs.shu.edu/newarkchurches/archives, (accessed November 30,2012).
[108] Julie Sloan to Gordon Henderson, letter, February 21,1991.
[109] Julie Sloan to Gordon Henderson, letter, March 12, 1991.

> I would be grateful for any information you might have on it and the work you did on it. In particular, I am interested in whether you applied any cold paint to the glass, like Tillinghast herself did, and if you recollect what types or brands of adhesives you used. Would you by any chance have any photographs or rubbings of the window when you worked on it or before? We would of course pay for their reproduction.[110]

A copy of Gordon Henderson's response survives. He relates how he had worked on the windows beginning in 1949 and how bad their conditions were. He wrote:

> At that time the Church was in a deplorable condition. The windows were covered with wire screening and ivy had grown to the extent that most were blacked out. All of this I removed, cleaned the stained glass and restored several windows that were in bad condition.
>
> There was a very low budget at the time and Karl Dowhie and I construed a plan to restore the windows over a period of time when funds were available.[111]

Henderson also related how he took other windows out of the church and Willet windows were installed in their place "over my objection."[112] Henderson preserved the windows and later returned them to the church after keeping them for many years for a restoration fee.

Julie Sloan has published numerous articles on stained glass and her firm's restoration work. She also wrote, in 1993, *Conservation of Stained Glass in America: A Manual for Studios and Caretakers.*

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[110] Julie Sloan to Gordon Henderson, letter, March 3, 1993.
[111] Gordon Henderson to Julie Sloan, letter, March 17, 1993.
[112] Ibid.

Louis Comfort Tiffany


TIFFANY STVDIOS
361 TO 365 MADISON AVENVE
CORNER FORTY FIFTH STREET
NEW YORK
STATEMENT JUNE 1, 1918.

Figure 232. Tiffany Studios billhead.[113]

> It was reserved for an American artist to a start a transformation. Mr. Louis C. Tiffany had made his first figure window in 1877. Scientist as well as artist, Mr. Tiffany was averse to using any paints or stains whatever, even for the flesh tints, though vitreous colors were employed and fired and fused into the glass. He rebelled against the restrictions placed upon him by the limitations of the glass then procurable and resolved to find something better. Then began the experiments which were continued persistently.[114]

Louis Comfort Tiffany, a champion of beauty in daily use objects, artist, designer, and promoter, is one of the major figures in the world of industrial arts. Robert Koch in his introduction to *Artistic America, Tiffany Glass, and Art Nouveau*, by Parisian art dealer Samuel Bing, describes how Bing "is particularly taken with the collective spirit in the workshops of those who apply art to useful objects."[115] Tiffany, in his factories, would mass produce items for the home in massive quantities of incredible beauty. The son of New York jeweler Charles Louis Tiffany, he was born into great wealth. Although his father had hoped he would follow him into the family business, his son preferred art. He studied and travelled extensively through Europe and North Africa. 1871 saw his election as an Associate member of the National Academy of Design.; in 1880 he became

[113] Author's collection.
[114] *Tiffany Studios: Memorials in Glass and Stone* Copyright 1913, by Tiffany Studios. Un-paginated
[115] Samuel Bing, *Artistic America, Tiffany Glass, and Art Nouveau,* Robert Koch introduction, (Cambridge, MA: The MIT Press, 1970), 6.

a full member. He was active in the American Water Color Society all his life.[116] After Augustus Saint-Gaudens had a work refused for "lack of space" for the National Academy of Design Annual Show, he helped form the Society of American Artists as a more open minded rival.[117] In the production of monumental windows, Tiffany Studios far out-produced any competitor in total numbers of commissions during its many years of operation. The name "Tiffany" is synonymous with stained glass in its many forms. Lamps are "Tiffany" lamps and windows "Tiffany" windows, no matter their provenance or quality.

When Tiffany became focused on stained glass as his preferred medium of artistic expression, he was dissatisfied with the glass available to him. He opened his own factory in Corona, Long Island to produce what he wanted. The chemists and craftsmen developed drapery, rippled, mottled, and other textured glass for Tiffany products. Glass could be produced in any variety of colors and color combinations. The ability to create glass of any texture, hue, transparency, or thickness allowed artists, designers, and cutters unparalleled freedom to produce windows of unsurpassed beauty.

Tiffany also wished to reproduce the look of glass that had been buried for centuries; over time it gained an iridescent sheen. After much experimenting, his patented Favrile glass was developed. The iridescent quality inherent in this material reflected and refracted light in surprising ways. Particularly when layered, it would take on a totally different appearance based upon transmitted or reflected light. The quality of this glass has never been matched and the formula died with its developers. Leslie Nash wrote in a

---

[116] Robert Koch, *Louis C. Tiffany, Rebel in Glass* (New York: Crown Publishers, 1964), 8.
[117] Michael John Burlingham, *A Biography of Dorothy Tiffany Burlingham: The Last Tiffany* (New York: Macmillan Publishing Company, 1989), 48.

then unpublished work (completed in 1957) describing his family's involvement with Tiffany and his glass:

> If I did and give out information I should only break the trust and tradition of the glass makers that has come down through the generations. Mr. Tiffany tried on many occasions to get this information in writing. I told him that I could not impart information without breaking a trust and that the knowledge I have, was given to me with that understanding. That is the way it is going to be, come what may.[118]

Tiffany spared no expense to create his products. His reach for beauty knew no compromise. He stated that, "We shall never have good taste in our homes until people learn to distinguish the beautiful from the ugly."[119] Often criticized for commercializing beauty, he said in a speech:

> If I may be forgiven a word about my own work, I would merely say that I have always striven to fix beauty in wood or stone or glass or pottery, in oil or water color, by using whatever seemed fittest by the expression of beauty; that has been my creed, and I see no reason to change it.[120]

After the death of his father, Louis C. Tiffany inherited millions and the position of Vice-president of Tiffany and Company, he had money to spend. He was an artist and not a businessman. His pursuit of beauty would not be constrained by accountants; "it was ironical that while being charged with commercialism, the business was suffering losses."[121] Every year Tiffany wrote a personal check to balance the losses of his company.[122]

Tiffany's work began to go out of fashion in the late 1920s and he eventually closed the glass factory as it went into bankruptcy in 1924. Leslie Nash, son of manager A.

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[118] Martin Eidelberg and Nancy A. McClelland, *Behind the Scenes of Tiffany Glassmaking: The Nash Notebooks* (New York: St. Martin's Press), 55.
[119] Joseph Purtell, *The Tiffany Touch* (Kingsport, TN: Kingsport Press, 1971), 126.
[120] Alastair Duncan, Martin Eidelberg, and Neil Harris. *The Masterworks of Louis Comfort Tiffany* (New York: Harry N. Abrams, Incorporated, 1989), 11.
[121] Joseph Purtell, *The Tiffany Touch* (Kingsport, TN: Kingsport Press, 1971), 127.
[122] Alastair Duncan, Martin Eidelberg, and Neil Harris. *The Masterworks of Louis Comfort Tiffany* (New York: Harry N. Abrams, Incorporated, 1989), 12.

Douglas Nash, wrote of the bankruptcy, "Mr. Tiffany bought in all stock at Par, paid out all outstanding indebtedness."[123] It was the most gentle bankruptcy in history, no investor lost money except for Tiffany. The Tiffany Studios limped along until 1936 under the direction of Joseph Briggs. Tiffany was dead and the Depression claimed the business.[124]

A few things set apart the work of Tiffany in stained glass; one is his pursuit of perfection, another is the quality of his glass. An often overlooked factor from the perspective of researchers is the quality of the men and women who worked for the firm. The production workers and designers that brought his vision to life displayed great pride in their work and ability. He hired the best available people and trained top notch craftsmen. Leslie Nash wrote of the men he worked with:

> I have come to the conclusion that the men who worked in the Tiffany plants, numbering over a thousand at times, were the finest men it has been my privilege to come in contact with. They were of high caliber, understanding, respectful, unselfish, and cared for the welfare of their fellow workers. They worked hard and if we were pressed for time on a contract, they would deliver before the due date. They were dependable and in return got respect from their foremen and bosses. They also received a generous bonus when business was good. They held fast to this high standard required of them. Our name stood for quality.[125]

Tiffany employed many women in his firm. Agnes Northrup designed windows, lamps, and mosaics. Clara Driscoll, in 1904, became one of the highest paid women in the United States managing the Women's Glass Department of the Tiffany Studios.[126]

Many workers found lifetime employment with Tiffany. Many other left to pursue their visions in the trade. Tiffany Studios may have spawned more competing studios

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[123] Martin Eidelberg and Nancy A. McClelland, *Behind the Scenes of Tiffany Glassmaking: The Nash Notebooks* (New York: St. Martin's Press), 128.
[124] Martin Eidelberg and Nancy A. McClelland, *Behind the Scenes of Tiffany Glassmaking: The Nash Notebooks* (New York: St. Martin's Press), XVI.
[125] Ibid., 99.
[126] Nina Gray, Margaret K. Hofer, and Martin Eidelberg, "The Women Mosaicists at Tiffany Studios," *The Antiques Magazine* 171, No. 3 (March 2007): 99.

than any other firm in history. The list is impressive. Henry Keck, Even McKay, Rudy Buenz, D. Maitland Armstrong, and Ernest Henderson are among those who left to establish themselves. There are dozens of others. Ernest Henderson's experiences are detailed in the E. Henderson & Son chapter related in the interview with Bruce Marcellius.

Louis Comfort Tiffany remains the standard by which other American stained glass firms are measured. Both in volume and variety of work, he surpassed all others. He is the object of more writing than any other artist or craftsman of his era. A complex person, his artistic, business, and personal life remain fascinating.

Gay Walker

Librarian and author, Preservation Department, The Yale University Library,
New Haven, Connecticut

Gay Walker worked in the Sterling Library at Yale University and became fascinated with the stained glass windows there and similar windows in other campus buildings. She began researching library and university records and found the names G. Owen Bonawit and Henderson Brothers. She began corresponding with Gordon Henderson in regards to his grandfather's firm and Bonawit. In a letter Henderson wrote:

> In reference to your inquiry concerning G. Owen Bonawit and his work, I can remember when he was on 11th St. in the Village section of NYC. His most noted work is at the Church of the Ascension at 12th & Park Ave. . . .
>
> Bonawit never got the credit he deserved because he worked in the declining period of stained glass. One of his designers was Frederic Kurtz, who later established a barn studio in Gettysburg, Pa.[127]

There was an exchange of more letters where Walker shared information about Henderson Brothers and delight about learning of Kutz's involvement with the design of other windows produced by Henderson Brothers at Yale. Walker wrote a series of

[127] Gordon Henderson to Gay Walker, letter, March 19, 1979.

articles in Yale publications and the most comprehensive investigation on the work and life of this elusive artist entitled *Bonawit, Stained Glass & Yale: G. Owen Bonawit's Work at Yale University and Elsewhere.*

Helene Weis

Gordon Henderson maintained correspondence with Helene Weis, archivist, librarian, and designer at Willet Studios. She was also the historian for the Stained Glass Association of America the 1980s and a frequent contributor to the *Stained Glass Quarterly Journal.* Upon the death of Henry Lee Willet, the firm's founder, Henderson wrote to Weis:

> Dear Ms. Weis,
> My deepest regret on the loss of Henry. The last time I saw him was at The Grace Church in New York City when I installed [a] window for Willet Studio. We have lost a giant of the trade and a era has passed. The one remaining hope of our heritage in glass is the Corning Museum program that Henry was so instrumental in the beginning.[128]

J. Scott Williams

Independent designer and muralist J. Scott Williams was born in England and moved to Chicago as a child; he became an American citizen there in 1896.[129] It is possible that he became acquainted with Henderson Brothers during this time as he later worked extensively with them on projects in New York City and the Midwest (see Henderson Brothers chapter). He worked as a muralist for WPA projects and produced many magazine covers and advertising art during his long career.

[128] Gordon Henderson to Ms. Helene H. Weis, letter (copy), November 2, 1982.
[129] Julie Sloan to Gordon Henderson, letter, December 6, 2007.

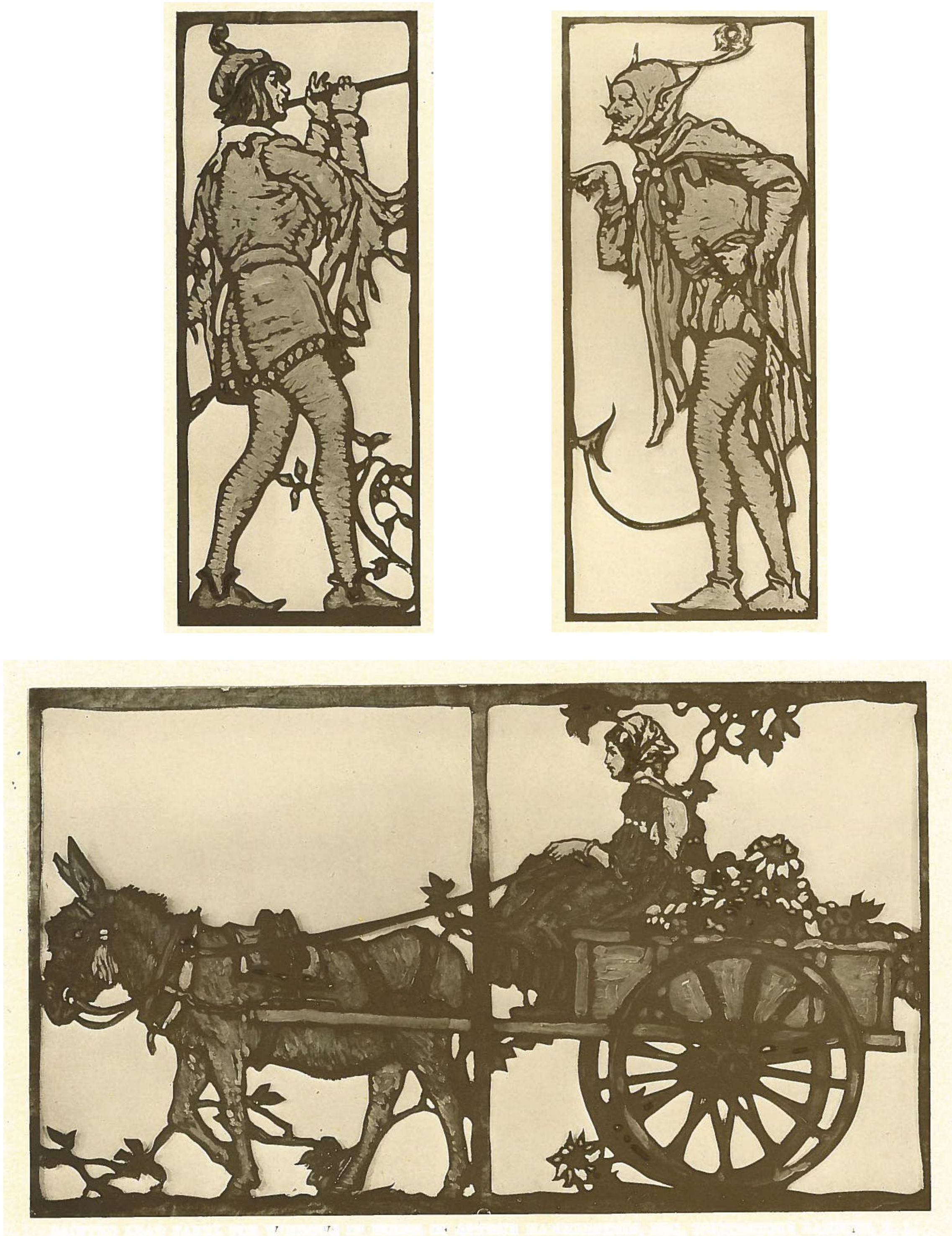

Figure 233. Painted lead panels for window in house of Arthur Hammerstein, Esq., Whitestone Landing, L. I. Painted by J. Scott Williams, Fabricated by Henderson Brothers.[130]

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[130] *Year Book of the Architectural League of New York and Catalogue of the Fortieth Annual Exhibition*, (1925).

Figure 234. J. Scott Williams at work, C. 1937.[131]

Willet Studios

HENRY LEE WILLET
CHAIRMAN
E. CROSBY WILLET
PRESIDENT
MURIEL C. WILLET
VICE PRESIDENT
JOHN B. SPENCER
VICE PRESIDENT
MARGUERITE GAUDIN
VICE PRESIDENT
WILLIAM R. EAGAN
SECRETARY-TREASURER
HELENE MARTIN
LIBRARIAN
RAYMOND L. RIVELL
SALES EXECUTIVE

The Willet Stained Glass Studios

(215) CH 7-5721 10 EAST MORELAND AVENUE - PHILADELPHIA, PA. 19118

June 26, 1968

Figure 235. Willet Studios letterhead.[132]

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[131] Archives of American Art, "J. Scott Williams, ca. 1937," Archives of American Art, Smithsonian Institution, http://www.aaa.si.edu/collections/images/detail/j-scott-williams-2733, (accessed July 15, 2007).
[132] Author's collection.

The Willet Studio was founded by William Willet, an artist and leader in the American Gothic Movement, in 1898. Along with Charles J. Connick and Wilbur Herbert Burnham, he was a pioneer in the movement away from opalescent glass windows. All three did work for architect Ralph Adams Cram. Henry Lee Willet took over the firm and expanded its efforts. They produced work in all fifty states under his direction. In 1965, E. Crosby Willet assumed control of the firm. In 1977, Willet Studios became a division of the Hauser Art Glass Company. In 2005, the company changed its name to Willet Hauser Architectural Glass.[133]

The Willets were active in writing and speaking about the trade. Henry Lee Willet wrote with good friend Harold W. Rambusch an article for the Encyclopedia Americana entitled "Stained Glass" which was reprinted in booklet form in 1948 by the Willet Stained Glass Co. The article relates the history of stained glass and includes information on the major neo-Gothic studios and artists in the United States. It is richly illustrated and scholarly.

The Willet Studio was progressive in its work moving along with and ahead of trends. They employed the best designers, artists, and craftsmen. They actively took in apprentices and employed women in key positions throughout the years.

Gordon Henderson did outside work for the firm in the 1960s and 1970s. He did work in New Jersey and New York taking measurements, making templates, and installing windows.

[133] Willet Studios, Willet Hauser Architectural Glass, http://www.willethauser.com/aboutwh/ourstory/willet.asp, (accessed November 30, 2012).

H. Webber Wilson
Owner Architectural Americana Antiques and author

Wilson connected with Gordon Henderson in his role as author and dealer. He was looking for items to sell through his business and materials to include in his next book. He has published numerous articles related to American stained glass and two books including *Great Glass in American Architecture: Decorative Windows and Doors Before 1920.*

Gordon recalled Wilson visiting him and looking through his collection. "He bought a couple of pieces from me. He bought a good sketch from me. He knew what he was looking at," stated Henderson.[134]

[134] Gordon Henderson, interview by author, Towaco, New Jersey, April 4, 2007.

Appendix E

Henderson Advertising

As previously discussed, Henderson Brothers advertised in a variety of print outlets. Gordon Henderson secured photocopies of some of the Henderson Brothers brochures and his father preserved others. Two items were purchased by the author in the course of research. The brochures are particularly important for locating the studio and showcasing their work.

Locations mentioned in advertisements include:

522 Sixth Avenue 1898 – 1902

707 1st Avenue 1911 – 1916

114 East 41st Street 1922 – 1925

228 East 41st Street 1928

693 3rd Avenue 1931 – 34

771 First Avenue 1934

Few hard copies survive of this type of advertisement from old-time firms. It is fortunate that Ernest and Gordon Henderson set out to recover family material. No doubt there is more out there, sitting in an architectural archive or church file cabinet; hopefully made accessible and not discarded.

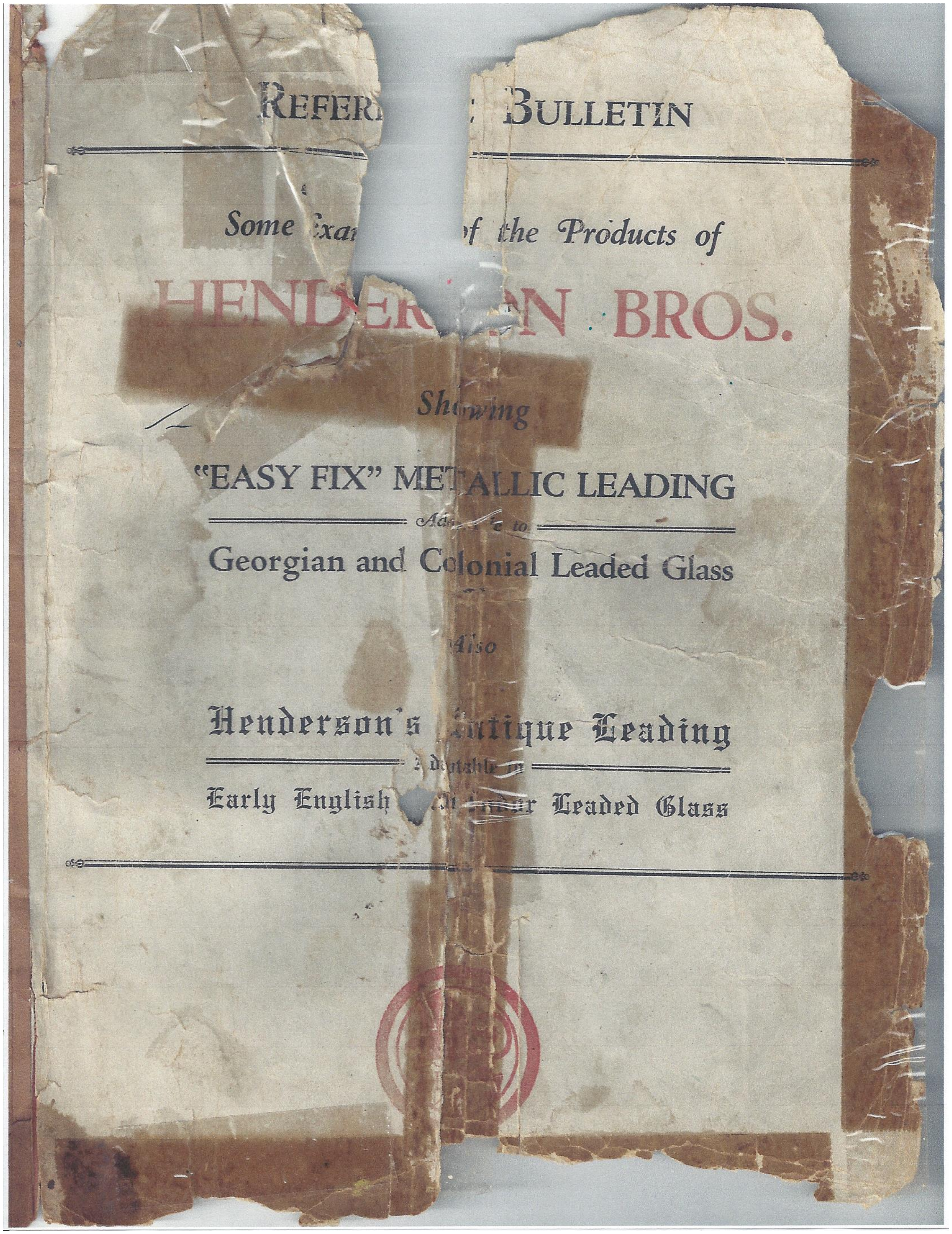

Figure 236. Henderson Brothers brochure used between c. 1922-1934.[1]

[1] Photocopy, author's collection.

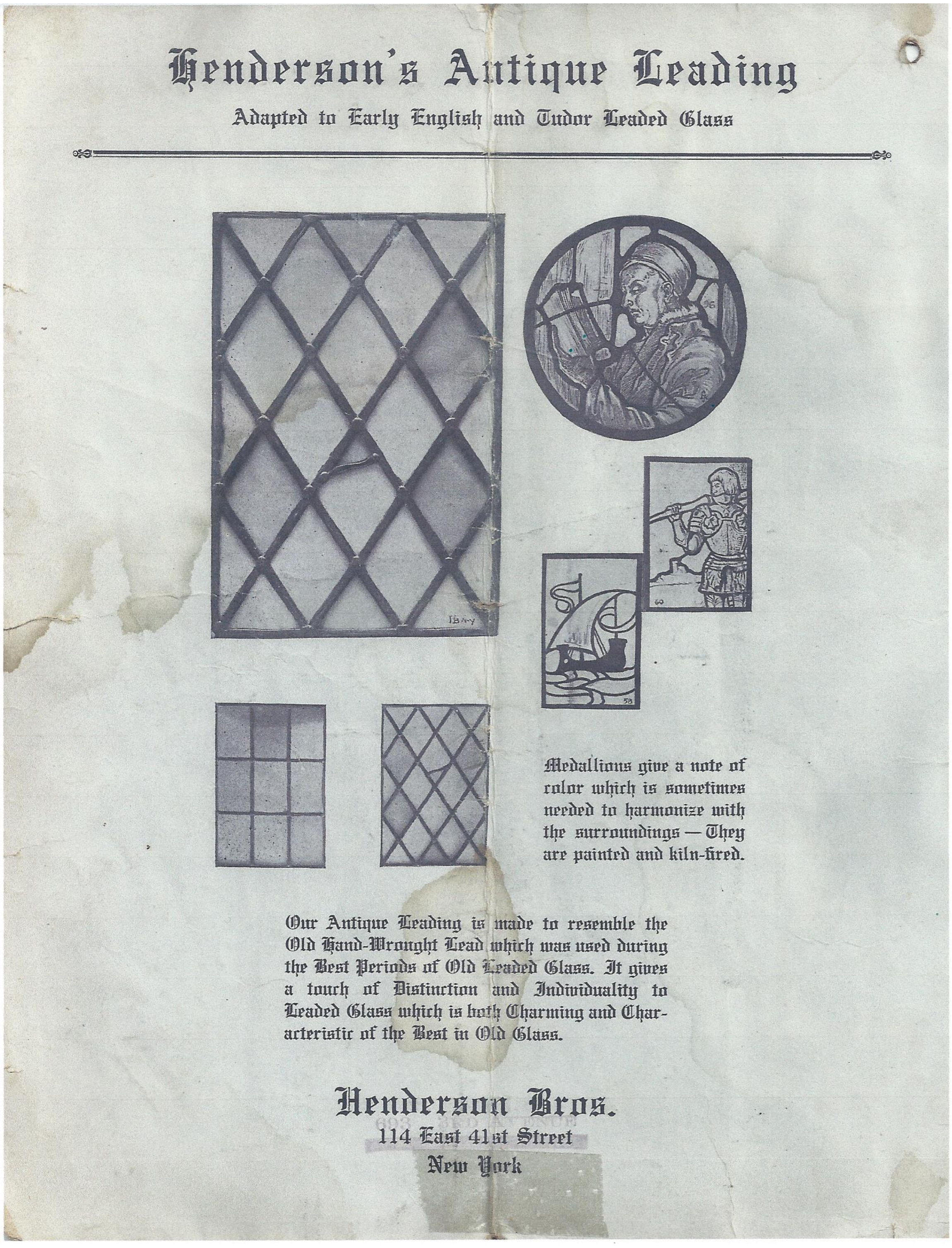

Figure 237. Henderson Brothers brochure used between c. 1922-1934.[2]

[2] Photocopy, author's collection.

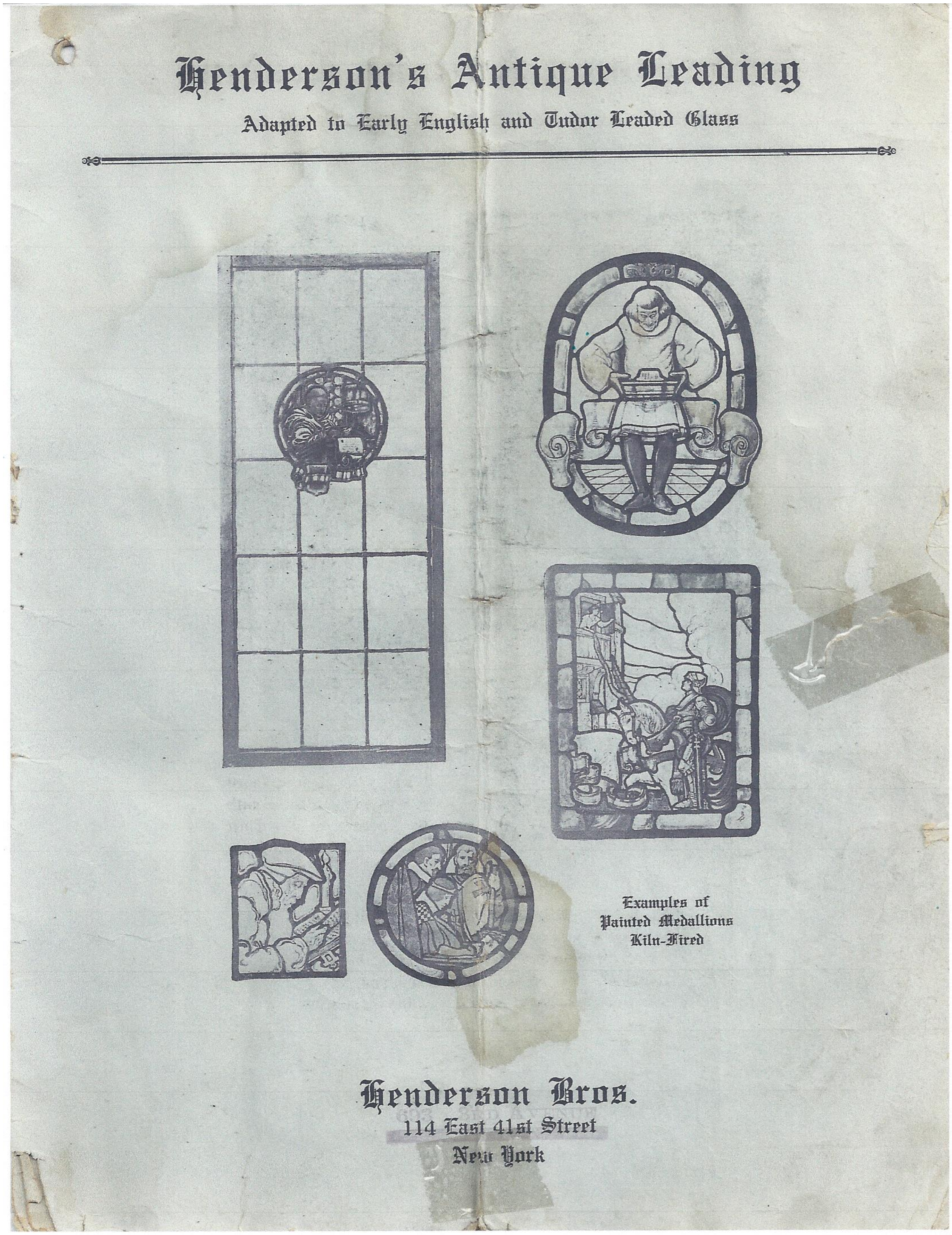

Figure 238. Henderson Brothers brochure used between c. 1922-1934.[3]

[3] Photocopy, author's collection.

Figure 239. Henderson Brothers brochure used between c. 1922-1934.[4]

[4] Photocopy, author's collection.

Figure 240. Henderson Brothers brochure used between c. 1922-1934.[5]

[5] Photocopy, author's collection.

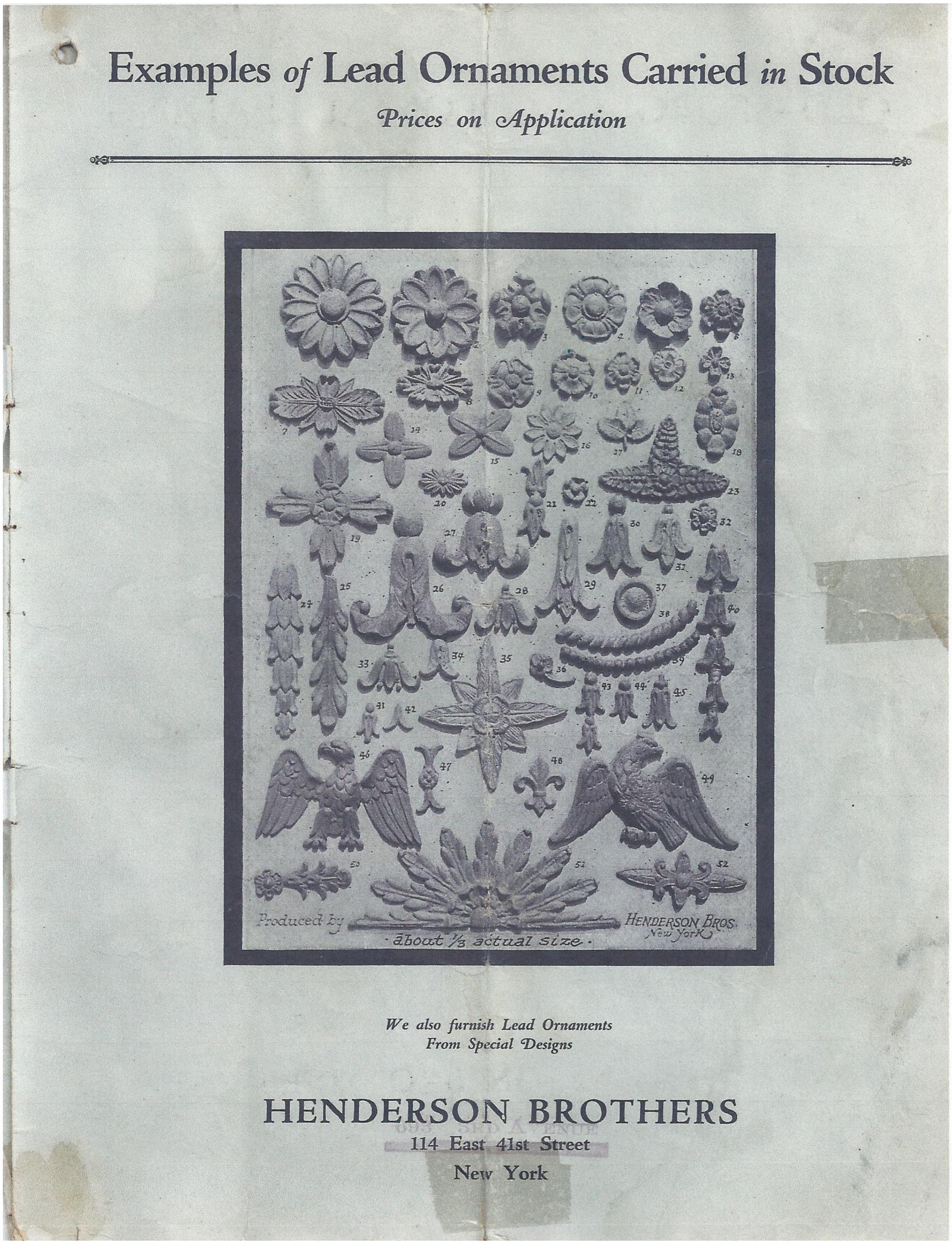

Figure 241. Henderson Brothers brochure used between c. 1922-1934.[6]

[6] Photocopy, author's collection.

Figure 242. Henderson Brothers brochure used between c. 1922-1934.[7]

[7] Photocopy, author's collection.

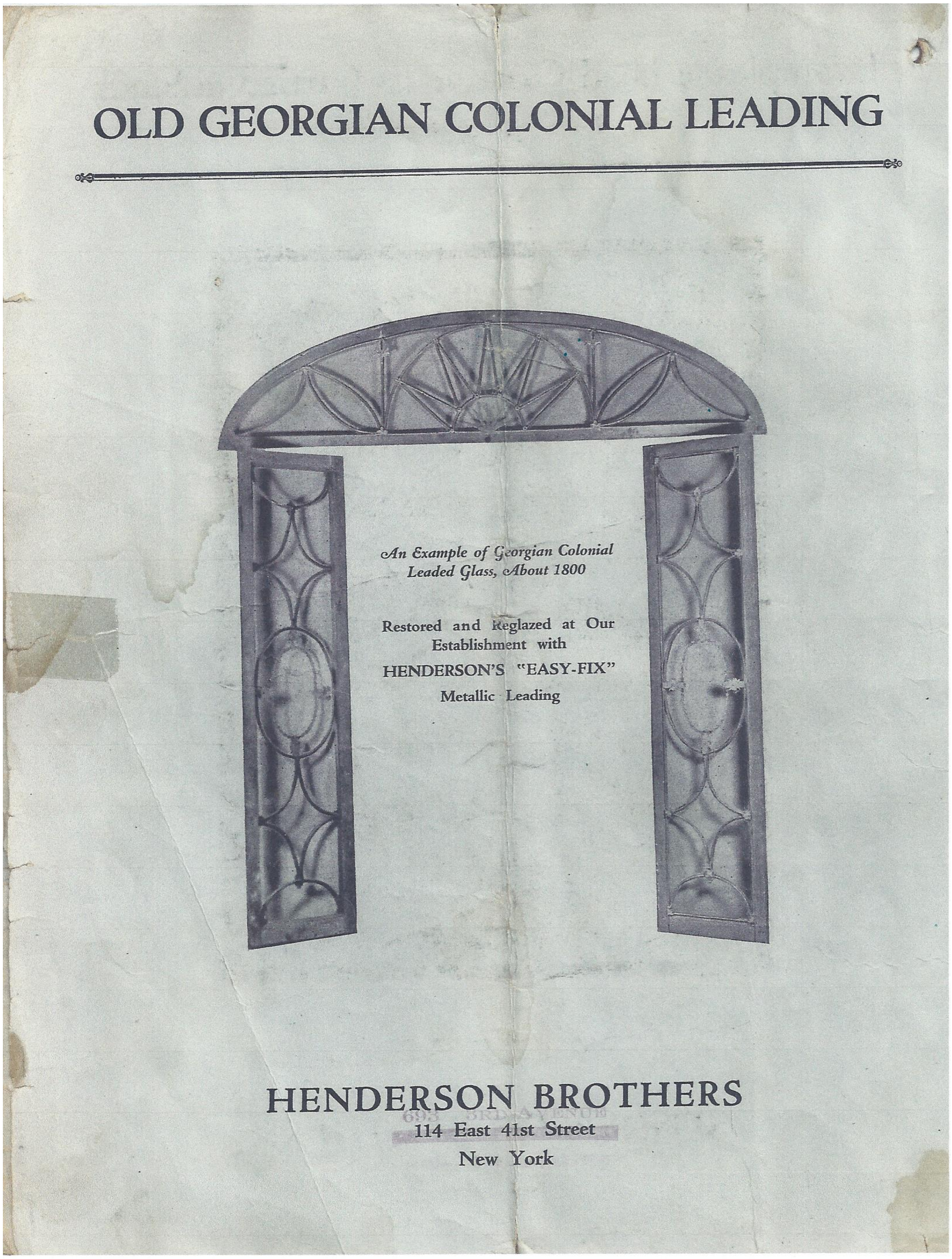

Figure 243. Henderson Brothers brochure used between c. 1922-1934.[8]

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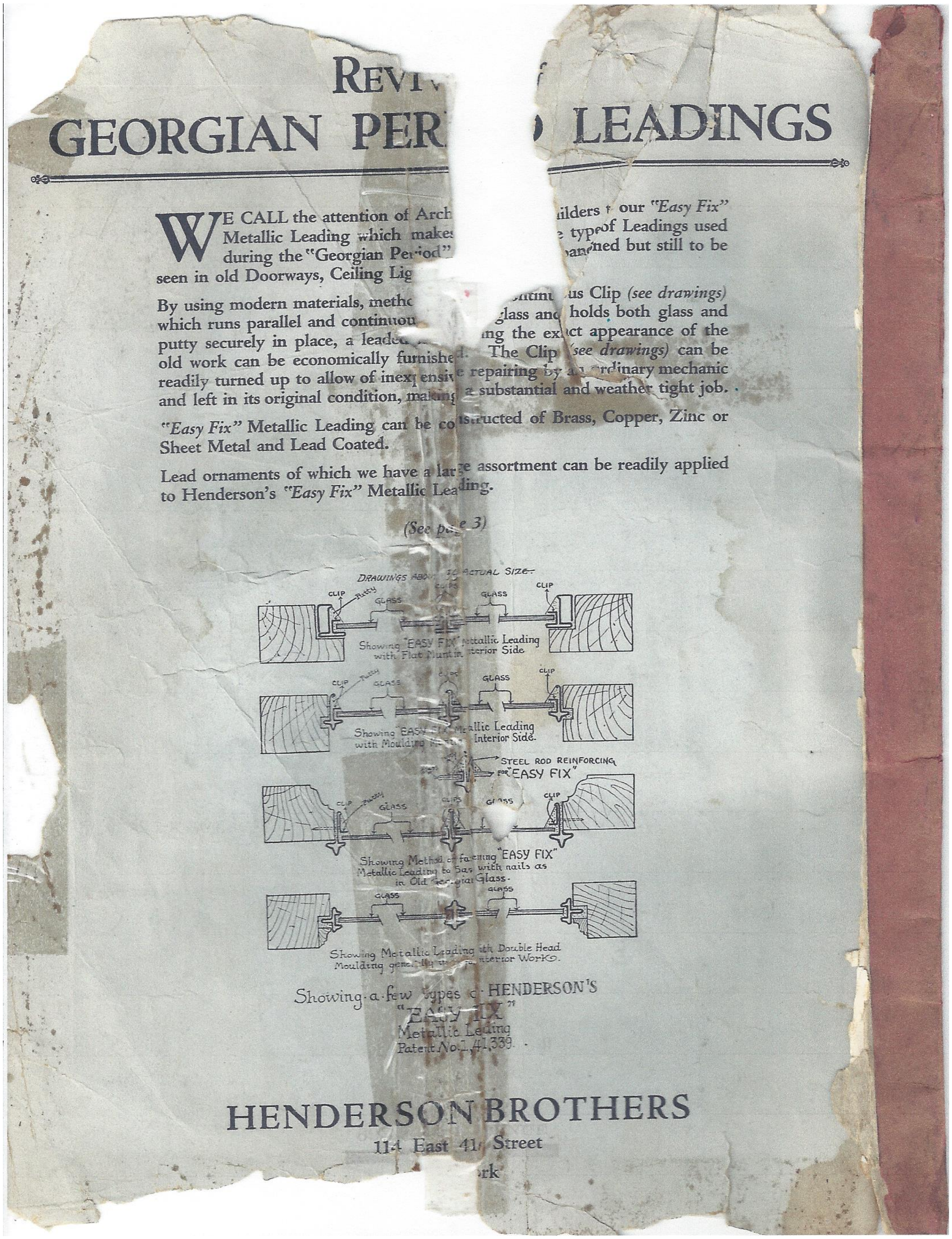
[8] Photocopy, author's collection.



REVI...

GEORGIAN PER... LEADINGS

WE CALL the attention of Arch... ...ilders ... our *"Easy Fix"* Metallic Leading which make... ...e type of Leadings used during the "Georgian Period" ... ...ned but still to be seen in old Doorways, Ceiling Lig...

By using modern materials, metho... ...us Clip *(see drawings)* which runs parallel and continuou... ...glass and holds both glass and putty securely in place, a leade... ...ng the exact appearance of the old work can be economically furnished. The Clip *(see drawings)* can be readily turned up to allow of inexpensive repairing by ... ordinary mechanic and left in its original condition, making a substantial and weather tight job.

"Easy Fix" Metallic Leading can be constructed of Brass, Copper, Zinc or Sheet Metal and Lead Coated.

Lead ornaments of which we have a large assortment can be readily applied to Henderson's *"Easy Fix"* Metallic Leading.

(See page 3)

Showing a few types of HENDERSON'S "EASY FIX" Metallic Leading Patent No. ...41,339.

HENDERSON BROTHERS

114 East 41st Street

...rk

Figure 244. Henderson Brothers brochure used between c. 1922-1934.[9]

[9] Photocopy, author's collection.

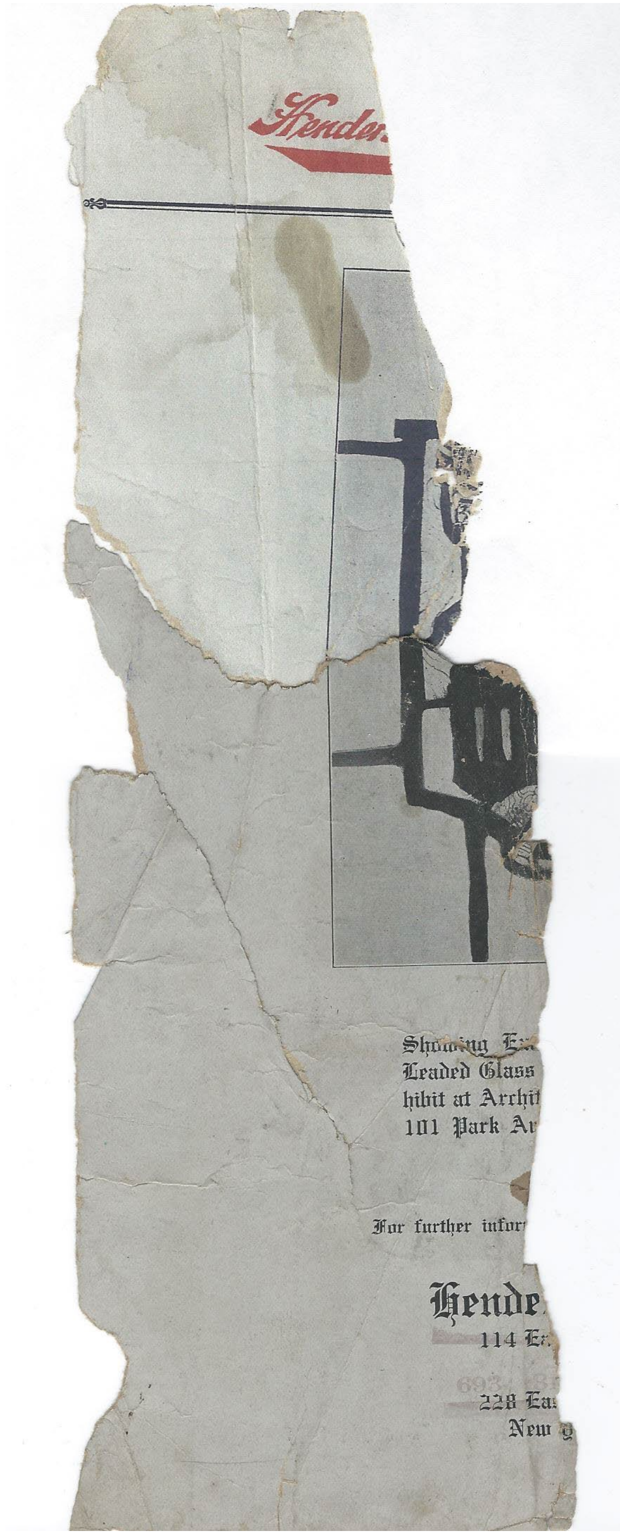
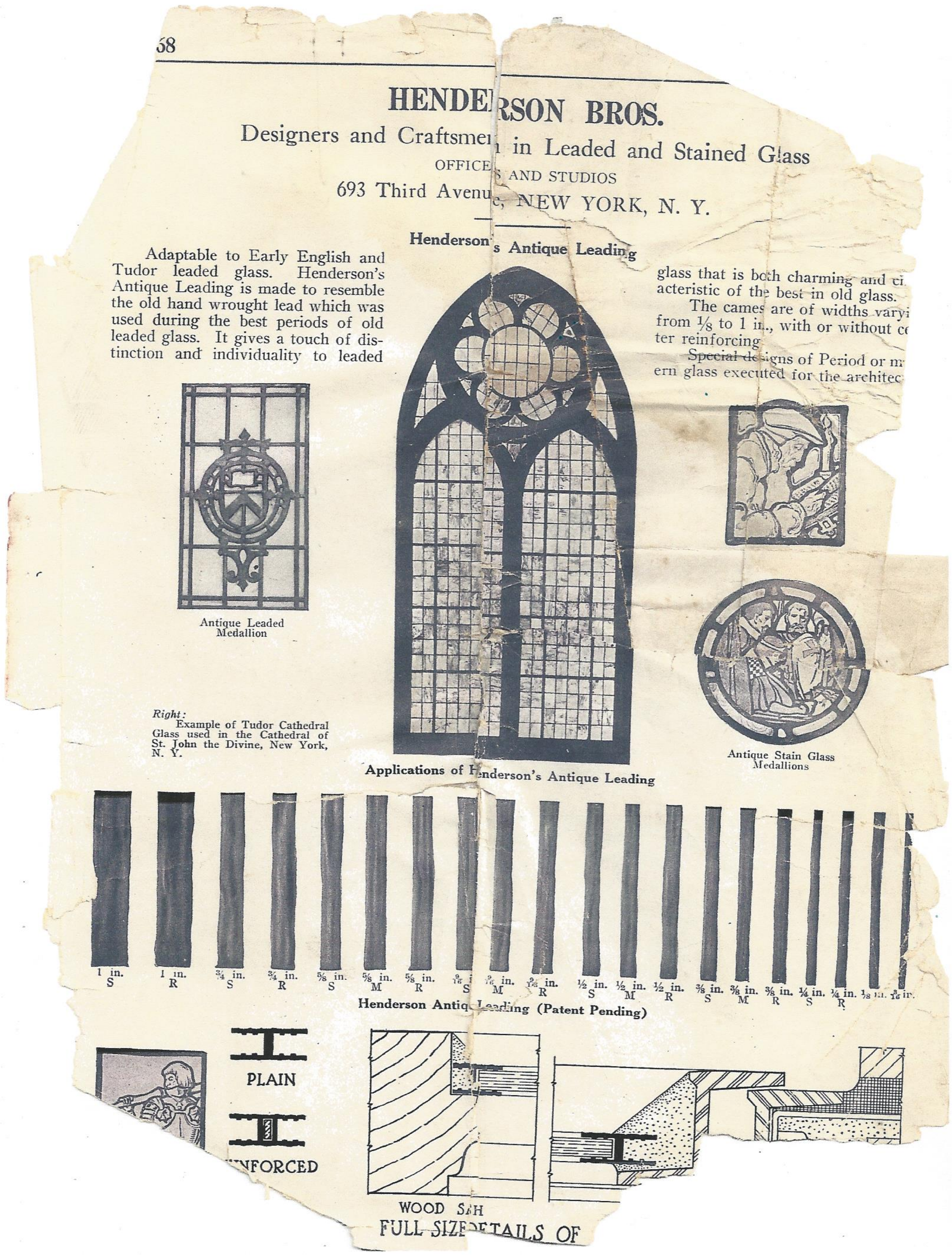


Figure 245. Fragment of Henderson Brothers brochure used c. 1928.[10]

[10] Original, author's collection.

Figure 246. Reverse of fragment, Henderson Brothers brochure used c. 1928.[11]

[11] Original, author's collection.



68

HENDERSON BROS.

Designers and Craftsmen in Leaded and Stained Glass

OFFICES AND STUDIOS

693 Third Avenue, NEW YORK, N. Y.

Henderson's Antique Leading

Adaptable to Early English and Tudor leaded glass. Henderson's Antique Leading is made to resemble the old hand wrought lead which was used during the best periods of old leaded glass. It gives a touch of distinction and individuality to leaded glass that is both charming and ch acteristic of the best in old glass.

The cames are of widths varyi from $\frac{1}{8}$ to 1 in., with or without c ter reinforcing.

Special designs of Period or m ern glass executed for the architec

Antique Leaded Medallion

Right: Example of Tudor Cathedral Glass used in the Cathedral of St. John the Divine, New York, N. Y.

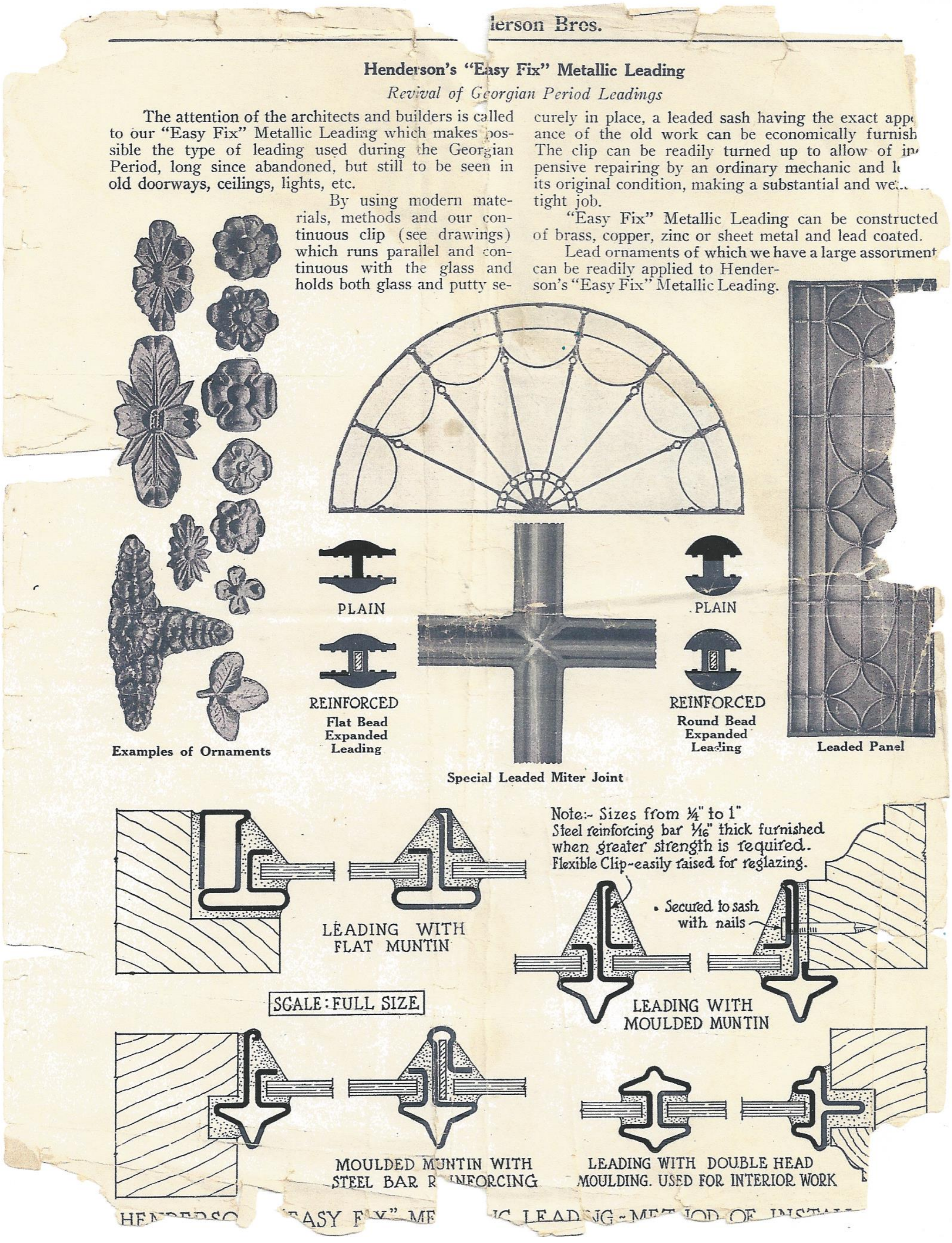
Antique Stain Glass Medallions

Applications of Henderson's Antique Leading

Henderson Antique Leading (Patent Pending)

Figure 247. Henderson Brothers brochure used between c. 1931-1934.[12]

[12] Photocopy, author's collection.


lerson Bros.

Henderson's "Easy Fix" Metallic Leading

Revival of Georgian Period Leadings

The attention of the architects and builders is called to our "Easy Fix" Metallic Leading which makes possible the type of leading used during the Georgian Period, long since abandoned, but still to be seen in old doorways, ceilings, lights, etc.

By using modern materials, methods and our continuous clip (see drawings) which runs parallel and continuous with the glass and holds both glass and putty securely in place, a leaded sash having the exact app ance of the old work can be economically furnish The clip can be readily turned up to allow of in pensive repairing by an ordinary mechanic and l its original condition, making a substantial and we... tight job.

"Easy Fix" Metallic Leading can be constructed of brass, copper, zinc or sheet metal and lead coated.

Lead ornaments of which we have a large assortment can be readily applied to Henderson's "Easy Fix" Metallic Leading.

Figure 248. Henderson Brothers brochure used between c. 1931-1934.[13]

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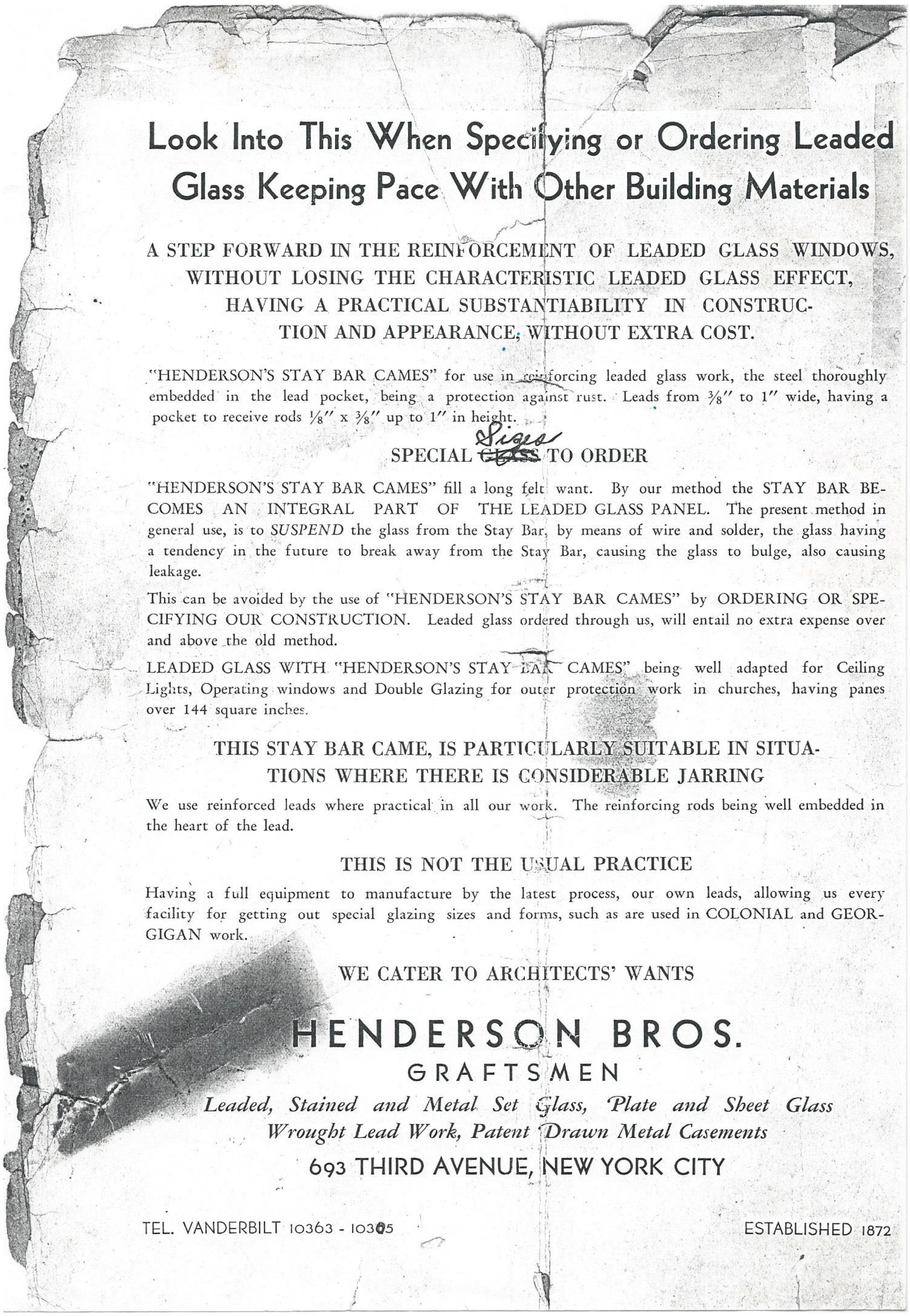
[13] Photocopy, author's collection.



Look Into This When Specifying or Ordering Leaded Glass Keeping Pace With Other Building Materials

A STEP FORWARD IN THE REINFORCEMENT OF LEADED GLASS WINDOWS, WITHOUT LOSING THE CHARACTERISTIC LEADED GLASS EFFECT, HAVING A PRACTICAL SUBSTANTIABILITY IN CONSTRUCTION AND APPEARANCE, WITHOUT EXTRA COST.

"HENDERSON'S STAY BAR CAMES" for use in reinforcing leaded glass work, the steel thoroughly embedded in the lead pocket, being a protection against rust. Leads from ⅜" to 1" wide, having a pocket to receive rods ⅛" x ⅜" up to 1" in height.

SPECIAL ~~GLASS~~ Sizes TO ORDER

"HENDERSON'S STAY BAR CAMES" fill a long felt want. By our method the STAY BAR BECOMES AN INTEGRAL PART OF THE LEADED GLASS PANEL. The present method in general use, is to *SUSPEND* the glass from the Stay Bar, by means of wire and solder, the glass having a tendency in the future to break away from the Stay Bar, causing the glass to bulge, also causing leakage.

This can be avoided by the use of "HENDERSON'S STAY BAR CAMES" by ORDERING OR SPECIFYING OUR CONSTRUCTION. Leaded glass ordered through us, will entail no extra expense over and above the old method.

LEADED GLASS WITH "HENDERSON'S STAY BAR CAMES" being well adapted for Ceiling Lights, Operating windows and Double Glazing for outer protection work in churches, having panes over 144 square inches.

THIS STAY BAR CAME, IS PARTICULARLY SUITABLE IN SITUATIONS WHERE THERE IS CONSIDERABLE JARRING

We use reinforced leads where practical in all our work. The reinforcing rods being well embedded in the heart of the lead.

THIS IS NOT THE USUAL PRACTICE

Having a full equipment to manufacture by the latest process, our own leads, allowing us every facility for getting out special glazing sizes and forms, such as are used in COLONIAL and GEORGIGAN work.

WE CATER TO ARCHITECTS' WANTS

HENDERSON BROS.
GRAFTSMEN
Leaded, Stained and Metal Set Glass, Plate and Sheet Glass
Wrought Lead Work, Patent Drawn Metal Casements
693 THIRD AVENUE, NEW YORK CITY

TEL. VANDERBILT 10363 - 10365 ESTABLISHED 1872

Figure 249. Henderson Brothers brochure used between c. 1931-1934.[14]

[14] Photocopy, author's collection.

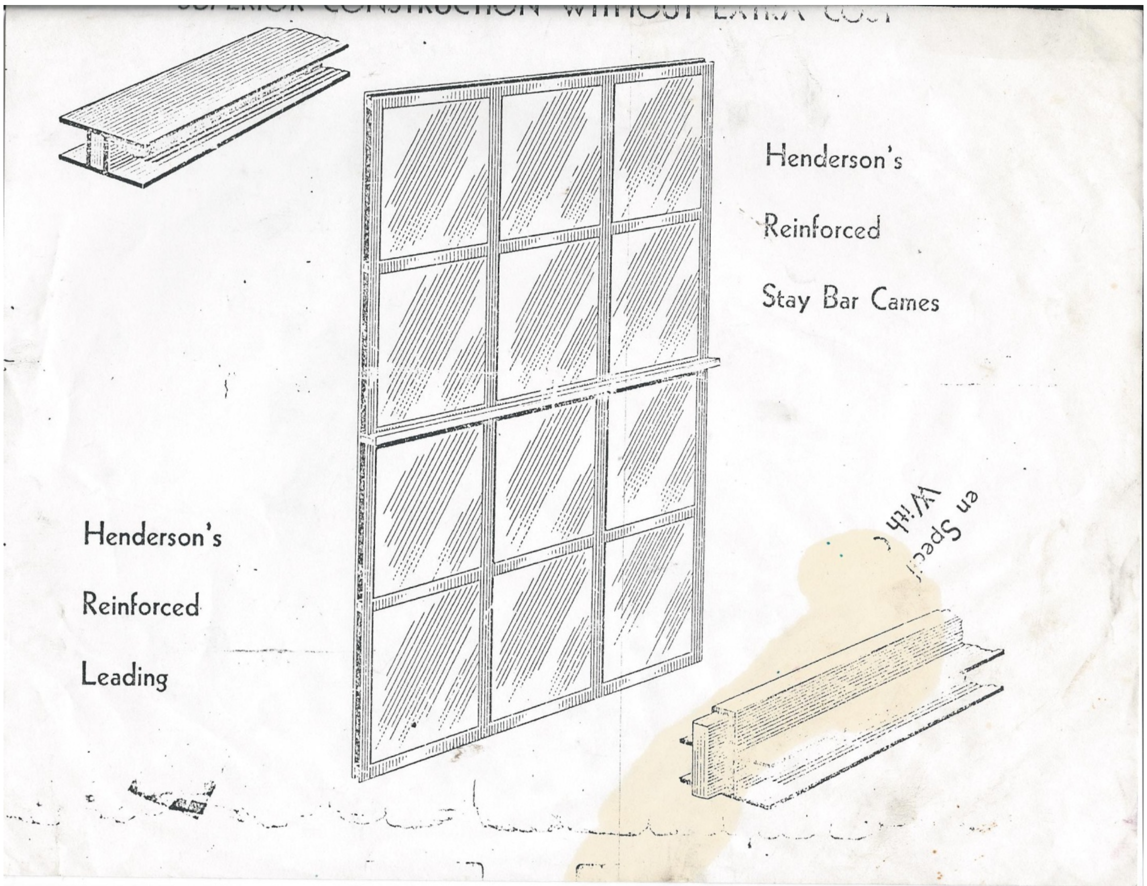
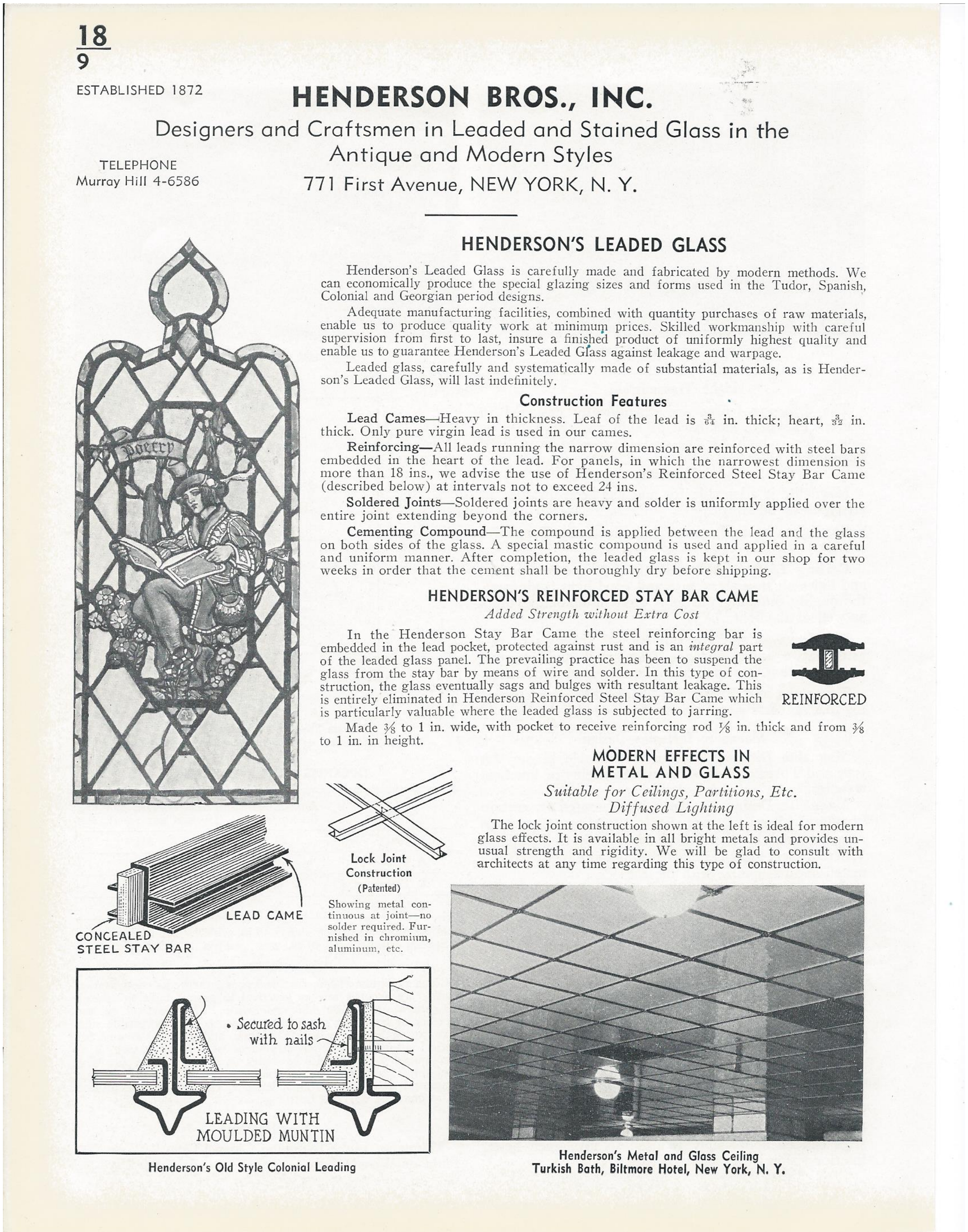


Figure 250. Fragment of brochure, c. 1932.[15]

[15] Photocopy, author's collection.



18
9

ESTABLISHED 1872

HENDERSON BROS., INC.

Designers and Craftsmen in Leaded and Stained Glass in the Antique and Modern Styles

TELEPHONE
Murray Hill 4-6586

771 First Avenue, NEW YORK, N. Y.

HENDERSON'S LEADED GLASS

Henderson's Leaded Glass is carefully made and fabricated by modern methods. We can economically produce the special glazing sizes and forms used in the Tudor, Spanish, Colonial and Georgian period designs.

Adequate manufacturing facilities, combined with quantity purchases of raw materials, enable us to produce quality work at minimum prices. Skilled workmanship with careful supervision from first to last, insure a finished product of uniformly highest quality and enable us to guarantee Henderson's Leaded Glass against leakage and warpage.

Leaded glass, carefully and systematically made of substantial materials, as is Henderson's Leaded Glass, will last indefinitely.

Construction Features

Lead Cames—Heavy in thickness. Leaf of the lead is 3/64 in. thick; heart, 3/32 in. thick. Only pure virgin lead is used in our cames.

Reinforcing—All leads running the narrow dimension are reinforced with steel bars embedded in the heart of the lead. For panels, in which the narrowest dimension is more than 18 ins., we advise the use of Henderson's Reinforced Steel Stay Bar Came (described below) at intervals not to exceed 24 ins.

Soldered Joints—Soldered joints are heavy and solder is uniformly applied over the entire joint extending beyond the corners.

Cementing Compound—The compound is applied between the lead and the glass on both sides of the glass. A special mastic compound is used and applied in a careful and uniform manner. After completion, the leaded glass is kept in our shop for two weeks in order that the cement shall be thoroughly dry before shipping.

HENDERSON'S REINFORCED STAY BAR CAME

Added Strength without Extra Cost

In the Henderson Stay Bar Came the steel reinforcing bar is embedded in the lead pocket, protected against rust and is an *integral* part of the leaded glass panel. The prevailing practice has been to suspend the glass from the stay bar by means of wire and solder. In this type of construction, the glass eventually sags and bulges with resultant leakage. This is entirely eliminated in Henderson Reinforced Steel Stay Bar Came which is particularly valuable where the leaded glass is subjected to jarring.

REINFORCED

Made 3/8 to 1 in. wide, with pocket to receive reinforcing rod 1/8 in. thick and from 3/8 to 1 in. in height.

MODERN EFFECTS IN METAL AND GLASS

Suitable for Ceilings, Partitions, Etc.
Diffused Lighting

The lock joint construction shown at the left is ideal for modern glass effects. It is available in all bright metals and provides unusual strength and rigidity. We will be glad to consult with architects at any time regarding this type of construction.

Poetry

CONCEALED STEEL STAY BAR

LEAD CAME

Lock Joint Construction
(Patented)
Showing metal continuous at joint—no solder required. Furnished in chromium, aluminum, etc.

Secured to sash with nails

LEADING WITH MOULDED MUNTIN

Henderson's Old Style Colonial Leading

Henderson's Metal and Glass Ceiling
Turkish Bath, Biltmore Hotel, New York, N. Y.

Figure 251. Henderson Brothers literature, c. 1934, possible trade show item.[16]

[16] Original, author's collection.

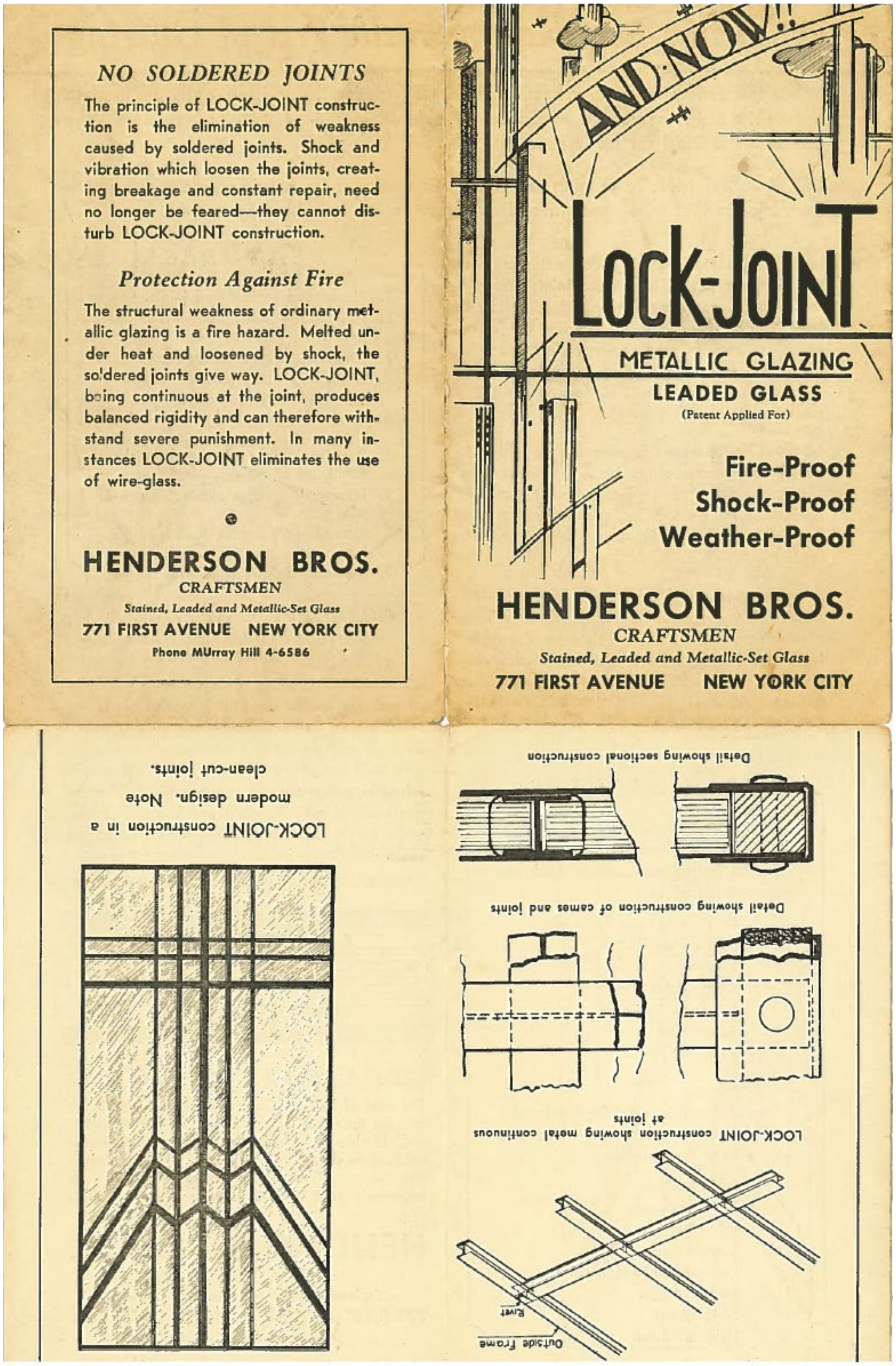


Figure 252. Front page of Henderson Brothers brochure, c. 1934.[17]

[17] Original, author's collection.

A Major Innovation in the Art of Glazing

While the slender grace and beauty of metallic glazing lends itself aptly to modern architecture, the structural weakness of soldered joints has until now rendered the design impractical for many uses.

LOCK-JOINT Metallic Glazing eliminates this weakness by providing clean-cut, unsoldered joints that give strength and durability to its desirable appearance.

In ordinary metallic glazing, constant vibration and frequent jarring loosen the joints and re-soldering is periodically required. Shattered panes can be replaced only by cutting the joints at all corners. Consequently maintenance is costly and even the greatest care cannot produce a repair job without leaving an unsightly scar!

LOCK-JOINT Metallic Glazing has no soldered joints! Continuous strips give the framework balanced rigidity. To replace a broken pane or reconstruct the glass design, any one section can be disjointed without leaving a single trace of repair!

Every metal is available for use in LOCK-JOINT construction—from the bright, polished surface of aluminum to the staid, dull richness of antique lead. Its very simplicity exerts a dignity of character never before achieved in metallic glazing. AND IT IS SHOCK-PROOF—FIRE-PROOF—WEATHER-PROOF.

SPECIAL USES

LOCK-JOINT Metallic Glazing is especially suitable where resistance to fire, frequent jarring and sudden shock are imperative, such as:

Elevator—Enclosure Partitions
Elevator Cars
Revolving and Swinging Doors
Ceiling Lights
Steamships, Yachts, etc.
Railway Cars
Aeroplanes

Where decoration is the dominant motif, LOCK-JOINT can be used with remarkable effect. For example:

Public Buildings
Bank Construction
Office Partitions
Cabinet Work
Ordinary Doors and Windows
Modern Designs
Antique Work
Lighting Fixtures

FEATURES

1. No brazed or soldered joints.
2. Fire-proof—Shock-proof—Weather-proof.
3. Available in all metals.
4. Costs no more than leaded glass of equal standard.
5. Adaptable to modern or antique style.
6. Permits simple replacements without any trace of repairs.
7. In many instances eliminates use of wire-glass.
8. Considerably lighter than lead glazing.
9. Balanced rigidity eliminates sagging.

LOCK-JOINT LEADED GLASS

For Use in Buildings Where Leaded Glass Is Desired

LOCK-JOINT Leading gives every appearance of ordinary leaded glass. It is leaded glass. An inner, unseen framework, however, gives it added strength and durability. This framework consists of a steel flange reinforcement which will remain intact in a fire of sufficient intensity to destroy the lead. It will also withstand jars and shocks, which heretofore has restricted the use of leaded glass.

LEAD CAME WITH LOCK-JOINT REINFORCEMENT

THE COST IS LOW!

The cost of LOCK-JOINT Metallic Glazing is no greater than that of leaded glass of equal standard. In view of its vast superiority, this economical feature should be particularly significant when general conditions make the price question as important as it is today. Estimates on request.

HENDERSON BROS.
CRAFTSMEN
Stained, Leaded and Metallic-Set Glass
771 FIRST AVENUE NEW YORK CITY
Phone MUrray Hill 4-6586

Figure 253. Back of Henderson Brothers art-deco style brochure, c. 1934, featuring "Lock-joint" metallic glazing leaded glazing.[18]

[18] Original, author's collection.

Appendix F

Drawings, Doodles, and Sketches of Gordon Henderson

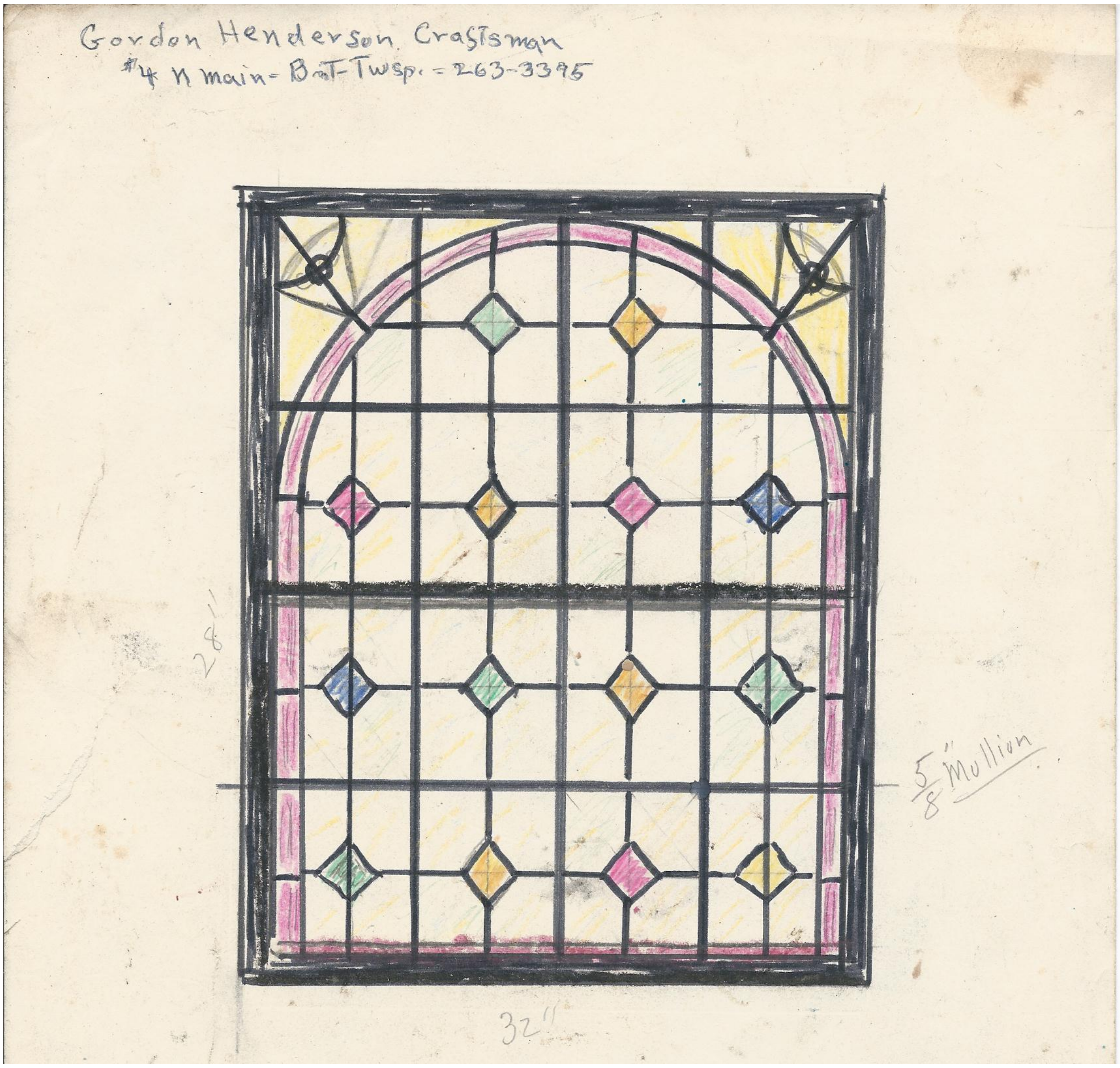


Figure 254. Window design for private residence, Mountain Lakes, New Jersey.[1]

[1] Author's collection.

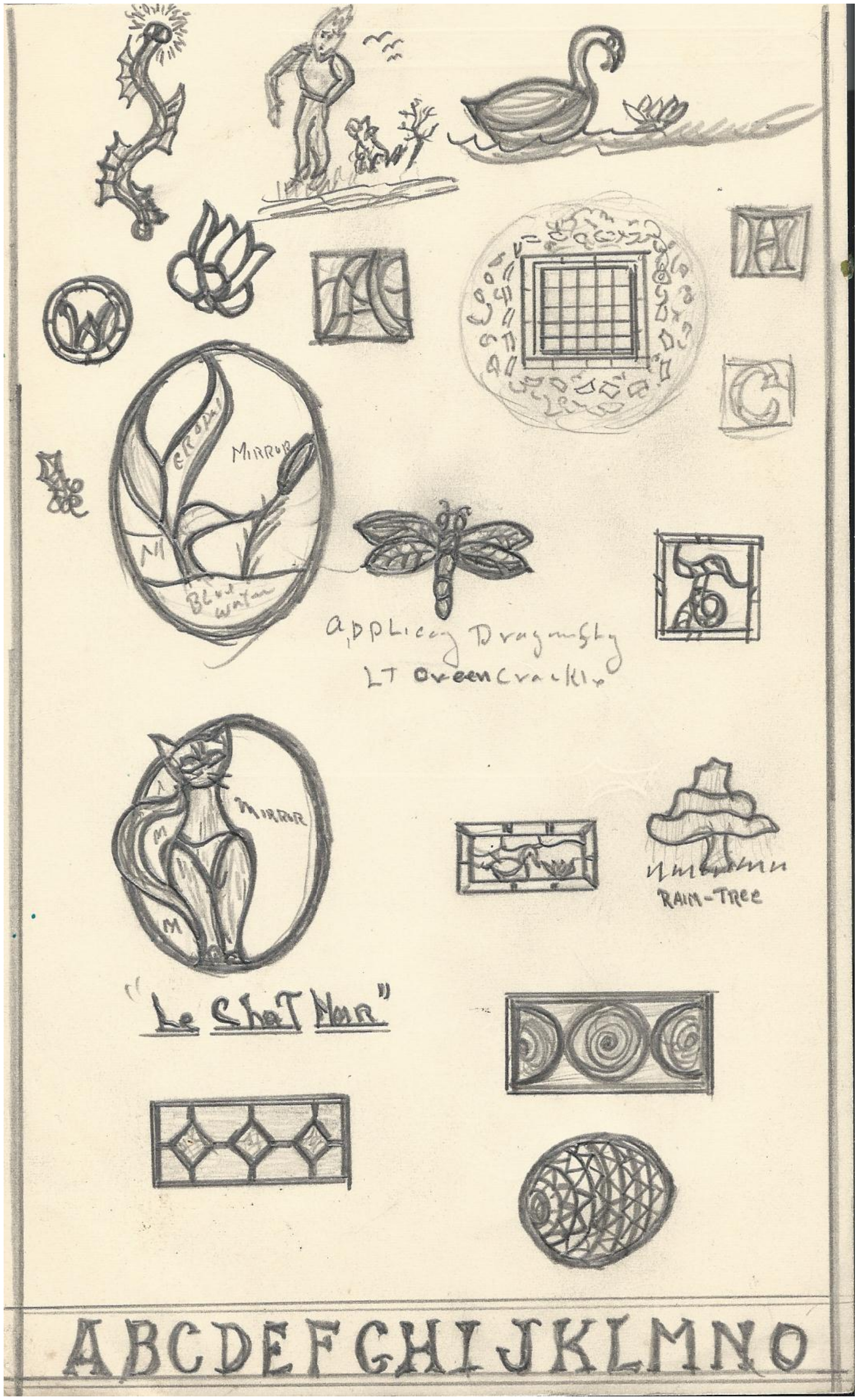


Figure 255. Page of designs, original size.[2]

[2] Author's collection.

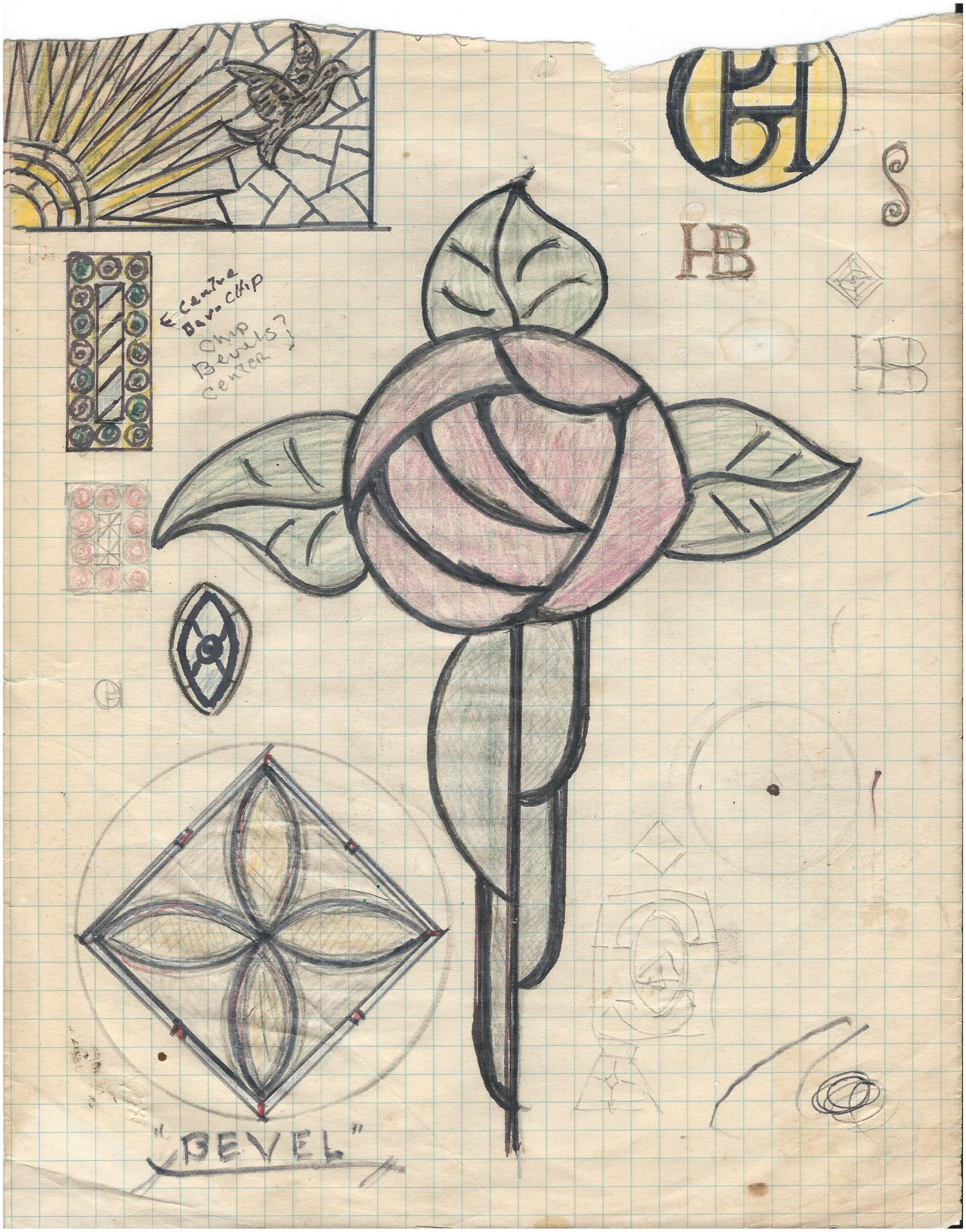


Figure 256. Designs and doodles, original size: 8 ½ X 11 inches.[3]

[3] Author's collection.

Figure 257. Pencil sketch for sailboat panel, signed "Don", original size 8 ½ X 5 inches.[4]

[4] Author's collection.

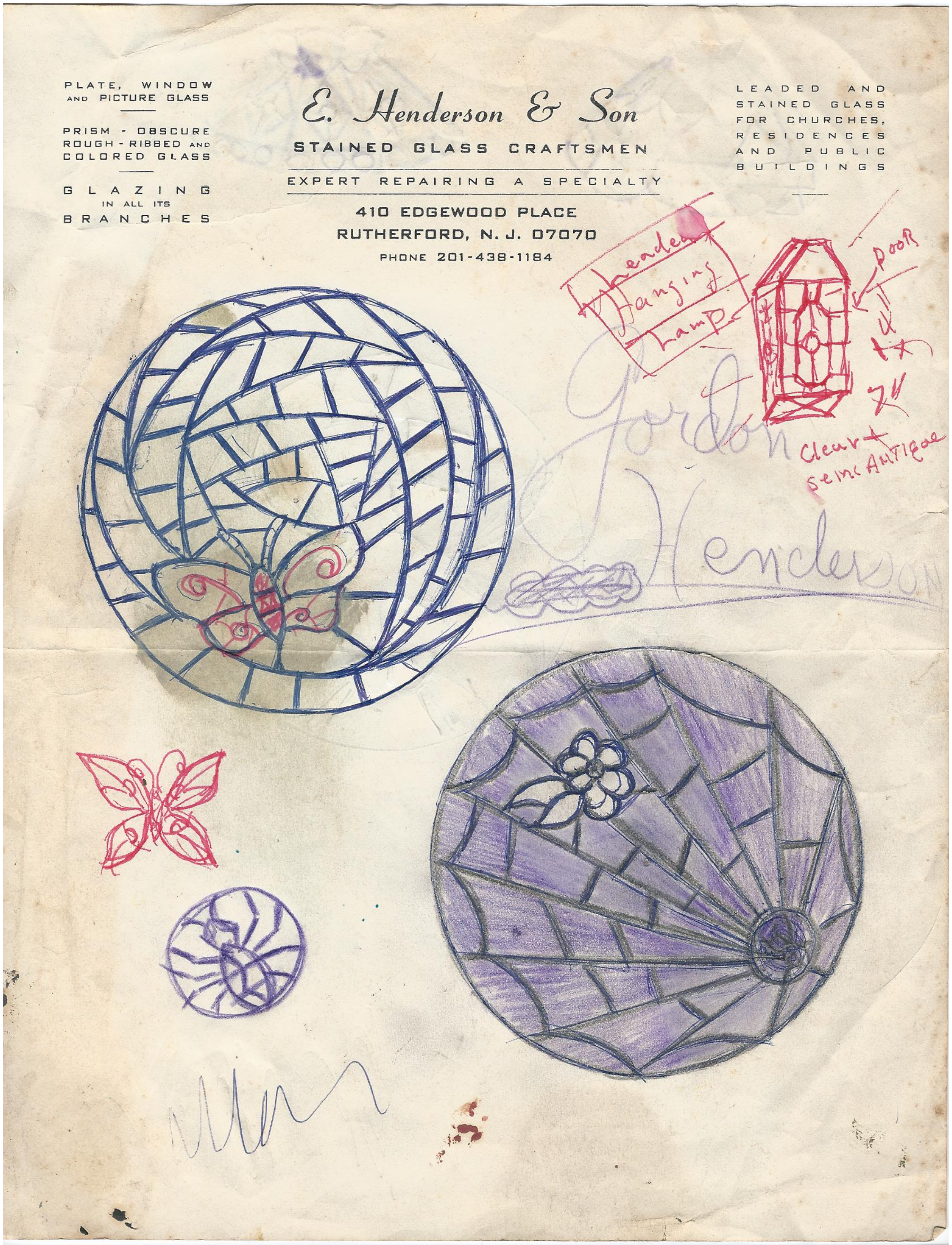


Figure 258. Sketches of panels. Original size: 8 ½ X 11 Inches.[5]

[5] Author's collection.

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