Evolution of Major Market Players, 1876–1919

CHAPTER 3

Fig. 15. Interior view of platform framing and building paper in a house built around 1911 in Aro Valley, Wellington, New Zealand. Photograph courtesy of the author, 2014.

In less than a decade, building paper had become widely used; over the next 43 years, it became commonplace. Patent documents provide a resource for examining the people and the changes in technology and processing.

Even before the 1883 demise of the Rock River Paper Company, and in spite of its patents, other businesses were also improving and manufacturing building paper. From 1876 to 1919, the use of building paper became internationally widespread. By 1911, building paper could be found in the walls of dwellings in New Zealand and in the form of tar paper covering shacks in the Western United States (Figs. 15 and 16). This chapter on the evolutionary period of building paper examines the various patents of other companies active during this time.

The mere existence of a patent affected the market not only by limiting the ability of other businesses to make a similar product, but by forcing them to make lower value products. For example, in 1871, the Chicago agent for the Rock River Paper Company, Benjamin E. Hale, patented a process that involved printing multiple advertisements on machine-made paper, which was either rolled or cut immediately into multiple pages to be used for wrapping (119,843).[1] In the opening clauses of the patent, Hale noted that the profit in producing wrapping paper was so greatly reduced that many manufacturers had ceased to do so, concluding that "the cause of this decline is due primarily to competition in the manufacture and to the fact that the most profitable products of paper-mills, such as building-paper and board, are

Fig.16. Edgar Syverud standing in front of the homestead tarpaper shack of his brother Henry Syverud, Valley County, Montana, 1911. Photograph courtesy of the Montana Historical Society Research Center Archives.

monopolized by a few manufacturers under Letters Patent." Hale was soon a manufacturer of wrapping paper.[2]

Products listed as "building paper" were not necessarily what would be considered as such today. For example, Edward Thompson—a dealer in roofing material, paints, and other supplies based in New Orleans, Louisiana—was the 1880 patentee and maker of Thompson's Improved Building Paper (235,178), which was designed to replace the "thick paper-board known as 'building-paper,' and sometimes called 'Western plastering-board,' for finishing of rooms in lieu of plastering."[3] Made of a rope-based pulp formed into a product "not exceeding twenty inches in width, and of an intermediate thickness between the straw paper-board and ordinary wall-paper," it was printed with a decorative finish. The use of manila rope-based building paper, as discussed earlier, had already been patented by Irving et al. in 1886 (60,635). Thompson's product was an interior wall lining complete with a preprinted decorative surface.

Finding Manufacturers

The identification of key building paper manufacturers during this period is complex. Until the first publication in 1906 of *Sweet's Indexed Catalogue of Building Construction,* individual company product catalogs were numerous and locally based, but not all are extant.[4] While it is comparatively easy to find a list of building paper manufacturers in an industry catalog, it is necessary to rely on other sources for the product names. Exhibitions, industry promotional catalogs, and newspaper and magazine advertisements provide valuable lists.

Records of the Centennial International Exhibition of Arts, Manufactures, and Products of the Soil and Mine, the first world's fair held in the US, also provide insight as to who was manufacturing building paper at that time and what the state of the art was. At the 1876 exhibition, held in Philadelphia, there were enough building paper manufacturers for the material to have its own class (Class 263), although some of the companies exhibiting in Class 260 (printing papers for books, newspapers, etc.) also reported producing building paper. The judges' report for Class 263 noted that the manufacture of types of building paper had "vastly increased within a few years," while the quality had improved "by the admixture of hemp and manila in much larger quantities" and new uses had been found as "evidence of their economy and utility."[5]

Table 6 shows the building and sheathing paper exhibitors at the 1876 Centennial Exhibition. Of the 11 building paper exhibitors, seven were from the US and three from Sweden; four received awards for their products (marked with a †).[6] The Swedish Commission report on the exhibition noted that these manufacturers were exporting their waterproof pasteboard to Denmark, Finland, Russia, England, France, and Belgium.[7] The listings suggest that the distinction between sheathing (used as a covering, including weatherboard and roofing) and building paper (used beneath the weatherboard) had been established, although the terms continued to be used interchangeably. The F. N. Davis Company also exhibited at the fair but promoted "stock for builders and paper-hangers," not building paper.[8] The Rock River Paper Company was included as a contributor to the State of Illinois exhibition, but no mention has been found of its product being assessed by the judges.[9]

The business of manufacturing and selling building paper grew quickly, with many new competitors entering the market. In 1891, *Carpentry and Building* magazine provided a list of eight "leading manufacturers": Standard Paint Co., F. W. Bird & Son, American Straw Board Co., Bird Paper Manufacturing Co., Newton Paper Co., S. E. Barrett Manufacturing Co., Nelson-Spencer Paper Co. Ehret-Warren Manufacturing Co., and H. F. Watson.[10] In the same

Table 6: Building and Sheathing Paper at the 1876 Centennial Exhibition

Class	Name († = award for product)	Place	Paper
263	Barrett, Arnold, & Kimball†	Chicago, IL	Building (Aluminous)
263	McNeil, Irving, & Rich†	Elwood, NJ	Building (Waterproof)
263	Haldeman Paper Company	Lockland, OH	Building
229	Irving Bros.	Elwood, NY	Building (Waterproof)
263	Joseph SteIwagon & Son	Philadelphia, PA	Sheathing (Raw & Prepared)
263	T. Seymour Scott & Bro	Philadelphia, PA	Building
263	A. Dunlop Gordon†	Philadelphia, PA	Building
263	Munksjö Paper Mills, Jonkoping†	Sweden	Building
263	Djupafors' Manufacturing Co. Ltd.	Ronneby, Djupafors, Sweden	Sheathing
263	Munkedal Manufacturing Co. Ltd.	Uddevalla, Sweden	Sheathing

year, Seeger and Guernsey's *Cyclopædia of the Manufactures and Products of the United States* recorded no manufacturers of building papers in its first edition, but 11 were listed in its 1891 second edition.[11] Even then, the basis of selection was not to provide a complete list of manufacturers but only "the best in every line."

The January 1907 issue of *Ice and Refrigeration Illustrated* magazine included advertisements for F. W. Bird & Son, J. A. & W. Bird, Standard Paint Company, and H. W. Johns-Manville Company—all promoting the air-management and moisture-control benefits of insulating and building paper products, although no detailed technical specifications were provided.[12]

Companies listed as providing building paper in four editions of the US National Association of Manufacturers' *American Trade Index* are recorded in Table 7.[13] Of the 17 companies listed in one or more of the four editions, nine also have one or more identified trademarks (marked with a ‡).

Walden's ABC Guide for 1928 (the earliest available to this research) listed 56 companies providing building paper, which included roofing, felt, asbestos, carpet, and other materials, of which 28 (50 percent) specifically listed building or sheathing papers.[14]

Technical training manuals also provided lists of products. For example, the 1898 first edition of Frank E. Kidder's *Building Construction and Superintendence: Part II, Carpenters' Work* noted that sheathing paper made extra provision "for keeping out the wind and the heat and cold." The use of sheathing paper or felt was listed in the sample specifications, showing how important it had become in just 30 years.[15]

Kidder's 1899 second edition included a table of 12 different paper and felt products, and the 1920 ninth edition an additional eight products.[16] The first two editions provide no detailed general instructions on the installation of sheathing paper—only that it should be used—although there are some installation details for windows:

> "When the outside casing is set flush with the boarding the band mould or outside architrave should be put on after the frame is fixed in place, and the sheathing paper should be extended on to the casing and [the architrave] nailed over it, and also over the joint between the casing and the boarding. If the casing sets outside the boarding the sheathing paper should be put on around the opening before the frame is set and the outside casing nailed over it."[17]

Kidder's 1920 ninth edition continued this guidance but added instructions on the use of building paper under "clapboards, siding, or shingles," noting that it was generally placed horizontally and "should lap about 2 inches [50 mm] over each sheet and over the paper previously placed around the window and door-frames."[18]

Table 8 provides a summary of the tables in the three editions of Kidder's manuals in the dollars of the day and includes the values adusted to the Consumer Price Index (CPI) for 2025. Apart from the papers shown in bold typeface, all of the other papers were made or sold by the Barrett Manufacturing Company.

Manufacturers with more than two patents for the manufacture or use of building or sheathing paper, or with trademarks for such products, or who exhibited at the 1876 Centennial Exhibition have been selected for detailed examination. This includes all identified American and British companies. It is possible that companies elsewhere in the world were manufacturing building

Table 7: American Trade Index Listings

Company (‡ = identified trademark)	City	State	1905	1910	1913	1918
Barrett Manufacturing Co. ‡	New York	NY	Y	Y	Y	
Certain-teed Products Corp. ‡	St Louis	MO				Y
Chas. T. Abeles & Co.	Little Rock	Ark		Y		
General Roofing Mfg. Co. ‡	East St. Louis	IL		Y	Y	
H. F. Watson Company	Erie	PA	Y	Y	Y	Y
H. W. Johns-Manville Co. ‡	New York	NY		Y	Y	Y
Hoboken Paper Mills Co.	Hoboken	NJ			Y	Y
Hollingsworth & Vose Co.	Boston	MA				Y
J. W. Sefton Manufacturing Co.	Chicago	IL	Y			
Keasbey & Mattison Co.	Ambler	PA	Y	Y	Y	
Keystone Roofing Mfg. Co. ‡	York	PA		Y	Y	Y
Mullen Brothers Paper Co.	St. Joseph	MI	Y			
Paraffine Paint Co., The ‡	San Francisco	CA	Y	Y	Y	Y
Pioneer Paper Co. ‡	Los Angeles	CA			Y	Y
Schmidt & Ault Paper Co.	York	PA			Y	Y
Standard Paint Co. ‡	New York	NY	Y	Y	Y	Y
Warren-Ehret Co. ‡	Philadelphia	PA	Y	Y		

paper during this period, but despite extensive searching, no others have been found beyond those listed in Table 6. Trademarks are further discussed in Chapter 4.

This chapter lists the selected manufacturers in order of their arrival in the building paper marketplace, with their period of building or sheathing paper production noted. Where possible, a brief company history is also provided.

F. N. Davis & Company, 1871–1880

In the early 1870s, Francis N. Davis started a factory making a paper flour barrel patented by Judson L. Thomson (147,710).[19] In 1871, Davis patented the use of alum-based material to make the building paper fire- and damp-proof (117,155). This involved first soaking the strawboard in alum (sulfate of aluminum) and then passing it through a "series of drying and heated calendering-rolls." The hardened, crystallized alum made it "not only fire-proof but impervious to dampness," as well as allowing it to be "wound into rolls without the danger of adhering." This product was advertised as Davis's "Patent Aluminous Building Paper" (Fig. 17). Davis also patented an improved manufacturing method for treated building paper (128,863), and a method to give a "wall-paper finish to continuous lengths of building paper or board" (124,795).

F. N. Davis's building papers were advertised by J. R. Lawrence & Company in 1872, and in 1873 under the name of Davis, Lawrence, & Davis by the

Fig. 17. F. N. Davis & Company advertising booklet, ca. 1870. Special Collections, Princeton University Library.

Table 8: Price of Building Papers

Product	Price $ per 100 ft²			*$1920 in*
	1899	1911	1920	*$2025*
Common tarred felts, 15 lb. per square	$0.30	$0.30	$0.30	*$4.60*
Red rosin-sized sheathing, best grades	$0.35	$0.35	$0.25	*$3.80*
Monahan's parchment sheathing, single ply	**$0.26**	**$0.26**	**$0.26**	**$4.00**
Monahan's parchment sheathing, double ply	**$0.40**	**$0.40**	**$0.40**	**$6.10**
Monahan's ship-rigging tar sheathing, double ply	**$0.75**	**$0.75**	**$0.75**	**$11.40**
Neponset black (waterproof) building paper	$0.45	$0.45	$0.45	*$6.80*
Neponset red rope roofing fabric	$1.20	$1.10	$1.20	*$19.00*
Sheathing papers with asphalt center	**$0.40–$0.50**	**$0.40–$0.50**	**$0.40–$0.50**	**$6.10–$7.60**
John's asbestos building or sheathing felt, 10 lb. per square	$0.42	$0.42	$0.22½	*$3.40*
John's asbestos building or sheathing felt, 14 lb. per square	$0.55	$0.55	$0.31½	*$4.80*
Cabot's sheathing quilt, single ply	$1.05	$1.05	$1.05	*$16.00*
Cabot's sheathing quilt, double ply	$1.25	$1.25	$1.25	*$19.00*
Barrett's specification felt			$0.35	*$5.30*
Barrett's defender felt sheathing			$0.80	*$12.20*
Sackett's waterproof sheathing			**$0.30**	**$4.60**
Empire parchment sheathing, single ply			$0.25	*$3.80*
Empire parchment sheathing, double ply			$0.36	*$5.50*
Empire parchment sheathing, triple ply			$0.50	*$7.60*
Barrett's red rope			$1.00	*$15.20*
Barrett's black waterproof sheathing			$0.40	*$6.10*

(bold = company other than Barrett Manufacturing Co.)

company's agent in Golden, Colorado.[20] In an advertising leaflet from 1872 or 1873, Davis, Lawrence & Davis sold products made under F. N. Davis's 1871 to 1872 patents, suggesting that around this time the two businesses were closely linked.[21]

The F. N. Davis Manufacturing Company was organized in 1875 with a capital of $100,000, producing building paper, paper carpeting, paper pails and barrels, and heavy waterproof paper boards.[22] Barrel manufacture stopped in 1876, even though Davis had his own patent by then (189,024) .[23]

The company's 1870 booklet noted that Barrett, Arnold & Kimball of Chicago, Illinois, were "sole agents for the sale of the celebrated Ornamental and Aluminous Building Paper and Paper Carpeting."

The last advertising found for the F. N. Davis Company is from 1877, although by 1879, Davis reportedly had factories in Cologne, Germany; London, England; and Prussia.[24] Davis died in December 1880, at the age of 40. He left a wife and two teenage children, but the company does not appear to have continued. It seems most likely that it became part of Barrett, Arnold & Kimball, which continued to sell building paper.

Willesden Waterproof, 1872–1980s

The Willesden Paper and Canvas Works of Willesden Junction, London, England, is the only non-American company identified as manufacturing building paper during the period of interest. The company made a variety of paper (one-, two-, and four-ply), canvas, and scrim products treated with its patented waterproofing compound. The "cupro-ammonium solution" treatment was

demonstrated to make its product waterproof, rotproof, and insect- and mold-resistant. The process resulted in shades of olive-green coloring, creating the distinctive green canvas used for army tents, suitcases, garden furniture, covers, and more.[25] The innovative treatment was first exhibited at the 1872 Annual International Exhibition, held in South Kensington, London, and, following further development, it was awarded three prizes at the 1878 Paris Exposition.[26] In addition to its use in buildings, drainpipes made of Willesden paper were reported to last over 40 years.

Willesden paper was widely distributed in Britain and its colonies. The company's products were not initially developed for use as barrier papers, but rather as specialist waterproof papers. It was upon export to the colonies that this use became particularly valuable; advertisements touting the impermeability of the material were distributed in New Zealand and appeared in magazines in Australia (Fig. 18).[27] Willesden roofing paper was exhibited at the 1885 Canterbury Agricultural and Pastoral Show in Christchurch, New Zealand, where it was said to have been "extensively used for roofing on stations in Canterbury."[28] In 1898, Willesden Paper was specifically identified in the roofing and walls of a hiking hut on Mount Malte Brun, near the Tasman Glacier in the Southern Alps of New Zealand.[29]

Fig. 18. Advertising sheet for Willesden Paper and Canvas Works, n.d. Puke Ariki Museum, New Plymouth, New Zealand.

Fay Manilla Roofing Company, 1866–1915

In about 1866, Stephen R. Colwell built a papermill on the site of an old ironworks in Weymouth, New Jersey. He leased it soon after to Thomas Irving, John McNeil, and George W. Rich. They had experience in the paper industry through involvement in the Pleasant Mills Paper Factory in Mullica, New Jersey.[33] Their patent with Cyrus J. Fay (60,635) provided the plant with a paper product suitable for building use.

A presumably related business, Irving Brothers of Brandon, Vermont, "general agents for waterproof building paper and paper carpeting," distributed products from an unnamed supplier, but with Irving, et al.'s and Fay's patent dates prominently noted in the promotional materials.[34] Given the mention of the patents, it appears that Irving Brothers and Fay shared production of building paper products. Displayed at the 1876 Centennial Exhibition, Irving Brothers' products received an award as "the strongest and most durable of the natural or untarred building papers exhibited."[35]

The Irving paper was being promoted in Vermont by A. W. Irving in 1874; in 1875, it was being sold in Vermont by both Irving Brothers of Brandon and Harris & Clark of Rutland.[36] In November 1875, Irving Brothers sold its New England and Northern New York business to Chas. P. Harris & Co. of Rutland, Vermont, the successors to Harris & Clark.[37] The company's business card, probably from 1877 (after the Centennial Exhibition), promoted

Fig. 19. Trade card for Chas. P. Harris & Co., ca. 1877. Historic New England.

Irving's waterproof building paper as "air tight, strong, clean, odorless, best, and cheapest" (Fig. 19).[38] The last known Chas. P. Harris advertisement for Irving's papers is from 1888, while the company catalog for 1891 listed only chairs.[39]

Although Cyrus J. Fay's original patent was for exterior use, by 1877, he was promoting it as a "substitute for more expensive material for building purposes, such as lining under shingles or lapboards, for walls and ceilings inside, instead of plaster."[40] One leaflet also promoted the company's patented "hay press," (10,472) and "stump and rock lifter" (95,011).

Cyrus Fay died in 1881, and the business was taken over by his son William H. Fay.[41] William Fay continued to develop the building paper product, patenting improved waterproofing based on a mixture of rosin, tallow, and paraffin (369,700). He suggested it could be "used under weather boards, shingles, slate, etc., for the purpose of excluding air and dampness," while also continuing to promote its use on outside walls (Fig. 20).[42] The business steadily grew,

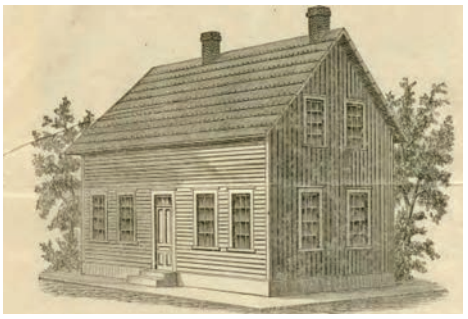


Fig. 20. Fay's Building Manilla catalog illustration, 1885. Special Collections, Rutgers University Libraries.

Fig. 21. Fay Manilla Roofing Co. buildings, Second and Vine Streets, Camden, New Jersey, 1877, 1882, and 1885 (left to right). Special Collections, Rutgers University Libraries.

as evidenced by the illustrations from the company's 1877, 1882, and 1885 promotional booklets (Fig. 21).

By 1885, the marketplace was becoming more complex. The company found itself vexed by a "class of 'hangers on'—who vulture-like are ever fearful of venturing alone and upon their own responsibility—[and who,] seeing our success, are greedy to share it, although they gave no aid in producing it." As a result, the company reported that it had obtained its own trademark, which was printed on all its manila goods during manufacturing (Fig. 22).[43] However, a search of both the *Gazette* and the New Jersey state trademarks has not uncovered any registration.

In 1888, a trade magazine reported that the manila building paper and oilcloth of the Irving Brothers of Elwood, New Jersey, were "excellent of their kind."[44] The Weymouth Paper Mill closed in 1888, so presumably the company either had significant stocks on hand or sourced from another mill.[45]

In February 1893, the company changed its name to the Fay Manilla Roofing Company.[46] Just over a year later, William H. Fay died, but the company continued, manufacturing waterproof insulating, roofing, and sheathing papers until 1912.[47]

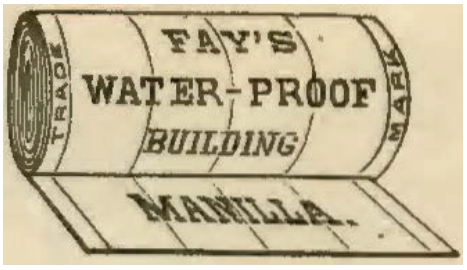


Fig. 22. Fay's Water-proof Building Manilla claimed trademark, 1885. Special Collections, Rutgers University Libraries.

In 1913, the company was promoting a template board as a "new material especially adapted for template work in shipyards."[48] By 1915, although it continued to produce roofing felt and waterproof paper, its primary product was template board.[49]

The company was officially dissolved in 1915, but it was listed in the trade directory under "roofing" in the magazine *Refrigerating World* from 1917 through 1920.[50]

Barrett, Arnold & Kimball, 1871–Present

Samuel Eddy Barrett moved from Cambridge, Massachusetts, to Chicago, Illinois, in about 1855, and established the business of Barrett, Arnold & Powell in 1857. He joined the Union army in 1861, serving with distinction until 1864.[51] On his return to Chicago, the company continued selling coal tar, felt and composition roofing material, and roofing paint. By April 1869, Powell, Getchell & Company had taken over the roofing business, while Barrett and Arnold were manufacturing and selling a range of roofing materials and felt.[52] That partnership was dissolved on January 1, 1871, and replaced by Barrett, Arnold & Kimball "for the manufacture and sale of paving and roofing materials, tar, oil, felt, etc."[53]

The company found a demand for its roofing felt in the construction of walls. In June 1866, its advertising reported that "due to the great demand for our Felting between the sheathing and siding of frame buildings, we are manufacturing an article especially adapted to that use."[54] The company's regular display advertisement in the *Chicago Tribune* from March 8 to October 6, 1871, added building paper to its product range. After October 25, 1871, the wording changed to "building felt," possibly in response to the Rock River Paper Company having been awarded a trademark for "building paper" earlier that year.

The manufacture of a tar-based product led to an unfortunate link between the company and the Great Fire of Chicago. The fire started southwest of the city center after 9 p.m. on the evening of October 8, 1871, and by 11:30 p.m. it had spread to the South Side. Soon after, it was reported that a burning shingle had ignited the Powell, Getchell & Company roofing plant or the next-door plant of Barrett, Arnold & Kimball, and from there advanced to the Chicago Gas Light and Coke Company before carrying on to destroy much of the city.[55]

At the 1876 Centennial Exhibition, Barrett, Arnold & Kimball won an award for its "Aluminous Building Paper," presumably using the Francis N. Davis patent.[56] In 1881, Barrett, Arnold & Kimball had its own mill in Beloit making strawboard, although the exact date on which it began producing in Beloit has not been determined.[57] The 1884 Sanford map shows Barrett and Kimball's Paper Lap Board Factory at the corner of Race and State Streets. In 1889, the Beloit Strawboard Company's plant was sold to the newly named S. E. Barrett Manufacturing Company,

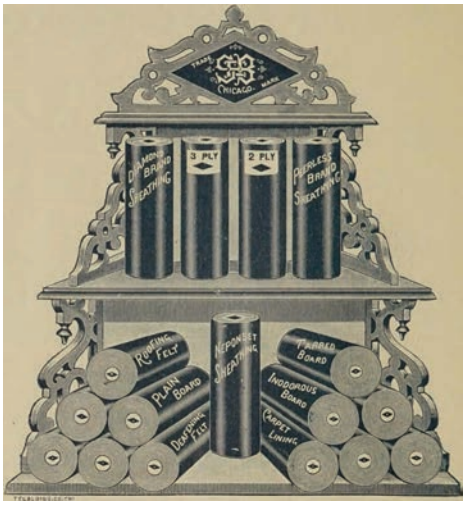


Fig. 23. Building and sheathing papers sold by S. E. Barrett Manufacturing Co., 1892. HathiTrust Digital Library.

so the 1890 Sanborn map showed an office at 206 D Street and the S. E. Barrett Manufacturing Co. name on the entire west side site. In 1902, the site was under development using the new name of Barrett Manufacturing Company. In 1907, the mill was sold to a group that included J. A. Fisher.[58]

In 1892, the S. E. Barrett Manufacturing Company catalog listed 11 products, at least four of which were from other manufacturers.[59] One product was the Excelsior parchment building paper, which was saturated with pine tar rather than rosin, making it "strong, air-tight, vermin proof and clean to handle."[60] The catalog illustration showed a logo of the intertwined initials "SEB" in a black diamond, and the supporting text indicated that the company's trademark was printed on each roll; however, no trademark registration has been found (Fig. 23).

Table 9 shows the products offered by the company and gives the date (where known) for each paper trademark and its first use. Interestingly, none of these dates were earlier than the company's 1892 catalog.

In 1896, the company changed its name to Barrett Manufacturing Company. In 1920, after a series of mergers, it joined with General Chemical Company, Solvay Process Company, Barrett Company, and National Aniline and Chemical Company to form the Allied Chemical and Dye Corporation.[61] In 1967, the Barrett Building Materials division of Allied Chemical Corporation was acquired by Jim Walter Corporation, but the business no longer offers building products.[62]

Warren Ehret Manufacturing Company, 1883–1920

The first advertisement offering rosin-sized sheathing from Warren Ehret Roofing Company, located in Philadelphia, Pennsylvania, dates from 1883, suggesting that this is when it began as a merger of Warren Roofing Company and M. Ehret, Jr. & Company.[63]

Five years later, in 1888, Ehret-Warren Manufacturing Company was established in St. Louis, Missouri, bringing together the manufacturing businesses of M. Ehret Jr. & Co. and S. D. Warren & Co.[64] The two companies were related, as discussed below, but maintained the two names through the early 1900s.

- **Warren Roofing Company:** Samuel Mills Warren described in a letter that, in about 1844 in Newark, New Jersey, he observed the installation

Table 9: S. E. Barrett Manufacturing Co. Building and Sheathing Papers Offered for Sale, 1892

Product	Weight /Length	Price	Other Manufacturer	Trademark	First claim
Plain strawboard	14 lb/100ft^2	$1.50/100 lb			
Tarred board	16 lb/100ft^2	$1.75/100 lb			
Inodorous sheathing	16 lb/100ft^2	$1.85/100 lb			
Beaver Brand	600 ft^2/roll	$1.25/roll	Beaver Co., NY	1914	1906
Diamond Brand	500 ft^2/roll	$1.75/roll		1906	1888
Union Brand	500 ft^2/roll	$1.50/roll	unknown		
Peerless Brand gray	500 ft^2/roll	$1.50/roll	Warren-Ehret, PA		
Gray Niagara	500 ft^2/roll	$2.00/roll	unknown		
Excelsior parchment – single ply	900 ft^2/roll	$2.50/roll		1907	1907
Excelsior parchment – double ply	500 ft^2/roll	$2.50/roll		1907	1907
Neponset sheathing	500 ft^2/roll	$2.25/roll	Bird & Son, MA	1921	1910
Neponset red rope sheathing No. 1	500 ft^2/roll	$5.50/roll	Bird & Son, MA	1921	1910
Neponset red rope sheathing No. 2	500 ft^2/roll	$3.50/roll	Bird & Son, MA	1921	1910

of roofing using "square sheets of ship sheathing paper and a mixture of pine-tar and pine-pitch, covered with sand." The product was claimed to be Bacons Patent Composition Roofing, and Warren obtained the Massachusetts rights. He soon found that there was no patent and that the style of roofing had been in use for some years. However, after learning the trade, he moved to Cincinnati, Ohio, where he set up a roofing company. In 1845, Samuel was joined by his younger brother, Cyrus Moors Warren, to form S. M. & C. M. Warren. In 1847, they replaced the pine tar with coal tar.[65] In 1849, they were advertising as "Warren, S. M. & C. M., composition roofers."[66]

The family developed extensive roofing and coal tar businesses. Brother John Warren set up a company in Buffalo, New York; sister Elvira Warren married Aaron Bisbee, who managed a plant on Long Island, New York; brother Herbert Marshall Warren set up a company in St. Louis, Missouri; while the youngest brother, Ebenezer Burgess Warren, worked in Louisville, Kentucky.[67]

In 1853, C. M. & H. M. Warren of St. Louis were advertising the manufacture of "Warren's improved fire and water-proof composition roofs and roofing materials," while in Cincinnati, S. M. & C. M. Warren reported that the materials were saturated with Carolina or coal tar.[68] The company also replaced sand with gravel as an outer covering.[69]

Around 1855, the brothers separated Warren Chemical Manufacturing Company from the roofing company, which was managed in Brooklyn, New York, by Herbert Warren.

Coal tar proved to be the most profitable product, especially with the 1858 introduction of mauve (or mauvine), the first organic dye to be synthesized. The Warrens profited from being a major source of benzene, aniline, and other coal tar, all of which were intermediates used by the aniline dye industry.[70] The Warren family had a major impact on the tar and roofing industries: Cyrus invented the process of fractional distillation, while Ebenezer refined Trinidad Lake asphalt for paving.[71]

- **M. Ehret Jr. & Company:** Michael Ehret Jr. and Charles H. Volkmar entered the paper business in Philadelphia in 1865 as "fireproof roofers."[72] They manufactured and sold their own Star Brand red rosin-sized sheathing.[73] For use in roofing, Ehret patented the use of small, angular pieces of granulated slag, scoria, or cinder, as these offered improved adhesion when compared with smooth, round pebbles (81,078). In 1885, Ehret patented an improved process for the manufacture of tarred paper with only a single side covered in tar, accomplished by pressing together three sheets while passing them through a tar bath (312,451). This process was in direct competition with Augustine Sackett's 1880 patent, which created tarred paper by pressing only two sheets together (226,459). Just over a decade later, Ehret patented a machine to manufacture multi-ply building paper (565,336).

The merged Warren-Ehret Company separated retail supply and manufacturing, with the original Ehret name used for prepared roofing products, while roofing and sheathing products were sold under the Warren Ehret Roofing Company name (Fig. 24).[74]

Fig. 24. Warren Ehret Roofing Co. rosin-sized sheathing, 1884. HathiTrust Digital Library.

In 1888, Ehret sold some manufacturing plants to Barrett, and in 1901, Warren-Ehret Company consolidated with Commonwealth Roofing Company.[75] By 1913, Commonwealth Roofing was a subsidiary of Barrett Manufacturing Company, becoming part of Allied Chemical and Dye Corporation in 1920.[76]

Sacket Plaster Board Company, 1883–1911

Augustine Sackett is perhaps best known for his 1894 patent for "inside wall covering," nowadays known as drywall (Fig. 25). It provided a "dry, firm, durable wall surface," made by a sandwich of alternating plaster and paper, with joints that could be "covered with wallpaper or other decoration."[77] A decade earlier, Sackett had patented a similar multiple-layer roofing or sheathing paper that cemented together "three or more sheets of paper, felt, or canvas with roofing-pitch, asphaltic cement, bituminous or other suitable cement, the outer sheets or layers being wider than the inner sheet or layer, so as to project beyond the edges of the

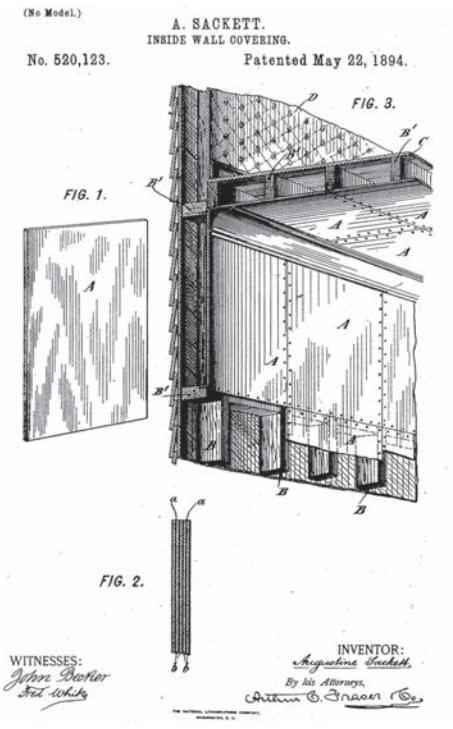
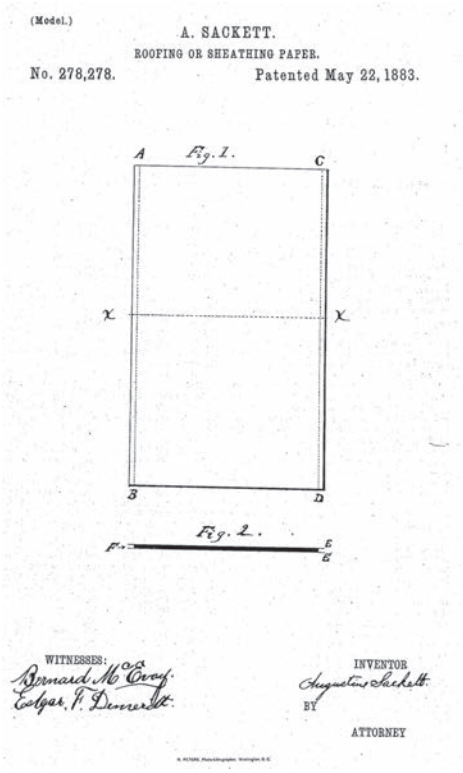


Fig. 25. Sackett's patent No. 520,123 for inside wall covering, 1894. US Patent and Trademark Office.


(Model.)

A. SACKETT.

ROOFING OR SHEATHING PAPER.

No. 278,278. Patented May 22, 1883.

Fig. 1.

Fig. 2.

WITNESSES:

INVENTOR

ATTORNEY

Fig. 26. Sackett's patent No. 278,278 for roofing or sheathing paper, 1883. US Patent and Trademark Office.

inner layer or sheet" (Fig. 26). He later patented the machinery to manufacture the three-ply product (291,628), although no dimensions were provided.

Sackett's sheathing paper was advertised in the US in 1885 and was available in New Zealand just three years later (Fig. 27).[78] It was probably the first building paper available in that country.[79] "Sackett's Waterproof Sheathing Paper" was advertised in *Sweet's Indexed Catalogue* by Barrett Manufacturing Company from 1906 to 1911, but did not appear in later editions.[80] It appears that Sackett sheathing paper was subsumed into the Barrett suite of products.

In 1909, the Sackett Plasterboard Company merged with US Gypsum Company, later USG Corporation.[81] Since 2019, it has been part of Knauf Group.

F. W. Bird & Son, 1885–Present

George Bird started making paper in 1795 on the Charles River near Boston, opening a second plant on the Neponset River in East Walpole, Massachusetts, in 1812. His son Francis joined in 1833, and Charles Sumner Bird joined in 1877, when the company became F. W. Bird & Son. The main factory was destroyed by a fire in 1880, closely followed by the worst flood in Massachusetts history. The surviving equipment could make only coarse paper products, so Bird used wood rosin and the discarded ropes from the ships in Boston Harbor to create Neponset black waterproof building paper, Neponset red rope roofing paper, and Neponset Paroid roofing paper.[82] In 1885, Bird patented a composition of matter for waterproofing paper using a combination of resin, paraffin, and silicate of soda (332,868).

In 1890, F. W. Bird & Son was advertising a range of Neponset paper, described as "absolutely water-proof and air-tight, is clean to handle, not tarred felt but far more durable. Its resistance to air and dampness renders it unsurpassed under clapboards, iron roofing and wood or tin shingles." The company also advertised lower-cost Climax paper that was "light, clean, [and] pink colored" but not waterproof.[83] In addition, it published a range of guidance and information leaflets, including one in June 1899 whose cover was made of samples of Neponset red rope roofing and Neponset black building paper.[84] The company's booklets showed the use of its products for farm buildings, suggesting that sheathing papers were important materials that every builder ought to consider "for every building."[85]

The company also developed and patented packaging to assist in the transport and on-site use of the building


ROOFING ROOFING for Buildings of every description. Durable, Light, Easily Applied, Inexpensive. BUILDING PAPER.—Sackett's Waterproof Sheathing. Clean to Handle, Impervious to Moisture, Water, and Gases. NEW YORK COAL TAR CHEMICAL CO., 10 Warren St., N. Y. BUILDING PAPER.

Fig. 27. Sackett building paper advertisement, 1885. HathiTrust Digital Library.

Fig. 28. F. W. Bird & Son trademark No. 20,093, 1891. Library of Congress.

paper roll (694,304), an improvement over the Rock River patent. As with other nineteenth-century building paper manufacturers, F. W. Bird & Son was active in promoting the use of its products through advertising and self-promotion, including using trademarks. Its promotional language promised, "Our Trade-Mark on every roll."

F.W. Bird & Co. first filed for a trademark on May 8, 1891, stating that its mark had been in use since November 1, 1885. The company provided an illustration and a description: "The representation of a person supporting above the head a sheet material which appears to serve as a protection from the falling rain" (Fig. 28).[86]

The first illustration was redrawn and resubmitted in an application filed on September 30, 1905, with a more detailed description: "The representation of a girl supporting above her head a comparatively large portion of sheet material, which appears to serve as a protection to the person from the rain, which is indicated by slanting lines, the girl's feet resting upon lines representing the ground" (Fig. 29).[87] The trademark was issued for the new image on March 27, 1906.[88] Unlike the original trademark, which had the word "Neponset" on the sheet, the new trademark did not include any text. The wording "Bird Neponset Products" did

Fig. 29. F. W. Bird & Son trademark No. 50,676, 1906. US Patent and Trademark Office.

not appear on a trademark until June 19, 1920, although the claimed first use was in June 1910.

In 1907, the company celebrated the trademark's twenty-first birthday, issuing "a poster showing a remarkably pretty young lady, presumably twenty-one years of age," which was made available to "architects or engineers on receipt of four cents in stamps to cover postage."[89]

In the early 1980s, the company changed its name to Bird & Son, in 1983 to Bird, Inc., and in 1990 to Bird Corporation.[90] In 1998, Bird Corporation sold its roofing plant to CertainTeed Corporation, which had been part of a French company, Compagnie de Saint-Gobain, since 1988.[91] No evidence has been found of any links between F. W. Bird & Son, Bird Paper Manufacturing, and J. A. & W. Bird.

Standard Paint Company/ Paraffine Paint Company, 1886–Present

In 1884, Truman J. Pearce and M. W. Beardsley, of Oakland, California, patented their process for dissolving maltha, the residue from the distillation of petroleum, in "gopher poison," or bisulfide of carbon (338,868). On September 14, 1886, patents for four related products using this invention were issued: number 348,993 for clothes, felts, and other fabrics; number 348,994 for electrical wire insulation; number 348,996 for a roofing fabric; and number 348,995 for the substance's use on paper to form a waterproof, smoother, tougher, and less flammable product that could be used for roofs and surfaces exposed to the elements and not subject to abrasion. In 1888, their new patent removed the use of bisulfide of carbon, simply coating the paper with maltha (378,520).

The company's products were initially marketed under the label "P & B" and manufactured by Standard Paint Company east of the Rocky Mountains and by the Paraffine Paint Company of San Francisco west of the Rocky Mountains (Fig. 30).[92]

In 1890, Standard Paint Company introduced the lower-priced Universal and higher-specification Giant building papers.[93] However, the names "P & B Insulating and Building Paper" and "Universal Building Paper" were not trademarked until 1899. "Giant" was trademarked in 1905 and "Plus" in 1919. On the other coast, the Paraffine Paint Company trademarked "Malthoid" in 1905 and the P & B logo in 1909, claiming it had been in use for ten years.

Pearce and Beardsley assigned their 1886 patents to the Paraffine Paint Company, which was incorporated in 1902. In March 1917, it joined with seven other paper-related businesses to form the Paraffine Companies, Incorporated.[94]

Standard Paint Company, founded in 1886, became Ruberoid Company in 1921. Its control of the Paraffine Companies was dissolved in 1922.[95] The Ruberoid Corporation was acquired by General Aniline and Film in 1967, which continues as a major manufacturer of roofing materials.[96]

P. & B. RUBEROID ROOFING—A light, cheap, and absolutely waterproof roofing. Is not affected by lime, oil, steam, or gas.

BUILDING PAPER—Is waterproof, and will not rot. Keeps the walls dry, and prevents draughts and excludes cold.

Agent—GEORGE ROSS,
10, Customhouse-quay, Wellington.

Fig. 30. P & B Ruberoid and building paper advertisement, June 22, 1898. *Evening Post*, Wellington, New Zealand.

New York Mica Roofing, 1888–1900

New York Mica Roofing Company, founded in 1854, appears to have developed from Joseph Ditto & Company, which was advertising "patent elastic fire and water-proof cement & mica roofing" in 1858.[97] Ditto's patented coating was painted over a tarred paper and then covered with mica flakes (25,182 and 34,947). New York Mica Roofing Company advertised such a product in December 1866.[98] The company also published promotional booklets.[99]

In 1880, Charles H. O'Connor patented a "heavy, flexible, and non-inflammable paper adapted for use as sheathing or deadening in building" using silicate of soda (225,858). In 1887, proprietor William H. H. Childs, whose involvement with the company started around 1868, patented a two-ply sheathing paper (372,894) and a machine for making coated paper that kept the edges free of the coating (361,050).[100] The product of this machine was advertised under the name "O.K. Bituminous Building Paper," with the first advertisements found in May 1888 (Fig. 31).[101] The company developed an extensive manufacturing plant in Brooklyn, New York.[102]

At the time of his death in 1898, Childs's fortune—valued at over two million dollars ($76 million in 2025)—included his substantial investment in Bon Ami Company, manufacturer of a mineral soap that used the waste mica from quartz mining. Three of Childs's five children had predeceased him, so his fortune was left to his two surviving sons. The younger, Irving Childs, aged 24 at his father's death, lived only to 26 years of age. He had come into a significant part of his inheritance at age 21, which he spent on "chorus girls, champagne, automobiles, dinners, and suppers," having been described as one of the "best little spenders who had ever entertained the vampires of the white lights."[103]

8

WATER-PROOF BITUMINOUS.

O.K. BITUMINOUS BUILDING PAPER

PATENTED APRIL 12, 1887, AND NOVEMBER 8, 1887.

FOR SHEATHING HOUSES,

This paper is superior in every respect to any sheathing now in use. We call attention to the novelty of its construction, it being composed of two sheets of paper with an interposed layer of water-proof bitumen or asphaltic cement, the whole united under great pressure, making the

O.K. BUILDING PAPER

not only a perfectly water-proof article of great toughness and strength, but one that is practically indestructible, clean to handle, odorless, inexpensive, vermin-proof, and that will last as long as the building upon which it is applied.

FOR FLOORS.

This paper is an exceedingly valuable article for putting between floors to deaden sound and to increase the warmth of the rooms. It effectually stops all currents of air, excludes moisture, and being perfectly water-proof, protects ceilings from leaks.

FOR ROOFS.

It is the best sheathing that can be used under tin, slate, tile, or shingle roofs. Its water-proof qualities, cleanliness, durability, and the facility with which it unrolls at all times, recommend its use.

PUT UP IN ROLLS 36 INCHES WIDE, CONTAINING 1,000 SQUARE FEET.

USE THE BEST.

It is a great waste of money to cover buildings with common straw sheathing or cheap papers that are not water-proof. Experience has shown that these papers do not protect a building for any length of time, but soon mildew and fall to pieces, making the house drafty and damp; these defects can then only be remedied at great expense. To be of any use, a building paper must be perfectly water-proof, and as durable as the building upon which it is placed. Such a paper is the O. K. BITUMINOUS BUILDING PAPER.

Fig. 31. O.K. Bituminous Building Paper advertisement, 1888. Internet Archive.

The other son, Eversley Childs, had joined Mica Roofing Company as a young man, working through the company to become president on his father's death. He was active in business and was an early financial backer and director at Technicolor, Inc., the company and technology responsible for bringing color to classic films like *The Wizard of Oz* and *Singin' in the Rain*.[104]

In about 1900, Mica Roofing Company merged with Barrett Manufacturing Company. In 1905, Barrett Manufacturing Company and United Coke & Gas Company were consolidated into American Coal Products Company, which changed its name in 1916 to Barrett Company. Eversley Childs served as chairman of the board at Barrett Company from 1916 to 1925, though in 1922, he sold his interests to Allied Chemical & Dye Corp.[105]

Manahan Parchment and Moth Paper Works, 1888–1913

Originally manufacturers of wrapping paper, Manahan began producing moth paper (or, more accurately, anti-moth paper) around 1855. In 1882, the company expanded into parchment paper.[106] Manahan's moth paper, made from red cedar pulp, was used for protective packing of woolens and other goods, retaining the "antiseptic aroma of the famous cedar tree."[107] However, in 1949, the Federal Trade Commission ruled that the company could no longer claim that this odor provided protection against, or prevented moth damage.[108]

By the late 1880s, the company was establishing systems for manufacturing and applying waterproof building paper. Its first such patent introduced nail guidelines to building and sheathing paper, allowing for easier nailing to roofing lumber (Fig. 32). In 1889, George Manahan and Henry Gade were awarded a patent for a waterproofing composition used in sheathing and building paper (401,042). An improved version of this composition was patented the following year (409,479), along with an apparatus to apply the compound (405,044).

The earliest known promotion for Manahan's parchment sheathing paper dates to 1888, featuring testimonials from architects from Cleveland, Ohio, and Jersey City, New Jersey, praising the high quality of the product.[109] That same year, M. Ehret Jr. & Company's trade circular not only showcased its own products but also included samples of Manahan's parchment sheathing, Diamond Brand red rosin-sized sheathing, and Neponset waterproof building paper.[110]

(No Model.)

T. MANAHAN.

SHEATHING PAPER.

No. 388,700. Patented Aug. 28, 1888.

WITNESSES:

INVENTOR.

ATTORNEYS.

Fig. 32. T. Manahan, patent No. 388,700, nailing guideline, 1888. US Patent and Trademark Office.

The product must have been well promoted—Frank Kidder included it in the sample specifications of the 1898 first edition of *Building Construction and Superintendence*, instructing builders to lay one thickness of Manahan's parchment sheathing "between the upper and under flooring throughout first story."[111] Kidder continued to recommend the product by name in subsequent editions until the 1918 ninth edition, when the specification became the more generic "parchment sheathing."[112]

In the 1913 registry of paper watermarks and trademarks, Manahan reported ownership of Japanese tar and parchment building papers, but no later advertising for these or other building paper products have been found.[113] Instead, the primary product of Manahan Parchment and Moth Paper Works appears to have been Tarine garment bags and sheets, whose trademark was renewed in 1950.[114]

Bird Paper Manufacturing Company, 1891–1901

In 1889, Henry J. Bird patented a waterproofing process for paper and other materials, applying a mixture of "pitch and petroleum residuum or tailings together with asphalt" (426,633). In 1891, Bird Paper Manufacturing Company was advertising the product as "Bird's Sheathing"—a waterproof, odorless material with no coal tar designed for "sheathing buildings, lining ice houses and refrigerators between floors or under shingle, slate, or metal roofs."[115]

The company, registered in New Jersey, listed Henry J. Bird, Abel T. Howard, Monroe Green, Bertha D. Bird, and James L. Reynolds as directors. Its trademark, claimed to have been registered in 1896, featured a bird perched on three crossed rolls of building

Fig. 33. Bird sheathing logo, 1897. HathiTrust Digital Library.

paper (Fig. 33).[116] However, the original filing information from the US Patent Office has not been found.

In 1892, Standard Paint Company filed a patent infringement lawsuit against Bird Paper Manufacturing Company, targeting Bird's patent (426,633) and the actions of Director James L. Reynolds. This initiated a five-year court battle.

In 1894, the Circuit Court ruled in favor of Standard Paint, deciding that the petroleum distillate residuum "maltha" used to coat paper in Pearce and Beardsley's earlier patent (378,520) for Standard Paint was synonymous with the "petrocite" used in Bird's waterproof sheathing patent.[117] Standard Paint quickly publicized this victory.[118]

However, Reynolds appealed. The Appeals Court determined that the key issue was not the coating's origin, but rather Pearce and Beardsley's attempt to extend their patent rights. The original patent (348,995) combined maltha with bisulfide of carbon as a solvent, but their newer patent (378,520) simply coated paper directly with maltha. The judge ruled that this new patent "broadened and prolonged" the initial patent, "which would be a sheer abuse of the patent laws." On June 14, 1895, the appeal was upheld, reversing the previous judgment.[119] Notably, no advertisements have been found promoting this reversal in Bird's favor.

During the court case, Bird Paper Manufacturing Company also faced negative press. As rumors circulated about an impending receivership, the company issued a public a statement denying financial trouble. It claimed to be solvent, reporting assets of $46,000 and liabilities of just $17,000.[120] Notwithstanding its claims, Bird Paper Manufacturing Company closed in New Jersey in 1901.[121]

J. W. Sefton Manufacturing Company, 1901–1910

J. W. Sefton Manufacturing Company was founded in 1888 in Anderson, Indiana, before relocating to Chicago in 1891 and, later, to Brooklyn in 1911.[122] By 1895, Jefferson T. Ferres, an employee of Sefton Manufacturing, invented the first machine capable of corrugating paper and then affixing paper facing.[123] Ferres filed two patents in 1899, first, on March 13, for a machine to make single-faced board (657,100) and then, on March 16, for manufacturing and cutting double-faced corrugated paperboard (746,807). Though his machine operated at only 10 feet (3 m) per minute, it laid the foundation for modern corrugating machinery.[124]

On February 16, 1901, Ferres patented a corrugated building paper featuring specially designed and manufactured edging for airtightness and waterproofing (676,183). The air space within the corrugations of the sheets or boards provided better insulation for buildings, making it suitable for summerhouses, icehouses, and cold stores. Unlike rolled building paper, Ferres's product was produced as board sheathing (Fig. 34). It appears that the profit from manufacturing corrugated paper for transport packing was greater than that from sheathing, as no promotion for the latter has been found. However, the company was listed in the *American Trade Index* as supplying building paper in the 1905 edition, but not in the 1910 edition.[125]

J. A. & W. Bird, 1905–1914

J. A. & W. Bird Company was established in Boston in 1839, initially as a druggist, but by 1869, the company was selling paint and varnish supplies.[126] On May 6, 1905, the company filed six trademark names for roofing felt and paper and one for insulating and sheathing paper and cloth, the latter bearing the name "Ibex" and picturing an ibex head in an equilateral triangle. The word "Ibex" was subject to a separate filing on February 14, 1906.

J. A. & W. Bird Company primarily advertised its Rex Flintkote Roofing, encouraging consumers to "look for the boy on every roll," beginning in 1904 (Fig. 35).[127] The company's other

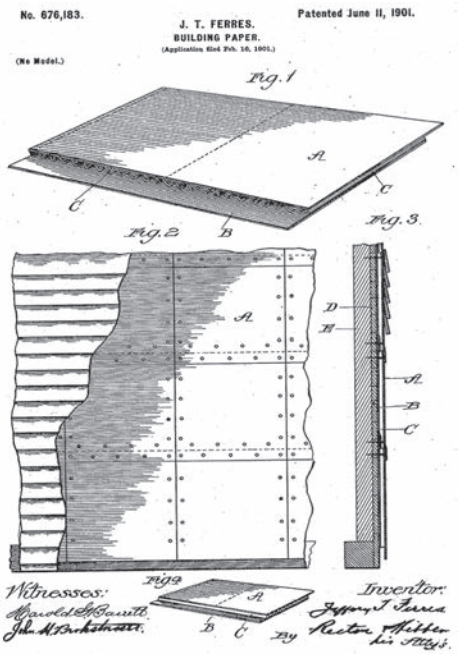


Fig. 34. J.T. Ferres's building paper patent No. 676,183, 1901. A and B refer to facing sheets, C to intermediate corrugated sheet, D to sheathing, and E to joist. US Patent and Trademark Office.

Fig. 35. Rex Flintkote at the St. Louis Fair, 1904. Internet Archive.

IBEX BUILDING AND INSULATING PAPERS

Ibex Extra and **Ibex** are both made in three weights or thicknesses, 1 ply, 2 ply and 3 ply. Rolls are 36 inches wide and contain 1,000 square feet. Half rolls contain 500 square feet. The selection of thickness is in accordance with the work to be performed, as noted below. Average weight per roll as follows:

RECOMMENDATIONS FOR IBEX PAPERS

Ibex Extra is for insulating purposes where greatest efficiency is required.

For general buildings, factories, mills, etc., use **Ibex Extra, 1 ply.**

For cold storage plants, refrigerators, ice houses, ice manufacturing plants, etc., use **Ibex Extra, 2 ply.**

For packing houses, breweries, refrigerator cars, steamship refrigeration, exposed floor spaces, and all places where extreme conditions are met with **Ibex Extra, 3 ply,** is most desirable.

Ibex makes the best sheathing paper for temporary or permanent structures.

For temporary work, lining purposes and general sheathing of frame structures use **Ibex, 1 ply.**

For best sheathing purposes on residences, churches, and large buildings: for laying under metal roofs to prevent corrosion, **Ibex, 2 ply,** should be used.

For ice house construction, general cold storage use and for sheathing buildings that have unusual exposure **Ibex, 3 ply,** will meet every requirement.

IBEX EXTRA	IBEX
1 ply, 40 lbs., per roll.....$.....	1 ply, 31 lbs., per roll.....$.....
2 ply, 54 lbs., per roll.....	2 ply, 41 lbs., per roll.....
3 ply, 99 lbs., per roll.....	3 ply, 66 lbs., per roll.....

Fig. 36. Ibex insulating and building paper, Osborn Company, 1911. Internet Archive.

products included Tunaloid, trademarked in 1905 for use in waterproofing structures and sublevel construction.[128]

J. A. & W. Bird was promoting its Rex Flintkote products and Ibex building paper in *Sweet's Indexed Catalogue* in 1911, and they were widely distributed—for example, by J. M. and L. A. Osborn Co. of Cleveland, Ohio (Fig. 36). After a two-year break, the products reappeared in the 1914 edition (the same year that founder William B. Bird died) under the aegis of the Flintkote Manufacturing Company.[129] Advertising for Ibex papers appears to have ended around this time.

Other Manufacturers

In addition to the companies discussed above in detail, there were others who sold building or sheathing paper during this period. They are discussed below in alphabetical order.

American Straw Board Company of Chicago, Illinois, was founded in 1889 by O. C. Barber.[130] In 1891, it was listed in *Carpentry and Building* among the leading manufacturers of American sheathing, standard sheathing, and Amazon waterproof sheathing.[131] The last listing found for the company as a supplier of building paper was in 1915.[132] The company expanded to include 13 mills in 1916 and played a major role in manufacturing and in setting prices due to its size.[133] It merged with three other companies also in the fiber box trade to form the Mid-West Box Company in 1921.[134]

Certain-teed Products Corporation of St. Louis, Missouri—see General Roofing Manufacturing Company below.

A. Dunlop Gordon of Philadelphia, Pennsylvania, received an award at the 1876 Centennial Exhibition for his manila paper product, which could be prepared or tarred for various building purposes. It was celebrated as "equal in strength to any, and smoother than any, prepared paper exhibited; and it is suitable for more purposes than common building paper."[135] Gordon lived in Philadelphia from 1876 to 1906, but no other information has been found on him or his business.

General Roofing Manufacturing Company of East St. Louis, Illinois, was founded in 1904 by George M. Brown. The company's advertisements played on its name, picturing an army general (Fig. 37).[136] It changed its name in 1917 to Certain-teed Products Corp. The name came from its motto: "Quality made **certain** . . . Satisfaction guaran**teed**." The company was listed in the 1918 *American Trade Index* as a supplier of building paper.[137] In 1938, it was acquired by Celotex Corporation of Chicago. After various mergers and acquisitions, it changed its name to CertainTeed Corporation in 1976 and became part of the Compagnie de Saint-Gobain in 1988.[138] General Roofing actively promoted its products, including their use in a range of plans. For example, they

Fig. 37. General Roofing Manufacturing Company advertisement, 1916. HathiTrust Digital Library.

advised that in building a sanitary poultry house, "*Certain-teed* black insulating paper should be used between [the floors]; and the side walls *Certain-teed* sheathing paper, both inside and outside the studding."[139] The company's first trademark was issued in 1913, although it was claimed to have been in use since 1908. The company continues today (see F. W. Bird & Son above).

N. A. Haldeman & Company of Philadelphia, Pennsylvania, sold roofing products, but its 1893 sales booklet also listed sheathing products, including number 4 common sheathing paper; numbers 5, 7, 15, and 20 rosin-sized sheathing; numbers 6, 6X, 6XX, and 8XX red manila sheathing; and numbers 26 and 27 Hygeia sheathing.[140] It is unclear whether these were the company's own products or those of another manufacturer, perhaps Joseph SteIwagon & Son.

Haldeman Paper Company of Lockland, Ohio, was founded in 1858 by Thomas J. Haldeman, a former steamboat captain, and Frank Parker, who took over an existing paper mill.[141] Upon Parker's death in 1868, it became the Haldeman Paper Company. Haldeman died in 1873, leaving J. C. Richardson in charge. It became the Richardson Company in 1898 and merged with the Gardner-Harvey Paper Company in 1932 to become the Gardner-Richardson Company.[142]

At the 1876 Centennial Exhibition, the company exhibited wrapping, roofing, and building paper, and at the 1879 Cincinnati Industrial Exposition, its products were awarded a bronze medal.[143] The company maintained very high ethical and business standards, as described in its statement of policies and procedures, published in a 1919 issue of *Fibre Containers*, a monthly trade magazine.[144]

In earlier days, the Richardson and Haldeman families were in conflict. Haldeman's will, under executors J. C. Richardson and Captain Walker (an investor in the company), left the bulk of his fortune to his two daughters—one of whom was the wife of J. C. Richardson—with smaller amounts going to his three sons. The sons disputed the will in court

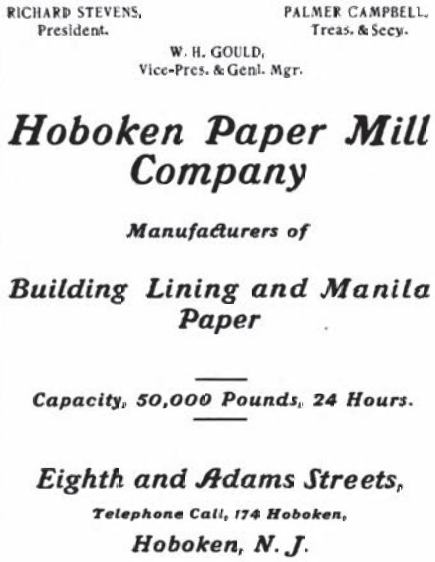


Fig. 38. Hoboken Paper Mill Company advertisement, 1905. HathiTrust Digital Library.

and lost, although a voluntary payment was made to them from the estate. Some 20 years later, William J. Haldeman (the youngest of Thomas's sons) shot Richardson, but subsequent events led to a reconciliation of the families.[145]

Hoboken Paper Mills Company of Hoboken, New Jersey, was established in 1883 and made building paper on a cylinder-wire machine powered by a steam engine. The product was advertised as early as 1905 (Fig. 38).[146] 1918 is the last known year that the company manufactured building paper.[147] In 1923, the company faced financial difficulties, and the plant was put up for sale.[148]

Hollingsworth & Vose Company of Boston patented the process for making paper from manila grass in 1843 (3,362). The company exhibited paper at the 1880 Melbourne International Exhibition in Australia and was listed as a supplier of building paper in the 1918 *American Trade Index*, but *Lockwood's Directory* made no mention of building paper as one of the company's products at that time.[149] The company remains in business as a supplier of filtration and energy storage solutions.

Johns-Manville of New York, New York, best known for its asbestos-based

Fig. 39. Johns-Manville Weathertite building paper advertisement, 1912. *Progress* magazine, Wellington, New Zealand.

insulation products, also manufactured Weathertite building paper. The earliest advertisement found dates from June 1912 and claimed that the product was "a chip off the same block as Regal" (Fig. 39).[150] The company promoted Weathertite, a kraft paper-based product, as the "highest grade paper" and claimed the material would not scale or crack, thereby retaining its insulating efficiency. The company also made a kraft paper-based red rosin-sized paper.[151] The company trademarked the name "Weathertite" for use with building paper in 1936, though it was claimed to have been in use since 1914.

Keasbey & Mattison Company of Ambler, Pennsylvania, was listed in the *American Trade Index* in 1905, 1910, and 1918 as a supplier of building paper, but no specific advertising for its building paper products has been found.[152] The company manufactured a wide range of asbestos products, including an asbestos paper with potential use as a building paper, which was promoted in its 1940 advertising.[153]

Keystone Roofing Mfg. Company of York, Pennsylvania, appears to have begun manufacturing tarred paper in 1910. The company was listed in the 1910, 1913, and 1918 editions of the *American Trade Index* as a supplier of building paper.[154] Keystone Roofing was first listed in *Lockwood's Directory* in 1912 under "Roofing Paper Manufacturers (Saturators)," suggesting that the base paper was obtained elsewhere.[155] The company's

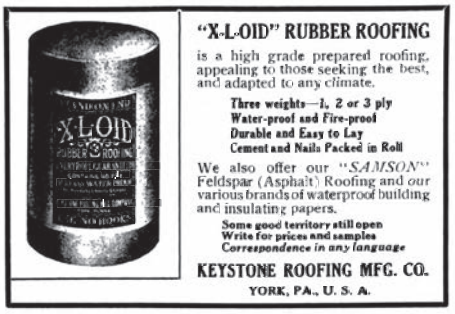


Fig. 40. Keystone Roofing Mfg. Co. advertisement, 1912. Internet Archive.

advertisements promoted its roofing materials as well as its building papers (Fig. 40).[156] In 1900, *Boyd's Philadelphia Business Directory* listed John W. Stelwagon as president of Keystone Roofing and Paving Company, as well as of Joseph Stelwagon Company (see below).[157]

Mullen Brothers Paper Company of St. Joseph, Missouri, was incorporated in 1895 by three brothers—John W., James, and Timothy Mullen—for the purpose of manufacturing paper.[158] By 1906, the company employed 41 people, producing wax-lined paper, along with fruit packages, butter dishes, and red rosin-sized sheathing.[159] John W. Mullen patented a number of products related to the paper and packaging industry, but is best known for the Mullen Paper Tester (358,056), which determines paper burst pressure and remains an industry standard (see, for example, TAPPI T403 or ASTM D 774), along with the Mullen and Pope screen for treating pulp (1,032,701). The company's mill was sold in 1923, following bankruptcy, to Frank S. Bicking, formerly of S. Bicking Paper Company of East Downingtown, Pennsylvania.[160]

Newton Paper Company of Holyoke, Massachusetts, was established in 1874 under the name Newton and Ramage, and incorporated in 1876 (Fig. 41). The company claimed to have originated red rosin-sized sheathing paper. In 1923, its brands included Elephant Brand "extra waterproof" sheathing paper.[161] In 1928, it manufactured carpet lining, sheathing, deadening, saturating, mill wrapping, felt, jute, manila duplex wrapping, building

Fig. 41. Newton Paper Co. advertisement for sheathing in *Lockwood's Directory*, 1912. Internet Archive

papers, rag wrappers, black papers, card middles, red flexible paper, and other specialty products.[162] The company was dissolved in 1961 and is now part of Sonoco Corporation.[163]

Pioneer Paper Company of Los Angeles, California, was started by Willis G. Hunt in about 1889. Hunt arrived in Los Angeles in 1888 and became the branch manager of the Pacific Roll Paper Company. He purchased the stock about a year later to set up his own company.[164] In 1890, his company became the sales agent for Fay's manila waterproof leather roofing and building papers and reported good sales following the receipt of its first cargo on October 1.[165]

Pioneer Paper Company was incorporated in 1895. In 1901, the company built a four-story reinforced concrete administration building at 249–251 South Los Angeles Street (now demolished). Interestingly, the building included a "lowerator," an "automatic gravity device for the delivery of merchandise from an upper to a lower floor, handling without increased expense of power more merchandise than perhaps a dozen elevators."[166]

The company was listed in the *American Trade Index* in 1913 and 1918.[167] It manufactured both building and wrapping papers—the former for the many houses in the developing region and the latter for the transport of California oranges and lemons. It promoted the longevity of its products (for example, "10- and 20-year roofs guaranteed") and published guidance for future homebuilders, but it is clear that building paper was of secondary importance (Fig. 42).[168]

Hunt retired in 1928, and the company merged with the Flintkote Group and Shell Company.[169] He died in 1940.[170] His only son, Willis E. Hunt, became active in yachting circles and married five times. In 1969, he was stabbed to death by his last wife, actress Deannie Best, who, after a trial, was found innocent.[171]

T. Seymour & Bro. of Philadelphia, Pennsylvania, sold a patented waterproof building and carpet paper that, in 1875, was "highly recommended at the recent Franklin Institute Exposition."[172] The company registered the trademark "T. S. S. & Bro." in 1876 (Fig. 43). The associated image included the names "Pioneer Building Paper" (used well before the advent of Pioneer Paper Company) and "Hero" wrapping paper. The company advertised its building paper in 1876 (Fig. 44). It also exhibited flour sack and building paper at the 1878 Paris Exposition, as well as floorcloth and other products at the 1880 Melbourne International Exhibition.[173]

Thomas Seymour Scott's obituary reported that he left the company in 1885 to set up the Scott and Bitting Paper Company.[174] By 1889, that company reported that its products were "rapidly increasing in popularity."[175] Scott left in 1889 and became manager of the *Ladies' Home Journal*, ultimately becoming a director of the magazine's publisher, the Curtis

Fig. 42. Pioneer building and insulating paper advertisement, Pioneer Paper Company, 1912. HathiTrust Digital Library.

Fig. 43. T. Seymour Scott & Bro. trademark, 1876. Library of Congress.

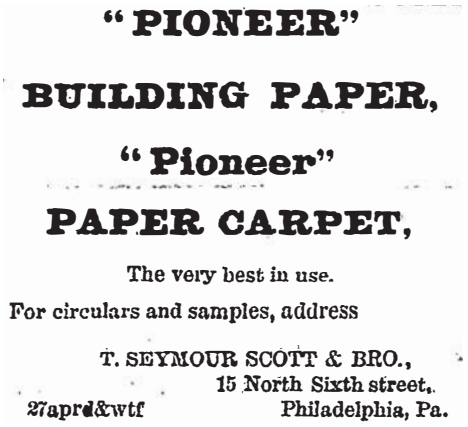


Fig. 44. T. Seymour Scott & Bro. advertisement, April 28, 1876. *The Daily Saratogian*, Saratoga, New York.

Publishing Corporation.[176] Scott and Bitting closed in New Jersey in 1892.[177]

Sears, Roebuck and Co. of Chicago, Illinois, sold hardware beginning in 1897. The small building paper section of its catalog listed papers "from the largest and most reliable makers," including Black Diamond and Peerless (see Barrett Manufacturing), Anchor (see Warren Chemical and Manufacturing Co.), and Competition.[178] Its 1910 special catalog for home builders and its standard 1918 catalog listed Leader, Fulton, Acme (see Warren-Ehret Co.), and Competition building papers (Fig. 45).[179] It appears that Competition, Leader, and Fulton were the company's own product names.


Red Rosin Sized Building Paper for Sheathing Purposes

We Carry a Complete Line of Red Rosin Sized Building Paper in only the very best grades. Due to our controlling the entire output of one of the largest and best mills in this country, we are able to guarantee a standard and uniform quality of Red Rosin Sized Building Paper.

Our Prices are so Extremely Low for this high grade building paper that many of the largest contractors throughout this broad country are continually sending us orders for large quantities of this paper. In many instances we receive orders for two to three hundred rolls for a single shipment.

If You are a Builder or Contractor or if you are building your own home do not overlook the economy of properly lining your building with plenty of this high grade paper. It will save its cost during the first winter, due to the reduction in your fuel bills, saying nothing of the added comfort to your home.

About Quality. Red Rosin Sized Building Paper, which we wrote below is made with a strong stock of filled paper for a body and is faced on both sides with a well calendered stock that is thoroughly rosin sized, rendering it dampproof and vermin proof. We sell four different weights of this paper. We recommend for ordinary building purposes our Leader Brand, as it is of sufficient thickness to give entire satisfaction.

Our Fulton Brand is made with exactly the same stock, but is considerably heavier than our Leader Brand and there is no better or heavier Red Rosin Sized Paper made by any other concern.

Our Acme Brand is the same quality as our Leader, except that it is a lighter weight.

Our Competition Brand is a fair grade, similar to the kind sold throughout this country. It is light in weight, as it runs only 6 pounds to the square, and will be satisfactory in the construction of a low priced building.

Fig. 45. Sears, Roebuck and Co. building paper catalog advertisement, 1910. Internet Archive.

However, the earliest solid evidence that the company manufactured building paper was its 1947 trademark registration of "Homart" for building papers (along with a wide variety of other products). The company claimed that the trademark had been in use since 1945.

Schmidt & Ault Paper Company of York, Pennsylvania, was established in 1897 and operated a single mill that made 200 tons (181 t) of paper a day.[180] A mill had been on the site since 1798. Schmidt & Ault brought in pulp and manufactured building paper on a 48-inch machine. The company developed a range of packing paper, carpet lining, building papers, and heavy bogus wrapping.[181] Bogus manila was made of 20 percent straw and 80 percent hemp rope or burlap bags, with cotton rag for texture.[182]

The owners, Robert A. G. Ault and John C. Schmidt, died in 1921 and 1923, respectively. The company continued under Schmidt family management until 1972, though it became a division of St. Regis Company in 1960.[183] St. Regis merged with Champion International in 1984, selling the containerboard and corrugating plants to Smurfit-Stone Container in 1985, which closed the plant in 2002.[184] The mill site is now the York College Knowledge Park.[185]

Joseph SteIwagon & Sons of Philadelphia began in 1853 as Joseph Stelwagon,

Fig. 46. Ajax Brand trademark, J. W. Stelwagon,1886. Library of Congress

a paper warehouse. By 1876, Joseph Stelwagon & Sons was both a paper warehouse and a manufacturer of roofing felt.[186] It later became a supplier of building and roofing materials, including building paper.[187] The company exhibited its building papers at the 1876 Centennial Exhibition, and its 1892 catalog listed Ajax, Quaker City, Hygeia, common, and rosin-sized sheathing (Fig. 46).[188] It is notable that these product names are similar to those used by N. A. Haldeman & Company, also of Philadelphia.

After being sold in 2002, the company remains in business today as Stelwagon Roofing Supply, a building product supplier.

H. F. Watson Company of Erie, Pennsylvania, was established in 1881, making manila and hardware paper (Fig. 47).[189] In 1890, it advertised asbestos paper and waterproof sheathing, and was listed in the *American Trade Index* for 1905, 1910, and 1913 as a supplier of building, roofing, and insulating papers, as well as asbestos materials, pipe coverings, and cements.[190] By 1913, Barrett Manufacturing Company, which owned 70 percent of H. F. Watson, was required to dispose of 25 percent of its stock due to a Sherman Anti-Trust Law ruling.[191] In 1928, the company merged with Ruberoid Company of New York and Continental Roofing and Manufacturing of Baltimore.[192] Watson's 15,000-square-foot (1,400 m^2), 234-room mansion, built in 1891, is now home to the Historical Society of Erie County.[193]

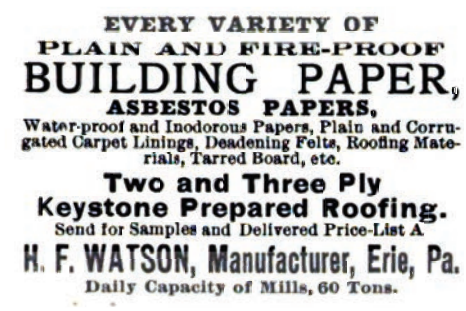

EVERY VARIETY OF
PLAIN AND FIRE-PROOF
BUILDING PAPER,
ASBESTOS PAPERS,
Water-proof and Inodorous Papers, Plain and Corrugated Carpet Linings, Deadening Felts, Roofing Materials, Tarred Board, etc.
Two and Three Ply
Keystone Prepared Roofing.
Send for Samples and Delivered Price-List A
H. F. WATSON, Manufacturer, Erie, Pa.
Daily Capacity of Mills, 60 Tons.

Fig. 47. H. F. Watson advertisement, 1888. HathiTrust Digital Library.

Conclusion

The invention of building paper in 1868 was the start of a revolution in lumber-framed construction. The use of a waterproof, paper-based, low-cost product that could keep the wind out and manage the ingress of moisture added comfort to all buildings, but especially to houses. The companies discussed in this chapter each improved the product and marketed it widely. Although initially protected by patents, once the protection had ended, the inventions could be—and were—widely adopted, as illustrated by the product's inclusion in hardware and builder's supply catalogs (Figs. 48 and 49). Trademarks will be examined in the next chapter.

Fig. 48. Caverhill, Learmont & Co. building paper catalog, 1901. Internet Archive.

Fig. 49. Mesker and Co. building paper catalog, 1905. Internet Archive.

Notes

1. Hale's son, William E. Hale, also worked for Rock River Paper Company, although he left it following the 1871 Chicago Fire.

2. "Funeral of B. E. Hale," *Brooklyn Union-Argus*, Dec. 6, 1877, sec. Deaths, bklyn-genealogy-info.stevemorse.org/Newspaper/BSU/1877.Death.html.

3. Andrew Morrison, *The Industries of New Orleans, Her Rank, Resources, Advantages, Trade, Commerce and Manufactures, Conditions of the Past, Present and Future, Representative Industrial Institutions, Historical, Descriptive, and Statistical* (New Orleans, LA: J. M. Elstner & Co., 1885), 139–40, hdl.handle.net/2027/loc.ark:/13960/t1gj0871v.

4. Andrew M. Shanken, "From the Gospel of Efficiency to Modernism: A History of Sweet's Catalogue, 1906–1947," *Design Issues* 21, no. 2 (Spring 2005): 28, jstor.org/stable/25223991.

5. Francis Amasa Walker, ed., *International Exhibition, 1876. Reports and Awards. Vol. V. Groups VIII-XIV*, vol. 5 (Washington, DC: Government Printing Office, 1880), 535, archive.org/details/internationalex01gardgoog.

6. Walker, *International Exhibition*, 576, 598, 599, 602.

7. Royal Swedish Commission to the International Exhibition 1876 and Elis Sidenbladh, *Swedish Catalogue: II Exhibits, International Exhibition, Philadelphia 1876* (Philadelphia, PA: Hallowell & Co., 1876), 45–47, archive.org/details/swedishcatalogue00swed.

8. Samuel J. Burr and S. D. V. Burr, *Memorial of the International Exhibition: Being a Description Written up by Buildings, by Nationalities, by Classes . . .* (Hartford: L. Stebbins, 1877), 341, hdl.handle.net/2027/uiug.30112063824046.

9. State Board of Centennial Managers, *Illinois, Report of the State Board of Centennial Managers to the Governor*, Dec. 1876 (Springfield, IL: D.W. Lusk, State Printer and Binder, 1877), 38, hdl.handle.net/2027/uiug.30112056441949.

10. "Building Papers and Roofing Felts," *Carpentry and Building*, Mar. 1891, books.google.com/books?id=wCVPAAAAYAAJ.

11. Seeger and Guernsey Company, *Seeger and Guernsey's Cyclopædia of the Manufactures and Products of the United States*, 1st ed. (New York: Seeger and Guernsey Company, 1890), books.google.com/books?id=HL00AQAAMAAJ; Seeger and Guernsey Company, *Seeger and Guernsey's Cyclopædia of the Manufactures and Products of the United States*, 2nd ed. (New York: The Seeger and Guernsey Company, 1891), 338, archive.org/details/seegerguernseysc00unse.

12. National Association of Practical Refrigerating Engineers, "Industrial Refrigeration," *Ice and Refrigeration Illustrated* 32, no. 1 (Jan. 1, 1907), hdl.handle.net/2027/chi.104905724.

13. *American Trade Index: Descriptive and Classified Directory of the Members of the National Association of Manufacturers*, 13th ed. (New York: National Association of Manufacturers, 1917), 394, hdl.handle.net/2027/hvd.hn4gja; *American Trade Index,* 11th ed. (New York: National Association of Manufacturers, 1913), 346, hdl.handle.net/2027/chi.102250733; *American Trade Index*, 10th ed. (New York: National Association of Manufacturers, 1910), 380, hdl.handle.net/2027/chi.102250791; *American Trade Index*, 7th ed. (New York: National Association of Manufacturers, 1905), 192, hdl.handle.net/2027/uiuo.ark:/13960/t3fz1hw4g.

14. Walden Sons & Mott, Inc., *Walden's ABC Guide: A Directory and Buyers' Guide for the Paper and Allied Trades*, (New York: Walden, Sons & Mott, Inc., 1928), 324–25, hdl.handle.net/2027/nyp.33433066471719.

15. Frank Eugene Kidder, *Building Construction and Superintendence: Part II, Carpenters Work*, 1st ed. (New York: W. T. Comstock, 1898), 178, 471, hdl.handle.net/2027/uc1.b4508016.

16. Frank Eugene Kidder, *Building Construction and Superintendence: Part II, Carpenters Work*, 2nd ed. (New York: W.T. Comstock, 1899), 177, hdl.handle.net/2027/wu.89080450919; Frank Eugene Kidder and Thomas Nolan, *Building Construction and Superintendence: Part II, Carpenters' Work*, 9th revised ed. (New York: William T. Comstock Co., 1920), 302–3, books.google.com/books?id=XHA1AAAAMAAJ.

17. Kidder, *Building Construction and Superintendence*, 115.

18. Kidder and Nolan, *Building Construction and Superintendence*, 1920, 303.

19. American Biographical Publishing Company, "Francis N. Davis, Beloit," in *The US Biographical Dictionary and Portrait Gallery of Eminent and Self-Made Men* (Chicago, IL: American Biographical Publishing Company, 1877), 119–20, archive.org/details/unitedstatesbiogwi00amer.

20. J. A. Lawrence & Co., "Building Paper," *Milford Times*, Nov. 2, 1872, digmichnews.cmich.edu; Golden Paper Company, "Golden Paper Company," *Golden Weekly Globe*, May 10, 1873, coloradohistoricnewspapers.org.

21. Davis, Lawrence & Davis, "To the Trade Only - Aluminous and Ornamental Paper Board," (Davis, Lawrence & Davis, c. 1873).

22. Royal Brunson Way, *The Rock River Valley; Its History, Traditions, Legends and Charms* (Chicago: S. J. Clarke, 1926), 260, 399–401; Lyman Horace Weeks, *A History of Paper-Manufacturing in the United States, 1690–1916* (New York: The Lockwood Trade Journal Co., 1916), 281.

23. "Manufacturers of Paper. Beloit, Wis., Feb. 20, 1877," *Northwestern Lumberman*, March 3, 1877, 4.

24. Armes & Dallam, "Armes & Dallam," *The California Mail Bag* 10, no. 6 (April 1877): 127, hdl.handle.net/2027/hvd.32044089892392; Western Historical Co., *The History of Rock County, Wisconsin* (Chicago, IL: Western Historical Company,1879), 622.

25. Ernest G. Blake, *Roof Coverings: Their Manufacture and Application; Being a Description of the Origin, Nature, and Method of Fixing the Various Materials and Substances That Are Employed for Covering the Roofs of All Classes of Buildings*, 2nd ed., rev. and enl. (London: Chapman & Hall Ltd, 1945), 20.

26. C. R. Alder Wright, "Cupro-Ammonium Solutions and Their Use in Waterproofing Paper and Vegetable Tissues," *The Journal of the Society of Arts* 32, no. 1643 (1884): 643, jstor.org/stable/41334880.

27. "Willesden Paper for Insulating Cold Storage Chambers, Agents: J. Barre Johnston & Co., 20 Loftus St., Sydney," *The Pastoralists' Review*, Mar. 15, 1901, nla.gov.au/nla.obj-487433593.

28. "Metropolitan Show," *The Press* (Christchurch, NZ), November 12, 1885, 2.

29. Minister of Lands, "Department of Lands and Survey (Annual Report) 1898," in *Appendix to the Journals of the House of Representatives, 1898 Session I*, vol. 1 (Wellington, NZ: Government Printer, 1898), 84, paperspast.natlib.govt.nz/parliamentary/AJHR1898-I.2.1.4.1.

30. E. Symes Bond, ed., *The Romance of Willesden, Dux, Oriental - Fabric Roofings, Canvas, Paper, Sandbags, Camouflage, Likewise Anti-Gas, Anti-Gas Clothing, A.R.P. Equipment*, 1st ed. (London: Willesden Paper and Canvas Works Limited, 1941), 161.

31. US Patent Office, *Official Gazette of the United States Patent Office* 568, no. 2 (Nov. 14, 1944): 225, hdl.handle.net/2027/wu.89047003553.

32. John S. Scott, *The Penguin Dictionary of Building*, 3rd ed. (Harmondsworth: Penguin, 1984), 51.

33. Arthur D. Pierce, *Family Empire in Jersey Iron: The Richards Enterprises in the Pine Barrens* (New Brunswick, NJ: Rutgers University Press, 1964), 119, archive.org/details/familyempireinje0000pier.

34. Irving Brothers, "Confidential Circular to Agents, Irving Brothers, General Agents for Waterproof Building Paper and Paper Carpeting, Brandon, Vermont," July 14, 1875, historicnewengland.org/explore/collections-access/capobject?refd=EP001.01.066.01.01.008.

35. Walker, *International Exhibition, 1876: Reports and Awards*. Vol. 5, Groups VIII-XIV (Washington, DC: Government Printing Office, 1880), 5: 598.

36. "The Vermont Agricultural Society. Annual Fair, Second Day," *Rutland Daily Globe*, Sept. 10, 1874, loc.gov/resource/sn84022473/1874-09-10/ed-1/?sp=2; "State, County and Vicinity: Orwell," *Rutland Daily Globe*, Dec. 3, 1875, loc.gov/resource/sn84022473/1874-12-03/ed-1/?sp=2; "Advertisement, Harris & Clark," *Rutland Daily Globe*, Oct. 4, 1875, loc.gov/resource/sn84022473/1875-10-04/ed-1/?sp=3.

37. "Notice, Chas. P. Harris & Co.," *Rutland Daily Globe*, Nov. 30, 1875, loc.gov/resource/sn84022473/1875-11-30/ed-1/?sp=2.

38. Chas. P. Harris & Co., "Trade Card for Chas. P. Harris & Co., Waterproof Building Paper, Rutland, Vermont" (Chas. P. Harris & Co., c. 1877), historicnewengland.org/explore/collections-access/gusn/242647.

39. Chas. P. Harris & Co., "Water-Proof Building Papers," *The Builder and Woodworker*, Dec. 1888, books.google.com/books?id=O9rlAAAAMAAJ; Harris Manufacturing Company, *Catalogue of Cane and Wood Seat Chairs* (Rutland, VT: Harris Manufacturing Company, 1891), rutlandhistory.com/special-collections-2/.

40. Cyrus J. Fay, *Water-Proof, Hemp & Manilla Felting for Covering Outside and Inside of Buildings, Floors &c.* (Camden, NJ: C. J. Fay, 1877), 1.

41. Richard Edwards, *Industries of New Jersey, Part 2: Cumberland, Salem, Gloucester, Atlantic, Camden and Cape May Counties*, vol. 2 (New York: Historical Publishing Company, 1882), 372, archive.org/details/industriesofnewj02edwa.

42. W. H. Fay, "Building Manilla (Advertisers' Trade Supplement)," *The American Architect and Building News*, Oct. 7, 1882, 3, books.google.com/books?id=bolaAAAAYAAJ.

43. W. H. Fay & Co., *Fay's Water-Proof Manilla for Covering Outside and Finishing Inside of Buildings, Also, Carpets and Rugs* (Camden, NJ: W. H. Fay & Co, 1885), 1, archive.org/details/fayswaterproofma00unse

44. "Trade Notes," *Carpentry and Building*, Sept. 10, 1888, books.google.com/books?id=G3fmAAAAMAAJ.

45. John F. Hall, *The Daily Union History of Atlantic City and County, New Jersey, Containing Sketches of the Past and Present of Atlantic City and County* (Atlantic City, NJ: Daily Union Printing Co., 1900), 33, hdl.handle.net/2027/njp.32101072334020.

46. "Corporation Record," *The National Corporation Reporter*, Feb. 11, 1893, hdl.handle.net/2027/coo.31924087643148.

47. Bureau of Statistics and Records (NJ), *The Industrial Directory of New Jersey* (Trenton, NJ: State Department of Labor New Jersey, 1912), 72, 621, 632, hdl.handle.net/2027/njp.32101067199867.

48. "Fay Template Board," *The Boiler Maker*, Apr. 1913, books.google.com/books?id=VZZaAAAAYAAJ.

49. Bureau of Statistics and Records (NJ), *The Industrial Directory of New Jersey* (Trenton, NJ: State Department of Labor New Jersey, 1915), 81, 683, 684, 697, google.com/books?id=dEYCAAAAYAAJ.

50. "Trade Directory," *Refrigerating World*, Dec. 1917, hdl.handle.net/2027/uc1.c2533614; "Trade Directory," *Refrigerating World*, Dec. 1920, hdl.handle.net/2027/uc1.c2533617.

51. Military Order of the Loyal Legion of the United States, *Memorials of Deceased Companions of the Commandery of the State of Illinois, Military Order of the Loyal Legion of the United States* (Chicago, 1901), 91–93, archive.org/details/memorialsofdeceav1mili.

52. Powell, Getchell & Co., "Roofing, Roofing" *Chicago Tribune*, Apr. 10, 1869, chroniclingamerica.loc.gov; Barrett & Arnold, "Roofing Material, Barrett & Arnold," *Chicago Tribune*, Dec. 1, 1869, chroniclingamerica.loc.gov.

53. Barrett & Arnold, "Dissolution," *Chicago Tribune*, Jan. 1, 1871, chroniclingamerica.loc.gov.

54. Barrett, Arnold & Powell, "Barrett, Arnold & Powell," *Chicago Tribune*, June 9, 1866, chroniclingamerica.loc.gov.

55. Richard F. Bales, *The Great Chicago Fire and the Myth of Mrs. O'Leary's Cow* (Jefferson, NC: McFarland & Co., 2002), 22–23, 47, archive.org/details/greatchicagofire0000bale.

56. United States Centennial Commission, *List of Awards Made by the United States Centennial Commission to the American Exhibitors, International Exhibition 1876 at Philadelphia, from the Official Lists* (Philadelphia, PA: S. T. Souder & Company, 1876), 47, archive.org/details/listofawardsmade00unit.

57. "Five Men Drowned," *Memphis Daily Appeal*, Jan. 1, 1881, chroniclingamerica.loc.gov.

58. Way, *The Rock River Valley*, 391.

59. S.E. Barrett Manufacturing Company, *Descriptive Catalogue of Black Diamond Prepared Roofing: Building and Sheathing Papers, Deadening Felts, Carpet Linings, Etc.,* (Chicago, IL: S.E. Barrett Manufacturing Company, 1892), 14–16, hdl.handle.net/2027/nnc2.ark:/13960/s21pskchc44.

60. S.E. Barrett Manufacturing Company, *Descriptive Catalogue*, 15.

61. Samuel Crowther, "Our Kings of Chemistry," *The World's Work: A History of Our Time* 41, no. Feb. (1921): 349, 352, hdl.handle.net/2027/uc1.31210019907292.

62. Federal Trade Commission (US), *Federal Trade Commission Decisions: Findings, Opinions, and Orders, July 1, 1977, to December 31, 1977*, vol. 90, *Federal Trade Commission Decisions* (Washington, DC: Federal Trade Commission, 1978), 672, hdl.handle.net/2027/uc1.32106015941120.

63. Warren-Ehret Roofing Company Ltd., "Rosin-Sized Sheathing," *Carpentry and Building*, Dec. 1883, hdl.handle.net/2027/mdp.39015080129367; John N. Vogel et al., *One Hundred Years of Roofing in America*, 1st ed. (Rosemont, IL: National Roofing Contractors Association, 1986), 44–48.

64. Jones & Orear, *Commercial and Architectural St. Louis* (St. Louis, MO: Jones & Orear, 1888), 285–86, hdl.handle.net/2027/hvd.32044086419926.

65. Samuel Mills Warren, "Extract of Letter from Reverend Samuel Mills Warren to Niece, Mrs. Isaac R. Davis Dated 9 February 1900," in *The Warren, Jackson and Allied Families: Being the Ancestry of Jesse Warren and Betsey Jackson*, by Betsey Warren Davis (Philadelphia, PA: J. B. Lippincott, 1903), 26, archive.org/details/warrenjacksonall00davi.

66. Williams Directory Company, ed., *Williams' Cincinnati Directory* (Cincinnati, OH: Williams Directory Co, 1849), 296, classic.cincinnatilibrary.org/record=b2681108~S1.

67. Davis, *The Warren, Jackson and Allied Families*, 20, 21, 35, 37.

68. "C. M. & H. M. Warren," *The Western Journal* (St. Louis, MO.: M. Tarver and T. F. Risk, August 1851), hdl.handle.net/2027/hvd.32044012539565; Williams Directory Company, ed., *Williams' Cincinnati Directory*, 271, classic.cincinnatilibrary.org/record=b2681108~S1.

69. Warren, "Extract of Letter," 26.

70. Martin D. Saltzman, "The Contributions of Cyrus Moors Warren to the Analysis of Hydrocarbons," *Bulletin for the History of Chemistry* 26, no. 2 (2001): 113–14, acshist.scs.illinois.edu/bulletin_open_access/v26-2/v26-2%20p112-117.pdf.

71. Diana S. Waite, "Roofing for Early America," in *Building Early America: Contributions toward the History of a Great Industry*, ed. Charles E Peterson (Radnor, PA: Chilton Book Co., 1976), 145–146, archive.org/details/buildingearlyame0000unse.

72. A. McElroy, ed., *McElroy's Philadelphia City Directory for 1865*, 28th ed. (Philadelphia, PA: A. McElroy, 1865), 693, hdl.handle.net/2027/nnc1.cu04037871.

73. Crowther, "Our Kings of Chemistry," 351.

74. M. Ehret, Jr. & Co., "Roofing," and Warren-Ehret Roofing Company Ltd., "Builders," *Carpentry and Building* (New York: David

Williams Company, 1887), xiv, hdl.handle.net /2027/mdp.39015080129540 .

75. Trow Directory, Printing and Bookbinding Co., *The Trow (Formerly Wilson's) Copartnership and Corporation Directory of Boroughs of Manhattan and the Bronx, City of New York*, vol. 49 (New York: Trow Directory, Printing and Bookbinding Co., 1901), 102, 511, hdl.handle.net/2027/njp.32101065143636.

76. George Hosking, ed., *Moody's Manual of Railroads and Corporation Securities*, 14th ed., vol. 2 (New York: Moody Manual Company, 1913), 4019, hdl.handle.net/2027/osu .32435063618854.

77. Thomas Leslie, "'Dry and Ready in Half the Time': Gypsum Wallboard's Uneasy History," in *History of Construction Cultures Volume 2: Proceedings of the 7th International Congress on Construction History (7ICCH 2021), July 12–16, 2021, Lisbon, Portugal*, eds. João Mascarenhas-Mateus and Ana Paula Pires (CRC/ Balkema, 2021), 682–87, doi.org/10.1201 /9781003173434.

78. New York Coal Tar Chemical Company, "Roofing Building Paper," *Scientific American* 52, no. 26 (June 27, 1885): 413, hdl.handle .net/2027/osu.32435022760201; E. W. Mills & Co. Ltd, "Ironmongers, Iron Merchants and Ships Chandlers," *New Zealand Times*, Sept. 3, 1888, 8, paperspast.natlib.govt.nz/newspapers /NZTIM18880903.2.39.5.

79. Nigel Isaacs, "Building Paper Arrives in New Zealand," *Architectural History Aotearoa* 20 (2023): 91–97, doi.org/10.26686/aha.v20.8716.

80. Architectural Record Co., *Sweet's Indexed Catalogue of Building Construction for the Year 1906*, 1st ed., vol. I (New York: Architectural Record Co., 1906), 170, archive.org/details /architecturalcat1906swee; Architectural Record Co., *Sweet's Indexed Catalogue of Building Construction for the Year 1911*, 7th ed. (New York: Architectural Record Co., 1911), 444, books.google.com/books?id=untNAAAAYAAJ.

81. John C. Bishop, "USG Corporation," in *International Directory of Company Histories*, ed. Adele Hast (Chicago, IL: St James Press, 1991).

82. Gerry Azzata, "Bird Corporation," in *International Directory of Company Histories*, ed. Tina Grant (Detroit, MI: St James Press, 1998), 56–57.

83. National Sheet Metal Roofing Co., *Practical Hints to Builders* (National Sheet Metal Roofing Co., 1890), 99, archive.org/details /NationalSheetMetalRoofingCo.1890.

84. "Novelties, 'Neponset Building Papers,'" *Carpentry and Building* (New York: David Williams Company, June 1899), hdl.handle.net /2027/njp.32101079220297.

85. A. F. Hunter, *Practical Farm Buildings: Plans and Suggestions* (East Walpole, MA: F. W. Bird and Son, 1906), 47, archive.org/details /AFHunterPracticalFarmBuildings19060001; F. W. Bird & Son, *House Insulation* (East Walpole, MA: F. W. Bird & Son, 1908), archive .org/details/houseinsulation00bird; F. W. Bird & Son, *Neponset Roofings for Every Building* (F. W. Bird & Son, 1910), archive.org/details /NeponsetRoofingsForEveryBuilding.

86. US Patent Office, *Official Gazette of the United States Patent Office* 56, no. 9 (Sept. 1, 1891): 1064, hdl.handle.net/2027/wu .89095061032.

87. US Patent Office, *Official Gazette of the United States Patent Office*, 120, no. 5 (Jan. 30, 1906): 1461–62, https://hdl.handle.net/2027/iau .31858029610445.

88. US Patent Office, *Official Gazette of the United States Patent Office* 121, no. 4 (Mar. 27, 1906): 1339, hdl.handle.net/2027/pst .000064089645.

89. National Association of Practical Refrigerating Engineers, "Industrial Refrigeration," Mar. 1907, 180.

90. Azzata, "Bird Corporation," 57–58.

91. Tracey Vasil Biscontini, "CertainTeed Corporation," in *International Directory of Company Histories*, ed. Tina Grant (Detroit, MI: St James Press, 2001), 87–88.

92. Standard Paint Co. and Paraffine Paint Co., "P & B Building and Insulating Paper," *Ice and Refrigeration Illustrated*, Aug. 1894, hdl.handle .net/2027/osu.32435062883020.

93. "Notes," *The American Architect and Building News* 29, no. 758 (July 5, 1890): A4.

94. Moody's Investors Service, *Moody's Analyses of Investments: Part 2 Industrial Investments*, 11th ed. (New York: Moody's Investors Service, 1920), 399, hdl.handle.net/2027/osu .32435063607055.

95. Poor's and Moody's, *Moody's Manual of Railroads and Corporation Securities, Industrial Section Vol. 2, K to Z*, 25th ed. (New York: Poor's Publishing Co., 1924), 404, hdl.handle.net /2027/umn.31951d00132596x.

96. Thomas Derdak, ed., "G.A.F.," in *International Directory of Company Histories* (Chicago, IL: St James Press, 1988); Robert J. Baptista and Anthony S. Travis, "I.G. Farben in America: The Technologies of General Aniline & Film," *History and Technology* 22, no. 2 (2006): 215, 218, doi.org/10.1080/07341510600629332.

97. H. Wilson, *Trow's New York City Directory 1859-60* (New York: John F. Trow, 1858), 23, https://hdl.handle.net/2027/hvd.hnfijb.

98. New York Mica Roofing Company, "Patent Mica Roofing," *The Democratic Advocate*, December 6, 1866, chroniclingamerica.loc.gov /lccn/sn85038292/1866-12-06/ed-1/seq-3/.

99. Mica Roofing Co., *The Mica Roofing Co., Manufacturers and Dealers in Composition Roofing, Paints, Oils, Naval Stores* (New York: J. W. Pratt, 1869), lccn.loc.gov/ca09003642.

100. H. Wilson, *Trow's New York City Directory 1868/69*, 82nd ed. (New York: John F. Trow, 1868), 190, 725, hdl.handle.net/2027/hvd.hnfihz.

101. Gerber & Drew, "Medal Brand Roofing," *Sacramento Daily Record-Union*, May 25, 1888, 2, chroniclingamerica.loc.gov/lccn/sn82014381 /1888-05-25/ed-1/seq-2/.

102. City of New York, *Journal of Proceedings: Minutes of the Board of Estimate and Apportionment of the City of New York from December 1, 1921 to December 31, 1921*, vol. 8 (New York: City of New York, 1922), 7116, hdl .handle.net/2027/nyp.33433090755293.

103. "New York Letter," *Santa Fe New Mexican*, Sept. 5, 1912, 3, chroniclingamerica.loc.gov/lccn /sn84020630/1912-09-05/ed-1/seq-3/.

104. Stony Brook University Libraries, "Eversley Childs Collection," Special Collections and University Archives, 2020, stonybrook.edu /commcms/libspecial/collections/manuscripts /childs.php.

105. James T. White and George Derby, *The National Cyclopædia of American Biography*, vol. D (New York: J. T. White & Company, 1934), 362, hdl.handle.net/2027/mdp .39015078229526.

106. International Publishing Co., *Illustrated New York. The Metropolis of To-Day* (New York: International Publishing Co., 1888), 198, hdl.handle.net/2027/miun.aja2262.0001.001.

107. "Swift Selling Specialties, Tarin Moth Bags Protect Clothes," *The House Furnishing Review*, Apr. 1913, 28, hdl.handle.net/2027/nyp .33433060476169.

108. Federal Trade Commission (US), *Federal Trade Commission Decisions. Findings, Orders, and Stipulations July 1, 1949 to June 30, 1950. v.46.*, vol. 46, *Federal Trade Commission Decisions* (Washington DC: Federal Trade Commission, 1952), 1203, hdl.handle.net/2027 /osu.32437011662034.

109. "A Good Building Paper," *American Architect and Building News*, May 5, 1888, books.google.com/books?id=dCNLAQAAMAAJ.

110. M. Ehret Jr. & Co., "M. Ehret Jr & Co Descriptive Circular." *Carpentry and Building*, Oct. 1888. books.google.com/books?id= G3fmAAAAMAAJ.

111. Kidder, *Building Construction and Superintendence*.

112. Kidder and Nolan, *Building Construction and Superintendence*.

113. Andrew Geyer, *Registry of Water Marks and Trade Marks*, 7th ed. (New York: Andrew Geyer, 1911): 295, 351, archive.org/details /registryofwaterm00geye_0.

114. US Patent Office, *Official Gazette of the United States Patent Office* 630, no. 4

(Jan. 24, 1950): 906, hdl.handle.net/2027/wu.89049546104.

115. "Building Papers and Roofing Felts."

116. Bird Paper Manufacturing Co., "The Bird Sheathing," *Hardware Dealers Magazine*, Mar. 1896, books.google.com/books?id=ekw-AQAAMAAJ.

117. George M. Dallas, *Standard Paint v. Bird et al.*, 65 Federal Reporter 509, 189 (Circuit Court D, New Jersey, 1894).

118. Standard Paint Co. and Paraffine Paint Co., "P & B Building and Insulating Paper."

119. *Reynolds v. Standard Paint Co.*, 68 F. 483 (C.C.A. 3d Cir. 1895) (Acheson, J.).

120. Bird Paper Manufacturing Company, "Communications: A Statement" *The Paper Trade Journal*, Mar. 10, 1894, archive.org/details/sim_paper-trade-journal_1894-03-10.

121. Oliver C. Klinger, *Obsolete Securities* (New York: Oildom Publishing Co., Inc., 1923), 53, hdl.handle.net/2027/njp.32101068993086.

122. Poor's Manual Company, *Poor's Manual of Industrials; Manufacturing, Mining and Miscellaneous Companies*, 8th ed. (New York: Poor's Manual Company, 1917), 2589–90, books.google.com/books?id=CmY3AQAAMAAJ.

123. Diana Twede, "The History of Corrugated Fiberboard Shipping Containers," *Conference on Historical Analysis and Researching Marketing (CHARM)* 13 (2007): 243, ojs.library.carleton.ca/index.php/pcharm/article/view/1591.

124. Twede, "The History of Corrugated Fiberboard Shipping Containers," 243.

125. National Association of Manufacturers (US), *American Trade Index*, 7th ed., 192, 543.

126. George L. Gould, *Historical Sketch of the Paint, Oil, Varnish and Allied Trades of Boston: Since 1800, A.D.* (Boston, MA: Paint and Oil Club of New England, 1914), 31–32, hdl.handle.net/2027/uc2.ark:/13960/t6057g41w .

127. J. A. & W. Bird & Co., "'The Resister' Rex Flintkote Roofing," *Saturday Evening Post*, Feb. 11, 1905, hdl.handle.net/2027/uiug.30112070072456; J. A. & W. Bird & Co., *Rex Flintkote Roofing: Exhibit in Palace of Varied Industries, St. Louis Fair, 1904* (J. A. & W. Bird & Co., 1904), archive.org/details/rexflintkoteroof00jawb.

128. J. A. & W. Bird & Co., *The Waterproofing of Structures, with Special Reference to Sublevel Construction, the Envelope Method, and the Application of "Tunaloid"* (Boston, MA: J. A. & W. Bird & Company, 1910), archive.org/details/waterproofingofs00bird.

129. Architectural Record Co., *Sweet's Indexed Catalogue of Building Construction for the Year 1911*, 464; J. M. and L. A. Osburn Company, *The J. M. And L. A. Osborn Company Catalog A* (J. M. and L. A. Osborn Company, 1911), 167, archive.org/details/J.M.AndL.A.OsborneCo; F.W. Dodge Co., *Sweet's Indexed Catalogue of Building Construction for the Year 1914*, 10th ed., vol. 1 (New York: The F.W. Dodge Co., 1914), 562, archive.org/details/architecturalcat1914swee.

130. Thomas William Herringshaw, *Herringshaw's Encyclopedia of American Biography of the Nineteenth Century* (Chicago, IL: American Publishers' Association, 1898), 77, hdl.handle.net/2027/uc2.ark:/13960/t7gq6rh0d.

131. "Building Papers and Roofing Felts."

132. Samuel E. Hendricks Co., *Hendricks' Commercial Register of the United States*, 24th ed. (New York: S.E. Hendricks Co., Inc., 1915), 1013, hdl.handle.net/2027/uiug.30112057145481.

133. Weeks, *A History of Paper-Manufacturing in the United States*, 306–7.

134. "Consolidation of Mid-West Box Company's Interests," *Fibre Containers*, Feb. 1921, hdl.handle.net/2027/nyp.33433108236088.

135. Walker, *International Exhibition, 1876*, 602.

136. General Roofing Manufacturing Company, "A Real Guarantee," *National Geographic*, July 1916, hdl.handle.net/2027/hvd.32044103134813.

137. National Association of Manufacturers (US), *American Trade Index,* 13th ed.

138. Biscontini, "CertainTeed Corporation," 86–89.

139. General Roofing Mfg. Co., *Modern Building Ideas and Plans* (East St. Louis, IL: General Roofing Mfg. Co., 1913), 38, archive.org/details/GeneralRoofingMfgCoModernbuildingideasandplans0001.

140. N. A. Haldeman & Co., *Illustrated Catalogue: N.A. Haldeman & Company*, 16th ed. (N. A. Haldeman & Co., 1893), archive.org/details/IllustratedCatalogueN.a.HaldemanCompany.

141. S. B. Nelson and J. M. Runk, *History of Cincinnati and Hamilton County, Ohio, Their Past and Present* (Cincinnati, OH: S. B. Nelson & Co., 1894), 436, hdl.handle.net/2027/umn.319510019629670.

142. Joseph Daniel Barnes and John C. Hover, *Memoirs of the Miami Valley*, vol. 3 (Chicago: Robert O. Law Company, 1919), 210–12, hdl.handle.net/2027/nyp.33433081819397.

143. Walker, *International Exhibition, 1876, Reports and Awards*, vol. V, Groups VIII–XIV (1876), 5:576; Board of Commissioners of the Cincinnati Industrial Exposition, *Report of the Board of Commissioners of the Cincinnati Industrial Exposition, Held in Cincinnati, Ohio, September 10th to October 11th, 1879* (Cincinnati, OH: Board of Commissioners of the Cincinnati Industrial Exposition, 1879), 243, 244, 246, hdl.handle.net/2027/mdp.39015067180045.

144. Richardson Paper Co., "Policies and Aims of the Richardson Paper Company," *Fibre Containers*, Mar. 1919, hdl.handle.net/2027/nyp.33433108236146.

145. "Heritage of Wrath: Story of the Haldeman-Richardson Feud That Started When a Will Was Read and Ended in Blood," *The Cincinnati Post*, Sept. 27, 1898.

146. A. J. Valente, *Rag Paper Manufacture in the United States, 1801-1900: A History, with Directories of Mills and Owners* (Jefferson, NC: McFarland & Co., 2010), 219, archive.org/details/ragpapermanufact00vale; Hoboken Paper Mill Co., "Hoboken Paper Mill Company," *American Federationist*, Nov. 1905, hdl.handle.net/2027/uiug.30112001474409.

147. Howard Lockwood, *Lockwood's Directory of the Paper and Allied Trades 1918*, 43rd ed. (New York: Lockwood Trade Journal Co., Inc., 1917), 107, hdl.handle.net/2027/hvd.hxipbm.

148. "To Sell Hoboken Paper Mills Co.," *The Paper Trade Journal*, July 26, 1923.

149. E. Rundle Levey, ed., *Melbourne International Exhibition 1880, Opened 1st October, 1880: The Official Catalogue of the Exhibits with Introductory Notices of the Countries Exhibiting*, 2nd ed., vol. 1 (Melbourne, AU: Mason, Firth & McCutcheon, 1880), 233–34, hdl.handle.net/2027/nyp.33433038604736; National Association of Manufacturers (US), *American Trade Index*, 13th ed., 394; Lockwood, *Lockwood's Directory of the Paper and Allied Trades 1918*, 104.

150. James W. Jack, "Say! No Equivocation. J-M Regal Roofing," *Progress*, Mar. 1, 1912, 1012A, paperspast.natlib.govt.nz/periodicals/P19120301.2.8.1.

151. Johns-Manville International Corporation, *General Data Sheets on Johns-Manville Products* (New York: Johns-Manville International Corporation, 1931), Secs. 4-I–20, hdl.handle.net/2027/coo.31924005028968; H.W. Johns-Manville Co., *J. M. Products and Their Uses* (New York: H. W. Johns-Manville Co., 1915), 25, hdl.handle.net/2027/coo.31924005028968.

152. *American Trade Index*, 13th ed., 394; *American Trade Index,* 11th ed., 346; *American Trade Index,* 10th ed., 380.

153. Keasbey & Mattison Company, *Legends of Asbestos: Being an Illustrated Compilation of Unusual Historical Incidents about Asbestos* (Ambler, PA: Keasbey & Mattison Company, 1940), 19, archive.org/details/LegendsOfAsbestosBeingAnIllustratedCompilationOfUnusualHistorical.

154. *American Trade Index*, 13th ed., 394; *American Trade Index,* 11th ed., 346; *American Trade Index,* 10th ed., 380.

155. Howard Lockwood, *Lockwood's Directory of the Paper and Allied Trades 1912*, 37th ed. (New York: Lockwood Trade Journal Co.,

Inc., 1911), 311, hdl.handle.net/2027/nyp.33433069060634.

156. Keystone Roofing Mfg. Co., "'X-L-OID' Rubber Roofing," *Commercial America* (Philadelphia, PA: Philadelphia Commercial Museum, July 1912), hdl.handle.net/2027/mdp.39015080167730.

157. C.E. Howe Co., *Boyd's Philadelphia Business Directory* (Philadelphia, PA: Boyd's Directory Office, 1900), 682, hdl.handle.net/2027/wu.89073028797.

158. Holyoke Correspondent, "Death of John W. Mullen," *Paper Mill News: News Magazine of the Paper and Pulp Industry*, Dec. 25, 1915, books.google.com/books?id=zt8_AQAAMAAJ.

159. O. W. Coolidge, *A Twentieth Century History of Berrien County, Michigan*, *Genealogy & Local History* (Lewis Publishing Company, 1906), 189, books.google.com/books?id=3G0Qo9lf4nsC.

160. "Construction News," *Paper Trade Journal*, Mar. 7, 1923, google.com/books/edition/Paper/mcEfAQAAMAAJ.

161. Dillon Printing & Publishing Co., *Holyoke Old and New: A Chronological History Together with an Account of the Fiftieth Anniversary Celebration of the Incorporation of Holyoke, Massachusetts as a City: 1873–1923* (Holyoke, MA: Dillon Printing & Publishing Co., 1923), 133, archive.org/details/holyokeoldnewchr00unse.

162. Lockwood Trade Journal Co., Inc., *Lockwood's Directory of the Paper and Allied Trades 1928*, 53rd ed. (New York: Lockwood Trade Journal Co., Inc., 1927), 129, hdl.handle.net/2027/coo.31924101107708.

163. Commonwealth of Massachusetts, "MA Corporations Card Search," *Corporations Division, Search the Corporations Card File*, Feb. 11, 2024, corp.sec.state.ma.us/CorpWeb/CardSearch/CardSearch.aspx.

164. Los Angeles Examiner, Press Reference Library, *Notables of the Southwest, Being the Portraits and Biographies of Progressive Men of the Southwest, Who Have Helped in the Development and History Making of This Wonderful Country*, (Los Angeles, CA: *Los Angeles Examiner*, 1912), 270, books.google.com/books?id=j-IDAAAAYAAJ.

165. Regular Correspondent, "San Francisco Notes," *The Paper Trade Journal*, Nov. 29, 1890, archive.org/details/sim_paper-trade-journal_1890-11-29_19_48.

166. "Modern New Home Building (Pioneer Paper Co.)," *Los Angeles Herald*, Apr. 3, 1910, sec. II, *Library of Congress*, lccn.loc.gov/sn85042462.

167. *American Trade Index,* 13th ed., 394; *American Trade Index,* 11th ed., 346.

168. Pioneer Paper Co., *Fifty-one Beautiful Homes* (Pioneer Paper Co., Inc., 1925), archive.org/details/FiftyOneBeautifulHomes.

169. "Pioneer Paper Co. Combines with Flintkote Group and Shell Company," *The California Lumber Merchant*, Jan. 15, 1929, issuu.com/building-products/docs/tclm_01151929.

170. "Willis G. Hunt Rites Arranged," *Los Angeles Times*, Mar. 25, 1940.

171. "Mrs. Hunt Charged With Killing Mate," *Los Angeles Times*, Dec. 16, 1969; "Mrs. Hunt Found Not Guilty in Death of Husband," *Los Angeles Times*, Nov. 11, 1970.

172. Special Correspondent, "Philadelphia Pickings," *The American Stationer*, Mar. 8, 1875, archive.org/details/ldpd_12498671_002.

173. United States Commission to the Paris Exposition 1878 and Thomas R. Pickering, *Official Catalogue of the United States Exhibitors* (London: Printed at the Chiswick Press, 1878), 100, archive.org/details/cu31924021898097; Levey, *Melbourne International Exhibition 1880*, 233–34.

174. Ethan Allen Weaver, *Annual Proceedings: Pennsylvania Society of Sons of the Revolution 1900-1901* (Philadelphia, PA: Pennsylvania Society of Sons of the Revolution, 1901), 39, archive.org/details/annualproceedin190001sons.

175. "Trade Notes," *Carpentry and Building* (New York: David Williams Company, 1889), hdl.handle.net/2027/njp.32101079220230.

176. Weaver, *Annual Proceedings: Pennsylvania Society of Sons of the Revolution 1900-1901*, 39.

177. Legislature of New Jersey, *Acts of the One Hundred and Seventeenth Legislature of the State of New Jersey and Forty-Ninth Under the New Constitution*, 553, archive.org/details/new-jersey-session-laws.

178. Sears, Roebuck and Co., *Sears, Roebuck and Co. Consumers Guide: Catalogue No. 104, Spring 1897* (Chicago, IL: Sears, Roebuck and Co., 1897), 95, archive.org/details/sears-roebuck-catalog-104-spring-1897.

179. Sears, Roebuck and Co., *Our Special Catalog for Home Builders 1910* (Chicago, IL: Sears, Roebuck and Co., 1910), 142, hdl.handle.net/2027/nnc2.ark:/13960/t5t820n33; Sears, Roebuck and Co., *Sears, Roebuck and Company Catalog 1918* (Chicago, IL: Sears, Roebuck and Co., 1918), 1623, archive.org/details/catalog1918sear_201901.

180. Valente, *Rag Paper Manufacture in the United States,* 238, 284.

181. "The Schmidt & Ault Paper Company," *Boxboard*, Apr. 1924, hdl.handle.net/2027/nyp.33433098418100.

182. Valente, *Rag Paper Manufacture in the United States,* 45.

183. "Schmidt and Ault Sale Confirmed," *The Gazette and Daily*, Nov. 14, 1959.

184. "Champion and St. Regis Are Planning to Merge," *The New York Times*, Aug. 1, 1984, sec. D.

185. York College of Pennsylvania, "The Transformation of the Old Schmidt & Ault Paper Mill into York College Knowledge Park Will Create a Place to Foster the Free-Flowing Exchange of Ideas among Students and Professionals from All Disciplines in a State-of-the-Art Environment," *Our York Media*, June 8, 2020, ouryorkmedia.com/stories/the-future-of-york-colleges-knowledge-park-gives-second-life-to-propertys-past/.

186. William H. Boyd, *Boyd's Philadelphia Business Directory 1858*, 1st ed., (Philadelphia, PA: Joseph Monier, 1858), 214, hdl.handle.net/2027/nnc1.cu04037839; Isaac Costa, *Gopsill's Philadelphia Business Directory 1876*, 1st ed. (Philadelphia, PA: James Gopsill, 1876), 318, hdl.handle.net/2027/hvd.hn77ev.

187. C. E. Howe Co., *Boyd's Philadelphia Business Directory 1898*, 40th ed. (Philadelphia, PA: C. E. Howe Co., 1898), 1390, hdl.handle.net/2027/wu.89073028763.

188. Joseph Stelwagon's Son, *Building Paper, Ajax Brand Two & Three Ply Roofing, Joseph Stelwagon's Son, Philadelphia* (Philadelphia, PA: Joseph Stelwagon's Son, 1892), archive.org/details/buildingpaperaja00jose.

189. Valente, *Rag Paper Manufacture in the United States,* 212, 290.

190. Seeger and Guernsey Company, *Seeger and Guernsey's Cyclopædia of the Manufactures and Products of the United States*, 1890, 88; *American Trade* Index, 7th ed., 192; *American Trade Index*, 11th ed., 346; *American Trade Index*, 10th ed., 380; *American Trade Index*, 13th ed., 394.

191. Hosking, *Moody's Manual of Railroads and Corporation Securities* 2, 4019.

192. Regular Correspondent, "H. F. Watson Co. in Merger," *Paper Trade Journal* 86, no. 14 (Apr. 5, 1928): 25, hdl.handle.net/2027/coo.31924067328173.

193. Historical Society of Erie County, "Watson-Curtze Mansion," *Hagen History Center*, 2024, eriehistory.org/exhibits/watsoncurtzemansion/.

The *APT Bulletin* is published by the Association for Preservation Technology. APT's mission is to advance appropriate traditional and new technologies to care for, protect, and promote the longevity of the built environment and to cultivate the exchange of knowledge throughout the international community. A subscription to the *Bulletin* and free online access to past articles are member benefits. For more information, please visit www.apti.org.