

William Frank & Sons, Pittsburgh, Pennsylvania

Bill Lockhart, Beau Schriever, Bill Lindsey, Carol Serr, and Bob Brown
with contributions by Jay Hawkins

William Frank moved into the glass business with Ephraim Wormser after he married Pauline Wormser, Ephraim's sister. Eventually, Frank traded his share of an oil business for Wormser's share of the glass house then brought his sons into the business. In a short decade of operation, the Frank family introduced a rich variety of manufacturer's marks into the market.

Histories

William Frank & Co., Pittsburgh (1846-1866)

In a 1975 interview, James A. Frank told how his grandfather, William Frank, began his first employment as a peddler, then worked in a dry goods store in Ohio, where he married Pauline Wormser. The couple moved to Pittsburgh in 1845 (National Council of Jewish Women 2002:75). James also stated that Frank "began operating in 1846 as Wm. Frank & Company, in the general mercantile business" (Creswick 1987:63). The couple had a total of four sons, Himan, Ephraim, Samuel, and Abraham, although Ephraim died as a child (Hawkins 2009:218).¹

At this point, stories begin to conflict. Citing McMaster (1875), Innes (1976:218-221) stated that Frank and his brother-in-law, Ephraim Wormser, joined in the glass business in 1854 (for more about Wormser, see his section). Elsewhere, however, Innes (1976:221-222) cited William K. Frank (another grandson) who claimed that the initial company was the Pittsburgh Green Glass Co., operated by Wormser, Burgraff & Co. Frank entered the business in 1857, and the group renamed the plant as the Franktown Glass Works in 1858. Other sources (McKearin & Wilson 1978:159; Roller 1996; Toulouse 1971:193-195) noted that Wormser and Frank *established* the Franktown Glass Works in 1858.

¹ Some authors spell Himan as Hyman. The patent documents, however, say, "I Himan Frank"

Hawkins (2009:218) resolved the issue by claiming both dates as valid. Frank and Wormser built the first glass house in 1854, with Frank's involvement principally as an investor. Wm. Frank & Co. was an active wholesale dry goods business during that period. Scraping up a \$10,000 capital, the pair built a second glass factory along the Monongahela River at Market St. & 2nd Ave. in 1857 – with Frank now as a full partner. Formerly called Wormser, Burgraff & Co., the firm was renamed Wormser & Co. (Hawkins 2009:218). For more information on Wormser's involvement in the glass business, see the Wormser section. The pair again teamed up to buy a three-acre plot of land near downtown Pittsburgh on August 15, 1858, and built the Franktown Glass Works there. Although the plant bore Frank's name, the firm remained Wormser & Co. until 1866 (Hawkins 2009:218).²

William Frank, Pittsburgh (1866-1870)

William Frank & Sons, Pittsburgh (1870-1876)

Wormser deeded his interest in the business to William Frank on March 24, 1866. Although Frank originally used his name alone to identify the business, he renamed the company William Frank & Sons, when Himan and Samuel became seriously involved in management in 1870.³ The plant made a large variety of bottles and flasks (Hawkins 2009:218-219; Innes 1976:218-221, 221-222; McKearin & Wilson 1978:159; Toulouse 1971:193-195). Both grandsons told the story of how H.J. Heinz, as a young man, bought bottles from their grandfather to contain his earliest product, horseradish, obviously a family tradition (Innes 1976:221-222; National Council of Jewish Women 2002:75).

One of William's sons, Himan Frank, was the inventor of the family. On August 6, 1872, Himan received two patents: one for "Forming Bottle Mouths" (No. 130,207), and one for a bottle stopper (No. 130,208). The forming tool patent (No. 130,207) related "to a tool for forming a screw-thread on the inside of the necks of glass bottles and jars along with a suitably

² McKearin & Wilson (1978:159) claimed that the "name of the firm [at the Frankstown Glass Works] was Wm. Frank & Co."

³ The date for the name change should be taken with a grain of salt. Directories were notorious for missing changes in companies – especially new ones or ones on the fringes of their territories.

shaped seat for a gasket” (Figures 1 & 2). The stopper was made to create an internal, continuous-thread finish (Innes 1976:218-222).

Himan also patented a gas furnace, which was put into operation in a new plant built by William Frank & Sons in 1873 (Innes 1976:218-222). The gas furnace may have been problematic – since a fire destroyed the factory on June 11, 1874. The family built a new structure in just ten weeks and resumed operations (Hawkins 2009:220; Innes 1976:222; Jones 1968:27; McKearin & Wilson 1978:159; Roller 1996). The new factory had a single furnace with six pots in 1875 (Grier 1877:127).

The senior Frank retired from the business in October of 1875, but the sons continued to operate under the old name. Frank apparently had maintained at least a financial interest in E. Wormser & Co., although he withdrew from that firm in 1876 – the same year that the plant burned to the ground again. This time, the sons did not rebuild. The sons continued to operate William Frank & Sons as a dry good business from 1877 to 1879 (Hawkins 2009:220-221).

Containers and Marks

Hawkins (2009:221-222) listed an even dozen marks used by William Frank or William Frank & Sons on bottles and flasks, including the full name spelled out, various abbreviations, and only initials. In addition, he noted marks on five different historical flasks. We have divided the section below according to the two glass company names.

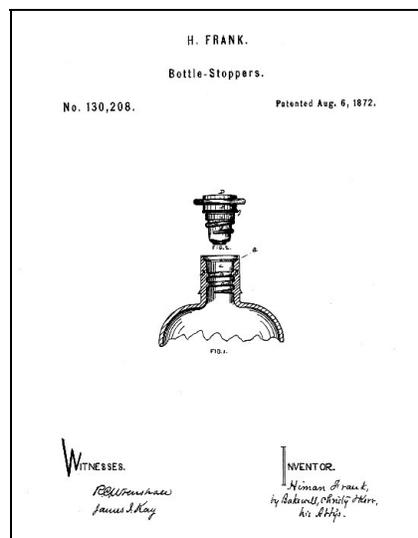


Figure 1 – H Frank 1872 patent

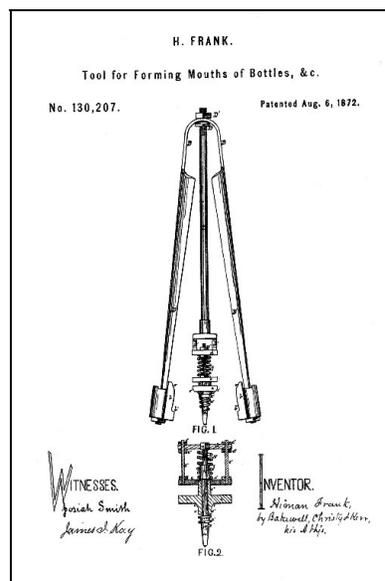


Figure 2 – H Frank 1872 patent

William Frank (1866-1869)

The city directories listed William Frank without his sons from 1866 to 1869. Because the directories have been shown to be unreliable for name changes, we have used the full three years (1866-1869) for bottle embossed with William Frank's name – without either the word “SONS” or the initial “S” to indicate them, but a slightly earlier date (1868-1876) after the sons joined the firm. We have included “WF&Co” at the beginning of this first section, but we have otherwise addressed the logos used by William Frank in an order from simple to complex. See below for dating William Frank & Sons.

W.F.&Co. (ca. 1866-ca. 1868)

Griffenhagen and Bogard (1999:129) suggested that the “W.F.&Co.” was used by William Frank & Co., Pittsburgh, on Schwab, McQuaid & Co. bottles in the 1890s. This dating does not fit with any of the other sources for William Frank & Co. Ring (1980:393) mentioned Schwab, McQuaid & Co. in connection with Red Jacket Bitters but did not note the “W.F.&Co.” mark or dates. Watson (1968:143) and Hunt (1997), however, listed Red Jacket Bitters by Schwab, McQuaid & Co. with the “W.F.&Co.” mark on the base. The Midwest Archaeological Center Bottle Glass Index (National Park Service 1997), however, noted the mark as “WM F & CO. PITTS. PA.” According to Pre-Pro.com (2020), Schwab, McQuaid & Co. was actually in business from 1870-1875 – a period too late – and therefore unlikely – for William Frank & Co.

According to Cannon (2005), Edward McQuaid, Charles H. Schwab and John B. Smith engaged in a wholesale wine and liquor establishment from 1866 to 1869. This is more in keeping with the dates found for William Frank & Co. in the city directories (see above). It is possible that the bottle (and mark) was made just at the transition between William Frank & Co. and William Frank. It is remotely possible that this was one of the *last* bottles made by the family – after the fire of 1874. We may never know.

W.F (1866-1869)

McKearin & Wilson (1978:160) illustrated and discussed a “blob-top” soda bottle and attributed it to William Frank. Innes (1976:222) also illustrated the bottle (used by J.C. Buffum

& Co., Pittsburgh) with the W.F. initials embossed on the reverse near the heel and noted that the mark “probably” indicated William Frank. Von Mechow (2020) listed three bottles with the “W.F.” logo, all used by J.C. Buffum & Co. He dated the logo 1866-1869.



Figure 3 – W.F. (McKearin & Wilson 1978:160)

Of great interest, eBay auctions featured two of these bottles, one embossed “J.C.

BUFFUM & CO. (arch) / PITTSBURGH (horizontal)” on the front and “W.F” on the rear heel – note the period *only* after the “W” (Figure 3). A second bottle was embossed “H.W. BUFFUM & CO.” – with the same initials on the reverse heel, including the period only after the “W.” Both bottles had applied, “blob” finishes, and the “H.W.” variation was embossed “B” on the base with a dot or mamelon in the center. The two mold halves fit together on the base in a “keyhole” format rather than using a baseplate. The “J.C.” bottle lacked the basal “B” but had a mamelon and probably also came together in a “keyhole” shape.

W^M FRANK (1866-1869)

Roller (1983:77) illustrated and discussed a fruit jar embossed “PATENTED BY / G.W. BUFFINGTON / MARCH 5TH 1867 (all horizontal) / MANUFACTURED ONLY (arch) / BY W^M FRANK / PITTSBURGH PA (both horizontal).” He dated the jar 1867-1870 and noted that “only one of these rare jars is known, and it is without closure.” Creswick (1987:23) also illustrated and discussed the jar, adding that G.W. Buffington received Patent No 62,603 on May 20, 1862 (Figures 4). She claimed that the jar was made by W. Frank & Co. from 1846-1866 and by W. Frank & Sons between 1866 and

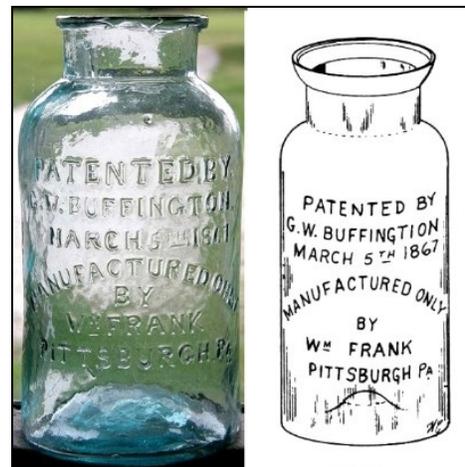


Figure 4 – W^M FRANK (Creswick 1987:23; North American Glass)

1875. The jar was actually probably made during the W. Frank period, 1866-1869, and only for a very brief period. Roller (2011:177) added that the only known example resided in the Senator John Heinz History Center at Pittsburgh.

WILLIAM FRANK PITTSBURG (1866-ca. 1868)

This is one of the few marks where Frank’s first name is spelled out. The mark “WILLIAM FRANK / PITTSBURG” (note spelling) was embossed on what appears to be a Ricketts type mold, the earliest type of plate (Figure 5). This plate wrapped around the outer portion of the bottle base. This mark was found on a bar decanter. The bottle was probably made during the 1866-1868 period.



Figure 5 – William Frank (Jay Hawkins)

Ring (1980:237) noted that one bottle of Dr. Henley’s California Bitters was embossed on the base with “WILLIAM FRANK’S PATENT PITTSBURGH.” In her later book with Bill Ham (Ring & Ham 1998:274), however, they corrected the entry to “WILLIAM FRANKS PITT” – although the final “S” in “FRANKS” is probably still an error on their part. Wichmann (1999:65) noted the mark as “W. FRANK & SONS PITT.” None of the other typical bitters sources (e.g., Umberger & Umberger 1967; Watson 1968; Wilson & Wilson 1969; Wichmann 1999) mentioned the “PATENT” mark.

William Frank & Sons (ca. 1868-1876)

Because the directories may not have picked up the correct change in name, we have moved the early date forward one year earlier than the listings. For example, if the business changed names as late as September of 1869, the change would not have appeared in the 1869 directory, and such a minor change could easily have been missed a year earlier. With the exception of the Hiram Frank patent marks (placed at the end), we have addressed the logos used by William Frank & Sons in an order from simple to complex.

F (1874?-1876?)

Toulouse (1971:193) claimed the “F” mark belonged to William Frank & Sons, although he did not supply any information about why he chose either the mark or the company. Thus far, we have not had reports that confirm the use of this mark by Frank.

WF&S (ca. 1868-1876)

Peters (1996:9, 184) attributed this mark to William Frank & Sons, although the mark is usually reserved for William Franzen & Son (see Franzen section). He based his claim on a single Wisconsin blob-top soda bottle used by Mostert & Bischoff of Waukesha. Peters dated the bottlers from 1875 to 1877, a date much too early for Franzen, although it touched in the last year of the Frank operation. The bottle style is one that was abandoned long before Franzen joined the bottle-making crowd. This bottle currently remains a possibility for William Frank & Sons.

Whitten (2020) dated the mark 1866-1876 and warned that William Franzen & Son used the same initials – although Franzen’s bases usually (probably always) included “MIL” or “MILW.” Von Mechow (2020) also attributed the logo to Frank and listed three bottles, used at Milwaukee, Wisconsin, Detroit, Michigan, and Spring Lake Michigan. The logos were embossed on bottle bases. Von Mechow suggested a use between 1870 and 1876. Although we have lost the provenience, we have a photo of a base that may be a beer bottle (although it could be a soda) embossed “WF&S” horizontally across the base (Figure 6). Franzen was never known to have made beer bottles. Beer bottles embossed “WF&S” on the heel (with no “MIL” were still made by William Franzen & Sons.



Figure 6 – WF&S

W.F.&SONS (ca. 1868-1876)

Knittle (1927:442) and Toulouse (1971:193) both attributed the “W.F.&Sons” mark to William Frank & Sons. Griffenhagen and Bogard (1999:129) listed the mark as being used on

Henley’s Wild Grape Root Bitters. Fike showed two slight variations of D^r Henley’s Wild Grape Root Bitters but did not mention any manufacturer’s mark. The product was introduced in 1866 and was advertised as late as 1915. Ring (1980:237), Ring and Ham (1998:275), and Watson (1968:55) all listed several variations of D^r Henley’s Wild Grape Root Bitters, including one marked on the base with “W.F.&SONS.” Her capitalization of SONS is almost certainly correct.



Figure 7 – WF&SONS (Glassworks Auctions)



Figure 8 – WF&SONS (Glassworks Auctions)

The mark also appeared on flasks. McKearin and Wilson (1978:653) discussed a flask with an ornamented shield design that was marked “W.F.& / SONS” below the shield. Unfortunately, they did not illustrate the flask, but an example of a clasped-hand flask with “W.F.& / SONS” in an oval appeared in a Glassworks Auction (Figures 7 & 8). Hawkins (personal communication 1/15/2007) added that he had seen this mark on medicine bottles in the Pittsburgh area.

Bottles of these types could not have been made by Franzen, who only manufactured beer and soda bottles.

We have also observed the mark with “PITTS” on the base of a Citrus of Magnesia-type medicine bottle. It appears in a circle around the edge of a small post-bottom mold (Figure 9). All examples recorded have periods after both initials.



Figure 9 – WF&SONS (Jay Hawkins)

W. FRANK & SONS (ca. 1868-1876)

The “W. FRANK & SONS” logo appeared in two formats. Each differed in shape, placement on the container, and location – “PITT” and “PITTSBURGH.”

Creswick (1987:184) illustrated a fruit jar marked “W. FRANK & SON (arch) / PITT. (Inverted arch)” on the base (Figure 10). The side was embossed “THE / RESERVOIR,” and two lugs were embossed inside the throat to take an internal stopper. Patent No. 136,240 was issued to Ella G. Haller for this type of jar/stopper combination on February 25, 1873. The jar was therefore made by Frank during the last two years of the company’s operation.

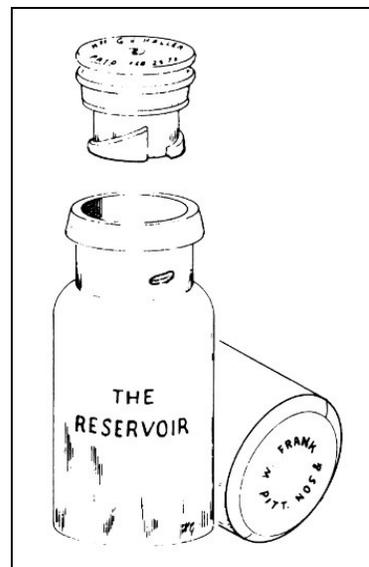


Figure 10 – W Frank & Sons
Creswick (1987a:184)



Figure 11 – Flask (Glassworks
Auctuons)

could have been used for medicinal purposes or for whiskey. The flask had the internal threads and screw stopper patented by Himan Frank in 1872 (see H FRANK below). An example in the Jay Hawkins collection was aqua in color.

Roller (1983:305; 2011:448) also listed the RESERVOIR and noted that the name was also used by Cunninghams & Ihmsen, probably after Frank had ceased operations. A similar jar (without RESERVOIR) also was listed by Roller (1983:128). He dated the jar ca. 1871-1876. While Creswick listed and illustrated the name as “W. FRANK & SON” – note *singular* – Roller used the plural spelling “SONS” – almost certainly correct. Unfortunately, we have not discovered a photograph.

The second form was “W. FRANK & SONS” horizontally across the front heel with “PITTSBURGH, P^A” (with two dots under a superscript “A”) in a similar position on the reverse (Figures 11 & 12). McKearin & Wilson (1978:160) included a black-and-white photo of a small, light colored flask with no other embossing but the logo and location that had a paper label denoting Spirits of Camphor. They suggested that the flasks



Figure 12 – W Frank & Sons (Jay Hawkins)

WM. FRANK & SONS (ca. 1868-1876)

These marks were used on flasks, bitters, and spirits bottles during the ca. 1868-1876 period when the firm was in business (McKearin & Wilson 1978:160-162; Palmer 1993:383). Although McKearin & Wilson consistently used the “WM.” format for the abbreviation, every example we have seen had the supercripted “M” – “W^M.” We have divided these into four variations, each centered around the location: no place name, “PITT,” “PITTS,” and “PA.”



Figure 13 – Back bar bottle (Glassworks Auction)

W^M FRANK & SONS

McKearin & Wilson (1978:161) illustrated a footed back bar bottle with a bulbous center and a long ringed neck that was also embossed “W^M FRANK & SONS” in a circle on the center of the base (Figure 13).

W^M FRANK & SONS, PITT

McKearin & Wilson (1878:161) illustrated another back bar bottle (see above) that was embossed “W^M FRANK & SONS PITT” in a circle on the center of the base. This bottle was cylindrical in shape and also used the Hiram Frank 1873 label design (Figure 14). The design on the front was made by a process developed by Hiram Frank. Frank received Patent No. 135,034 for “Bottle Labels” on January 21, 1873 (Figure 15). Bottles with this design were only made between 1873 and 1876.

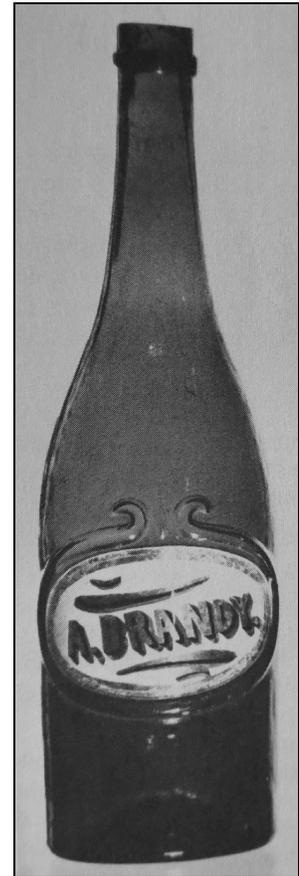


Figure 14 – Back bar bottle (McKearin & Wilson 1978:161)

McKearin & Wilson (1978:162) described a clasped-hands flask similar to the one discussed above, embossed “W^M FRANK & SONS

(arch) / PITT (horizontal)” in an outlined oval (Figure 16). Because the word “FRANK” was centered at the top, “& SONS” curled all the way onto the bottom. “PITT” then became left justified. This is very similar to the mirrored or reversed “PITTS” variation in the W^M FRANK & SONS PITTS section below, but it was made in a different mold. These are the only two examples we have found for this format.

W^M FRANK & SONS, PITTS



Figure 16 – W^M FRANK & SONS (Jay Hawkins)

“Wm. FRANK & SONS, PITTS” was embossed in a circle around a diamond on the base of a green, grooved-ring, wax-sealer fruit jar (Toulouse 1969:120).

Toulouse dated the mark from 1858 to 1866; however, the correct dates should be ca. 1868 to 1876. Roller (1983:128; 2011:200) also listed the jar but added little information. Creswick (1987:63), too, illustrated a grooved-ring wax sealer fruit jar embossed on the base with “W^M FRANK & SONS



Figure 18 – W^M FRANK & SONS (Jones 1968:27)

(arch) / PITTS (inverted arch)” with an elongated diamond in the center (Figure 17). She dated the jar 1866-1876. Jones

(1968:27) provided an interesting variation of the mark. She showed WM. FRANK & (arch) / PITTS (horizontal, center) / SONS (inverted arch) on a round bottle base (Figure 18).

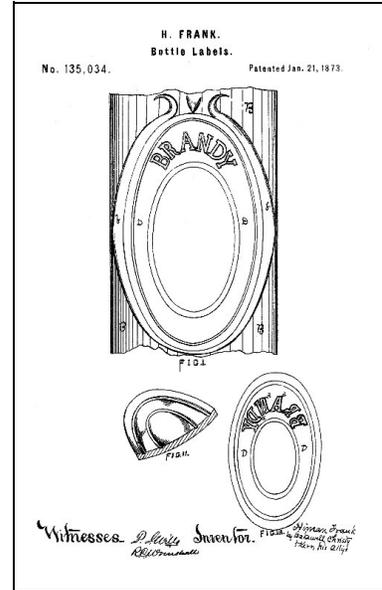


Figure 15 – Frank 1873 patent

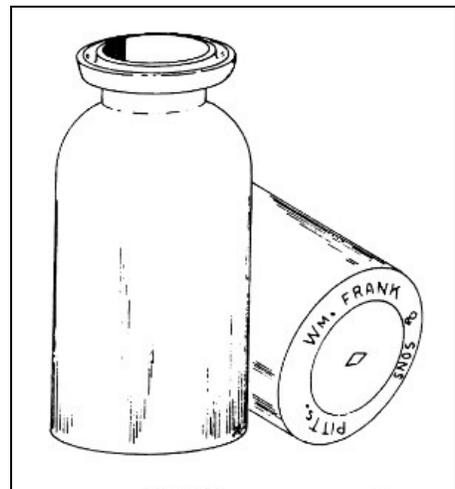


Figure 17 – W^M FRANK & SONS (Creswick 1987a:63)

McKearin & Wilson (1978:162) described another clasped-hands flask similar to the one discussed above, embossed “W^M FRANK & SONS (arch) / PITTS (horizontal)” in an outlined oval – with “PITTS” reversed or in mirror image (Figure 19). As with the flask above, the word “FRANK” was centered at the top, “& SONS” curled all the way onto the bottom. The flask was embossed with an arc of 11 stars / “UNION” in a slight arch / clasped hands / the oval configuration.



Figure 19 – Reversed PITTS (McKearin & Wilson 1978:161)

W^M FRANK & SONS PA



Figure 20 – PA variation (McKearin & Wilson 1978:161)

Both Innes (1976:220-224) and McKearin & Wilson (1978:161) illustrated and discussed “W^M FRANK & SONS P^A” embossed in a circle on the base of an amber cylinder brandy bottle (Figure 20). Although the photo from the books (identical photo in each book) is not perfect, the “P^A” is visible. The mold maker may have used the abbreviation because he left no room for “PITT,” “PITTS,” or “PITTSBURGH.”



Figure 21 – Chapin & Gore (Farnsworth & Walthall 2011:214-216)

H FRANK (1872-1876)

In the history section, we discussed two patents both issued to Himan Frank on the same day – August 6, 1872 (see Figures 1 & 2). One was for a stopper that fit into internal threads in the finish, and the other was for the tool to create the finish. These patented stoppers have been found on unmarked whiskey flasks and barrel-shaped Sour Mash bottles used by Chapin & Gore.

Farnsworth & Walthall (2011:214-216) illustrated and discussed bottles embossed “CHAPIN & GORE CHICAGO” on the shoulder, “SOUR MASH / 1867” in the center of the body, and “H. FRANK’S PAT^D (arch) / AUG 1872 (inverted arch)” on the base (Figures 21 & 22). The threaded stopper had “PAT.AUG672” embossed in a circle around the top (Figure 23). Although Chapin & Gore obviously created the brand in 1867, the



Figure 22 – H Frank (Farnsworth & Walthall 2011:214-216)



Figure 23 – Stopper (Farnsworth & Walthall 2011:214-216)

Frank stopper could not have been made prior to 1872. The Hawley Glass Co. made some of these bottles after the Frank family left the glass business. They are identical to the Frank bottles, but the bases were

embossed “HAWLEY GLASS CO. / HAWLEY, PA.” Even though Chapin & Gore remained in business from 1867 to the early 1900s, the firm began using generic bottles with paper labels in the 1880s. See the Other H section for more information.



Figure 24 – Union Oval (eBay)



Figure 25 – Oval base (eBay)

Occasional eBay auctions have offered generic union oval (strap-sided) flasks embossed “PAT’D’AUG’6TH 72 (slight arch) / H. FRANK (slight inverted arch)” on their bases (Figures 24 & 25). The patent date, of course, was for the internal screw stopper discussed

above. However, many of the flasks with this basal embossing had the typical applied-ring finishes for corks (Figure 26). Apparently, the Franks used the same mold for flasks with any finishes they offered.



Figure 26 – Applied Ring Finish (eBay)

A final variation was an apparent flask base embossed “PAT AUG. 1872 / H FRANK” (Figure 27). Wedel & Walker (1992:165-166) noted, “The maker’s mark is for Wm. Frank & Sons, Pittsburgh 1866-76, with this particular mark being used between 1872-1876. The patent is by Hymen [*sic*] Frank (a son).” Aside from the drawing, we have not found an actual example.

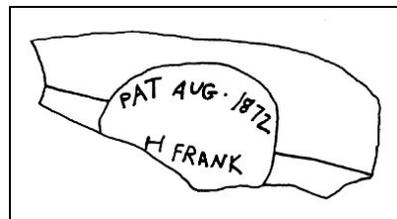


Figure 27 – H Frank base (Wedel & Walker 1992:165-166)

Discussion and Conclusions

The research makes it clear that the decade-long Frank family involvement in the glass business was divided into two periods – 1866-1869 (possibly only 1868), when William Frank separated from Ephraim Wormser but had not yet involved his sons, and William Frank & Sons from 1869 (possibly 1868) to 1876.

It has been demonstrated elsewhere (e.g. Lockhart 2000) that city directories are often slightly inaccurate, especially about beginning dates for establishments. It is entirely possible that either a lazy employee for the directory company failed to check on the listing or that Frank did not think about sending in a change – or both. A member of the Frank family may have checked the directory in 1869 and pointed out the discrepancy. Because of this and the paucity of marks from the William Frank period, we have used ca. 1868 for the beginning of William Frank & Sons, although we have maintained 1869 as an end date for William Franks. It is almost certain that William Frank & Sons continued to use the older molds until they wore out.

Like most early glass manufacturers, the Frank family did not use any form of mark on most of its products. Although our sample is too small to be certain, many of the products that were marked were made by only one mold. The letters in our sample of flasks embossed “W. FRANK & SONS” on one heel and “PITTSBURGH, PA” on the other, for example, match in all aspects. However, we need a larger sample to test this hypothesis.

A key question – not only for this research but for many glass houses from the second-half of the 19th – is *why* were only selected bottles marked? Selected liquor bottles (and flasks) and soda bottles were some of the earliest to carry manufacturer’s marks. Once beer could be

bottled for longer periods, beer bottles also became one of the early container types where maker's logos were the norm.

Part of the answer, of course, was that quality control became important to the buyers of the returnable bottles – beer, soda, and milk. A producer whose bottles would not last long was quickly shunned by businesses whose repeated use of glass was imperative for financial success. Although the reasons are less intuitively obvious, profit was almost certainly a reason behind the marking of liquor ware, too. But we have no good reasons why the same quality was unimportant (or at least less so) for medicinal containers, food, and household ware.

Acknowledgments

We wish to thank Greg Spurgeon for allowing us to use the photos from North American Glass and Doug Lebourne for letting us reproduce the drawings from the Alice Creswick books. Gratitude, too, to Wanda Wakkinen for her tireless proofreading.

Sources

Cannon, Richard

2005 “The Medicine Chest: Two in One.” *Antique Bottle & Glass Collector* Webpage.
<http://glswrk-auction.com/mc12.htm>

Creswick, Alice

1987 *The Fruit Jar Works, Vol. I, Listing Jars Made Circa 1820 to 1920's*. Douglas M. Leybourne, N. Muskegon, Michigan.

Farnsworth, Kenneth B. and John A. Walthall

2011 *Bottled in Illinois: Embossed Bottles and Bottled Products of Early Illinois Merchants from Chicago to Cairo, 1840-1880*. University of Illinois, Urbana. Studies in Archaeology No. 6, Illinois State Archaeological Survey.

Grier, W. Hayes

1877 "Among the Industries of Central, Western and North-Western Pennsylvania." *Commonwealth of Pennsylvania, Annual Report of the Secretary of Internal Affairs* 4(3):90-227.

Griffinhagen, George and Mary Bogard

1999 *History of Drug Containers and Their Labels*. American Institute of the History of Pharmacy, Madison, Wisconsin.

Hawkins, Jay W.

2009 *Glasshouses & Glass Manufacturers of the Pittsburgh Region, 1795-1910*. iUniverse, Inc., New York.

Hunt, William J. Jr.

1997 *Embossed Medicine Bottle Labels: An Electronic Finding Aid for the Identification of Archeological Specimens*. National Park Service, Midwest Archeological Center, Lincoln, Nebraska. Revision of the 1995 publication.

Innes, Lowell

1976 *Pittsburgh Glass, 1797-1891: A History and Guide for Collectors*. Houghton Mifflin, Boston.

Jones, May

1968 *The Bottle Trail, Volume 9*. Nara Vista, New Mexico.

Knittle, Rhea Mansfield

1927 *Early American Glass*. Appleton-Century, New York.

Lockhart, Bill

2000 *Bottles on the Border: The History and Bottles of the Soft Drink Industry in El Paso, Texas, 1881-2000*. Townsend Library, New Mexico State University at Alamogordo. <http://alamo.nmsu.edu/~lockhart/EPSodas/>

McKearin, Helen and Kenneth M. Wilson

1978 *American Bottles & Flasks and Their Ancestry*. Crown Publishers, New York.

McMaster, John P.

1875 *Manufactures of Pennsylvania* Galaxy Publishing, Philadelphia.

National Council of Jewish Women

1993; 2002 *Pittsburgh and Beyond: The Experience of the Jewish Community: A guide to the NCJW Pittsburgh Section Oral History Collection*. National Council of Jewish Women, Pittsburgh, Pennsylvania. <http://www.library.pitt.edu/guides/archives/ncjw.pdf>

Palmer, Arlene

1993 *Glass in Early America*. W. W. Norton, New York.

Peters, Roger

1996 *Wisconsin Soda Water Bottles, 1845-1910*. Wild Goose Press, Madison, Wisconsin.

Pre-Pro.com

2020 "Schwab, McQuaid & Co."

http://www.pre-pro.com/midacore/view_vendor.php?vid=ORD6077

Ring, Carlyn

1980 *For Bitters Only*. Nimrod Press, Boston.

Ring, Carlyn, and Bill Ham

1998 *Bitters Bottles*. Boyertown Publishing Co., Boyertown, Pennsylvania.

Roller, Dick

1983 *Standard Fruit Jar Reference*. Privately published.

1996 "Franktown Glass Works History Notes." Dick Roller files.

2011 *Standard Fruit Jar Reference: 2011 Update*. Edited by Jerome McCann and Barry Bernas. Fruit Jar Annual/Phoenix Press, Chicago.

Toulouse, Julian Harrison

1969 *Fruit Jars*. Thomas Nelson & Sons, Camden, New Jersey.

1971 *Bottle Makers and Their Marks*. Thomas Nelson, New York.

Umberger, Art and Jewel Umberger

1967. *It's A Bitters!* Corker Bottle Company, Tyler, Texas.

Von Mechow, Tod

2020 "Soda & Beer Bottles of North America: Bottle Attributes - Beer & Soda Bottle Manufacturers." <http://www.sodasandbeers.com/SABBottleClosures.htm>

Watson, Richard

1968, Supplement to Bitters Bottles. Thomas Nelson & Sons, Camden, New Jersey.

Wedel, Dale L. and Danny N. Walker

1992 "Artifacts and Faunal Remains." In *Archaeological Survey and Test Excavations at Fort Fred Steele State Historic Site*, edited by Mark E. Miller and Dale L. Wedel. Project Number WY-12-90. Office of the Wyoming State Archaeologist, University of Wyoming, Laramie, Wyoming.

Whitten, David

2020 "Glass Manufacturers' Marks on Bottles & Other Glassware." <https://www.glassbottlemarks.com/bottlemarks-5/>

Wilson, Bill and Betty Wilson

1969 *Western Bitters*. Old Time Bottle Publishing Co., Salem, Oregon.

Wichmann, Jeff

1999 *Best of the West: Antique Western Bitters Bottles*. Pacific Glass Books,
Sacramento, California.

Last Updated 8/1/2020

