

William Painter's Baltimore Loop Seal

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William Painter was a machinist who became an inventor during the 1880s. By at least 1885, Painter had turned his hand to bottles – specifically bottle seals. He seems to have been particularly talented in looking at the closure process in ways that were unique and different – what we would call today thinking outside the box. This type of thinking revolutionized bottle use in the soft drink and brewing industries.

Although the Baltimore Loop Seal has been discussed by such sources as Lief (1965:17), Jones & Sullivan (1989:163), Graci (2003:39-40), and von Mechow (2013), no one appears to have conducted an in-depth analysis of the patents involved. The seal, itself, is apparently uncommon in both collections and excavations, but the finishes for the seal – while not readily noticeable because they are located inside the throat or bore of the bottle – are nonetheless distinctive. Externally, the closure area of the bottle is not much different from any other “blob-top” beer or soda finish, but the inside has a distinctive groove that may be visually discerned by looking inside the throat or felt by inserting a finger.

Von Mechow (2013) noted that “this stopper enjoyed moderate success, but was more popular in some areas than in others.” He dated the stopper’s popularity between 1885 and 1905.

William Painter’s son, Orrin (1914:45), recalled that the invention

was known as the “Bottle Seal.” It consists, as finally perfected . . . as a rubber disc containing a loop of wire, by means of which it is extracted from the bottle, and somewhat resembling an ordinary shank button. It is forcibly compressed into an annular recess formed in the bottle mouth, and is lined with an inert fabric to prevent contact of the contents of the bottle with the rubber. This device was the beginning of what is now known as single-use stoppers.

The Baltimore Seal was produced by a number of glass manufacturers across the country and used in numerous bottle styles for soda and beer. The 1906 Illinois Glass Co. catalog included 25 pages devoted to beer, root beer, soda, and related bottles. The firm offered the Baltimore Seal option on Hutchinson bottles, champagne sodas, champagne beers, export beers, and weiss beers. Similar options remained in the 1908 catalog, although it is doubtful that many were still used that late. The catalog used the term Baltimore Seal (without the word “loop”).

Each of these beer and soda bottles was mouth blown into a two-piece mold with a baseplate. The tops of these bottles were finished by hand and could easily be tooled into any style desired. Therefore, the catalogs usually offered finishes for corks, Hutchinson spring stoppers, Baltimore loop seals, and swing stoppers, such as Lightning or Hutter stoppers – all on the same bottle. Thus, the style of the bottle rarely limited the style of the closure.

The actual groove in the throat of bottles with loop seals apparently changed over time. Although these distinctions did not appear on patent drawings, the earliest grooves had a sharp angular (squared) lower section (Figure 1). The later grooves were more rounded (Figure 2). Since the actual seal was intended to be seated in a “cup” shape, the rounded groove almost certainly created a tighter seal).



Figure 1 – Groove with squared bottom (eBay)



Figure 2 – Groove with rounded bottom (eBay)

Evolution of the Seal

The evolution of the seal was not as simple as Painter suggested in his “finally perfected” version. The seal actually went through three distinctive stages in its development (see Discussion and Conclusions section). William Painter of Baltimore, Maryland, initially applied for a patent for a “Bottle-Stopper” on June 5, 1885. He received Patent No. 327,099 on September 29 of that year and assigned one-half of the rights to Lewis R. Keizer, also a resident of Baltimore (Figure 3).

An inveterate inventor, William Painter had moved his wife and son to Baltimore in March of 1865 to market two of his inventions, a blacking box and a riveting machine. In 1867, he became the machine shop foreman for Murrill & Keizer at 44 N. Holliday St. (Painter 1914:12, 41). Painter obviously remained under the Murrill & Keizer umbrella when he assigned half the rights of his 1885 patent to Lewis Keizer (Keizer's former partner, Murrill, having died much earlier). Lief (1965:17) described Painter as a "restless inventor, who worked out ideas by drawing on the floor of his shop and jotted memos on his white cuffs."

According to Orrin Painter (1914:42), William Painter and some associates formed the Bottle Seal Co. in 1885 to market the new seal, and the firm remained in business until the formation of the Crown Cork & Seal Co. in 1893. Both the original patent

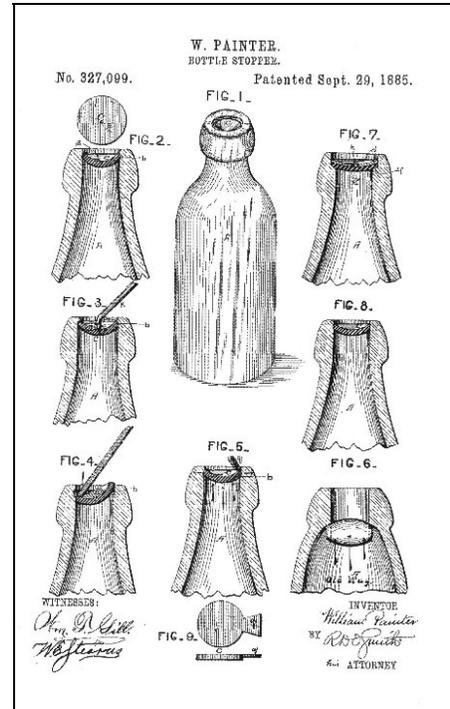


Figure 3 – Painter's 1885 patent



Figure 4 – 1886 Bottle Seal Co. ad (Fowler 2013)

date of 1885 and an ad from the Bottle Seal Co. in an 1886 edition of the *National Bottlers' Gazette*, confirm an early date for the company. The ad indicates that the firm was in business by at least 1886 (Fowler 2013). The seal in the ad was made to the original patent – with no loop (Figure 4).

Graci (2003:41) note that Brinton & Brosius (operating the Standard Mineral Water Co.) was the first bottler to embrace the Baltimore seal, using two bottles embossed respectively "PAT / 85" and "PAT / • / 85" on their bases (Figure 5). The firm soon switched to Codd-stopper bottles. The Baltimore Seals were more popular with brewers than with soda bottlers. In the June 5, 1893, *National Bottlers Gazette*, breweries placed 64% of the ads for

Baltimore Seals, with only 35% of the ads inserted by soda bottlers. By the October 1, 1896, edition, beer bottle ads made up 74% of the total, leaving only 26% for Soda Bottlers.

Salesman’s Sample Bottles



Figure 6 – Bottle Seal Co. bottle (eBay)

The ad also showed what was apparently a salesman’s sample bottle or possibly one that was sold to customers. The bottle in the ad was embossed “THE BOTTLE SEAL CO. (arch) / PATD / SEP 29 / 1885 (all horizontal) / BALTIMORE (inverted arch)” in a circular plate mold on the front body. A variation auctioned on eBay was embossed “BOTTLE SEAL C^o (arch) / PAT. 85. (horizontal) / BALT^o M^d (inverted arch)” in a plate, with “PAT / ‘85 (both horizontal)” on the base and “THIS BOTTLE NOT TO BE SOLD” on the reverse (Figures 6 & 7).

Another example recorded by von Mechow (2013) was embossed “C&Co.LIM.” – the logo of Cunninghams & Co., Ltd., on base.

A series of discussions on Antique-Bottles.net (2013) described and showed photos of two other slight variations, both with round front plates.

One was embossed “BOTTLE SEAL C^o (arch) / PAT. ‘85 (horizontal) / BALT^o M^d (inverted arch)” – a slight difference (the apostrophe) from the eBay bottle (Figure 8). The other was embossed “BOTTLE SEAL C^o (arch) / PAT. 85 (horizontal) / BALTIMORE (inverted arch).” Unfortunately, the discussion did not mention the basemarks (Figure 9).

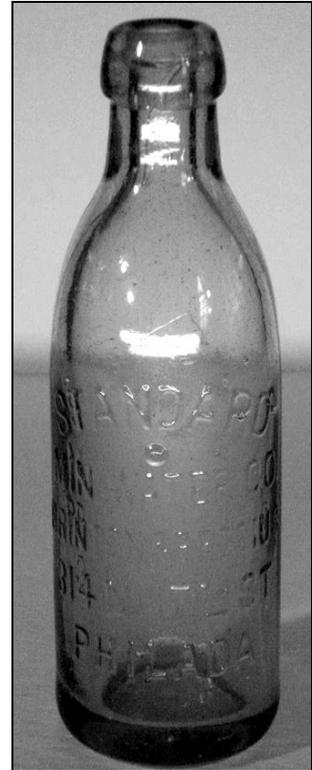


Figure 5 – Brinton & Brosius bottle (Aaron Bechtel)



Figure 6 – Bottle Seal Co. bottle (eBay)

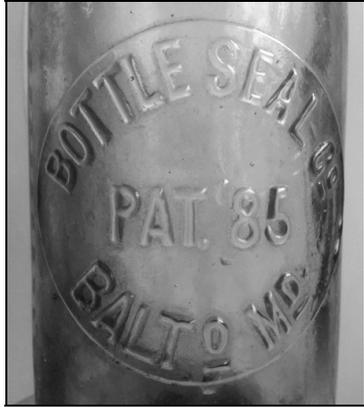


Figure 8 – Variation of the front plate (Antique-Bottles.net 2013)

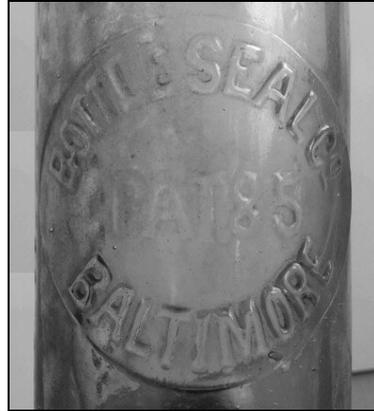


Figure 9 – Variation of the front plate (Antique-Bottles.net 2013)

More Patents and the “Baltimore Loop”

Painter received four patents on October 21, 1890. He applied for the first of these (Patent No. 438,709) three years earlier, on October 1, 1887, and assigned them all to the Bottle Seal Co. The first one was for

a headed stud, to which a tool can be applied with great facility and precision and the stopper extracted with ease. The stud may be in the form of a straight shaft, which passes through the disk-stopper, and is provided with a head at each end, or it may be made of a wire staple, which passes through the disk and has its ends twisted together to form a hold for the extracting-instrument (Figure 10).

His next application was on June 13, 1888 (Patent No. 438,710) for a “tool for extracting stoppers, a means whereby after the tool has been used to extract the stopper or cork the bottlemouth may be again conveniently and tightly stopped, yet so as to be as readily reopened” (Figure 11). In other words, a rubber plug was built into the center of the opener so that the entire opener could be used to reseal the bottle.

Painter applied for his third patent on December 6, 1888 (Patent No. 438,711) for a twisted-wire device “for temporarily holding corks or other stoppers in beer-bottles while the beer in them is being steamed or pasteurized. Such devices are commonly known as steaming

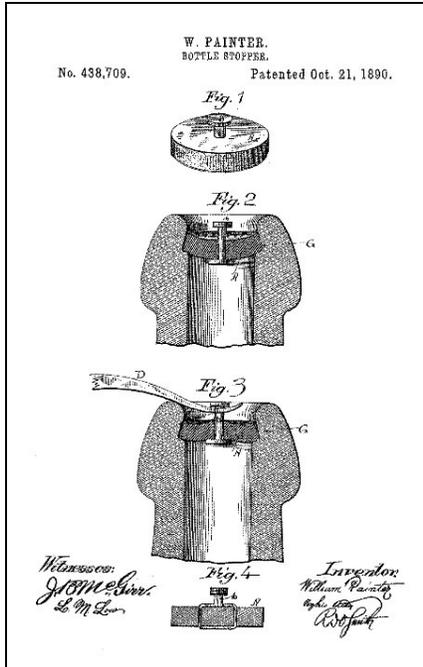


Figure 10 – Painter’s first 1890 patent

caps. They are removed from the bottles after the beer has been steamed and reused on other bottles continuously.” He applied for the fourth (Patent No. 438,712) on March 7, 1890, for a machine to make the seals.

On March 7, 1890 – before he had received the preceding four patents – Painter

applied for a patent for a “Bottle-Stopper.” He received Patent No. 449,822 on April 7, 1891. This patent was for the actual loop that created the Baltimore Loop Seal. The main feature was “a projecting wire loop situated about centrally of the seal, through which a suitable instrument may be inserted for the purpose of . . . withdrawing the seal from the bottle when the same is to be emptied of its contents” (Figure 12). This patent was also assigned to the Bottle Seal Co.

A June 1892 ad for Cunninghams & Co. noted that the firm had “made arrangements with Bottle Seal Co., of Baltimore, Md., for making any of the above bottles for the use of the Seal Stopper. . . . for Beer and Soda” (Lockhart et al. 2005:15). Thus, the Bottle Seal Co. remained in business in 1892.

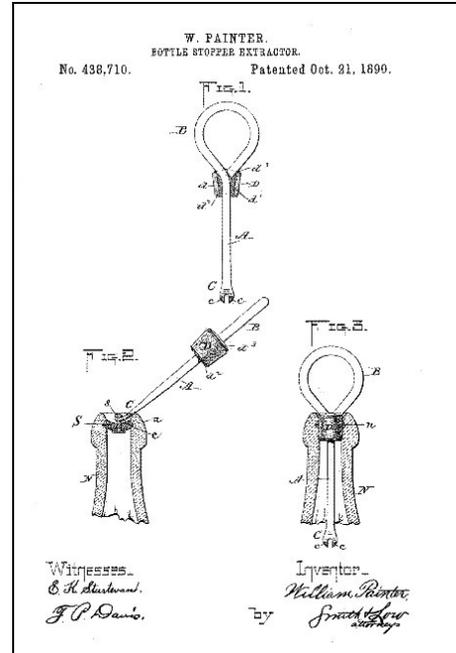


Figure 11 – Painter’s second 1890 patent

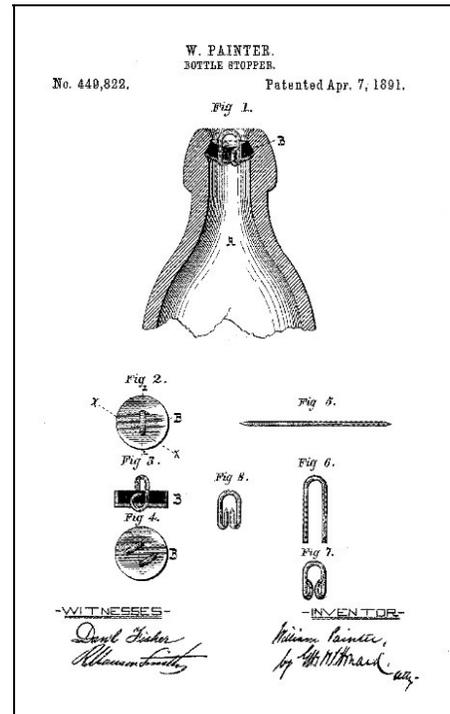


Figure 12 – Painter’s 1891 patent

The Crown Cap

Painter and his associates incorporated the Crown Cork & Seal Co. on April 1, 1893 (Painter 1914:30) to market what would become Painter's outstanding invention. He applied for a patent for a brand new idea on November 5, 1889, and received Patent No. 468,258 on February 2, 1892 – a year and three months after his application. This was the precursor to the crown cap.

However, before he even received the initial patent, Painter applied for an improvement on his own idea on May 19, 1891. He received Patent No. 468,226 on February 2, 1892 – the same day as his earlier crown patent. This invention, however, became the template for the crown cap that would completely revolutionize the soft drink industry. Interestingly, Painter did not assign either of these crown cap patents to his older company. However, he assigned all subsequent patents to the Crown Cork & Seal Co.

Never one to rest, Painter applied for another patent on June 5, 1893, and received Patent No. 514,200 for a “Capped-Bottle Opener” on February 6 of the following year. This device was “specially adapted to operate upon such caps as are provided with some kind of a projected edge with which the opener may be engaged so that it may be operated with leverage in wrenching or prying the caps from bottles.” However, it had a slightly hooked point on the other end that could be used to remove the Baltimore Loop Seal (Figure 13).

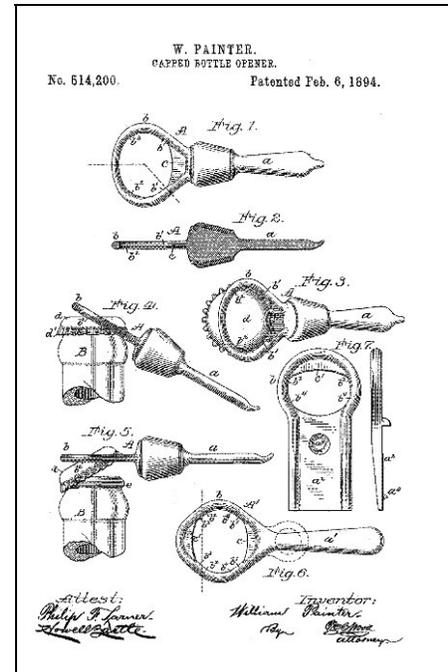


Figure 13 – Painter's 1894 patent

Painter applied for another Baltimore seal-related patent on October 3, 1891, and received Patent No. 528,485 on October 30, 1894 – three years later. This seal was designed with an extra layer of material on the bottom of the stopper, so that neither the wires that formed the loops nor the rubber seal would come in contact with the drink. Painter alluded to the concern that the steel wire would contaminate the taste of the soft drinks or beer in bottles closed with the seal.

Hall's 1895 Patent

On February 28, 1894, Robert A. Hall applied for a patent for a “Bottle Sealing Device” and received Patent No. 541,203 on June 18, 1895. Hall described his seal as a “hollow plug, which is composed of metal, and is expanded within the throat of the bottle into retaining engagement therewith” (Figure 14) The device became known as the Aluminum Seal. Von Mechow (2013) noted that the Aluminum Seal:

was mainly used in the metro Baltimore area and was a competitor to William Painter’s Bottle Seal closure. However, unlike the Bottle Seal there were two sizes as seen on some of quart sized bottles. The groove on the inside of the lip is very close to the top and is not as angular as the Bottle Seal. Painter successfully sued Hall in 1903.

The story of Painter’s victory over Hall, however, began on October 12, 1885, when Painter applied for a patent for a “Bottle-Stopper.” Unlike other versions of his internal stopper, this one required “the employment of an expanding stopper made of some material substantially inelastic which when once expanded within the bottle mouth will remain so.” Painter suggested “a cup shaped disk of malleable metal, commercial tin or other substantially inelastic metallic material being suitable” to fit into the groove in the bottle throat. He did not receive Patent No. 540,072 until May 28, 1895 – almost a decade later (Figure 15).

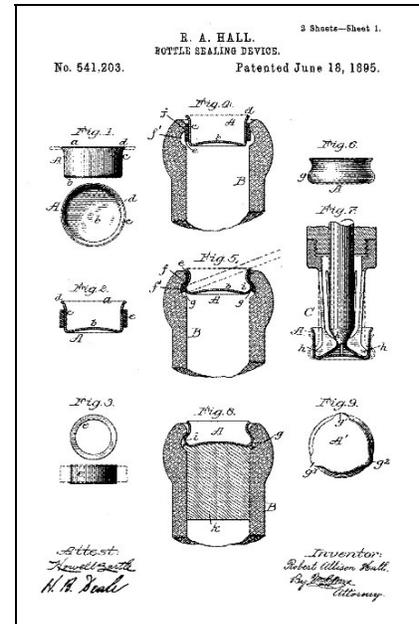


Figure 14 – Hall’s 1895 patent

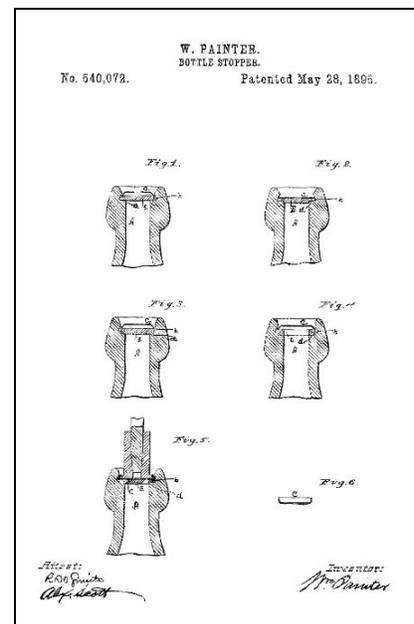


Figure 15 – Painter’s 1895 patent

On December 26, 1895 – seven months later – Painter applied to have the patent reissued. He did not receive Reissue No. 11,885 until July 26, 1898 – 3 ½ years later. Although the wording was slightly changed, the basic idea of the patent remained, and the drawings were identical.

Painter applied for his final internal stopper patent on December 2, 1898, and received Patent No. 625,055 on May 16 of the following year. The basic idea of this patent was to have a partly incised circle on the top of either a crown cap or a metallic internal stopper, so that the drink could be opened without removing the stopper or cap. One of the stoppers appeared virtually identical with the drawing in Hall’s 1894 patent (Figure 16).

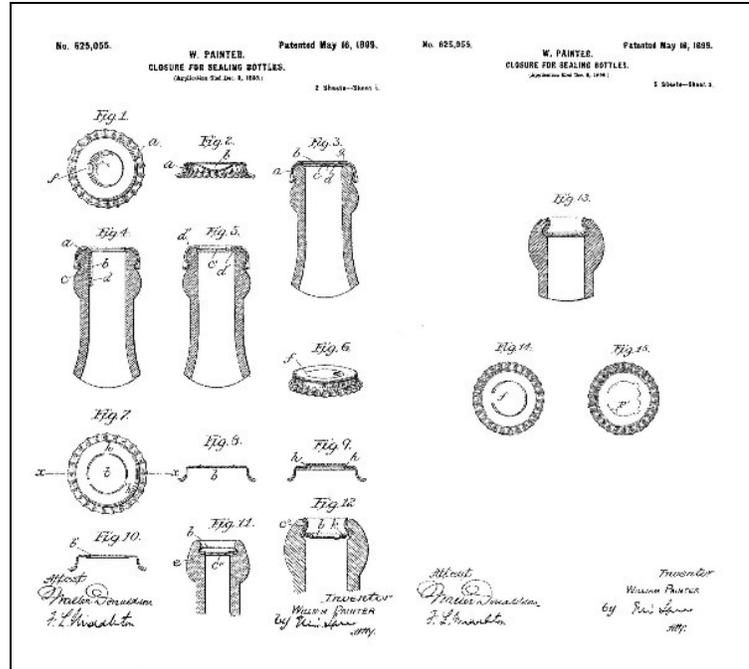


Figure 16 – Painter’s 1899 patent

It is virtually certain that Painter won the suit with Hall based on his earlier patent. Not only did Painter apply for a patent for the metal internal seal almost a decade prior to Hall (1885 v. 1894), he received his patent on May 28, 1895, where Hall’s was issued on June 18 of that year. Painter was clearly the first.

The End of the Baltimore Loop Seal

By this time, however, the newer crown cap had forever eclipsed the earlier seal. Although the crown did not receive instant success, by the time Painter died on July 15, 1906, the crown seal was fast becoming the industry standard for both beer and soft drink closures (Painter 1914:40). By the 20th century, Painter’s earlier seal had become a historical footnote.

Bottles with the 1885 Patent Date

[Parts of this section was previously published in Lockhart et al. 2011.]

While investigating the bottles excavated as part of the Tucson Urban Renewal project, the Ayres researchers (1980:25) noted that the “PAT 85” embossing found on champagne beer bottle bases “presumably indicates some attribute was patented in 1885. An examination of the actual bottle itself indicates that it is identical in all respects to contemporary ones without this mark so that the registered attribute must have been something applied to the bottle.”¹ On the next page, they listed 10 patents that were issued in connection with bottle stoppers in 1885 – including Painter’s seal patent, although they did not specifically identify any one of them.

Based on the data presented here, there is no doubt that the “PAT 85” mark references the 1885 patent by William Painter. Two bottles in the David Whitten collection were embossed on their bases with “PAT 85” and had one-part finishes, each with an internal groove for the Baltimore Loop Seal. Along with subsequent sources – e.g., the salesman sample bottles described above that have the mark on the base, loop seals, and were embossed with the Bottle Seal Company information (described above) – this information makes it virtually certain that “PAT 85” referred to the patent for the Baltimore Loop Seal. Bottles offered on eBay auctions also had the same patent mark associated with Baltimore Loop finishes.

We have only discovered a few examples of bottles with the PAT 85 mark. Although made by a few different companies, all were beer bottles:

“PAT (arch) / R&CO (horizontal) / 85” [Reed & Co., Massillon, Ohio – 1887-1895]

“PAT 85 (arch) / R&CO (horizontal) / 14” (also 15, 17, 18, 19)
(Figure 17)



Figure 17 – R&Co with PAT 85 (eBay)

¹ See Lindsey 2013 or Lockhart 2006 for a discussion of beer bottle styles.

“M / 7” with “PAT” in an arch to the left and “85” in an arch to the right [Massillon Glass Works, Reed & Co. – 1881-1887] (Figure 18)



Figure 18 – M / 7 with PAT 85 (Fort Bowie, Arizona)

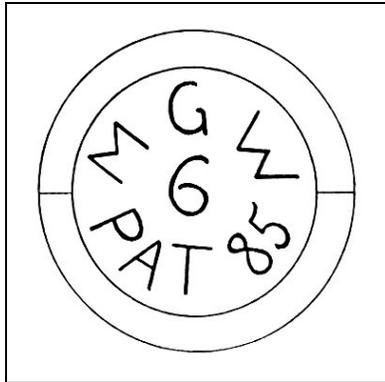


Figure 19 – MGW with PAT 85 (Ayres et al. 1980)

MGW in a downward arch at the top of the base with “6” in the center and “PAT 85” in an upward arch at the bottom of the base [Massillon Glass Works, Reed & Co. – 1887-1895] (Figure 19)

“PAT / BOC / 85” [*actually DOC, an engraver’s error* – D.O. Cunningham, Pittsburgh – 1880-1931]

“PAT 85 / F. B. Co. / 1” [Findlay Bottle Co., Findlay, Ohio (1888-1893)] (Figure 20)



Figure 20 – F.B.Co. with PAT 85 (NPSWACC)



Figure 21 – F.C.G.Co with PAT 85

“PAT / F.C.G.Co / ‘85” (all horizontal) [Falls City Glass Co., Louisville, Kentucky (1884-1892)] Figure 21)

“GLASS WORKS (arch) / PAT 85 (horizontal) / ROCHESTER, N.Y. (inverted arch)” (Figure 22) [Rochester Glass Works (1881-

1888)]

“PAT 85” (all horizontal)

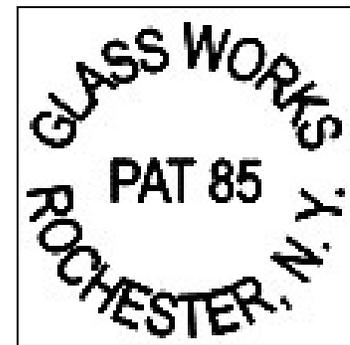


Figure 22 – ROCHESTER GLASS WORKS with PAT 85 (von Mechow 2013)

We also have a report that “PAT 85” was on a base from the East Lake Glass Works, but they have no details.

Clearly, “PAT 85” could not appear on a bottle prior to 1885. It is highly likely that each company only used each mold to make the bottle until it wore out. Reed & Co. apparently used seven molds – as well as molds with the “MGW” and “M / 7” marks (see Lockhart et al. 2011 for an explanation). The Falls City Glass Co. used at least two molds, one for a “quart” sized bottle, another for a pint bottle. The other identified glass houses – D.O. Cunningham and the Findlay Bottle Co. – only seem to have ordered a single mold with the patent date. Bottles with the patent date are at least uncommon – although von Mechow has collected bottles made from 38 separate molds with some form of “PAT 85” basemarks. At least 45 glass houses made bottles with the Baltimore Seal, although most of those did not include any “PAT 85” embossing.

We have discovered at least one bottle with a baseplate embossed with the “PAT 85” marking, but the bottle had a one-part finish that did *not* include the internal groove. Recall that all these bottles were mouth blown into a mold with the finish created by hand. Thus, any finish could be tooled on any bottle. Although we will never know for sure, it is highly likely that a bottle crew had been making bottles with Baltimore Loop Seals, then took a break before changing to bottles with regular cork finishes – and failed to change the baseplate of the mold (or failed to switch molds). However, the vast majority of the bottles we have recorded had both the “PAT 85” baseplate and the grooved finish for the Baltimore Seals.

Discussion and Conclusions

The above information clearly divides the evolution of William Painter’s Bottle Seal into three segments. The first segment may have begun as early as June 5, 1885, when Painter applied for his first patent, although he did not receive Patent No. 327,099 until September 29 of that year. However, since the Bottle Seal Co. advertised the stopper as “The New Bottle Seal” in 1886, that was probably the first year the closure was introduced to the market. This first period probably lasted until 1890.

The second and probably more definitive period begins on March 7, 1890, when Painter applied for the loop in what would become known as the Baltimore Loop Seal. He received Patent No. 449,822 on April 7 of the following year. Thus, the seal with the loop was unlikely to

have been on the market prior to mid-1890 or as late as mid-1891. It is important to note that the 1885 patent would no longer set the defining date after this point.

The third period is probably irrelevant. Painter applied for his final Bottle Seal-related patent on October 8, 1891, and received Patent No. 528,485 on October 30, 1894 – three years later. This patent set the date for seals having a bottom segment that kept both the metal of the loop and the rubber of the seal from touching the liquid in the bottle. This could be an important dating tool for the closure, itself, but it would not have any relevance toward the structure of the bottle. Assuming that von Mechow's closing date of 1905 is correct, this last period would have lasted a bit over ten years.

The main relevance of the three-period hypothesis is that bottles embossed with any of the "PAT 85" logos would almost certainly have been made during the initial period from ca. 1886 to ca. 1890, although a few molds may have lasted into the 1890s. It is further likely that these bottles were not overly popular, although Reed & Co. seems to have made a larger number of them than the other glass houses using the patent date. The actual Baltimore Loop Seal – with the wire insert creating the loop – was probably used after Painter applied for the patent in 1890 and would have been inserted in bottles that had the internal groove in the throat but no embossed patent date on the base.

Baltimore Loop Seal bottles without the "PAT 85" embossing are much more common than those with the patent date. This possibly suggests that the second patent closure was more functional and/or popular than the first and increased the use of the closure. It is also possible, however, that patent dates were considered less important after the initial molds wore out.

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