

# Zang's Mystery Codd Bottle

by Bill Lockhart



Figure 1 – Star Brand Codd bottle

Zang Wood came into possession of a Codd-Stopper bottle that was embossed “{star} / STAR BRAND / SUPER STRONG” on the lower front body. The bottle still retained the grommet inside the neck to affect the seal with the Codd ball or marble. The marble appears to be made of gutta percha or some similar substance. It is certainly not glass (Figures 1 & 2).



Figure 2 – Neck assemblage of Starr Brand bottle

The base of the bottle was embossed had an “M” with rounded sides and an “X” between the “legs” of the “M” above a bold underline. Below that was “10 OZ” followed by two parallel lines, then three dots, and finally a “1” (Figure 3).

## Background

Hiram Codd first patented his ball-stopper idea in England on November 24, 1870, and followed up with British patents in 1871 and 1872 and U.S. patents in 1872 and 1873.<sup>1</sup> The bottles were most popular in England and other members of the British Commonwealth, especially Canada, Australia, and India, although some were used in the U.S. This style, however, was never a popular one outside the English sphere of influence (Lindsey 2012; von Mechow 2012).



Figure 3 – Base of Star Brand bottles

Codd's system used a ball made from glass, gutta percha, or other material inside the bottle that sealed against a grommet fitted into a groove inside the finish at the top of the neck. The pressure of the carbonation in the liquid held the ball in place. Various grooves and stops

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<sup>1</sup> Tod von Mechow's website (2012) provides the most complete coverage of Codd bottle patents we have found.

inside the bottle prevented the ball from either falling into the bottom of the bottle or re-plugging the opening at the top when the drink was poured. To open the bottle, a special device (or anything else that would fit into the opening) pressed the ball downward, breaking the seal and releasing some of the pressure with a popping sound.

One mystery about the Codd patents is in the sequencing of numbers and dates. Codd received English Patent No. 3,070 on November 24, 1870. Although his second British patent was not issued until August 22, 1871, it received No. 2,212 – a lower number than the initial patent. This makes no intuitive sense, but Codd referred to the earlier patent – *by number* – in his second patent. The dated sequence, therefore, must be correct (see von Mechow 2012).

In the 1870 patent, Codd noted that “the invention relates to the construction of bottle necks with transverse passages for stoppering them. At the top of the bottle is a head piece having a transverse hole through it at right angles to, but communicating with, the hole in the neck.” The stoppers consisted of “balls glass, wood, cork, india-rubber or gutta-percha.” The bottle was to be made with

an annular groove in the inside of the upper end of the neck, and closely fitting therein is placed a ring of cork, india-rubber or gutta-percha, of such thickness that about half the ring will project beyond the mouth of the groove and prevent the ball within the bottle from passing through it. To empty the bottle . . . the ball is pressed down by a lever or other mechanical means.

The 1871 patent concentrated on a method for creating the “contraction in the neck” that is “formed by pressing in the sides so that the neck at that part assumes an oval form. Above the contraction the neck is widened to form a recess into which the stopper rolls when the liquid is being poured out.” On July 23, 1872, Codd received U.S. Patent No. 129,652 for an “Improvement in Bottles” and assigned half the rights to Richard Barrett of London. Essentially, this was a combination of the two earlier English patents (Figure 4).

The description in the 1872 U.S. patent was much more complex. It explained how the ball – made larger than the opening of the bottle neck – was placed into the container. First, the bottle was blown into a mold:

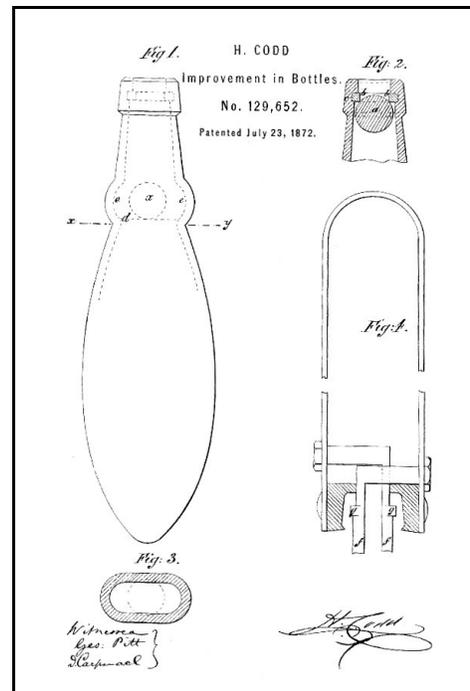


Figure 4 – Hiram Codd’s U.S. 1872 patent

When the bottle has been removed from the mold a glass marble previously heated is dropped into the bottle through the neck; the ring or head is then formed at the top of the neck in the ordinary manner by means of the tool above described. After the bottle has been allowed to cool a ring of . . . elastic material . . . is inserted into the groove formed around the interior of the head.

On September 3, 1872, Codd received English Patent No. 2,621 for another improvement to keep the ball from rolling into the mouth of the bottle, when the liquid was poured out. This consisted of “ridges . . . which prevent [the ball] from returning when the bottle is inclined.” The molds were “formed with projections to produce the ridges in the neck when the bottle is blown. Codd applied for a U.S. patent for the same invention on January 21, 1873, and received Patent No. 138,230 on April 29, 1873 (Figure 5).

Again, he assigned half the rights to Richard Barrett. Codd changed the word “ridges” to “contractions” in the American patent and once again provided a more in-depth explanation.

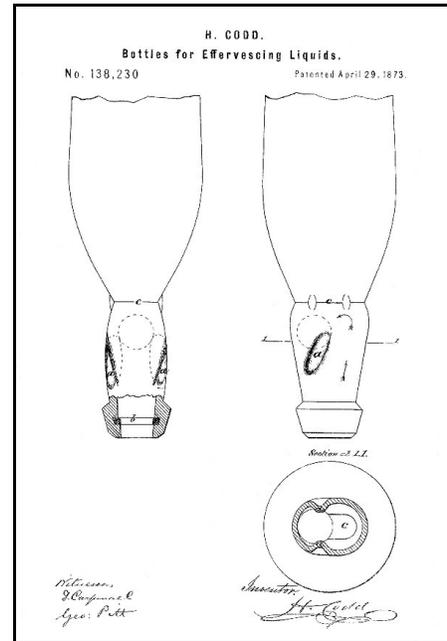


Figure 5 – Hiram Codd’s U.S. 1873 patent

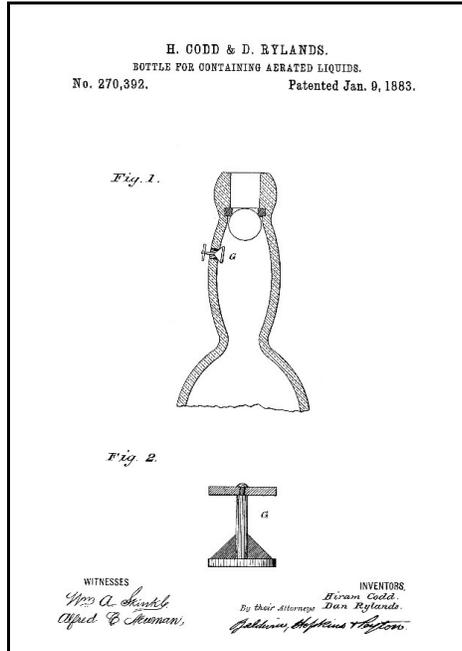


Figure 6 – Codd & Rylands’s U.S. 1883 patent

Codd apparently had trouble marketing his invention. Ross (1982:157) noted that “Alexander & Austin . . . was said to be one of the first firms to whom Hiram Codd licensed the manufacture of his patented mineral water bottle.” This is repeated in some form in publications (e.g., Dunn & Dunn 1987:7; Munsey 2010:5)<sup>2</sup> and on the internet by more than a dozen sites. In our study of the glass houses operated by Alfred Alexander, we find no historical support for any involvement of Alexander & Austin with the Codd-

stoppered bottles – with the single exception of Ross, who cited what may have been a vague memory. Since the partnership of Alexander & Austin ended in 1873, the firm would have been a very temporary help to Codd.

<sup>2</sup> Dunn & Dunn (1987:5-8) reprinted a section that he cited as: “Extract from the ‘Mineral: Diary and Text Book, 1882’” on the life of Hiram Codd and his experience in bottle design and manufacture. Coming from an 1882 source, this is the most credible connection between Codd and Alexander & Austin.

Munsey (2010:5) added that “W. Brooke of Hunslet showed interest in [Codd’s] invention” – also in 1872. Codd apparently met Richard Barrett in 1874, and the two became partners two years later. They started the Hope Glass Works at Barnsley. At some point, certainly by 1882, Codd teamed up with Dan Rylands, and the two applied for a U.S. patent for a “Bottle Containing Aerated Liquids.” Codd and Barrett received Patent No. 270,392 on January 9, 1883, for what was essentially a valve in the side of the neck of a marble-stoppered bottle that would release the pressure to allow the ball to be easily pressed into the bottle by finger pressure (Figure 6).

Codd may have been increasingly less involved in bottle development and marketing after the death of his wife, Jane, on February 28, 1884. By the time Codd died on February 18, 1887, Rylands seems to have taken up the advancement of the Codd invention (Dunn & Dunn 1987:8,17). Rylands began his own series of patents by 1886:

unknown patent, probably English – Ben Rylands “Rylands’s Reliance Closure”  
February 8, 1886 – English Patent No. 1,811 – Ben Rylands “Rylands’s Acme Closure”  
unknown patent, probably English – Ben Rylands “Rylands’s Safe Groove Closure”  
July 8, 1881 – English Patent No. 3,252 – Ben Rylands “Rylands’s Valve Closure”  
October 25, 1882 – English Patent No. 2,118 – Ben Rylands “Rylands’s Valve Closure”  
1882 – English Patent No. 3,525 – Ben Rylands “Rylands’s Valve Closure”  
January 9, 1883 – U.S. Patent No. 270,392 – Ben Rylands “Rylands’s Valve Closure”  
November 19, 1883 – English Patent No. 5,445 – Ben Rylands “Rylands’s Valve Closure”  
November 20, 1884 – English Patent No. 15,281 – Ben Rylands “Rylands’s Valve Closure”  
January, 1885 – English Patent No. 348 – Ben Rylands “Rylands’s Valve Closure”  
unknown patent, probably English – Ben Rylands “Rylands’s Premier Closure”  
October 16, 1885 – English Patent No. 12,337 – “Rylands’s Bulb Closure”  
January 14, 1887 – English Patent No. 649 – Ben Rylands “Rylands’s Valve Closure”  
January 20, 1887 – English Patent No. 876 – Ben Rylands “Rylands’s Valve Closure”  
May 24, 1887 – U.S. Patent No. 363,768 – Ben Rylands “Rylands’s Valve Closure”  
July 12, 1887 – English Patent No. 9,771 – Ben Rylands “Rylands’s Valve Closure”  
January 24, 1888 – U.S. Patent No. 376,916 – Ben Rylands “Rylands’s Valve Closure”<sup>3</sup>

Of course, others took out patents for various “improvements” on the marble-stopper idea, mostly during the 1880s.

Initially, Codd licensed the bottle rights to various soda bottlers, but, eventually, anyone could make or use the bottles as the patents expired. Some researchers have credited the Codd stopper as being responsible for the term “pop” being used for carbonated drinks – citing the sound made with the marble was pushed into the bottle. However, Munsey (2010:9) cited poet Robert Southey as using the term “pop” for a bottled soft drink in 1812, noting the sound when the *cork* was withdrawn. This clearly pre-dates the Codd inventions.

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<sup>3</sup> Patents from von Mechow (2012); it is notable that the Ryland British patent series also does not seem to flow in a sequential order by patent number – as was noted earlier with Codd’s first two patents.

Rylands also introduced the “anti-theft” bottle by 1889. These were Codd-stoppered containers with applied finishes of different colored glass than the aqua bottle. Munsey noted that the finishes could be blue, amber, green or red. Although typically made from aqua glass, other Codd bottles were occasionally produced in amber, green, purple, and blue hues (Munsey 2010:13-17).

Eventually, of course, the Codd declined in popularity, replaced by William Painter’s crown cap. The simplicity, low cost, and ease of application of the crown made all other forms of closures obsolete. It took several years after Painter’s initial patent in 1892 for the new invention to gain widespread use, but it completely dominated the soft-drink and brewing industries by 1914. However, pockets of popularity – although few and small – remained throughout the 20<sup>th</sup> century.

### Codd Bottles in the 21<sup>st</sup> Century

A Japanese drink popular in the 20<sup>th</sup> and into the 21<sup>st</sup> century is called Ramune (pronounced RAH-moo-nay). The drink is a type of carbonated lemonade, and it is bottled in typical Codd-stoppered containers (Figure 7). Alexander Cameron Sim, a Scottish expatriate pharmacist, invented the drink in 1876. Banta – another lemon-flavored soft drink, bottled in India – was also packaged in Codd bottles into the 21<sup>st</sup> century (Munsey 2010:21-24, 27; Wikipedia 2012). These two beverages are probably the last ones to use a technology that is currently 142 years old!



Figure 7 – Ramune (Wikipedia)

In January 2012, the website of the Khandelwal Glass Works at Hathras, Uttar Pradesh, India, stated the following about itself and its Codd bottle production:

#### About Us

We, Khandelwal Glass Works, are one of the oldest companies in the glass industry in India. Established in 1932 at Sasni, we started the manufacturing of Codd Bottles since 1981 and started capturing the market thenceforth. We are the only manufacturer of Codd Bottles in India, which are marketed under the brand name of VICTORY and DECO.

#### About the Codd Bottle

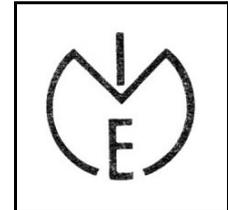
Hiram Codd of Camberwell, a British soft swig maker based in south east London, designed, developed and patented the Codd Bottle for carbonated drinks in the year 1872. Also termed as the Codd-neck bottle, it encloses a marble and a rubber washer/gasket in the neck. The bottle is filled upside down, and pressure of the gas in the bottle forces the marble against the washer, sealing in the carbonation. Pinched into a special shape, it has a chamber that prevents the marble from blocking the neck as the drink is poured. The Codd Bottle is popular in Europe, Asia and Australasia.

The Codd Bottle is widely used to bottle carbonated drinks like Soda Water/Aerated Water. The Codd Bottle is also known as kancha bottle, goli bottle, and soda bottle in different parts of the country.

### Possible Manufacturers of the Star Brand Bottle

#### Italy

Toulouse (1971:588) only showed a single logo using an “M” with rounded outside lines. This mark was in a circle and was used after 1965 by the Vetrizin Rinuite Bordoni Miva, located at various sites in Italy. Emhart (1982:41) illustrated a similar Italian mark with an “E” between the “legs” of the “M” and an “I” above it – used by V.I.M.E. Vetrerie Italia at Bari (Figure 8). Neither plant appeared in the 1996 listing.



#### Japan

Emhart (1982:43) showed the stylized “M” in a circle – very reminiscent of the post-1965 Italian logo – as being used by the Kohdai Glass Co., Ltd., Osaka, Japan (Figure 9). This mark no longer appeared in the 1996 listing.



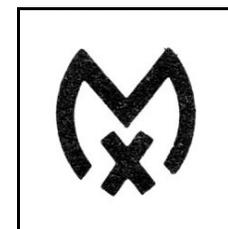
#### Pakistan

Emhart (1982:57) illustrated a logo that was virtually identical to the Japanese mark that was used by the Manzoor Glass & Ceramics, Ltd., Karachi, Pakistan (Figure 10). The logo was still in effect in 1996 (Emhart 1996:37).



#### India

Emhart (1982:33) featured an “M” with curved sides and a smaller “x” between the legs as used by the Mahalakshmi Glass Works Private Ltd., Bombay, India (Figure 12). The logo remained in the 1996 listing (Emhart 1996:21).



#### Discussion

Because the logo used by the Indian glass house matched the mark on the Codd bottle, and because India is one of the last bastions of Codd bottle use, the most probable maker of the bottle was the Mahalakshmi Glass Works Private Ltd. of Mumbai (Bombay).

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