

Chapter 3

Finishes and Closures

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Because the subjects of both finishes and closures are so complex, I have given them their own chapter, separate from the rest of the dating information. Other returnable bottles – soda and beer – quickly developed standardized types of closures. For example, soda bottles evolved from cork closures to Hutchinson stoppers, to crowns. Beer bottles went from corks to Lightning fasteners to crowns. Milk bottles, however, remained complex – even though the disk closure completely dominated the industry for the first half of the 20th century.

Finishes

Types of Finishes

As with most bottle types, milk bottle finishes changed over time. The early ones were borrowed from other container types, but the industry soon developed unique finishes and closures that were specially adapted to the unique properties of milk. Closures and finishes continued to develop throughout the 20th century.

Tin-Top Finish

Prior to the invention of the ligneous disk (see below), milk bottles were sealed with some variation of the Lightning stopper, patented by Henry W. Putnam on March 15, 1859. The finish involved was either a wide, flattened ring or a rounded ring at the mouth of the jar. One of the earliest, was patented by Louis Whitman, who received Patent No. 225,900 on March 23, 1880. His brother, Abram V. Whiteman, improved the system with Patent No. 275,101 on April 3, 1883. His drawing is much closer to the finish found on actual jars (Figure 3-1). Various types of tin and glass lids,

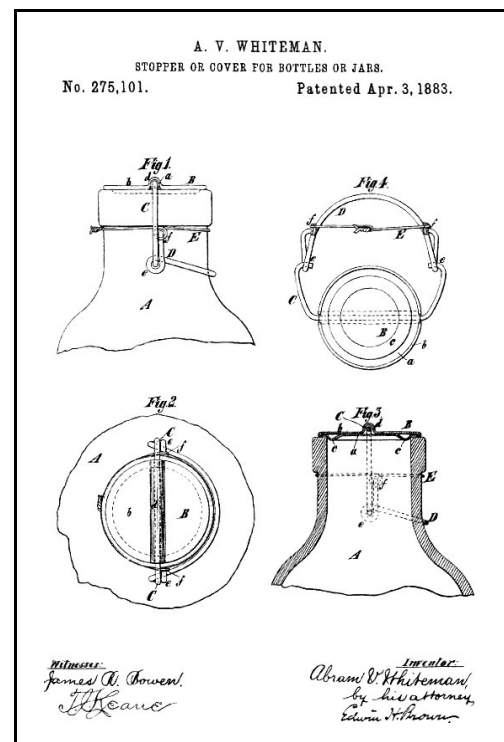


Figure 3-1 – Whiteman's 1883 finish and closure patent

all with similar wire-bale closures, were used during the 1878-ca. 1915 period. The closures worked equally well on the cap-seat finishes made for the Common Sense bottles (see next entry), so many tin-top closures are found on finishes with cap-seats.

Common Sense Finish

The common sense or cap-seat finish consisted of a heavy, rounded ring at the very top of the bottle. Inside the throat, offset ca. .05 cm (3/8") deep



Figure 3-2 – Early Common Sense (cap-seat) finish

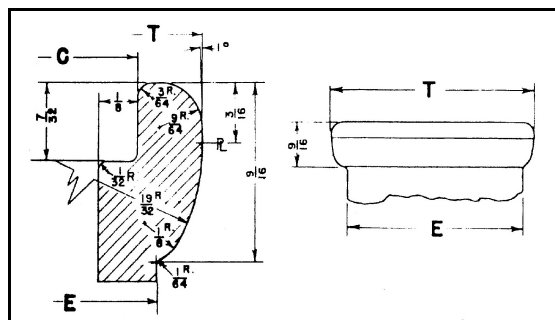


Figure 3-3 – Later cap-seat finish (Owens-Illinois drawing, 1947)

(i.e., below the actual lip or rim) was a ledge or cap seat (Figure 3-2). A ligneous disk (initially made of cardboard or wood – later always of cardboard) fit tightly against the cap seat, creating an effective seal that was easy to remove and could be reused. The cap seat also prevented the disk from dropping into the milk below. This simple and effective seal, invented in 1889, was used for a full century.

Rawlinson (1970:34) noted that the finish was sealed with “Plug Cap [ligneous disk], Seal-Kap, Sealon Hood, Cellophane Hood, and the Standard Seal Hood.” See the Common Sense section of Chapter 2 for patent details and Figure 2-3 for the patent drawing. The heavy, rounded rings on later cap-seat finishes were greatly reduced in size (Figure 3-3).

Slogan Rolls

Slogan rolls were embossed messages applied to the underside of Common Sense and Syrup finishes on milk bottles (Figure 3-4). Each of the major milk bottle manufacturers offered a different slogan. Slogan rolls began to be popular in the early 1940s but were phased out by the late 1950s to early 1960s (*The Milk Route* 1984:8). According to Rawlinson (1970:35), the slogan roll had a second application, aside from the obvious advertising value. A delivery man, especially at night, could tell by feel alone that the milk bottle he was picking up in front of a house belonged to his company rather than a competitor. The finishes were only made in the 56mm size.

Table 3-1 – Slogan Rolls (*Milk Route* 1984:9)

Slogan	Glass House
“A BETTER BOTTLE OF MILK”	Lamb Glass Co.
“A BOTTLE OF MILK IS A BOTTLE OF HEALTH”	Thatcher Mfg. Co.
“MILK FOR HEALTH IN A BOTTLE FOR SAFETY”	Owens-Illinois Glass Co.
“COP THE CREAM BOTTLE COMPANY”	Cop the Cream Bottle Co.
“DRINK MILK FOR HEALTH”	Universal Glass Products Corp.
“PURITAN PURITAN”	Thatcher Mfg. Co. ¹

Standard Syrup Finish

Originally known as the Jug finish, and later the Portland finish, the Syrup finish was a thicker variation of the Common Sense finish (Figure 3-5). Only the 56mm plug cap Igf(ligneous disk) and Seal-Kap were generally used with the Syrup finish, although a Sealon Hood was occasionally used (*Milk Route* 1984:8; Rawlinson 1970:35).



Figure 3-4 – Slogan Roll

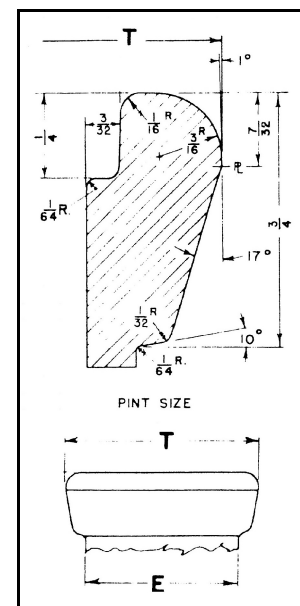


Figure 3-5 – Syrup Finish (Owens-Illinois drawing, 1947)

¹ This was almost certainly a special embossing for the Dairy, Hy Vita Milk Co., Ship Bottom, New Jersey. Brad Blodget suggested that the slogan roll may have been connected to the Puritan Dairy, Perth Amboy, New Jersey. Although Perth Amboy is ca. 40 miles north of Ship Bottom, the dairies may have been connected in some way. The use of the slogan roll on the Hy Vita bottle may also have been accidental on the part of Thatcher.

Duplex Finish

An 1922 ad from the National Seal Co. (*Milk Dealer* 1922) touted the Duplex Seal as “the First Real Seal for Milk Bottles.” The milk bottles looked the same as other milk containers of the period, but the sides of the finishes had four lugs that the metal cap twisted onto (Figure 3-6). The seal was already popular on food bottles and jars, medicines, cold cream jars, and jelly glasses, although it did not seem to ever see much use on milk bottles.

Holdfast Grip Finish

Essentially a modified 56 mm. Common Sense finish, a series of tapered, downwardly projecting lugs

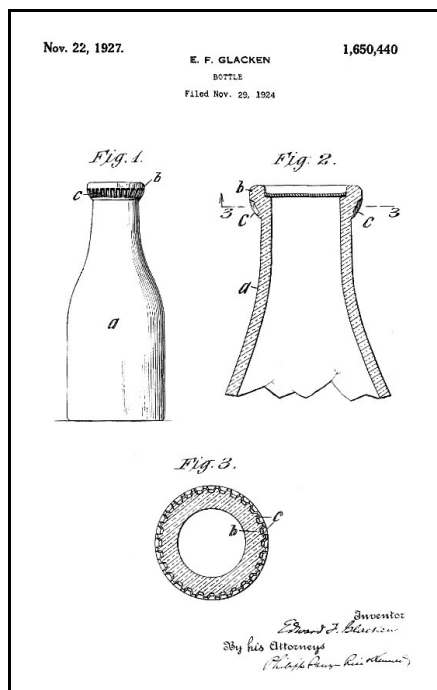


Figure 3-7 – Glacken’s 1927 patent
for the Holdfast Grip finish



Figure 3-6 – Duplex Seal (*Milk Dealer* 1922)

were cut into the

bottom two-thirds of finish. Rawlinson (1970:35) also noted that the finish was sealed with “Plug Cap [ligneous disk], Seal-Kap, Sealon Hood, Cellophane Hood, and the Standard Seal Hood.”

As noted by the Dairy Antique Site (2011), Edward F. Glacken applied for a patent on November 29, 1924, and received Patent No. 1,650,440 for a “Bottle” on November 22, 1927. The finish of the bottle was the primary aim of the invention. The finish essentially consisted of a typical Common Sense bead with numerous embossed indentations that formed ridges around the lower edge of the finish (Figure 3-7). The main purpose of the rougher bottom edge was to provide a better grip for both delivery personnel and home users to prevent dropping.

A Holdfast Spinoff

Although I have not discovered a name for the design, James E. Greenwood applied for a patent on December 31, 1935, and received Patent No. 2,076,124 for a “Milk Bottle” on April 3, 1937. Greenwood’s invention was actually a stepped series of horizontal ridges at the lower part of the large ring of the typical Common Sense finish. Greenwood assigned the patent to the Liberty Glass Co. This finish was an obviously intended to compete with the Holdfast finish, used by the Atlantic Glass Co. (Figure 3-8). The Dairy Antique Site (2011) noted the similarity of this finish to Glacken’s invention.

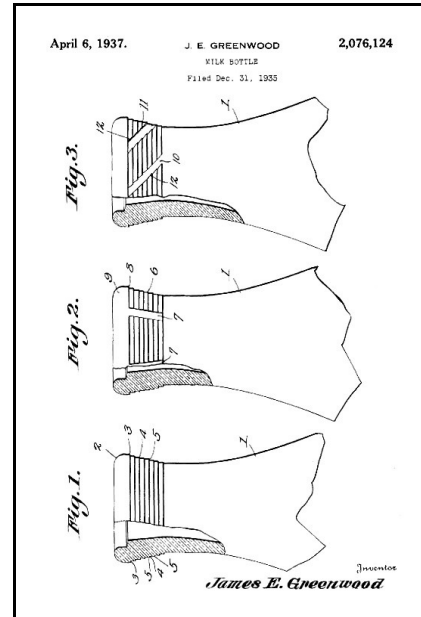


Figure 3-8 – Greenwood’s 1935 patent for a “grip” type of finish

Standard Alseco Finish

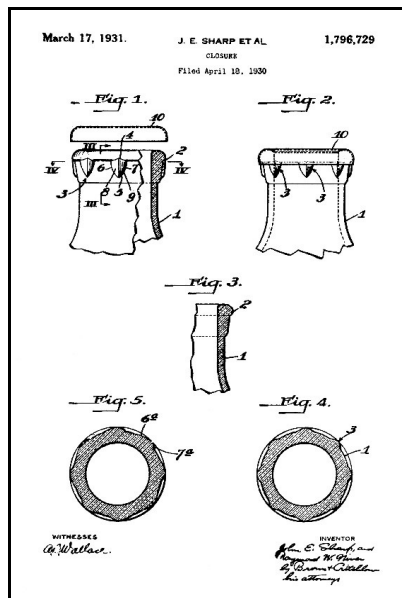


Figure 3-9 – Sharp & Niver 1931 Patent for the Alseco finish

John E. Sharp apparently worked for the Aluminum Co. of America (Alcoa) at least in part as a designer. From 1927 to 1945, Sharp, sometimes in conjunction with others, patented at least 13 designs for aluminum caps, as well as patenting several machine designs. Of specific interest here, Sharp and Raymond W. Niver applied for a patent on April 18, 1930, and received Patent No. 1,796,729 for a “Closure” on March 17, 1931, the date embossed on many of the milk bottles with the Alseco finish (Figures 3-9).

A main object of the invention was to provide a “cap which can be easily applied and removed and which, when applied, protects the lip and the mouth of the container against contamination.” A key ingredient to the finish was “a plurality of spaced projections immediately below the bead.” A cap made of “thin pliable metal such as aluminum” could then be pressed onto the finish. The patent drawing showed wider projections, more pointed at the bases, than were used with the actual finish.

The Dairy Antique Site (2011) noted the 1931 patent number embossed on some bottles with the Alseco finish and that many milk bottles from Golden State (California) and Meadow Gold used the finish. Many Meadow Gold bottles were marked with the phrase “Silver Seal” – the firm’s name for the aluminum cap.

The Alseco finish was made with and without a cap seat. The finish was again a modification of the Common Sense finish with two different sizes of downward projections. Although the 51 mm size was made, the more common finishes were 54 mm and 56 mm. It was used with the same seals as the Common-Sense finish as well as using aluminum seals (Rawlinson 1970:35). When the aluminum cap was sealed over the edge of the finish, it conformed to the shape of the projections to lock the cap into place (Figure 3-10).

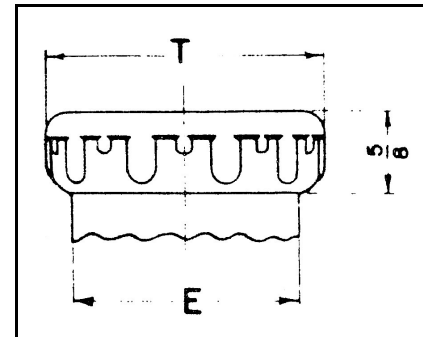


Figure 3-10 – Alseco finish (Owens-Illinois drawing, 1947)

The Aluminum Seal Co., New Kensington, Pennsylvania, used the name Alseco for its aluminum milk bottle hoods. Parents’ Magazine first advertised these hoods on January 25, 1935, but ads in other venues soon followed. During World War II, however, there was an aluminum shortage, so Alseco recommended using finishes with cap seat capability during periods when aluminum was unavailable (*Milk House Moosletter* 1981:185).

As late as 1940, however, Alseco Hoods were being advertised for use with Econopor finishes. An ad noted that “a large dairy” began testing “single-capping milk with Alseco Hoods” in 1931. The ad further stated that dairies in 26 states were using Alseco Hoods (*American Journal of Public Health* 1940:1268).

Econopor Finish

Like the Alseco, the Econopor finish was made with or without a cap seat. Rawlinson (1970:36) illustrated this finish in two distinctive styles. The first was a rounded square when viewed from the side with rounded downward projections spaced evenly around lower part (Figure 3-11). As with the Alseco, an aluminum cap sealed around the projections to hold the cap tightly against the finish. The most common size was 48 mm, especially on lighter T-Square

and round bottles. However, the finish was also made in 51 mm and 56 mm sizes. Rawlinson (1970:36) noted that the finish was sealed with “Plug Cap [ligneous disk], American Seal Hood, Seal-Kap, Sealon Hood, Cellophane Hood, Standard Seal Hood, and the Aluminum Hood.”

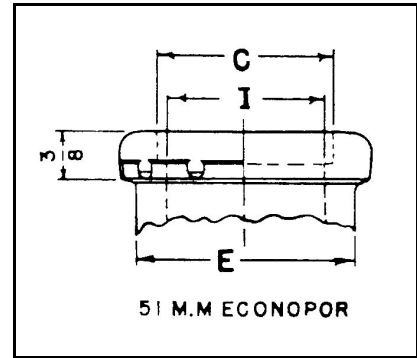


Figure 3-11 – Econopour finish (Owens-Illinois drawing, 1947)

Eventually, Econopour finishes were offered with or without cap-seat, with or without lugs, and with or without the bumper roll. This resulted in a total of eight choices (Figure 3-12). The bumper roll was a more pronounced reinforcing ring below the finish (Figure 3-13). This ring was virtually identical to the later Dacro finish described below. Rawlinson (1970:36) noted that the style was created for the Borden Co. in a 43 mm size. The finish was sealed with a disk, Seal-Kap, Sealon Hood, or an Aluminum Hood.

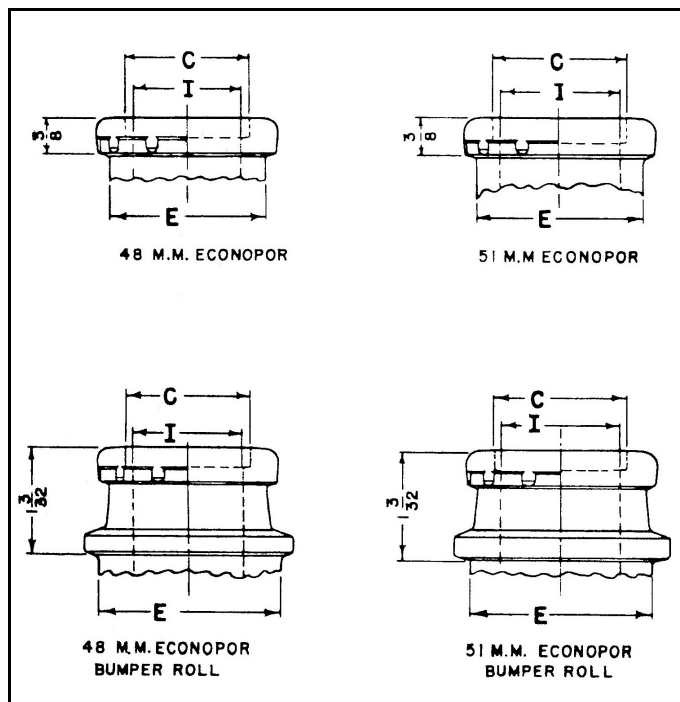


Figure 3-12 – Variations in Econopour finishes (Owens-Illinois drawing, 1947)

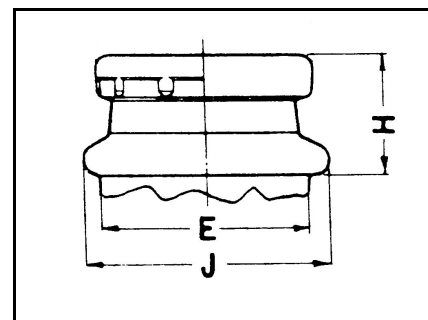


Figure 3-13 – Econopour finish with bumper roll (Owens-Illinois drawing, 1947)

Dacro Finish

Harvey Coale patented what would become the Dacro (Dairy Crown) finish on April 11, 1911. This was an adaptation of the same crown finish, first patented in 1892 by William Painter, that was used on soda, mineral water, beer, and catsup bottles. The original Dacro finish looked the same as the smaller ones on soda and beer bottles, with a sealing ring on top and a larger, reinforcing ring below (Figure 3-14).

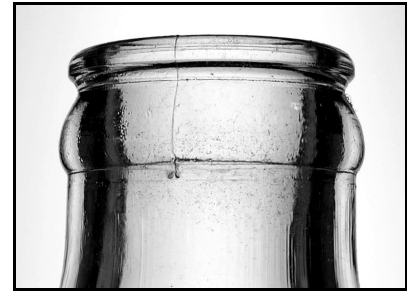


Figure 3-14 – Early Dacro finish

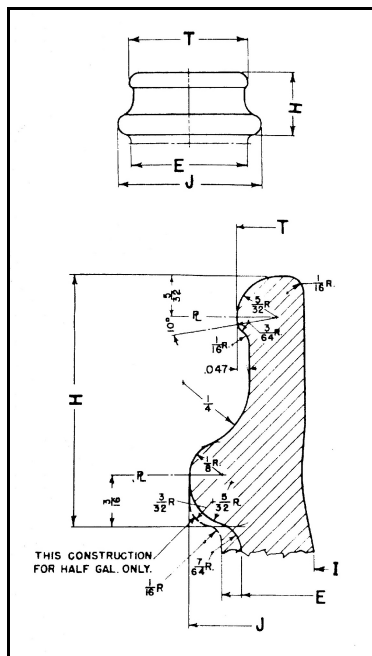


Figure 3-15 – Later Dacro finish (Owens-Illinois drawing, 1947)

On January 19, 1932, Frank L. Lloyd modified the Dacro finish so that the reinforcing ring became almost cup shaped and had some space between the sealing and reinforcing rings. Over time, the reinforcing ring gradually became modified into a rounded but much less pronounced shape, still noticeably below the sealing ring (Figure 3-15). See the Closure section below for a more in-depth discussion of the patents and evolution.

Some dairies, such as the The Deerfoot Farms Co. of Southborough, Massachusetts, used Dacro finishes in order to Pasteurize milk in the bottle. The milk would be placed inside the bottle and a metal or aluminum cap would be placed onto the lip. The milk would be filled to a line just below the bulbous top. This created an expansion chamber, where the milk would expand during the heating process, preventing the bottle from breaking or the cap being blown off. Later crown top and Dacro-finished bottles (beginning in 1920) had arrows embossed in the glass pointing to the bottom of the “chamber” with “FILL TO THIS POINT” embossed next to it. Milk bottle collectors differentiate between the two styles by naming the earlier, 1910 finish, a “Crown Top” and the finish developed in 1932 the “Dacro” finish. The newer style was usually made in 45 mm and 38 mm sizes (personal communication, Paul Doucette, 5/22/2007).

Multicap Finish

The Multicap finish was made with the idea that it would serve virtually all of the milk bottle seals in vogue at the time (Figure 3-16). The 45 mm size was made with or without a cap seat and is almost always found on square milk bottles. The cap seat was absent on the smaller, 38 mm size. Hood closures did not work well with this finish, but it was used with disk seals, Seal-Kap, and aluminum closures (Rawlinson 1970:36). The main differences between the second variation of the Econopor and the Multicap seem to be less downward projections and a slightly larger distance between the sealing ring and the reinforcing ring.

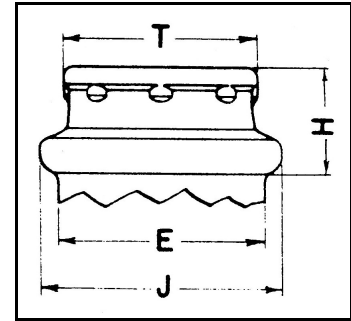


Figure 3-16 – Multicap finish (Owens-Illinois drawing, 1947)

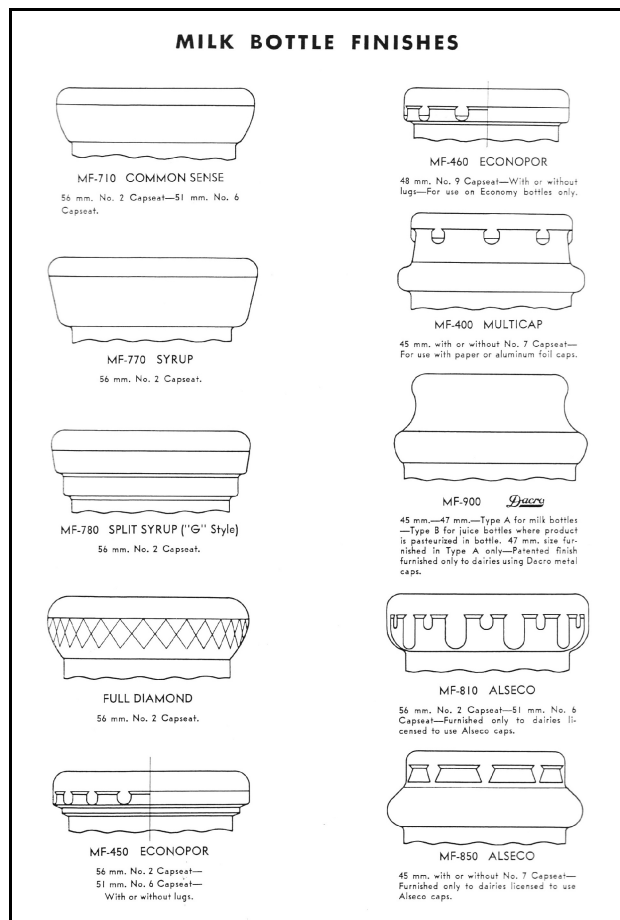


Figure 3-17 – Variations in finishes, ca. 1940s (Lamb Glass Co., n.d.)

Later Variations

Variations in finishes became more and more complex (Figure 3-17). With the greater variety of seals and hoods, dairy owners were soon subjected to an almost bewildering set of choices. By 1958, the sub-variations had increased to the point where nuances made further classification somewhat moot (Figure 3-18).

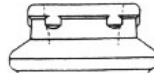
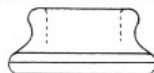
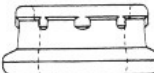
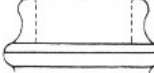

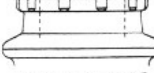
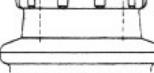
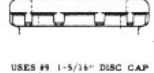


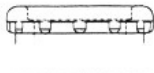


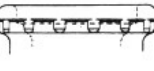
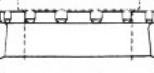
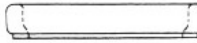
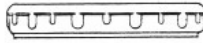

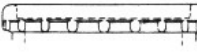
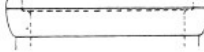
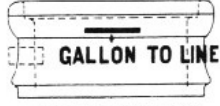
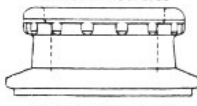
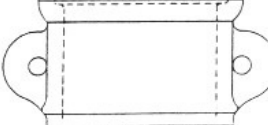
STANDARD MILK FINISHES		
<p>38 mm O.I.G. 5035 MULTICAP</p>  <p>NOT FURNISHED WITH CAPSEAT USES #5 SNAP ON CAPS FOR SEAL KAP - KLEENSEAL - SEALRITE CRIMP CAPS FOR ALUMINUM - DACRO STANDARD CAP & SEAL - ECONO-SEAL</p>	<p>38 mm O.I.G. 5026 DACRO TYPE A</p>  <p>NOT FURNISHED WITH CAPSEAT USES #18 DACRO DISC 53/64 Minimum Opening</p>	
<p>45 mm O.I.G. 5000 MULTICAP WITH OR WITHOUT C.S.</p>  <p>USES #9 OR #7 DISC CAP 1-7/32" Min. Opening With C. S. 1-7/32" Min. Opening Without C. S.</p>	<p>45 mm O.I.G. 5028 DACRO TYPE A</p>  <p>NOT FURNISHED WITH LUGS OR C. S. 1-7/32" Minimum Opening 1-11/32" Min. Opening When Furnished on BULB NECK bottles</p>	<p>45 mm O.I.G. 5018 ECONOPOR WITH OR WITHOUT LUGS OR C.S.</p>  <p>USES #9 OR #7 DISC CAP 1-7/32" Min. Opening With C. S. 1-7/32" Min. Opening Without C. S. 17-3/4 OZ. WT. SQUARE & ROUND LINES ONLY</p>
<p>45 mm O.I.G. 5018-A ECONOPOR WITH OR WITHOUT LUGS OR C.S.</p>  <p>USES #9 OR #7 DISC CAP 1-7/32" Min. Opening With C. S. 1-7/32" Min. Opening Without C. S. 22 OZ. WT. SQUARE & ROUND LINES ONLY</p>	<p>45 mm O.I.G. 5018-B ECONOPOR WITH OR WITHOUT LUGS OR C.S.</p>  <p>USES #9 OR #7 DISC CAP 1-7/32" Min. Opening With C. S. 1-7/32" Min. Opening Without C. S. FOR HALF GALLON ONLY</p>	<p>48 mm O.I.G. 5019 ECONOPOR WITH OR WITHOUT LUGS</p>  <p>USES #9 1-5/16" DISC CAP 1-7/8" Minimum Opening</p>
<p>48 mm O.I.G. 5021 ECONOPOR WITH OR WITHOUT C.S.</p>  <p>USES #9 1-5/16" DISC CAP 1-7/8" Minimum Opening 1-11/32" Min. Opening Without C. S. ON BULB NECK ONLY</p>	<p>48 mm O.I.G. 5015 ECONOPOR WITH OR WITHOUT LUGS OR C.S.</p>  <p>USES #9 1-5/16" DISC CAP 1-7/8" Minimum Opening FOR HALF GALLON & GALLON ONLY</p>	<p>51 mm O.I.G. 5004 ECONOPOR WITH OR WITHOUT LUGS OR C.S.</p>  <p>USES #6 OR #4 DISC CAP 1-7/32" Minimum Opening</p>
<p>51 mm O.I.G. 5008 ECONOPOR WITH OR WITHOUT LUGS OR C.S.</p>  <p>USES #6 OR #4 DISC CAP 1-7/32" Minimum Opening FOR HALF GALLON & GALLON ONLY</p>	<p>56 mm O.I.G. 4502 COMMON SENSE</p>  <p>USES #2 1-21/32" DISC CAP 1-7/32" Minimum Opening</p>	<p>56 mm O.I.G. 5007 ECONOPOR WITH OR WITHOUT LUGS</p>  <p>USES #2 1-21/32" DISC CAP 1-7/32" Minimum Opening</p>
<p>56 mm O.I.G. 5012 ECONOPOR WITH OR WITHOUT LUGS</p>  <p>USES #2 1-21/32" DISC CAP 1-7/32" Minimum Opening FOR GALLON & HALF GALLON ONLY</p>	<p>NO DEPOSIT DAIRY PRODUCTS JAR FINISHES W-O CAPSEAT</p> <div> <p>68-70 mm O.I.G. 4557 COMMON SENSE</p>  </div> <div> <p>68-70 mm O.I.G. 5046 D/L ALSECO</p>  </div>	
DAIRY PRODUCT JAR FINISHES-WITH & WITHOUT CAPSEAT		
<p>59 mm O.I.G. 5027 ECONOPOR WITH OR WITHOUT LUGS</p>  <p>USES #1 1-7/8" DISC CAP 1-5/8" Minimum Opening FOR HANDI-SQUARE JARS ONLY</p>	<p>70 mm O.I.G. 5038 ECONOPOR WITH OR WITHOUT LUGS</p>  <p>70 MM USES 2-1/8" PLUG CAP</p>	<p>68&70mm O.I.G. 575 COMMON SENSE</p>  <p>68 MM USES 2-1/4" PLUG CAP 70 MM USES 2-1/8" PLUG CAP</p>
GALLON & HALF GALLON FINISHES-WITH & WITHOUT CAPSEAT		
<p>70 mm O.I.G. 576 COMMON SENSE</p>  <p>ONE HALF GALLON TO LINE</p> <p>ALTERNATE CAPACITY LETTERING AND ARROW APPEAR ON BOTH SIDES USES 2-1/8" DISC CAP With Capseal Will Take Jenkins Snap Lock Handle</p>	<p>56 mm O.I.G. 5042 ECONOPOR WITH OR WITHOUT LUGS</p>  <p>USES #2 1-21/32" DISC CAP 1-7/32" Minimum Opening Will Take Jenkins Snap Lock Handle</p>	<p>70 mm O.I.G. 578-12-B COMMON SENSE</p>  <p>USES 2-1/8" DISC CAP With Capseal EARS FOR WIRE RAIL HANDLE</p>

Figure 3-18 – Variations in finishes by 1958 (Owens-Illinois 1958:4)

Necks

Generally speaking, milk bottle necks remained the same from the invention of the common sense milk bottle in 1886 until the square milk bottles of the 1940s dominated the industry. However, a few changes appeared periodically, such as embossed Cream Line marks in the late 19th century. For example, Abram Whiteman patented a milk bottle on February 18, 1890 (Figure 3-19), with three cream lines embossed on the neck and shoulder (Schulz et al 2010:53-54).



Figure 3-19 – Cream Line Neck – Warren jar (eBay)

Wellinghoff (1940:288) commented on the cream lines in 1918:

Not so many years ago with the question of cream line effect and slim necks, shoulders on the bottle dropped thus increasing the length of the neck and various expediencies were demanded in order to force the cream plug farther down into the bottle and “kid” the “dear old public” into the idea that this, that, or the other dairy was supplying milk which afforded a greater amount of cream than did their competitors.

Non-slip grips

Although I have not yet discovered patents for any of these non-slip grips, different glass houses embossed vertical ribs, horizontal ribs, embossed rings, dots, and other embossed characters to the necks of some milk bottles by at least 1927. Many of these remained in use for some time and were very popular with some dairies. These served the same purpose as the “holdfast” grip cut into the bottom roll of the finish and other gripping surfaces in that area – discussed above in the finishes section (Figure 3-20).

Embossed vertical ribs on the neck were in use before 1920. By at least the 1930s, some milk bottles had one or more horizontal rings around the necks as well as some with embossed dots of various sizes and in various patterns. Some also used embossed diamonds and other designs.

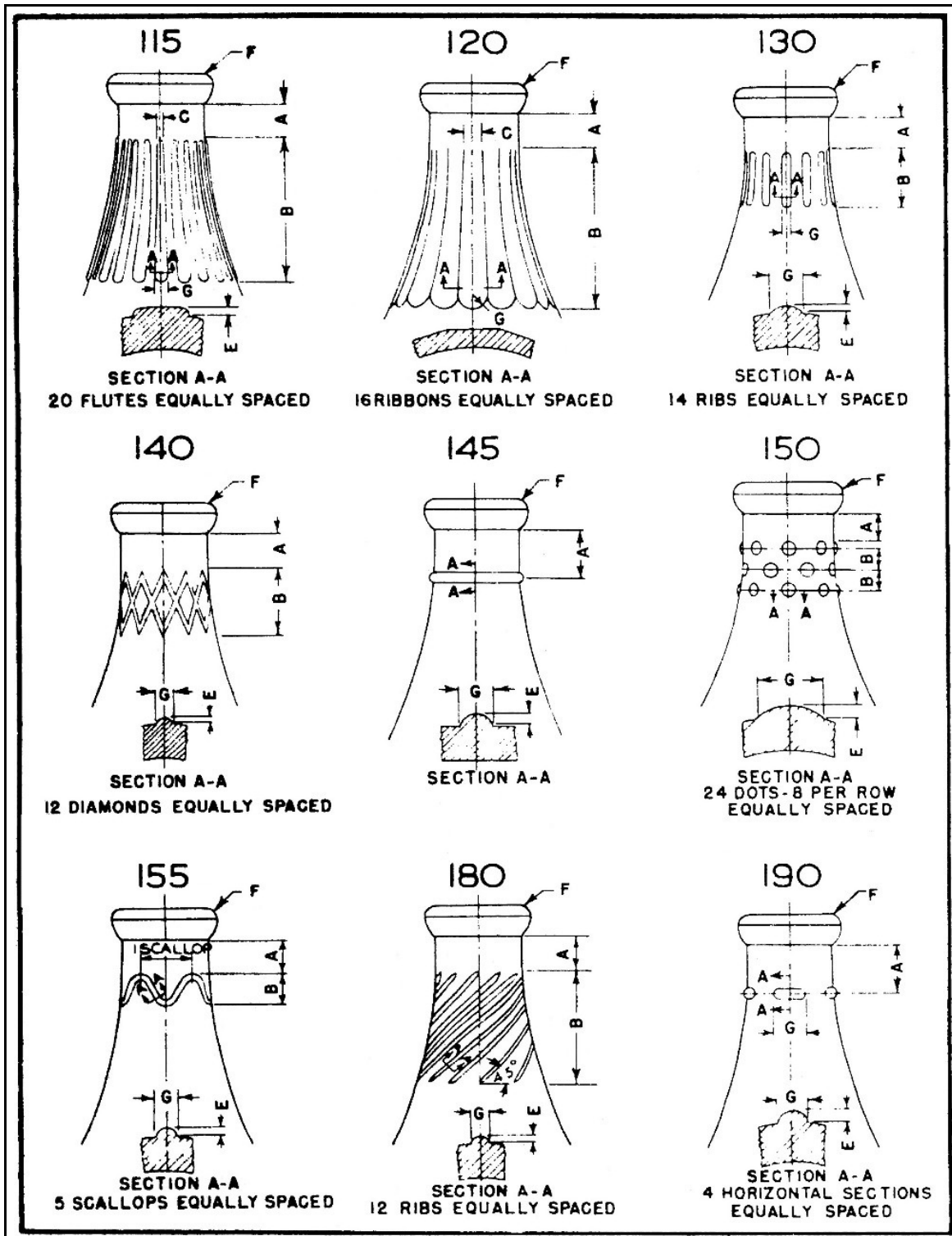


Figure 3-20 – Various neck grip embossing (Owens-Illinois drawing 1947)

Closures

Early Closures

One of the earliest closure types was the “tin top,” a metal cap that was held in place by an arrangement of wires. These, and glass top closures, were essentially lightning-style fasteners. Indeed, a metal closure designed to fit a large opening, patented January 5, 1875, may be the first bottle-related patent connected with the dairy industry (Tutton 1994:2-3). According to Taylor (1971:82), tin tops in general may be dated from the early 1880s to “at least 1903,” although Rawlinson (1970:13) stated that “for all practical purposes the use of the ‘Lightning’ type closure on milk bottles came to an end shortly before 1900.” Subsequent experience suggests that some were still in use at least as late as 1912 or later (see discussion under Ligneous Disks below).



Figure 3-21 – Smalley jar with Lightning-style tin-top (California State Parks collection)

Louis Whitman applied for a patent on January 31, 1880, for a “Jar for Milk &c.” and received Patent No. 225,900 on March 23 of that year (see Figure 3-1). Although the patent was for the jar, it centered around the cap, made of “metal or other suitable material” and held in place by a wire-bale arrangement. The seal was affected by a “flange overlapping the mouth of the jar, sealing it with the aid of a packing ring . . . preferably of cork.”

This type of closure included the “common tin top” (No. 381,331) patented by G.L. Carll on April 17, 1888 (Tutton 1997:6), and the Smalley Milk Jar, patented by A.G. Smalley & Co. (No. 601,988) on April 5, 1898 (Taylor 1971:49; Tutton 1992:7; 1994:23). Gallagher & Munsey (1969:333) dated this bottle at 1896. In addition to its glass closure, the Smalley jar is distinguished by a metal handle attached to the neck and upper body by metal bands (Figure 3-21). Small mouthed bottles (similar to large soda bottles) with actual lightning stoppers were used by some early dairies (Tutton 1997:6). Tutton (1994:5, 9-11) also illustrated other examples.

A second early closure was the “glass top,” clamped in place by a thick wire. In operation, these were also very similar to the lightning fastener used on beer bottles. Possibly the

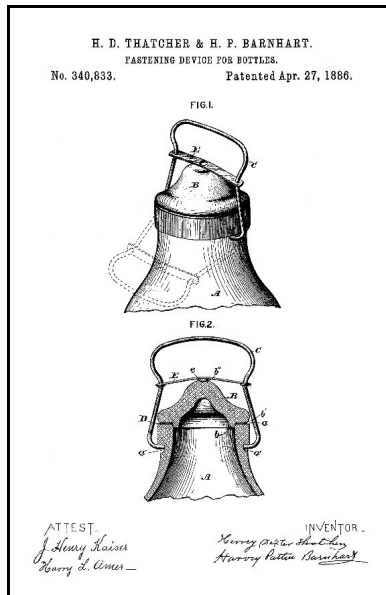


Figure 3-22 – Tin-top patented by Thatcher & Barnhart in 1886

earliest of these was the glass closure and wire bale arrangement patented by Hervey D. Thatcher and Harvey P. Barnhart on April 27, 1886 (No. 340,833 –Figure 3-22). Whittell Tatum & co. made the original milk bottle for Thatcher, but the C.A. Tatum patented his own glass closed bottle (No. 389,263) for Whittell Tatum on September 11, 1888 (Tutton 1997:6 – Figure 3-

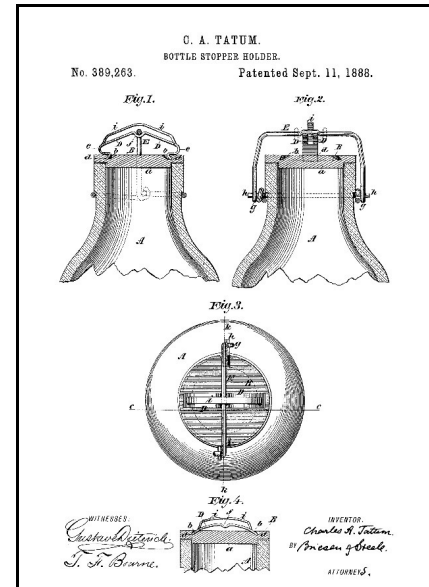


Figure 3-23 – Tatum's 1888 patent glass-top stopper patent

23). Although I have not found a source for general dates, various glass stoppers were probably used in the late 1880s and early 1890s. A specific type of glass top was “F.K. Ward’s Milk Preserving Jar.” The jar was patented in both 1890 and 1892 (Gallagher & Munsey 1969:333; Taylor 1971:48; Tutton 1994:20).

Ligneous Disks

After the introduction of a number of other closure types, the ligneous (cardboard) disk was introduced along with the “common sense” milk bottle in 1889 (patented September 17). Commonly called a cap or disk by modern archaeologists and a “plug” by collectors, the disk was sealed against a ledge, molded inside the mouth of the “common sense” bottle (see Figure 3-1). This method of closure was easy to use and was acceptable for limited periods of time and transportation over short distances.

The ligneous disks originally sold for 40¢ per thousand and were available in lots of 1,000, 5,000, and 10,000 in sacks and 50,000 lots in barrels. The disks were marketed as cheap, sanitary, and easier to use than prior closures. The combination of the common sense bottle and the ligneous disk revolutionized the dairy industry, and the disk continued in use as long as glass containers were the industry norm (Gallagher & Munsey 1969:333; Jones & Sullivan 1989:161;

Rawlinson 1970:13, 32-34). An ad in the Champion Milk Cooler Co. Dairy Supplies Catalog of 1899 states that the “caps are used but once and therefore are always clean and carry no filth or disease” (Tutton 1994:14).

An ad in the J.S. Biesecker Catalog of 1900 offers this description of the cap on the common sense milk bottle:

The cap or cover is made of heavy wood fibre, prepared so as to resist the moisture from within and without, and when pressed into the neck of the Jar to the shoulder with the thumb or finger it forms a tightly fitting cover. The operation of capping is quickly and easily accomplished, and when completed is perfectly tight, and can be handled in any position and transported without danger or leakage. The disc can be removed when the milk is required for use by inserting the blade of a penknife or any other sharp instrument and lifting the cap out. The cap can again be used and will seal the Jar reasonably tight, but their nominal cost allows the dealer to discard them after using them once (Tutton 1994:16).

Thatcher (1902:8) noted that:

The selection of woods for preparing [the caps] for the board machines, the method and process of manufacture of the board, the printing and cutting of the caps and the process required in the paraffining and water proofing all call for our personal supervision and constant watchfulness to produce a cap that will perform all the exacting and trying requirements and guard against the slightest defect in taste or odor.

Thatcher caps were available in three qualities: the Thatcher Cap (40 cents per thousand); the Star Cap (30 cents per thousand); and the Crescent Cap (24 cents per thousand) and were available in five diameters (see Table 3-2).

Table 3-2 – Thatcher Cap Diameters (following Thatcher 1902:9)

Designation	Diameter (inches)
No. 1	1 7/8
No. 2	1 5/8
No. 3	1 6/8
No. 0	1 1/2
No. 4	2 5/8

Later cap size became more standardized across the industry. According to the Creamery Package Mfg. Co. in 1912 (Tutton 1994:183), “By far the larger portion of milk bottles made are No. 2 cap finish, the cap diameter being 1 21/32 inches.” They warned, however, that “large dealers . . . sometimes wish bottles that cannot be used by competitors. To accomplish this, bottles having larger or smaller cap finish than regular are used.” By 1923, there were 23 sizes of ligneous disks (Williams 1923:12). By at least 1940, cap size was measured in millimeters.

By at least 1917, caps had undergone various transformations. The San Lac Seal was made of “four disks from the best pulp board, wire stitched after being thoroughly waxed, which insures a proper coating on the edges.” The Perfection Pull Cap included a tab in the uppermost disk which could be bent upward and used as a handle to remove the cap. The base of the tab was reinforced by a staple through all four layers. Certified Caps contained a rectangular tab of paper stapled onto the cap (from the Dairymens Supply Co. catalog of 1917 – Tutton 1994:152-3, 159).

Flipper caps had their tabs built in as an extension (appearing as if a nipple extending from one side of the cap). The tab was bent upon insertion onto the cap seat and was thus left sticking up to aid in removal. The Kuvercap was advertised as “convenient and sanitary. Easy-to-grasp flange projects over rim, protecting pouring edge. Easy to lift off, and snap back on. Very low in cost.” Finally, the School Cap was a standard pull cap with a hole beneath the tab to allow a drinking straw to be inserted without removing the cap. This helped prevent spillage when used by children (from the Dairymens Supply Co. catalog of 1917 – Tutton 1994:152-3, 159).

A combination of the cap (ligneous disk) and a metal closure (tin top) were offered by the Creamery Package Mfg. Co. by 1912. Replacement tops could be ordered: “Lightning Tin Top Trimmings with cover, spring and wire fastener; can be easily attached to jars where old trimmings become rusty or worn out” (Tutton 1994:185). These offered the customer either double protection or the option of which method to use for recapping.

Wilbur L Wright

The disks patented by Wilbur L. Wright will serve as examples of the myriad inventions and designs that grew from the original ligneous disk. Wright also invented waxed-paper cartons, ice cream packaging, hoods, and machines to create all of these items. Wright’s disk patents include:

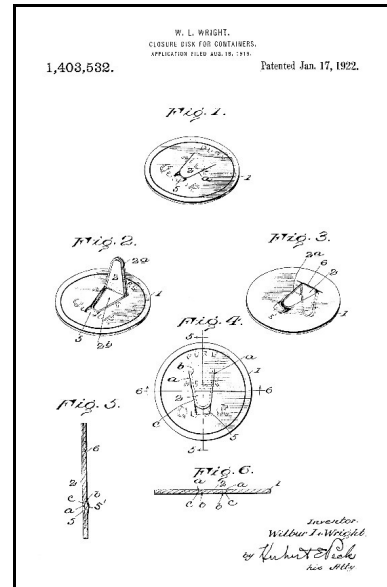


Figure 3-24 – Wright’s 1922 disk closure patent

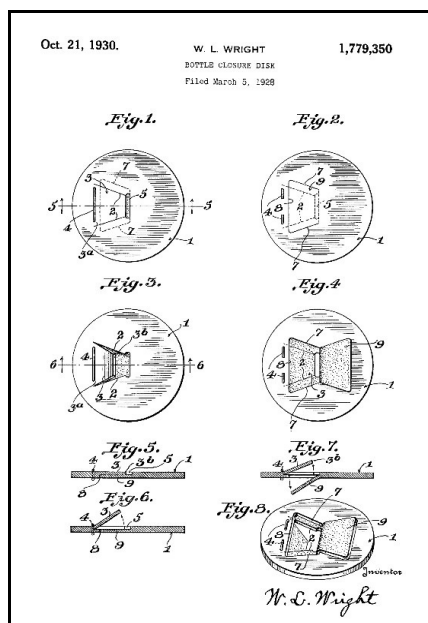


Figure 3-25 – Wright’s 1930 disk closure patent

Patent No. 1,403,532 – applied Aug. 18, 1919; received Jan. 17, 1922 – “Closure Disk for Containers” – This is probably the father of the most common milk bottle disk closures, with a tab for removal (Figure 3-24).

Patent No. 1,462,995 – applied Aug. 15, 1922; received July 24, 1923 – “Closure Disk” – This was an improvement on the 1922 disk.

Patent No. 1,779,350 – applied March 5, 1928; received Oct. 21, 1930 – “Bottle Closure Disk” – This one was important because it introduced the idea of a staple to reinforce the pull tab. Disks with the staple-reinforcing became the industry standard (Figure 3-25).

Dacro Closures

The Crown Cork & Seal Co., manufacturer's of the crown cap for beer and soda bottles, also modified their cap design for use on milk bottles. The adapted closure was called the Dairy Crown or Dacro, and the name was adopted for both the cap and the finish (Dairy Antique Site 2011). Harvey Coale applied for a patent for a "Process of Packaging" on March 29, 1910, and received Patent No. 989,337 on April 11, 1911 (Figure 3-26). Coale's object in adapting the crown cap to a jar or wide-mouth container was for "the packaging of milk or similar food products to be heated to destroy the harmful bacteria by placing the product in a suitable container, such as a jar, applying thereto a sheet metal closure . . . which is locked to the jar by being bent into engagement therewith." Coale assigned the patent to the Crown Cork & Seal Co.

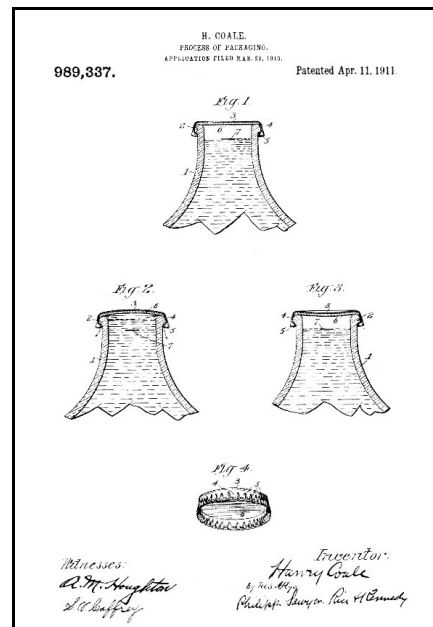


Figure 3-26 – Coale's patent for what would become the Dacro finish and seal

Lauritz C. Garman applied for a patent (No. 1,200,482) on October 24, 1911, for a "Closure-Applying Machine" – to place Dacro caps on milk bottles. Although Garman applied for his patent very shortly after Coale adapted the Dacro cap, he did not receive his patent for almost five more years – on October 10, 1916. The milk bottles shown in his drawings depict a finish that closely resembled a large version of the crown finish applied to soda and beer bottles. These early Dacro finishes had the large reinforcing ring to support the pressure required to seat the cap on the sealing ring. Like Coale, Garman assigned his patent to Crown Cork & Seal.

The Dacro closure was never as popular as the Common Sense finish. Initially, the cork seal inside the cap imparted a flavor to the milk, but the substitution of other materials (e.g., wood or paper) reduced the distaste. The Dacro, however, required a special capping device (such as Garman's invention) that was expensive and slower than the cappers for the common sense closure. The sheet metal cap created an additional problem. Each cap was delivered to the customer (dairy) as a flat disk, and the machine created the crown shape as part of the capping process (Dairy Antique Site 2011).

Albin H. Warth developed a new liner for the crown and applied for a patent on November 2, 1926. He called his invention a “Bottle Cap and Method of Producing Same.” Warth noted the effects of sheet metal, tin plate, cork, and the paper being used at the time (specifically, jute tag or sulphate tag) on the taste of the milk. His idea applied two “sheets of vegetable parchment” to “both sides of a sheet of paper stock” that was then glued to the inside of the sheet metal disk. This three-ply lining effectively blocked the disagreeable taste. Warth received Patent No. 1,732,958 on October 22, 1929, and assigned the patent to Crown Cork & Seal. The patent was reissued on November 8, 1932.

The next major change occurred on October 7, 1931, when Frank L. Lloyd filed for a patent for a “Design for a Bottle” – more specifically, a milk bottle. He received Design Patent No. 86,037 on January 19, 1932. Lloyd described his invention as an “ornamental design

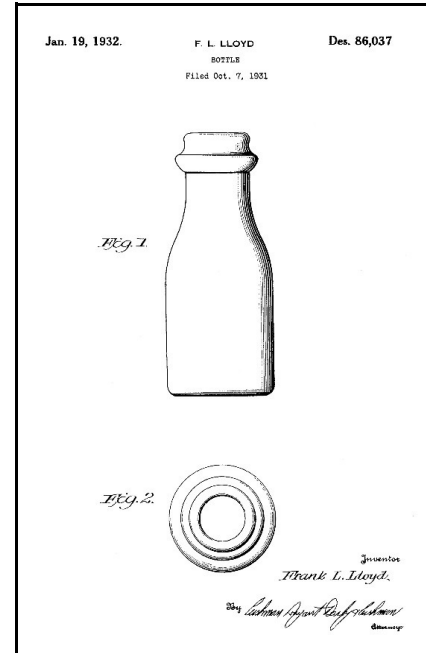


Figure 3-27 – Lloyd’s patent for a modified Dacro finish



Figure 3-28 – Dacro ad (*Milk Dealer* 1945a:16)

for a bottle,” but the real contribution was in the design of the finish. The reinforcing ring had become almost cup shaped, and there was little definition left to the sealing ring. This rather ugly design became the new Dacro finish (Figure 3-27). Ads for the new system appeared in September 1931, and many bottles were embossed on the bases with Dacro and the patent number (Dairy Antique Site 2011).

At some point, aluminum Dacro caps were introduced. The idea of aluminum crowns was not new. George H. Gillette applied for a patent for a “Bottle Sealing Device” – actually a crown cap made from aluminum – on April 22, 1903, and received Patent No. 734,459 on July 21 of that year. Apparently, the device did not function in real life as well as Gillette claimed (Figure 3-28).



Figure 3-29 – Seal-Kap closure (Rawlinson 1970:33)

Although empirical evidence suggests that aluminum Dacro caps were used earlier, the only patent I can find for them was filed by Ralph E. Ford, of Bedford, England, on July 1, 1957, for “Closing and Sealing Bottles and Other Receptacles.” Ford received Patent No. 2,974,816 on March 14, 1961. Ford specifically stated, “The closure cap according to this invention is also suitable for closing bottles containing sterilised [British spelling] milk, the cap being able to withstand both the pressures occurring in the bottle during sterilisation and the vacuum created in the bottle on cooling.”

Seal-Kap

The Seal-Kap was invented ca. 1918 and consisted of thin cardboard molded to fit over the pouring lip of milk bottles. The cap had corrugations at the top for extra rigidity (Figure 3-29 & 3-30). It snapped into the throat of the bottles and covered the top of the roll (Rawlinson 1970:33).

Hoods

As with the disks discussed above, an example of the hoods invented by Wilbur R. Wright will provide an idea of the complexity in style and numbers of available hoods.

Wilbur R. Wright

Patent No. 1,603,057 – applied July 12, 1923; received October 12, 1926 – “Capping Milk Bottles and Other Containers” – This was a milk bottle hood.



Figure 3-30 – Seal-Kap ad (*Milk Dealer* 1945a:62)

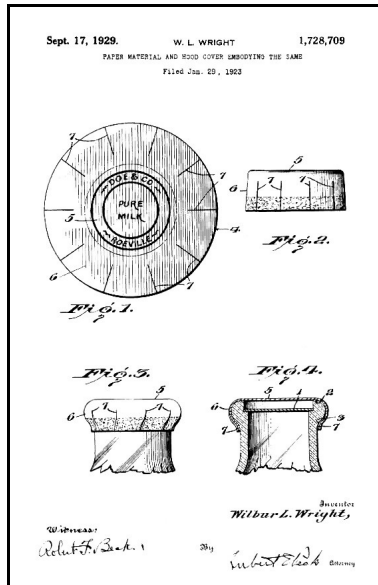


Figure 3-31 – Wright’s 1929 hood patent

Patent No. 1,711,337 – applied July 12, 1923; received April 30, 1929 – “Capping Milk Bottles and Other Containers” – This was another milk bottle hood. Although applied the same day, this one did not receive the patent until a year-and-a-half later (Figure 3-31).

Patent No. 1,728,709 – applied Jan. 29, 1923; received Sep. 17, 1929 – “Paper Material and Hood Embodying the Same” – This was Wright’s first attempt for a hood

patent, but it was received after the other two.

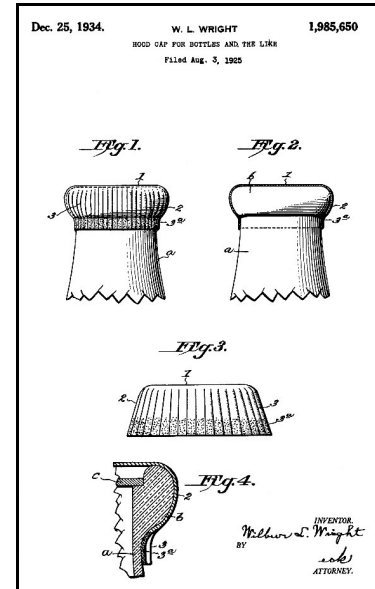


Figure 3-32 – Wright’s 1934 hood patent

Patent No. 1, 985,650 – applied Aug. 3, 1925; received Dec. 25, 1934 – “Hood Cap for Bottles and the Like” – This was Wright’s last patent for a milk bottle hood (Figure 3-32).

At some point, hoods were used to cover the caps on common sense and later milk bottles. These offered an extra barrier for sanitation.

Seal Hood

The American Seal-Kap Corp. made the Seal Hood to fit over their Seal-Kap finish. The hood covered the entire cap and finish roll and prevented tampering with the seal of the bottle (Figure 3-33). The seal was crimped below the finish by machine and sealed with wax. Once removed, the seal could not be reapplied. The seal was mostly used with the 48 mm finish (Rawlinson 1970:33).



Figure 3-33 – Seal Hood (Rawlinson 1970:33)

Sealon Hood

Made by the Sealright Co., Fulton, New York, the Sealon Hood was stretched tightly over the top of the bottle and sealed with wax under the roll of the finish (Figure 3-34). This hood required a disk or some other seal below it (Rawlinson 1970:34).



Figure 3-34 – Sealon Hood (Rawlinson 1970:33)

Cellophane Hood

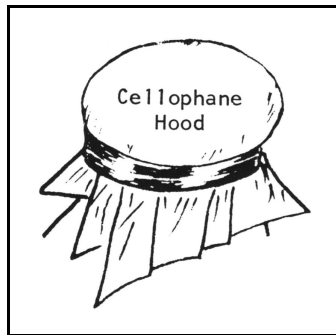


Figure 3-35 – Cellophane Hood (Rawlinson 1970:33)

In 1941, Smith Lee introduced the Cellophane Hood. Made from cellophane, these came in three colors (red, tango, and green) as well as a colorless hood (Figure 3-35). The hoods included a paper disk that displayed advertising and had their own special machinery for crimping the closure to the bottle (Ryan 2000:7-8). The inventor started the Smith Lee Co. in Oneida, New York to market the hoods, which were fastened by a narrow cellophane band directly beneath the finish (Rawlinson 1970:33).

Standard Seal Hood

The Standard Seal Hood was made by the Standard Cap & Seal Co., Chicago, Illinois. These pressed-paper hoods were pulled over the finish and crimped under the lobes (see Alseco, Econopor, and other finishes above). The hood was held in place by a very fine wire that made it virtually tamper proof. The hood required a disk seal below it (Figure 3-36).

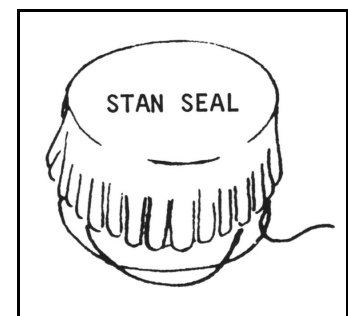


Figure 3-36 – Standard Seal Hood (Rawlinson 1970:34)

Aluminum Hood

The Aluminum Seal Co., New Kensington, Pennsylvania, produced the Aluminum Hood. Starting about 1932, these were usually made of a combination of aluminum and paper, although aluminum, alone, was also used (Figure 3-37). It was crimped between the lobes and was considered tamper proof (Rawlinson 1970:34).

Alseco Hood

Alseco Hoods were made to be crimped over the lobes of the Alseco finish (see Finishes section above). Although these were made to cover a disk closure, they could be used alone as a seal (Figure 3-38).

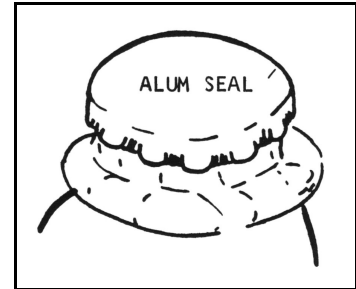


Figure 3-37 – Aluminum Hood (Rawlinson 1970:34)

After-Market Closures

After market closures were available at least as early as 1914, when the Dorsey Milk Bottle Cover was advertised in Time Magazine (Rawlinson 1970:6). The clip-on metal cover in Figure 3-39 may have been one of these. These aluminum disks were clamped on the lip of the bottle with four tabs after a common sense milk bottle had been opened. A pour spout extended from one side with a corresponding hole sealed with a smaller swivel cover riveted to the disk. Other after-market closures appeared periodically.

**Want to get down to
BRASS TACKS?**



If you are like other dairymen, you have been wondering about switching to Alseco Aluminum Hoods when they are back again. You have probably wondered about three things in particular:

1. What savings you will make when you change over to Alseco Aluminum Hoods.
2. What you ought to be doing now to be ready to use Alseco Hoods when they are available.
3. What size of Alseco Aluminum Hood will work out best for your dairy.

You can get the answers to these three questions, and any others you want to ask, by filling out and mailing the form at the right. Do it today.

Answer These Questions Now and Get the Facts to Help You Decide About Alseco Aluminum Hoods. Mail to: Aluminum Seal Co., 1319 Third Ave., New Kensington, Pa.

What type bottle filler do you have?.....
 How many capping heads?.....
 What is the size of your present bottle? (Check below)
 45 mm...? 48 mm...? 51 mm...?
 54 mm...? 56 mm...? or ...mm?
 Does your bottle have the Alseco lug fault?.....
 What type of cap do you now use?.....
 Approximately how many bottles do you fill per day?.....

Name.....
 Dairy.....
 Address.....
 City.....State.....



Alseco Aluminum Hoods
 Made of ALCOA Aluminum Foil

Figure 3-38 – Alseco ad (*Milk Dealer* 1945b:31)



Figure 3-39 – Clip-on metal cover

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