

Capstan Glass Co.

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The Capstan Glass Co. began its corporate life as a subsidiary of the Anchor Cap & Closure Corp. and remained in a subordinate position for its entire existence. The plant made tumblers, tableware, and packers' ware. When Anchor Cap merged with the Hocking Glass Co. to form the Anchor Hocking Glass Corp. in 1937, Capstan lost its individual identity, and the new firm closed the plant the following year. In 1941, the plant reopened as Anchor Hocking Glass Plant No. 5 and remained in production until November 4, 2004.

History

Capstan Glass Co., South Connellsville, Pennsylvania (1919¹-1938)

The Anchor Cap & Closure Corp., owned by the Monitor Securities Corp., incorporated the Capstan Glass Co. as a Delaware corporation on April 12, 1918. After an extensive retooling of the former Ripley & Co. plant at South Connellsville, Pennsylvania, operations began April 17, 1919, and the first load of tumblers was shipped on June 9 (Bernas 2007a:32, 2007b:10; Toulouse 1971:549).

Daniel C. Ripley bought the former plant of the Baldwin Automobile Manufacturing Co. and converted it into Ripley & Co., Inc. Ripley opened the factory in mid-April 1910 and made tumblers, tableware, and some lampshades. On August 11, 1917, with no explanation, Ripley dismissed his workers and closed the plant. Although Ripley continued to make tableware at his other factories, the location was now available for the new Capstan operation (Bernas 2007b:7).

The name "Capstan" – a windlass "rotated in a horizontal plane . . . for winding in ropes, cables, etc." (Dictionary.com) – was selected for the plant because it seemed to tie in with the "Anchor" of Anchor Cap and Closure. Initially, the plant made tumblers, although it also

¹ The initial date reflects the beginning of production rather than the formation of the company.

advertised other packers' ware. Capstan replaced the three Ripley furnaces and their 23 pots with a single continuous tank using nine rings, and nine automatic presses made tumblers. In 1920, the plant added a second tank with six more presses and six blowing machines for jar production. The firm added a third tank by 1926, and the plant became the largest exclusive manufacturer of commercial packers' ware in the U.S.² (Bernas 2007b:9, 13-16, 24-26).

By 1927, Capstan made "jellies, tumblers and jars for packers' use" as well as "packers and preservers" ware, all by machine at three continuous tanks with 24 rings. The newly formed Anchor Cap Corp. received its corporate charter in Delaware on September 13, 1928, and officially acquired the Capstan Glass Co. on October 31 (*American Glass Review* 1927:85, 129; Bernas 2007b:25).

Capstan's product listing was amended to "jars, bottles and tumblers for packers' use" in 1932, but the plant still retained the existing hardware. Anchor Cap expanded its glass production on September 1, 1934, when it announced the addition of the Salem Glass Works to its organization, but Capstan continued as before. The 1935 Capstan product list included the same products as 1932 but added "flint and amber" made at five continuous tanks with 33 rings. The plant expanded again in 1937, to nine continuous tanks with 65 rings (*American Glass Review* 1932:70; 1935:82; 1937:82; Bernas 2007b:42-43).

On December 31, 1937, the Anchor Cap Corp. merged with the Hocking Glass Co. to form the Anchor Hocking Glass Corp. The Capstan name was officially changed to the Anchor Hocking Glass Corp. of Pennsylvania on February 18, 1938, and the factory closed in September (Bernas 2007a:32, 2007b; Toulouse 1971:549). The plant reopened in 1941 and continued to serve as Anchor Hocking Glass Plant No. 5 until November 4, 2004, when Anchor Glass Container Corp. closed the factory permanently (Bernas 2007b; McCumber 2005).

² Although Owens-Illinois and Hazel-Atlas were both larger, they were not *exclusive* manufacturers of packers' products. Because of the differences between press-and-blow machines (for large-mouth ware) and blow-and-blow machines (for small-mouth bottles), glass houses tended to specialize in one or the other. Eventually, the need for such specialization ceased.

Containers and Marks

Initially, Capstan made tumblers, but the plant added wide-mouth packers' ware by 1920. With the repeal of Prohibition and the resumption of beer production in the U.S., Capstan joined the dozens of other glass houses in the manufacture of beer bottles (Bernas 2007b:29). This led to the production of other types of narrow-mouth bottles, including liquor flasks and bottles, vinegar jugs, and catsup bottles. Bernas (2007b) noted that most glass tumblers, jars, and bottles made by Capstan were marked on their bases by the capstan logo and a "mold number" (probably a model or catalog codes). The numerals correspond to numbers in advertisements from the company. Bernas has enumerated and discussed many of these along with photos or drawings of tumblers (pp. 55-76), jars (pp. 77-113) and bottles (pp. 114-134). Roller (1983:369) also noted that Capstan made the Vacuum Tite Jar.

Capstan (1918-1938; 1941-1950s)

According to Toulouse (1971:549), the capstan mark (an embossed drawing of a capstan) was used by the Capstan Glass Co. from 1918 to 1934 (Figure 1). White (1985) parroted the dates from Toulouse. Bernas (2007b:9), however, noted that the Trade Mark No. 228,353 for the capstan symbol was registered on May 31, 1927, with a first use claimed at April 11, 1918. Bernas (2007b:10) also illustrated the mark on both pressed ware (e.g., tumblers) and blown ware (e.g., jars). He observed that the logo is much more distinct on pressed items (Figure 2).



Figure 1 – Capstan packer base

Despite the Toulouse dates, it is certain that the Capstan logo was used after 1934. Toulouse stated that "A corporate change also took place in 1934 when Capstan became a subsidiary of the Anchor Cap Co., on Mar. 31." Although the Salem Glass Works became part of Anchor Cap in September of that year, Capstan had been a subsidiary from its inception. Thus, there is no reason to suppose that the mark was discontinued in 1934.

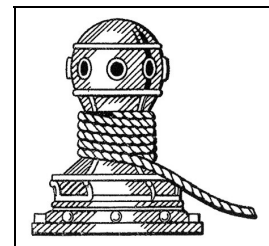


Figure 2 – Capstan figure
(Roller 1983:369)

Further, the law requiring codes on liquor bottles took effect in September 1934. However, Bernas (2007b:122-129) illustrated ten liquor bottles and flasks – all marked with the capstan logo. All of these, embossed with the capstan mark, had to have been made *after* the incorrect Toulouse date of March 1934. In addition, Anchor Hocking Glass Corporation sponsored ads still showed pieces with Capstan trademarks on them up to about August 1938. The mark certainly continued in use until the Anchor-Hocking merger at the end of 1937 then was resumed in 1941 and used until at least the early 1950s – as shown on a liquor flask base made in 1950 (Figure 3).



Figure 3 – 1950
Capstan liquor base

Toulouse (1971:549) also noted that the capstan logo was used “sometimes with the word ‘Anchor.’” Barry Bernas (one of the authors), however, noted his nearly 2,000 piece collection of Capstan embossed containers has not a single base with the word ANCHOR. The use of “Anchor” was almost certainly a misunderstanding on the part of Toulouse.

Capstan and S

Bernas (2007b:130-131) noted a small grape juice bottle with the embossed capstan logo in the center of the base. Around the logo was a large letter “A” with a truncated top (creating a cross-bar at the apex). These large letters frequently indicated the bottling company, especially when used by dairies. To the right of the capstan was the single letter “S” – almost certainly indicating the Salem Glass Works.

It was not unusual for related glass houses to trade molds. In this case, it appears that a Capstan mold was transferred to the Salem Glass Works. Instead of peening out the capstan symbol, the mold department apparently added the Salem “S” and used the mold. This is one of the few examples we have seen where the “S” was used outside of liquor ware.

Liquor Bottle Number

At the end of Prohibition, the Treasury Dept. issued regulations for the manufacture of liquor bottles. Beginning August 1, 1934, any glass house desiring to make liquor bottles or

flasks had to apply for a permit number, as did each distillery or rectifier (i.e., modifier of whiskey or other alcoholic beverage). By November 1, the only legal bottles for liquor had to have both of those numbers, along with a code for the date when the bottle was made, embossed on the base or heel of the container. The Capstan Glass Co. received Permit No. 13, and that number was passed on to the Anchor Hocking Glass Corp., when it was formed in December 1937 (see Figure 3).

Vacuum Tite Jar

Although Toulouse (1969:314; 1971:314), Roller (1983:639), and Creswick (1987:133) all illustrated and discussed a glass lid embossed “VACUUM TITE Co. / RAPID CITY, N.D. (both arched) / PATENTED AUGUST 19, 1930 (inverted arch)” along with other related lids and a single jar, Bernas (2011:4-24; 2014:56-72) rendered all of the earlier studies obsolete. Bernas described the lids, jar, and related processes, as well as relevant patents and company histories, and we have summarized those findings below.

The basic idea of the lid was simple. It consisted of a circular disk of metal or glass with a slightly sunken central section. Each lid had a perforated center, closed with a rubber dome, or in the earliest lids, a rubber disk.

Two variations of the tinned-iron lids were unlettered, one with gold lacquer on top and bottom, the other with silver lacquer on the top and gold lacquer on the bottom. The lettered lids were marked in three different variations:



Figure 4 – Chicago lid; Rapid City, SD lid; Pittsburgh lid (Bernas 2011:7; Toulouse 1969:314; Minnestrista Heritage Collection)

1. TRADE “VACU-TITE” MARK CHICAGO PATENT RIGHTS RESERVED [glass](Figure 4)
2. VACUUM TITE CO. RAPID CITY, S.D. PATENTED AUGUST 19-1930 [glass] (Figure 4)
3. VACUUM TITE CO., PITTSBURGH, PENNA. PATENTED AUGUST 19, 1930 [painted in black letters on top of gold-lacquered metal lid] (Figure 4)

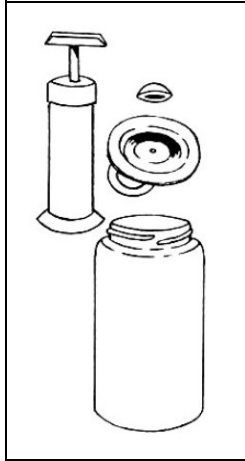


Figure 5 – Vacuum pump (Bernas 2011:14)

The basic idea behind all the lids was vacuum sealing. In each case a hand-operated vacuum pump was used to evacuate air from the jars, and the vent hole in the lid was sealed by a rubber device (Figure 5). The lids sat atop the rim or lip of the jar and were held in place by the vacuum produced by the pump. The Capstan Glass Co. produced a single type of jar – embossed “VACUUM TITE JAR (arch) / 11 (or other numbers) / {capstan logo} / P-901 (all horizontal) – on the base (Figures 6 & 7). The lids also fit on other standard-sized jars, including Mason jars.

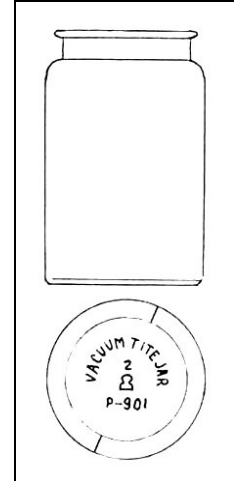


Figure 6 – Vacuum Tite Jar (Bernas 2011:14)

Relevant Patents

Bernas (2011:4-5) reviewed the three patents received by Dan Killen during the 1930s. Because of the August 19, 1930, patent date on two of the lids, all of the earlier researchers have recognized Killen’s early patent. We have reviewed Killen’s two jar-related patents below. In addition, Bernas (2014:66-68) has recognized the importance of an earlier patent that very likely set the tone for Killen – the Frank Reinbold patent of March 15, 1927.



Figure 7 – Base of Vacuum Tite Jar (Bernas 2011:9)

Frank Reinbold, March 15, 1927

Frank Reinbold of Sheiboygan, Wisconsin, applied for a patent for a “Method and Apparatus for Sealing Fruit Jars on January 2, 1925. He received Patent No. 1,621,132 on March 15, 1927 (Figure 8). The design was for a cap with a single perforation in the center and a vacuum pump to create a vacuum inside the jar. The rubber seal to plug the perforation was a flat disk. See Bernas (2014:66-68) for a more thorough review.

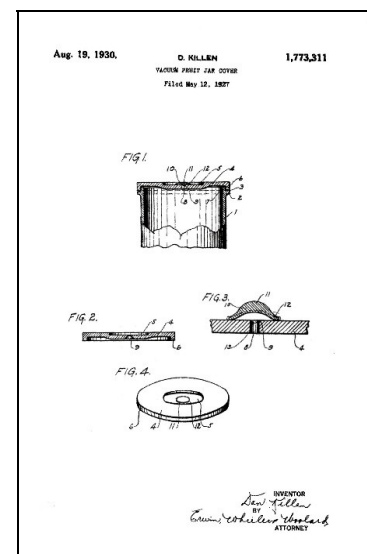


Figure 8 – Reinbold 1927 patent

Dan Killen, August 19, 1930

Dan Killen of Milwaukee, Wisconsin, applied for a patent for a “Vacuum Fruit Jar Cover” on May 12, 1927, and received Patent No. 1,773,311 on August 19, 1930 (Figure 9). Killen’s patent was very similar to the one obtained by Frank Reinbold, consisting of a disk that sat upon the rim or lip of a fruit jar with a single hole in the center to allow evacuation of the air inside the jar by a vacuum pump. The major difference was the rubber seal to cover the hole. Killen’s seal was dome shaped. See Bernas (2011:4-5) for a more thorough review of both Killen patents.

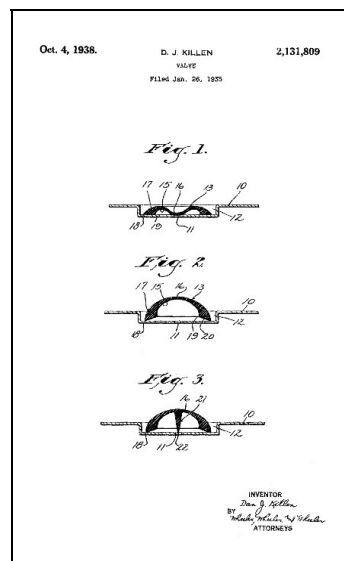


Figure 9 – Killen 1930 patent

Dan Killen, October 4, 1938

On January 26, 1935, Dan J. Killen, now of Rapid City, South Dakota, applied for his third patent (the second was unrelated to glass or jars). He received Patent No. 2,131,809 for a “Valve” on October 4, 1938 (Figure 10). Killen stated that this was a “valve member of resilient material of such dimensions and so shaped as to be particularly suitable as a closure member for an apertured plate.” In other words, this was an improved rubber seal for the 1930 lid.

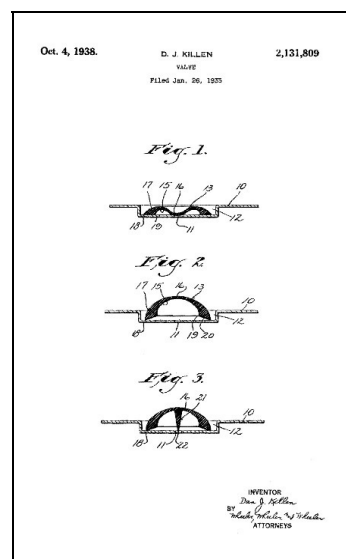


Figure 10 – Killen 1938 patent

Vacuum Lid Manufacturers and/or Distributors

While cautioning that the data were sparse, Bernas (2011; 2014) created a probable chronology for the distributors of the vacuum seal lids. It is highly unlikely that any of these firms actually manufactured the lids they sold. See Table 1 for a chronology of firms and the lids they used.

M&M Rappel Mfg. Co., Manitowac, Wisconsin (1926-1927)

On September 25, 1926, Martin and Marcus Rappel incorporated Rappel Mfg. Co. with a

capital stock of \$100,000 for “the manufacture of a patented fruit jar cover that will fit all makes of jars. The new cover is on the vacuum principle” (Bernas 2014:62). Note that this was almost eight months before Dan Killen *applied* for his first fruit jar patent. The firm was only in business until June 18, 1927, when it became the Vacu-Tite Co. The Rappels almost certainly sold unmarked metal disk closures based on Frank Reinbold’s March 15, 1927 patent (No. 1,621,132), applied for on January 2, 1925 (Figure 11).



Figure 11 – Generic lid (Bernas 2011:3)

Vacu-Tite Co., Manitowac, Wisconsin (1927)

The Rappel brothers renamed the M&M Rappel Mfg. Co. as the Vacu-Tite Co. on June 18, 1927. Pell Johnson, D.J. Killen, and Marcus Rappel signed the notice. Note that Dan Killen was a part of this firm, and this early involvement suggests that he had been connected with the earlier M&M Rappel Mfg. Co. Although the exact timing is unclear, the firm apparently relocated to Chicago shortly after the name change. This company probably neither made nor distributed anything during the short period of its existence (Bernas 2014:63).

Vacu-Tite Co., Chicago, Illinois (1927-1928+)

In mid-1927, Charles W. McCamon, Lief Jensen, Berdie M. Flint, Henry A. Lang, and possibly others incorporated the Vacu-Tite Co. of Chicago at 10 S. La Salle St., Suite 601 – with a capital of \$10,000. The La Salle St. address was almost certainly an office. The purpose of the firm was “to manufacture vacuum tops, fruit jar covers, pumps and other devices.” The following year, Dan Killen was listed as manager at 139 N. Clark St. – another office building. It is virtually sure that Vacu-Tite was a distributor rather than a manufacturer (Bernas 2014:63).

This was obviously the firm that sold the glass lids embossed “TRADE “VACU-TITE” MARK / CHICAGO (both arched) / PATENT RIGHTS RESERVED (reverse arch)” (see Figure 4). These lids were likely made to the Killen patent of 1930. Dan Killen had applied for his patent in May of 1927, so this move to Chicago may reflect the adoption of the Killen lid, although it is impossible to tell from the lid. Although Killen suggested a tapered central aperture, it was not a requirement, and the lid embossed “CHICAGO” lacked the taper. The

most dramatic difference between the two patents was the shape of the rubber seal for the central hole.

Although Bernas (2011:68) suggested that Killen “saw a potential problem with Reinbold’s rubber sealing cap” due to his involvement with the company, we suggest that the problem was not “potential.” Reinbold’s patent had been used by the Rappel brothers for several months prior to Killen’s application. It is thus likely that there were problems with either the creation of the vacuum with the pump or with the sealing of the rubber disk.

Although Killen never specifically mentioned problems with an earlier lid, he specifically noted the shape of the “cylindrical aperture (8) concentric with the recess (5), the outer margin (9) of which is preferably comparatively sharp. The sharpness of this outer margin may be made more pronounced by tapering the aperture outwardly of the cover as shown at (9) in Fig. 2.” This can be seen in the patent drawing (see Figure 8).

As Bernas (2014:68) discussed at length, Killen’s cupped or concave rubber disk was also designed to seal better than one with a flat undersurface. Bernas also noted the unusual wording “Patent Rights Reserved” on the lid. The Reinbold patent would have already been issued by this time (March 1927), so the date would probably have accompanied it – if that patent had been used.

Vacuum Tite Co., Omaha, Nebraska (1934-1940)

The *Beatrice Daily Sun* announced on April 8, 1934, that the Vacuum Tite company was newly registered as a Nebraska corporation with a capital of \$25,000. D.J. Killen, B.R. Kinter, and Edward Skalenicka were the incorporators. Kinter, a Rapid City, South Dakota resident, was the president, with H.B. George as secretary, Dr. Andrew Karsten as one of the directors, and Killen as manager. By 1937, Killen had assumed the presidential position (Bernas 2014:64).

The firm announced the opening of a Pittsburgh office on June 4, 1934, as a distribution center for the eastern segment of the U.S. However, it is probable that the office did not open until sometime near May 1935. The branch may have been short lived, although the firm created a tinned iron lid with gold lacquer that was labeled “VACUUM TITE CO.,

PITTSBURGH, PENNA. (arch) / PATENTED AUGUST 19, 1930 (inverted arch)” (see Figure 4). A similar branch at Fayetteville, Arkansas, in 1934 – to serve the southern part of the country – also seems to have been ill fated (Bernas 2014:65-66).

A final branch is only represented by a surviving glass lid embossed “VACUUM TITE CO. / RAPID CITY, N.D. (both arched) / PATENTED AUGUST 19-1930 (inverted arch)” (see Figure 4). Although we have discovered no historical references for the office, it is likely that a branch was at least planned at Rapid City for the western distribution. At some point during 1940, the firm underwent a reorganization (Bernas 2014:66). This lid is unique in the series; it *has* the tapered aperture in the center recommended by the Killen 1930 patent. All of the metal lids were too thin for the taper, and the hole was merely punched straight through. These last two marked lids – with the August 30, 1930 patent date – were obviously made to Killen’s 1930 patent.

Vacuum Process Co., Omaha, Nebraska (1940-1944)

Although we have found little evidence for the firm, the Vacuum Tite Co. apparently reorganized as the Vacuum Process Co. at some point during 1940 (Bernas 2014:66). The firm continued to advertise until August 1944, but it probably closed due to restrictions imposed during World War II by the War Production Board. Use of glass and especially iron or steel was greatly reduced during the latter war years. This firm almost certainly used generic lids.

Table 1 – Firms, Locations and Lids Associated with Dan Killen

| Dates | Firm | Location | Lid |
|------------|---------------------|----------------|---------------|
| 1926-1927 | M&M Rappel Mfg. Co. | Manitowac, WI | generic metal |
| 1927 | Vacu-Tite Co. | Manitowac, WI | generic metal |
| 1927-1928+ | Vacu-Tite Co. | Chicago, IL | Chicago |
| 1934-1940 | Vacuum Tite Co. | Omaha, NE | generic |
| 1935-1936? | Vacuum Tite Co. | Pittsburgh, PA | Pittsburgh |
| ca. 1935 | Vacuum Tite Co. | Rapid City, ND | Rapid City |
| 1940-1944 | Vacuum Process Co. | Omaha, NE | generic metal |

The Capstan Glass Vacuum Tite Jar (1934-1940)

Although the Rappel brothers and subsequent vacuum cover firms advertised the lids as fitting all types of jars, the Capstan Glass Co. made a type of jar specifically for the caps. These jars were cylindrical with distinct shoulders flaring to a lip or rim almost as wide as the jar's body (Figure 12; also see Figure 6). The base was embossed "VACUUM TITE JAR (arch) / {one- or two-digit mold code} / {capstan logo} / P-901 (all horizontal)" (see Figure 7). P-901 was Capstan's model number for the jar; the "P" may have indicated that the jar was proprietary.

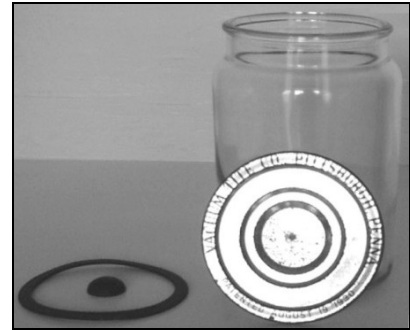


Figure 12 – Vacuum Tite Jar and lid
(Bernas 2011:6)

The jars used the "Pittsburgh" lid, made of tinned-iron and printed "VACUUM TITE CO. PITTSBURGH, PENNA (arch) / PATENTED AUGUST 19, 1930 (inverted arch)." Although Bernas (2011:8) suggested the Vacuum Process Co., Omaha, as the distributor, we feel that the presence of the lid from the Vacuum Tite Co. also makes that firm a likely candidate. Bernas (2011:18) also cited a box end from the Vacuum Process Co. that identified the P-901 jar – along with patent No. 2,131,809, the number for Killen's 1938 patent. The patent number combined with the latter firm name, clearly dates the lids to the 1940-1944 era, suggesting a total date range of 1934-1944 – the time period for both firms.

Bernas (2014:62) also discussed boxes of lids for the P-901 jars. These were unlettered metal caps, demonstrating that the generic lids were also used during the 1934-1944 period. He also found a second set of lids – also packaged in a box of P-109 lids for the Vacuum Tite Jar – that were actually "*Kerr Wide Mouth* lettered metal lids with a hole drilled through the center of each one" (*italics in original*). This package may reflect the period during World War II, when metal for the lids was scarce.

Design Patents from Capstan Glass

Bernas (2007:32-36) presented a total of 17 design patents from Theodore J. Piazzoli or Capstan Glass Co. Although three of these were for tumblers, eleven were for jars, with three

for bottles. Each of these designs was unique, and the illustrations in the article, along with the patent dates, could provide initial dates for any of these containers found on an archaeological site. Of course, these could have been made by Anchor-Hocking after 1938.

Discussion and Conclusions

Because of the relatively short span of the Capstan Glass Co., it only used a single logo for the entire duration of the company. Liquor bottle bases, however, also contained the company number, the number for the distiller, rectifier, or importer, and a date code.

The Vacuum Tite Jar was produced by the Capstan Glass Co. between ca. 1934 and 1940, possibly into the early 1940s. These jars and their lids provide an interesting story, although future research will hopefully fill in some areas of ambiguity. The Capstan jar appears to be the only container specifically made for the vacuum lids.

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