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E. SCOFIELD

1,882,996

FRICION CLOSURE CAP

Filed Oct. 10, 1928

Fig. 1.

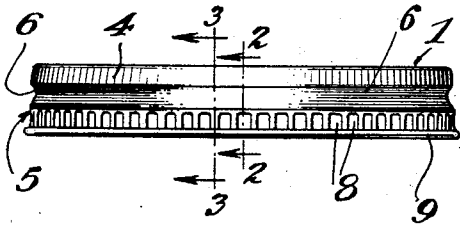


Fig. 4.

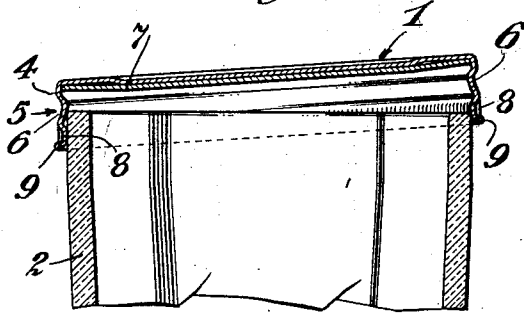


Fig. 2.

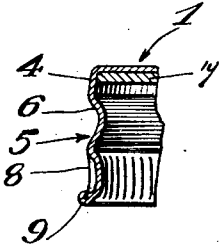


Fig. 5.

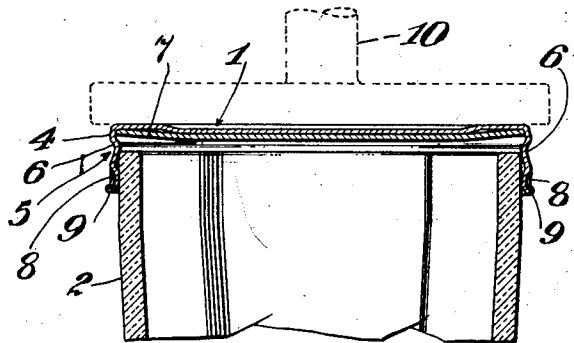


Fig. 3.

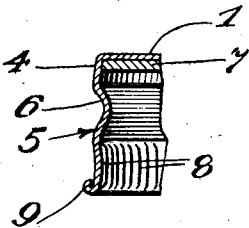
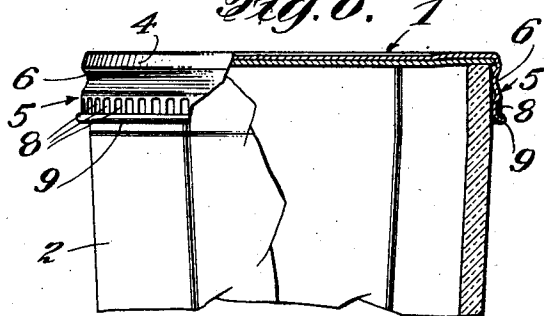


Fig. 6.



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UNITED STATES PATENT OFFICE

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FRICITION CLOSURE CAP

Application filed October 10, 1928. Serial No. 311,440.

The present invention relates to closure caps and more particularly to friction closure caps adapted to be held in position by a metal-to-glass grip.

5 In sealing jellies and the like, the sugar content is such that it is unnecessary to use a hermetic seal. Of course, a hermetic seal is better but a good dust proof seal will suffice. For these purposes, friction closure caps hav-
10 ing a metal-to-glass grip are used to a considerable extent. Usually a liner of cardboard or oiled paper is inserted in the top of the cap to form an edge seal. This seal is frequently defective due to the fact that
15 flaws are most likely to occur about the edge of glass containers.

The main difficulty with this type of cap is that glass containers vary in size and out-of-roundness by as much as thirty thousandths of an inch or roughly three-quarters
20 of a millimeter. This is a permissible variation and of course in some instances containers with greater variations pass inspection and hence reach the packer. Great
25 difficulty has been encountered in securing closures in which the contacting metal forms a tight grip capable of holding a cap on minimum size glass and at the same time fit upon the maximum size container.
30 Generally, there is a substantial percentage of caps which crush in going on the maximum size containers. The reason for this is that the metal of the cap is unable to stretch sufficiently to go over the glass. This is ac-
35 centuated by the fact that the caps do not sit straight on the container but are permitted to cant to one side when placed on the container for the sealing operation. The cap is accordingly subjected to excessive crushing
40 forces before it rights itself and frequently crushes. This not only means a loss of caps but in some instances, the loss of contents and the requirement for someone to watch the machinery.

15 The present invention eliminates these difficulties by providing a closure cap which will readily accommodate the entire permissible range in size of containers.

50 In addition, if necessary, it will also accommodate greater variations than those per-

mitted by the standardization rules. At the same time, it makes a very tight seal and forms both an edge seal and a metal-to-glass side seal both of which are effective in preventing access of deleterious matter and the
35 escape of liquids where the liquids are packed in the containers. The caps are adapted to right themselves on the containers upon application of a small force by the sealing mechanism thereby to facilitate the sealing
60 operation.

An object of the invention is to provide an inexpensive closure adapted to form an effective metal-to-glass grip on containers
65 varying in size and out-of-roundness within and beyond the permitted variations established by the trade.

Another object of the invention is to eliminate or minimize the crushing of friction closure caps when applied to maximum size
70 containers.

A further object of the invention is to provide an inexpensive closure cap having a plurality of gripping zones, the lower zone
75 having greater expansibility so that it will right itself on the container when the container passes through this zone, thereby facilitating the passage of the container through a second sealing zone and forming a very
80 tight grip.

Other and further objects of the invention will be obvious upon an understanding of the illustrated embodiment about to be described or will be indicated in the ap-
85 pended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

A preferred embodiment of the invention has been chosen for purposes of illustration
90 and description and is shown in the accompanying drawing, wherein

Fig. 1 is a side elevational view of the closure;

Fig. 2 is a fragmentary sectional view on
95 the line 2—2 of Fig. 1;

Fig. 3 is a fragmentary sectional view on
the line 3—3 of Fig. 1;

Fig. 4 is a fragmentary sectional view of
100 the closure cap on a container ready for the

sealing operation showing the closure in canted position;

Fig. 5 is a fragmentary sectional view of a cap and container showing the cap partially on the container; and

Fig. 6 shows the cap on the container.

Referring to the drawing, there is shown a closure cap 1 and a container 2. The closure cap comprises a cover portion 4 and a depending skirt 5 having an annular bead or groove 6 adjacent the upper part thereof. The size of this bead is such that it may be stretched over the side wall of the container to form a tight seal on containers of minimum size. Preferably, the bead is continuous so that a liquid tight seal is formed on the side wall of the container in addition to an edge seal formed by the liner 7 about the upper edge of the container.

A continuous bead in addition to forming a seal provides a very tight grip since it is necessary that metal therein be stretched for the cap to go on the container. This acts like an elastic band and provides a very effective grip and an effective metal-to-glass seal which will prevent dust and the like from contaminating the contents of the package irrespective of the use of a liner. Due to the fact that the bead is in the upper part of the skirt and therefore engages the container adjacent its upper edge, there is no material trapping of air therein.

A second gripping zone is formed at the lower part of the skirt by means of a series of indentations 8. While these indentations may vary in shape and size, they are shown herein forming a continuous band adjacent the lower edge of the skirt which preferably is turned upwardly into a wire edge 9 to conceal and protect the raw edge of the metal and to strengthen the lower edge of the cap. The indentations 8 are illustrated as short corrugations. Due to the smallness of these and due to their proximity to each other, this part of the cap may be expanded entirely by bending as distinguished from the stretching necessary to expand the upper bead. Since bending requires less force than stretching, the container will go through this zone more easily than through the upper zone. The lower zone serves to right the cap on the container so that the upper zone will readily telescope about the container without requiring excessive sealing pressures. In addition the lower zone forms a substantial gripping action which cooperates with the upper sealing zone to provide a firm grip on the container. The outward and upward pressure on the lower zone transmits an upward and inward pressure on the upper zone or bead which constricts it slightly giving a better grip. The coating zones form a tight grip even on containers with slight tapers. It will be clear from Figs. 4, 5, and 6, that closures which are canted to one side, will right them-

selves as the container passes through the lower gripping zone.

The container 2 preferably has at its upper end the usual jellyring or cylindrical wall for engagement with the sealing closure. Slight tapers will not affect materially the seal since the lower sealing zone is readily expansible and makes a grip a substantial distance below the upper edge of the receptacle. The two grips, one at the upper edge and the other below the upper edge, have a very effective holding power, and therefore minimize the tendency for the cap to pop off if the jelly ring has a slight taper.

In applying the closure to such a container, the caps are usually placed on the container by a boy or girl as the filled containers move along a conveyor. It is not possible for the operator to adjust each cap so that it sits properly upon the container and hence they are permitted to cant somewhat as shown in Fig. 4. As the line of containers pass the sealing station, a sealing head 10 presses downwardly upon the container, the effect first being to right the cap in position simultaneously with telescoping the lower sealing zone about the upper end of the container as shown in Fig. 5. With the closure in this position, a maximum stretching of the bead 6 may be effected without crushing the cap because it is accurately held in position by the lower sealing zone. Thereafter continued application of pressure causes the upper bead to slide over the mouth of the receptacle into its sealed position as shown in Fig. 6.

It will be seen that the present invention provides a closure cap which is inexpensive in construction and which is adapted to form a very effective seal on containers varying in size and having slight tapers at their upper ends. The lower sealing zone serves to correct the position of the cap so that the container may be telescoped through the upper sealing zone. The passage through the first sealing zone causing the second zone to decrease slightly in size which also increases the grip upon the container. Due to the cooperation between the two sealing zones and due to the position of the cap prior to the insertion of the vessel through the second sealing zone, a maximum range of variations in size may be accommodated. Further, the sealed package is fully capable of withstanding the rough usage in shipment and otherwise to which it may be subjected without impairing the seal and without accidental removal of the cap. The cap may be readily removed by tapping the side of the closure to peen the bead thereby to increase its size so that it can be manually removed and used repeatedly as a re-seal closure.

As various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and

scope of the invention and without sacrificing its advantages it is understood that all matter herein is to be interpreted as illustrative and not in a limiting sense.

5 Having thus described my invention I claim:

10 1. A friction closure cap comprising a cover portion, a depending skirt, a bead in the upper part of the skirt for forming a continuous sealing zone on the side wall of a container, and corrugations in the lower portion of the skirt adapted to engage the container and form a less tight and more expansive gripping zone.

15 2. A friction closure cap comprising a cover portion, a depending skirt, an inwardly extending annular bead in the upper part of the skirt for forming a relatively tight grip on a container, and a series of closely spaced indentations in the lower part of the skirt adapted to set the cap straight on the container to facilitate the sealing operation and to form an expansive gripping zone.

20 3. A friction closure cap comprising a cover portion, a depending skirt and a plurality of sealing zones in said skirt, one of said zones being formed by vertical corrugations and being substantially expandible and the other zone being adapted to exert a substantially greater grip on the container than the first zone.

25 4. A friction closure cap comprising a cover portion, a depending skirt, a pair of sealing zones in said skirt, the lower sealing zone being formed by vertical corrugations and more resilient than the upper zone.

30 5. A friction closure cap, comprising a cover portion, a depending skirt, continuous annular bead in the upper part of the skirt adapted to form a metal-to-glass seal with a container, and a corrugated zone in the lower part of the skirt adapted to engage the container and cooperate with the upper sealing zone to form a tight seal.

35 6. A friction closure comprising a cover part, a depending skirt, a rolled edge on the bottom of said skirt, an annular bead in the upper part of the skirt for forming a relatively tight grip on a container, and a series of instruck corrugations in the lower part of the skirt adjacent to said rolled edge adapted to form a more expansive gripping zone.

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