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SPOUTED CAP AND CLOSURE THEREFOR

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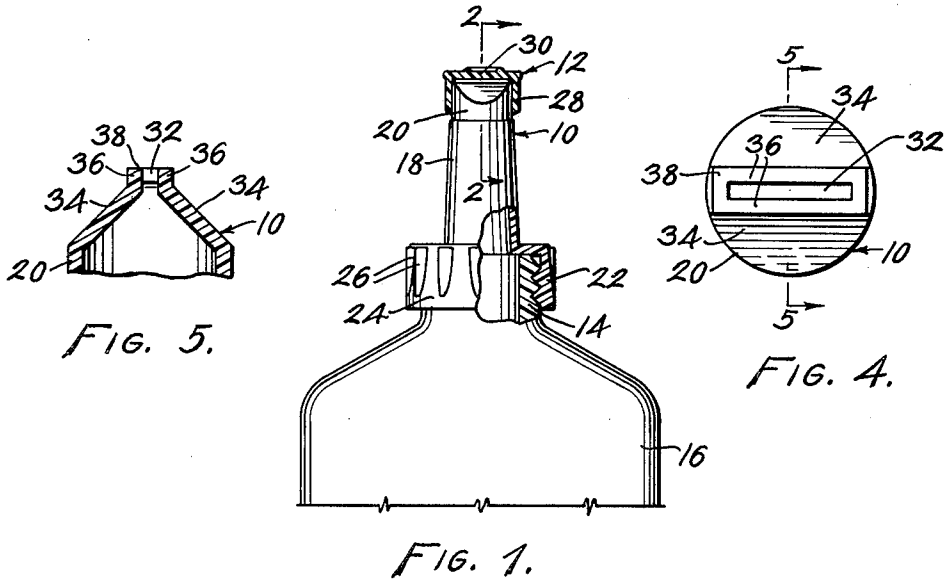


FIG. 5.

FIG. 4.

FIG. 1.

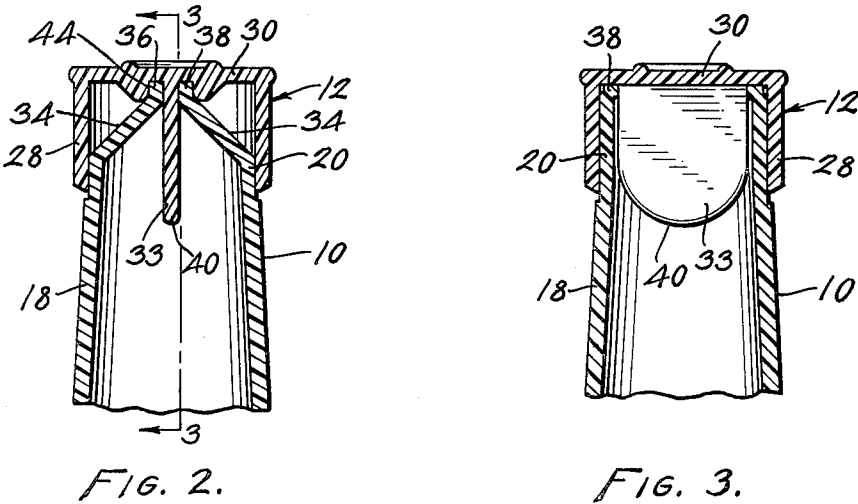


FIG. 2.

FIG. 3.

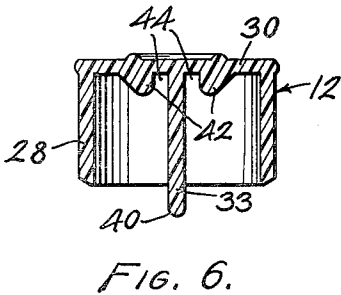


FIG. 6.

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**SPOUTED CAP AND CLOSURE THEREFOR**

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9 Claims. (Cl. 15—592)

This invention relates to spouted caps along with the closures therefor and, more specifically, to devices of this type which are particularly adapted for use on containers filled with liquid adhesives and foodstuffs.

Most of the commonly used adhesives together with a number of other liquid or paste-type products that harden or spoil upon contact with the air are presently packaged in dispensing containers of either the collapsible-tube or squeeze-bottle type. Both of the latter types of dispensing containers are customarily provided with a tapered pouring-spout having an orifice therein and a closure which is usually either threadedly or frictionally held on the spout. Unfortunately, these conventional pouring devices are most unsatisfactory for use on containers filled with air-setting or spoilable liquids and pastes.

The four most significant disadvantages of the prior art pouring spouts and closures insofar as liquid adhesives and foodstuffs are concerned are that they open and spill during shipment, they fail to provide an air-tight seal for the container, the closure oftentimes becomes glued to the spout to the extent that it is difficult, if not impossible, to remove without damaging same, and no provision is made for keeping the discharge orifice open and ready for immediate use. Spouted caps and closures having a threaded connection therebetween are substantially air-tight; however, the threads usually become filled with the adhesive or other air-setting material making it virtually impossible to separate the elements one from the other. Friction-type closures for use on smooth tapered spouts overcome the aforementioned difficulty to some extent, but instead, are seldom sufficiently air-tight. Few, if any, of the closures of this type include means for keeping the discharge orifice clear of the material packaged in the container.

It is, therefore, one of the principal objects of the present invention to provide a novel and improved spouted cap and closure therefor of a type especially suited for use on dispensing containers filled with liquid adhesives, air-setting liquid materials and foodstuffs.

A second object of the invention of the class described is the provision of a tapered spout having opposed bias-cut surfaces bordering on elongate discharge orifice that constitute means for spreading and leveling the dispensed material into a layer of uniform thickness.

Another objective is the provision of spouted cap and closure that when connected cooperate to produce a substantially air-tight seal over and around the discharge orifice.

Still another object of the instant invention is to provide a closure for spouted caps that includes a centrally-located web-like projection adapted to enter the elongate discharge orifice and maintain the latter open and free for immediate use.

An additional objective of the invention as claimed is the provision of a spouted cap and closure frictionally held thereon that can be easily detached even though some of the contents have become lodged between mating surfaces thereof.

Additional objects are to provide a spout cap and closure of the type aforementioned that are inexpensive, easy to use, versatile, rugged, decorative in appearance, and adaptable for use with a number of different types of dispensing containers.

Other objects will be in part apparent and in part

pointed out specifically hereinafter in connection with the description of the drawings that follow, and in which:

FIGURE 1 is side elevation, portions of which have been broken away and shown in section, illustrating the spouted cap and closure therefor of the present invention attached in place upon the threaded neck of a squeeze-bottle-type dispensing container;

FIGURE 2 is an enlarged fragmentary section taken along line 2—2 of FIGURE 1 showing the closure in sealed position on the tip of the spout;

FIGURE 3 is an enlarged fragmentary section similar to FIGURE 2 except that it is taken along line 3—3 thereof;

FIGURE 4 is a top plan view to an enlarged scale showing the tip of the spout with its elongate discharge orifice and bias-cut surfaces bordering same, the closure having been removed;

FIGURE 5 is a fragmentary section to a larger scale than FIGURE 1 taken along line 5—5 of FIGURE 4; and,

FIGURE 6 is an enlarged diametrical section similar to FIGURE 2 but showing the closure by itself.

Referring now to the drawings, and in particular to FIGURE 1 thereof, the improved spouted cap and closure therefor that comprise the subject matter of the present invention, and which have been identified in a general way by numerals 10 and 12 respectively, have been shown attached in place on the externally-threaded neck 14 of a squeeze-bottle type dispensing container 16 of the style used for packaging liquid products including adhesives and other air-setting materials. Cap 10 includes a hollow tapered spout 18 terminating at the upper end thereof in a generally-cylindrical section 20 which may have a slight taper, and at the lower end in an integrally-formed connecting portion 22 adapted for attachment to the dispensing container 16. In the specific embodiment illustrated herein, the connecting portion 22 has an inverted cup-shaped configuration with the skirt 24 thereof internally threaded to receive the threaded neck 14 of the container 16 and provided with fingerholds 26 on the external surface thereof. Obviously, connecting portion 22 can be modified and adapted as necessary for attachment to various types of dispensing containers including collapsible tubes, etc.

The closure 12 for the spouted cap is of the friction-type and includes a tubular wall portion or skirt 28 adapted to receive the generally cylindrical section 20 at the upper end of the tapered spout and an integrally-formed disk-like portion 30 covering the upper open end of the tubular wall portion and forming a liquid-tight cover therefor. Integrally-formed web 33 depends from the underside of the disk-like portion of the closure and is positioned to enter the elongate discharge orifice 32 (FIGURES 4 and 5) in the tapered spout in a manner and for a purpose that will be set forth in greater detail in connection with the description of FIGURES 2 and 3 that will be given presently.

In the preferred embodiment of the present invention illustrated herein, both the spouted cap 10 and closure 12 therefor are fabricated from a deformable material such as the high molecular weight polymerized ethylene polymers commonly identified by the term "polyethylene" or "linear polyethylene" alone. The latter material along with many others are impervious to most liquids and possess the deformability desired for the instant invention, and yet, are sufficiently firm to maintain their shape unless forcibly mis-shaped. While the present cap and closure can be fabricated from rigid materials such as hard rubber and the like, somewhat more exact tolerances should be maintained in manufacture to insure an adequate liquid-tight seal between the mating surfaces; therefore, even a slightly elastic substance can be used.

Now, with reference to FIGURES 4 and 5, it will be seen that the generally-cylindrical upper portion 20 of the tapered spout 18 is provided with a pair of upwardly-inclined bias-cut planar surfaces 34 bordering the elongate discharge orifice 32 in the upper extremity of the tapered spout. The last mentioned bias-cut surfaces are angularly disposed relative to one another intersecting along the discharge orifice and, in a sense, can be considered as truncating the generally-cylindrical upper portion of the spout. These two planar surfaces terminate along the upper edge thereof in upturned flange-portions 36 arranged in spaced substantially parallel relation to one another and interconnected at the ends to define a box-like projection 38 surrounding the discharge orifice 32. Surfaces 34 and flanges 36 cooperate with one another to define means adapted for use in spreading the contents of the container 16 into a ribbon or layer of substantially uniform thickness should such be needed. Also, the elongated narrow discharge orifice 32 performs somewhat the same function when viscous liquids such as adhesives are dispensed therethrough.

While portion 20 of the tapered spout has been referred to herein as being "generally-cylindrical," this term is intended to include a slightly upwardly tapered or frusto-conical surface which is its preferred shape although a genuinely cylindrical form is quite acceptable and operative for the purpose intended. If, however, the slightly tapered configuration for section 20 is used and the closure 12 is fabricated from an elastic material, the skirt or tubular wall portion 28 of the latter can be cylindrical and sized to spread somewhat as it is forced down over the tip of the spout thus insuring the formation of an air and liquid-tight seal.

In this same general connection, spout 18 has been illustrated and referred to herein as being "tapered"; however, this is of little or no significance to the present invention and has been so described because plastic molding techniques and equipment have proven it to be one of the most practical shapes to make from the standpoints of cost and structural strength. On the other hand, it should be obvious that the other surface shapes and cross-sections are also quite suitable for this purpose without having any functional effect whatsoever on the device.

With particular reference now to FIGURE 6 wherein the closure 12 is shown in diametrical section, it can be seen that the tubular wall-portion or skirt 28 is, in fact, substantially cylindrical at least insofar as the interior surface thereof is concerned. When the closure 12 is fabricated from an elastic material and the upper section 20 of the spout 18 is shaped to provide a slightly upward taper of frusto-conical surface, then the internal diameter of the skirt, assuming a substantially cylindrical inner surface therefor, should be slightly less than the outside diameter of spout at the base of generally cylindrical section 20. Insofar as the diameter of the inside surface of the closure skirt in relation to the maximum transverse dimension of the spout at the upper end thereof is concerned, the closure is preferably slightly larger but can, in fact, even be smaller because it can be deformed into an oval or elliptically-shaped cross section to pass the box-like projection 38 surrounding the discharge orifice; whereupon, the bias-cut surfaces 34 will act as cams to spread the skirt as it is forced downwardly thereon until it is shaped to pass over the base of section 20.

The integrally-formed web-like projection 33 that depends from the underside of the cover 30 of the closure is of a width and thickness to enter the discharge orifice 32 in the spout and form both a substantially liquid-tight and air-tight seal with the box-like projection surrounding said orifice. Also, the lower edge 40 of web-like projection 33 is preferably rounded both transversely and longitudinally to assist in centering same within the orifice as it enters therein.

FIGURE 6 also shows that the underside of the closure over 30 includes a pair of integrally-formed rib-like

projections 42 arranged in spaced substantially parallel relation to the web 33 and on opposite sides thereof to define therewith a pair of elongated pockets 44 sized and adapted to receive the upturned flanges 34 bordering the discharge orifice in the upper extremity of the spout. These rib-like projections preferably extend the full width of the closure terminating in the skirt portion 28 as an integral part thereof.

Finally, with reference to FIGURES 2 and 3 of the drawings, it will be noted that a continuous annular seal which is substantially air and liquid-tight is formed between the mating opposed surfaces of the closure skirt 28 and the base of section 20 on the tip of the spout. A second seal is formed when the web-like portion 33 depending from the inside of the closure is passed into the discharge orifice 32 forming a plug preventing the escape of the liquid therethrough and, incidentally, keeping the orifice open and free of the contents for immediate use, the latter being of utmost importance in the dispensing of air-setting liquid adhesives and the like. Still another seal is formed when the upturned flange portions 36 along the side edges of the discharge orifice enter the pockets 44 (FIGURE 6) formed by the web-portion 33, rib-like projections 42 and the inside surface of closure cover 30 which rests against the top of box-like projection 38 around the discharge orifice when the closure is fully seated on the tip of the spout. Thus, the contents of the container are most effectively sealed within the container against both leakage and contact with the air whenever the closure is attached to the spouted cap.

Having thus described the several useful and novel features of the spouted cap and closure therefor of the present invention, it will be apparent that the many worthwhile objectives for which it was designed have been achieved. Although but a single specific embodiment of the invention has been illustrated in the accompanying drawings and described in connection therewith, we realize that certain changes and modifications therein may well occur to those skilled in the art with the broad teaching hereof; hence, it is our intention that the scope of protection afforded hereby shall be limited only insofar as said limitations are expressly set forth in the appended claims.

What is claimed is:

1. In combination in a device for dispensing liquids from containers therefor, a resilient hollow spout terminating at its upper extremity in inwardly sloping side walls to form an elongate narrow discharge orifice of a length many times greater than its width bordered on at least the side margins thereof by upturned flange-like portions forming a spreader tip adapted for use in smoothing the dispensed liquid into a coating of uniform thickness, a closure for the spout including a cover portion having plug-forming means and a pair of spaced elongate ribs depending from the underside thereof adapted to cooperate with one another and with the discharge orifice to overlap the upturned flange-like portions of the spout to provide a substantially liquid-tight seal therefor, said plug-forming means comprising a downwardly projecting integral web shaped and sized to enter the discharge orifice in continuous contact with the edges thereof, said ribs extending along opposite sides of the web in spaced relation thereto and in position to engage the outside of the upturned flange-like portions of the spout holding them in against the web thus preventing deforming forces acting at the ends of the discharge orifice tending to widen the mid-portion thereof from destroying the liquid-tight seal.

2. The combination as set forth in claim 1 in which the upturned flange-like portions bordering the side margins of the discharge orifice lie in spaced parallel relation to one another.

3. The combination as set forth in claim 1 in which a second pair of upturned flange-like portions are provided on the upper extremity of the spout at the ends of the dis-

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charge orifice, said second pair of flange-like portions cooperating with the first pair thereof to define an uninterrupted rim bordering the discharge orifice.

4. The combination as set forth in claim 1 in which the lower margin of the plug-forming web of the closure is rounded at the corners to guide same into a centrally-sealed position within the discharge orifice of the spout.

5. The combination as set forth in claim 1 in which the spout is tubular and the closure includes a continuous annular skirt extending downwardly from the cover portion of the closure, said skirt being sized and adapted to encircle the tubular spout forming an annular substantially liquid-tight seal therewith when the web is seated within the discharge orifice.

6. The closure for liquid dispensing containers of the type having a resilient hollow pour spout terminating at its upper extremity in inwardly sloping side walls to form an elongate narrow discharge orifice of a length many times greater than its width bordered by upstanding flanges at the sides thereof which comprises, a cover having a web depending from the underside thereof sized and shaped to enter such an elongate narrow discharge orifice and form a substantially liquid-tight plug therefor, and a pair of spaced elongate ribs projecting downwardly from the cover in spaced relation on opposite sides of the web

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cooperating therewith to definite elongate grooves therebetween adapted to receive and overlap the upstanding flanges bordering the discharge orifice in the spout and hold same against the web.

7. The closure as set forth in claim 6 in which the lower margin of the plug-forming web of the closure is rounded at the corners to guide same into a centrally-sealed position within the discharge orifice of the spout.

8. The closure as set forth in claim 6 in which a skirt depends from the underside of the cover enclosing the web and ribs, said skirt being shaped and adapted to engage the spout underneath the discharge orifice and upstanding flanges in a manner to form a continuous liquid-tight seal therewith when the web is in seated position.

9. The closure as set forth in claim 8 in which the skirt is tubular and adapted to form a continuous annular liquid-tight seal with a tubular spout.

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