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3,149,763

CONTAINER CLOSURE MEMBER HAVING A LINER AND POURER

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Fig. 1.

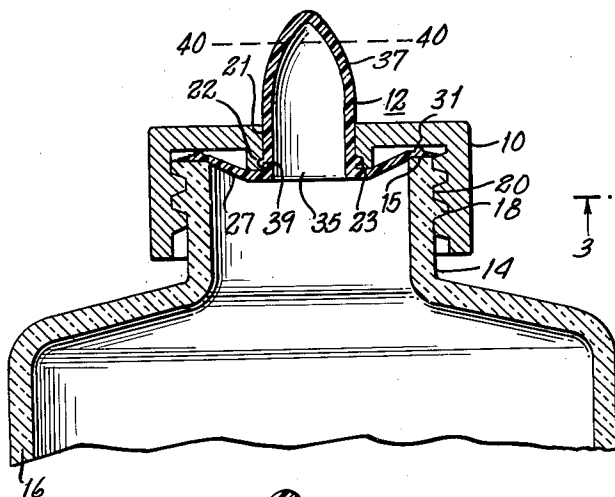


Fig. 2.

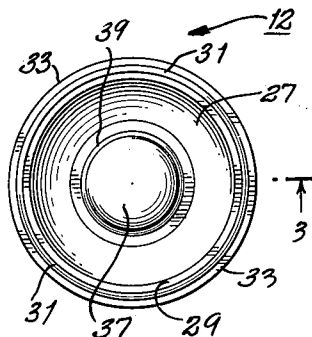


Fig. 3.

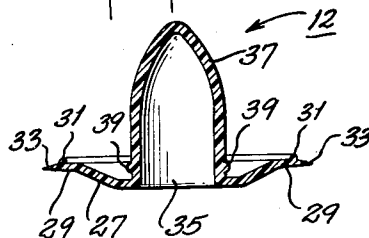


Fig. 4.

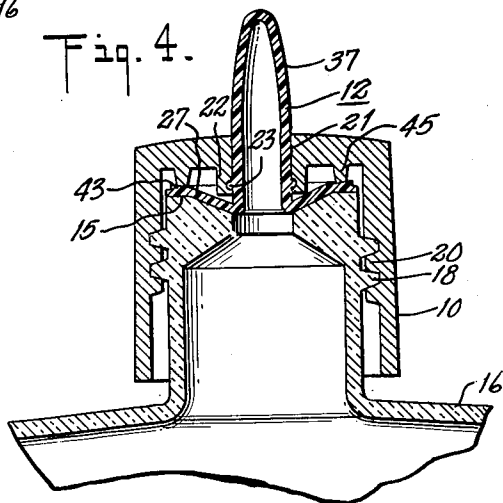
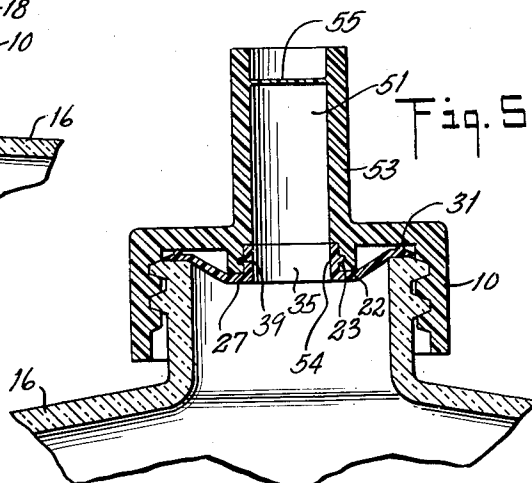


Fig. 5.



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CONTAINER CLOSURE MEMBER HAVING A LINER AND POURER

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3 Claims. (Cl. 222-541)

This invention relates to closures for containers and more particularly to a cap and liner arrangement for sealing the opening of a container and also providing a spout through which the contents of the container may be poured.

As is well known, all containers such as glass or metal bottles, jars, flexible plastic squeeze bottles, etc., are provided with a suitable closure member for sealing the container opening. This closure member is preferably of the self-sealing type which prevents the contents of the container from leaking out under normal storage conditions or when the container is tipped or turned upside down. The seal for the opening should also be of a type which is permanently fixed to the closure member and made of a material which will not deteriorate and fall into the container thereby contaminating the contents. In certain types of containers, for example plastic squeeze bottles containing liquid detergents, it is also desired to provide a pourer through which the container contents may be readily emptied.

The present invention is directed to a closure member in the form of a cap which also has a sealing liner and a pourer. The liner is made of an elastically deformable material which is substantially convex in shape. The liner is fixedly fastened to the cap and fits into the container opening to form a good seal around the lip and edge of the opening when the cap is fastened down. The liner also has an opening in its central portion through which the contents of the container are emptied. In one embodiment of the invention a pourer is integrally formed with the liner as an upwardly extending spout around the opening in the central portion of the liner. The spout protrudes through a hole in the cap and the container contents are poured therethrough. In another embodiment of the invention, the pourer is a spout which is formed on the cap and extends upwardly around a hole in the cap which is coaxial with the hole in the liner. The containers are shipped with the spouts of the closure members in closed condition and the consumer merely opens the spouts, in both embodiments of the invention, in order to pour out the contents of the container.

The liner used with the present invention is made of an elastically deformable plastic material. The material used not only provides a good seal but is also selected to be impervious to and non-reactive with the contents of the container so that the seal may be maintained and the contents prevented from being contaminated. Since the closure members are also provided with a spout through which the contents are poured, there is no need to remove the cap and break the seal at any time. This means that the user of the container may empty its contents without bothering to take-off and put the cap back on every time.

It is therefore an object of this invention to provide a closure member having a self-sealing liner and a pourer.

Another object of this invention is to provide a container cap with a liner of an elastically deformable material having a central opening therein through which the contents of the container may be emptied.

A further object of this invention is to provide a container closure member with a liner made of an elastically deformable material the liner being formed with an integral pourer which extends through an opening in the cap.

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Still a further object of this invention is to provide a container closure member in which a cap is formed with a spout and a liner having a central opening which co-operates with the spout is placed on the inside of the cap.

Other objects and advantages of the present invention will become more apparent upon reference to the following specification and annexed drawings in which

FIGURE 1 is an elevational view taken in section showing a closure member having a liner formed with a pourer spout;

FIGURE 2 is a top view of the liner-pourer of FIGURE 1;

FIGURE 3 is a side elevational view taken in section along lines 3-3 of the liner-pourer of FIGURE 2;

FIGURE 4 is an elevational view taken in section of another embodiment of closure; and

FIGURE 5 is an elevational view taken in section of a closure member with a spout formed as a part of the cap.

Referring to FIGURE 1, the closure member, which is formed by a cap 10 and a liner-pourer 12, is shown fastened down on the narrowed down neck portion 14 of a container 16. The container 16 may be any suitable vessel for holding liquid or solid contents, for example, a bottle, jar, jug, plastic squeeze bottle etc., which may be made of any suitable material such as glass, other vitreous material, plastic, metal etc. The cap 10 may be made of rubber, plastic, Bakelite, metal or any other suitable material which is well known in the manufacture of such articles. The top of the neck has a lip 15 and the outer surface of the neck is formed with a plurality of screw threads 18. A plurality of screw threads 20 are also formed on the inner wall of cap 10 and these threads are tightened down on the screw threads 18 to fasten the cap to the neck of the container.

The cap 10 is formed with an aperture 21 in approximately the central portion of its top. A wall 22 extends downwardly from the inner top surface of the cap and surrounds the aperture 21. Wall 22 is formed with a groove 23 around the inner edge thereof. The cap 10 may be cast or molded in one operation to have the screw threads 20, aperture 21, wall 22 and groove 23.

The bottom portion of the liner-pourer 12 is formed with a flared skirt wall 27 which is substantially convex or dish-shaped (see FIGURES 1 and 3). The liner-pourer 12 is made of any suitable resilient and elastically deformable material which will not react unfavorably with the contents of the container. Examples of materials which can be used for the liner-pourer are plastics such as polyethylene, polypropylene, vinyl-chloride and copolymers thereof, any elastomer, etc., and other flexible materials such as rubber, nylon, etc. The liner-pourer 12 may be formed by any suitable process such as molding, etc., and the bottom skirt wall 27 may be of any size suitable to conform to and seal the opening of any size container.

The liner-pourer 12 is formed to have in a condition of non-compression a flattened out portion 29 around the outer edge thereof. A bead 31, which extends around the entire skirt wall, is formed on the upper surface of the flat portion 29 near the edge of the skirt wall. The size of the liner is such so that the bead 31 formed on the skirt wall 27 always rests on the lip of the neck, no matter what the size of the container opening. The outer edge of the flat portion 29 is thinned down around the periphery of the skirt wall 27 between the bead 31 and the edge of the skirt wall.

The central portion of the bottom skirt wall 27 is formed with an aperture or bore 35 which communicates with the interior of the container 16. The skirt wall 27 is bent over to form a continuous corner surrounding the aperture 35 and the liner-pourer is continuous formed

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with an upwardly projecting spout 37 which encloses the aperture 35.

The spout 37 has a protruding rim 39 formed around the outside at the bottom near the skirt wall 27. The protruding rim 39 mates with the groove 22 in the inner wall 23 of the cap to hold the liner-pourer 12 in the cap. The spout 37 is preferably made of the same material as the skirt wall 27 and in the same molding operation. Therefore, the liner-spout 12 may be economically produced.

In assembling the liner-pourer 12 and the cap 10, the spout 37 is pushed through the hole 21 in the cap so that the rim 39 mates with the groove 23 on the inside of the wall 22. In this manner, the liner-pourer 12 is securely fastened to the cap 10 so that it cannot become disengaged therefrom even when the cap is removed from the bottle.

When the cap is off the neck of the container, the skirt wall 27 tends to drop down slightly so that the bead 31 does not touch the inside of the top of the cap. When the cap 10 is screwed onto the neck of the bottle, the liner skirt wall 27, due to its elastic properties, is pressed down against the lip by the top of the cap and deforms so that the portion of the liner on the lip 15 of the neck 14 takes on substantially the same shape as the lip. The inside of the top of the cap presses down on the circular bead 31 so that a seal is formed between the portion of the skirt wall 27 lying on the lip 15 of the neck opening by the pressure exerted on bead 31 by the cap 10. Also, due to substantially convex shape of the skirt wall 27, a seal is formed around the inner edge of the lip by the liner pressing against it. In this manner, a tight seal is formed around the neck of the container so that none of the container contents can leak out around the edges of the lip 15. It should also be noted that due to the seal formed, none of the contents can get into the space between the liner wall 27 and the inside of the top of the cap.

When the consumer receives the container having the liner-pourer shown in FIGURE 1, in order to pour the contents from the container it is only necessary to puncture the spout 37 with a pin or other sharp instrument or snip off its top along the line 40. The contents of the container are emptied through the hole in the spout by turning the container over. This arrangement is particularly useful with plastic squeeze bottles containing a liquid since the liquid may be squeezed out of the spout 37 without removing the cap 10 from the container.

FIGURE 4 shows another embodiment of the invention which has a different type liner-pourer. Those portions of the closure shown in FIGURE 4 which are the same as that shown in FIGURES 1-3 are designated by the same reference numerals. The neck of the container of FIGURE 4 is shown as being of generally frusto-conical shape, although this embodiment of the invention may also be used with any type of container opening. Instead of having the bead 31 around the outer edge thereof, the outer edge of the skirt wall 27 is formed with a thickened portion 43. The inside of the top of the cap 10 has a substantially circular wall 45 which is located so as to engage the thickened portion 43 of the liner when the cap 10 is screwed down onto the neck. When the cap is off the container, skirt wall 27 drops slightly away from the wall 45. When the cap 10 is screwed down on the neck, the wall 45 presses against the thickened part 43 of the skirt wall to form a seal against the lip 15. The skirt wall 27 also conforms to the solid flared portion of the neck above the opening of the container and a secondary seal is also formed.

The liner-pourer 12 of FIGURE 4 is also formed with the spout 37 which protrudes through a hole 21 in the top of the cap. The spout 37 is shown here to be slightly longer and narrower than the spout shown in FIGURE 1. It should be realized that any shape and length of spout may be utilized as desired. The liner-pourer 12 is fixedly held to the cap 10 by the groove and ridge arrangement

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22-23. Again, it is only necessary for the consumer to puncture a hole in the top of the spout 37 or to snip it off in order to empty the contents from the container.

FIGURE 5 shows another embodiment of the invention in which the spout is formed as a part of the cap. Here, the liner has the generally convex bottom skirt wall 27 with the aperture 35 which communicates with the interior of the container. A hollow tubular spout 53 having a bore 51 is also formed as a part of the cap 10. The liner is formed with the rim 39 around a wall 54 which surrounds the liner opening 35 and this rim mates with the groove 23 in the wall 22 on the underside of the cap surrounding the opening 51. It should be noted that the wall 54 of the liner extends only a short distance up into the bore 51. Located near the top of the spout 53 in the bore 51 is a thin wall 55 which is also formed as part of the cap 10. This thin wall 55 is sometimes referred to as a flashing and it is formed during the molding of the cap.

In assembling the closure of FIGURE 5 the liner is snapped into the cap so that the rim 23 mates with groove 22 as before. When the cap 10 is screwed down on the neck of the container the inner surface presses the bead 31 against the lip of the opening to form a seal therewith as in FIGURE 1. Also, a seal is formed around the inner edge of the lip by the deformation of the liner material. The thin wall 55 prevents the contents of the container from leaking out and when the consumer desires to open the container it is only necessary to puncture through the thin wall with a pin or matchstick or other suitable instrument.

Therefore it has been seen that a closure member has been provided which has all the desired attributes of a good seal for a container opening and additionally allows the contents to be poured from the container through a spout. It should also be realized that the liner which is utilized as the seal is very useful since a single liner may be used with a variety of types of bottles having slightly different size and shape openings. Of course, liners may be manufactured to accommodate any size opening. Also, the particular shape of the spout may be selected as desired. While only a rim and groove arrangement has been shown for holding the liner to the top of the cap it should be realized that other suitable arrangements may also be utilized. For example, both the liner and the inner wall 22 may be undercut in opposite directions so that a mating arrangement is formed thereby.

Although a particular structure has been described, it should be understood that the scope of the invention should not be considered to be limited by the particular embodiments of the invention shown by way of illustration, but rather by the appended claims.

What is claimed is:

1. A closure member adapted for sealing the opening of a container and for extracting the contents from said container comprising a cap which is adapted to be fastened to said container, said cap having an opening in the top thereof, an elastically deformable liner of generally convex shape having a spout formed thereon, said liner adapted to be placed in the opening of said container with the spout protruding through the opening in the cap, said liner also having an opening therein which is adapted to communicate with the interior of said container and the interior of said spout, a downward extension from the underside of said cap top adjacent the opening in said cap, a shoulder formed on the outside of the spout, said extension and said shoulder being formed to mate and to fixedly attach said liner to said cap so that the openings in said cap and said liner communicate with one another.

2. A closure member adapted for sealing the opening in the neck of a container and for pouring the contents from the container comprising a cap which is adapted to be fastened to said neck, said cap having an opening in the top thereof, said cap being integrally formed with a

hollow spout around said cap opening and extending from the top thereof, a breakable wall across the interior of said spout for sealing said spout, a liner having a generally convex skirt wall adapted to extend into the interior of said container, an opening in said skirt wall for communicating with the interior of said container, said skirt wall being formed with a flat portion around the outer edge thereof which is adapted to lie on the lip surrounding the neck of said container, said skirt wall being continuously formed with an upwardly extending wall which surrounds the opening in said liner and said cap being formed on the underside thereof with a mating wall for receiving said upwardly extending liner wall for attaching said liner to said cap.

3. A closure member as set forth in claim 1, wherein a raised bead is provided on the liner skirt wall on the side opposite the underside of the cap, said bead being engaged by said cap as the cap is fastened to the container.

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