

- [54] **CLOSURE WITH TEAR-OFF SKIRT**
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- [51] Int. Cl. **B65d 41/22**
- [58] Field of Search **215/41, 42, 46 A**

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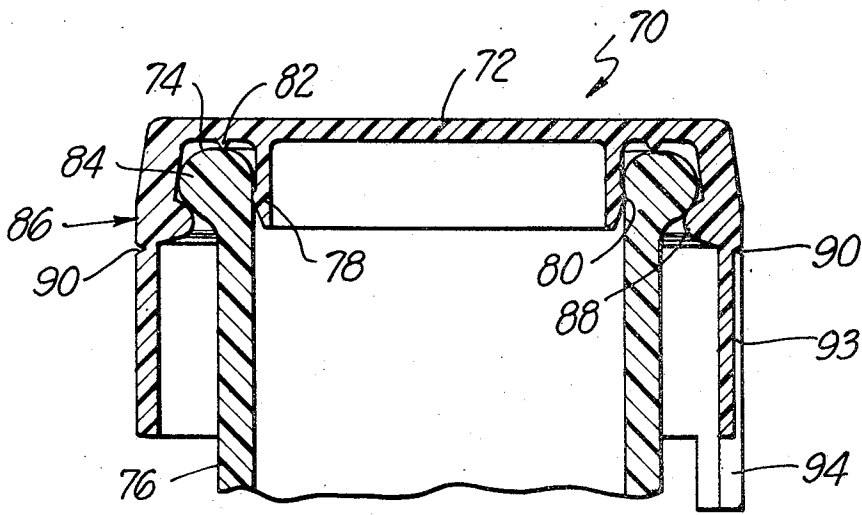
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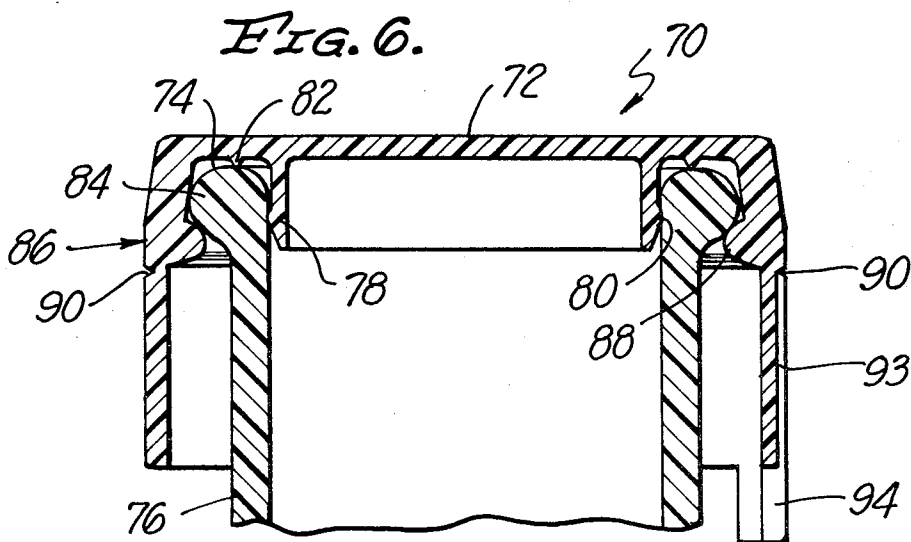
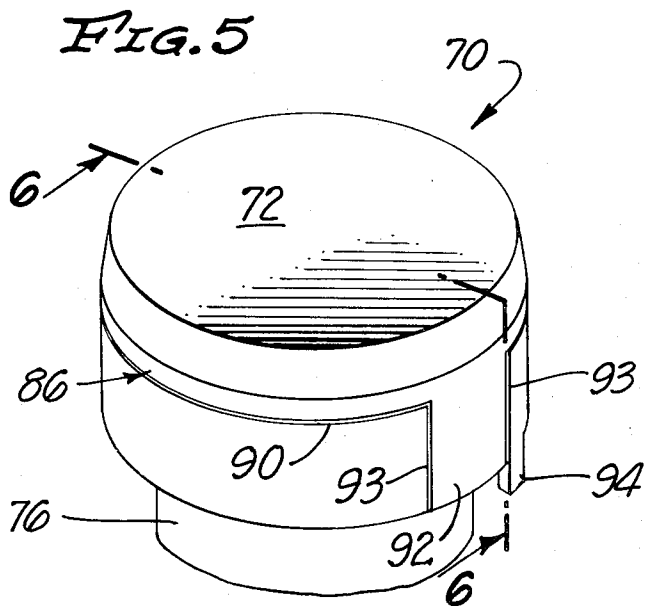
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[57] **ABSTRACT**

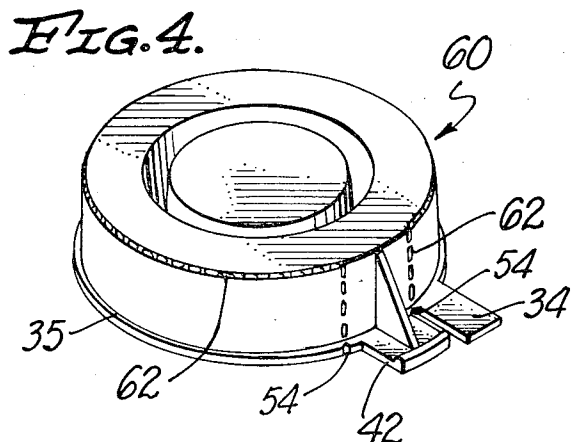
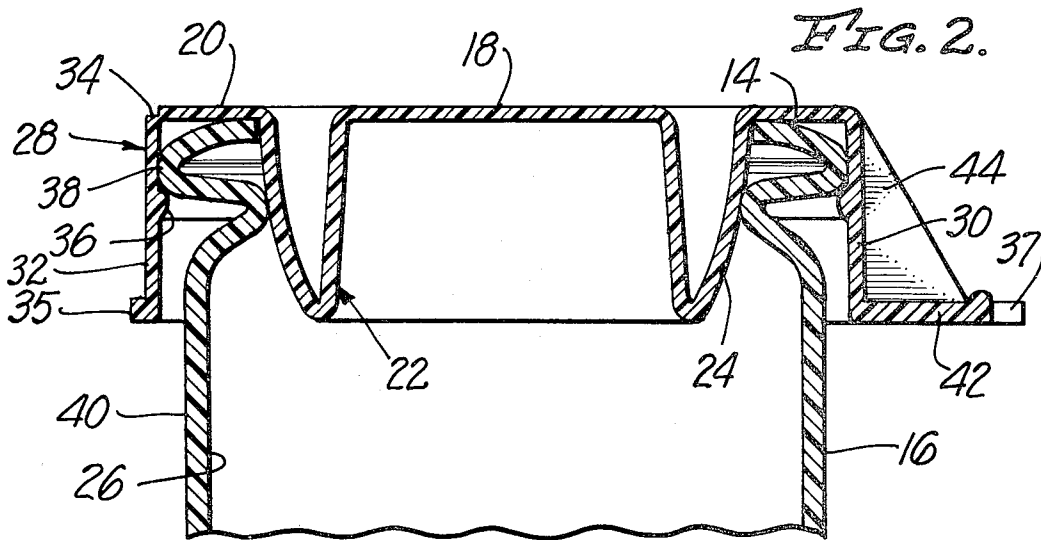
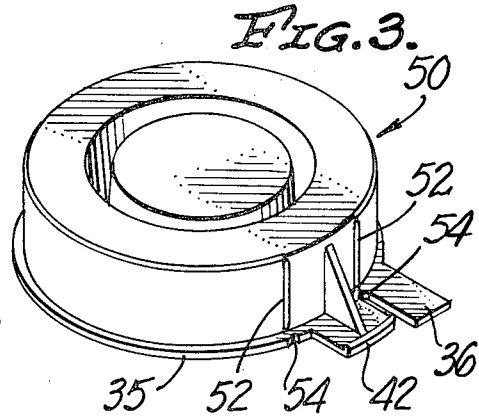
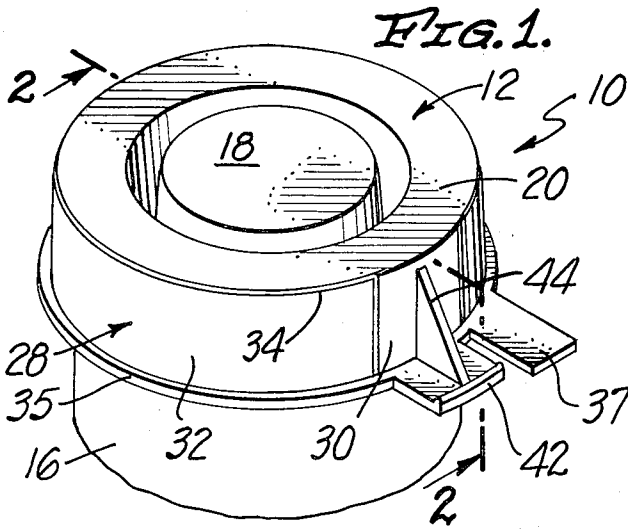
A closure for use on a container neck may be constructed including a top adapted to be located over the end of the neck, a sealing structure serving as a cork or stopper for engaging the interior of the neck located on the top so as to depend from it and a dependent skirt located at the periphery of the top so as to fit over and extend around the exterior of the neck. The skirt includes a fixed portion and a tear-off portion separated from the remainder of the closure by a severable means such as a line of reduced thickness, perforations or both. A tab is located on the fixed portion. With this structure the tear-off portion of the skirt may be removed from the closure so that the tab and fixed portion may thereafter be used as a handle in removing and replacing the closure upon a container neck.

1 Claim, 6 Drawing Figures





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CLOSURE WITH TEAR-OFF SKIRT**CROSS-REFERENCES TO RELATED APPLICATIONS**

Woodrow S. Wilson U.S. patent application entitled "Initially Sealed Closures with Sealing structures," Ser. No. 66,263, filed Aug. 24, 1970.

BACKGROUND OF THE INVENTION

Many different types of closures are intended to be used and then reused in sealing a container neck. Thus, for example, common corks or stoppers are frequently intended to be used in connection with a bottle neck under such circumstances that they will be periodically removed from and replaced within a bottle neck. Cost and other considerations have resulted in the abandonment of the use as corks or stoppers for many different container seal applications.

As a replacement for corks and stoppers in certain applications, closures have been developed which utilize a top, a sealing structure dependent from the top which is adapted to fit within a container neck and a dependent skirt extending from the periphery of the top so as to cover and enclose a portion of the exterior of a container neck. It is known to form such a skirt with an internal bead which will aid in engaging a corresponding seal on a container neck so as to firmly hold such a closure in position. It is also known to provide such a skirt with axially extending slots facilitating the skirt being broken so that the entire closure may be readily removed from the container.

Structures of this type are unquestionably utilitarian. However, it is considered that they are not as utilitarian as desired for commercial purposes. It is considered that many customers have difficulty in disrupting the skirt on such a closure at one more locations so that the closure may be readily removed from a container. It is also considered that a closure with such a ruptured skirt is comparatively difficult to remove from a container and to replace upon the container.

SUMMARY OF THE INVENTION

An objective of the present invention is to provide new and improved closures of the type described which are easier for a customer to use than closures such as are specifically indicated in the preceding. From this it will be apparent that an objective of the present invention is to provide closures in which the skirts may be more easily broken or disrupted than prior related closures. A further objective of the invention is to provide closures which are constructed so that they may be more easily removed and replaced upon a container neck than prior related structures.

In accordance with this invention, these objectives are achieved by providing a closure for use on a container neck, which closure has a top adapted to be located over the end of the neck, a sealing structure serving as a cork or stopper for engaging the interior of the neck located so as to depend from the top and a dependent skirt located at the periphery of the top so as to fit over and extend around the exterior of the neck in which the improvement comprises including on the skirt a fixed portion and a tear-off portion separated from the remainder of the closure by an easily severable structure or means and locating a tab upon the fixed portion of the skirt.

With this construction the severable means or structure separates the fixed portion of the skirt and the top so that the tear-off portion of the skirt can be easily removed from the remainder of the closure by a simple tearing operation. When this is done, the tab and fixed portion of the skirt are capable of being used as a handle during removing and replacing the closure on the container neck. A second tab may be located on the tear-off portion of the skirt so as to facilitate a force being applied to it so as to remove it from the remainder of the closure.

BRIEF DESCRIPTION OF THE DRAWING

The manner in which the various objectives of this invention are achieved, as well as various advantages of it will be apparent from a detailed consideration of the remainder of this specification in conjunction with the appended drawing in which:

FIG. 1 is an isometric view of the presently preferred embodiment or form of this invention installed on a container neck;

FIG. 2 is a cross-sectional view taken at line 2—2 of FIG. 1;

FIG. 3 is an isometric view similar to FIG. 1 of a modified embodiment of this invention;

FIG. 4 is a view similar to FIG. 1 of a still further modified embodiment of the invention;

FIG. 5 is a view similar to FIG. 1 of another modified embodiment of the invention; and

FIG. 6 is a cross-sectional view taken at line 6—6 of FIG. 5.

It is to be realized that the closures shown in the drawings are not themselves the invention, but are structures embodying the concepts of the invention. It will be realized that these concepts may be embodied within other somewhat differently constructed and/or differently appearing closures through the exercise of routine engineering skill.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1 of the drawing there is shown a closure 10 of the present invention formed as an integral article out of a polymer such as a linear or non-linear polyethylene polymer, isotactic polypropylene or the like. Various other non-polyolefin polymers having physical properties similar to these polyolefins may be used in constructing the closure 10. One important factor with respect to the entire closure 10 is that it can be manufactured at a comparatively nominal cost using modern high speed injection molding techniques.

This closure 10 includes a top 12 which is adapted to overlie the end 14 of the neck 16 of a conventional container (container not shown). This top 12 is divided into an inner center section 18 and an outer ring-like concentric peripheral section 20 by means of a dependent sealing structure 22. This sealing structure 22 has a cross-sectional configuration of essentially a "Vee" and extends in a complete circle between the sections 18 and 20 so as to separate them. If desired an exterior wall 24 of the structure 22 may be of a non-linear shape so as to facilitate the interior of the sealing structure 22 into the container neck 16 and so as to aid in forming a seal against the interior 26 of this neck 16. This sealing structure 22 is comparatively flexible by virtue of its wall thickness so as to be capable of forming essentially

a stopper-type seal within the interior 26 of the neck 16.

The periphery of the top 12 (the periphery of the section 20) carries a dependent skirt 28 which is divided into what may be regarded or termed a fixed portion 30 and a tear-off portion 32 by means of a line 34 of lesser thickness than the remainder of this skirt. These portions may, if desired, carry a bottom reinforcing rib or flange 35. This line 34 is adapted to be broken or severed when force is applied to it as by pulling on a tab 37 attached to one end of the tear-off portion 32 so that the entire tear-off portion 32 may be readily removed from the remainder of the closure 10.

This line 34 extends axially on both sides of the fixed portion 30 and extends completely around the skirt 28 from one side of the fixed portion 30 to the other side of this fixed portion 30. Preferably the line 34 is located so as to extend around the periphery of the top 12 so that when the tear-off portion 32 is removed the entire remaining closure 10 will have a neat appearance. The location of the line 34 in this position as shown is also advantageous in avoiding undercuts in molding. In order to facilitate removal of the closure 10 from the neck 16 this tear-off portion 32 (and the line 34) should extend more than 180 degrees around the axis of the skirt 28 and preferably at least 270 degrees around the axis of the skirt 28.

The skirt 28 preferably includes an internal bead 36 which is adapted to mate against a corresponding bead 38 on the exterior 40 of the neck 16. These beads 36 and 38 may be referred to as ridges. They are adapted to engage one another so as to firmly hold the closure 10 upon the neck 16. This entire closure 10 is constructed in such a manner that it may be located on the neck 16 by being pushed down upon it until such time as the result of temporary material deformation the beads 36 and 38 pop over or snap over one another.

Once the closure 10 has been located in such a manner the engagement between the beads 36 and 38 may be broken by pulling upon the tab 36, severing the tear-off portion 32 along the line 34. Once the tear-off portion 32 has been severed in this manner, the fixed portion 30 will remain on the closure 10. After removal of the tear-off portion 32 the sealing structure 22 will serve as a cork to hold the remainder of the closure 10 in place on the neck 16. This will be the case even as the remainder of the closure 10 is reused.

Preferably, this fixed portion 30 carries another tab 42 which extends radially outwardly from the skirt 28 at the portion of this skirt furthest removed from the top 12. If desired a small web 44 may connect the tab 42 with the fixed portion 30 so that these two parts can be considered as an integral unit. Such a unit may be used as a handle in repeatedly removing and replacing the closure 10 minus the tear-off portion 32 on the neck 16 in much the manner in which a common cork or stopper is used. This "unit" of the fixed portion 30 and the tear-off portion 32 is advantageous inasmuch as it serves this function without extending from the container neck 16 in a significant distance and inasmuch as it may be constructed comparatively easily at no significant cost in excess of that required to construct prior closures which are related to the closure 10.

In FIGS. 3 and 4 of the drawing there are shown two modified closures 50 and 60 of the present invention which are substantially identical to the closure 10. For convenience and in the interest of brevity various parts of these closures 50 and 60 which are identical or substantially identical to various parts of the closure 10 are not separately described herein and are designated herein and in the drawing by the same numerals previously used to designate such parts.

In the closure 50, axially extending openings 52 are used in place of portions of the line 34 at the sides of the fixed portion 30. If it is desired to use a rim 35 on the skirt 12, these slots 52 extend from such a rim 35 as shown. Small notches 54 may be used on the rim 35 so as to facilitate its being broken in severing the tear-off portion 32. Such notches may also be used on the closure 10. This closure 60 employs small perforations 62 along the length of the line 34 so as to facilitate the severance of the tear-off portion 32.

Such perforations 62 and such slots 52 may be used whenever the closure 10 is to be formed of a material which is sufficiently difficult to break so that it is desired to facilitate removal of the tear-off portion 32 by the use of either of these expedients. They may also be used when it is desired to make the line 32 sufficiently thick so that openings or perforations will facilitate tearing along this line. Because of its function, the line 34 either with or without the perforations 62 and/or the slots 52 may be considered as an easily severable means or structure.

In FIG. 6 of the drawing there is shown another closure 70 of the present invention which may be conveniently formed out of a material such as can be used in forming the previously described closures. This closure 70 includes a flat top 72 which is adapted to overlie the end 74 of the neck 76 of a conventional container (not shown). This top 72 carries on its under surface a cylindrical sealing member or skirt 78 which is adapted to fit tightly within the interior of the neck 76 so as to form a seal therewith. Preferably a small downwardly tapering projecting ridge 80 extends from the exterior of the sealing member 78 completely around its periphery so as to engage and form the seal with the neck 76. Preferably a secondary annular sealing ridge 82 is located on the under surface of the top 72 so as to form a secondary seal against the end 74 of the neck 76.

This neck 76 includes an enlarged external bead 84 located around its periphery adjacent to the end 74. In the closure 70 a peripheral cylindrical skirt 86 is located on the top 72 so as to extend down along the neck 76 past the bead 84. This skirt 86 preferably includes an internal locking bead 88 which engages the bead 84 so as to firmly and securely hold the entire closure 70 in place upon the container neck 76.

A line 90 is located in the skirt 86 immediately beneath the bead 88 so as to extend nearly around the periphery of this skirt 86. This line 90 corresponds to the line 34 described in the preceding in connection with the closure 10. This line 90 has extensions 93 extending between the side edges of a small tab 92 which extends from the upper portion of the skirt 86 to the bottom of this closure 70. These side edges of the tab 92 are defined by means of other lines 94 corresponding to the line 90.

This line 90 and these lines 94 are used to segregate the skirt 86 into what may be regarded as a fixed portion including the tab 92 and all of the skirt 86 above the line 90 and what may be regarded as a tear-off portion beneath the line 90 extending at opposite sides of the tab 92. If desired another tab 94 may be located on what has been described herein as a tear-off portion, this other tab 94 corresponding to the tab 36 as previously described. It will be noted that in the closure 70 the tabs 92 and 94 extend in the same plane as the remainder of the closure 70. This is considered to facilitate handling without danger of damage prior to and during closures such as the closure 70 being installed upon a container neck.

The closure 70 may be installed on a neck such as the neck 76 by merely being located over the neck and then by being pushed down. When in such a location the closure 70 will be held in place as shown. When it is desired to use the closure 70 the initial time the tab 94 may be engaged and pulled so as to separate what has been termed as the tear-off portion from the remainder of the closure 70 then the closure 70 may be easily "deformed off" of the neck 76 by lifting upon the tab 92. The individual ultimate user may thereafter reapply or reuse the closure 70 minus this tear-off portion to a container neck as desired.

Because of the structure of the closure 70 it would be extremely difficult if not impossible for an individual user to remove the closure 70 from a container neck without removing what is described herein as the tear-off portion. This is considered valuable in providing a visual indication to the ultimate customer that the contents of a container have not been tampered with. It is considered significant that with the closure 70 the tabs 92 and 94 are located where they are not apt to be moved during normal handling of the container.

From a careful consideration of the preceding it will be realized that the various embodiments of the invention as shown achieve the objectives of the invention and it will also be realized that structures employing the concepts embodied within the illustrated structures may be manufactured at a comparatively nominal cost, may be easily assembled upon a container neck using conventional techniques and may be easily and conveniently re-employed a large number of different times.

I claim:

1. In a closure for use on a container neck, said clo-

sure having a top adapted to be located over the end of said neck, a dependent skirt to fit around the exterior of said neck, and sealing means located within said skirt and beneath said top for sealing said closure with respect to said neck, the improvement which comprises:

said skirt being a cylindrical skirt extending beneath the periphery of said top,
said sealing means comprising two separate sealing means,

the first of said separate sealing means comprising a cylindrical sealing member having a downwardly tapering exterior bead adjacent its lower end adapted to fit tightly within the interior of said neck, said member being dependent from said top so as to extend therefrom within said skirt,

the second of said separate sealing means comprising a projecting ridge formed integrally with said top so as to extend therefrom around the first of said separate sealing means, said second of said separate sealing means being capable of engaging the end of said neck so as to form a seal therewith,
an internal locking bead extending internally of said skirt, said locking bead being capable of engaging a portion of a container neck so as to firmly and securely hold said closure upon said neck,

said skirt having a tab-like fixed portion and a tear-off portion, said portions being located on said skirt beneath said internal locking bead, said fixed portion extending to the edge of said skirt remote from said top,

a line of material of lesser thickness than the remainder of said skirt which is capable of being easily severed extending along the side edges of said fixed portion and around the periphery of said skirt adjacent and beneath the internal locking bead, said line segregating said fixed portion from said tear-off portion,

said tear-off portion being capable of being engaged so as to be completely severed from said fixed portion and the remainder of said skirt along said line in order to facilitate removal of said closure from said container,

said fixed portion of said skirt being capable of being moved to facilitate removing and replacing said closure on said neck after removal of said tear-off portion from said closure.

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