May 19, 1959 W. DEUSSEN 2,887,240

INSERTABLE CLOSURE FOR BOTTLES AND LIKE CONTAINERS

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Fig.1

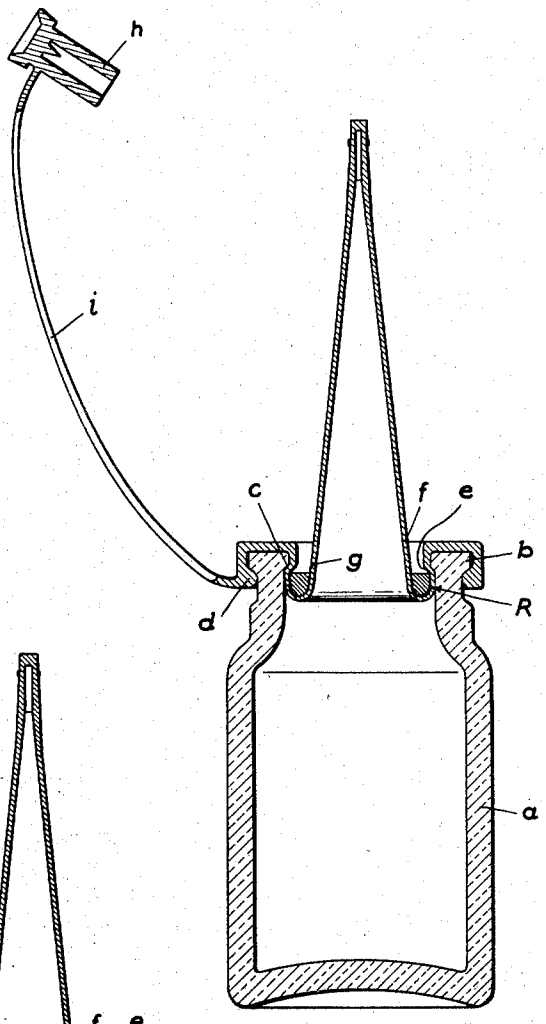
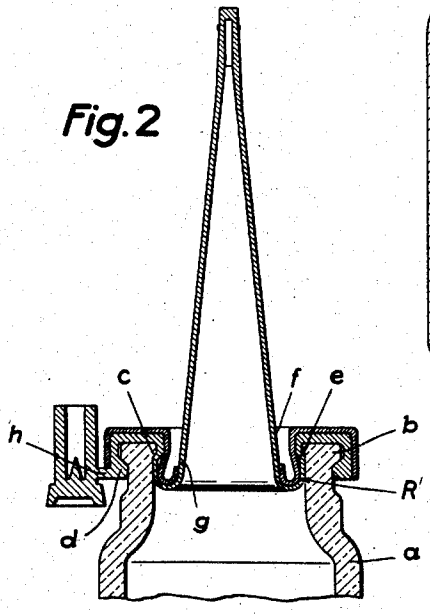


Fig.2



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Fig. 3

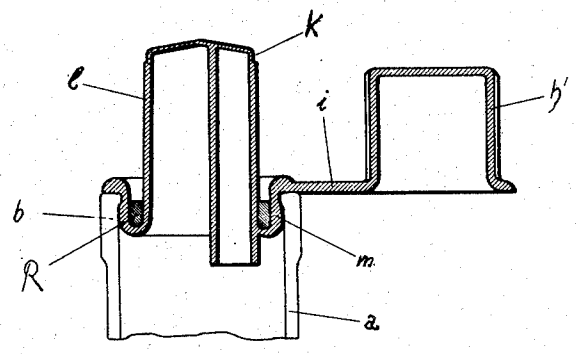
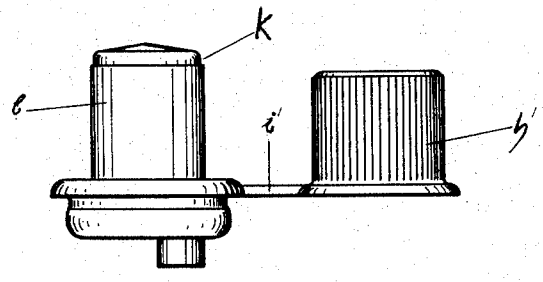


Fig. 4



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United States Patent Office 2,887,240 Patented May 19, 1959

2,887,240

INSERTABLE CLOSURE FOR BOTTLES AND LIKE CONTAINERS

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Application April 2, 1956, Serial No. 575,593

Claims priority, application Germany April 7, 1955

6 Claims. (Cl. 215—52)

The present invention relates to insertable closures, such as pouring spouts or drop dispensers, for bottles and similar containers. More particularly, this invention relates to closures of elastic or resilient material which are inserted into the neck of a bottle of glass or the like and which cannot be removed therefrom without destroying the closure.

In one specific embodiment, the closure is of the type wherein pressure is applied to its elastic walls to dispense limited amounts, such as drops, of liquid from a bottle.

In another embodiment, the novel closure of the invention has the form of a pouring spout which is inserted in the bottle neck.

In all embodiments, the closure cannot be removed from the bottle neck after it has been pressed thereinto without destruction of the closure.

Various means have been devised to use liquid dispenser-closures of the above type. Some are merely inserted in the neck of the bottle, others are connected to it by flange or bead means, still others may be screwed onto the bottle or connected thereto by means of a threaded cap-like ring.

All of these structures have the common disadvantage that anybody can remove the closure without difficulty and that the connection between closure and bottle is not only unsatisfactory but in no way insures the contents of the bottle against undesired tampering.

Rigid connection between a container and a dispenser-closure is desirable particularly in cases where the closure extends for a considerable length from the container and where it is flexible and subjected to considerable mechanical stress when used as a dispenser. Heretofore, this has been satisfactorily accomplished with a centrally apertured threaded cap which holds the closure in its central aperture and is screwed onto the threaded neck of a bottle. However, the disadvantages of this structure are well known to the art.

The shortcomings of the prior art devices are overcome in accordance with the present invention by a closure of an elastic material having a base portion arranged to grip the outside of the neck of a bottle, a groove (groove-like fold) being formed between the closure wall extending outwardly from the neck and the next adjacent wall of the base portion, and an undivided retaining ring (guard ring) being arranged within said groove.

It is known to secure covers of sheet metal containers by means of clamping rings which press the cover against the walls of the container orifice. Such clamping rings are divided and their ends overlap when the rings are not under tension. Such rings are inserted in the cover and then tensioned so that they press against the wall of the cover to maintain its form and to prevent it from removal from the container. When it is desired to open the container and remove the cover, the clamping ring is merely removed. Contrariwise, the retaining ring of the present invention is not divided. It serves not only

to secure the closure in the container orifice but also to seal the closure effectively. Since it is undivided, in contrast to the conventional clamping rings, and is not crimped to facilitate reduction of its circumference by pressing the ring together, it cannot be removed after it has been forced into the fold or groove in the base portion of the closure.

The invention will be more fully explained in the following description of certain embodiments thereof, taken in conjunction with the accompanying drawing wherein

Fig. 1 is a longitudinal section of a container and drop or spray dispenser closure incorporating one embodiment of the invention;

Fig. 2 is a longitudinal section of a closure similar to that of Fig. 1 but showing a modification;

Fig. 3 is a longitudinal section of a pouring spout closure incorporating another embodiment of the invention; and

Fig. 4 is a side view of Fig. 3.

In the drawing, the same reference characters refer to like parts in all figures.

The spray or drop dispenser closure shown in Fig. 1 comprises an elongated spout portion *f* and a base portion folded over to form an annular cavity or groove between the lower wall part of the spout and a base portion wall *e* extending upwardly from the groove and around annular neck *b* of container *a*, being folded back again to form annular lip *d* gripping the outside of the container neck. As shown, the bottleneck *b* is preferably provided with shoulder *c* at its inner periphery so that a downwardly tapering orifice is formed. The unitary closure is of elastic or resilient material and, when forced onto the container neck, lip *d* will grip the outside of the neck wall while base portion wall *e* will be inserted into the neck and will press against the inner wall of the neck. As shown, wall *e* has about twice the length of neck bead portion *b*.

In accordance with the invention, retaining ring R is pressed into the groove or fold formed between wall *e* and spout portion *f* which extends from the container neck, tapering upwardly. The ring is so proportioned that it will exert considerable pressure on the inner wall of the neck, in cooperation with the elasticity of the two base portion walls of the closure. As shown, the neck wall is preferably receding so that shoulder *c* has the effect of a barb in retaining the base portion walls of the closure in the neck.

It has been found that the preferred thickness of retaining ring R is about half the height of the groove in the base portion of the closure inserted in the container neck. Such dimensioning will make undesired removal of the closure extremely difficult.

It is obvious that the above-described structure will make it either impossible to remove the closure from the container or will, at least, require considerable force to effect such removal. This makes is possible, if desired, to reinforce the safety of the closure by forming one part of the closure wall so thin, for instance at *g*, that the spout will tear off at this place before the pull on the spout will be sufficiently strong to remove the retaining ring from its seat.

Many liquids are sold in containers (such as illustrated) whose closure top is sealed. When it is desired to dispense liquid from the container, the top is cut off. An unauthorized person may desire to remove liquid from the bottle without making it appear that such had been done. Thus, he may wish to leave the top of the dispenser-closure untouched and pull the closure out of the container, remove liquid, possibly replace it with an adulterant, and then force the closure back onto the container in an effort to leave no outward sign of tampering. The

structure according to the invention will make this impossible since the spout will tear off before it can be removed.

Fig. 1 also shows a cap *h* attached to lip *d* by string *i* to provide a closure for the orifice of the spout after its top has been removed by a legitimate user.

The modification of the closure shown in Fig. 2 is distinguished over that of Fig. 1 by the different form of the retaining ring. Ring R' is folded over similarly to the base portion of the closure, its outermost fold pressing against the outer wall of the base portion of the closure which sits on neck bead *b*.

In contrast to the attachment of cap *h* to the closure by string *i*, the cap is directly attached to lip *d* of the closure wherefrom it may be broken or cut when put in use to seal the opened spout orifice.

The closure illustrated in Figs. 3 and 4 serves as a pouring spout. The spout **1** (shown in closed condition) is inserted in neck *b* of container *a*. The base portion of the spout is folded to form a groove between the lower wall part of the spout and base portion wall *m* which is pressed against the inner wall of the neck by retaining ring R. In contrast to the embodiment of Fig. 1, the edge of the closure lies flat on top of neck bead *b*. Cap *h'* is connected to the spout by a thin connecting piece *i'*.

When the spout is to be used to pour liquid from container *a*, upper portion K is removed by cutting it off and cap *h'* is cut off the spout by severing connecting piece *i'*, whereby the cap may be placed on the opened closure when the spout is not in use. Removal of the closure from the container is not possible without destruction of the same.

The closure of this invention is inserted in the container neck after the container is filled by pressing or forcing the closure with its base portion groove or fold into the neck until the outer fold or folds of the base portion engage the edge of the neck. Thereupon, the retaining ring is forced into the groove to press the outer wall of the groove against the inner wall of the bottleneck.

The retaining ring is preferably made of a hard plastic, for instance, polyvinyl chloride or a formaldehydephenol resin. It may also be of metal, however, for instance, aluminum, particularly when it takes the form shown in Fig. 2.

The closure which has been illustrated by way of example as a pouring spout or a drop dispenser, is preferably made of an elastic plastic material, such as polyethylene, plasticized polyvinyl chloride, and similar synthetic resins.

It should be clearly understood that the illustrated embodiments have been presented merely by way of explanation and that they are not intended to limit the scope of the invention as defined in the accompanying claims.

I claim:

1. In combination with a container having a neck with an interiorly extending bead narrowing the outer end of the neck and a pressure closure of elastic material mounted in said neck with an annular base portion having a groove extending within the neck to a point below the bead, the base portion conforming to the container portion and bead defining the neck: a rigid and undivided retaining ring pressed into the groove and unyieldingly retained therein on three sides to form a closure of the neck which cannot be removed without destruction of the closure.

2. The combination of claim 1, wherein the retaining ring has a flange portion engaging the base portion.

3. A closure of elastic material for insertion into a container neck, said closure having an annular base portion insertable in said neck, the base portion comprising an innermost wall and a wall concentrically surrounding said innermost wall, the walls defining a groove therebetween, and an undivided rigid retaining ring in the groove for unyieldingly pressing the second-named wall against the container neck.

4. In combination with a container having a neck: a closure of elastic material insertable in said neck, said closure having an annular base portion with an innermost wall and a wall concentrically surrounding said innermost wall, the walls defining a groove therebetween and said base portion being inserted into the neck with the second-named wall adjacent thereto, and an undivided rigid retaining ring pressed into said groove to press the second-named wall unyieldingly against the neck.

5. The closure of claim 4, wherein the base portion has a flange engaging the top of the neck wall and the retaining ring has a flange engaging the base portion flange of the closure.

6. In combination with a container having a neck with an interiorly extending bead: a closure of elastic material insertable in said neck, said closure having an annular base portion with an innermost wall and a wall concentrically surrounding said innermost wall, the walls defining a groove therebetween and said base portion being inserted into the neck with the second-named wall adjacent thereto, and an undivided rigid retaining ring pressed into said groove below the bead to press the second-named wall unyieldingly against the neck.

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