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A. G. WOOD

3,109,547

BOTTLE CLOSURES

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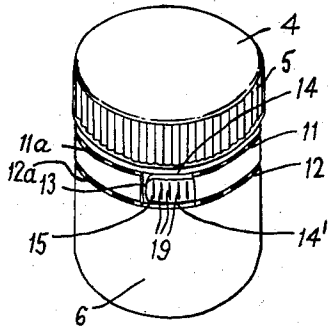


Fig. 1

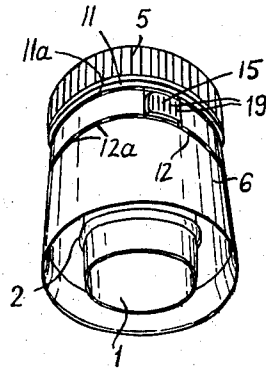


Fig. 2

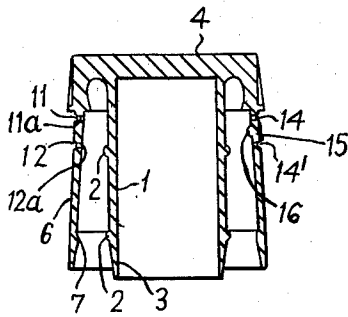


Fig. 3

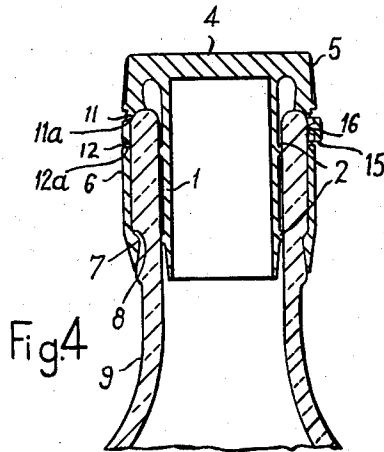
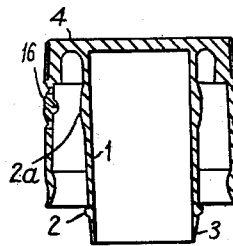


Fig. 4

Fig. 7



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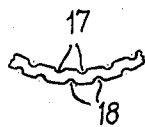


Fig. 6

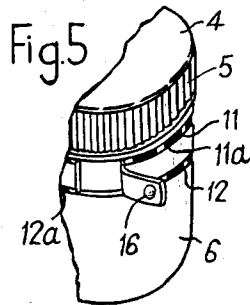


Fig. 5

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BOTTLE CLOSURES

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1 Claim. (Cl. 215-41)

Bottles which are closed by a cork or stopper are often, and especially so in the case of bottles containing liquids and beverages, also provided with a metal or plastic capsule or sleeve which surrounds or encloses the top end of the bottle neck and stopper and which has to be removed or destroyed before the stopper can be withdrawn.

The present invention has for its object to provide a bottle closure constituting a combined bottle stopper and capsule which is moulded in one piece from a resilient plastic material and in which the capsule portion is provided with means whereby it may be manually torn open or be torn away from the stopper portion when the stopper is to be removed from the bottle.

The closure comprises a stopper body portion adapted to fit within the bottle neck, a head portion, at the upper end of said stopper body portion, and a thin-walled capsule skirt depending downwardly from the head portion and spaced from and surrounding the stopper body portion, said skirt comprising a continuous annulus at or adjacent its free end and being adapted to fit over the exterior of the bottle neck when the closure is fitted thereon and firmly to grip or interlock with the exterior of the bottle neck so as to prevent or resist withdrawal of the stopper while the capsule skirt remains intact and connected to the stopper head. The capsule skirt is formed with one or more grooves, lines of perforations or the like to form weakened zones along which the skirt may be torn by manually pulling on a tab provided for the purpose.

In one embodiment the capsule skirt is formed below the head portion with two spaced annular lines of weakening comprising grooves and/or rows of perforations defining a tear strip and having at one place therearound slots defining a tab portion which is adapted to be gripped by the fingers and pulled in order to tear the tear strip to separate the head from the capsule skirt.

The tab portion is provided with a projection on its internal surface which, when the closure is fitted on to a bottle neck, is engaged by the neck so that the tab is urged outwardly to facilitate raising the tab for gripping by the fingers. If desired the external surface of the tab portion may also be roughened, for example by providing it with a series of ribs extending parallel to the axis of the skirt, further to facilitate gripping the tab portion between the fingers while tearing away the tear strip and thus separating the head from the capsule skirt.

The closure is moulded of a resilient flexible plastic material, preferably polythene, and the skirt portion is preferably moulded of such dimensions that when the closure is applied to the bottle, the skirt portion is caused to expand slightly in order firmly to grip the exterior of the bottle neck and resist withdrawal of the closure until the tear strip has been severed.

According to a feature of the invention, an annular step or rib is provided around the internal surface of the skirt portion at such a distance from the underside of the head portion as to engage beneath the ridge normally provided on the exterior of the bottle neck a short distance below the top of the neck. This annular step or rib is urged by the resilience of the plastic skirt to engage beneath the ridge on the bottle neck and provides additional security against the closure being removed without severing the tear strip. In a modification the annular step or

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rib may be replaced by one or more lugs or projections arranged on the internal surface of the skirt portion so as to engage beneath the ridge on the bottle neck.

The stopper body preferably comprises a hollow thin-walled sleeve of plastic material. It may be provided with one or more annular reinforcing ribs around its external surface to strengthen the thin-walled stopper portion and to provide a liquid-tight seal against the internal surface of the bottle neck.

The closures according to this invention are tamper proof since they prevent the stopper from being removed without tearing or severing the capsule skirt and thus giving an indication that the closure has been tampered with.

In order that the invention may be more clearly understood, reference will now be made to the accompanying drawing, in which:

FIGURE 1 is a perspective view of the closure from above.

FIGURE 2 is a perspective view from below.

FIGURE 3 is a section through the closure.

FIGURE 4 is a section through the closure, when applied to a bottle neck.

FIGURE 5 is a fragmentary perspective view.

FIGURE 6 is a horizontal section through the wall of a modified capsule skirt.

FIGURE 7 is a section through a modified closure.

The closure illustrated in FIGURES 1 to 5 of the drawing is made as a one-piece moulding of a resilient flexible plastic material, preferably polythene, with a stopper portion 1 formed as a thin-walled hollow cylindrical sleeve having one or more annular reinforcing ribs 2 around its external periphery. The lower end of the stopper may be tapered as indicated at 3 to facilitate its insertion into the bottle neck. At its upper end the body portion is formed with a head portion 4 having a serrated or knurled edge 5 around its periphery to facilitate gripping the head within the fingers, when the stopper is to be removed from a bottle.

Extending downwardly from the underside of the head portion 4 and surrounding the stopper portion 1 is a cylindrical skirt 6 having an annular rib 7 formed around its internal surface and adjacent its lower end. This rib is so positioned that it engages beneath the ridge 8 on the bottle neck 9 (see FIG. 4) when the closure is fitted thereon. The rib 7 may be of stepped form as shown, with the step facing upwardly and tapering smoothly towards the bottom edge of the skirt.

The skirt is formed with a portion constituting a tear strip to enable the skirt to be severed from the stopper by hand. This is achieved, in the embodiment shown, by forming the skirt with two spaced annular grooves 11 and 12, the groove 11 being approximately level with the underside of the stopper head and the groove 12 a short distance therebeneath. The plastic material in the groove may, if desired, also be provided with a series of perforations as shown at 11a and 12a. At one position around the strip defined by the grooves, the skirt is moulded with a vertical opening 13 extending completely through the skirt between the grooves, and two longitudinal openings 14, 14' extending completely through the skirt in alignment with the grooves 11 and 12 and respectively joining the ends of the vertical opening 13, thereby forming a tab 15. The tab is formed with a projection 16 on its internal surface which, when the closure is fitted on to a bottle neck, engages with the surface of the glass which thus flexes the tab 15 slightly outwardly, as shown in FIGURE 4, whereby the tab is slightly raised above the external surface of the skirt and can be easily gripped by inserting the fingernail thereunder. The outer surface of the tab is also provided with a series of ribs 19 in order, in conjunction with the projection 16, to pro-

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vide a good finger grip on the tab and facilitate tearing the tear strip away. By pulling on the tear strip portion, it tears along the weakened lines formed by the grooves 11, 12.

The closure is applied to the bottle pressing it down on to the bottle neck 9 into the position shown in FIGURE 4. The capsule skirt 6 is made of such dimensions that it will be slightly expanded by the bottle neck to provide a friction grip thereon.

To facilitate expansion of the capsule skirt it may be axially corrugated. This may be achieved by moulding axial grooves 17, 18 both inside and outside the capsule skirt as shown in FIG. 6. The corrugations may extend for the full length of the skirt or may terminate at or above the level of the rib 7, so that the rib will be stronger and less expandible than the corrugated skirt portion. The grooves 17, 18 may be not more than about .010" deep.

The ribs 2 around the stopper portion may be arranged in other ways and may be more or less than two in number. They may also be of different shape and may be of different width. FIGURE 7 shows a section through a modification of the closure shown in FIGURE 3 in which the upper rib 2a is wider than the lower rib 2. The shape of the bottom of the capsule skirt is also somewhat modified.

I claim:

A bottle closure for a bottle having a neck, said closure constituting a combined bottle stopper and capsule which is moulded in one piece from a resilient plastic material, comprising a stopper body portion adapted to fit within the bottle neck, a head portion at the upper end of said stopper body portion, and a thin-walled capsule skirt depending downwardly from the head portion and spaced from and surrounding the stopper body portion, said skirt comprising a continuous annulus adjacent its free

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end and being adapted to fit over the exterior of the bottle neck when the closure is fitted thereon and to firmly grip the exterior of the bottle neck so as to resist withdrawal of the stopper while the capsule skirt remains intact and connected to the stopper head, said capsule skirt being formed just below the head portion with two spaced parallel slits therethrough connected by a relatively transverse slit to define a cut-out tab portion surrounded by said skirt and normally lying substantially flush with the external surface thereof, said tab portion being adapted to be gripped by the fingers and pulled in order to tear the capsule skirt, and two lines of weakening in the skirt extending respectively from the ends of the openings defining the tab portion and along which the skirt will tear when the tab is pulled to separate the head portion from the capsule skirt, said tab portion having a projection on its internal surface which, when the closure is fitted on to a bottle neck, is engaged by the bottle neck so that the tab is flexed outwardly of the external surface of the skirt to facilitate raising the tab for gripping by the fingers.

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