

Sept. 9, 1958

F. A. STRODE
PUNCH-TOP CONTAINER CAP

2,851,184

Filed Sept. 13, 1957

2 Sheets-Sheet 1

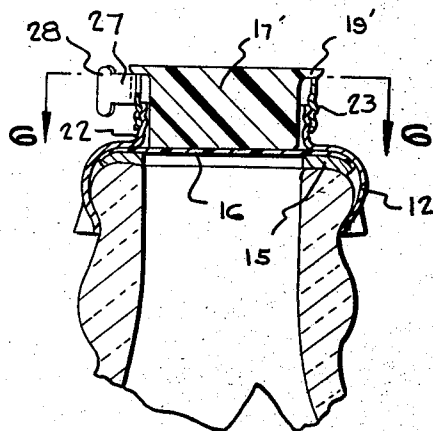
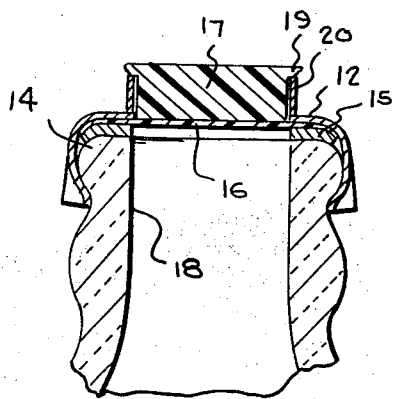
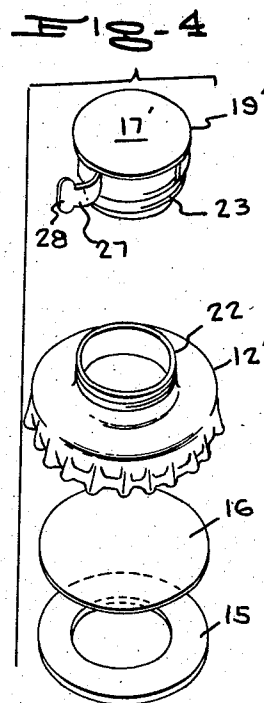
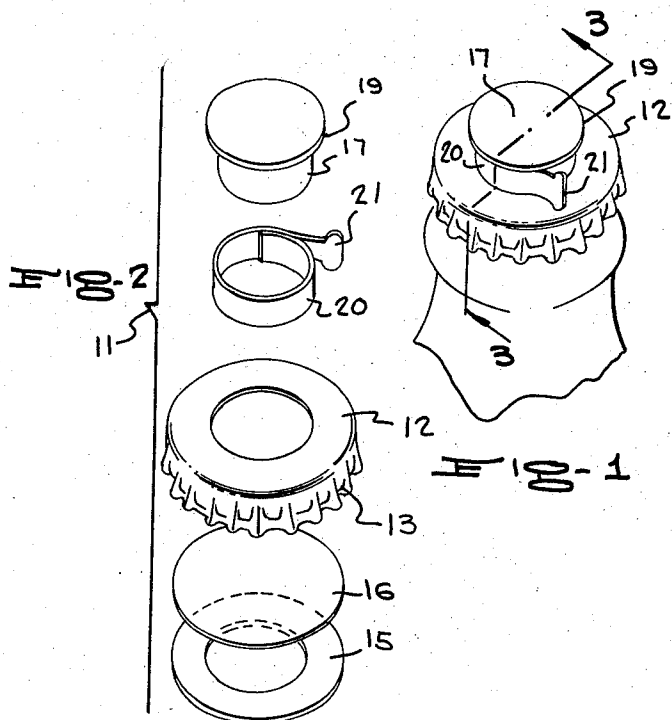


FIG-3

FIG-5

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FIG-6

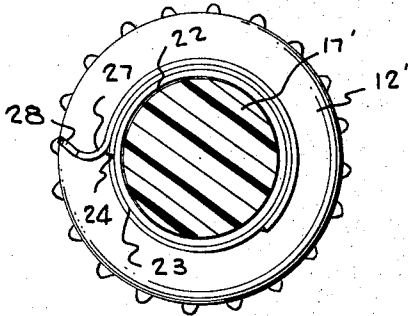


FIG-7

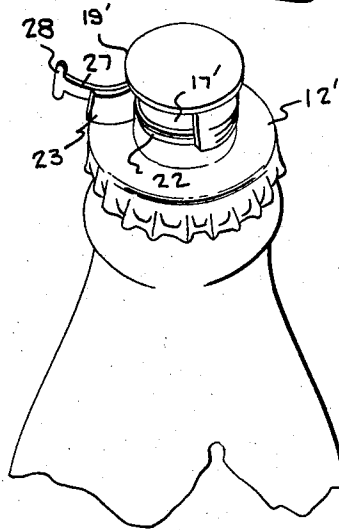


FIG-8

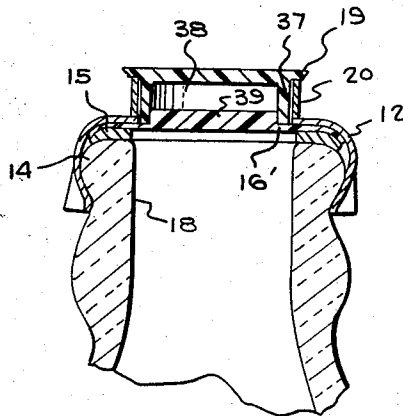
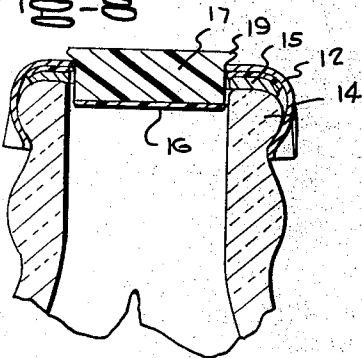
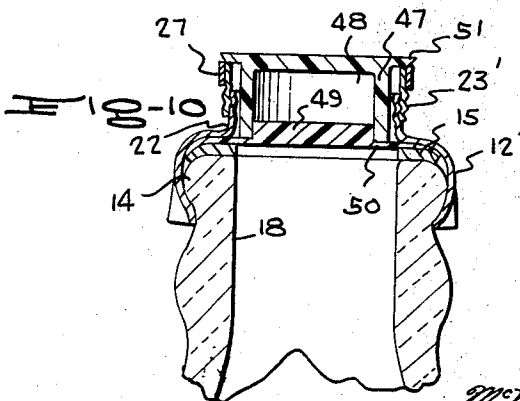


FIG-9



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2,851,184

PUNCH-TOP CONTAINER CAP

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3 Claims. (Cl. 215—46)

This invention relates to container caps, and more particularly to a bottle cap provided with self-carried means for opening same.

A main object of the invention is to provide a novel and improved container cap which is simple in construction, which is easy to open, and which is relatively compact in size.

A further object of the invention is to provide an improved punch-top container cap which is inexpensive to manufacture, which is neat in appearance, and which eliminates the need for a bottle opener or other container-opening implement when it is desired to obtain access to the contents of the associated container.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein:

Figure 1 is a fragmentary perspective view of the top end of a bottle provided with an improved closure cap constructed in accordance with the present invention.

Figure 2 is a perspective view of the components of the closure cap employed in Figure 1, said components being shown in separated positions.

Figure 3 is an enlarged vertical cross sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a perspective view of the components of a modified form of bottle cap constructed in accordance with the present invention.

Figure 5 is a vertical cross sectional view, similar to Figure 3, but showing the modified form of bottle cap illustrated in Figure 4.

Figure 6 is a horizontal cross sectional view taken on the line 6—6 of Figure 5.

Figure 7 is a fragmentary perspective view, similar to Figure 1, but showing the manner in which the modified form of bottle cap of Figures 4 to 6 is engaged on the top of a bottle and is operated for opening same.

Figure 8 is a fragmentary vertical cross sectional view, similar to Figure 3, and showing the punch member in downwardly actuated position.

Figure 9 is a vertical cross sectional view, similar to Figure 3, and illustrating a further modification of a bottle cap according to the present invention.

Figure 10 is a vertical cross sectional view, similar to Figure 5, and showing a still further modification of a bottle cap according to this invention.

Referring to the drawings, and more particularly to Figures 1, 2, 3 and 8, 11 generally designates an improved bottle cap assembly according to this invention, the assembly comprising an annular main closure member 12 having a crimped depending skirt flange 13 adapted to be engaged over a bottle rim 14 in the manner illustrated in Figure 3. An annular sealing gasket 15 of suitable deformable material is disposed on the top of the bottle rim 14, and disposed between the gasket 15 and the annular member 12 is a frangible sealing disc 16 of suitable, readily frangible material, such as sheet plastic, or the like, the marginal portion of the disc 16 being engaged between the annular member 12 and the sub-

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jacent annular sealing gasket 15 in the manner clearly illustrated in Figure 3.

Secured on the central portion of the disc 16 is a generally cylindrical plug member 17 of relatively rigid material, such as of relatively rigid plastic material, the diameter of the plug member 17 being slightly smaller than the inside diameter of the bottle neck bore 18, as shown in Figure 3, whereby the plug 17 may be at times slidably received in the top portion of the bore. The plug member 17 is formed at its top end with the outwardly extending peripheral flange 19, and surrounding the cylindrical plug 17 and engaged between the flange 19 and the annular main closure member 12 is a flat, deformable metal strip member 20. As shown in Figure 2, the strip member 20 extends completely around the plug 17 and is provided with an outwardly extending gripping portion 21. The strip member 20 is of sufficient rigidity to normally prevent the plug 17 from being pushed downwardly and from puncturing the sealing disc 16.

To open the cap, the strip member 20 is removed by exerting sufficient tension on the gripping portion 21 thereof to cause the strip member to be unwound from the plug 17. Thus, the strip member 20 may be merely unwrapped from the plug by pulling outwardly on the strip member by means of the gripping portion 21 thereof. This releases the plug member 17 for downward movement. The top of the plug member may then be struck by the operator's hand, whereby the plug member punctures the frangible sealing disc 16 and descends, as illustrated in Figure 8, allowing the plug member and the portion of the sealing strip 16 fastened thereto to be removed. This provides access to the contents of the bottle.

In the modification illustrated in Figures 4, 5 and 7, the main closure member, shown at 12', is provided with a central, upstanding threaded sleeve portion 22 on which is engaged a correspondingly threaded collar member 23. The collar member 23 is vertically slit, as shown at 24 in Figure 6, so that it is separable from the sleeve member 22 on which it is engaged in substantially the same manner as the strip 20 is separable from the plug 17 in the previously described modification of the invention. Secured to the upper portion of the collar member 23 is a strip member 27 having the outwardly extending gripping portion 28, said gripping portion 28 being located adjacent the slit 24. Thus, by grasping the outwardly projecting portion 28 and exerting suitable outward force thereon, the collar member 23 may be unwound from the upstanding threaded sleeve member 22.

The plug member, shown at 17' in Figure 5, is secured in any suitable manner to the central portion of the frangible sealing disc 16 and is provided at its top end with the outwardly projecting peripheral flange 19' which is normally engaged by the top edge of the collar member 23 to prevent downward movement of the plug member 17. When the collar member 23 is disengaged from the sleeve 22, in the manner above described, the plug 17' may be moved downwardly by striking the top surface thereof, whereby the sealing disc 16 is punctured in the same manner as previously described in connection with Figure 8. The plug member 17' and the adherent central portion of the sealing disc 16 may then be removed, allowing the contents to be poured out of the bottle.

The modification of the invention illustrated in Figure 9 is similar to that shown in Figures 1, 2, 3 and 8, except that the plug member, shown at 37 is formed with the cylindrical internal recess 38 open at its bottom end, the recess receiving an upstanding cylindrical boss 39 formed centrally on the frangible sealing disc, shown at 16'. The outside diameter of the plug member 37 below its top

flange 19 is slightly smaller than the diameter of the internal bore 18 of the bottle, whereby the plug body may be at times slidably received in the bore of the bottle neck 18 in the same manner as is illustrated in Figure 8. Thus, when the strip 20 is removed by unwinding same from the plug 37, the plug is free to be moved downwardly, as by exerting an impact on its top surface, causing the sealing disc 16' to be punctured, as above described, and allowing the plug 37 and the severed central portion of the sealing disc 16' to be removed, whereby the contents of the bottle may be poured out.

Figure 10 illustrates a form of the invention generally similar to that shown in Figures 4, 5 and 6, except that the plug member, shown at 47, is hollow and is formed with the cylindrical, downwardly facing bottom recess 48 in which is received the upstanding boss 49 formed on the frangible sealing disc 50. As in the form of the invention illustrated in Figures 4, 5 and 6, a vertically slit, threaded collar member 23' is threadedly engaged on the upstanding sleeve member 22 of the cap 12'. The plug 47 is provided with the outwardly projecting peripheral top flange 51 which is normally engaged by the top edge of the collar member 23'. When the collar member 23' is removed, as in the manner previously described in connection with Figures 4, 5 and 6 regarding the collar member 23, the plug 47 is released for downward movement and may be forced downwardly into the neck of the bottle by exerting an impact on its top surface, puncturing the sealing disc 50. The plug 47 and the adherent severed central portion 49 of sealing disc 50 may be then removed, allowing the contents of the bottle to be poured.

While certain specific embodiments of an improved bottle cap have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore, it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A bottle cap comprising an annular main closure member having a crimped depending skirt flange adapted to be engaged over a bottle rim, a frangible sealing disc disposed in said closure member, a relatively rigid plug element mounted centrally on said sealing disc and rising through said closure member, an outwardly projecting peripheral top flange on said plug element, and a strip member removably engaged between said peripheral top flange and said main closure member and normally preventing axial movement of said plug element through said closure member.

2. A bottle cap comprising an annular main closure member having a crimped depending skirt flange adapted to be engaged over a bottle rim, a frangible sealing disc disposed in said closure member, a relatively rigid plug element mounted centrally on said sealing disc and rising through said closure member, an outwardly projecting peripheral top flange on said plug element, and a flat deformable metal strip member surrounding said plug element, said metal strip member being removably engaged between said peripheral top flange and said main closure member and normally preventing axial movement of said plug element through said closure member.

3. A bottle cap comprising an annular main closure member having a crimped depending skirt flange adapted to be engaged over a bottle rim, a frangible sealing disc disposed in said closure member and having its marginal portion engaged beneath the closure member, a relatively rigid, generally cylindrical plug element secured centrally on said sealing disc and rising through said closure member, an outwardly projecting peripheral top flange on said plug element, and a flat deformable metal strip member surrounding said plug element, said metal strip member being removably engaged between said peripheral top flange and said main closure member and normally preventing axial movement of said plug element through said closure member.

No references cited.