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CONTAINER CAP

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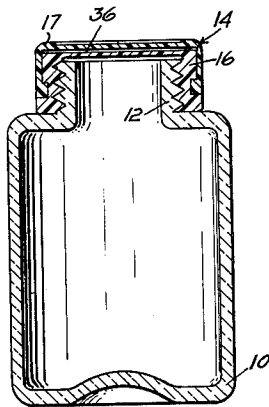


Fig. 1

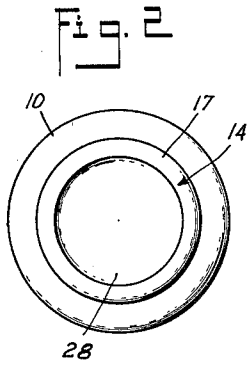


Fig. 2

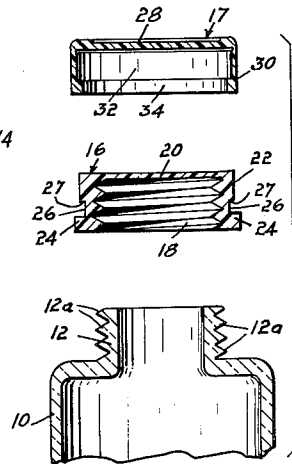


Fig. 3

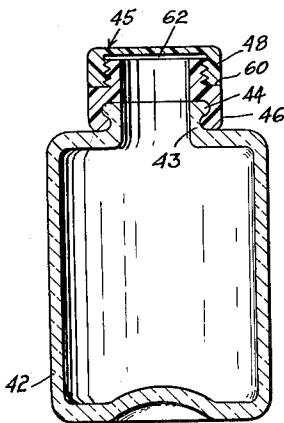


Fig. 4

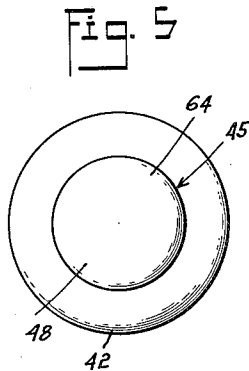


Fig. 5

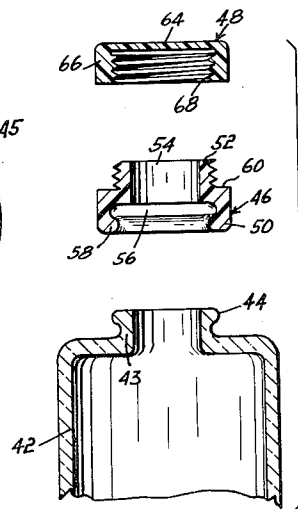


Fig. 6

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**CONTAINER CAP**

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1 Claim. (Cl. 215—9)

This invention relates to container closures, and more particularly to a safety cap for containers, and especially those containing dangerous materials, such as poisons, medicines, inflammables, etc.

For many purposes it is desirable that various persons, and notably small children, are hindered in their ability to open containers, and yet the closure cap for the container should be able to be easily actuated for obtaining access by authorized or qualified individuals to the interior of the container.

Accordingly, it is among the objects of this invention to provide an improved cap for containers which may be easily opened by qualified or authorized personnel, and at the same time presents a bar to irresponsible individuals.

Another object of the invention is to provide an improved safety cap which includes a first cap element having an inwardly extending portion adapted for holding engagement with a shouldered section of a container and being rotatable with respect thereto, and a second cap section mounted on the first cap section in shouldered holding engagement therewith and being rotatable with respect thereto, rotation of one of said cap elements with respect to the container being operable to either open or close the container and rotation of the other of the cap elements being in the form of free or independent rotation and being inoperable to actuate the cap for opening or closing the container.

Another object of the invention is to provide an improved safety cap of the above discussed type which is durable in construction, uncomplicated in design, economical to manufacture, easy to assemble, and pleasing in appearance.

Other features and advantages of the invention will be apparent from a consideration of the following description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a vertical sectional view of a conventional container having a threaded neck portion on which is mounted a safety cap formed in accordance with the present invention.

FIG. 2 is a top plan view of the container and cap assembly of FIG. 1.

FIG. 3 is a vertical sectional, exploded view of the parts of the safety cap of FIG. 1, together with the upper portion of the container associated therewith.

FIG. 4 is a vertical sectional view of another embodiment of the safety cap or closure of the invention shown associated with a container member having a shouldered or lipped neck portion.

FIG. 5 is a top plan view of the cap and container assembly of FIG. 4.

FIG. 6 is a vertical sectional, exploded view of the parts of the safety cap of FIG. 4, together with the upper portion of the container associated therewith.

Referring first to FIGS. 1 to 3 inclusive of the drawings, there is illustrated a conventional container in the form of a bottle 10, having an externally threaded neck portion 12 thereon, adapted for threaded engagement with the safety closure or cap 14 of the invention.

Cap 14 comprises a first element or member 16 which is internally threaded as at 18 for holding coaction with the external threads 12a of neck portion 12 of container 10, and a second or upper member 17 which is adapted to be mounted in generally freely rotatable relationship

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on element 16. In the embodiment shown, member 16 comprises an upper or top wall portion 20 of generally circular configuration and a continuous, annular-like wall portion 22 depending therefrom. A circumferentially extending shoulder or radially projecting flange 24 is provided adjacent the bottom extremity of wall portion 22. Immediately above shoulder 24, the outer periphery of wall 22 is recessed to provide an annular-like, circumferential slot or groove 26 which partially defines shoulder 24. Slot 26 also defines upper abutment or shoulder 27 which is adapted for interlocking coaction with a portion of top cap element 17, to retain the latter and element 16 in assembled and aligned relationship, as will be hereinafter described in greater detail.

Cap or closure element 17, in the embodiment shown, comprises a generally circular top or upper wall portion 28 with a continuous, annular-like wall portion 30 depending therefrom. Wall portions 28 and 30 define cavity or pocket 32 which is adapted to receive in telescoped relation the upper portion of cap element 16 when the cap elements 16 and 17 are in assembled condition, as shown in FIG. 1. Adjacent the bottom extremity of wall portion 30, an inwardly extending flange, lip, or shoulder 34 of annular-like configuration is provided. Shoulder 34 is adapted to be received in generally freely rotatable relationship in groove 26 in cap element 16, to interlock the cap elements 16 and 17 together and limit or prevent relative vertical movement therebetween.

The cap elements 16 and 17 can be formed of ceramic, metallic, plastic, or other like materials which possess sufficient resiliency to permit the entry of the upper portion of cap element 16 into the cavity 32 in element 17 and the movement of flange or shoulder 34 on cap element 17 into the complementary recess 26 in the lower cap section 16 during assembly thereof. It will be seen that the shoulder or flange 24 on cap element 16 limits the downward movement of cap element 17 with respect to cap element 16 and preferably supports the wall portions 20 and 28 of the cap elements in slightly spaced relationship, as indicated at 36 in FIG. 1, to reduce the frictional drag upon relative rotation between the cap members.

When cap elements 16 and 17 are in finalized, assembled relationship as shown in FIG. 1, the vertical, external peripheries thereof are substantially coextensive, presenting what generally appears to be a substantially uninterrupted surface extending vertically from the body of the container 10 to the top of the closure or cap therefor.

The external vertical extent of wall portion 30 of upper cap element 17 is substantially greater than that presented by the external surface of cap element 16, and in particular the externally visible surface of flange portion 24 thereof, when the cap elements 16 and 17 are in final assembled relationship on container 10. Thus, when unauthorized personnel, and especially children, attempt to remove cap 14 from the container, they will in all probability grasp primarily the external periphery of the upper cap element 17, which is substantially freely and independently rotatable with respect to the lower cap element 16 and to the container, and therefore the cap will not be disengaged or threaded from the container. However, when authorized personnel, who are familiar with the operation of the cap, wish to actuate the latter, they will grasp the cap so as to apply the rotative force to the externally accessible periphery of the bottom cap element 16, thereby unscrewing or unthreading the cap 14 from the threaded neck 12 of the container.

In FIGS. 4 to 6 inclusive of the drawings there is shown another embodiment of the invention. In this embodi-

ment, the container 42 is illustrated in the form of a bottle having a neck portion 43 with an outwardly extending lip or shoulder 44 thereon.

The cap member 45 of this embodiment comprises a first or lower member 46 which is adapted to clasp the neck portion 43 of the container, and a second or upper member 48 which is adapted to be mounted in threaded relationship on cap element 46.

In the embodiment as shown, cap member 46 is of generally cylindrical outer configuration comprising a base portion 50 having an upwardly projecting neck or stem 52 formed integrally therewith. An axial passageway 54 extends continuously through cap member 46 and is widened as at 56 to form a groove adjacent the bottom thereof for receiving the lipped neck 43 of container 42. Adjacent the bottom extremity of member 46, an annular-like, inwardly extending flange or shoulder 58 is provided which is adapted to coact in interlocking relationship in a vertical direction with the lip or shoulder 44 on neck portion 43 of the container, to limit or prevent relative vertical movement between cap assembly 45 and the container. It will be seen however, that with such an arrangement, cap member 46 is substantially freely rotatable with respect to neck 43 of container 42. Neck or stem portion 52 of cap element 46 is preferably of reduced diameter, as shown, so that when the upper and lower cap elements 48 and 46 are in final assembled relationship as a unit, the outer vertical surfaces thereof will be substantially coextensive, as shown in FIG. 4. With the reduced diameter of stem portion 52, the base or body portion 50 of member 46 is provided with a ledge or shelf portion 60 which extends circumferentially around stem portion 52. Stem portion 52 is externally threaded, as shown, and is adapted to be received in telescoped relationship in the internally threaded cap element 48. Ledge or shelf portion 60 on cap element 46 limits the threaded movement of stem 52 of cap element 46 into cap element 48 to preferably provide a clearance as at 62 (FIG. 4) between the upper portions of the cap members.

Cap member 48 is of generally cylindrical outer configuration in the embodiment shown and comprises a top wall portion 64 and a continuous, circumferentially extending, wall portion 66 depending therefrom. Wall portion 66 is internally threaded as at 68, as aforesaid, for receiving in threaded engagement the externally threaded neck or stem section 52 of cap 46. It will be seen that in effect, the external threads of stem portion 52 of cap element 46 form outwardly extending shoulders or portions, and the internal threads 68 of cap element 48 in effect form inwardly extending shoulders or portions, for holding engagement in a vertical direction, to prevent relative vertical movement therebetween when the latter is undesirable, with the threads being rotatable with respect to one another for engagement or disengagement of the cap elements.

The cap elements 46 and 48 are assembled by rotating the latter with respect to one another into threaded engagement, and then the assembled cap may be forced downwardly over the lipped neck portion 43 of the container. During the latter downward movement of the cap assembly, the body portion 50 of cap element 46 is deformed outwardly to permit entry of the lipped neck 43 of the container into the widened entrance 56 to passageway 54, and then the shoulder 58 on member 46 will snap or move into vertical interlocking relation with the lip 44 of the container, to retain the latter in closed condition.

The threaded and abutting engagement between cap elements 46 and 48 provides a frictional coaction therebetween of such magnitude that when unauthorized personnel who are unfamiliar with the operation of the cap assembly, and especially children, attempt to open the container, the cap assembly 45 will merely rotate about the lipped neck section 43, with no disengagement of the closure or cap assembly from the container occurring.

However, when authorized personnel want to open the container, they may merely grasp one of cap elements 46 or 48 to hold it stationary and rotate or unthread the other cap element with respect to the stationary cap element, and thereby disengage the cap elements to open the container.

The cap elements of the embodiments of the invention shown may be provided with either right or left hand threads, depending upon the preference of the ultimate user thereof.

From the foregoing description and accompanying drawings it will be seen that the invention provides an improved cap or closure, for a container, which is comparatively easily actuated by authorized personnel to open the container, but which presents a definite bar to unauthorized personnel unfamiliar with the operation of the cap. The invention also provides a rotary type cap or closure comprising a plurality of elements adapted to be assembled into a unitary arrangement and mounted on a container for effectively closing the latter, and wherein one of the elements comprises means for attaching the cap assembly to the container and wherein both of the elements comprise means adapted for coacting relationship to retain the individual parts as a unitary assembly, for effectively barring unauthorized opening of the container, but wherein means is provided on the cap assembly for readily actuating the latter to open the container when operated by personnel familiar with the working of the device.

The terms and expressions which have been employed are terms of description and not of limitation and there is no intention in the use of such terms and expressions of excluding any equivalents of the features shown and described or portions thereof, but it is recognized that various modifications are possible within the scope of the invention claimed.

I claim:

A closure for a container having a neck and a shoulder thereon, comprising in combination a sleeve surrounding the neck of the container and being a one-piece integral structure freely rotatable on the container, said sleeve having a grooved resilient portion adapted to be snapped over the shoulder on the container and coacting therewith to retain the sleeve on the neck of the container, said sleeve having a central passageway co-extensive with the opening in the neck of the container, and said sleeve having a cylindrical lower portion and a reduced upper portion, there being a horizontal plane surface at the upper end of the cylindrical lower portion, the reduced portion of the sleeve being externally threaded, and a cap having a flat portion adapted to extend across the top of the sleeve in spaced relation to said top, and having a skirt portion the outer surface of which is co-extensive with the outer cylindrical surface of the sleeve, the skirt portion having an internal thread adapted for engagement with the external thread of the sleeve, the lower portion of the skirt being adapted to engage the plane surface on said sleeve for enabling the cap to be tightened onto the sleeve, whereby when the cap is tightened onto the sleeve, the sleeve and cap have the appearance of a single unitary structure, said plane surface on said sleeve and said coacting lower portion of said cap being of sufficient area so as to normally retain said sleeve and cap in assembled relation, thus necessitating holding of the sleeve against rotation in order to remove the cap therefrom.

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