

- [54] **PLASTIC CLOSURE CAP FOR A CONTAINER**
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- [51] Int. Cl.²..... **B65D 41/32**
- [58] Field of Search..... 215/253, 254, 320;
 220/266, 268, 269

3,722,729 3/1973 Yamada..... 215/254

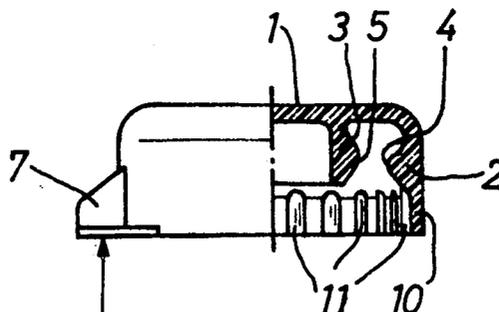
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[57] **ABSTRACT**

A closure cap formed of plastic for a container, especially a bottle or the like, comprising a cap lift-off or removal nose member which protrudes away from the outer periphery of the body of the closure cap. At least one reference rupture location is provided at a region in the neighborhood of the cap lift-off nose member, which region is stressed during pushing the closure cap off of the container, or such reference rupture location is provided at the cap lift-off nose member itself. Tearing of the reference rupture location indicates any possible unauthorized opening of the container. The regions containing the reference rupture locations form a part of the closure cap member which can be removed as a unit with the cap lift-off nose.

- [56] **References Cited**
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3 Claims, 7 Drawing Figures



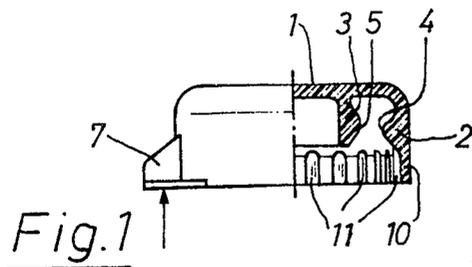


Fig. 1

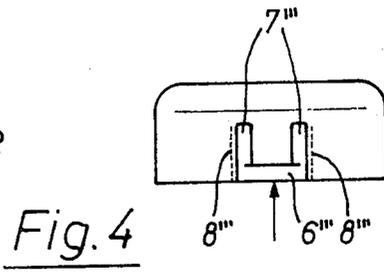


Fig. 4

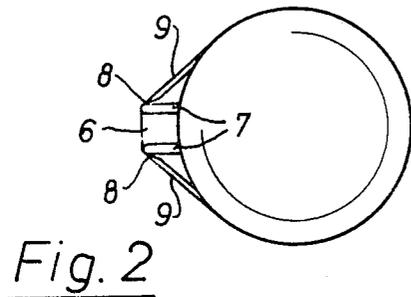


Fig. 2

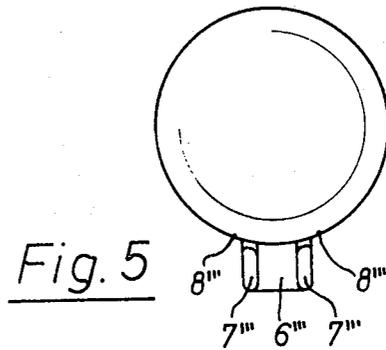


Fig. 5

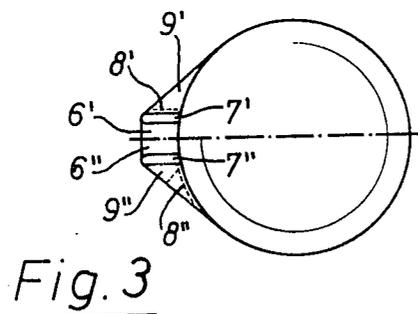


Fig. 3

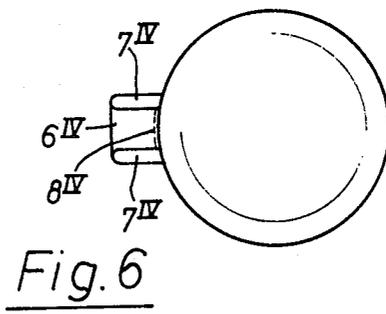


Fig. 6

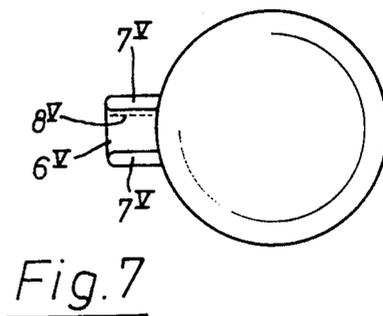


Fig. 7

PLASTIC CLOSURE CAP FOR A CONTAINER

BACKGROUND OF THE INVENTION

The present invention relates to a new and improved construction of closure cap member for a container, especially a flask or bottle, which closure cap member is of the type comprising a cap lift-off or actuation nose member which protrudes away from the outer periphery of the body of the closure cap member.

Such type closure cap can be removed from the container by pushing away the lift-off nose member with the thumb. With heretofore known closure caps of this type, it was not possible to determine whether or not the container had already been opened prior to its actual use.

SUMMARY OF THE INVENTION

Hence, it is a primary object of the present invention to provide an improved construction of closure cap for a container or the like rendering possible the ready and easy determination whether the container has been previously improperly opened.

Another object of the present invention aims at a new and improved construction of closure cap for a container or the like, which closure cap is relatively simple in construction and design and equipped with means enabling the rapid and quick determination whether the container with which the cap is used has previously been opened.

Now in order to implement these and still further objects of the invention, which will become more readily apparent as the description proceeds, the closure cap of this development contemplates the provision of at least one reference rupture location provided at regions of the cap in the neighborhood of the cap lift-off nose member or at the cap lift-off or removal nose member itself, and which regions are stressed during removal of the closure cap from the container. Tearing of the reference rupture location or locations indicates unauthorized opening of the container. The regions containing the reference rupture locations form a part of the closure cap which can be removed as a unit together with the cap lift-off or removal nose.

The invention is particularly suitable for closure caps used in conjunction with containers which house a beverage under pressure. Such closure caps, also known as crown corks, can possess a substantially cylindrical peripheral or marginal section which axially extends away from the floor of the cap, and at the inner periphery of which there is formed, for instance, a substantially ring-shaped, elastically flexible support bead for cooperation with a bead edge at the neck or throat of the container, and a substantially cylindrical inner section which likewise axially extends away from the cap floor, the outer periphery of which possesses a substantially ring-shaped, elastically flexible sealing bead which sealingly fits into the container throat. The outer contour or shape of such sealing bead approximates the shape of an olive.

BRIEF DESCRIPTION OF THE DRAWING

The invention will be better understood and objects other than those set forth above, will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawing wherein:

FIG. 1 is a side view, partially in section, of a closure cap designed according to the invention;

FIG. 2 is a plan view of the closure cap depicted in FIG. 1;

FIG. 3 is a plan view of a closure cap designed according to the invention, the upper half of the illustration showing one embodiment and the lower half showing a different embodiment;

FIG. 4 is a side view, turned through 90° in comparison to the showing of FIG. 1, and depicting a further modification of closure cap according to the invention;

FIG. 5 is a plan view of the closure cap depicted in FIG. 4;

FIGS. 6 and 7 respectively illustrate plan views of still two different embodiments of closure cap designed according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Describing now the drawing, the various embodiments of closure caps depicted therein possess a substantially bowl- or cup-shaped configuration. The sectional view appearing at the right hand portion of FIG. 1 is identical to all of the illustrated embodiments of closure caps. Accordingly, it will be seen that the closure cap possesses a cap floor or base 1 from which axially protrudes a substantially ring-shaped cylindrical peripheral or marginal section 2 and radially and further inwardly thereof a likewise substantially ring-shaped cylindrical inner section 3. The marginal or peripheral section 2 is provided at the region of its free end with an inwardly protruding support bead 4, the upper profile or contour of which, as shown in FIG. 1, extends or slopes more markedly towards the apex or tip than its lower contour. The peripheral or marginal section 2 is reinforced at its free end by means of a substantially circular or ring-shaped encircling collar 10 and at its inside by ribs 11 which extend from the support bead 4 to the cap edge, these ribs being substantially uniformly distributed along the inner peripheral wall of the cap.

The inner section or portion 3 has a convex curved outer contour or profile 5 defining a sealing bead and similar to the shape of an olive. As concerns the spacing of the tip or apex of the inner section 3 from the cap floor 1, the same is spaced at a lesser or at most the same distance as the support bead 4 of the outer or peripheral section 2.

Owing to this construction, the support bead 4, upon pressing the closure cap into the neck or throat of the container or the like, bears prior to or at least simultaneous with the sealing bead 5 against the bead edge of the container, and thus during the cap pressing-in or insertion operation the pressure exerted by the sealing bead at the inner section towards the outside upon the inner wall of the container neck or throat is supported at the outer wall of the container neck. In this way there can be avoided destruction of the container neck during insertion of the closure cap owing to too large a pressure being exerted from the inner section or portion 3 upon the container neck.

The closure cap is provided at the outside with a cap lift-off or removal nose 6 (FIG. 2), 6' (FIG. 3), 6'' (FIG. 3), 6''' (FIGS. 4 and 5), 6'''' (FIG. 6), and 6'''''' (FIG. 7), which in each of the exemplary illustrated

embodiments are equipped to both sides with a respective reinforcement wall 7, 7', 7'', 7''', 7''', and 7^v.

During actuation of the cap lift-off or removal nose, by applying a pressure in the direction of the arrows shown in FIGS. 1 and 4 upwardly away from the neck of the container or the like, the closure cap, which owing to high frictional forces is tightly seated at the neck of the container, is deformed, particularly at the region of the cap lift-off or removal nose. This behavior is beneficially utilized by arranging reference rupture locations at the region of the nose and which are constructed such that the first time the closure cap is pushed or lifted off the container by means of the cap lift-off or removal nose, such reference rupture locations tear, thereby indicating any unauthorized opening of the container or the like.

With the embodiment shown in FIGS. 1 and 2, struts or webs 9 extend between the radial outermost corners of the nose 6 and the cap periphery, and at which struts there is formed a reference rupture location 8 neighboring each corner of the lift-off nose 6. The reference rupture location also can be of course arranged at the location of the connection of the struts or webs 9 with the cap periphery or at an intermediate location of the strut length.

With the embodiment according to FIG. 3, there are provided connection surfaces 9', 9'', between the nose or nose member 6' or 6'' and the periphery of the closure cap. With the embodiment shown at the upper portion of FIG. 3, a broken-line illustrated reference rupture line 8' extends neighboring the reinforcement wall 7' at the connection surface 9', whereas with the modification illustrated at the lower half of FIG. 3 a reference rupture line 8'' initially extends along the periphery of the closure cap at the connection surface 9'' and thereafter flexes or bends-off towards the outside from the radial inner corner of the reinforcement wall 7'' and extends transversely through the connection surface 9'', as shown.

With the embodiment according to FIGS. 4 and 5, there are arranged reference rupture lines 8''' to both sides of the cap lift-off or removal nose 6''' and such reference rupture lines coincide with axially parallel jacket lines or generatrices at the wall of the closure cap. With this embodiment the reinforcement walls 7''' are not constructed so as to extend up to the periphery of the closure cap, in order to insure for a sufficient deformation of the closure cap wall for tearing the reference rupture lines 8''' during the initial lifting-off or removal of the closure cap.

With the embodiments according to FIGS. 6 and 7 the reference rupture lines are arranged at the nose member itself. With the embodiment of closure cap depicted in FIG. 6, the reference rupture line 8^{iv} extends adjacent to and along the periphery of the closure cap at the web of the nose 6^{iv} between the reinforcement walls 7^{iv}, which here again extend up to the peripheral wall of the closure cap.

With the embodiment of FIG. 7, the reference rupture line 8^v extends approximately in radial direction and closer to one of both reinforcement walls 7^v at the web of the nose 6^v.

What is common to all of the exemplary embodi-

ments is that upon actuation of the cap lift-off or removal nose for pushing away the closure cap from the neck of the container, the reference rupture locations are caused to tear, thereby visually indicating that the associated container has already been opened, in other words, indicating when necessary any unauthorized opening of the container.

While there is shown and described present preferred embodiments of the invention, it is to be distinctly understood that the invention is not limited thereto, but may be otherwise variously embodied and practiced within the scope of the following claims. Accordingly,

What is claimed is:

1. A closure cap formed of plastic for use with a container, especially a flask or bottle, comprising a closure cap having a cap body, a cap lift-off nose extending away from the outer periphery of the body of the closure cap, at least one reference rupture location provided for said closure cap, said reference rupture location tearing upon removal of the closure cap from the container, the region of the closure cap containing said reference rupture location forming a part of the closure cap which can be removed as a unit together with the cap lift-off nose, said closure cap including at least one lateral connection surface extending between the cap lift-off nose and the outer periphery of the body of the closure cap, said at least one reference rupture location comprising at least one reference rupture line provided at said lateral connection surface.

2. A closure cap formed of plastic for use with a container, especially a flask or bottle, comprising a closure cap having a cap body, a cap lift-off nose extending away from the outer periphery of the body of the closure cap, at least one reference rupture location provided for said closure cap, said reference rupture location tearing upon removal of the closure cap from the container, the region of the closure cap containing said reference rupture location forming a part of the closure cap which can be removed as a unit together with the cap lift-off nose, said reference rupture location comprising a reference rupture line provided at the cap lift-off nose at a region thereof neighboring the periphery of the body of the closure cap, and reinforcement wall means provided for the cap lift-off nose, said reinforcing wall means laterally bounding said reference rupture line.

3. A closure cap formed of plastic for use with a container, especially a flask or bottle, comprising a closure cap having a cap body, a cap lift-off nose extending away from the outer periphery of the body of the closure cap, at least one reference rupture location provided for said closure cap, said reference rupture location tearing upon removal of the closure cap from the container, the region of the closure cap containing said reference rupture location forming a part of the closure cap which can be removed as a unit together with the cap lift-off nose, said closure cap including at least one lateral connection strut extending between the cap lift-off nose and the outer periphery of the body of the closure cap, said at least one reference rupture location comprising at least one reference rupture location provided at said lateral connection strut.

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