

July 16, 1968

G. W. FAULSTICH

3,392,862

TEARABLE BOTTLE CAP

Filed Sept. 26, 1966

FIG. 7.

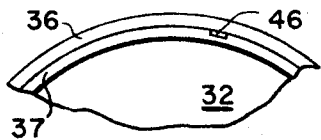


FIG. 4.

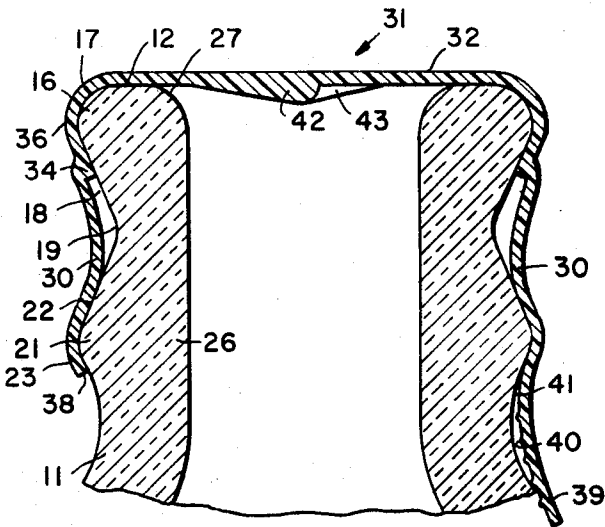


FIG. 1.

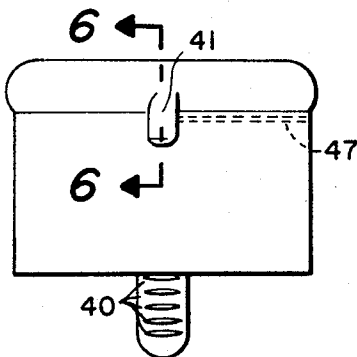
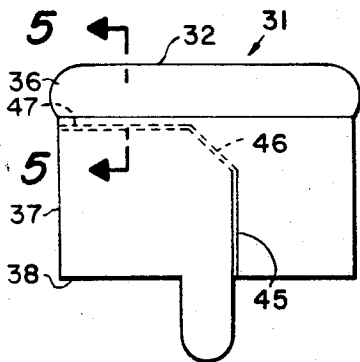


FIG. 2.

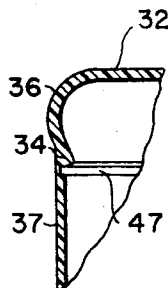


FIG. 5.

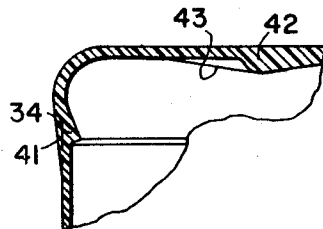


FIG. 6.

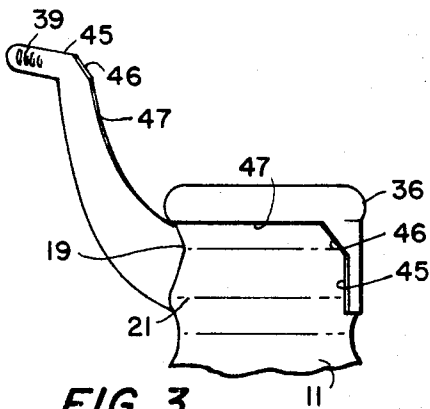


FIG. 3.

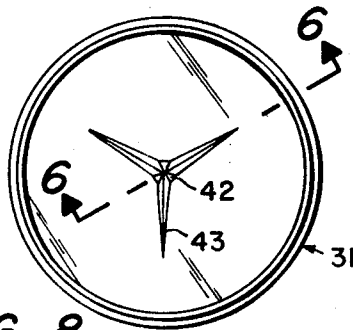


FIG. 8.

INVENTOR.
GEORGE W. FAULSTICH
BY *Julian Caplan*
ATTORNEY

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3,392,862

TEARABLE BOTTLE CAP

George W. Faulstich, % Black Mountain Spring Water, Inc., 800 Alameda St., San Carlos, Calif. 94070
Continuation-in-part of application Ser. No. 515,608, Dec. 22, 1965. This application Sept. 26, 1966, Ser. No. 582,082

7 Claims. (Cl. 215—41)

ABSTRACT OF THE DISCLOSURE

A plastic bottle cap for 5-gallon water bottles, and the like, has a central disc with a depending skirt which fits snugly around the exterior of the bottle neck and, so long as it remains intact, prevents tampering with the contents. The lower part of the skirt is scored and provided with a tab so that it may be partially torn off, thereby facilitating easy removal of the cap to dispense the contents. The score lines are so constructed that when the installer of the bottle tears the cap skirt, he can readily remove the cap from the neck without his hands coming in contact with the bottle lip and thus contaminating the contents.

This invention is a continuation-in-part of co-pending application Ser. No. 515,608, filed Dec. 22, 1965.

This invention relates to a new and improved plastic water bottle cap of the type used on five gallon water bottles of the type having a crowned neck. The cap has a depending skirt which fits snugly around the exterior of the neck of the bottle and, so long as it remains intact, prevents tampering with the contents. Thus when the skirt is intact, liquid cannot be added to or removed from the bottle. However, the lower part of the skirt is scored and provided with a tab so that it may be partially torn off, thereby facilitating easy removal of the cap to dispense the contents.

A particular feature and advantage of the present invention is the fact that prior to tearing of the skirt the upper part of the neck of the bottle, as well as the lip, are sealed against contamination from dirt. Another important feature of the invention is the fact that when the skirt is torn and the cap removed, the likelihood of the hands of the user coming in contact with the upper end of the neck is practically eliminated. This feature is of extreme importance in sanitation. In prior caps, when the driver who delivers and installs the bottle in a water cooler removes the cap, his hand is in such close proximity to the lip of the neck that contact therewith is not easily avoided and hence contamination may occur. The present invention has for its principal object, therefore, provision of a cap which promotes sanitation.

A still further feature of the construction of the cap is the fact that after the cap has been removed, it may be reinstalled on an empty bottle and used to protect the lip of the bottle against damage during transportation of the bottle back to the point of refilling. In conventional delivery trucks, five gallon bottles are racked on top of each other and this may result in the bottom of the upper bottle chipping or cracking the lip of the neck of the lower bottle and thus reducing the effectiveness of the subsequent seal after the bottle has been used and eventually resulting in discard of the bottle. Accordingly, a still further feature of the present invention is the reduction in damage to the bottles both when the seal is intact and when it is being used to protect a bottle during transportation back to the bottling works.

The torn bottle cap may also be used as a temporary reclosure cap where all of the contents of the bottle are not dispensed at a single time. There is sufficient im-

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perforate area on the cap which interfits with the neck of the bottle to permit the cap to be reinstalled and keep dust out of the bottle.

A disadvantage of all prior caps for bottles of this type is the fact that it is relatively easy to replace the high quality pure water which is intended to be vended therein with ordinary tap water because there is no way that removal and replacement of cap or cork can be readily detected. Such caps encourage dishonesty in that empty bottles can be filled with tap water instead of the high quality water intended to be sold. The present invention provides a cap having a skirt which while intact prevents the contents of the bottle from being substituted. The patron is assured by the appearance of the skirt at the time the bottle is delivered that there has been no tampering with the contents.

A still further advantage of the invention is the fact that the cap seals on the neck of the bottle in a plurality of different locations. Thus, the underside of the top of the cap seals against the top edge or finish of the lip of the neck. The skirt seals around the topmost external bead as well as against the upper edge of the lower bead. Sealing in a plurality of locations reduces the tendency of the contents to leak or for contaminants to enter the bottle.

A principal feature of the invention is its low cost of manufacture and the facility with which the cap may be installed at the bottling works and removed at the premises of the patron.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

FIG. 1 is a side elevation of a cap in accordance with this invention.

FIG. 2 is a view similar to FIG. 1 taken from the opposite side.

FIG. 3 is a partially schematic side elevational view of a cap and upper end of a bottleneck showing the skirt in the act of being torn preliminary to removal of the cap.

FIG. 4 is an enlarged fragmentary sectional view of a cap and bottleneck.

FIGS. 5-7 are, respectively, fragmentary sectional views of portions of a cap as taken along corresponding lines in FIGS. 1, 2 and 1.

FIG. 8 is a bottom plan showing the underside of the top of the cap.

One conventional type of five gallon water bottle used for spring water, distilled water and the like has a neck 11 terminating in an upper edge or finish 12 which is annular. Immediately below finish 12 the neck has an external upper bead 16 having a substantially circular arcuate upper corner 17 and a downwardly-inwardly tapering lower curvature 18 which terminates in a minimum diameter portion 19. Below minimum diameter portion 19 is a second bead 21 having an upper curvature 22 which extends upwardly-outwardly in a parabolic curve 22 and then curves inwardly-downwardly in a circular arc 23 merging with the upper end of neck 11. Customarily, the bottle is made of glass although the present invention contemplates rigid plastic substitutes for glass. The interior of the bottleneck 11 has a generally cylindrical inner diameter 26 terminating adjacent the finish 12 in an outwardly flaring bevel 27.

Cap 31 is initially unitary and is a thin-walled plastic such as polyethylene or polystyrene, it being understood that a variety of plastic materials is available for such purpose. The quality of the plastic is such that it is sufficiently resilient so as to slip over the external beads and

yet to snap back to form tight seals as heretofore described. The material further is characterized by the fact that it may be torn with the fingers along a score line as hereinafter explained to obtain access to the container.

Cap 31 has a top circular disk 32 having an external diameter about equal to the inside diameter of the top finish 12 of neck 11. Around the perimeter of disk 32 is an external bead which is complementary to bead 16 and terminates in a vertical skirt 37 having a lower edge 38 which fits around and under and seals against the surfaces 22 and 23 of bead 21. Depending from bottom edge 38 is a tab 39 having horizontal ribs 40 on its inside surface to facilitate gripping with the fingers of the user. Immediately opposite tab 39 is an external gusset 41 which is for a purpose hereinafter described.

Bead 36 is finished with an internal, triangular cross-section ring 34 which fits tightly against surface 18 and improves the seal of the cap against the upper bead 16.

The underside of disk 32 is reinforced by a central hemispherical protuberance 42 and three radial, equiangularly spaced, downward-outward tapering ribs 43. Elements 42, 43 help to prevent disk 32 from deflecting inward or outward unduly.

Commencing at bottom edge 38 immediately to the right of tab 39 is a vertical external score line 45 which extends up about half the length of skirt 37. Slanting up and to the left (as viewed in FIG. 1) is an internal score line 46 which merges into horizontal internal score line 47 which is immediately below ring 34. Line 47 terminates at gusset 41 and has an arcuate length of about 150°. Score lines 45, 46 and 47 are sufficiently deep so that when the user grips the tab 39 and pulls upwardly and outwardly as best illustrated in FIG. 3, the skirt tears along said lines to permit removal of cap 31 as herein-
after explained.

In use, cap 31 is installed by pressing downward. By reason of the fact that surfaces 17 and 22 are rounded, when downward pressure is applied on cap 31 the cap stretches so that it slips over beads 16 and 21 and then contracts to its initial condition with tight sealing engagement against bead 16 and bead 21 as well as with lip 12. The skirt concaves inward between beads 16 and 21, as indicated by reference numeral 30. The fact that score line 45 is on the exterior reduces tendency of the cap to split under the stress of installation of the cap since nicks in surface 17 do not enter line 45. In such position the contents of the bottle are not subject to tampering since the cap cannot be removed without tearing the skirt. Water cannot leak out of the bottle nor can dirt or other contaminants enter. Of equal importance is the fact that the exterior of the bottle around the neck is also protected from contaminants.

When the bottle reaches its destination, it is customarily unloaded from a truck by the driver and installed in a water cooler, although such end use is not essential to practice of the present invention. The user grasps tab 39 and pulls upwardly and outwardly with a twisting motion as best illustrated in FIG. 3, tearing along lines 45, 46 and 47 until gussets 41 stops the tearing action. Continued pulling of tab 39 upwardly and outwardly unseats cap 31 from the neck of the bottle, the plastic stretching sufficiently after the skirt has been perforated as indicated to permit removal of the cap. The hands of the user are far removed from the upper end of the neck and hence the danger of contamination of the surface or of the contents by contact of the hands is eliminated.

When desired the cap in the condition shown in FIG. 3 may be used for reclosure purposes. The cap fits on the bottleneck sufficiently tightly to prevent dirt from contaminating the water, and in fact the cap is partially water-tight under normal storage conditions. A principal

purpose of the perforated cap, however, is the fact that it may be reapplied to an empty bottle and when thus used protects the bottle from chipping or cracking during transportation back to the bottling works.

Although the foregoing invention has been described in some detail, by way of illustration and example for purposes of clarity and understanding, it is understood that certain changes and modifications may be practiced within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. In combination, a container having a container neck having an annular finish at the end of said neck, an upper external first bead having a substantially circular arcuate upper corner and a downward tapering lower curvature ending in a minimum diameter portion and a second bead below said minimum diameter portion; and a cap of a flexible plastic material said cap deformable to accommodate minor variations in bottle dimensions and also to permit said cap to stretch over said first bead, said cap preformed and having substantially uniform wall thickness throughout, said cap comprising a flat top disk having a diameter about equal to that of said finish, an external third bead below said disk complementary to and tightly engaging said first bead down to the upper end of said lower curvature, and an imperforate vertical skirt below said external third bead having a diameter less than said first and second beads of said neck, said skirt being weakened in a first score line below said external third bead and also in a spiral configuration second score line joining said first line and extending down toward the bottom edge of said skirt, said first score line having an arcuate length less than 180°, a thickened gusset below said external bead, said first score line terminating at said gusset, said skirt being tearable along said second and first lines, said cap in intact condition on said neck sealing said neck against either input or output of liquid, said cap when torn along said second and first lines permitting removal of said cap from said neck.

2. The combination of claim 1 which further comprises a pull tab depending from the lower edge of said skirt.

3. A combination according to claim 2 in which said tab is formed with ribs facilitating gripping with the fingers.

4. A combination according to claim 2 in which said second score line terminates above the lower edge of said skirt, said skirt weakened in a substantially vertical third score line from the lower end of said second score line to the lower edge of said skirt.

5. A combination according to claim 4 in which said third score line is external and said first and second score lines internal.

6. A combination according to claim 1 which further comprises an internal, substantially triangular cross-section ring immediately below said external bead.

7. A combination according to claim 1 in which the underside of top disk is formed with a central protuberance and angularly spaced, radial ribs extending toward the periphery of said disk.

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DONALD F. NORTON, *Primary Examiner*.
FRANKLIN T. GARRETT, *Examiner*.