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2,850,194

SCREW CAP

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Fig. 1

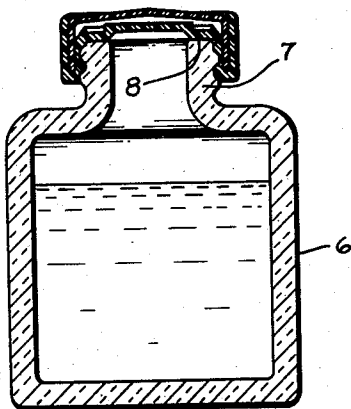


Fig. 2

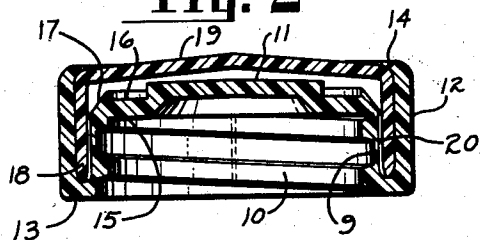


Fig. 3

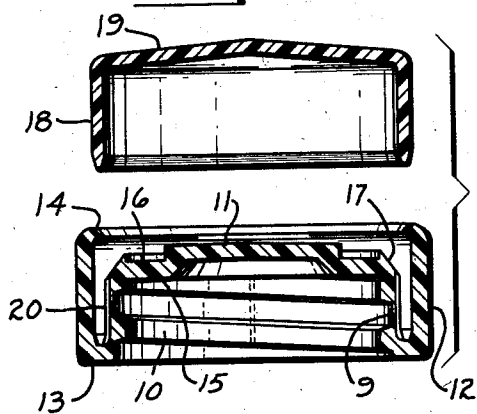


Fig. 5

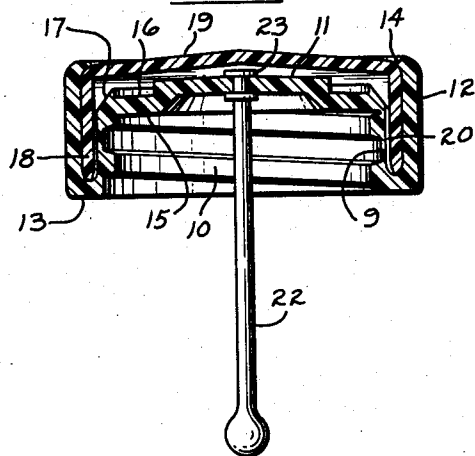
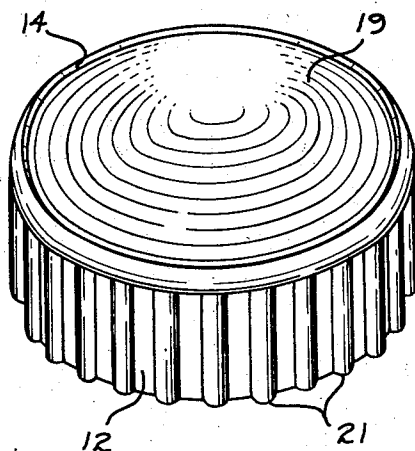


Fig. 4



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## SCREW CAP

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4 Claims. (Cl. 215—43)

The invention relates to closures for containers and more particularly to an improved screw cap adapted to be threaded over the neck of a bottle, jar or the like.

Screw caps in common use generally consist of an internally threaded cap of rigid material, either metal or plastic, and a liner, or sealing disc held in some manner as by glue to the inner surface of the top end wall of the cap. These liners give rise to certain objections. The glue or other adhesive would be objectionable for bottles containing edible or potable material; and the operation of inserting such liners adds considerably to the cost of the caps.

It is therefore an object of my invention to provide an improved screw cap which will not have the faults of the caps above described and in which the need for a sealing liner is eliminated.

Another object is to provide a screw cap consisting of two parts which can be economically manufactured and assembled.

A further object is to provide such a screw cap wherein the part most prominently exposed across the top of the cap can be made of material the surface of which has a high finish and luster; wherein the two parts can be made of material having any desired matching or contrasting colors; and wherein the top of the cap may be of any desired shape or which can conveniently be made to carry any desired insignia.

A still further object is to provide such a screw cap construction which will allow for the attachment of inside fittings such as a brush applicator.

The foregoing objects and certain advantages that will hereinafter appear, are realized in the embodiments of the invention shown in the accompanying drawings.

In these drawings:

Fig. 1 is a central vertical section showing my improved cap as applied to a typical bottle;

Fig. 2 is a section showing the cap itself on a larger scale;

Fig. 3 is a section showing the two parts of the cap separated;

Fig. 4 is a perspective view of the finished cap; and

Fig. 5 is a section showing my improved screw cap modified to carry an applicator.

As an example of a container for which my invention provides an improved closure, there is indicated a glass bottle 6 having an exteriorly threaded neck 7 with a top or end surface 8 against which the cap must provide a seal in spite of the slight irregularities in the molded glass surface.

The screw cap illustrated in Figures 1 to 4 consists of only two pieces. The first piece which is in direct contact with the bottle is moulded preferably from a thermoplastic material which when furnished, is pliable at ordinary temperatures. The most suitable material that I have found for this purpose is polyethylene. This first piece consists of an inner cylindrical wall 9 having a coarse internal thread 10 adapted to engage over a threaded bottle neck, an integral top wall 11 for covering

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the mouth of the bottle, and an outer cylindrical wall 12 which is integrally joined to the inner wall around the bottom edge 13 of the cap and which extends upwardly in spaced relationship to the inner wall somewhat beyond the top wall 11, terminating preferably in a slightly inturned lip 14. The circular portion 15 of the top wall 11 adjacent to the thread 10 is adapted to bear and seal against the upper edge of the bottle neck. Opposite this bearing portion 15 on the top surface of the wall 11 there may be provided a circular groove 16. In this way it is assured that the portion 15 has sufficient yieldability to conform to the upper edge of the bottle and form a fluid tight fit therewith. Preferably the corner at the outer edge of wall 11 is beveled as indicated at 17 to facilitate assembly of the two pieces.

The second piece is of rigid material and serves to maintain the shape of the cap by supporting or reinforcing the first piece. It is preferably molded of a suitable rigid plastic and for this purpose I prefer to use polystyrene, which not only provides the required rigidity but gives to the top of the cap a surface with a high finish and luster, thus enhancing the appearance.

The second piece consists of a cylindrical wall 18 which fits snugly in the space between the inner and outer walls 9 and 12 respectively of the first piece and a top 19, which is herein shown as slightly domed, but which permits of any desired shape and which may also carry lettering or other insignia. The inturned edge or lip 14 is sufficiently flexible that it does not hinder insertion of the second piece and when the two parts are assembled it fits over the corner of the second piece to help retain it in place. In the example shown the top wall 19 of the rigid piece is spaced slightly from the top wall 11 of the first or pliable piece, but even if the top 19 were made flat so that it would contact the central portion of the wall 11, the bearing portion 15 would be sufficiently pliable and flexible to seal against the bottle by reason of the groove 16. In order to allow for the escape of air when the top or second piece is pushed into place in the first piece, small vent channels may be provided in one of the pieces, herein shown as narrow shallow grooves 20 on the surface of wall 9 of the first piece.

The wall 12 of the first piece may be described as a rim integral therewith and positioned outwardly of the cylindrical wall of the second or rigid piece, to provide means for gripping the cap for attaching it to or detaching it from the neck of a bottle. In Figure 4 it may be seen that the outer surface of the cylindrical wall 12 has ribs 21 to assist in grasping the cap.

When it is desired to attach an applicator or other inside fitting to the cap it will be observed in Figure 5 how this can easily be accomplished without affecting the pleasing outside appearance. For example an applicator 22 may extend through the top wall 11 of the inner or first piece and be retained in place by any suitable means such as the collars 23.

In threading the cap to or unthreading it from the bottle there is no likelihood of an inner part or liner slipping because the outer ribbed wall 12 is integral with the threaded inner wall.

It will be apparent to those skilled in the art that the two pieces of my improved cap can be economically manufactured and assembled and also that a cap is provided which lends itself to "automation" in assembly to bottles. It will be noted that the flexible nature of the threaded piece permits the thread to be molded without the employment of unscrewing mechanism to remove it from the mold.

While for convenience I have used the terms "screw cap" and "threaded," it is not the intention that they should be construed in a limited sense but to include

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mechanical equivalents, such as interrupted threads and bayonet type fittings.

What I claim as new and desire to secure by Letters Patent is:

1. A cap adapted to fit over the neck of a bottle consisting essentially of two pieces, the first piece being of pliable material having a cylindrical wall with internally projecting means adapted to interengage with complementary means on the neck of the bottle and an integral top wall for covering the mouth of the bottle including a circular bearing portion which is sufficiently pliable and flexible to provide an effective seal against the end of the bottle neck, the second piece being of rigid material having a cylindrical wall fitting tightly around the cylindrical wall of the first piece to reinforce the same against outward expansion and a top wall overlying the top wall of the first piece and in spaced relationship at least in the region of said circular bearing portion, and a rim integral with the first piece and positioned outwardly of the cylindrical wall of the second piece to provide means for gripping the cap for attaching the cap to or detaching it from a bottle.

2. A screw cap adapted to be threaded over the neck of a bottle consisting essentially of two pieces, the first being of molded pliable plastic material having an inner

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internally threaded cylindrical wall adapted to engage over the neck of a bottle, an integral top wall for covering and seating directly against the top of the bottle and an outer cylindrical wall which is integrally joined to the inner wall around the bottom edge of the cap and which extends upwardly in spaced relationship to the inner wall somewhat beyond the top wall, the second piece having a cylindrical wall which fits snugly in the space between the inner and outer walls of the first piece and a top overlying the top wall of the first piece.

3. A screw cap as defined in claim 2 wherein the outer wall of the first piece terminates in an intumed lip which engages around the corner of the second piece.

4. A screw cap as defined in claim 2 wherein there is a space between the pliable top wall of the first piece and the rigid top wall of the second piece to provide a cushioned seating surface on the first piece to engage the top of the bottle neck.

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