SLIDING TOP INTERNAL POURER BOTTLE CAP

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References Cited
UNITED STATES PATENTS

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ABSTRACT
A two piece molded plastic bottle cap has a slidable closure member inserted into a top cavity of a screw cap body, with corresponding surfaces of the two parts mating in closed position to effect an airtight leakproof seal, and space between corresponding surfaces of the two parts when slidably moved to an open position forming a liquid pouring spout and an air vent channel enabling continuous pouring of liquids.

1 Claim, 5 Drawing Figures
SLIDING TOP INTERNAL FOURSER BOTTLE CAP

BACKGROUND AND OBJECTS OF THE INVENTION

The invention relates to improved bottle closures which may be quickly and easily opened with one hand for convenient dispensing of controlled quantities of liquids. Whereas the prior art bottle closures generally require the use of two hands, one for holding the bottle and the other for manipulative removal of the cap either by unscrewing or otherwise, the principal object of the present invention is to provide an improved bottle cap adapted for opening or closing by the touch of a finger, even while holding the bottle in one hand.

A further object is to provide such a closure which does not require the user's fingers to touch the dispensing area, thereby assuring cleanliness.

Another object of the invention is to provide such a dispensing bottle cap with an internal pouring spout which may be covered and completely sealed when the cap is in closed position.

Additional objects of the invention are to provide such an improved liquid dispensing closure with means to prevent leakage or evaporation during shipment or storage, and which are inexpensive to manufacture and commercially attractive to users.

Other objects of the invention will in part be obvious and in part appear hereinafter.

The invention accordingly comprises an article of manufacture possessing the features, properties, and the relation of elements which will be exemplified in the article hereinafter described, and the scope of the invention will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description taken in connection with the accompanying drawings, in which:

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front perspective view of a preferred embodiment of the dispensing bottle closure of the invention, here shown open and ready for dispensing;

FIG. 2 is an exploded perspective view of the two molded plastic parts which comprise the bottle closure of FIG. 1;

FIG. 3 is a top view of the assembled parts shown in FIG. 2, with dotted lines showing the closure member in its open position;

FIG. 4 is a cross-sectional view taken along the line 4--4 of FIG. 3 showing the assembled bottle cap attached to the mouth of a bottle, with broken lines indicating the open position;

FIG. 5 is a cross-sectional view taken along the line 5--5 of FIG. 4.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Referring now in greater detail to FIGS. 1 through 5 of the drawings, the pouring dispenser closure of the invention will be described. A molded plastic cap portion indicated generally at 10 in FIG. 1 and FIG. 2, has a recessed top plate portion 11, a central cavity opening 12, and an internal pouring spout surface 14. A slidable closure member indicated generally at 15, also formed of molded plastic, is insertable in the recess 11 and cavity 12 of body member 10, and is slidable between an open position as shown by solid lines in FIG. 1 and by dotted lines in FIGS. 3 and 4, and a closed position shown by solid lines in FIG. 3 and FIG. 4.

Cavity 12 in body member 10 is formed and substantially enclosed by depending vertical sidewalls 40--41 and bottom wall 42 as shown in FIG. 5 and rear wall 44 as shown in FIG. 4.

When slider member 15 is moved to its open position as shown by dotted lines in FIG. 4 an opening at 45 exposes cavity 12 to the interior mouth of a bottle 39 to which the cap is attached. When the slider member 15 is in its closed position as shown by solid lines in FIG. 4 the front plug portion 46 of depending member 22 fills and closes the opening 45, forming a leak-proof seal at this opening between body member 10 and closure member 15.

A curved surface 46 on the lower side of closure member 15 as seen in FIG. 2 mates with correspondingly curved surface 16 of body member 10 when the member 15 is moved to its closed position and thus forms a seal at the opening. When the member 15 is slid to the open position, as shown in FIG. 1 and by dotted lines in FIG. 3 and FIG. 4, the surfaces 14 and 16 form therebetween an internal pouring spout through which liquids, such as spirits, for example, may be smoothly and continuously poured. Continuous pouring is made possible by the admission of air through an air vent 17 in the cap body member 10, as shown in FIGS. 2 and 4. A molded lip portion 18 on the underside of slider member 15 fits within the opening 17 of the body member 10 when in the closed position and thereby serves the dual function of closing and sealing the air vent 17 and at the same time releasably locking the slider 15 in its closed position.

As clearly shown in FIG. 2, a pair of channel recesses 19 and 20 formed in the underside of closure member 15 meet in a recessed area 21 which is immediately above the air vent 17 when the assembled cap is in the open position, thereby admitting atmosphere through channels 19, 20, chamber 21 and into vent opening 17. A downwardly depending channel portion 22 of closure member 15 fits into cavity 12 of cap member 10 and serves the dual purpose of adding rigidity to the molded plastic member 25 and also functioning as a limit stop to limit the slidable motion of member 15 when it is inserted into body member 10. In the closed position an angularly disposed planar notch 24 formed on the depending portion 22 of slider member 15 as shown in FIG. 2 cooperatively engages with a correspondingly angular disposed lip 25 formed in the molded cap body member 10, in the manner clearly shown by cross-sectional view of FIG. 4, to effectively lock and seal the two parts in closed position.

Referring again to FIG. 2 of the drawings, a pair of undercut shoulder guide grooves 26 and 27 formed in the molded cap member are parallel to the surface of plate 11 but preferably are non-parallel to each other, as seen in the plan view of FIG. 3. Guide grooves 26 and 27 receive corresponding edge portions 28 and 29 of the slider member 15 when the member 15 is inserted into the body of cap 10. To facilitate assembly of the two parts 15 and 10 as shown separately in FIG. 2, the edges 28 and 29 of slider member 15 are beveled as shown at 30 and 31, as also are corresponding edges of the opening in the top of cap member 10 as shown at 32. The depending channel portion 22 of cap member 15 is inserted into the cavity 12 of cap member 10 in the open position, i.e., as far to the right as possible (as shown by dotted lines in FIG. 3 and FIG. 4) and the slider member 15 is then forced downwardly whereby the resilience between the two plastic parts enables the beveled surfaces 30, 31 and 32 to yield slightly in deformation whereupon the slider member 15 snaps into the grooves 26 and 27 of the cap member 10 and the two parts are thus permanently assembled.

Referring now more particularly to FIGS. 4 and 5 of the drawings, it will be seen that in a preferred embodiment the dispenser closure cap of the invention includes an annular depending skirt portion 36 containing recessed screw thread 37 for engaging corresponding screw threads 38 on the neck of a bottle 39. A molded annular ring portion 33 is adapted to engage the mouth of the bottle 39 in airtight sealing engagement. The air vent 17 may be seen to extend downwardly through an integral molded plastic tube portion 43, preferably for a distance below the annular rim of skirt 36. The lower end of tube 43 opens into the air space at the top of the bottle thereby admitting atmospheric pressure to replace the void of liquid poured through the spout when the cap is used for its intended purpose. It will be understood that while an air vent such as 17 through tube 43 is essential to smooth and continuous pouring of fluids, the closure of the invention may be used without the air vent for dispensing such items as condiments where continuous pouring is neither required nor desired.
For aesthetic reasons I prefer that the top surface of slider member 15 and the top surface of body member 10 be in a single, substantially smooth plane as shown in FIG. 5. To provide a finger grip for operation of the slidable member 15 I provide a small indentation 35 in the top surface thereof as shown in FIGS. 1, 3 and 4 of the drawings. Of course, it will be understood that other configurations of the closure member 15 and the cap member 10 may be employed without departing from the invention. Thus serrations or ridges may be molded into the slider top 15 for gripping purposes, or any other ornamentation may be included therein. The body member 10 need not be cylindrical as shown but may be of any other solid shape, and the surfaces 14 and 16 need not be curved as shown but may be substantially straight plane mating surfaces.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above article without departing from the scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

A. A molded plastic body member having a depending annular skirt portion adapted to receive and surround the mouth of a bottle,
1. means within said skirt portion for securing and sealing said body member to the mouth of a bottle,
2. a recessed substantially planar surface within the top of said body member connecting with a recessed cavity extending downwardly within the central volume enclosed by said annular skirt portion,
3. a first opening in said body member extending from said recessed surface through said recessed cavity and connecting said cavity with the mouth of a bottle to which said body is sealed,
4. a depending tubular portion of said body member extending downwardly adjacent said first opening for a distance at least equal to the length of said skirt portion and connecting a second opening in said recessed surface with the interior of a bottle to which said body member having corresponding non-parallel edges is secured,
5. a pair of opposed undercut non-parallel guide grooves in the top of said body member adjacent said recessed planar surface,
B. A molded plastic slidable cap closure member receivable in said body recess and in said body cavity and having corresponding non-parallel edge portions slidably engageable with said opposed undercut guide grooves whereby said closure member is cooperatively conjoined in slidable relation with said body member,
1. a depending channel portion of said closure member extending downwardly from said guide groove engaging portion thereof into the cavity of said body member,
2. a channel passage formed in the underside of said slidable closure member and connecting with said second body opening when in open position.

3. detent means formed on the underside of said slidable closure member engageable with and adapted to seal said second body opening when said closure member is slidably moved to its closed position, and
4. an inclined surface on said depending closure member portion frictionally engageable with a corresponding inclined surface within the cavity of said body member whereby said closure member is securely retained in its closed position to maintain a leakproof seal between said closure member and said cap body.

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