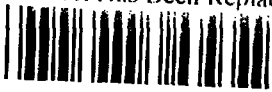


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DESCRIPTION

This invention relates to a tamperproof closure for bottles, in particular bottles of valued liquors, being of the type which comprises an issuing body associated with the bottle, a stopper associated with the issuing body, and a security seal between the stopper and the issuing body.

It is a recognized fact that bottles containing valued liquors may become the butt of attempts at topping them up with inferior quality liquors, and above all, attempts at tapping minute amounts from each of a number of bottles, whereafter the bottle closures are reset to disguise the breach.

In an effort to discourage such deceitful attempts, current closures have been provided with a security band which must be removed preliminarily to opening a bottle. Unfortunately, it has been found that, given sufficient time and patience, as well as skillful manipulation, a breached security seal can be restored to a condition which is almost indistinguishable from its original appearance. As a result, no trace of the tampering would be detected by the consumer.

The underlying problem of the present invention is to provide a tamperproof closure as



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indicated, which has such constructional and functional features as to obviate the above-mentioned drawback.

This problem is solved by a closure as indicated being characterized in that the security seal comprises a cap which is fitted over the stopper and retained axially to the issuing body, said cap being formed with a cut which defines a grasping tab and with a pre-weakened groove which extends from the cut, thereby to enable the seal to be ruptured.

Further features and the advantages of a closure according to the invention will become apparent from the following description of a preferred embodiment thereof, given by way of example and not of limitation with reference to the accompanying drawing figures, of which:

Figure 1 is a perspective view of a closure according to the invention;

Figure 2 is an elevation view showing in section the closure of Figure 1;

Figure 3 is an exploded elevation view showing in section the closure of Figure 1;

Figures 4 and 5 are an elevation and a plan view, respectively, showing a detail of the closure of Figure 1;

Figure 6 is an enlarged elevation view, taken



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along section line VI-VI, showing a detail of the closure of Figure 1;

Figure 7 is an enlarged plan view, taken along section line VII-VII, showing a detail of Figure 1; and

Figure 8 is a perspective view showing the closure according to the invention at a different stage of its operation.

With reference to the drawing views, generally shown at 1 is a combination of a bottle 2 or the like, preferably a glass bottle for some superior quality liquor, and a tamperproof closure 3 for that bottle.

The bottle 2 has a rim 4 which is formed with radial serrations 5, and a cylindrical neck 6 about an axis X-X whose exterior is molded with an annular bead 7.

The closure 3 includes an issuing body 9, preferably made of polystyrene, which has a pour-out rim 10, an annular drip-catcher 11, an outside threadway 12, and a flange 13.

The issuing body 9 is mounted in continuation of the bottle neck, with a washer 14, preferably made of polyethylene, which forms a predetermined force fit with the issuing body, is fitted over the bottle rim,



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and has radial serrations 16 for engagement with the radial serrations 5.

A tubular skirt 16, preferably of aluminum, is fitted over the neck 6 and adapted to retain, by an upper edge 17 thereof bent inwardly over the flange 13, the issuing body 9 to the bottle 2. For this purpose, the tubular skirt is adapted to mate with the bead 7 by deformation.

Formed substantially inwards of the issuing body 9 and the washer 14 is a cage 18 enclosing a first ball 19, of glass, which functions as a check valve, a second ball 20, also made of glass, which serves a mass function, and an inverted cup member 21 which functions as a check valve. The aggregate of these parts is effective to prevent deceitful topping up of the bottle contents.

The closure 3 further includes a stopper 22, substantially cap-like in shape and preferably made of polypropylene, which has an undercap 23, preferably of polythene, and an inside threadway 24.

The undercap 23 ensures a tight fit to the pour-out edge 10, and is provided with a finger 25 which protrudes axially into the cage 18 to unseat the inverted cup member 21 when screwing off.

The stopper 22 engages, by its threadway 24,



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the threadway 12 on the issuing body.

The closure 3 also includes a security seal 26 which is placed between the stopper 22 and the issuing body 9. In the closure of this invention, the security seal 26 comprises a cap 27 fitted over the stopper 22 and being held axially to the issuing body 9 by a retaining means 28.

Defined on the cap 27 are a bottom wall 29 having a periphery 30, and a cylindrical shroud 31 having an upper edge which is substantially coincident with the periphery 30 of the bottom wall, and a loose lower edge 33.

The retaining means 28 comprises a ring 34 which is snap-fitted into the issuing body 9 and made rotationally rigid therewith by being formed with inside radial serrations 35 which engage with outside radial serrations 36 on the issuing body; additionally thereto, the ring is held axially by inside axial serrations 37 formed on the ring engaging by snap action a shoulder 38 defined on the issuing body 9 by a groove 39 formed therein.

The ring 34 is also made rotationally rigid with the cap 27 by outside radial serrations 40 formed on the ring engaging inside radial serrations 41 formed on the cap. The cap 27 is held axially to the ring 34



by outside axial serrations 42 formed on the ring snap-engaging over a shoulder 43, located opposite the shoulder 38 and being defined on the cap by a recess 44 formed therein.

It should be noted that, in accordance with the invention, the cap 27 is provided with a cut 45 which defines on the cap a grasping tab 46, and a pre-weakened groove 47 extending from the cut 45 for the seal removal.

The cut 45 outline is C-shaped with one side 48 extending axially, and upper and lower legs 49 and 50, respectively, which span circumferentially an angle of approximately 60°.

The upper leg 49 lies around the periphery 30 of the bottom wall 29 of the cap 27, and accordingly, around the upper edge 32 of the cap shroud 31. The lower leg 50 lies instead a short distance away from the loose lower edge 33 of the cap shroud 31, substantially through an angle of about 60°.

The pre-weakened groove 47 has a first or upper section 51 and second or lower section 52.

The first section 51 extends circumferentially in continuation of the upper leg 49 through a major portion of the circumference, e.g. through an angle of about 270°.



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The second section 52 extends circumferentially in continuation of the lower leg through a major portion of the circumference, e.g. through an angle of 270°, and has an end portion 53 which lies obliquely and interferes with the lower loose edge of the cap.

Notice that the pre-weakened groove 47 is quite long and extends all across the cap surface.

Resisting spots 47a are arranged at intervals along both sections, 51 and 52, of the pre-weakened groove in such a manner that spots 47a along both sections are paired axially.

The cap 27 is preferably an injection molding of a suitable plastics material, preferably acrylonitrile-butadiene-styrene (ABS).

To open the bottle, one grasps the grasping tab 48 and applies a sufficient pull force to produce a tear along the pre-weakened groove 47. As a consequence of this, the cap will separate from the bottles and expand into a substantially spread-open configuration which is virtually impossible to reduce to its original appearance, and at all events, impossible to reset close against the bottle in any lasting fashion.

Notice that to tear along the pre-weakened groove, an increased pull force must be applied



intermittently as successive resisting spots 47a are encountered, in order to overcome their resistance and rupture them.

It has been found that the cap, upon tearing along the pre-weakened groove, takes a festooned shape wherein adjacent arched segments form an angle at each of the resisting spots.

A major advantage of a closure according to the invention is that it practically defeats all attempts at disguising the unauthorized unsealing of the bottle, despite any amount of time, patience and skillfulness displayed in the effort.

Another advantage of a closure according to the invention is that its various component parts can be assembled with no regard for their relative orientations.

With all its parts assembled, this closure forms an individually handled unit which can be applied to a bottle, after its filling, by a single operation.

In addition, the closure of this invention is simple and robust in construction.

It should be understood that a skilled person in the art may, in order to fill individual contingent demands, make many changes and modifications unto the closure described in the foregoing, without departing

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from the protection scope of this invention as defined
in the following claims.

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CLAIMS

1. A tamperproof closure (3) for bottles (2), in particular bottles of valued liquors, being of the type which comprises an issuing body (9) associated with the bottle (2), a stopper (22) associated with the issuing body (9), and a security seal (26) between the stopper (22) and the issuing body (9), characterized in that the security seal (26) comprises a cap (27) which is fitted over the stopper (22) and retained axially to the issuing body (9), said cap (27) being formed with a cut (45) which defines a grasping tab (46) and with a pre-weakened groove (47) which extends from the cut (45), thereby to enable the seal (26) to be ruptured.

2. A tamperproof closure (3) according to Claim 1, characterized in that the pre-weakened groove (47) has great length, extends all across the cap (27) surface, and has resisting spots (47a) arranged at intervals along its length, whereby once ruptured along the pre-weakened groove, the cap (27) will take a substantially spread-open festooned configuration.

3. A tamperproof closure (3) according to Claim 2, characterized in that the cut (45) is C-shaped with legs (49,50) which extend circumferentially.

4. A tamperproof closure (3) according to Claim 3, characterized in that the upper (49) of said





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legs locates at the bottom wall (29) of the cap (27) and the lower (50) of said legs locates a short distance away from the loose edge (33) of the cap (27).

5. A tamperproof closure (3) according to Claim 4, characterized in that the pre-weakened groove (47) has a first section (51) extending circumferentially in continuation of the upper leg (49) through a major portion of the circumference and a second section (52) extending circumferentially in continuation of the lower leg (50) through a major portion of the circumference, and has an end section (53) which interferes with the loose edge (33) of the cap (27).

6. A tamperproof closure (3) according to Claim 5, characterized in that the cap (27) is rotationally rigid with the issuing body (9).

7. A tamperproof closure (3) according to Claim 6, characterized in that it includes a ring (34) formed with inside radial serrations (35) engaging outside radial serrations (36) formed on the issuing body (9), and outside radial serrations (40) engaging inside radial serrations (41) formed on the cap (27) to make the cap (27) rotationally rigid with the issuing body (9).

8. A tamperproof closure (3) according to





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Claim 7, characterized in that the ring (34) has inside axial serrations (37) snap-engaging over a shoulder (38) formed on the issuing body (9) to hold the ring (34) axially to the issuing body (9) and outside axial serrations (42) snap-engaging over a shoulder (43) formed on the cap (27) to hold the cap (27) axially to the ring (34), and hence, the issuing body (9).

9. A tamperproof closure (3) according to Claim 8, characterized in that the cap (27) is injection molded from a suitable plastics material, preferably acrilonitrile-butadiene-styrene (ABS).

