

[54] NON-REFILLABLE BOTTLE

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[58] Field of Search ..... 215/17-25, 28, 29, 26

[56] References Cited

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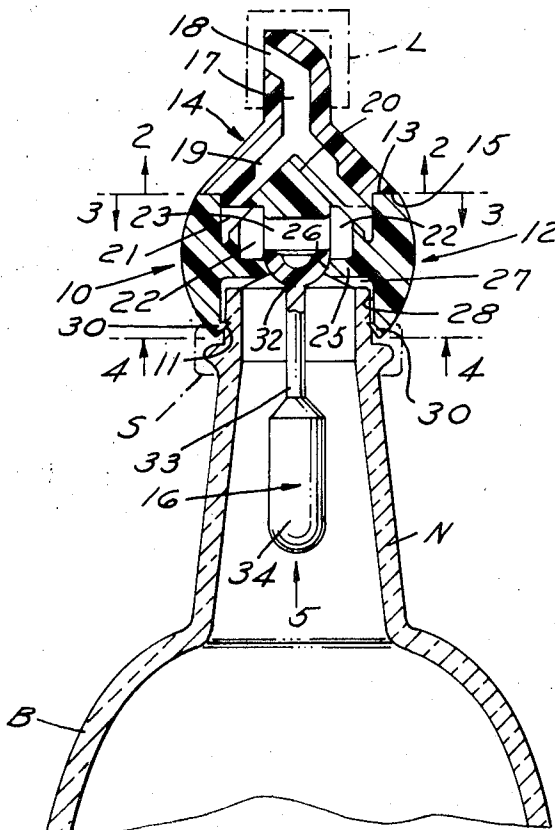
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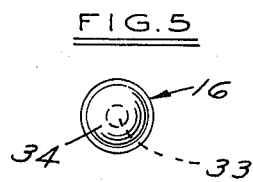
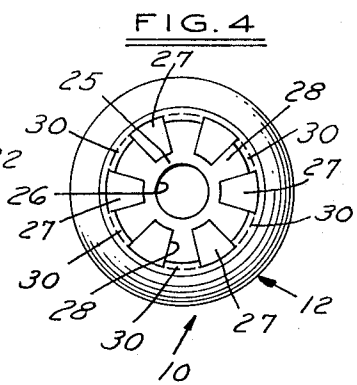
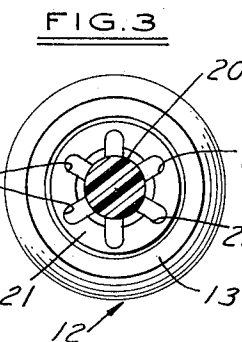
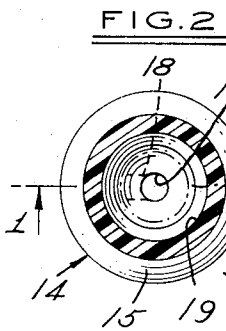
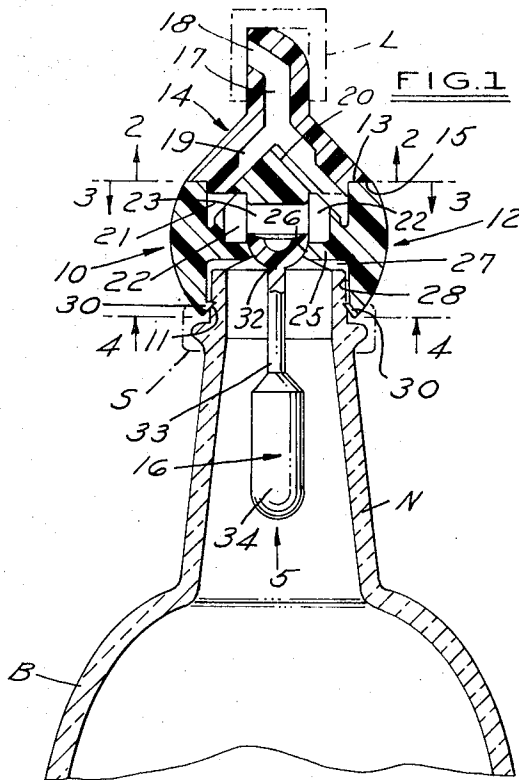
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[57] ABSTRACT

A non-refillable bottle closure features a one-piece, pouring body having an axially intermediate valve seat at which it is gravity-sealed; and integral hooks on the body grip it onto the top of the bottle neck, so as to be removed only by breaking. A number of partitioned radial passages beneath the valve seat open to the bottle interior for pouring, and to accommodate an anti-vacuum back air flow after a smooth pouring. Above the valve seat the body has a central axial bore which opens laterally to radial ports, and the ports in turn communicate axially upwardly with an annular, downwardly flared conical flow chamber of a pour cap fused unitarily to the body, this chamber being centrally defined at its bottom by a tamper-proof integral top cone formation of the body. This cone radially outwardly overhangs and shields the radial porting of the body, also its valve seat and a weighted, pour-displaceable valve member normally seated on and sealing the latter.

8 Claims, 5 Drawing Figures





## NON-REFILLABLE BOTTLE

## Background of the Invention

## Field of the Invention

The non-refillable bottle of the invention, and more particularly, the special valved pouring device thereof, finds an intended original use at the plant of a bottler of spirituous or other potables, medicines and the like, as an effective preventative to the fraudulent or criminal addition to the bottle's normal content of a diluent or adulterant after the bottle package leaves said plant. As such, the closure is in effect a unitary component of the bottle, like the screw cap or cork of a more conventional bottle. However, it is recognized that the use of the invention may be much more general, for example, as sold to and used by bar owners to combat a comparable fraudulent purpose.

## Summary of the Invention

In the above mentioned form as a unitary and substantially integral, gravity valve-controlled device, the pouring closure of the invention has great structural simplicity, being constituted in its entirety of parts molded of an inexpensive synthetic plastic composition; and the assembly and welded or fused connection of such components is also simple and inexpensive indeed.

The one-piece closure body features an axially intermediate horizontal partition centrally apertured on its axis, and that of the bottle to which it is applied, to afford a circular valve seat, which is controlled by a weighted valve member.

Axially upwardly of the valve opening or seat the closure body is molded to provide an axial center bore which communicates radially outwardly with a plurality of uniformly spaced flow distribution ports; and these in turn communicate axially upwardly with an annular conical flow manifold chamber of a pour cap member. With the cap member unitarily fused upon the body, this conical manifold space is defined at its bottom by an integral cone shaped shield central of the body and directly above the latter's radial distribution ports, the valve and the valve seat, thus to deflect a wire or any other foreign object anyone might attempt to insert substantially into the pouring spout, as in an effort to displace the valve from a proper sealing position and thus permit the addition to the bottle's content of a diluent, adulterant or the like. Moreover, with the closure normally sealed by its weighted valve, anything, fluid or otherwise, forced under pressure through the pouring throat of the device will only hold the valve more tightly on its seat.

The pour cap component is substantially integrally fused, as by sonic welding, to the top of the main closure body, once the valve is appropriately assembled in the latter; and the valve, body and cap parts of the combined assembly are molded of an appropriate rigid and inexpensive plastic composition, chosen of many available ones to comply with national standards relating to foods and the like, for example chemical inertness, non-contaminability, etc.

While in some instances it may be found desirable to provide a releasable snap-on type engagement of the pouring closure with the neck of the bottle, for example, for repeated bar use, it is preferred that the engagement of the closure to the bottle neck be a more permanent, bottler-installed one for the anti-fraud objective,

i.e., such engagement as would call for a breakage of the device to remove it from the bottle. For this purpose the device incorporates hook-type formations at uniformly spaced points about a lower skirt-like portion thereof to engage in a small pre-formed circumferential groove in the bottle neck, just above the latter's conventional bead. Of course other alternative arrangements are available.

## Brief Description of the Drawing

FIG. 1 is a fragmentary view to substantially actual scale of a typical liquor bottle equipped with the non-refillable pouring device of the invention, the section being in a vertical plane including the common axis of the device and bottle, as represented by the line 1—1 in FIG. 2;

FIG. 2 is a horizontal cross-section looking upwardly from the line 2—2 of FIG. 1, illustrating internal arrangements of the pouring cap component of the device;

FIG. 3 is another horizontal but downwardly facing view of the body component of the improved device, as along the broken line 3—3 of FIG. 1;

FIG. 4 is a view in horizontal upwardly facing cross-section on line 4—4 of FIG. 1, the valve component and the sectioning of the bottle being omitted for clarity; and

FIG. 5 is a bottom plan detail view of a weighted valve constituting an internal and the sole movable component of the device.

## Description of a Preferred Embodiment

A more or less conventionally sized and proportioned bottle B, for example for a spirituous beverage, is shown as having a non-refillable pouring closure device 10 according to the invention applied to the top of its neck N, just above the usual projecting annular bead of the latter; and in accordance with the invention the upper portion of the neck above the bead is provided with an acutely angled annular groove or notch formation 11, the function of which is later described.

Device 10 includes a lower main body portion, generally designated 12, which is of quasi-spherical external contour. It is bounded at its top by an annular flat horizontal ledge surface 13 surrounding a relatively large size central and upwardly opening body bore. A second basic fixed component of the invention is a pour cap 14, generally conical in external outline, which has an inner bottom portion snugly fitted within said body bore. The remainder of the bottom of pour cap 14 is shaped as an outer flat, horizontal downwardly facing shoulder 15, which downwardly abuts the ledge 13 of body 12; and components 12 and 14, as molded of a suitable rigid, non-erosive and non-contaminable synthetic plastic composition, are unitarily fused or sonic-welded together at the abutted surface 13, 15 and the telescoped bore overlap of the parts. This operation is, of course, performed after the assembly axially within the components 12, 14 of a weighted valve member, generally designated by the reference numeral 16.

Commencing at and proceeding downwardly from the pour cap member 14, the latter has an axial throat or pour passage beneath a canted mouth 18; and the throat downwardly communicates with an annular conical flow manifold or chamber 19 within cap 14. This cavity is defined at its bottom by a coaxial conical shield formation 20, preferably molded integral with

the cap portion 14 of the device, more specifically with certain port-defining formations directly beneath the cone.

Body 14 is also molded to afford an annular space 21 with which the annular manifold space 19 directly communicates downwardly; and the space 21 in turn opens inwardly to a plurality of equally spaced radial distribution ports 22, shown in FIG. 3 as being six in number, the ports 22 themselves communicating radially inwardly with a generally cylindrical bore space 23 central of body 12. This bore is marginally defined by the inner ends of wall members separating the ports 22 from one another; and it is through these ports and bore that the liquid content of bottle B passes in pouring, the valve 16 unseating at this time. The distributor ports 22 contribute to an even flow of the poured liquid.

It will be noted in FIG. 1 that the conical axial formation 20 of body 12 is sufficiently dimensioned in diameter to radially outwardly overhang a goodly portion of the chamber 21, and the communicating ports 22, as well as the area of the body 12 immediately underlying the same. This includes an integral intermediate horizontal partition or separator wall 25 of body 12, which is centrally apertured to afford a circular valve seat 26.

Directly beneath the partition 25 the body 12 is molded, as appears in FIG. 4, to provide a plurality of upright partitions 27, evenly distributed circumferential-wise and six in number, which separate the zone just beneath horizontal partition 25 and valve seat 26 into an equal number of radial passages 28, the arrangement affording an air flow space of substantial volume above the bottle neck top.

Also pursuant to the invention, the lower skirt portion of the body 12 is formed, in the radial zone of each of the passages 28, with six acutely angled locking hook formations 30, which hooks are snapped into the acutely angled neck recess 11 when the device 10 is first applied in assembled form to the filled bottle B, thereby serving thereafter as a positive and preferably permanent lock of the device 12 to the bottle.

Finally, the latter comprises, as an integrally connected part of its weighted valve element 16, an upper valve sealing portion 32 of semi-spherical contour. This normally is gravity sealed downwardly against body valve seat 26, a vertically elongated axial stem 33 extending downwardly from portion 32 to a weighted tail 34.

Pour cap 14 will normally be covered by a plastic snap-on or friction lid L, shown in dotted line in FIG. 1, and a plastic sealing band S is similarly shown as encircling the bottle neck's bead and the lower skirt portion of closure body 12. Band S is removed when the bottle is to be used, thus exposing the hook formations 30 and the spaces therebetween. The latter then open to the radial passages 28 between the upright partitions

27, providing for an anti-vacuum air entry between hooks 30 to the bottle interior through passages 27 and over the bottle neck.

What is claimed is:

1. A non-refillable bottle closure device, comprising an internally valved body portion, and a pouring cap portion, said body portion having a partition formation provided with an axial valve seat, and an annular chamber in communication with said seat at one axial side of the latter through radial ports, said cap portion having a pouring throat communicating axially through a generally conical manifold with said body chamber, the body portion having a formation located beneath said manifold and affording a conical surface of the latter, which formation radially overhangs and shields said ports and valve seat of the body portion.

2. The device of claim 1, and further comprising a movable and liquid-displaceable weighted valve member normally sealing said valve seat.

3. The device of claim 2, in which said cap and body portions are separate interfitted plastic composition parts fused together to provide a substantially one-piece pouring body.

4. The device of claim 2, in which said body portion has a skirt formation shaped to fit over the neck of a bottle, said formation being provided with means to effect a substantially permanent union of the device.

5. The device of claim 1, in which said cap and body portions are separate interfitted plastic composition parts fused together to provide a substantially one-piece pouring body.

6. The device of claim 5, in which said body portion has a skirt formation shaped to fit over the neck of a bottle, said formation being provided with means to effect a substantially permanent union of the device.

7. The device of claim 1, in which said body portion has a skirt formation shaped to fit over the neck of a bottle, said formation being provided with means to effect a substantially permanent union of the device and bottle.

8. A non-refillable bottle closure device, comprising an internally valved body portion, and a pouring cap portion, said body portion having a partition formation provided with an axial valve seat, and an annular chamber in communication with said seat at one axial side of the latter through radial ports, said cap portion having a pouring throat communicating axially through a manifold with said body chamber, the body portion having a formation beneath said manifold which radially overhangs and shields said ports and valve seat of the body portion, said cap and body portions being separate interfitted plastic composition parts fused together to provide a substantially one-piece pouring body.

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