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2,167,476

COMBINED BOTTLE CLOSURE AND LIQUID DISPENSER

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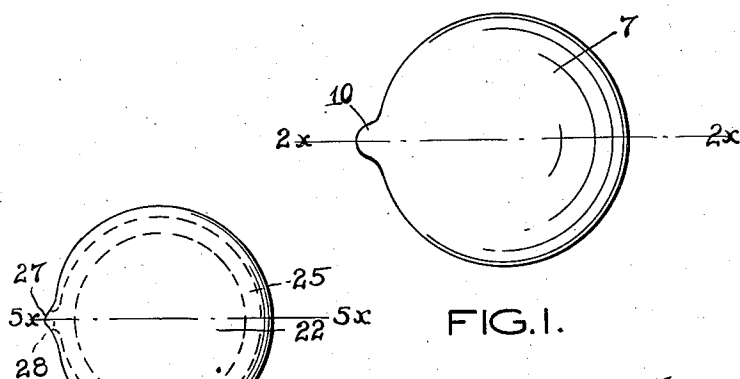


FIG. 1.

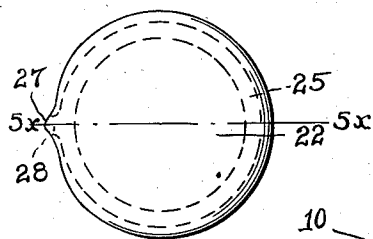


FIG. 4.

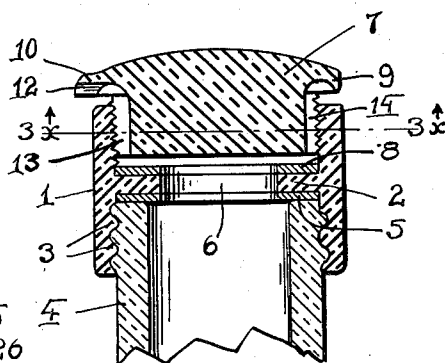


FIG. 2.

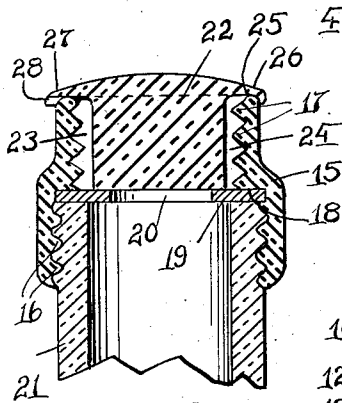


FIG. 5.

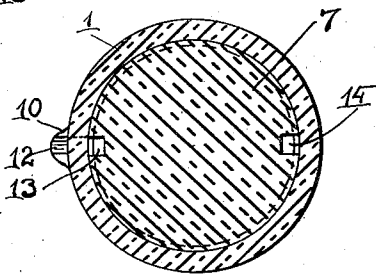


FIG. 3.

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COMBINED BOTTLE CLOSURE AND LIQUID DISPENSER

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8 Claims. (Cl. 221-148)

This invention relates to bottle closures for sealing the bottle as well as regulating the flow of liquid from the bottle and the invention has for its principal object to provide a bottle closure of simple and inexpensive construction with which a bottle may be quickly and easily sealed or the flow of liquid from the bottle accurately regulated in dispensing the contents thereof.

This and other objects and attendant advantages of the invention will become more readily apparent from the detailed description thereof which follows, reference being had to the accompanying drawing in which:

Figure 1 is an enlarged top plan view of the combined bottle closure and liquid dispenser.

Figure 2 is an enlarged vertical sectional view of the bottle closure and liquid dispenser and a portion of a bottle neck on which it is mounted, the section being taken on the line 2x-2x of Figure 1.

Figure 3 is an enlarged horizontal sectional view of the liquid closure and liquid dispenser, the section being taken on the line 3x-3x of Figure 2.

Figure 4 is a top plan view of a modified form of the combined bottle closure and liquid dispenser.

Figure 5 is a vertical sectional view thereof taken on the line 5x-5x of Figure 4.

In the figures like reference numerals indicate like parts.

The combined bottle closure and liquid dispenser, forming the subject matter of my present invention, is adapted for use on bottles containing fluids which are to be used in restricted quantities. For example, cleansing fluids, medicines, toilet waters, all kinds of chemicals in liquid form, etc., of which one or more drops or restricted quantities are to be used at a time may be quickly and efficiently dispensed from a bottle provided with my combined bottle closure and dispenser.

As illustrated in the drawing, the bottle closure and dispenser comprises a substantially cylindrical body member 1 which is divided by a horizontal partition 2 and the lower portion is provided with a suitable internal thread 3 by means of which the lower portion of the closure member is threaded to the bottle neck 4. A gasket washer 5 is inserted between the top of the bottle neck and the partition to seal the closure member to the bottle.

The partition has a central opening 6 thru which the liquid from the bottle is adapted to pass to the inside of the upper portion of the closure member and its flow controlled thru the

opening 6 and out of the closure member. For this purpose a cap 7 is threaded into the upper portion of the closure member so that the bottom of the cap may be seated and unseated on the gasket 8 which surrounds the opening 6, and thus provides a seal over the opening when the cap is threaded thereagainst.

The cap 7 is provided with an overhanging flange 9 and this flange is extended from the periphery by a short lug 10. The under side of this lug is grooved and its groove 12 extends inwardly of the cap to form the continuation of a vertical groove or duct 13 provided in the periphery of the threaded portion of the cap. When, therefore, the cap is unscrewed to uncover the opening 6, liquid from the bottle is free to flow from the opening and thru the vertical groove to the under side of the flange and lug of the cap so that when the bottle is tilted, the liquid will flow into the groove 12 and flow or drip off from the outer end of the lug 10. The lug thus provides a nozzle which directs the liquid from the closure member in the manner desired.

In order to provide for a free flow of liquid from the closure member a vent in the form of a vertical slot 14 is formed in the cap at a distance remote from the slot or duct 13, preferably diametrically opposite thereto so that when the bottle is tilted to dispense some of the liquid the vent will be located at a point where the admission of air thru the closure member will not interfere with the flow of the liquid therefrom.

The projecting nozzle lug also serves as means for turning the cap in that it prevents a slipping of the cap in the hand when opening and closing the closure member.

The opposing walls of the ducts in the threaded periphery of the cap for the escape of the liquid and the intake of air serve as scraping means on the thread in the upper portion of the closure member so that when the cap is turned any caked residual matter on the thread within these slots is scraped loose thereby thus making the cap self cleaning at every operation thereof.

The cap may be operated to open the opening 6 as little or as much as is needed for the desired flow of liquid from the bottle, so that a drop by drop or a constant stream of the liquid may be readily dispensed from the bottle.

From the foregoing it will be apparent that I have devised a new and useful combined bottle closure and dispenser which embodies the features and advantages enumerated, and while I have, in the present instance, shown and described a pre-

ferred embodiment thereof, it is to be understood that this embodiment is susceptible of modification without departing from the spirit or scope of the invention or sacrificing any of its advantages.

5 In the modified form of the combined bottle closure and liquid dispenser, illustrated in Figures 4 and 5, the hollow body 15 of the closure member is provided with the threads 16 leading into the bottom and the threads 17 leading into the top and an annular shoulder 18 separating these threads intermediate the body member. A gasket 19 with a central opening 20 is placed against the shoulder to have the neck 21 of a bottle threaded thereagainst to hold the gasket in place and have its central portion overhang the opening in the neck so as to provide a seat around the hole in the gasket.

A bottle cap 22 is threaded into the top of the body member so as to open or close the opening 20 in the gasket and control the flow of the liquid from the bottle to the outlet duct 23 and open the vent thru the duct 24. The flange 26, which overhangs the top of the cap, is provided on its under side with an annular groove 25 so as to have the top of the body member engage thereinto and provide an additional seal at the top of the body member when the cap is screwed thereinto. When the cap is unscrewed and the bottle tilted to dispense some of its liquid the groove 25 keeps any liquid which collects therein from flowing off the overhanging flange except at the outlet groove 28 which is located under the tip 27 of the cap and is in line with the outlet duct for the purpose of directing the liquid as it leaves the bottle.

I claim:

1. In a combined bottle closure and dispenser the combination of an attachable closure member adapted to be fastened to the neck of a bottle or other container and having a restricting discharge opening therein, a cap member movable in the top of said closure member so as to open and close the restricted discharge opening within the closure member, an overhanging projection at the top of said cap member, an air vent and a liquid outlet duct partially extending thru said cap member offset from said discharge opening and a substantially horizontal extension at the end of said outlet duct leading to the edge of the projection at the top of said cap member.

2. In a combined bottle closure and dispenser the combination of an attachable closure member adapted to be fastened to the neck of a bottle or other container and having a restricted discharge opening therethru, a cap member rotatably and endwise movably mounted in the top of said closure member and having an air vent and a liquid outlet duct in the periphery extending axially thereof, a flange on said cap member overhanging said air vent and liquid outlet duct and an extension of said liquid outlet duct leading to the outer edge of said flange on the under side thereof.

3. In a combined bottle closure and dispenser the combination of an attachable closure member adapted to be fastened to the neck of a bottle or other container and having a restricted discharge opening within the closure member, a valve seat surrounding said discharge opening, a cam member threaded into the top of said closure member for movement onto or away from said seat for closing and opening said discharge opening, a pair of substantially parallel ducts in the periphery of said cap member extending axially thru the threads thereof, an overhanging flange of said cap member overhanging one of said openings and

a duct on the under side of said overhanging flange in line with said last mentioned of said pair of ducts so as to provide a substantially horizontal continuation thereof.

4. In a combined bottle closure and dispenser the combination of a hollow cylindrical closure member, a horizontal wall member having a central opening therethru dividing said closure member into an upper and lower chamber, means for telescopically fastening the lower chamber over the neck of a bottle or container, a cap member threaded into the upper chamber so as to open and close said opening on the endwise movement thereof, an air vent and a discharge duct in said cap member offset from said opening, an overhanging flange on said cap member overhanging both the air vent and discharge duct, a substantially radial extension on the flange of said cap member and a groove on the under side of said extension and flange forming a substantially horizontal extension of said discharge duct.

5. A combined bottle closure and dispenser comprising a hollow cylindrical body member, an annular stepped shoulder within said body member intermediate the ends thereof, a removable gasket having a central opening therein positioned to be held against said shoulder by a bottle neck on the insertion of the bottle neck into one end of said body member so as to have the edge of the central opening overhang the opening in the bottle neck and provide a combined reduced opening and closure seat on top of the bottle neck, a cap threaded into the opposite end of said body member so as to be movable into and out of engagement with said seat and open and close the central opening in said gasket, an air inlet and a liquid outlet duct provided in said cap and arranged so as to be located to one side of said central opening in said gasket to simultaneously open or close said air inlet and liquid outlet on the movement of said cap into and out of contact with said gasket.

6. A combined bottle closure and dispenser comprising a hollow cylindrical body member, an annular step shoulder within said body member intermediate the ends thereof, a removable gasket having a central opening therein positioned to be held against said shoulder by a bottle neck on the insertion of the bottle neck into one end of said body member so as to have the edge of the central opening overhang the opening in the bottle neck and provide a closure seat on top of the bottle neck, a cap threaded into the opposite end of said body member so as to be movable into and out of engagement with said seat and open and close the central opening in said gasket, a flange at the top of said cap so as to overhang the top of said body member, an annular groove formed in the bottom of said flange, a radially extending groove leading from the annular groove to the edge of said flange, and a vertical outlet duct leading to said annular flange in the side of said cap.

7. A combined bottle closure and dispenser as set forth in claim 5 in which said gasket is yielding and said cap is provided with a flange adapted to overhang the top of said body member to engage said body member and seal the top of the cap against the body member simultaneously with sealing the bottom of the cap against the gasket.

8. In a bottle closure having an internally threaded outlet duct with a reduced opening forming an annular shoulder at the inner end of the duct and a gasket supported on said shoulder,

the combination of an externally threaded capopen inner ends closed by the gasket supported on member threaded in said internally threaded outlet to have its bottom seated on the gasket supported by said shoulder, an axially extending liquid outlet duct and an axially extending air inlet duct in said cap member arranged to have their

said shoulder, a flange overhanging the top of said cap member and a duct in said flange leading from the top of said liquid outlet duct to the edge of said overhanging flange.

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