Nov. 8, 1966 I. H. MILLER 3,283,966

LIQUID DISPENSER AND CLOSURE FOR BOTTLES

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FIG. 1

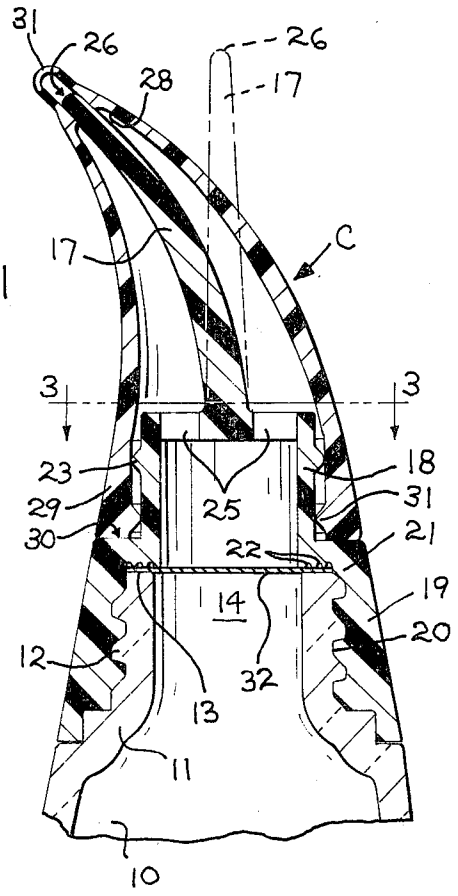
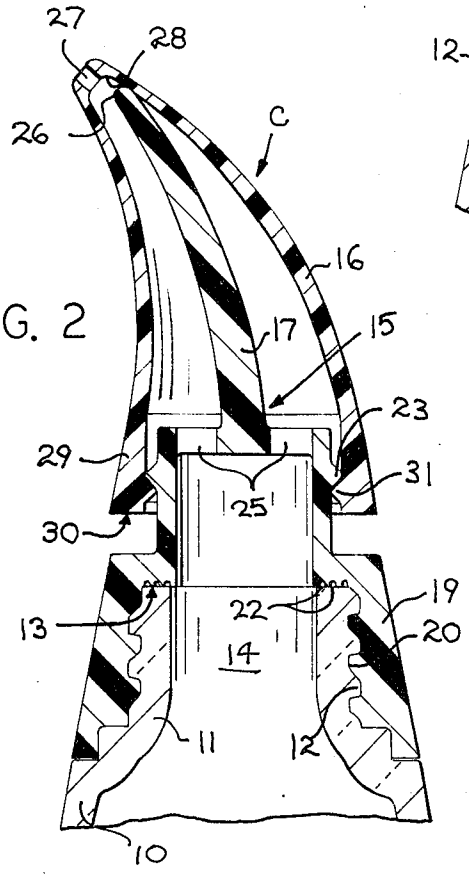


FIG. 2



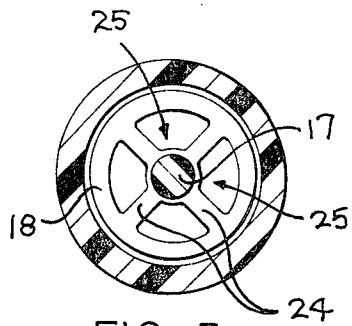


FIG. 3

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LIQUID DISPENSER AND CLOSURE FOR BOTTLES

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My invention relates to liquid dispensers and more particularly is concerned with the provision of a novel combined closure and dispenser readily attachable to the neck of a glass bottle or similar liquid container.

An important object of my invention is the provision of a nozzle-type liquid dispenser in which the nozzle is curved longitudinally and is free to rotate on the axis of the container upon which it is mounted and in this regard is "self-directional."

A further object of my invention is the provision of a novel liquid dispenser in which a valved dispensing nozzle is axially shiftable bodily relative to a valve member or stem carried by the container, thereby to alternately open and close a discharge port at an end of said nozzle.

It is also an object of my invention to provide in a dispenser of the above character, a curved tapered dispensing nozzle in combination with a flexible elongated rod-like valve member or stem which normally is perfectly straight, but is flexed by sliding contact with the nozzle interior thereby to effect entry into and withdrawal from a discharge port in the nozzle.

Other objects will be in part apparent and in part pointed out hereinafter.

In the accompanying drawings forming a part of my application:

FIG. 1 is a longitudinal sectional view of the dispenser, the valve member also being shown in dotted lines in its initial normal position.

FIG. 2 is a view like FIG. 1 but with the liner or sealing disk removed, the nozzle tip cut off and the nozzle extended to open the discharge port.

FIG. 3 is a sectional view taken along the plane of line 3—3 of FIG. 1.

In its illustrated embodiment my invention is shown in conjunction with a glass bottle **10**, the upper end of which has a diametrically reduced circular neck **11**, provided externally with screw-threads **12**, these intended for holding engagement with threads on the closure dispenser unit, as will be brought out presently. The neck wall terminates in an annular radial rim **13** defining a mouth **14**.

The combined closure and dispenser C may well be formed of polypropylene, or some similar flexible, resilient plastic material, for reasons which become apparent presently. This closure and dispenser unit comprises essentially two elements or parts, viz: an inner valve member **15** and a nozzle **16** which encloses said valve member **15**.

The valve member **15** comprises an elongated tapered stem **17** or rod, which initially extends axially upward from a cylinder-like hub **18**. This hub **18** rises from an attaching skirt **19** or collar having internal screw-threads **20** for engagement with the previously mentioned screw-threads **12** on the bottle neck. A radial annular flange **21** interconnects the base of the hub **18** and the upper end of the skirt **19**, said flange formed on its lower side with a series of concentric sealing beads **22** which effectively sealingly contact the aforementioned rim **13** at the top end of the neck. Externally, this hub carries a circumferential bead **23**, generally V-shape in cross-section. Such bead **23** preferably is near the upper end of this hub for obvious reasons. The upper end of the hub, internally, has a series of radial spokes **24** (FIG. 3) which create a plurality of liquid flow passageways **25** and a support for the valve stem **17** which rises therefrom at the axis of the hub. This valve stem **17** or rod is tapered to a rounded small free end **26** for entry into the discharge port **27** or orifice at the outer end of the nozzle **16**.

This nozzle **16** is hollow and of generally conical form, being curved so that its discharge port **27** at the outer small end is offset radially from the axis of the bottle, with the axis of the port at an acute angle to the axis of the bottle. Internally, the nozzle **16** has a gently curved guiding surface **28** which, as is apparent, aids in guiding the valve stem **17** to its port closing position. The base of this nozzle **16** is a thickened collar **29** having a lower end **30** designed for engagement with the aforementioned flange **21**, these preferably having the same external diameter. Internally, this collar **29** is provided near its lower end with an annular bead **31** of V-shape cross-section. This bead **31** cooperates with the bead **23** on the hub **18** in securing the nozzle and valve portions **15** and **16** together, while permitting relative axial movement of these two elements, as is obviously essential. Because of the resilience of the beads, assembly involves simply telescoping the nozzle base **29** over the hub **18**. The beads are momentarily deformed but quickly resume their normal form and hold the elements against accidental separation.

Initially, the nozzle **16** has a "snip-tip" **31***a* at the discharge end, such being readily severable and necessarily so, preliminary to dispensing the bottle contents. Also, there is a sealing liner disk **32** which closes the bottle mouth **14** from the time the bottle is closed following filling, until the consumer wishes to dispense the contents. At this time the liner is removed and for dispensing purposes the nozzle **16** is moved axially away from the bottle, thereby withdrawing the stem from the discharge port **27**. The nozzle is freely rotatable on the hub **18** so that it may well be termed a "self-directional" dispenser, in that it is readily shiftable to any pouring position as determined by the point at which one initially grasps the bottle for dispensing purposes.

Modifications may be resorted to within the spirit and scope of the appended claims.

I claim:

1. In a combined closure and liquid dispenser attachable to a bottle neck, a generally cylindrical hub having open ends, means at one end of the hub for securing it to a bottle neck with their axes in alignment, an elongated rod-like valve member extending from the other end of and normally initially disposed coaxially with the hub, said member formed of a plastic material and being laterally flexible, a hollow elongated generally conical nozzle enclosing the valve member and having a discharge orifice at its apex, said nozzle curved laterally in the apex end section and having a coaxial collar at its base end telescoped over, and both axially and rotatably movable on said hub, the length of the valve member and nozzle curvature being such that a predetermined degree of longitudinal movement of the nozzle in one direction relative to the valve member laterally flexes the latter to close the discharge orifice.

2. In a combined closure and liquid dispenser as defined in claim 1, the hub having an external annular radial bead and the collar on the nozzle having an internal annular radial rib positioned between the first named rib and the means for securing the hub to a bottle neck.

3. In a combined closure and liquid dispenser as defined in claim 1, the hub at said other end having radial circumferentially spaced apart spokes providing an annular series of liquid flow passageways and a support for the valve member.

4. In combination, a bottle having a circular neck terminating in an annular rim defining a mouth, a closure and liquid dispenser formed of a resilient plastic material and

comprising a cylinder-like hub coaxial with the neck, a readily removable mouth-sealing liner between and contacting both the rim and one end of the hub, an attaching skirt integral with the hub and threaded on the bottle neck, a rod-like valve member normally straight and rod-like extending coaxially from the other end of said hub, said member being tapered to a free end and capable of being flexed laterally, a hollow nozzle of generally conical form enclosing said valve member, said nozzle having a discharge orifice at its apex and being curved in the apex end section with the axis of the orifice at an angle to the axis of the bottle neck, and means so uniting the hub and nozzle that the latter may be moved axially relative to the hub to flex the free end of the valve member laterally and thereby move the latter to alternately open and close the orifice.

5. In combination a bottle having a circular neck terminating in an annular rim defining a mouth, there being an annular radially outwardly extending bead carried by and coaxial with the neck, a combined closure and liquid dispenser formed of a resilient plastic material and comprising a laterally curved generally conical nozzle having a discharge orifice at its apex end, the nozzle curvature being most pronounced near its apex end, said nozzle at its base end having an internal annular rib

cooperating with said bead to interconnect the nozzle and neck and allow either or both relative axial and rotary movement thereof, and an elongated rod-like valve member positioned entirely within the nozzle, said member being normally straight and extending coaxially upward from the neck area and being laterally resilient, said valve member having a free outer end portion for entry into said orifice in response to relative axial movement of the nozzle and valve member and consequent lateral flexing of the latter during and due solely to said movement.

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