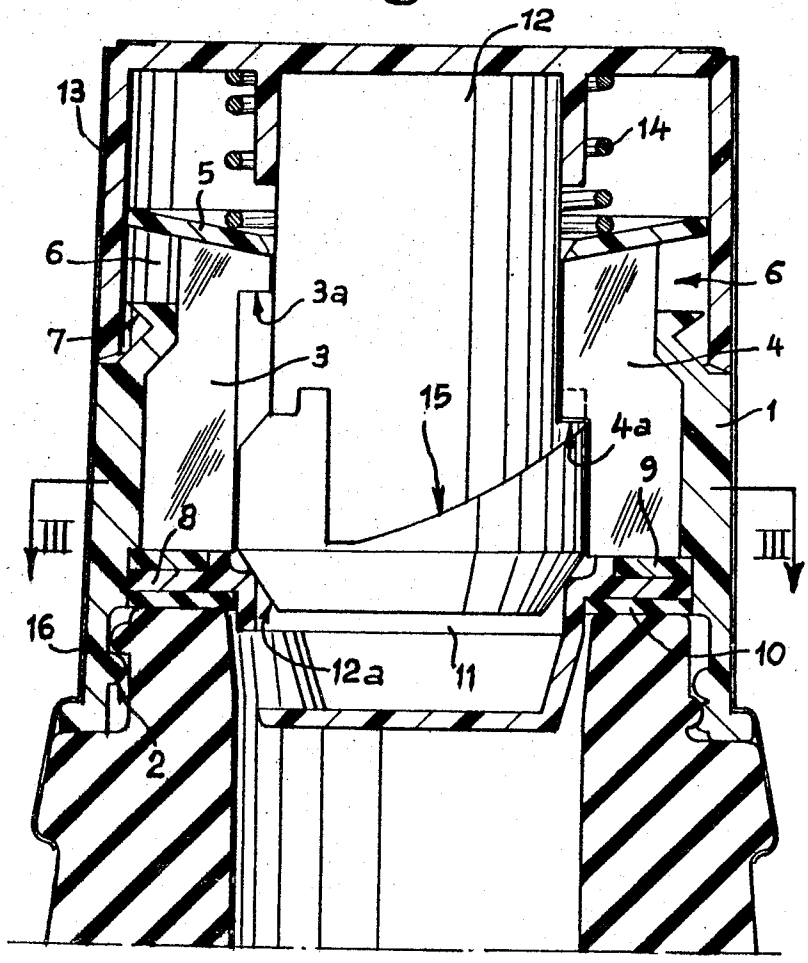
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BOTTLE CLOSURE

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Fig. 1



INVENTOR

BY

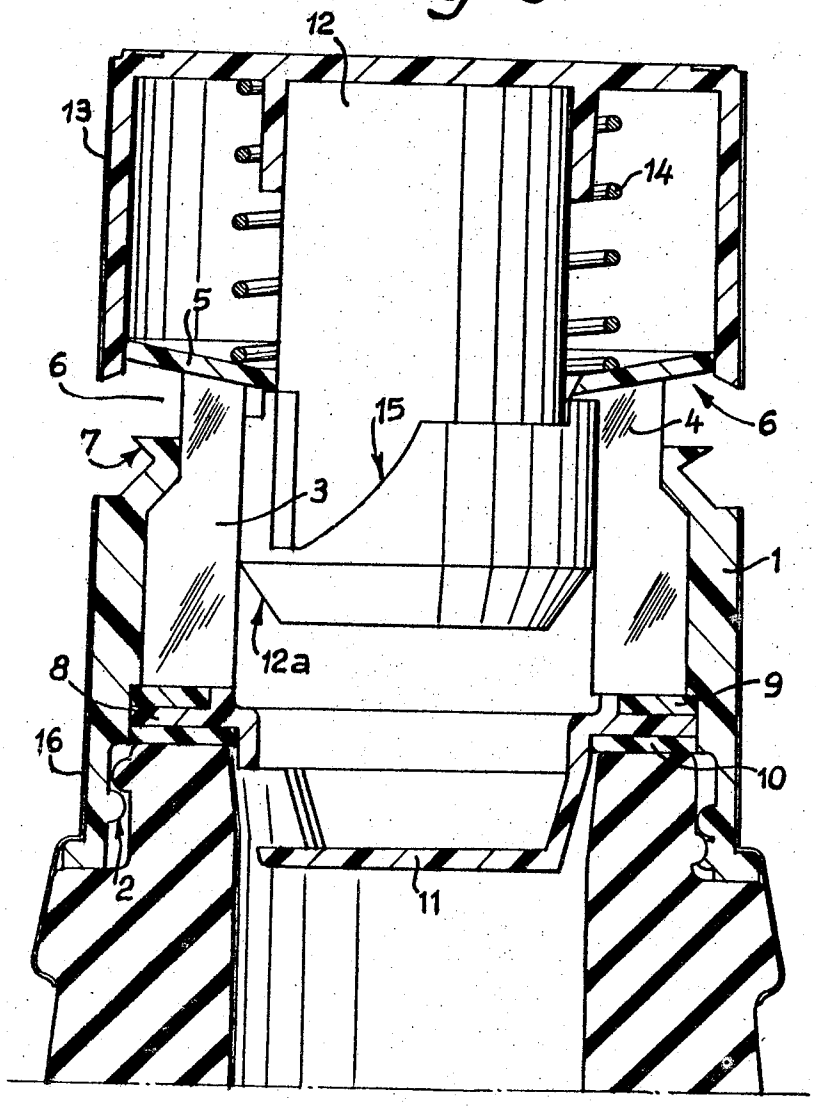
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BOTTLE CLOSURE

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Fig. 2



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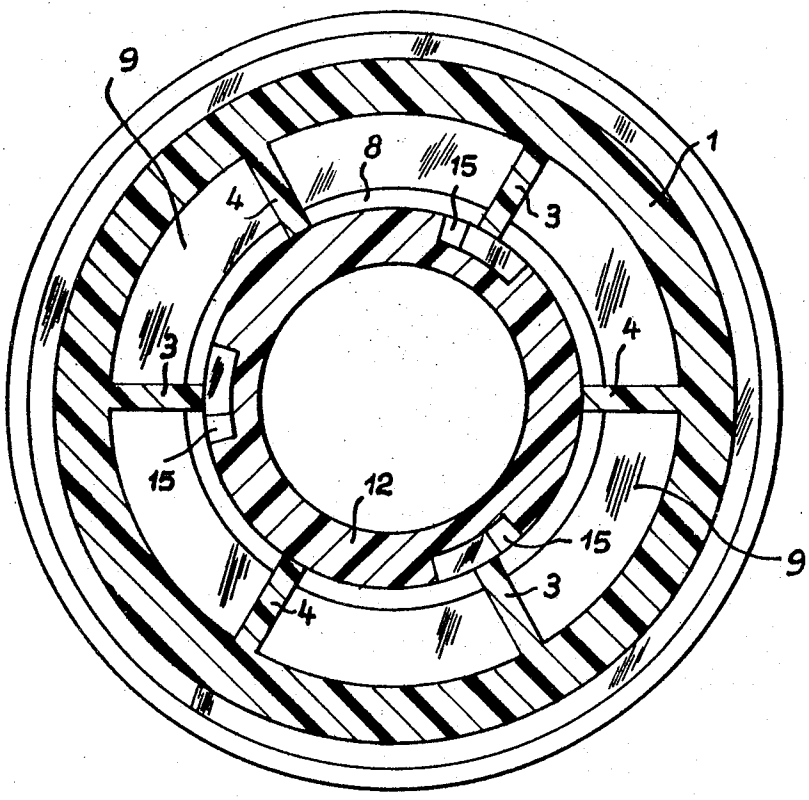
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Fig. 3



INVENTOR

BY

ATTORNEY

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3,115,264

BOTTLE CLOSURE

Angelo Guala, 3 Via Cairoli, Alessandria, Italy

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4 Claims. (Cl. 215—76)

This invention relates to a bottle closure which need not be removed from the bottle for delivery of the contents thereof and is suitable for use as a safety device against unauthorized refilling of the bottle.

The improved device comprises a hollow cylindrical body fastened on the bottle mouth, provided with axially extending ribs on its inside and formed with radial apertures between the ribs at its delivery end for delivering liquid from the bottle, an annular base member frontally retained by the body against the bottle mouth and an inner axially movable plug acting as shutter for the annular base member, and a cap fast with the outward end of the plug for closing the delivery apertures as the plug engages in the base member. The plug is provided with cam-lie projections on its circumferential surface cooperating with the steps on the ribs in order to open and close the bottle, respectively, by a helical movement of the cap.

The structure is such as to avoid dripping and protect the region over which the liquid flows against any contact by the hands or exposed parts.

Further characteristic features of this invention will be understood from the appended description with reference to the accompanying drawings which show by way of a non-limiting example an embodiment thereof.

FIGURE 1 is a vertical sectional view of the device in originally closed condition,

FIGURE 2 is a vertical sectional view of the device in its open condition, and

FIGURE 3 is a sectional view on line III—III of FIG. 1.

A hollow cylindrical body 1 of moulded plastics is formed with an inner screw thread 2 for screwing on a corresponding screw threaded seating around the bottle mouth. The body 1 is moreover formed with a circumferential series of inwardly directed axially extending ribs 3, 4, such as three ribs of each kind uniformly spaced from one another.

The ribs 3 are formed with a step 3*a* which is located higher than the step 4*a* on the rib 4.

The ribs 3, 4 are interconnected at the top by an annular diaphragm 5 integral therewith which is slightly tapered with a slight inward slope, or of funnel form, concentrical with the body 1.

The delivery end portions of the ribs 3, 4 adjacent the diaphragm 5 and delivery end edge 7 of the body 1 leave therebetween free radial apertures 6 through which the bottle contents are poured.

The edge 7 is annular and is sufficiently sharp in cross-sectional profile to prevent dripping of the liquid in a manner known per se in the art.

The body 1 frontally retains against the bottle around the mouth of the latter by means of the inner ends of the ribs 3, 4 an annular base member 8 through the interposition of two sealing rings 9, 10. A rigid disc 11 is rigidly suspended on the inner edge of the annular member 8 and is located in the mouth of the bottle while allowing outflow of the liquid, around the disc, whereas the aperture in the member 8 provides a seating for a tapered inner end 12*a* of a plug movable within the ribs 3, 4. The

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plug 12 has a cylindrical outer cap 13 fast with its end outwardly protruding beyond the diaphragm 5, which in the closed position comes around the portions 5, 7 of the body 1, thereby maintaining the delivery apertures 6 closed.

A helical spring 14 is interposed between the diaphragm 5 and cap 3 and tends to lift the cap together with the plug 12, thereby to remove the tapered end 12*a* of the plug 12 from the seat in the annular base member 8.

The plug 12 is provided around its cylindrical circumferential surface with cam-like projections 15 cooperating with the steps 4*a* on the ribs 4 in order to stop the plug 12 together with the cap 13 in the closed condition, admitting of opening thereof only by a helical movement which is imparted by the user to the cap 13 direct.

In the open condition (FIGURE 2) the plug 12 is maintained lifted by the thrust of the spring 14, so that the liquid can be poured around the disc 11, between the ribs 3, 4 and through delivery apertures 6.

The parts contacted by the liquid cannot come into contact with the hands on account of the shape of the cap 13 acting as protection. The spring 14 is likewise removed from the liquid flow on account of a relatively close sliding fit of the plug 12 and cap 13 on the diaphragm 5.

The screw thread 2 in the body 1 permits of re-using the closure device in connection with bottles other than the original ones, while by applying a capsule 16 on the body 1 and neck of the bottle the device can be sealed to the bottle as a warrant against unauthorized refilling of the bottle.

What I claim is:

1. A bottle closure device comprising a hollow cylindrical body fitted by one end on the mouth of a bottle, a circumferential series of axially extending radial ribs formed on the inner circumferential surface of the body, an annular diaphragm integrally formed with the ribs interconnecting the outer ends of the latter in concentrical arrangement with the body, radial delivery apertures in the body between the ribs, an annular base member frontally retained by the body against the bottle around the mouth of the latter, a plug axially movable in the body having one end section providing a shutter for the base member and its opposite end section protruding outwardly through the central aperture in the annular diaphragm, a cap fast with said opposite end section of the plug arranged for closing the delivery apertures as the plug engages in the base member, and cooperating camming means on the plug and ribs guiding the plug in a helical movement for opening and closing the bottle.

2. In the device as claimed in claim 1, a helical spring compressed between the cap and annular diaphragm thereby to urge the plug to open condition, and a relatively close sliding fit between the plug and cap, on one hand, and the diaphragm on the other hand, preventing the helical spring from being contacted by the liquid contained in the bottle.

3. In the device as claimed in claim 1, a sharp annular edge on the body at a location beneath the delivery apertures providing an anti-drip gutter.

4. In the device as claimed in claim 2, the said diaphragm of an outwardly flaring configuration.

References Cited in the file of this patent
UNITED STATES PATENTS
1,015,591 Sellar ---------- Jan. 23, 1912