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C. FUREDI

2,808,182

Pouring Stopper

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FIG. 2.

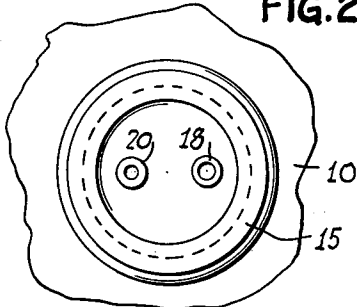


FIG. 4.

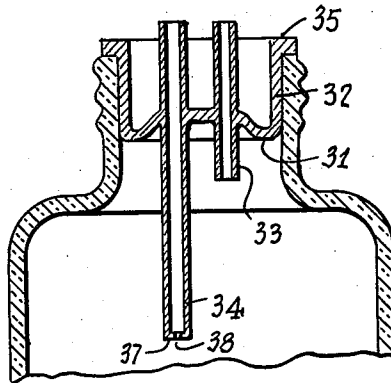
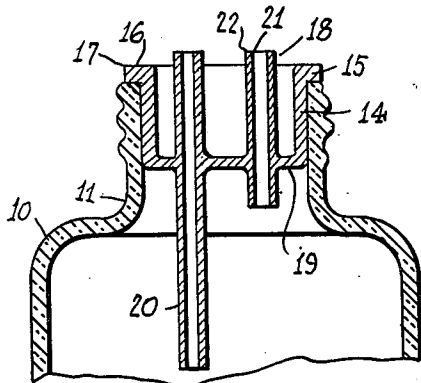


FIG. 5.

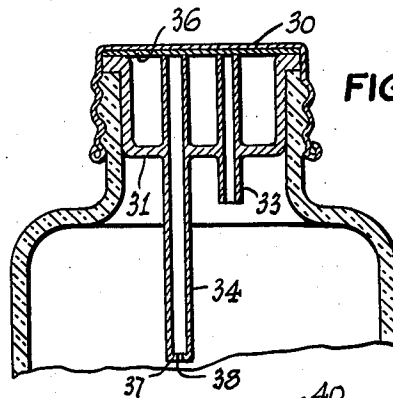


FIG. 1.

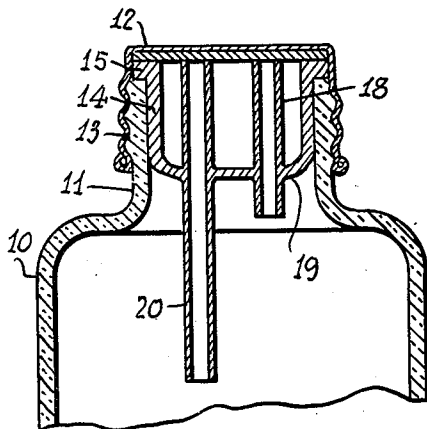
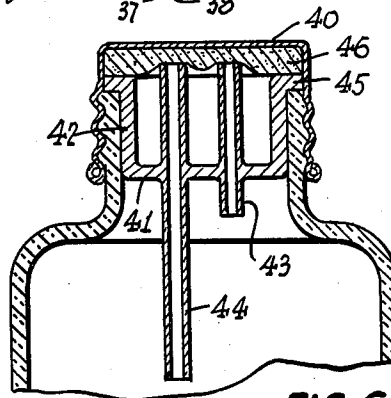


FIG. 3.

FIG. 6.

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2,808,182

POURING STOPPER

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11 Claims. (Cl. 222—479)

This invention is concerned with a pouring stopper 15 which fits inside the cap of a bottle.

The pouring stopper according to the present invention provides a smooth, even, regulated flow of the liquid. Dripping is considerably reduced or eliminated. Only a minimum residual amount of the liquid is retained in the bottle when it is emptied through the pouring stopper. The pouring stopper can be cheaply and efficiently manufactured.

The pouring stopper according to the present invention is a cup-shaped stopper tightly fitting into the neck of a bottle. A flange at the upper outer edge of the stopper is clamped between the upper rim of the bottle and the opposing portion of the cap for the bottle.

A pouring tube and an air vent lead through the bottom of the stopper into the bottle and extend upwards to be closed by the cap of the bottle. To assure a liquid-tight seal of the pouring and air vent tubes, these tubes are forced towards the cap.

Smooth pouring surfaces and sharp pouring edges facilitate pouring and reduce or eliminate dripping.

The pouring stopper may be moulded, preferably from a non-wetting plastic material.

In the accompanying drawing:

Fig. 1 is a vertical section showing the neck of a bottle and one embodiment of the pouring stopper with the bottle cap removed;

Fig. 2 is a top view of the embodiment shown in Fig. 1;

Fig. 3 is a vertical section similar to Fig. 1 with the bottle cap in place;

Fig. 4 is a vertical section showing the neck of a bottle and another embodiment of the pouring stopper with the bottle cap removed;

Fig. 5 is a vertical section similar to Fig. 4 with the bottle cap in place; and

Fig. 6 is a vertical section of the neck of a bottle and another embodiment of the pouring stopper with the bottle cap in place.

In Figs. 1, 2 and 3, 10 designates the upper portion of a bottle having a neck 11. A cap 12 screws or slides onto the neck 11 as at 13. A stopper 14 fits into the neck 11 of the bottle 10.

In the embodiment illustrated in Figs. 1, 2, and 3, the stopper 14 is substantially cup-shaped with a horizontal flange 15 extending outwardly from its upper rim. Flange 15 rests on the upper rim of the neck 11 and fits tightly into the clearance formed by this rim and the opposing portion of the cap 12, assuring a reliable seal.

A pouring tube 18 extends through the bottom 19 of the cup-shaped stopper 14. The upper rim 21 of tube 18 may be smooth and the outer edge 22 thereof sharp to reduce or eliminate dripping. Similarly the upper surface 16 of the flange 15 is preferably smooth and its outer edge 17 sharp. An air tube 20, having a smaller inner diameter than the pouring tube 18, also extends through the bottom 19 of the stopper 14 by an amount to assure satisfactory pouring properties.

When the cap 12 is screwed in place, Fig. 3, tubes 18

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and 20 extend to the cap 12 so that no liquid can escape through these tubes. To improve the seal, the bottom 19 is slightly elastic to force the two tubes 18 and 20 towards the cap 12. Hence, when the cap is removed Fig. 1, no pressure is exerted on the upper rims of tubes 18 and 20, and the slight curvature of the bottom 19 will straighten out pushing tubes 18 and 20 upwards beyond the upper surface 16 of flange 15.

In the embodiment illustrated in Figs. 4 and 5, the bottom 31 of the cup-shaped stopper 32 is pretensioned by a slight upwards curvature towards its center, as shown in Fig. 4. The pouring tube 33 and the air vent 34 extend beyond the upper rim 35 of the cup-shaped stopper 32, as in the previous embodiment, when the cap is removed.

The cap 30 is lined with an elastic material 36 such as rubber or cork to engage the upper rims of tubes 33 and 34, Fig. 5, when they are forced upwards towards the cap through the pretensioning of the bottom 31.

The two tubes 33 and 34 are of substantially the same inner diameter. However, tube 34 is terminated at its lower end by a disk 37 having a small opening 38 to prevent the liquid from entering therein.

In the embodiment illustrated in Fig. 6, the bottom 41 of the cup-shaped stopper 42 is rigid. The pouring tube 43 and the air vent 44 extend beyond the horizontal flange 45 of stopper 42 when the cap 40 is in place as shown. The cap 40 is provided with a resilient lining 46 of any suitable material such as rubber or cork which engages the upper rims of the tubes 43 and 44, thereby preventing escape of the liquid through either tube into the stopper 42 when the cap 40 is in place.

It will be understood that in any of the embodiments the cap may penetrate into the cup of the stopper to contact the two tubes and the two tubes terminate at any level slightly above the inside of the cap; they need not extend beyond the edge of the cup. It is, however, preferred that both tubes are forced towards the cap when the cap is in place. This is accomplished by positioning the upper rims of the tubes, with the cap removed, slightly above the opposing inside surface of the cap, with the cap in place.

In all embodiments illustrated the cup-shaped stopper is shown in an upright position. However, an inverted cup, having its bottom wall adjacent or close to the cap and its sidewall extending downward along the inside of the bottle neck may be advantageous for certain applications. The comparatively larger amount of liquid caught in the space of the bottle neck corresponding to the extension of the pouring tube below the bottom of the cup-shaped stopper may prove a disadvantage in some instances. This amount of liquid can readily be removed after the stopper has been taken out. If desired, the bottom wall of the cup-shaped stopper may also extend somewhere between the upper and lower edge of the sidewall, thereby forming an upright cup and an inverted cup having a common bottom wall.

Further, although both tubes must extend through the bottom of the cup-shaped stopper, they need not extend beyond it. The bottom of the cup may be positioned to coincide with the lower end of one or both tubes. If it is made to coincide with the lower end of the pouring tube, no residual liquid will be left in the bottle. However, a comparatively long pouring tube improves the pouring properties, and saving of material indicates a short stopper depth.

It is contemplated to cheaply and efficiently manufacture the pouring stopper including the flange and both tubes as one piece of molded plastic by injection moulding. A comparatively non-wetting type of plastic improves the pouring properties of the stopper.

In operation, when it is intended to dispense some of the liquid in the bottle, the cap is removed and the bottle

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tilted with the pouring tube directed toward the receiving receptacle. The stopper will assure an even, smooth, regulated flow of the liquid at a desirable rate of flow which may be stopped readily and substantially without dripping by restoring the bottle to a more upright position.

I claim:

1. A pouring stopper for a bottle having a cap removably fitting over its neck, a cup-shaped stopper having a bottom wall and a sidewall, at least part of the sidewall of said stopper tightly fitting into the inside of the bottle neck, a first and a second tube extending through the bottom wall of said stopper, the inner diameter of the lower end of said first tube being substantially larger than the inner diameter of the lower end of said second tube, and a flat shoulder extending outside from the upper rim of said stopper, said shoulder resting on the upper rim of the bottle neck and fitting tightly in the space between the upper rim of the bottle neck and the opposing section of the cap when the cap is screwed onto the bottle neck.

2. A pouring stopper as claimed in claim 1, in which said two tubes abut against the cap of the bottle when the cap is in place.

3. A pouring stopper as claimed in claim 2, in which said two tubes have substantially the same inner diameter throughout, the second of said tubes terminating at its lower end in a disk having a hole smaller than the inner diameter of said tubes.

4. A pouring stopper as claimed in claim 2, in which the upper rim of said first tube is smooth and has a sharp outer edge.

5. A pouring stopper as claimed in claim 2, in which the upper rims of said flange of said cup-shaped member and the upper rim of said first tube are smooth and have a sharp outer edge.

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6. A pouring stopper as claimed in claim 2, in which the upper rims of said two tubes are forced towards the cap when the cap is in place.

7. A pouring stopper as claimed in claim 6, in which, when the cap is removed, said tubes terminate slightly above the position of the opposing surface of the cap when in place.

8. A pouring stopper as claimed in claim 6, in which the bottom of said cup-shaped stopper is adapted to force said two tubes towards the cap.

9. A pouring stopper as claimed in claim 6, in which the bottom of said cup-shaped stopper is of elastic material and said two tubes extend slightly beyond the upper rim of said flange of said cup-shaped member when the cap is removed.

10. A pouring stopper as claimed in claim 6, in which the bottom of said cup-shaped member is slightly rounded with a raised center when the cap is removed, thereby also raising said two tubes to extend slightly beyond the upper rim of said flange of said cup-shaped member.

11. A pouring stopper as claimed in claim 6, said pouring stopper consisting of comparatively non-wetting plastic material.

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