United States Patent

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[72] Inventor **Charles B. Cruikshank**
Glasgow, Scotland

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[73] Assignee **Daniel Montgomery & Son, Limited**
Glascow, Scotland
a corporation of the United Kingdom of Great Britain and Northern Ireland. a part interest

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[33] **Great Britain**
[31] **13,332/67**

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[54] **POURING DEVICE FOR A BOTTLE**
1 Claim, 1 Drawing Fig.

[52] **U.S. Cl.** **222/478,** 222/547, 222/570
[51] **Int. Cl.** **B65d 23/04,** B65d 25/48
[50] **Field of Search** 222/478, 479, 564, 571, 109, 542, 547, 566, 567, 568, 569, 570

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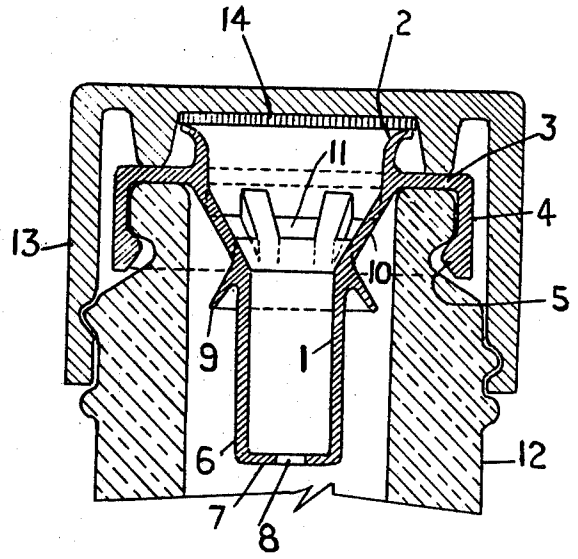
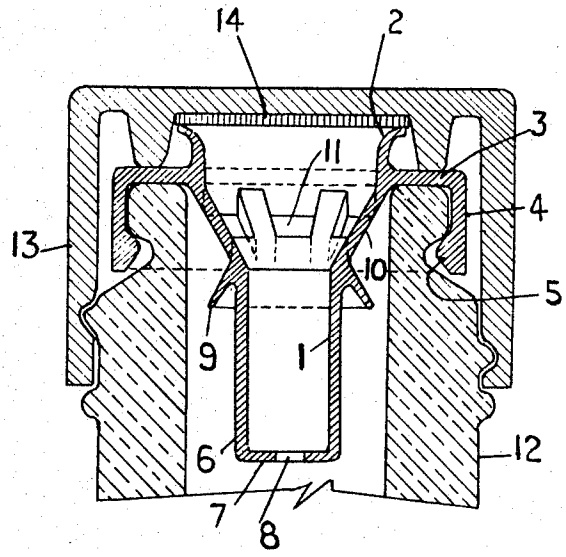
Primary Examiner—Robert B. Reeves
Assistant Examiner—Frederick R. Handren
Attorney—Larson, Taylor & Hinds

ABSTRACT: A pouring device for facilitating smooth liquid flow from a bottle by establishing a path for liquid flow from the bottle and a further path for the ingress of replacement air into the bottle. The device has a central tubular portion with an aperture at the inner end and an outwardly flared conical portion at the bottle opening. A flange at the bottle opening attaches the device to the bottle itself. Ports in the outwardly flared conical portion permit outward flow of liquid in an axial direction while permitting the ingress of air through the central portion of the device and hence into the bottle through the inner opening.

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POURING DEVICE FOR A BOTTLE

The subject of this invention is a pouring device intended to be inserted in the neck of a bottle to facilitate the pouring of the liquid contents of the bottle.

Difficulty is normally experienced in pouring the liquid contents of a bottle especially where the neck of the bottle is small in diameter because the liquid trying to leave the bottle by gravity hinders the inward movement of air which tries to enter the bottle to replace the effluent liquid. The result is that the liquid tends to leave the neck of the bottle in a spasmodic stream. It then becomes difficult to dispense liquid, particularly where the liquid is to be dispensed in accurate quantities. It is an object of the present invention to provide a pouring device which, when inserted in the neck of the bottle, provides separate paths for the outgoing liquid and the incoming air and thus makes it possible for liquid leaving the bottle to do so under continuous streamline-flow conditions.

A device according to the invention consists of a central tubular portion having an inner end and a pouring end, the inner end being arranged to enter the neck of a bottle and the pouring end being flared outwardly and presenting near that end a radially extending flange the periphery of which is joined to a cylindrical portion extending to the side of the flange away from the flared end of the central tubular portion, the end of the cylindrical portion remote from the flange being formed with an inwardly projecting annular bead, the portion of the central tubular portion between the flange and the inner end presenting an annular skirt projecting in a direction towards said end, and the portion of the central tubular portion between the skirt and the flange being formed with ports.

Preferably the central tubular portion is coned from a large diameter nearly as great at the flange as the diameter of the neck of the bottle to which the device is to be fitted to a smaller diameter at the point where the skirt is presented.

The flared end of the central portion is preferably of a diameter at least as great as that of the neck of the bottle to which the device is to be fitted.

The inner end of the central tubular portion preferably terminates in an end plate formed with an aperture smaller in diameter than the central tubular portion.

A practical embodiment of the invention is illustrated in the accompanying drawing which is a diametral section through the neck of a bottle with the pouring device in place and the usual cap fitted to close the bottle. In the drawing, 1 denotes a central tubular portion one end of which is flared outwardly at 2 and presents near that end a radially extending flange 3 the periphery of which is joined to a cylindrical portion 4 extending backwardly from the flange 3 in the direction away from the flared end, the end of the cylindrical portion 4 remote from the flange 3 being formed with an inwardly projecting annular bead 5. The other end of the central tubular portion 1 i.e. the inner end 6 terminates in an end plate 7 formed with an aperture 8. The portion of the central tubular portion 1 between the flange 3 and the inner end 6 of the central tubular portion 1 presents an annular skirt 9 projecting in a direction towards the inner end 6 while the portion of the tubular portion 1 between the skirt 9 and the flange 3 is coned as at 10 and is formed with ports 11. The larger diameter of the coned portion 10 is made to fit just within the neck 12 of the bottle to which the device is to be applied. 13 denotes a cap of normal type fitted to the neck 12 of the bottle and 14 denotes a pad of resilient sealing material arranged to be pressed by the cap 13 into sealing engagement with the flared end 2 of the device.

In practice, the device is fitted to the neck 12 of a bottle with the inner end 6 within the neck of the bottle and the flange 3 against the rim of the bottleneck. The cylindrical portion 4 then fits over the bottleneck 12 and the annular bead 5 engages the bottleneck in an annular groove formed behind the reinforcing ring usually found on bottles. The device thus remains in place even when the bottle is upended.

The bottle is sealed by screwing the usual cap 13 onto the bottle, the annular ridge normally presented by the cap coming against the flange 3 and pressing the flange into contact with the rim of the bottleneck thus providing a seal. The resilient pad 14 located within the cap 13 is compressed between the cap and the flared end 2 of the central tubular portion 1, thus providing an additional seal.

To pour liquid from the bottle the cap 13 is removed and when the bottle is upended liquid runs into the neck of the bottle and flows through the ports 11 into the interior of the central tubular portion 1 and runs out of the flared end 2. Even if the bottle contains sufficient liquid to cover over the aperture 8 in the inner end 6 of the central tubular portion 1 air can enter the bottle since, because the aperture 8 is at a higher level than the ports 11 when the bottle is upended the hydrostatic pressure at the aperture 8 is less than the hydrostatic pressure at the ports 11 and air will tend to enter through the aperture 8 rather than attempt to enter through the ports 11. The entering air and the effluxing liquid are thus maintained separate so that pouring may be performed in a continuous smooth stream. The presence of the skirt 9 causes the velocity of the liquid flowing around the free edge of the skirt 9 to increase in the constriction between the free edge of the skirt 9 and the bottleneck thus making it more difficult still for air to attempt to enter through the ports 11.

I claim:

1. A device for a bottle comprising a central tubular portion having an inner end terminating in an end plate formed with an air vent and an open pouring end, the inner end being arranged to enter the neck of a bottle, and the pouring end being a cone portion having, at the end thereof closest to the said inner end, a small diameter substantially equal to the diameter of the said inner end and extending to a large diameter substantially equal to the inner diameter of the neck of the bottle, said central tubular portion presenting at the large diameter end a radially outwardly extending flange, the periphery of which is joined to a cylindrical portion extending to the side of the flange in the direction towards the small diameter end of the pouring portion, the end of the cylindrical portion remote from the flange being formed with an inwardly projecting annular bead, engageable with an annular groove in the neck of the bottle, the portion of the central tubular portion between the flange and said inner end presenting formed integral therewith an annular conical skirt projecting in a direction towards said inner end and projecting radially outward to an outer diameter which is less than the said large diameter of the cone portion of the pouring end, and the cone portion of the central tubular portion between the skirt and the flange being formed with ports, said ports being of sufficient length in the axial direction along the said cone portion such that each port has a projected area in the axial direction to permit flow through said ports in said axial direction.