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BOTTLE PIPETTE CLOSURE FOR LIQUID CONTAINERS

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Fig. 1

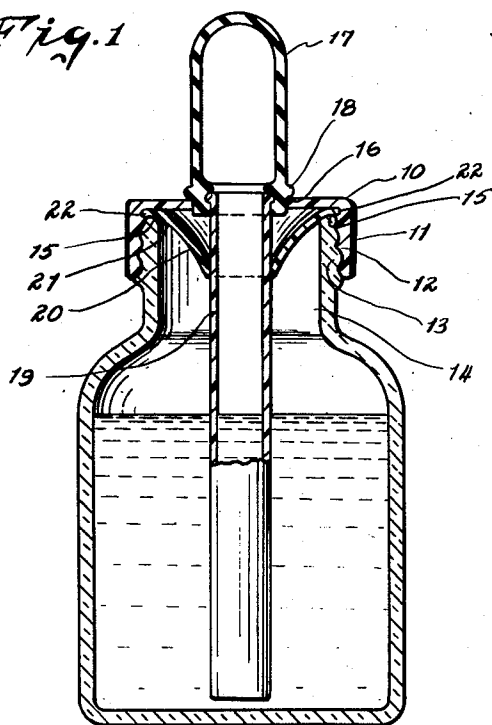


Fig. 2

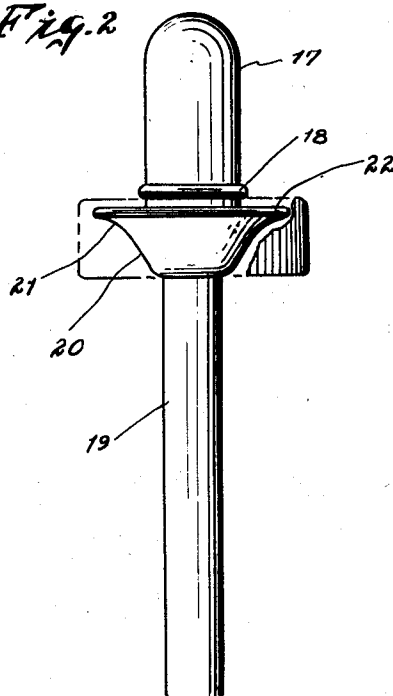


Fig. 3

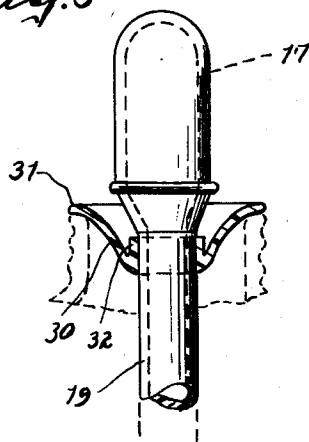
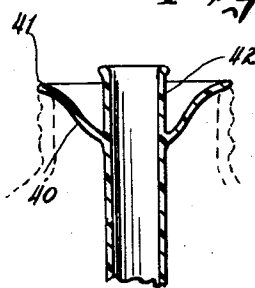


Fig. 4



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BOTTLE PIPETTE CLOSURE FOR LIQUID CONTAINERS

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3 Claims. (Cl. 141—24)

This invention relates to closures of the pipette form for bottles, jars or similar containers.

For many purposes accurate drop-wise dispensing of liquids is essential and, accordingly, the bottles in which the liquids are sealed and distributed are equipped with pipette closures which are characterized generally by their being formed with a glass pipette passing through a cap and carrying an external rubber bulb. Problems of sealing such bottles, particularly in the region where the glass pipette passes through the cap, are acute and it is accordingly a fundamental object of this invention to provide a form of bottle pipette closure or cap characterized by its efficiency as a pipette coupled with its effective sealing capacity.

It is another object of the invention to provide a bottle closure which consists of a pipette in combination with a cap, the pipette being integral with a sealing means effective, in combination with the cap, to seal the container.

Other objects and advantages of the invention will in part be obvious and in part appear hereinafter.

The improved bottle pipette of this invention comprises in combination a cap having a cylindrical portion, threaded to engage a matching threaded neck on a bottle, the cap having a centrally disposed opening into which is fitted a pipette having a conical sealing member closely formed around it, which may be integral with the pipette, the sealing member extending outwardly to a diameter matching the inside diameter of the cap, whereby the combination when screwed onto a container provides an efficient pipette which also is an efficient seal for the liquid contents of the container.

In the drawings—

Fig. 1 illustrates a longitudinal section through the cap;

Fig. 2 is a plan view of the closure as formed in accordance with the invention;

Fig. 3 is a longitudinal section through an alternative form of sealing member and pipette;

Fig. 4 is a longitudinal section through a second alternative form of sealing member and pipette.

Referring now to Fig. 1 the structure comprises a cap 10 having a cylindrical side 11 provided with internal threads 12 which engage the external threads 13 on the neck 14 of the bottle or other container. The bottle is of a conventional design in that the mouth terminates in a ring 15 which encircles it in a plane transverse to the axis of the mouth. Centrally located in the cap of the bottle is the orifice 16 to which is fitted the rubber or elastic syringe 17 which carries circumferential rib 18 for close seal and contact around the mouth of the orifice 16. Within the rubber or flexible syringe 16 is fitted the pipette 19 which may have any lower configuration which will fit within the mouth of the container being sealed. Usually, however, it is a cylindrical tube as shown. The pipette serves to pick up and make available for drop-wise dispensing a small volume of the liquid

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contents of the bottle. The sealing of the bottle is accomplished by means of sealing member 20 which is of a frustro-conical configuration having a central axial opening large enough to fit around the pipette 19 very closely.

The sealing member 20 flares outwardly to a circumference 21 which matches the internal circumference of the bottle mouth and extends further out to circumference 22, and preferably slightly beyond the bottle lip, so that when the bottle is sealed, member 20 is somewhat distorted by being compressed between bottle cap 10 and neck ring 15. As physically formed, the sealing member will fit within a bottle and the outer edge of the flaring conical section 20 will rest on the bottle mouth.

Fig. 3 shows a modification of the sealing member which has the frustro-conical section 30, the outer edge 31 of the flaring conical section 30, and is characterized by a re-entrant cylindrical section 32 which is closely matched to form a sleeve to fit the cylindrical wall of the pipette 19. In Fig. 4 a further modification of the sealing member is shown wherein the pipette itself is integrally molded as part of the sealing member. There the upwardly extending frustro-conical section of the sealing member 40 has outer edge 41 in contact with the end of the bottle and the pipette 42 is formed of resilient plastic and is integrally molded therewith.

For some purposes it may be desirable to have the pipette not only integrally molded with the resilient sealing member itself, but also to have the syringe attached to the end of the pipette integrally molded with it, whereby the syringe-pipette and sealing member are a unitary piece.

In general the combination is satisfactorily made up of a hard plastic cap 10, i.e., Bakelite; a rubber or other resilient material for the bulb 17; a glass pipette 19; and a resilient plastic conical element 20, e.g., one formed of polyethylene or polytetrafluoroethylene. Actually, as shown in Figure 4, it is convenient and advantageous to form the pipette and sealing member of resilient plastic, such as polyethylene. It is also feasible, as shown in Figure 3, to form the sealing member, pipette and bulb of resilient plastic, such as polyethylene. The advantage of polyethylene, or polytetrafluoroethylene, as the material for forming the sealing member and pipette is that common molding grades combine a proper degree of resiliency with inertness to chemical materials.

Though the invention has been described with reference to only a few embodiments it is to be understood that variations thereof may be made without departing from its spirit or scope.

What is claimed is:

1. A closure for a container terminating in an end surface encircling the mouth thereof in a plane transverse to the axis of the opening of said mouth, said closure comprising a cap member having a cylindrical portion, a substantially flat rim portion parallel to said end surface, and a central orifice in the flat portion thereof, a pipette passing through said orifice, and a frustro-conical imperforate sealing member of resilient material rotatably movable with respect to and within said cap, the central portion of said sealing member extending downwardly within said container when said closure is in use thereon and having a central opening with side portions closely encircling said pipette passing therethrough, the lip of said sealing member flaring outwardly from said central portion to fit upon said rim portion about said mouth, the diameter of said lip being intermediate that of said container mouth and the internal diameter of said cap member, and means for moving said cap axially of said container to compress said lip between said flat rim portion and said end surface,

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2. The structure of claim 1 wherein said inwardly flaring conical section has a longitudinally oriented sleeve defining a cylindrical bore for the reception of the pipette.

3. The structure in accordance with claim 1 in which the conical sealing member is integrally joined with the pipette.

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References Cited in the file of this patent

UNITED STATES PATENTS

726,038	Fitzsimmons	Apr. 21, 1903
2,087,374	Dykema	July 20, 1937
2,105,202	Root et al.	Jan. 11, 1938
2,325,209	Swihart	July 27, 1943
2,756,749	Munday	July 31, 1956