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W. D. ELSAS ET AL

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CLOSURE

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Fig. 1

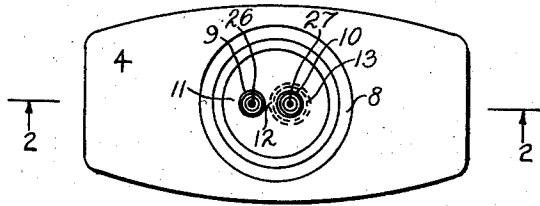


Fig. 2

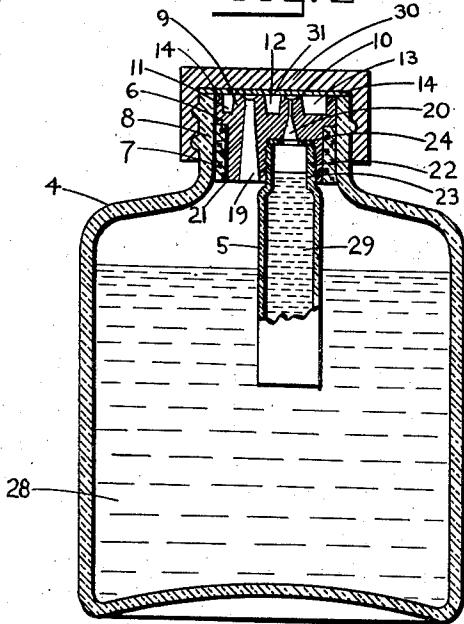
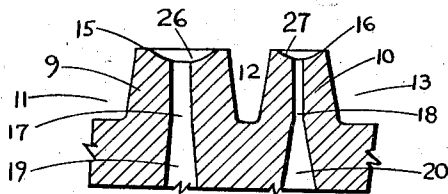


Fig. 3



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1 Claim. (Cl. 215—6)

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This invention concerns closure means for duplex bottles and refers more particularly to stopper means adapted to position one bottle inside another and permit dispensing the contents of both bottles in fixed proportions.

An object of the present invention is to provide such a bottle which will effectively prevent any mingling of residual quantities of the respective liquids after a bottle has been inverted for dispensing and then returned to the upright position. In all such bottles known in the art, several drops of each liquid remain in the vicinity of the openings whence they were dispensed, this vicinity being a common space wherein the drips mixed before draining back indiscriminately into the respective containers, contaminating the contents of each container or bottle by reason of comprising drops from the other container.

A further object is to prevent the well known and unwelcome phenomenon of the small bubble which forms and bursts over the narrow opening of a bottle which has just been used for dispensing by shaking.

Other objects will become apparent in the course of the following specification.

In accomplishing the objects of the present invention it was found desirable to provide a stopper body comprising two truncated conical studs or bosses, with top surfaces substantially even with the top of the main bottle neck, the bodies of the studs being defined by depressions surrounding them. Each stud is bored on a downwardly expanding taper, one taper leading to the bottom surface of the stopper, the other leading to a threaded cylindrical portion of the bore which leads to the bottom surface and is adapted to receive and support the second bottle in threaded engagement. The top surfaces of the studs further have dish or cup shaped depressions concentrically surrounding the respective bores. The stopper body is surrounded through part of its height by a gasket, and an ordinary threaded bottle cap engages threads on the exterior of the main bottle neck and by means of a disc gasket closes simultaneously the main bottle neck and the two bores.

In operation, the contents of the respective bottles are maintained separately as long as desired by keeping the main or outside bottle either closed or upright. To dispense the two liquids simultaneously, the cap is removed and the bottle inverted. Liquids will flow from the two bores in predetermined proportion. To discontinue the dispensing, the bottle is once more brought upright. The downwardly expanding taper form

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of the two bores encourages the liquids therein at the moment to flow back down into the respective bottles. Drops which may have failed to leave the surface of the studs when the dispensing was interrupted, drain back into their respective bores by reason of the depressions surrounding the latter. Thus all the undispensed liquid is not only saved, but preserved in separate condition as intended in all bottles of this general type.

The invention will appear more clearly from the following detailed description when taken in connection with the accompanying drawings showing, by way of example, a preferred embodiment of the inventive idea.

In the drawings,

Figure 1 is a top plan view of the bottle with the cap removed.

Figure 2 is a section along the line 2—2 of Figure 1 but with the cap applied.

Figure 3 is a detail of a portion of Figure 2.

The device comprises the outer bottle 4, the vial 5, and the stopper 6. The stopper 6 comprises the gasket 7 which acts as a packing and constitutes a closure of the neck 8 of bottle 4.

Two frustoconical studs or bosses 9, 10 are defined by depressions 11, 12, 13, in the top surface 14 of the stopper 6. It follows from the above that the height of the top surfaces 15, 16 of the studs is the same as the height of the surface 14.

The studs 9, 10 have substantially cylindrical bores 17, 18, extending throughout their height and connecting with downwardly and outwardly tapering bores 19, 20 in the body of stopper 6. Bore 19 extends through to the bottom surface 21 of stopper 6, while bore 20 leads to a cylindrical threaded bore 22 leading to bottom surface 21 and adapted to receive the threaded neck 23 of vial 5. A gasket 24 is held upon the vial 5.

Saucerlike depressions 26, 27, concentrically surround the mouths of bores 17—18 on the top surfaces 15, 16 of studs 9, 10. Said depressions are concave and their width is more than twice their depth.

Bottle 4 contains liquid 28 and vial 5 contains liquid 29.

A bottle cap 30 of ordinary threaded construction engages threaded neck 8 of bottle 4, and a disc shaped gasket 31 in cap 30 seals simultaneously neck 8 and studs 9 and 10.

In operation, the liquids 28 and 29 are preserved separate one from the other as long as either the cap 30 is screwed down or the bottle 4 is upright. On cap 30 being removed and bottle 4

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inverted and shaken, liquids 28, 29 pass out of bores 19, 20, respectively. On bottle 4 being returned to upright position the liquids 28, 29 in bores 19 and 20 run back into bottle 4 and vial 5 respectively, aided by the downward and outward taper of the bores.

It is possible that some liquid in the cylindrical bores 17, 18 may be forced out thereof in the form of bubbles due to the entrapped air rising and entraining liquid with it. Such liquid is caught in the saucer like depressions 26, 27 when the bubbles burst, and the liquid runs back into the bore whence it came.

Liquid which has escaped from either bore but has adhered to a stud at the moment of interruption of the dispensing will also drain back into its own bore if it is within the depressions 26, 27. In the unlikely circumstance that it has adhered to the small surfaces 15, 16, which are shown larger than they are for the purpose of illustration, it must either roll back into the depressions 26, 27 and bores 19, 20, whence it came, or fall into the depressions 11, 12, 13 in which case it is wasted but at least is kept from getting back into a different container than the one from which it came.

It is notable that the above invention requires no special skill in use. It is shaken just as though it were a single bottle. It is capped and uncapped as though it were a single bottle. It is also simple to fabricate, the stopper 6 comprising all the special features, all other parts used in the invention being already cheaply available.

It is apparent that the specific illustrations shown above have been given by way of illustration only and not by way of limitation, and that the structures above described are subject to variation and modification without departing from the scope of the appended claim.

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What is claimed is:

A dispensing container having two separate compartments and a mouth opening, a stopper for insertion into said mouth opening to seal the same and having a pair of spaced apart discharge openings formed therein, each of said discharge openings leading to one of the separate compartments, and a separate projection formed about each of said discharge openings at the upper end of the stopper, said projections having separate concave saucer-like depressions having edges located in substantially the same plane upon the upper surfaces of said projections in communication with said discharge openings for facilitating the return of liquid therein to the discharge openings for dispensing, the width of each saucer-like depression being more than twice its depth.

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