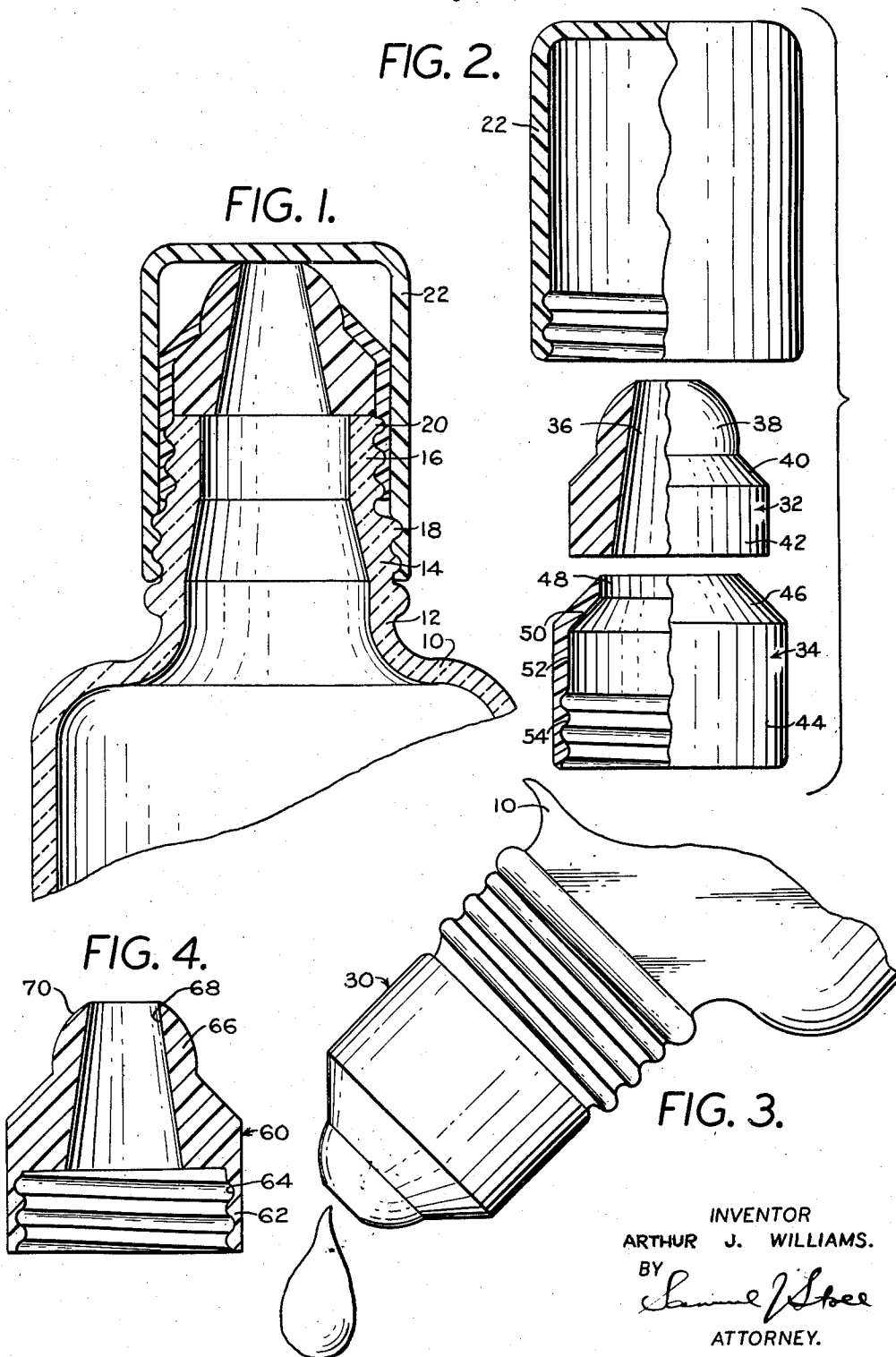


Aug. 4, 1959

A. J. WILLIAMS
OPEN-MOUTH AIR-BOUND APPLICATOR FOR LIQUID
MATERIALS SUCH AS INKS, COSMETICS
AND OTHER LIQUID PREPARATIONS
Filed Sept. 6, 1956

2,898,019



1

2,898,019

OPEN-MOUTH AIR-BOUND APPLICATOR FOR LIQUID MATERIALS SUCH AS INKS, COSMETICS AND OTHER LIQUID PREPARATIONS

Arthur J. Williams, Great Neck, N.Y.

Application September 6, 1956, Serial No. 608,340

1 Claim. (Cl. 222—551)

This invention relates to an open-mouth air-bound applicator for liquid materials such as inks, cosmetics and other liquid preparations.

Open-mouth applicators of this general type are known to the art. To dispense their contents, they are inverted over a selected surface and a drop or so of their contents is dispensed. Further flow is prevented since the contents of the applicator are air-bound, that is, air cannot readily enter to displace the contents. But in all cases known to applicant, these applicators include a bottle or other container integrally connected with the applicator nozzle. Usually the applicator nozzle is integrally molded into the neck of the applicator bottle and they constitute a single integral entity.

The principal object of this invention is the provision of an applicator nozzle of the character described which may be mounted on a conventional bottle, thereby rendering conventional bottles suitable for dispensing liquid contents in the manner aforesaid.

In the present invention, the applicator nozzle is provided with internal screw threads adapted for engagement with the external screw threads of a conventional screw type neck of a conventional bottle or similar container. Said applicator nozzle may be mounted on a screw-type neck or removed therefrom in precisely the same manner and with precisely the same ease as a screw-type cap.

The advantages of such construction are manifold. In the first place, an applicator nozzle of this type is easily made, especially by comparison with the difficulties inherent in the making of a similar nozzle which is integrally connected to a bottle. In the second place, the present applicator nozzle is adaptable to many kinds of bottles and other containers, provided that they embody a screw-type neck. When the nozzle is integral with the bottle, a new molding is required for every new shape or size of bottle. In the present invention, a single molding for a single applicator nozzle will suffice for many bottles which are normally and conventionally made for other purposes.

An important object of this invention is the provision of a special type of bottle may be used in conjunction with the present applicator nozzle and in conjunction with a conventional cap therefor. Specifically, this special type of bottle is provided with a stepped neck, the lower portion thereof being relatively large and the upper portion thereof being relatively small, both portions being provided with external screw threads. The applicator nozzle is adapted for screw-threaded engagement with the upper neck portion. A conventional screw type cap is adapted for engagement with the lower neck portion.

An important feature of the present invention resides in the fact that it may be made of either one or two pieces. A single plastic molding will suffice for many purposes. In some cases a two-piece applicator nozzle provides important advantages. For example, the liquid which is to be dispensed may be of such character that glass would be a suitable material not only for the con-

2

tainer but also for its nozzle. In such case, the inner member of the nozzle may be made of glass and the outer member may be made of plastics suitable for securely attaching said glass inner member to the neck of a glass bottle.

The invention is illustrated in the accompanying drawing in which:

Fig. 1 is a fragmentary vertical section showing an applicator nozzle made in accordance with one form of this invention mounted on the neck of a bottle and also showing a cap mounted thereon, said bottle neck being screw-threaded and stepped to receive both the applicator nozzle and the cap.

Fig. 2 is an exploded view partly in section showing the cap and the inner and outer elements which comprise the applicator nozzle.

Fig. 3 shows the bottle of Fig. 1 inverted to dispense a drop of its contents through the applicator nozzle mounted thereon.

Fig. 4 is a sectional view through another applicator nozzle made in accordance with a second form of this invention, said applicator nozzle comprising a one-piece member.

Bottle 10 shown in Figs. 1 and 3 is conventional except in relation to its neck portion 12. Said neck portion consists of a relatively large base portion 14 and a relatively small upper end portion 16. External screw threads 18 are formed on said base portion and external screw threads 20 are formed on said upper end portion. An internally screw-threaded cap 22 is engageable with the screw threads on the base portion 14 and it is adapted to enclose the upper neck portion and the applicator nozzle mounted thereon as hereinafter described.

Referring now to the first form of this invention as illustrated in Figs. 1, 2 and 3, it will be observed that the applicator nozzle 30 consists of two separable elements, a nozzle proper 32 which is the inner element, and a retaining or connecting collar 34 which is the outer element. As the drawing clearly shows, the connecting collar 34 is the means whereby the nozzle element 32 is attached to the neck of the bottle and more particularly to its upper end portion 16.

The nozzle element 32 has a tapered opening 36 formed therein axially thereof. This tapered opening tapers from a relatively broad base to a relatively small upper end which is the orifice through which the contents of the bottle may be dispensed. Stated broadly, this tapered opening assumes the shape of a truncated cone. The upper portion 38 of the nozzle element 32 is rounded or tapered to meet the upper end of the conical opening 36. Below said rounded or tapered upper portion 38 is an annular inclined shoulder 40 and below said shoulder is a generally cylindrical portion 42. Reference is here made to the external configuration of said nozzle member 32.

The outer connecting collar 34 comprises, in the main, a cylindrical portion 44 and an upper end portion 46 which is tapered inwardly from said cylindrical portion. The foregoing also refers to the external configuration of said connecting collar. Viewing said collar in relation to its internal configuration, it will be observed that at its upper end there is a generally cylindrical band 48. Below said cylindrical band is an annular inclined shoulder 50. Below said shoulder is a generally cylindrical portion 52. Below said cylindrical portion are internal screw threads 54.

The two elements 32 and 34 may be assembled to each other and to the upper neck portion of the bottle as follows: The nozzle portion 32 is inserted into the collar portion 34 until the rounded upper end 38 of said nozzle portion projects through the annular band 48 and inclined shoulder 40 abuts the inclined shoulder 50. Cylindrical

portion 42 of nozzle member 32 is thereby seated within the cylindrical portion 52 of the collar member 34. Screw threads 54 remain exposed for engagement with screw threads 20 on the upper neck portion 16 of the bottle. It will be observed that when the collar member 34 is brought into screw-threaded engagement with said upper neck portion, the latter abuts the lower end of nozzle member 32. Consequently, when the collar member 34 is tightly secured to the upper neck portion, the nozzle member 32 is securely held between said collar member, and more particularly its inclined shoulder 50, and the upper end of the upper neck portion of the bottle.

It will be understood that the bottle and the two elements 32 and 34 as well as cap 22 may be made of any suitable material. For example, the bottle may be made of glass or of flexible plastics. The cap may be made of plastics or metal, as desired. The two elements 32 and 34 may be made of plastics or the applicator nozzle proper 32 may be made of glass and the collar member 34 may be made of plastics or any other combination of materials may be employed.

In Fig. 4 is shown an applicator nozzle 60 which is made of one piece. Its internal and external configuration closely approximates that of the applicator nozzle assembly above described, that is, the assembly of the two elements 32 and 34. More specifically, applicator nozzle 60 has a generally cylindrical base portion 62 with internal screw threads 64 formed therein. The upper portion 66 of said applicator nozzle tapers both on the inside and on the outside from relatively large proportions at its lower end to relatively small proportions at its upper end. Specifically, a tapered opening 68 of truncated cone shape is formed within the upper portion 66 of the applicator nozzle 60. A rounded upper end portion 70 curves upwardly and inwardly to meet the upper end of said conical opening 68.

It will be understood that applicator nozzle 60 may be made of any suitable material, such as plastics or rubber or the like and it may be mounted on a screw-threaded neck portion of a bottle precisely in the same manner as the applicator nozzle first above described.

The foregoing is illustrative of preferred forms of this invention and it will be understood that these forms may be modified and other forms may be provided within the broad spirit of the invention and the broad scope of the claim.

I claim:

An applicator type bottle of the character described having a reduced neck portion provided with a relatively large base portion, and a relatively small upper end portion, external screw threads formed on said upper end portion, additional external screw threads formed on said base portion, a bead surrounding said base portion at its lower extremity, said relatively smaller upper end portion having a flat top and a relatively large opening there-through, a plastic nozzle having a flat base seating on said flat top, said nozzle having a cylindrical outer lower portion, a tapered intermediate outer portion and a hemispherical outer top portion, said nozzle having a conical opening extending throughout the same, the larger end of said conical opening being positioned adjacent said relatively large opening in the relatively small upper end portion of said neck portion, and being of a slightly lesser diameter than the opening in the neck portion, the smaller end of said conical opening comprising a discharge opening centrally located in said hemispherical top portion, a plastic retaining collar detachably securing said nozzle to said neck portion, the lower end portion of said collar being internally threaded for engagement with the external screw threads on the upper end of said neck portion and the upper end of said collar having a conical flange extending radially inwardly thereof and overlying said tapered intermediate outer portion of the nozzle, the inner rim of said flange having an arcuate face closely engaging the lower periphery of said hemispherical outer top portion, thereby holding said nozzle tightly against the neck portion and providing a liquid-tight seal therebetween, and a cylindrical cap enclosing the nozzle and retaining the collar, said cap being provided with internal threads at its lower end for engagement with the external threads on the base portion of said neck portion adjacent said bead, the top of said cap seating on the top of said hemispherical outer top portion of said nozzle to tightly close and seal the discharge end of said conical opening.

References Cited in the file of this patent

UNITED STATES PATENTS

924,959	Bennett	June 15, 1909
2,075,249	Wilson	Mar. 30, 1937
2,160,602	Nagel	May 30, 1939
2,342,932	Fram et al.	Feb. 29, 1944
2,734,665	Flamm	Feb. 14, 1956