Dec. 17, 1935. M. FISCHMAN 2,024,570

DISPENSER FOR PERFUME AND THE LIKE

Filed Jan. 9, 1934

Fig. 1.

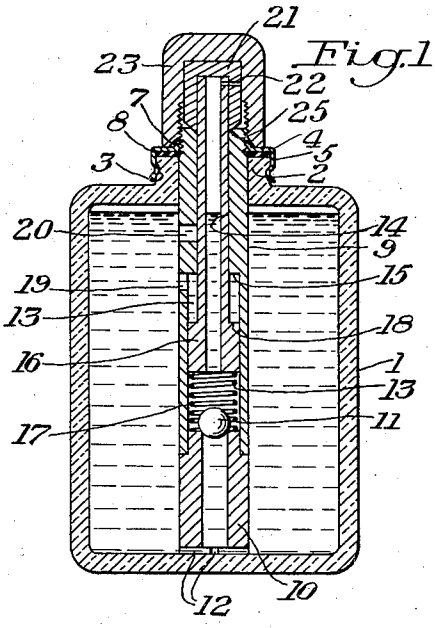


Fig. 2.

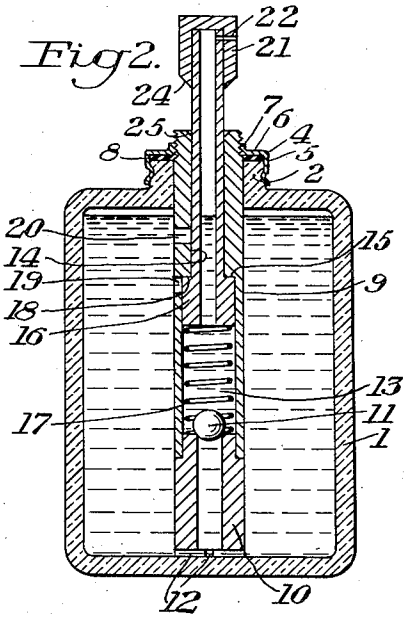


Fig. 3.

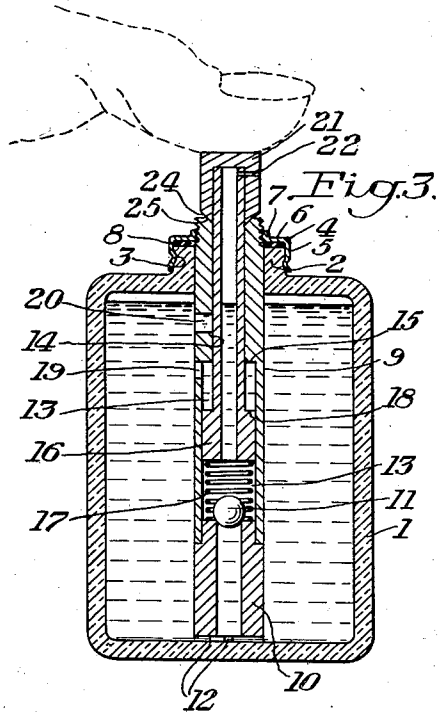
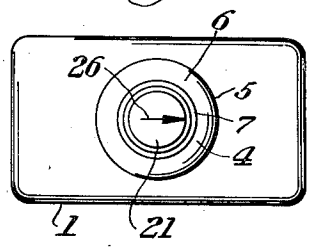


Fig. 4.



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DISPENSER FOR PERFUME AND THE LIKE

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Application January 9, 1934, Serial No. 705,914

3 Claims. (Cl. 221—102)

The principal object which I have in view is the provision of a convenient dispenser for perfumes and like liquids, which will provide means for dispensing a limited quantity as upon the handkerchief or the clothing of the user, and which will be both leak-proof and evaporation-proof when not in use, and which may be safely carried either on its side or inverted in a purse or shopping bag.

Other objects in view will appear from the following description.

In the accompanying drawing, wherein I have illustrated a practical embodiment of the principles of my invention, Fig. 1 is a longitudinal section of my improved dispenser in its closed position and as carried or stored.

Fig. 2 is a like view with the cap removed and the plunger fully extended.

Fig. 3 is a like view showing the plunger depressed to discharge a limited portion of the liquid.

Fig. 4 is a top plan view with the cap removed.

Referring to the drawing, 1 represents the container, usually a relatively small glass bottle, which is provided with a cylindrical neck 2 exteriorily threaded as at 3. 4 represents a ferrule, usually of metal, having a portion 5 of larger diameter which is provided with threads for screwing the ferrule onto the neck 2. The ferrule also comprises an intermediate annular shoulder 6 and a portion 7 of less diameter. The portion 7 is threaded. When the ferrule is screwed down onto the neck of the bottle a rubber or other resilient gasket 8 is compressed between the end of the neck 2 and the shoulder 6 of the ferrule, thus sealing the ferrule relative to the bottle neck.

9 represents a tubular metal barrel which extends down through the neck of the bottle and is sealed relative to the neck by the compressed gasket 8. The upper end of the barrel 9 is exteriorily threaded and is screwed into the interior threads of the portion 7 of the ferrule 4, thereby supporting the barrel in place.

10 represents a cylindrical plug which is inserted up into the lower end of the barrel, the enlarged head of the plug preferably resting on the floor of the bottle. The plug is provided with an axial bore, the upper end of which acts as a seat for the upwardly opening valve ball 11. The lower face of the head of the plug 10 is provided with radial grooves 12 which act as channels to conduct liquid from the interior of the bottle to the interior of the barrel 9.

The lower bore 13 of the barrel 9 is of greater diameter than its upper bore 14, with an annular shoulder 15 formed between the two bores.

16 represents a tubular metal plunger having a lower portion of proper exterior diameter to slidably fit the bore 13 of the barrel while its upper diameter fits the bore 14. 17 represents a helical spring interposed between the lower end of the plunger and the upper end of the plug 10, thus tending to maintain the plunger in its raised position in the barrel 9 with the plunger shoulder 18 engaging the barrel shoulder 15, and also to quickly return the plunger to its raised position after it has been depressed and then released from pressure of the thumb or finger.

The internal diameter of the spring 17 is sufficient to provide full clearance for the free movement of the valve ball 11 in opening and closing.

The barrel 9 is provided with a port 19 which opens into the upper end of the lower bore 13 adjacent the shoulder 15. 20 represents a second port in the wall of the barrel which opens into the interior of the barrel approximately half way between the shoulder 15 and the upper end of the bottle.

The bore of the plunger 16 is closed at its upper end as by the cup 21 and a port 22 is formed in the wall of the plunger and the skirt of the cup 21 for the forcible discharge of liquid.

23 represents a domed cap made of any suitable material and, if desired, of ornamental shape and coloration. The cavity of the cap is of sufficient diameter to snugly receive the cup 21 and close the port 22, preventing leakage of the liquid when the cap 23 is in place as shown in Fig. 1. The lower skirt of the cap is interiorly threaded so as to be screwed onto the exterior threads of the barrel 9.

The lower edge of the cap 23 is interiorly beveled to provide clearance for the portion 7 of the ferrule 4.

The lower edge of the cup 21 is exteriorly tapered as at 24 to fit into the interiorly tapered upper end 25 of the bore 14. Thus when the cap 23 is assembled it forces these two tapered surfaces together effecting a seal between the plunger and the barrel.

The top of the cup 21, as shown in Fig. 4, is marked with an arrow or pointer 26, to indicate the side of the cup at which the discharge port 22 is located so that the port may be properly directed in discharging liquid.

When the cap 23 is in place, as shown in Fig. 1, the liquid will tend to stand at the same level

in the barrel 9 and in the bore of the plunger 16 as it stands in the body of the bottle 1 as the valve ball 11 is not spring-seated. When the cap is removed the plunger will spring upwardly until its shoulder 18 engages the shoulder 15 of the barrel and the liquid will tend to follow the quickly ascending plunger.

Now if the thumb be placed in the outer end of the plunger and the latter be quickly depressed into its lowermost position, as indicated in Fig. 3, until the spring 17 is practically fully compressed, the descent of the plunger will seat the valve ball 11, trapping the liquid above it in the barrel and plunger and the downward movement of the plunger will forcibly displace the liquid, the momentum of the displaced liquid causing it to be forced upwardly in the plunger and discharged in a jet through the port 22.

Next, when the plunger is released by the removal of the thumb, the expansion of the spring 17 causes the plunger to be forcibly elevated into its position shown in Fig. 2, producing a low pressure condition above the valve ball 11, which causes it to rise from its seat and permit liquid to flow past it to refill the barrel. This refilling flow of liquid is aided by the action of the port 19 in relieving possible back pressure in the barrel and assisting the pumping action of the plunger.

The port 20 which opens at its inner end into the upper bore 14 of the barrel, in which the plunger has a sliding fit, permits air to leak down between the barrel and the plunger and into the interior of the bottle 1, thus to maintain head pressure on the body of liquid in the bottle, this admitted air replacing the discharged liquid.

The resistance to the flow of liquid up between the barrel and the plunger from the port 20 is much greater than the resistance to the down travel of air, so that there is no tendency to pump liquid up between the barrel and the plunger, but the full pumping action is effective to draw liquid up past the valve ball.

When the cap 23 is screwed into place there is no danger of leakage if the bottle be laid on its side or even inverted.

I claim:—

1. In a dispenser for perfume and the like, the combination of a container, a tubular barrel having one end arranged to extend into the container and sealed therewith, the outer end of the bore of the barrel being provided with an annular inwardly and downwardly tapered surface, a tubular plunger having a portion thereof arranged to operate in the barrel, a cap arranged to be secured to the barrel to close and hold the plunger in its lowermost position, and means on the outer portion of the plunger arranged to engage and effect a seal with the tapered surface of the barrel to prevent leakage between said parts while the plunger is maintained in its lowermost position.

2. In a dispenser for perfume and the like, the combination of a container, a tubular barrel having one end externally threaded and having the other end arranged to extend into the container and sealed therewith, the outer end of the bore of the barrel being provided with an annular inwardly and downwardly tapered surface, a tubular plunger having a portion thereof arranged to operate in the barrel, means on the outer portion of the plunger arranged to engage and effect a seal with the tapered surface of the barrel, and a cap internally threaded and arranged to screw onto the barrel forcing the said means into engagement with the tapered surface of the barrel effecting a seal therebetween.

3. In a dispenser for perfume and the like, the combination of a container having a tubular neck provided with exterior threads, a ferrule having an interiorly threaded larger bore which is screwed onto said neck, an intermediate annular shoulder which overlies the end of the neck to form a seal therewith and an outer bore of lesser diameter, a tubular barrel extending into said container and fixed in the lesser bore of the ferrule, a spring-actuated plunger working in the barrel and protruding outwardly therefrom, and a cap arranged to be mounted on said barrel to inclose the outer end of the plunger and to hold the same depressed in said barrel.

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