

Dec. 4, 1951

J. B. FILGER

2,577,321

NOSE DROP DISPENSER

Filed Oct. 29, 1949

2 SHEETS—SHEET 1

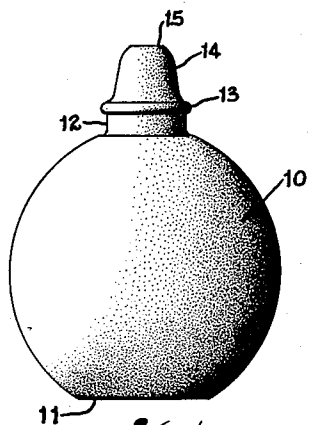


Fig. 1

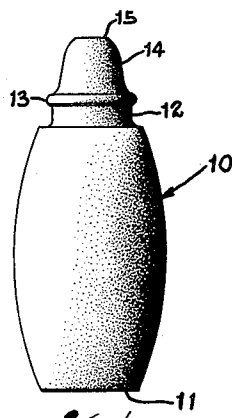


Fig. 2

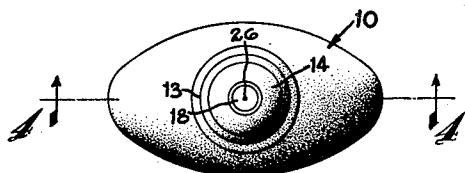


Fig. 3

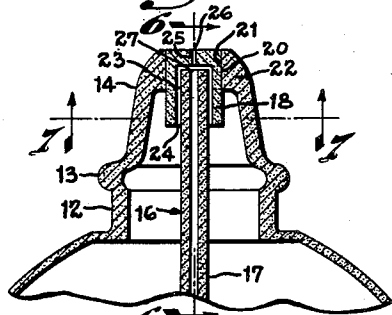


Fig. 4

Fig. 5

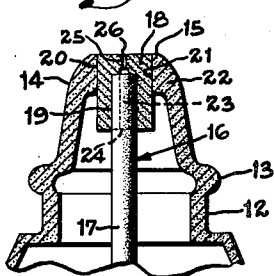


Fig. 6

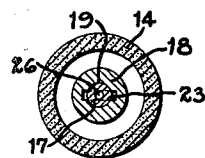


Fig. 7

INVENTOR.
Joseph B. Filger
BY
Wood, Arey, Henon & Evans
ATTORNEYS

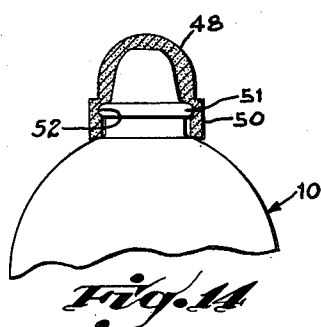
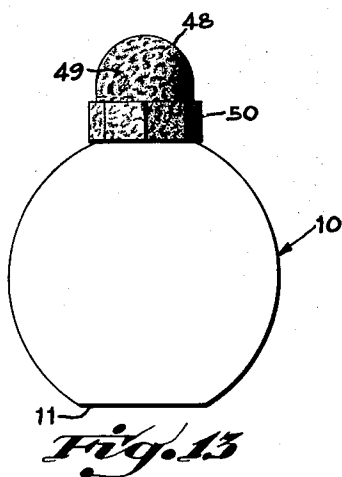
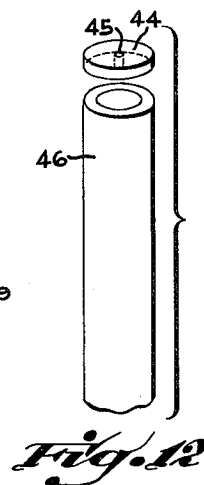
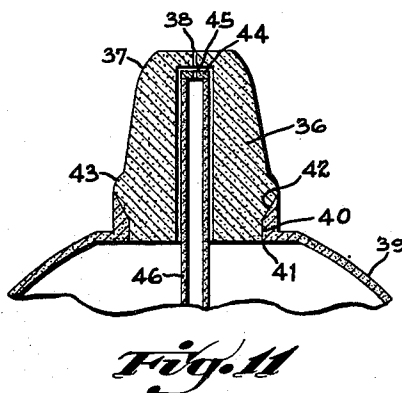
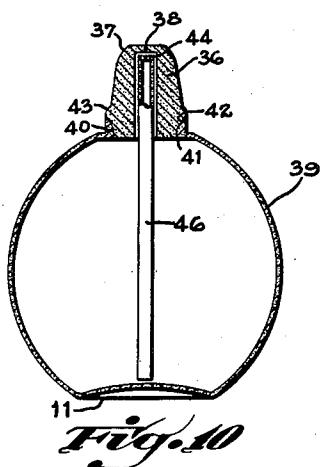
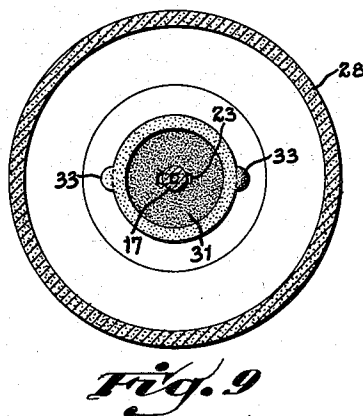
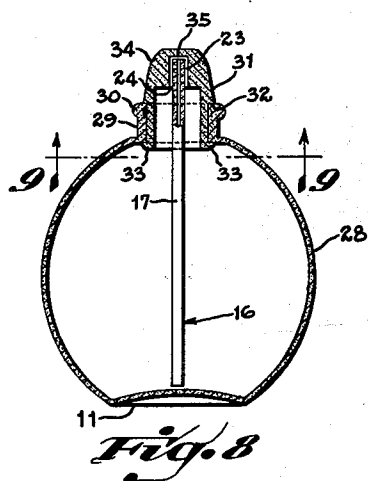
Dec. 4, 1951

J. B. FILGER
NOSE DROP DISPENSER

2,577,321

Filed Oct. 29, 1949

2 SHEETS—SHEET 2



INVENTOR.
Joseph B. Filger
BY
Wood, Arey, Henn & Evans
ATTORNEYS

UNITED STATES PATENT OFFICE

2,577,321

NOSE DROP DISPENSER

Joseph B. Filger, Cincinnati, Ohio

Application October 29, 1949, Serial No. 124,465

3 Claims. (Cl. 128—173)

1

2

This invention relates generally to a dispenser for nose drops or the like and is particularly concerned with a bottle formed from polyethylene, vinyl polymer or the like combined with aspirating mechanism to permit the dispensation of conventional nose and throat medications directly from the bottle.

It has been proposed in the past to construct small bottles from polyethylene or similar materials for the dispensation of certain types of liquids, particularly deodorants. Bottles formed from this type of material are quite advantageous for this purpose because the elastic properties of polyethylene permit a bottle so formed to be squeezed for the ejection of the liquid placed therein. Since polyethylene will not readily crack or break, is chemically inert, is transparent, and can readily be supplied in a variety of colors, bottles formed from it have a considerable customer appeal and in addition possess definite advantages not found in bottles formed from rubber and other types of materials.

The art of forming bottles from polyethylene and like materials is, however, comparatively undeveloped at the present time and there are certain limitations to the manufacturing technique which present definite problems to supplying a completed unit of the type here under consideration. Polyethylene bottles are blown in a manner somewhat similar to certain types of glass bottles. However, at the present time, the development of the art does not permit the formation of a polyethylene bottle to absolutely exact tolerances, such as would be necessary to provide the narrow tubing and small apertures required for aspirating liquids such as nose drops. For this reason, it is practically essential that the outlet aperture be provided in an element made from some different material. It may be advantageous also to use a different material for the elements which combine to form the aspirating mechanism as close tolerances are required here also.

There is also a problem in configuring the upper surface of the bottle element both alone and in combination with the aspirating elements to provide a structure which can be inserted smoothly and effectively into a nostril to exactly the desired degree. A further problem exists in connection with the provision of a cap for a bottle formed from polyethylene to provide a seal when the bottle is not in use. Polyethylene cannot readily be configured to form screw threads and accordingly this invention utilizes the natural elastic properties of the material to provide a

cap which can effectively be snapped in position to seal the bottle against loss of the medication and to permit removal when desired.

Having in mind the solution of the difficulties mentioned as well as others which are particularly involved in providing a polyethylene bottle for the aspiration and discharge of nose drops, this invention provides in various different forms a construction which attains the desired result, particularly effectively and with a minimum of parts and assembly difficulties.

Referring to the drawings which illustrate a preferred form of the invention and several modifications thereof,

Figure 1 is a side elevation of a completed bottle unit particularly well adapted to the purpose intended.

Figure 2 is an end elevation of the same unit.

Figure 3 is a top plan view.

Figure 4 is a sectional view along the line 4—4, Figure 3.

Figure 5 is an enlarged view of the upper portion of Figure 4, illustrating particularly the aspirating mechanism and its assembly with the bottle proper.

Figure 6 is a sectional view along the line 6—6, Figure 5.

Figure 7 is a sectional view along the line 7—7, Figure 5.

Figure 8 is a sectional view illustrating a modified form of the invention in which the entire nostril insertion portion is a separate unit which is interlocked with the bottle proper in the manner illustrated.

Figure 9 is a sectional view along the line 9—9, Figure 8.

Figure 10 is a sectional view illustrating a second modification somewhat similar to the one shown in Figure 8 except that the nostril insertion portion is secured to the bottle in a different manner and the aspirating tube is formed in two separate elements.

Figure 11 is an enlarged view of the upper portion of the structure shown in Figure 10.

Figure 12 is a perspective view illustrating the construction of the two sections of the aspirating tube shown in Figures 10 and 11.

Figure 13 is a side elevational view showing a preferred type of cap positioned on the upper end of the bottle.

Figure 14 is a sectional view of a portion of the structure shown in Figure 13 and particularly illustrates the inner contours of the cap and the mode of securing it to the bottle.

Referring again to the drawings and particu-

3

larly to the form of the invention illustrated in Figures 1-7, the bottle proper has been designated generally as 10. As illustrated, the contours are preferably rounded and the sides flattened to permit easy insertion in a pocket or purse. The base may be flattened as at 11 to permit the bottle to seat on a flat surface. The neck is preferably narrowed as at 12 and a laterally extending peripheral flange 13 is provided along the upper edge of the neck. This flange has the dual function of preventing insertion of the end of the bottle in the nostril beyond the flange and constituting a seat for engagement with the inner surface of the cap as particularly illustrated in Figure 14. The portion of the bottle neck above the flange which has been designated 14 is rounded and tapered upwardly to correspond generally with the inner contours of the nostril. The extreme upper end 15 is preferably flattened slightly as illustrated.

The elements which accomplish the aspiration of the medication are best illustrated in Figures 4, 5 and 6 in which the numeral 16 designates generally the assembly of the tube 17 and the plug 18. The tube 17 is preferably formed from polyethylene, vinyl polymer or some like material having a substantial degree of flexibility to permit bending of the tube inside of the bottle when the walls of the bottle are squeezed for the ejection of fluid. The plug on the other hand is formed preferably from an acrylic resin, or some like material having a substantial degree of hardness permitting working of the material to close tolerances, either by molding or machining. The upper end of the tube is press-fitted into a bore 19 in the lower surface of the plug as is best illustrated in Figure 6.

The tube 17 may be of relatively small external diameter, such as, for example, .10 to .12 inch. The inner diameter is preferably from .020 to .035 inch. The tube should be of a length to extend from approximately the upper edge of the bottle element 10 to a point closely adjacent the base as illustrated particularly in Figure 4. This enables the user to exhaust or practically to exhaust the medication in the container.

The plug 18 is preferably of cylindrical configuration and is adapted to have its outer side walls 20 press-fitted into engagement with the inner side edges 21 of the upper wall 22 of the bottle member 10. It will be noted particularly that the upper end wall of the bottle member is substantially thicker than the side walls or base in order to provide as large as possible a bearing surface against the outer walls of the plug 18.

A channel 23 of inverted U configuration is provided in the plug adjacent its point of engagement with the side walls of the tube. This channel has its lower ends 24 opening into the bottle cavity and is interconnected with a second channel 25 which extends to the outlet aperture 26 in the plug.

In the operation of the device illustrated in Figures 1-7, as the bottle is squeezed, air from the interior of the bottle is forced into the channel 23 through the openings 24 and because of the Bernoulli effect created, the medication rises in the tube until at the point 27 it is contacted by the upwardly moving air stream, aspirated, and ejected through the aperture 26 as a fine mist.

One of the particular advantages of the structure illustrated in Figures 1-7 is its simplicity and ease of assembly. There are actually only three elements, the bottle 10, the tube 17 and the plug 18. As previously described, the tube and

4

plug are press-fitted into the relationship shown, but preferably are not inserted into the bottle until the latter has been filled with the particular type of medication desired. The entire assembly may be performed by the manufacturer of the medication or alternatively by the retail druggist who is required only to insert the aspirating assembly 16 into the bottle to complete the combination. While the invention particularly contemplates a bottle which is disposable after one use, it will be readily seen that it would be quite practical to re-use the bottle if desired.

Since the polyethylene from which the bottle walls are formed is elastic, a particularly tight engagement can be obtained between the edges 21 and the sides of the plug 18 and to assist in this result, the plug may be of slightly larger diameter than the opening in the bottle. It is also preferable that the upper surface of the plug be somewhat smaller than the upper surface of the bottle as this permits a more complete rounding of the surfaces to be inserted in the nostril. Similarly a very tight fit can be accomplished between the sides of the tube 17 and the sides of the bore 19 because one material is preferably elastic and the other preferably hard surfaced. Here again if desired the diameter of the tube may be slightly greater than the diameter of the bore.

In the form of the invention shown in Figure 8, the bottle portion 28 is similar in configuration to that shown in Figures 1-7, except that the neck 29 terminates at the upper edge of the peripheral flange 30. A separate nasal insertion element or spray head 31 is provided. This element has its side edges configured to form a peripheral shoulder 32 which seats on the upper edges of the flange 30. At the lower edge of the element 31 a pair of tabs 33 interlock with the inner surface of the bottle member thereby securing the spray head member to the bottle member. The upper edges of the spray head 31 are curved and tapered as illustrated at 34 and an aperture 35 is provided in the upper surface of this member for ejection of the liquid. The tube 17 is identical with the tube illustrated in connection with the form shown in Figures 1-7 and its upper edge is inserted and fitted in a bore in the member 31 in the same manner as the tube 17 is inserted in the bore 19 in the plug in the first form. The operation of the device is identical with that of the preferred form.

In the modified form of the invention shown in Figure 10, the nasal insertion portion 36 is a separable element somewhat similar in contours to that shown in Figures 8 and 9. The upper surfaces 37 are curved and tapered in a similar manner and the outlet aperture 38 is also similar. However, the mode of attachment to the bottle element is quite different. In Figure 10, the bottle element, here designated 39, has an upstanding peripheral flange 40 extending around the outlet aperture 41. The inner surfaces of this flange are adapted to engage with the surfaces 42 on the nasal insertion portion which are narrowed to form a neck. The attachment may be accomplished by press-fitting, although an appropriate adhesive or some form of heat fusion may be employed if desired. The shoulder 43 formed on the nasal insertion portion performs the same function as the peripheral flange shown in the other forms. The aspirating elements, the assembly of parts, and the mode of operation are the same in this form as in the others described.

In the form shown in Figures 10 and 11 there

is another difference in that a disk 44 having a central aperture 45 therein is provided for the tube here designated as 46. The disk preferably has an outside diameter the same as that of the tube. The purpose of this construction is to permit the use of a tube of greater diameter in the event that this should prove desirable because of the difficulty of obtaining tubes from the desired material which have a sufficiently small and sufficiently uniform internal bore. The assembly involves only one additional step and the cost of the structure is little if any more than the other forms shown.

Figures 13 and 14 illustrate the attachment of a protective cap 48 to a completed assembly of any of the types herein described. As shown particularly in Figure 14, this cap is simply snapped over the spray head and is held in position by the engagement of the peripheral groove 52, provided in the interior surface of the cap, with the peripheral flange here designated 51. This operation can be readily accomplished because of the elastic nature of polyethylene. Since the inner contours of the cap coincide very closely with those of the spray head, a sufficiently tight seal can readily be provided permitting the container to be transported in a pocket or a purse without leakage. In order to facilitate disengagement of the cap, the outer surfaces are preferably knurled as at 49 and a plurality of flat surfaces 50 are preferably provided to facilitate manipulation.

From the above, it will be apparent that the invention contemplates in various forms a simple yet effective combination unit for the purposes intended and one in which the manufacturing and assembly problems are greatly simplified from those of similar structures. While the invention has been disclosed particularly with reference to a bottle formed from polyethylene, it may be that there are now or will be in the future materials which are the full equivalent of this material for the purpose intended. The same applies to the materials from which the aspirating elements and plug or nasal insertion portions are formed.

Having fully disclosed the invention, I desire to be limited only by the ensuing claims.

1. A compressible dispenser for nose drops or the like comprising an open ended hollow receptacle formed from polyethylene or the like, said receptacle having a body portion and a neck extending upwardly therefrom, said neck having a peripheral flange thereon, the upper surfaces of said neck above the peripheral flange being rounded and tapered to form a nasal insertion portion, a plug formed from a hard surfaced material fitted in the open end of the receptacle, said plug being generally cylindrical in configuration and being of lesser diameter than that of

the upper end surface of the receptacle, said plug having an outlet aperture therein and air channels interconnected to said outlet aperture and to the interior of the receptacle, and a tube formed from a compressible material fitted into the under side of the plug and depending into the body of the receptacle.

2. A dispenser for nose drops or the like comprising an open ended hollow receptacle formed from polyethylene, said receptacle having a body portion and a neck extending upwardly therefrom, said neck having a peripheral flange thereon, the upper surfaces of said neck above the peripheral flange being rounded and tapered to form a nasal insertion portion, the upper wall of the receptacle adjacent the open end being substantially thicker than the side and base walls of the receptacle, a plug formed from a hard surfaced material press-fitted in the open end of the receptacle and supported by the upper wall thereof and a tube formed from a compressible material fitted into the under side of the plug and depending into the body of the receptacle.

3. A plastic dispenser for nose drops or the like comprising an open ended receptacle formed from a flexible material such as polyethylene, a plug formed from a hard surfaced material such as an acrylic resin fitted into said open end, said plug having an outlet aperture therein and a flexible tube formed from polyethylene fitted in a bore in the under side of said plug and interconnected to said outlet aperture, said tube having its lower end extending into the cavity of the receptacle to a point adjacent the base thereof.

JOSEPH B. FILGER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
482,407	Magee	Sept. 13, 1892
772,802	Hawley	Oct. 18, 1904
905,250	Truman	Dec. 1, 1908
1,140,301	De Vilbiss	May 18, 1915
2,040,630	Silten	May 12, 1936
2,115,959	Lewis	May 3, 1938
2,449,734	Wunsch	Sept. 21, 1948
2,564,400	Hall	Aug. 14, 1951

FOREIGN PATENTS

Number	Country	Date
392,433	Great Britain	May 18, 1933
632,883	Germany	July 15, 1936

OTHER REFERENCES

Pages 54 and 70 of Fieser and Fieser, Organic Chemistry, published in 1944 by D. C. Heath and Co., Boston, Massachusetts.