

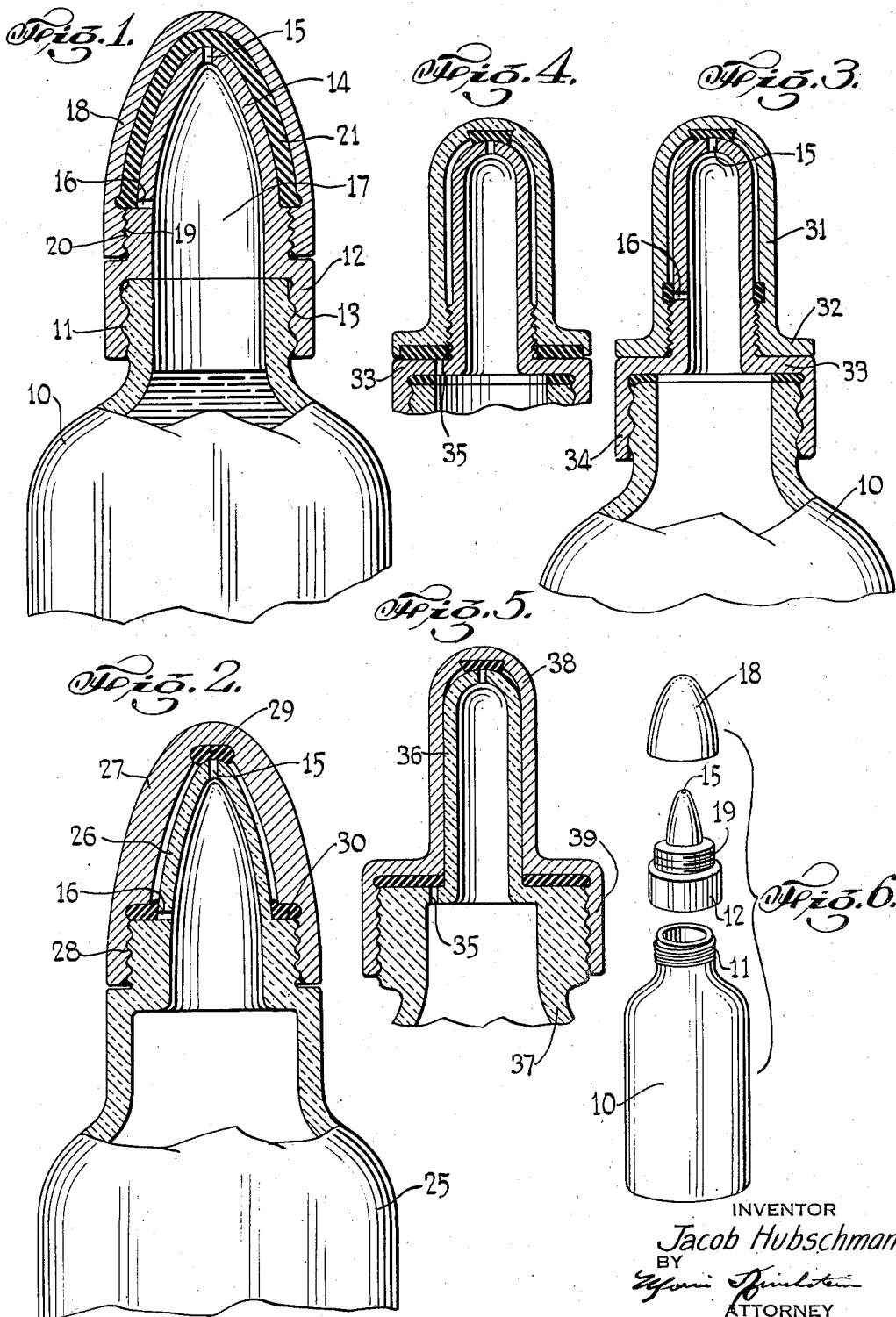
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J. HUBSCHMAN

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DISPENSING DEVICE

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DISPENSING DEVICE

Jacob Hubschman, Brooklyn, N. Y.

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This invention relates to bottles. More particularly, my invention relates to the type of bottle adapted for use as a dropper.

One of the objects of my invention is to provide, in combination with a bottle, a cap so constructed that said assembled cap and bottle may be used as a gravity dropper for dispensing medicine drops or for other similar uses.

Another object of my invention is to provide a medicine bottle of the character described so constructed that it may be used to dispense uniform drops therefrom, and thus eliminate the necessity of supplying a dropper with said medicine bottles, and which, at the same, is adapted to be used as an applicator.

Still another object of my invention is to provide a bottle of the character described suitable as a gravity dropper and which at the same time is so constructed that it is substantially non-refillable.

A still further object of my invention is to provide a device of the character described which shall comprise relatively few and simple parts, which shall be easy to construct, which shall be relatively inexpensive to manufacture, which shall be neat in appearance, and which at the same time shall operate with a high degree of efficiency.

Other objects of this invention will in part be obvious and in part hereinafter pointed out.

The invention accordingly consists in the features of construction, combinations of elements, and arrangement of parts which will be exemplified in the construction hereinafter described, and of which the scope of application will be indicated in the following claims.

In the accompanying drawing, in which is shown one of the various possible embodiments of this invention,

Fig. 1 is a side elevational view, partly sectional, of a bottle and a cap construction embodying my invention;

Fig. 2 is a view of a bottle similar to that shown in Fig. 1 but illustrating a modified form of bottle construction in accordance with my invention;

Figs. 3, 4 and 5 are views similar to that shown in Fig. 1 but illustrating still further modified forms of my invention; and

Fig. 6 is a disassembled perspective view illustrating the method of assembly of the parts, constructed in accordance with my invention.

Referring now to the drawing, and more particularly to Fig. 1, there is disclosed a bottle 10 which may be of any usual type of construc-

tion suitable for holding liquids such as medicines, and the like, and provided with a threaded neck portion 11 adjacent the top edge or lip thereof.

In the types of construction heretofore employed for bottles of the character herein described, when it was desired to fill the bottle with a liquid contents which it was desired to dispense in the form of drops, it was customary to supply an extra dropper with the bottle. In certain instances, the bottle cap was constructed to support a dropper which normally dipped in the liquid. When it was desired to dispense the contents of the bottle in drop form, the cap was unscrewed and the dropper operated in the usual method of droppers, which is, to hold the dropper in the liquid and press a suction rubber cap to draw a certain amount of liquid into the dropper and then to dispense the liquid from the dropper by pressing the rubber cap. Certain types of gravity bottles were also employed which tended to spill and leak when inverted.

By my invention I have provided an improved construction whereby I am able to overcome the above described disadvantages. I provide a dropper member 12 of any suitable material which may be of hollow tubular construction and provided adjacent the bottom edge thereof with an internally screw-threaded portion 13 corresponding to the screw-threaded portion 11 of the neck of the bottle. The member 12 is provided with an upwardly extending portion 14 having a top portion of reduced diameter or, in other words, suitable for use as an applicator. In said top portion there is provided a relatively small aperture 15 extending through the wall of the member 12. Adjacent the lower end of the upwardly extending portion 14 there is provided a vent aperture 16 open to the outside atmosphere and communicating with the interior space 17 of the member 12, which in turn communicates with the interior of the bottle 10. I have found by experiment that when the vent 16 is definitely positioned, with respect to the aperture 15, such a position for example, as that shown in Fig. 1 of the drawing, that when the bottle is turned upside down, the contents thereof will be dispensed through the aperture 15 only, in the form of drops of uniform size and uniform intermittent flow. The vent 16 is so designed as to permit a predetermined amount of air to enter the space 17 in the form of a bubble after each drop of liquid has passed through the aperture 15, and thus continuous uniform dropping is obtained.

When the bottle is not in use for the purpose of dispensing drops therefrom, I have provided a cap 18 which is screwed to the member 12 by providing the said member 12 with an externally threaded portion 19 and the cap 18 with a correspondingly internally threaded portion 20. Mounted in the cap 18 is a gasket or packing member 21 which is adapted, when the cap 18 is screwed on to the member 12, to close off the aperture 15 and the vent 16 to prevent any leakage of the liquid from the bottle.

In Fig. 2 I have shown a modified form of the invention illustrated in Fig. 1. In this form I provide a bottle 25 with an integral upwardly extending portion 26 similar to the portion 14, which may be of applicator shape as shown. I also provide a dispensing aperture 15 in the upper wall thereof, and a vent 16 in a position similar to that shown in Fig. 1. In the Fig. 2 form of device, the aperture 15 and the vent 16 function in the same manner as that shown and described in connection with the Fig. 1 form. In the Fig. 2 form, I provide a cap 27 which is screw threaded to the neck of the bottle at 26. Instead of the continuous packing 21 however, I may provide a separate packing member 29 fastened to the inner wall of the upper portion of the cap 27 which is of sufficient size to cover the aperture 15. There is also provided a second packing member 30 fixed to the inner wall of the cap 27 which is designed to cover the vent opening 16 to prevent leakage. In the form of my invention illustrated in Fig. 2, it is seen that I have provided a substantially non-refillable type of bottle which is at the same time a gravity dropper bottle for dispensing a uniform flow of drops.

In Fig. 3 I have shown another modified form of my invention, in which the cap 31 is provided with a flange 32 at the lower edge thereof, extending outwardly from the side wall of said cap and which is adapted to lie adjacent the flange 33 in the dropper member 34. The dropper member 34 is screwed to the neck of the bottle 10 in a manner similar to that shown in Fig. 1. The dispensing aperture 15 and the vent aperture 16 are of similar construction and may be similarly disposed to that shown in Figs. 1 and 2.

In Figs. 4 and 5 I have disclosed still another modified form of my invention, the Fig. 4 form being similar in construction to that shown in Fig. 3 with the exception of the vent aperture 35 which, instead of being disposed as shown in Figs. 1 to 3, is disposed at right angles thereto and in the flange 33. The Fig. 5 form of device is similar in construction to that shown in Fig. 2, since the applicator shaped dropper portion 36 is integral with the bottle 37. There is also provided a vent aperture 35 which may be similar in construction and arrangement to the vent aperture shown in Fig. 4. In the Fig. 5 form, however, it is noted that the cap 38 is threadedly attached to the neck of the bottle by having the side flanges 39 thereof extending downwardly and provided with an internally threaded portion as shown.

It is noted that the vents 35 in the Figs. 4 and 5 forms of construction are positioned adjacent the lip of the bottle opening. It has been found by this construction that a better and more uniform flow of drops is obtained.

It is also noted that in the constructions illustrated in Figs. 1 to 5, when the cap is removed, a finger of the person using the bottle may be placed over the vent aperture to prevent any drops from flowing through the dropping aper-

tures until the bottle has been completely turned upside down, at which time, upon removal of the finger, the drops will begin to automatically and uniformly flow.

In Fig. 6 there is shown the method of assembling the parts of my invention, as shown in Fig. 1, as well as in the other modified forms described above, in which the dropper member is screwed to the threaded portion of the neck of the bottle and the cap then screwed to the threaded portion of the dropper member.

It will thus be seen that there is provided a device in which the several objects of this invention are achieved, and which is well adapted to meet the conditions of practical use.

As various possible embodiments might be made of the above invention, and as various changes might be made in the embodiments above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

Having thus described by invention I claim as new and desire to secure by Letters Patent:

1. In a drop bottle of the character described the combination with a neck provided with an externally threaded portion, of a closure member having an internally threaded portion screwed to said externally threaded portion, a drop dispensing aperture in said closure member, a vent aperture in said closure member, said vent and said dispensing apertures being disposed relatively remote from each other and at different levels along the longitudinal axis of the closure member, said closure member being provided with an externally threaded portion, and a single cap having an internally threaded portion screwed to said last named externally threaded portion so as to cover said vent and dispensing apertures, the axis of said drop dispensing aperture being parallel to the longitudinal axis of said bottle.

2. In a dropping bottle of the character described, the combination with a neck provided with an externally threaded portion, of a closure member screwed to said threaded portion, said closure member comprising side and top walls, a drop dispensing aperture in said closure member top wall, a vent aperture in said closure member side wall, said vent and said dispensing apertures being disposed relatively remote from each other, said closure member being provided with an externally threaded portion, a cap screwed to said last named threaded portion, and a packing attached to said cap adapted to cover said dispensing and said vent apertures.

3. In a dropping bottle of the character described, the combination with a neck provided with an externally threaded portion, of a closure member screwed to said threaded portion, said closure member comprising side and top walls, a drop dispensing aperture in said closure member top wall, a vent aperture in said closure member side wall, said vent and said dispensing apertures being relatively remote from each other, said closure member being provided with an externally threaded portion, a cap screwed to said last named threaded portion, and a single packing carried by said cap, said packing being so constructed and arranged as to provide a leak proof cover for said dispensing and said vent apertures.

4. In a dropping bottle of the character described adapted to hold a liquid, the combination with a neck, of a closure member attached

to said neck, said closure member comprising a side wall and a top wall, an aperture in said top wall adapted to have drops of said liquid pass directly therethrough, and a vent aperture in said side wall, said vent aperture being adapted to permit air from the surrounding atmosphere to directly enter the interior of said closure and a single cap member threadedly attached to said closure member adapted to cover said bent and said dispensing apertures.

5. In a bottle of the character described, the combination with a neck provided with an externally threaded portion, of a closure member screwed to said threaded portion, said closure member being symmetrically formed about its vertical axis, a dispensing aperture in said closure member the axis of said dispensing aperture being in alignment with the longitudinal axis of the bottle, a vent aperture in said closure member, said vent and said dispensing aperture being disposed relatively remote from each other, the axes of said apertures being substantially at right angles to each other and a single cap member threadedly attached to said closure member adapted to cover said vent and said dispensing apertures.

6. In a dropping bottle of the character described adapted to hold a liquid, the combination with a neck, of a closure member attached to said neck, said closure member comprising a side wall, a top wall and a flange portion extending from the bottom of said side wall and adapted to

overlie a portion of the top of said neck, a dispensing aperture in said top wall of said closure member, and a vent aperture in said flange portion communicating directly with the interior of said bottle.

7. In a dropping bottle of the character described adapted to hold a liquid, the combination with a neck, of a closure member attached to said neck, said closure member comprising a side wall, a top wall and a flange portion extending from the bottom of said side wall and adapted to overlie a portion of the top of said neck, a dispensing aperture in said top wall of said closure member, and a vent aperture in said flange portion communicating directly with the interior of said bottle, said vent aperture being disposed adjacent the lip of said bottle.

8. In a dropping bottle of the character described adapted to hold a liquid, the combination with a neck, of a closure member attached to said neck said closure member comprising a side wall, a top wall and a flange portion extending from the bottom of said side wall and adapted to overlie a portion of the top of said neck, a dispensing aperture in said top wall of said closure member, and a vent aperture in said flange portion communicating directly with the interior of said bottle, said vent aperture being disposed adjacent the lip of said bottle, the axes of said dispensing and said vent apertures being substantially parallel.

JACOB HUBSCHMAN.