Nov. 27, 1934. S. H. LEBOWITZ 1,982,440

BOTTLE CLOSURE AND DROPPER

Filed July 30, 1932

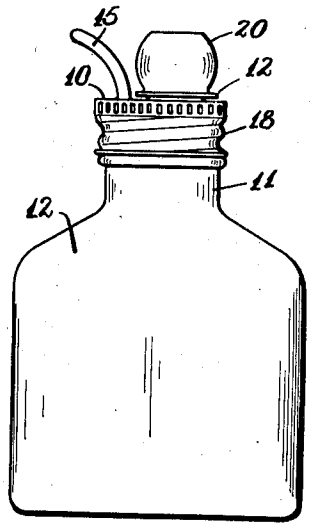


Fig. 1.

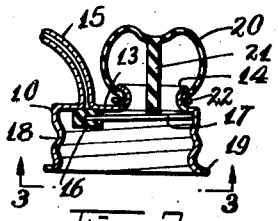


Fig. 2.

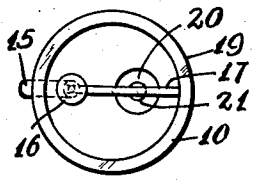


Fig. 3.

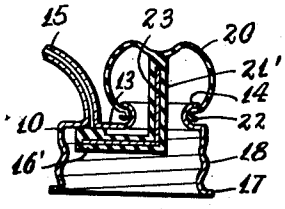


Fig. 4.

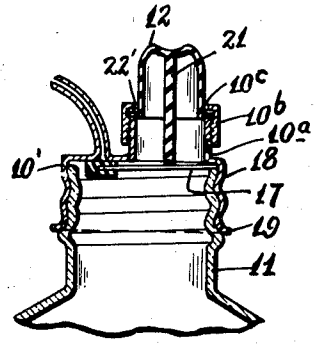


Fig. 7.

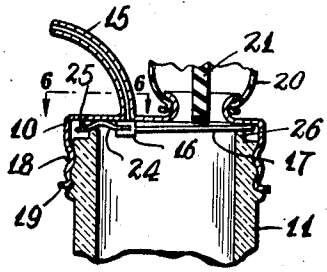


Fig. 5.

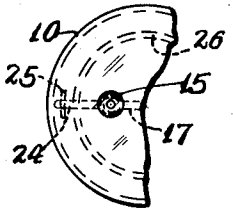


Fig. 6.

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BOTTLE CLOSURE AND DROPPER

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4 Claims. (Cl. 215—58)

This invention relates to new and useful improvements in a combination bottle closure and dropper.

The invention has for an object the construction of a device as mentioned which is characterized by the ability of dispensing a quantity of liquid in controlled or measured amounts.

Furthermore, it is also capable of delivering in intermittent streams or in drops.

The invention has for a still further object the construction of an article as mentioned which is characterized by a bottle closure having a top side with a flanged opening, a delivery nozzle projecting from said top side, a resilient covering over said flanged opening, and an arrangement whereby liquid passage through said nozzle may be manually controlled by compressing said resilient covering.

As a still further object of this invention it is proposed to provide an arrangement adapted to prevent the passage of fluid through said delivery nozzle when desired, and particularly adapted to prevent such passage when the article is upon a bottle containing liquid in transit.

A still further object of this invention is the construction of an article as mentioned which is simple and durable and which may be manufactured and sold at a reasonable cost.

For further comprehension of the invention, and of the objects and advantages thereof, reference will be had to the following description and accompanying drawing, and to the appended claims in which the various novel features of the invention are more particularly set forth.

In the accompanying drawing forming a material part of this disclosure:

Fig. 1 is a side elevational view of a device constructed according to this invention.

Fig. 2 is a vertical sectional view of the combination bottle closure and dropper per se.

Fig. 3 is a bottom view of Fig. 2.

Fig. 4 is a view similar to Fig. 2 but illustrating a variation of the invention.

Fig. 5 is a fragmentary sectional view of a modified form of the device shown applied upon the neck of a bottle.

Fig. 6 is a fragmentary sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a similar view to Fig. 2, showing another form of the device.

The combination bottle stopper and dropper according to this invention comprises a bottle closure 10 adapted for engagement upon the neck 11 of the bottle 12 and having a top side 13 with a flanged opening 14. A delivery nozzle 15 projects from the top side 13 and is shown curved outwards. This delivery nozzle may be straight or bent in any desired direction.

A valve 16 is located within the bottle closure 10 and is adapted to act against the bottom of the delivery nozzle 15 so as to prevent the passage of liquid from the bottle through the delivery nozzle. A means is provided for normally urging the valve 16 closed, that is, in a position against the inner end of the nozzle. This means comprises a metallic spring 17 carrying the valve 16 and at its other end rigidly attached upon the inner side of the bottle closure 10. As shown in the drawing the closure 10 is composed of metal, though this is not intended as a limitation, and is formed with a threaded portion 18 adapted to threadedly engage upon the neck 11 of the bottle. The lower end of the bottle closure 10 is shown with a bead 19 serving to finish this edge.

A resilient covering element 20 is mounted upon a flange opening 14 and is adapted to be manually compressed and then move the valve 16 indirectly to the open position to allow the passage of the liquid through the delivery nozzle. In detail, the resilient covering element 20 is provided with a post portion 21 terminating immediately above the spring 17 in a manner so that when the resilient covering element 20 is forced downwards the spring 17 will be bent and so move the valve 16 from its closed position. The lower edge of the resilient covering element 20 is formed with a bead 22 adapted to resiliently hold it in place on the flanged opening 14.

In Fig. 4 a modified form of the invention has been disclosed in which a valve 16' acts against the inner end of the delivery nozzle 15 for the controlling of the passage of fluid and the valve 16' is integral with the post 21' on the resilient covering element 20. A rigid L-shaped member 23 is molded into the post 21' and into the arm leading up to the valve 16' so as to insure rigid and positive operation of the parts. The resiliency of the resilient covering element 20 is depended upon to normally urge the valve into its closed position. Thus the resilient covering element 20 may be depressed for opening the valve 16' to any degree desired.

In Figs. 5 and 6, another variation of the invention has been illustrated, which form is very similar to the form shown in Figs. 1 and 3 inclusive, but distinguishes in the provision of means associated with the valve 16 and adapted to contact with the top edge of a bottle upon which the bottle stopper is engaged in a manner so that when the stopper is firmly on the bottle the valve

will be locked against being opened by manual depression by the resilient covering element. In detail a finger 24 extends from the valve 16 to a position beneath a projection 25 upon the bottom face of the cover 10. The top neck of the bottle is formed with a rim 26 adapted to engage the finger 24 between the projection 25 and the valve 16 so as to hold the finger bent and firmly urge the valve into the closed position. This closed position is retained regardless of compressing of the resilient covering element 20 so that the post 21 acts against the spring 17. The other details of this form is similar to the preferred form and corresponding parts may be recognized by the same reference numerals. The device may be used as a dropper by first loosening the closure 10 to such an extent that the resilient member 20 may be pressed in to cause the post 21 to flex the spring 17 a sufficient distance so that the finger 24 is disposed within the neck of the bottle. Then the closure 10 may again be firmly engaged upon the top of the bottle and the valve 16 will be in an inoperative position for the reason that the spring 17 extends downwards into the neck so that the finger 24 and the valve 16 are against the inner wall of the neck of the bottle. The valve 16 may be set into its operative position, when desired, by first removing the closure 10 and then manually forcing the spring 17 upwards so that the finger 24 again extends over the flange at the top of the neck of the bottle.

In Fig. 7 the bead or flange 22' of the covering element is held in position by a threaded metal cap 10' which has an opening 10^a through which the member 20 projects. The threaded portion of cap 10' screws on a corresponding threaded portion 11' of the bottle neck 11.

In operation a controlled or measured quantity of the liquid may be dispensed either in drops or an intermittent stream. When the bottle 12 is inclined so that the liquid attempts to flow from the delivery nozzle, and the resilient covering element 20 is tapped, drops of liquid will be discharged as the valve 16 oscillates on and off of its seat. If the resilient element 20 is moved so that it holds the valve open continuously only a certain measured quantity will be dispensed in that the passage through the delivery nozzle 15 is designed so that by capillary action the liquid is restrained from passing through and such passage is only obtained by the disturbing of the pressure of the liquid by the motion of the valve.

While I have shown and described the preferred embodiment of my invention, it is to be understood that I do not limit myself to the precise construction herein disclosed and the right is reserved to all changes and modifications coming within the scope of the invention as defined in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by United States Letters Patent is:—

1. A combination bottle closure and dropper, comprising a bottle closure adapted to engage on the neck of a bottle and having a top side with a flanged opening, a capillary delivery nozzle projecting from said top side, a valve within said bottle closure and adapted to act against the inner end of said delivery nozzle, a resilient covering bulb element on said flanged opening adapted to be manually compressed and move the valve to the open position, a resilient member attached to said valve and closure for urging said valve into its closed position, and a post element projecting from the interior of said resilient covering and adapted to engage against said resilient member for the operation of said valve.

2. A combination bottle closure and dropper, comprising a bottle closure adapted to engage on the neck of a bottle and having a top side with a flanged opening, a capillary delivery nozzle projecting from said top side, a valve within said bottle closure and adapted to act against the inner end of said delivery nozzle, means for resiliently urging said valve into its closed position, a resilient covering element on said flanged opening adapted to be manually compressed and move the valve to the open position, said means for resiliently urging said valve into the closed position comprising a flexible member attached to said valve and at another portion attached to said bottle closure, and a post element projecting from the interior of said resilient covering being adapted to engage against said flexible element for the operation of the valve.

3. A combination bottle closure and dropper, comprising a bottle closure adapted to engage on the neck of a bottle and having a top side with a flanged opening, a delivery nozzle projecting from said top side, a valve within said bottle closure and adapted to act against the inner end of said delivery nozzle, means for resiliently urging said valve into its closed position and in a depressed condition resiliently urging said valve against the inner wall of the said neck of the bottle for holding the valve in its open position, a resilient covering element on said flanged opening adapted to be manually compressed to depress said means and move the valve to the open position, and means associated with said valve adapted to contact with the top edge of a bottle when said closure is firmly engaged on the bottle to hold the valve locked closed against manually opening by depression of said resilient covering element.

4. A combination bottle closure and dropper, comprising a bottle closure adapted to engage on the neck of a bottle and having a top side with a flanged opening, a delivery nozzle projecting from said top side, a valve within said bottle closure and adapted to act against the inner end of said delivery nozzle, means for resiliently urging said valve into its closed position and in a depressed condition resiliently urging said valve against the inner wall of the said neck of the bottle for holding the valve in its open position, a resilient covering element on said flanged opening adapted to be manually compressed to depress said means and move the valve to the open position, and means associated with said valve adapted to contact with the top edge of a bottle when said closure is firmly engaged on the bottle to hold the valve locked closed against manually opening by depression of said resilient covering element, comprising a finger projecting from said valve and extending beneath a projection from said bottle closure, said finger being adapted to be engaged intermediately by the flange of said bottle to hold the valve in the closed position.

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