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NON-REFILLABLE BOTTLE.

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943,331.

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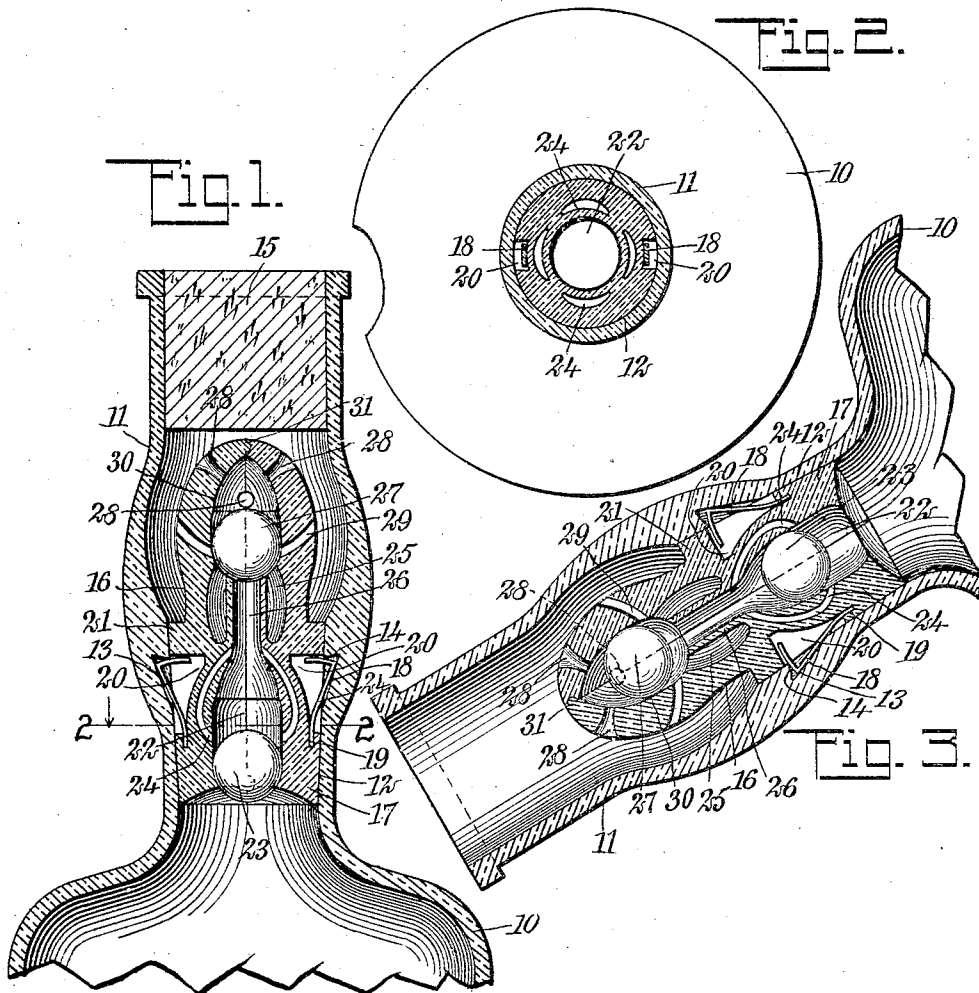
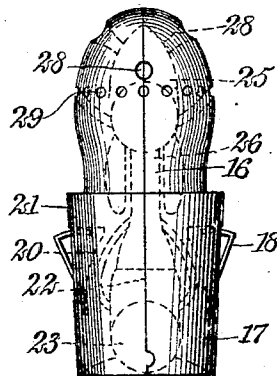


Fig. 4.



WITNESSES

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HIRAM C. ANDERSON, OF UNIONPORT, AND FRANK S. ASH, OF NEW YORK, N. Y.

NON-REFILLABLE BOTTLE.

943,331.

Specification of Letters Patent.

Patented Dec. 14, 1909.

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To all whom it may concern:

Be it known that we, HIRAM C. ANDERSON, a resident of Unionport, borough of the Bronx, in the county and State of New York, and FRANK S. ASH, a resident of the city of New York, borough of Manhattan, in the county and State of New York, both citizens of the United States, have invented a new and Improved Non-Refillable Bottle, of which the following is a full, clear, and exact description.

This invention relates to non-refillable bottles, and more particularly to a device of this kind in which the neck of the bottle is closed by a plug having chambers therein, one of which is extended in the form of a tube and projects into the other; each chamber has therein a ball-valve, to prevent the passage of fluid therethrough, and the plug is provided with passages regulating the escape of fluid from the bottle.

The object of the invention is to provide a simple, inexpensive and durable bottle of the class described, from which the contents can be easily poured, which cannot be refilled, after once being emptied, by the ordinary methods, such as by force, submersion, or by the use of a vacuum, and the form of which does not differ radically from that of the ordinary bottle.

The invention consists in the construction and combination of parts, to be more fully described hereinafter and particularly set forth in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views, and in which—

Figure 1 is a longitudinal section of the upper part of a bottle having an embodiment of our invention applied thereto; Fig. 2 is a transverse section on the line 2—2 of Fig. 1; Fig. 3 is a view similar to Fig. 1, showing the bottle in an inverted position; and Fig. 4 is a side elevation of the plug showing the same before insertion in the bottle.

Before proceeding to a more detailed explanation of our invention, it should be clearly understood that the same is applicable to various types of bottles, and may be fashioned from any suitable material, preferably from glass, porcelain or the like. Certain of the details of construction shown

for example herewith form no part of the invention but can be varied without departing from the underlying spirit of the invention.

The plug which we employ has two chambers in each of which is located a movable ball-valve, which regulates the flow of fluid through the plug, permitting a flow in one direction and preventing it in the other. These balls have movements of different lengths, so that while one can move a considerable distance back and forth in its chamber, the other has a very limited movement. Consequently, if the bottle is shaken when immersed in a liquid in an attempt to refill it, these balls act as a pump to exhaust the air from the bottle, whereby the pressure causes the ball having the longer travel to be held upon its seat, thus preventing the entrance of the liquid into the bottle.

Referring more particularly to the drawings, we have shown for example a bottle 10 of convenient form. The neck 11 of this bottle, however, is outwardly expanded intermediate the ends, so that the plug has sufficient room in the neck, as will appear more clearly hereinafter. At the inside near the body of the bottle, the neck has a tapered ground portion 12, and at the side of this portion remote from the body, it has an annular recess 13, forming a shoulder 14 at the upper side. The outer end of the neck is suitably formed to receive a cork 15 or any other closure adapted for the purpose.

We employ a plug 16 having at the lower end a tapered preferably ground part 17, which fits snugly within the part 12 of the neck. At opposite sides, the plug has spring-keepers 18 the lower ends of which are inserted in openings 19 at the ends of recesses 20. The upper ends of the keepers are angularly disposed and adapted to be moved into the recesses 20. The keepers are normally projected, and are adapted to engage at the shoulders 14, to hold the plug in place in the neck.

Near its lower end, the plug has an open chamber 22, the ends of which are constricted, and within which is movably positioned a ball member or valve 23. The latter, when positioned at the lower end of the chamber 22, closes the inlet of the same, and at the same time lies under the ends of passages 24, which form by-passes and extend from near the middle of the chamber

to the upper end of the same, and which communicate interiorly with the chamber. We provide a second chamber 25 in the plug above the chamber 22. The latter has the outlet extended in the form of a tube 26, which extends into the chamber 25 an appreciable distance. Within the chamber 25 is a member 27 similar to the ball-valve 23, serving to close the end of the tubular outlet 26. The chamber 25 at the upper end of the plug has openings 28, and intermediate the ends of the chamber has passages 29, which have the open inner ends at points adjacent to the opening of the outlet tube 26.

The valve 23 can move the length of the chamber 22, and its movement is limited by the ends only of the chamber. The valve 27, on the other hand, has a very short travel, being limited in one direction by the tube 26, and in the other direction by a constriction or shoulder 30 of the chamber 25.

As has been described above, the balls 23 and 27, when the bottle is shaken under the surface of a liquid, act as a pump and tend to exhaust the air from the bottle. A partial vacuum, when formed in the bottle, draws the valve 23 against the open end of the chamber 22, and thus closes the bottle and prevents fluid from being introduced into the same. The provision of the openings 28 prevents the use of a vacuum to hold the ball 27 inoperative, as, when a vacuum is applied, the ball 27 is drawn against the tube 26 by the vacuum in the bottle. When the bottle is inverted, the balls 23 and 27 assume positions which leave the passages 24, the tube 26 and the passages 29 unobstructed, so that liquid can flow from the bottle.

The expanded part of the neck permits the upper portion of the plug to be spaced inwardly from the wall of the neck, so that liquid can flow freely from the passages 29. The plug, if so desired, can be made in two or more parts, to simplify the operation of molding the plug, if it is manufactured in this manner. The parts of the plug can be cemented together, or, if so desired, can be provided with studs 31, fitting into corresponding recesses to hold the parts together when they are inserted without cementing in the bottle neck.

Having thus described our invention, we

claim as new and desire to secure by Letters Patent:

1. In a non-refillable bottle having an outlet, a plug in said outlet, said plug having chambers therein, a passage connecting said chambers and movable members within said chambers and adapted to close the same when in predetermined positions, to prevent the flow of fluid through said chambers, said plug having openings for one of said chambers above and below said movable member therein, said plug further having passages constituting by-passes and communicating interiorly with one of said chambers at separated points thereof.

2. In a non-refillable bottle, an outlet neck, a plug in said neck and having open-ended chambers therein, the first chamber having an outlet tube discharging in said second chamber, and independent valve members loosely arranged in said chambers and adapted to close respectively the open end of said first chamber and said outlet tube in said second chamber, said plug having openings for said second chamber above and below said valve member therein.

3. In a non-refillable bottle, an outlet neck, a plug in said neck and having a chamber therein, said chamber being open at the lower end, said plug having a second chamber therein, said first chamber having an outlet tube projecting into said second chamber, and unconnected and independent valve members movably arranged in said chambers respectively, said second chamber having a constricted part whereby the movement of said valve member in said second chamber is more limited than the movement of said valve member in said first chamber, said plug having passages constituting by-passes and communicating interiorly with said first chamber at separated points thereof, said plug further having openings for said second chamber above and below said valve member of said second chamber.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

HIRAM C. ANDERSON.
FRANK S. ASH.

Witnesses:

JOHN K. BRACHVOGEL,
EVERARD B. MARSHALL.