R. DEHRENBACH.

NON-REFILLABLE BOTTLE.

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1,068,113.

Patented July 22, 1913.

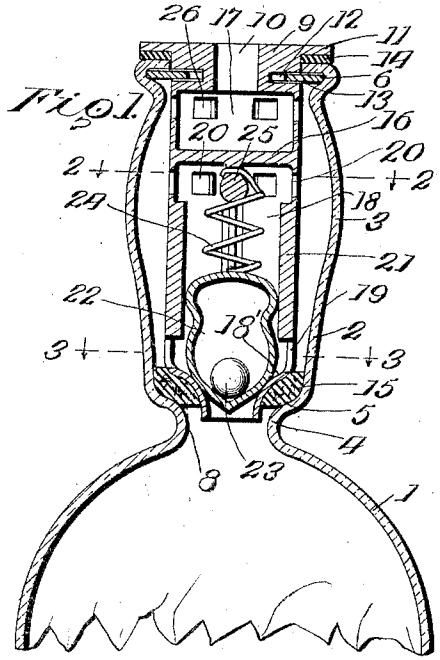


Fig. 1.

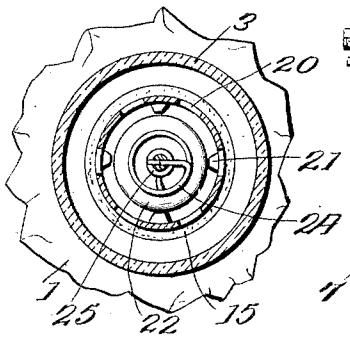


Fig. 2.

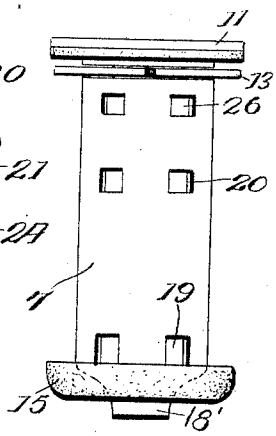


Fig. 4.

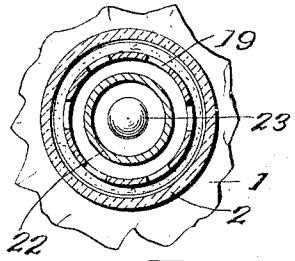


Fig. 3.

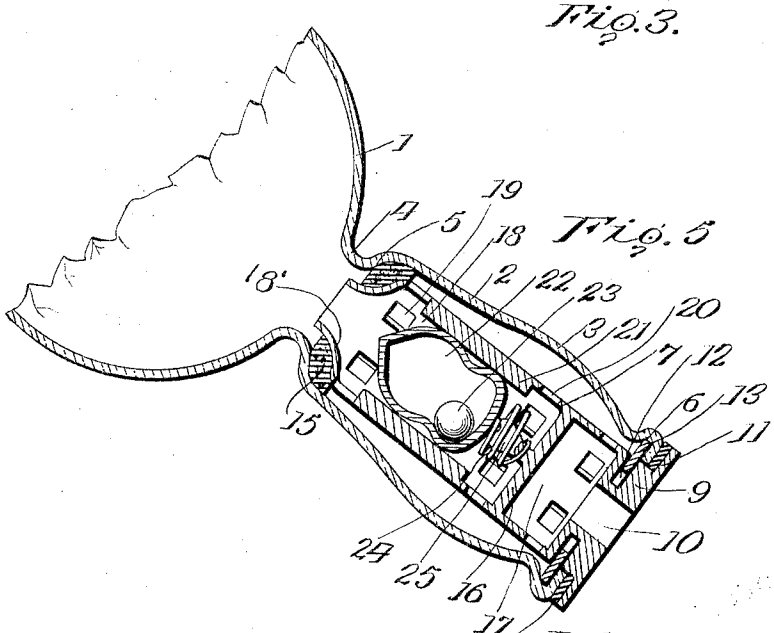


Fig. 5.

Witnesses

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NON-REFILLABLE BOTTLE.

1,068,113. Specification of Letters Patent. Patented July 22, 1913.

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To all whom it may concern:

Be it known that I, ROBERT DEHRENBACH, citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention relates to non-refillable bottles, and one aim of the invention is to provide a bottle of this type which, while simple in construction, and consisting of but few parts, cannot be refilled after having been once emptied, the use of the bottle after having been once emptied, in dispensing liquids of a quality inferior to its original contents, being in this manner prevented.

One aim of the invention is to provide a bottle of this type so constructed that the liquid will flow freely therefrom when the bottle is tilted to discharge its contents, and from which the entire contents may be poured.

A further aim of the invention is to so construct the bottle that liquid will not accumulate in the neck thereof after the bottle has been tilted to discharge part of its contents and returned to upright position.

The invention aims still further to provide against the insertion of a wire or like implement into the neck of the bottle in such manner as to lift the valve of the bottle from its seat.

For a full understanding of the invention reference is to be had to the following description and accompanying drawing, in which:—

Figure 1 is a vertical sectional view through a bottle constructed in accordance with the present invention. Fig. 2 is a horizontal sectional view on the line 2—2 of Fig. 1. Fig. 3 is a similar view on the line 3—3 of Fig. 1. Fig. 4 is a view in elevation of the valve casing of the bottle removed from the neck thereof. Fig. 5 is a view similar to Fig. 1, but showing the bottle tilted to discharge its contents.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawing by the same reference characters.

In the drawing, the bottle is indicated by the numeral 1 and the neck thereof by the numeral 2, the neck being bulged as shown at 3 and at its point of juncture with the body of the bottle being contracted as at 4 to form a shoulder 5.

For a purpose to be presently explained, the neck 2 of the bottle is formed interiorly at its upper extremity with an annular groove 6.

A valve to be presently described is designed to prevent re-filling of the bottle after it has once been emptied of its contents and the casing for this valve is indicated by the numeral 7 and may be of glass or any other suitable material, it being substantially cylindrical and being contracted at its lower end to form a neck 8. The casing at its upper end has its wall considerably thickened to form a head 9 having a discharge opening 10 extending therethrough, and this head is further provided with an outwardly projecting circumscribing flange 11. The head 9 is formed with a circumscribing groove 12 and a spring split washer 13 is fitted in the groove 12 and expanded into the groove 6 in the bottle neck, the valve casing being in this manner held within the neck after its insertion thereinto. A washer 14 is preferably disposed between the flange 11 and the upper end of the neck 3 so as to prevent leakage of the liquid contents of the bottle around the said head 9. A packing washer 15 of rubber or cork or some other suitable packing material is fitted upon the contracted lower end of the valve casing 7 and surrounds the neck 8, and when the valve casing is inserted into the bottle neck this packing washer will be compressed to a greater or less extent between the wall of the neck 8 and the shoulder 5 at the lower end of the bottle neck 3. This washer 15 serves not only to space the lower end of the valve casing from the bottle neck and prevent its being broken by impact with the wall of the neck, should it be formed of glass, but also serves to prevent liquid flowing into the body of the

bottle, except through the neck of the valve casing. It will be observed from inspection of the several figures of the drawing that the valve casing is of less diameter than the bottle neck, so that a considerable space is afforded between the interior of the bulged portion of the neck 3 to allow the liquid to more readily flow from the bottle.

As shown in Figs. 1 and 5 of the drawings the valve chamber is formed interiorly near its upper end with a partition 16 which serves to divide the said neck into an upper chamber 17 and a lower chamber 18, the valve of the bottle being housed in this latter chamber, as will be presently explained. By contracting the lower end of the chamber, a valve seat is formed, indicated by the numeral 18′ and the wall of the chamber is formed with a series of openings 19 located immediately above this seat. The upper side of the packing washer 15 registers with the lower edges of the openings 19 so that after the bottle has been tilted to discharge its contents and is returned to upright position, any liquid which would otherwise accumulate in the neck 3 will be directed through the openings 19 and into the bottle. Immediately below the plane of the partition 16, the wall of the valve chamber is formed with openings 20 and the said wall of the casing is formed interiorly with ribs 21 which extend from the upper ends of the openings 19 to points adjacent the openings 20, these ribs being parallel to the axis of the valve chamber. The valve is indicated by the numeral 22 and is substantially of inverted conoidal form. This valve 22 is hollow, as shown in Figs. 1, 3 and 5. It is slidably received between the ribs 21, and normally rests upon the valve seat 18′ and is guided in its sliding movement in the valve casing by the inner edges of the said ribs. A ball-weight 23 is loosely held within the valve 22 and assumes the position shown in Fig. 1 of the drawing when the valve is in closed position. When the bottle is tilted to discharge its contents, the weight 23 will fall into what is normally the upper end of the valve and will assume about the position shown in Fig. 5. Thus, should the valve tend to adhere to its seat, the dropping of the weight into the upper end of the valve will serve to jar it from its seat. To insure of proper seating of the valve when the bottle is restored to upright position after having been tilted to pour liquid therefrom there is provided a spring 24 secured at its lower end to the upper end of the valve 22 and at its upper end to a stud 25 which is integral with the under side of the partition 16. This spring 24 is comparatively weak, it being only sufficiently strong to slide the valve downwardly to its seat when the bottle is in upright position.

It will be observed from inspection of Fig. 5 of the drawing, that when the bottle is tilted to discharge its contents the valve 22 will slide downwardly between the ribs until its upper end contacts with the stud 25. This will prevent the valve interfering with the free passage of liquid through the openings 20.

The wall of the valve casing is formed, above the plane of the partition 16 with a number of openings 26 which establish communication between the chamber 17 and the space between the valve casing and the bulged wall of the bottle neck.

It will be readily understood from the foregoing that when the bottle is tilted, the ball-weight 23 falling into the upper end of the valve will serve to jar the valve loose from its seat, and the weight of the liquid flowing into the valve casing will cause the valve to slide down into engagement with the stud 25. Liquid will then flow through the openings 19 and into the space between the valve casing and the bulged wall of the bottle neck 3 and will also flow into the valve casing between the ribs 21 and the wall of the casing and the said valve and out through the openings 20 into the said space between the neck of the bottle and the wall of the casing. From this space the liquid will flow through the openings 26 into the chamber 17 and out through the discharge opening 10 in the head of the casing. Air entering at the top of the opening 10 will pass through the uppermost ones of the openings 26 and between the upper side of the valve casing and the upper side of the neck 3 and through the uppermost ones of the openings 19 and into the bottle.

The interiorly formed shoulder of the hollow valve 22 serves as a temporary stop for the ball weight 23 to retard its movement from one end of the valve to the other and therefore, the valve being normally held in closed position by the spring 24, prevents the opening of the valve until the bottle has been considerably tilted. As soon however, as the ball passes this shoulder, it immediately falls to the outer end of the valve and moves the valve against the action of the spring to open the same. Of course upon the closing of the valve, the ball weight does not interfere for as soon as it is moved from the outer end of the valve the spring comes into play and the valve will be closed as soon as the bottle reaches a horizontal position.

From the foregoing it will be observed that the bottle is so constructed that liquid may be freely poured therefrom and that air entering the bottle will not interfere

with the valve nor with the outflowing liquid.

Having thus described the invention what is claimed as new is:—

A non-refillable bottle having a valve seat, a hollow valve normally resting upon the seat by one end and reduced intermediate its length by an interiorly formed inwardly directed encircling shoulder, a ball weight loosely confined within the valve and movable from end to end thereof over said shoulder, and a guard for the valve.

In testimony whereof I affix my signature in presence of two witnesses.

ROBERT DEHRENBACH. [L. S.]

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."