

C. G. HILL.
NON-REFILLABLE BOTTLE.
APPLICATION FILED FEB. 26, 1912.

1,043,934.

Patented Nov. 12, 1912.

Fig. 1.

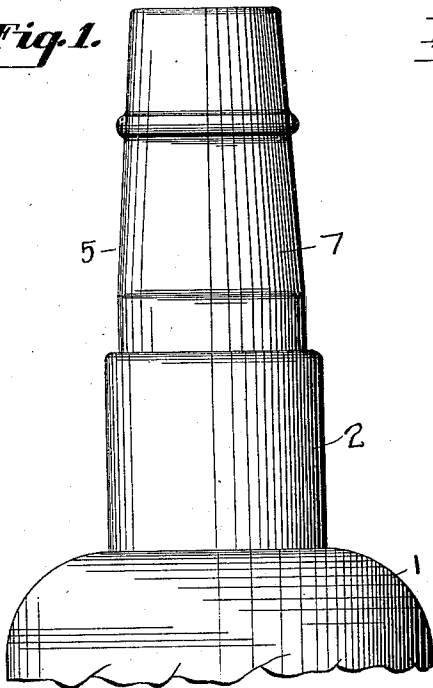


Fig. 2.

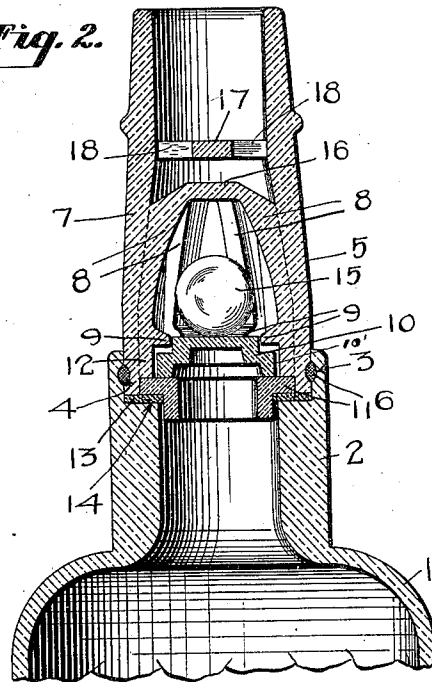


Fig. 3.

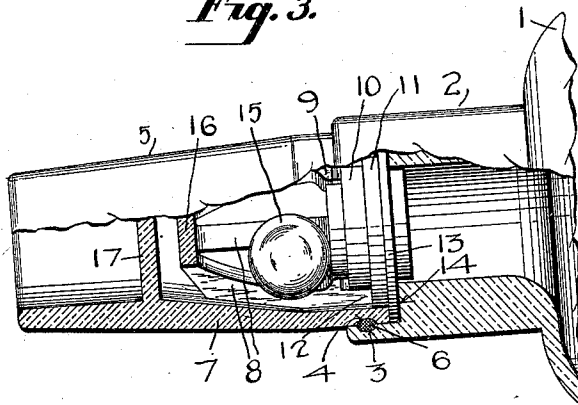


Fig. 4.

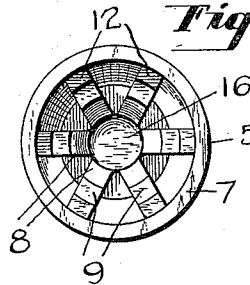
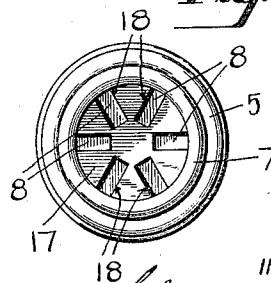


Fig. 5.



WITNESSES.

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NON-REFILLABLE BOTTLE.

1,043,934.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLAYTON G. HILL, a citizen of the United States, and a resident of the city, county, and State of New York, have invented a new and useful Non-Refillable Bottle, of which the following is a specification.

My invention relates to improvements in non-refillable bottles, and has for its object to provide a container, simple in its construction with no complicated or expensive mechanism or parts, and which cannot be refilled after the contents have been removed.

In many of the forms of so-called non-refillable bottles, the container can be refilled if it is submerged in liquid and manipulated beyond the horizontal, whereas in my device the entrance to the main body of the bottle is positively sealed even under those conditions.

My invention is further described in the following specification and illustrated in the drawings annexed hereto.

Figure 1 is a side elevation of my invention. Fig. 2 is a sectional elevation. Fig. 3 is a partial section showing the operation. Fig. 4 is a bottom plan of the stopper frame. Fig. 5 is a top plan of the same.

In the drawings, the bottle 1, is provided with a neck 2 having an annular internal groove 3, to cooperate with an external groove 4 on the stopper 5, the said stopper being secured to the neck 2 after all the parts of the stopper are assembled, by filling the grooves 3 and 4 with cement or some similar substance 6. This may be made integral with the neck and stopper if glass is used, by the application of heat thereto, or if cement is used, a solid ring would be formed by the adherence of the cement in the two grooves, thus hermetically sealing the opening and securely keying the neck portion and stopper together. The stopper and neck may also be secured together in any of the usual ways, and I only show the above as one of the preferred methods.

The stopper 5 comprises a frame portion 7, having ribs or tracks 8 diverging from top to bottom, said ribs having flanges 9, which form an abutment and stop for the valve 10, which operates against a flanged seat 11, securely held in place between continuations 12, of the ribs 8 and the shoulder 14 within the neck 2 of the bottle. The valve 10 is normally held closed by the ball 15, the movement of the said ball being limited

by the said valve and the ribs 8 which terminate in a disk, 16. I construct the valve 10 so that its greatest periphery 10' is not sufficient to bring it in contact with the continuations 12 of the ribs 8 and therefore it rests entirely on the flanges 9. When the bottle is in a horizontal position the valve 10 is supported entirely by the inner edges of the flanges 9 which has the effect of making the valve tip over easily and form a quick engagement with and closure of the opening in the seat 11. Integral with the frame 7, and above the disk 16 is formed a plate 17 having a plurality of radial slots 18.

When the bottle has been filled and the stopper 5 has been sealed to the neck 2, the contents can be poured out by tipping the bottle as the said contents will force the valve 10 away from its seat 11 and will flow through between the ribs 8 and the slots 18. It is necessary in a non-refillable bottle that the valve shall be closed in all upright positions of the bottle and until the long axis thereof has been tilted at such an angle to the horizontal as to lock the air within the bottle. I accomplish this in a very simple but efficient manner. The ribs 8, which form tracks for the ball 15, are made divergent downwardly and it is therefore obvious that although the long axis of the bottle is tilted at an angle sufficient to make the plane of the ribs tilt downward with reference to the horizontal, the ball 15 will still hold the valve 10 against the seat 11 and form a lock to the air within the bottle. The reason for this is simple, as while the ball rolls up hill with reference to the plane of the ribs, the center of mass of the ball is lower when the latter is at the diverging ends of the ribs than when it is at the converging ends, and gravity therefore operates to bring the ball in engagement with the valve 10 and hold it against the seat 11.

To prevent manipulation of the ball through the mouth of the bottle by means of a wire or the like, the radial slots 18 in the plate 17 may be placed directly over the ribs 8, or in other words, the slots 18 are staggered with relation to the spaces between the ribs 8.

All the parts of my device can be made from glass, porcelain or similar materials, thereby keeping down the cost of manufacture and avoiding the use of metals to which various objections may be found.

I claim:

1. In a non-refillable bottle; a body portion adapted to receive and hold liquids; a stopper member adapted to be rigidly secured to the top of said body portion; means within said stopper member for permitting the discharge of liquid contents; means within said stopper member for preventing the entry of liquids, comprising a seat with an opening and adapted to fit snugly in the lower end of said stopper member, a plurality of ribs arranged divergently in a downward direction upon the inner walls of said stopper member and having flanges near their lower ends, a valve adapted to engage with said flanges and provided with means whereby by gravity it will move out of engagement with said flanges when the bottle is horizontally disposed, said valve being adapted to be moved into and out of engagement with said seat, and means for moving said valve into engagement with said seat comprising a ball adapted to run upon said ribs and to be moved by gravity into engagement with said valve before the bottle is in position to be filled.

2. In a non-refillable bottle; a body portion adapted to receive and hold liquids and having a cylindrical neck member rigidly secured to its upper end; a stopper member adapted to be rigidly secured to said neck member and provided with means for permitting the discharge of said liquid contents and preventing the entry of other liquids, comprising a frame portion having at its upper end a slotted plate and on its inner walls a plurality of ribs converging upwardly and diverging downwardly, said ribs being provided with inwardly extending flanges near their lower ends; a valve

adapted to engage with said flanges; a seat adapted to engage with the lower ends of said ribs and provided with an opening adapted to be closed by said valve; and means for closing said opening with said valve, comprising a ball adapted to run upon said ribs and to be moved by gravity into and out of engagement with said valve.

3. In a non-refillable bottle a body portion provided with an annular shoulder at its upper end, a stopper member adapted to engage with said annular shoulder and comprising a frame portion provided at its upper end with a plate with radial slots; a plurality of upwardly converging ribs within said frame portion and having flanges and continuations at their lower ends and a disk at their upper ends; a flanged seat provided with an opening and adapted to engage snugly with the said annular shoulder on the body portion and with the said continuations on the divergent ends of the ribs; a valve adapted to be moved with relation to the said flanges on the ribs and the said flanged seat and to close the said opening in the flanged seat when brought into engagement therewith; and a ball adapted to engage with the converging ends of the said ribs when the bottle is in position to discharge its contents and to hold the said valve in engagement with the said flanged seat when the bottle is in position to be filled.

In witness whereof, I have hereunto set my hand this 17th day of February, 1912.

CLAYTON G. HILL.

Witnesses:

ANTHONY F. ARCOME,
J. W. MANNEBACH.

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