J. T. HOLTFOTH & E. T. REMISCH.

NON-REFILLABLE BOTTLE.

APPLICATION FILED JULY 10, 1908.

945,168. Patented Jan. 4, 1910.

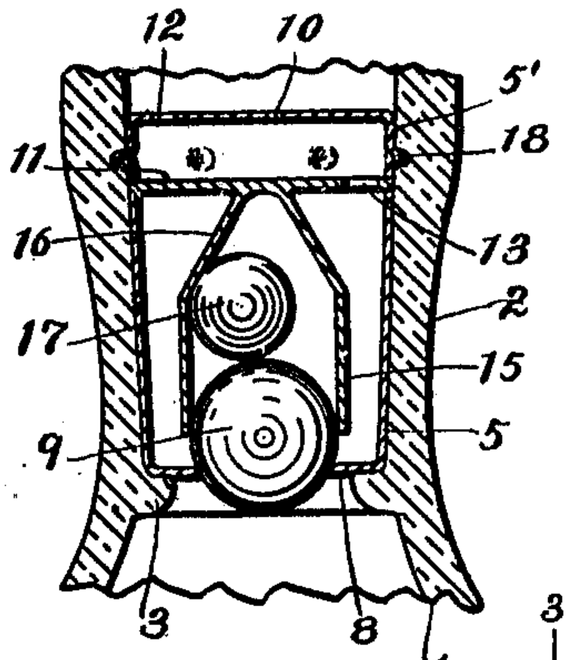

Fig. 4.

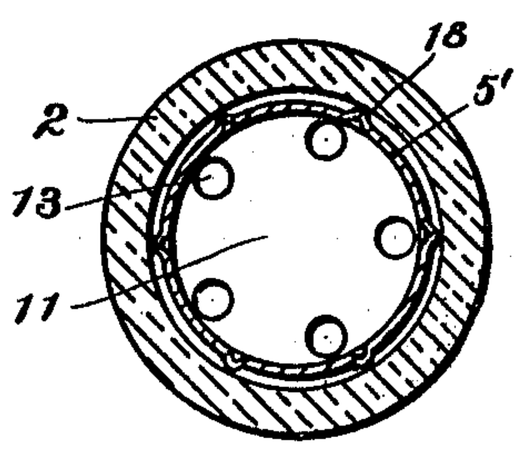

Fig. 5.

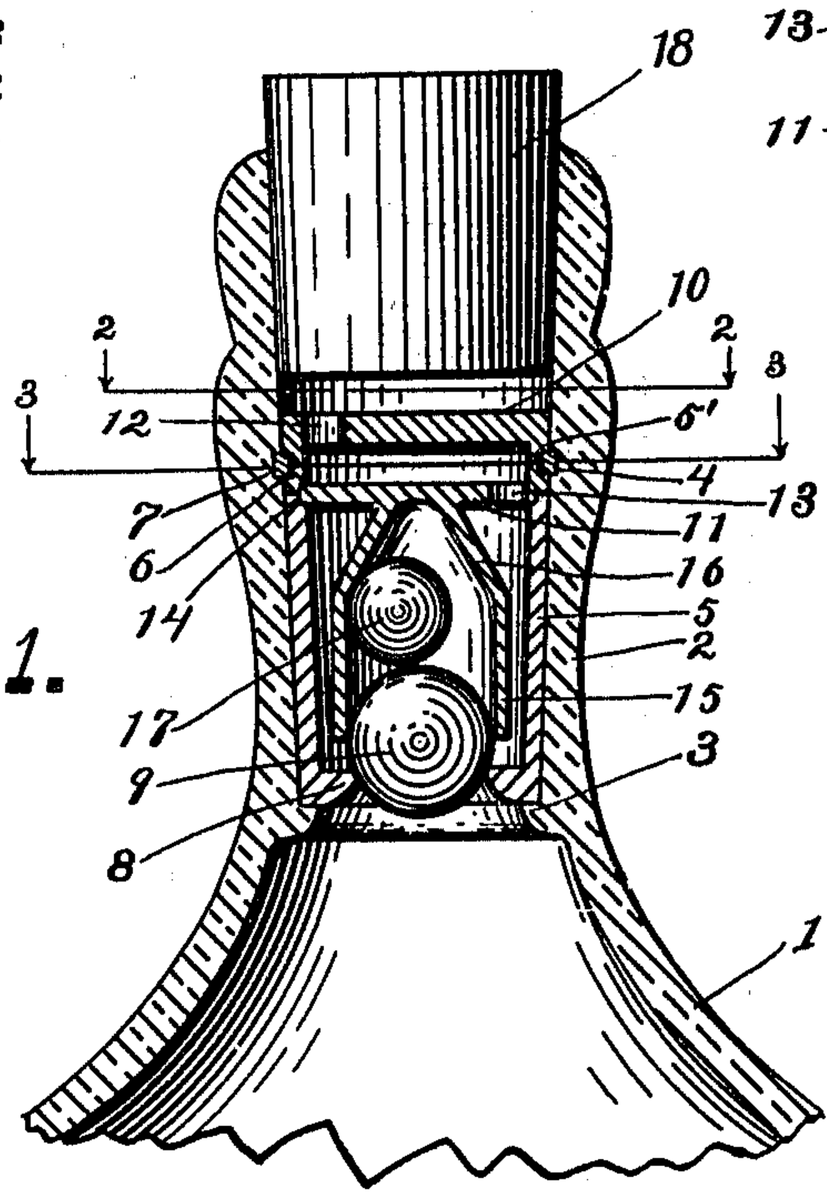

Fig. 1.

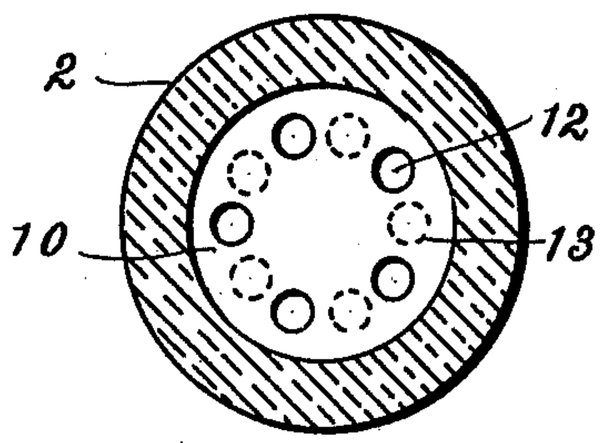

Fig. 2.

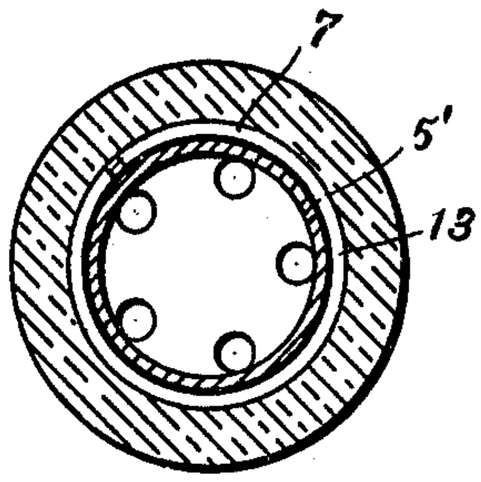

Fig. 3.

Witnesses
Lulu Greenfield
Phina Woodruff

Inventors
Joachim T. Holtfoth
and Edward T. Remisch
By Chappell & Co.
Attorneys

UNITED STATES PATENT OFFICE.

JOACHIM T. HOLTFOTH AND EDWARD T. REMISCH, OF KALAMAZOO, MICHIGAN.

NON-REFILLABLE BOTTLE.

945,168. Specification of Letters Patent. Patented Jan. 4, 1910.

Application filed July 10, 1908. Serial No. 442,948.

To all whom it may concern:

Be it known that we, JOACHIM T. HOLTFOTH and EDWARD T. REMISCH, citizens of the United States, residing at Kalamazoo, Michigan, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention relates to improvements in non-refillable bottles.

The main object of our invention is to provide an improved non-refillable bottle which is simple in structure and efficient in preventing the refilling of the bottle, and at the same time, allows the contents to be readily removed therefrom.

Further objects, and objects relating to structural details, will definitely appear from the detailed description to follow.

We accomplish the objects of our invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claim.

A structure embodying the features of our invention is clearly illustrated in the accompanying drawing, forming a part of this specification, in which,—

Figure 1 is a detail vertical section through a structure embodying the features of our invention, the valve and retaining ball therefor, and also the cork being shown in full lines. Fig. 2 is a cross section taken on a line corresponding to line 2—2 of Fig. 1. Fig. 3 is a cross section taken on a line corresponding to line 3—3 of Fig. 1. Fig. 4 is a detail vertical section of a modification in which the valve casing is made of sheet metal. Fig. 5 is a detail transverse sectional view of the modification appearing in Fig. 4, taken midway between plates 10 and 11, looking down.

In the drawings, similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

Referring to the drawing, the bottle 1 is provided with the usual neck 2, which preferably has an inwardly-projecting annular rib 3 at the lower end thereof, and an internal annular groove 4 above the rib. The valve casing 5 is cylindrical in form and is adapted to be inserted in the neck and rest upon the rib 3. The valve casing is provided with a cap portion 5′ which preferably has an annular groove 6 therein located so as to register with the groove 4 when the casing is inserted in the bottle neck.

The casing is locked in the neck by means of the locking ring 7, which is split on one side so that it may be compressed so as to pass into the neck, but snaps or expands into the groove 4 in the neck thereby securely locking the casing in position.

In the modified construction shown in Fig. 4, the cap portion 5′ is provided with groove engaging lugs 18 which are punched up thereon. The sheet metal cap yields sufficiently to permit the same being moved to position in the bottle neck, the lugs 18 snapping into the groove. Other means than the above might be provided, but the means described are simple and effective.

The casing is provided with a valve seat 8 at its lower end, on which the ball valve 9 seats. Above the valve seat, the casing is provided with a plurality of transverse walls 10 and 11, which are arranged in a spaced relation to each other and provided with perforations or openings 12 and 13, respectively. These openings are for the passage of the liquid from the bottle and are arranged out of register,—that is, the openings of the two walls are out of register with each other so that a wire cannot be introduced to work the valve from its seat. The wall 10 is preferably a part of the cap 5′ as illustrated. The wall 11 is preferably seated in the annular groove formed in the edge of the casing and casing cap, so that the parts can be readily assembled.

We provide a cylindrical valve retainer 15, it being of such diameter as to permit the valve 9 to move up in the same. This retainer is provided with a conical portion 16 for retaining the ball 17 in place, the retainer ball normally resting at the base of the cone so that in order to lift the valve from its seat, the bottle must be tilted to a greater angle than horizontal, so that the valve will be released by the retainer ball. The retainer is preferably located centrally of the valve casing and suspended from the inner cross wall, its lower end being in a spaced relation to the valve seat so that the fluid passes under the same and along the outside. This retainer further guards the valve thereby coacting with the cross walls in preventing the introduction of an implement to open the valve. The cylindrical portion extends less than the diameter of the

ball valve above the ball when the ball is seated. Thus a retainer ball of less diameter than the ball valve can be utilized and coacts with the conical portion which retains the ball valve. This would not be the result, if a retainer ball of the same size as the valve were used, because it would not drop to one side thereof.

A stopper 18 of the usual form is provided, the casing being seated in the bottle neck far enough to allow the introduction of the stopper. With the parts thus arranged, the fluid will not run from the bottle until after the neck of the bottle is turned considerably below the horizontal plane, or until it is tilted sufficiently so that the retaining ball will roll up the inclined wall of the retainer, thereby releasing the valve. This prevents the introduction of fluid, or the forcing of fluid into the bottle by placing the bottle in a horizontal position, or immersing the same in the fluid in that position. If the bottle is inverted to the position required for the opening of the valve and immersed in the fluid, the fluid will not enter owing to the pressure of the air within, unless the bottle be provided with some vent or escape for the air, other than through the valve and valve casing. Our improved non-refillable bottle is very effective for the purpose and is, at the same time, comparatively economical to produce.

We have illustrated and described our improved non-refillable bottle in detail in the form preferred by us on account of its structural simplicity and economy, although we are aware that it is capable of considerable variation in structural details without departing from our invention.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

In a structure of the class described, the combination of a bottle; a casing for insertion in the neck of the said bottle with means for securing the same in place; a valve seat at the lower end of said casing; a ball valve therefor; a plurality of spaced cross walls for said casing located above said valve, said walls having a plurality of openings therein, the openings of one of said walls being out of register with those of the other; a cylindrical guiding retainer embracing and loosely engaging said ball valve, having a conical portion at its upper end, said retainer being suspended from the inner cross wall of said casing and centrally thereof, with its lower end in a spaced relation to said valve seat, the said cylindrical portion extending above the ball valve less than its diameter when seated; and a ball of less diameter than said ball valve arranged in said retainer to rest on said valve and coact with said retainer and its conical part to hold said ball valve on its seat, as specified.

In witness whereof, we have hereunto set our hands and seals in the presence of two witnesses.

JOACHIM T. HOLTFOTH. [L. S.]
EDWARD T. REMISCH. [L. S.]

Witnesses:
CLORA E. BRADEN,
LULU G. GREENFIELD.