

B. F. HAND & A. L. BUCKNAM.
 DEVICE FOR PREVENTING THE REFILLING OF BOTTLES.
 APPLICATION FILED FEB. 17, 1911.

989,964.

Patented Apr. 18, 1911.

Fig. 1.

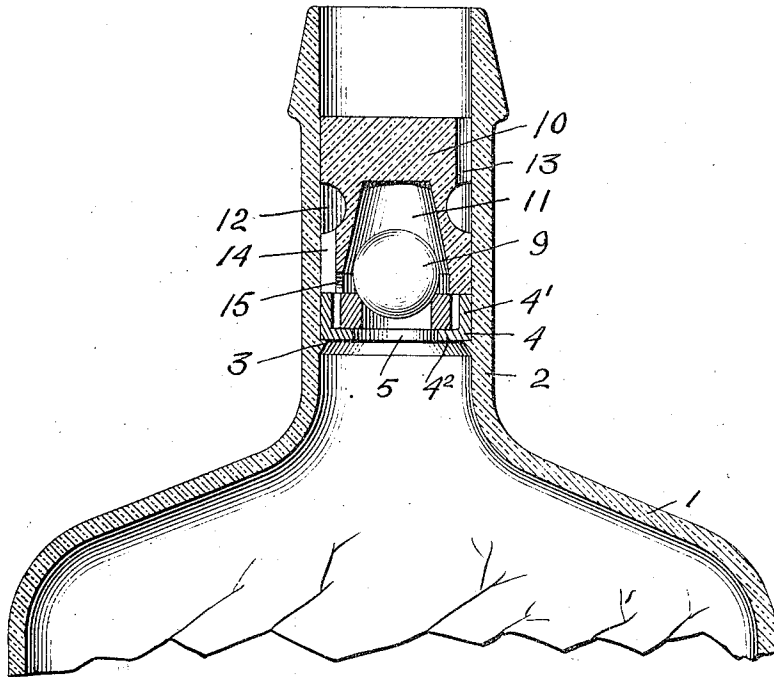


Fig. 3.

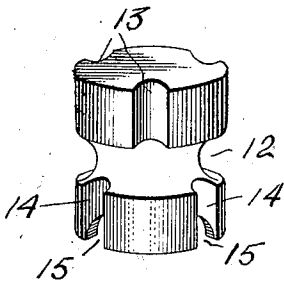
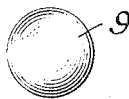


Fig. 2.

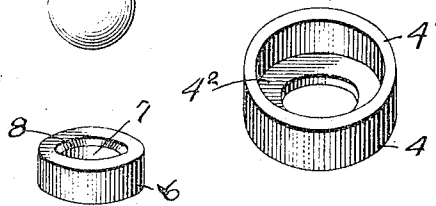
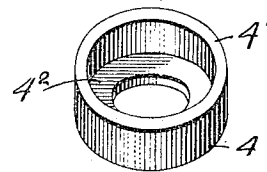


Fig. 4.

Fig. 5.



Inventors

B. F. Hand
 A. L. Bucknam

By

A. P. Greeley
 Attorney

Witnesses

J. F. Collins
 Parker Cook

UNITED STATES PATENT OFFICE.

BEXATIO F. HAND AND ALBION L. BUCKNAM, OF WASHINGTON, DISTRICT OF COLUMBIA.

DEVICE FOR PREVENTING THE REFILLING OF BOTTLES.

989,964.

Specification of Letters Patent.

Patented Apr. 18, 1911.

Application filed February 17, 1911. Serial No. 609,207.

To all whom it may concern:

Be it known that we, BEXATIO F. HAND and ALBION L. BUCKNAM, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Devices for Preventing the Refilling of Bottles, of which the following is a description, reference being had to the accompanying drawings, forming a part hereof.

Our invention relates to devices for preventing the refilling of bottles and like receptacles for liquids, and has for its object to provide a device adapted to be secured within the neck of the bottle or other receptacle which will permit the contents of the receptacle to flow out freely when it is tipped into pouring position and will prevent the introduction of liquid to take the place of what has been poured out, that is, will make the introduction of liquid so difficult as to render the receptacle practically non-refillable.

With this object in view, our invention consists in the construction and combination of elements hereinafter described and claimed.

Referring to the drawings,—Figure 1 is a vertical sectional view of the neck of a bottle having the device of our present invention in place therein. Fig. 2 is a perspective view of the valve protector. Fig. 3 is a perspective view of the ball. Fig. 4 is a perspective view of the inner valve seat ring, and Fig. 5 is a perspective view of the outer valve seat ring.

In the drawings, 1 represents a bottle having neck 2, here shown as provided with a shoulder 3, which is not, however, essential and may be dispensed with.

4 is the outer valve seat ring secured in the neck of the bottle resting on the shoulder 3 if the neck is provided with this shoulder. This ring comprises a cylindrical portion 4' and a flat end portion 4" having a central orifice 5.

6 is the inner valve seat ring having central orifice 7 and valve seat 8 adapted to receive the ball 9 as hereinafter explained.

The exterior diameter of the inner valve seat ring 6 is less than the inner diameter of the cylindrical portion 4' of the outer valve seat ring, so that it will be movable from side to side, the thickness of the ring, that is, the

difference between its outer and inner di-

ameter, being so proportioned to the diameter of the orifice 5 that it will always be in contact with the upper face of the end portion 4", for at least a portion of its width completely around the orifice 5. The height of the ring 6 is the same as, or less than the height of the inner face of the cylindrical portion 4' of the outer ring.

Above or outside of the rings 4 and 6 is a valve protector 10 having a central frusto-conical recess 11 extending up into it of sufficient diameter to permit the ball 9 to move freely therein. The walls of the recess 11 are slightly thicker at their lower ends than the thickness of the cylindrical portion 4' of the ring 4 so as to extend inward sufficiently to hold the ring 6 within the ring 4.

The valve protector 10 is provided on its exterior about midway between its ends with an annular groove 12. The portion above the groove 12 is provided with longitudinal grooves 13, and the portion below the groove 12 is provided with longitudinal grooves 14 which communicate at their lower ends by passages 15 with the recess 11. The grooves 13 and 14 are so located that no groove 13 will be in line with any groove 14. The grooves 13 and 14 are here shown as three in number, but a larger or less number may be used and the number of grooves 13 may be the same as or less or greater than the number of grooves 14, provided always that no groove in the upper portion of the valve protector is in line with a groove in the lower portion.

The ring 4 and the valve protector are intended to fit snugly within the neck of the bottle and are to be secured therein, preferably by cement such as "water glass" cement. The several parts are preferably made of porcelain or glass, though one or more of them may be made of metal.

After the bottle has been filled with liquid the ring 4 is placed and cemented in position; the ring 6 is then placed in position; then the ball and last, the valve protector is placed and cemented in position. Or, if preferred, the parts may be assembled outside the bottle neck, the ring 4 and the valve protector being preferably cemented together at their ends, and the device introduced as a whole into the neck of the filled bottle.

In order to pour out the contents of the bottle, it must be tipped so that the neck

will point downward at about an angle of 45° to the horizontal. When so tipped the ball will drop or run into the recess 11, and the liquid will flow freely through one or more of the grooves 14 into the groove 12 and out through one or more of the grooves 13, the air necessary to supply the place of the liquid poured out passing in through other of the grooves 13 and 14. As the bottle is tipped back after pouring out such of its contents as may be desired, before it reaches a horizontal position, the ball 9 will, by reason of the inclination of the walls of the recess 11, run into engagement with the valve seat 7, and will cause the ring 6 to slide over in such position that the ball will completely close the orifice 8, and in combination with the ring 6, will close the orifice 5 in ring 4, even though the ring 6 may and probably will be eccentric to the ring 4. Of course, so long as the bottle is in vertical position or has its neck pointed upward, the ball will remain in position and hold the orifice 5 closed against the entrance of liquid, thus making it practically impossible to refill the bottle.

Having thus described our invention, what we claim is:—

1. In a valve bottle stopper an outer cylindrical ring having an inwardly extending flange at its lower end, a ring within the outer ring of less diameter than the interior diameter of the outer ring adapted to move on the flange of the outer ring and having a valve seat on its upper end, and a ball

adapted to fit the valve seat of the inner ring.

2. In a valve bottle stopper an outer cylindrical ring having an inwardly extending flange at its lower end, a ring within the outer ring of less diameter than the interior diameter of the outer ring, adapted to move on the flange of the outer ring and having a valve seat on its upper end, a valve protector above the rings having a central recess formed therein with its walls inclined downward and outward, and a ball within the recess adapted to fit the valve seat of the inner ring.

3. In a valve bottle stopper an outer cylindrical ring having an inwardly extending flange at its lower end, a ring within the outer ring of less diameter than the interior diameter of the outer ring adapted to move on the flange of the outer ring and having a valve seat on its upper end, a valve protector above the rings having a central recess formed therein with its walls inclined downward and outward the walls of the recess at their lower end being thicker than the thickness of the cylindrical ring, and a ball within the recess adapted to fit the valve seat of the inner ring.

This specification signed and witnessed this 17th day of February A. D. 1911.

BEXATIO F. HAND.
ALBION L. BUCKNAM.

In the presence of—
CHAS. E. RIORDON,
PARKER COOK.