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W. J. KOLTS.

DEVICE FOR PREVENTING REFILLING OF BOTTLES.

(Application filed May 8, 1899.)

(No Model.)

Fig. 1.

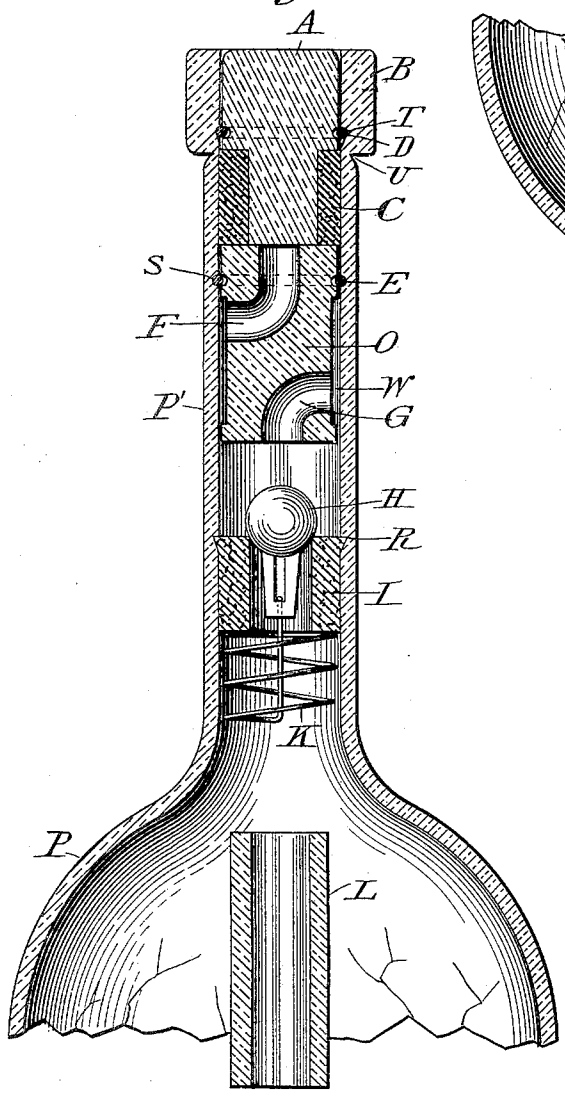
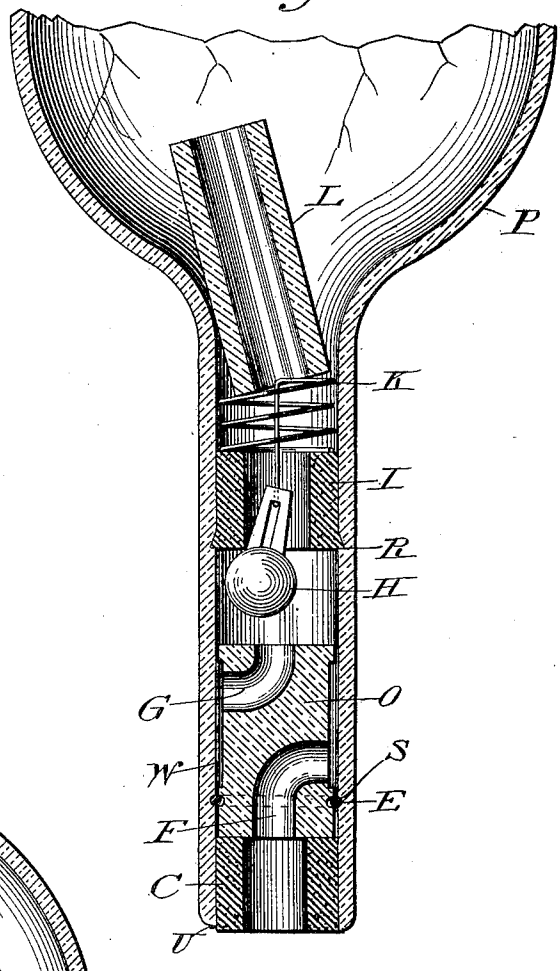


Fig. 2.



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DEVICE FOR PREVENTING REFILLING OF BOTTLES.

SPECIFICATION forming part of Letters Patent No. 668,105, dated February 12, 1901.

Application filed May 8, 1899. Serial No. 716,067. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM J. KOLTS, a citizen of the United States, residing at Kingston, in the county of Ulster and State of New York, have invented a new and useful Improvement in Devices for Preventing Refilling of Bottles, of which the following is a specification.

My invention relates to an improved device to prevent the refilling of bottles, consisting of three essential parts, viz:

First. A stopper of suitable material consisting of three parts—a cork cylinder, a glass stopper, and an expansion-ring. The stopper is located in the upper part of the neck of a bottle.

Second. A perforated glass cylinder located in the neck of a bottle just below the stopper. The glass cylinder is also provided with an expansion-ring.

Third. A valve consisting of four parts—a floating valve of some suitable material, a spiral spring, a cork cylinder, and a glass cylinder. The valve is located in the lower part of the neck of the bottle.

The glass stopper is supplied with an expansion-ring which fits in an annular groove in the glass stopper and in an internal annular groove in the upper part of the neck of the bottle, partially filling both grooves, and thus permanently preventing the stopper from being drawn after it has been placed in position without breaking off the upper part of the neck of the bottle. The lower part of the glass stopper fits snugly into a cork cylinder. The objects of the cork cylinder are twofold—first, to receive the lower part of the glass stopper, thus rendering the bottle tight, and, second, to expand over the rough edge of the neck of the bottle, and thus prevent the chips of glass from getting into the bottle when the upper part of the neck has been broken off and the stopper removed.

The perforated glass cylinder is supplied with an expansion-ring which fits in an annular groove in the upper part of the cylinder and in an internal annular groove in the neck of the bottle, partially filling both grooves, thus preventing the glass cylinder from being forced either in or out and holding it permanently in position. The object of this perforated cylinder is to prevent tampering with the valve, the said valve being located just below the cylinder.

The ball-valve is made of some floating material. The ball has a lower tapered part which has a slot running through the tapered part from side to side and from the ball to within a short distance from the end of the tapered part. There is also a hole in the end of the tapered part, running vertically through its center to the slot. The hole and slot are to receive the central shaft and hook of the spiral spring and are very important features in the device.

The spiral spring is made of some suitable material coated with tin and has a straight central shaft projecting upward through the center of the spring. The straight central shaft has a hook on its upper end. This hook is bent at right angles with the central shaft. The spiral spring rests against the bottom of the cork cylinder, with the straight central shaft projecting upward through the hole in the center of the bottom of the tapered part of the ball-valve and the hook resting against the lower shoulder of the slot. The object of the spring is to hold the ball-valve in position.

The upper external edge of the cork expands in an internal annular ring in the neck of the bottle, thus preventing the valve from being forced out by the glass weight-cylinder. The bottom of the cork forms a seat for the spiral spring and the top of the cylinder forms a seat for the ball-valve.

The glass weight-cylinder is loose in the bottle. The object of this weight is to depress the spiral spring, thus allowing the contents of the bottle to flow past the ball-valve.

The objects of my invention are, first, to provide a bottle with a stopper which will allow the contents or liquid to be poured out and prevent refilling the bottle by inverting, laying the bottle on its side, by shaking, or any other possible means; second, to afford facilities for the proper insertion and securing of the stopper into the neck of the bottle, and, third, to prevent any means of entrance into the bottle from the upper exposed part of the neck, so that the valve cannot be tampered with in any possible manner. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional elevation of the whole

device as seen inserted in position in the neck of a bottle, the part of the bottle below the curve of the neck being broken off and of ordinary shape. Fig. 2 is a sectional elevation of the neck of a bottle inverted and with the upper part of the neck broken off and the glass stopper drawn and the ball-valve open, the whole figure showing the several parts in position as they would be while the contents are being poured out.

Similar letters refer to similar parts in the two views.

In the drawings the bottle, with its upper vertical neck, is indicated by P, its upper internal annular groove by T, its central internal annular groove by S, and its lower internal annular groove by R. The external annular groove is indicated by U. The upper groove T has its upper shoulder at right angles with the perpendicular and its lower shoulder cut away to the form of an acute angle. This is to facilitate the insertion of the expansion-ring of the glass perforated cylinder. The central groove S has both of its shoulders at right angles with the perpendicular. The lower annular groove S has its upper shoulder at right angles with the perpendicular and its lower shoulder cut away in the form of an acute angle. The external annular groove U in the upper part of the neck is to facilitate the breaking off of the upper part of the neck of the bottle.

A is a glass stopper with an external annular groove with both shoulders at right angles with the perpendicular.

D is an expansion-ring, of some suitable material, and is coated with tin. When this ring is pressed in position, the glass stopper is enabled to enter the bottle-neck to position. Then the ring will increase in diameter and partially fill both the groove in the glass stopper and the groove in the upper part of the neck, resting against its right-angled shoulder, and thus retaining the stopper in permanent position or until the upper part of the neck of the bottle has been broken off at U.

The right-angled shoulder in the bottle-neck, with the lower part cut away to the form of an acute angle, is very important, for, while with the expansion-ring in the glass stopper it effectually prevents the stopper from being drawn, it allows the expansion-ring E in the glass cylinder O to pass to its proper position at S.

C is a cork cylinder with its opening slightly smaller than the lower part of the glass stopper A. Thus when the lower part of the stopper is forced into the opening in the cork cylinder the cork is compressed between the neck of the bottle and the lower part of the glass stopper, making the bottle perfectly tight. The second object in having the cork cylinder C is that when the upper part of the neck of the bottle has been broken off at U the upper external edge of the cork will expand over the rough edge of the broken part of the neck and will prevent the glass chips from getting in the bottle.

O is a perforated glass cylinder with an external annular groove in its upper part. The perforations start in the center of the cylinder, one at the top and one at the bottom. Then the said perforations run vertically for a short distance and branch off in opposite directions. The angles of the perforations are rounded to facilitate the flow of the liquid. The external part of the cylinder is cut away to allow the liquid to flow freely from one perforation to the other.

E is an expansion-ring which fits into the groove in the glass cylinder and into the internal annular groove S in the neck of the bottle, partially filling both grooves and thus effectually and permanently preventing the glass cylinder from being removed or forced into the bottle. The object of this perforated cylinder is to prevent tampering with the valve by means of wire or any other substance from the outside.

H is a ball-valve with a lower tapered part. This valve is made of some floating material. The lower tapered part of the valve has a slot from the ball to within a short distance from the end and a hole from the end to the slot. The object of this slot and hole and of making the valve of some floating material is to prevent the bottle from being refilled for the following reasons: When the bottle is inverted and the spring K depressed by the glass weight L, the ball-valve H will float in any liquid forced in the neck of the bottle and will rest against its seat on the cork cylinder I, thus effectually closing the bottle. The slot in the tapered part of the valve H is made long enough so that the hook on the central shaft of the spring K may move freely when the spring is depressed and so allow the valve to float. The hole in the end of the tapered part of the floating valve H is to allow the straight central shaft of the spring K to pass through and must be just large enough to admit the shaft to slide freely. The hook at the end of the central shaft rests against the lower shoulder of the slot in the tapered part of the valve H, and thus prevents the said valve from dropping out of position.

K is a spiral spring with a straight central shaft, the said shaft having a hook on its upper end. The upper part of the spring *k* has its seat on the under surface of the cork cylinder I, and the straight central shaft projects upward through the spring into the opening of the cork cylinder, and the hook on the said shaft is hooked through the hole and into the slot of the tapered part of the valve H. The object of the spring *k* is to hold the ball-valve H against its seat on the upper internal edge of the cork cylinder I, and thus prevent the bottle from being refilled when standing up, or when on its side, or while being shaken.

I is a cork cylinder fitting the neck of the bottle snugly. The upper edge of the said

cork cylinder I expands into the internal annular groove R in the neck of the bottle, thus preventing the valve H from being forced outward. The bottom surface of the cork cylinder also forms a seat for the top of the spring K.

L is a glass cylinder-weight sufficiently heavy to depress the spring K when the bottle is inverted, thus allowing the liquid to flow past the ball-valve H. This weight is allowed to play loosely in the body part of the bottle.

In order to pour out the contents of the bottle, it is necessary to tap the neck of the bottle at U, thus breaking off the upper portion of the neck. The glass stopper is then drawn. Now when the bottle is inverted the weight L engages the bottom of the spring K, thus compressing the said spring and allowing the valve H to open. The liquid then passes through the center of the cork cylinder I, past the valve H, through the two perforations in the glass cylinder O, through the center opening of the cork cylinder C, and out.

The device is so constructed and arranged, as set forth, that it is impossible to refill the bottle, the spiral spring K always holding the valve H against its seat on cork cylinder I when the bottle is upright, on its side, or while being shaken, and the valve H being made of floating material will always seek its seat against the cork cylinder I if attempts should be made to force liquid into the bottle while the said bottle should be in an inverted position, the slot in the tapered part of the valve H being long enough to allow for any depression of the hook and central shaft of the spring K due to the weight L resting on the spring K, the hook on the end of the central shaft of the spring passing freely up or down in the slot and the shaft of the spring passing freely through the hole in the end of the tapered part of the valve.

The weight L on the lower part of the spring is essential to open the valve.

Any attempt to probe the device is frustrated by the peculiar construction of the perforated glass cylinder O, because the perforations of the said cylinder are out of a vertical line. This part of the device is very important.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a bottle to prevent refilling, a valve, composed of a floating ball-valve H with a tapered lower part which has a slot through from side to side and a hole from the end to the slot, a spiral spring K with a straight central shaft with a hook bent on its end at right angles with the shaft, a cork cylinder I with an opening large enough to freely admit the tapered part of the valve H, and a glass weight-cylinder L to operate the valve.

2. In a non-refillable bottle, the combination, with a perforated cork provided with a valve-seat, of a spherical valve on one side of the cork provided with a projection adapted to enter the perforation, a spring upon the opposite side of the cork, the outer end of which is bent at an angle and passes axially through the spring and engages with the projection on the valve, a guard above the cork, and a weight within the bottle to compress the spring.

3. In a non-refillable bottle, the combination, with the neck of the bottle, the interior of which is provided with two annular grooves, of a perforated cork in the neck with its outer end projecting into one of the grooves, a valve on the cork, a glass cylinder in the neck beyond the cork, the periphery of which is provided with circumferential grooves, one of which registers with the other groove in the neck, the ends of the cylinder being provided with channels which communicate with the other groove around the cylinder and an expansion-ring in the registering grooves of the neck and cylinder.

WILLIAM J. KOLTS.

Witnesses:
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