

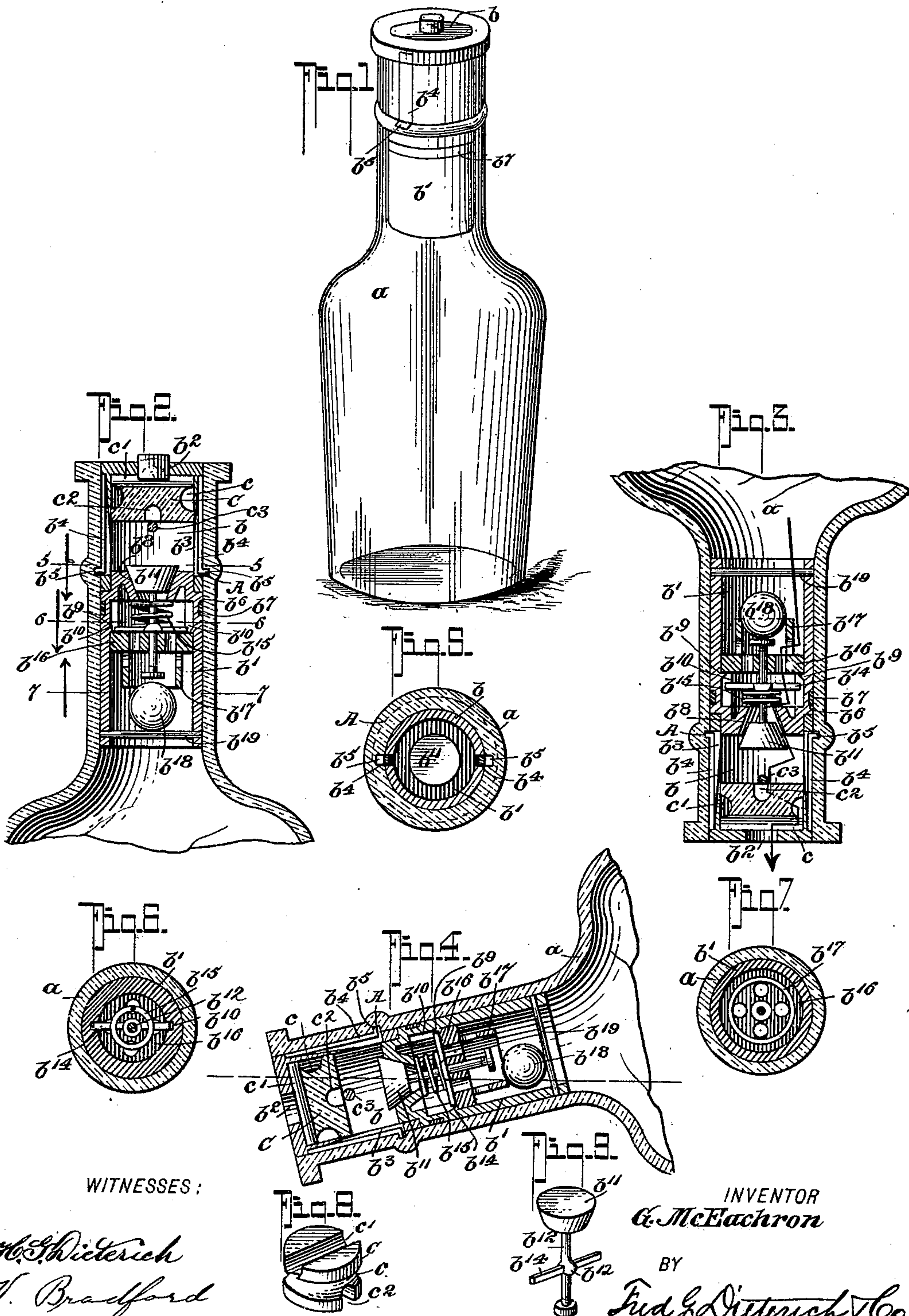
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Patented Aug. 15, 1899.

G. McEACHRON.
NON-REFILLABLE BOTTLE.

(Application filed Jan. 20, 1897.)

(No Model.)



WITNESSES:

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TO EDWARD J. RABIDEAU, OF FORSYTH, MICHIGAN.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 631,258, dated August 15, 1899.

Application filed January 20, 1897. Serial No. 619,866. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MCEACHRON, a citizen of the United States, residing at Brampton, in the county of Delta and State of Michigan, have invented certain new and useful Improvements in Non-Refillable Bottles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in non-refillable bottles; and it consists in certain combinations, details, and arrangement of parts, all of which will be hereinafter first described and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is an exterior view of the bottle constructed in accordance with my invention. Fig. 2 is a central vertical section of the same. Fig. 3 is a similar section, the parts being shown inverted. Fig. 4 is a central vertical section of the neck portion of the bottle, the same being tilted to a point slightly below the horizontal plane and illustrating the relation of the valve opener ball or weight and the valve when the bottle is tipped to this position. Figs. 5, 6, and 7 are horizontal sections on the line 5 5, 6 6, and 7 7 of Fig. 2, respectively. Fig. 8 is a detail view of the valve-guard detached from its casing; and Fig. 9 represents an enlarged detail view of the valve, together with its stem and guide member.

Referring to the accompanying drawings, in which like letters indicate like parts in all the figures, *a* represents the bottle proper, and *b* the main stopper portion thereof.

The bottle may be of any desired construction and material, with the exception that its neck portion has an internal annular groove *A*, for the purposes hereinafter described.

The stopper proper, *b*, comprises two sections *b b'*, respectively, the section *b* being provided at its upper end with an escape-aperture *b²*, which during shipment or standing of the bottle is closed by a suitable cork piece, as shown in Figs. 1 and 2, said section *b* also having in its sides slots *b³* for the ac-

commodation of flat springs *b⁴*, having angular ends *b⁵*, the said springs *b⁴* being secured at their upper ends to the material forming the head of the section *b* and projected down and outward, so that when the stopper is forced into the neck of the bottle the projecting portions *b⁵* will snap into the annular groove *A*, and thus hold the stopper *b* securely in position in the neck of the bottle against withdrawal.

While fitting the stopper into the neck the spring *b⁴* will compress into the slots *b³* within the interior of the section *b*, they only springing out of a locked position when the extensions *b⁵* come in line with the annular grooves *a a'*.

The section *b* is provided with a valve-guard *C*, which consists of a block of glass, porcelain, or other suitable material, its sides having formed therein an annular groove *C'*, while its top is provided with a groove *c'*, extending diametrically across the same and at a sufficient depth to unite with the annular groove *c*. The under side of the block is also provided with a groove *c²*, running at right angles to the groove *c'* and also of sufficient depth to communicate with the groove *c*.

It will be observed from the foregoing description that liquid coming against the under side of the guard *C* will first pass through the groove *c²*, then into the groove *c*, and finally out through the groove *c'*. By this means a free passage for the liquid from the bottle is provided, and at the same time the insertion of any instrument from above is prevented and the valve thus fully protected.

The block *C* is secured in position in the section *b* directly under the aperture *b²* by a pin *c³*, which passes through the walls of the said section *b* and under the said block.

The stopper *b* is further provided with an exterior annular groove *b⁶* for the accommodation of the elastic packing-ring *b⁷*, the purpose of which is to provide for an air-tight joint between the stopper *b* and the neck of the bottle, and thus prevent the entrance of air into the bottle. The section *b* is attached to the section *b'* by being passed over the upper end of the same and secured thereto by screws or rivets.

The lower section b' of the stopper is provided with a conical seat b^8 , an annular internal shoulder b^9 , and internal vertical grooves b^{10} . The conical valve b^{11} is adapted to fit the seat b^8 and is provided with an opening valve-stem b^{12} , the lower end of which terminates in a head b^{13} , and the said valve-stem is also provided at a point between the valve portion proper and the head b^{13} with a cross member b^{14} , the opposite ends of which are adapted to engage and slide within the grooves b^{10} , and thus guide the valve-stem in its movements. A coil-spring b^{15} is disposed about the valve-stem and bears with its opposite ends against the under side of the valve-seat and the top of the cross-bar piece b^{14} , said spring serving to normally hold the valve b^{11} seated to a closed position. The valve-stem b^{12} passes through an apertured plate b^{16} , having an apertured pendent flange b^{17} of less diameter than the internal diameter of the section b' . The plate b^{16} is held to rest against the shoulder b^9 of the stopper and be suitably secured within the latter.

b^{18} indicates a spherical weight or ball which is located below the flange b^{17} and held in position in the section b' by a cross-pin b^{19} , passed transversely through the said section b' .

It will be observed by reference to Fig. 2 that the lower or head portion of the valve-stem and the weight b^{18} normally are so disposed relatively that the weight is disengaged therefrom, it being also seen from the drawings that the diameter of the flange b^{17} and that of the ball is such that when the bottle is turned over to the position approximately that shown in Fig. 3 the weight will drop against the head of the valve and by reason thereof force the valve to an open position and allow for a free egress of the fluid from the bottle, which passes out through the stopper in the direction indicated by the arrow.

The pendent flange b^{17} , besides serving as a means for guiding the weight against the head of the valve-stem when the bottle is tilted to a proper inverted position, also serves to act as a detent to hold the said weight from engaging with the said valve when the bottle is tilted at or slightly below a horizontal position, as shown in Fig. 4.

By arranging the parts in this manner it is obvious that it will be impossible to hold the bottle-neck in any such position that the fluid may enter therein by pouring through the neck of the bottle, for the reason that as the spring b^{15} is not opposed by the weight b^{18} the valve will be securely held to a closed position.

From the foregoing description, taken in connection with the accompanying drawings, it will be observed that after the bottle has once been filled and the stopper forced into the neck the latter cannot be again withdrawn, for the reason that the springs at the side thereof will serve to hold it automatic-

ally locked within the bottle-neck. Furthermore, after the bottle has once been emptied of its contents it is impossible to again refill the same with an inferior article, as the valve will immediately become seated upon the bottle being placed in any refilling position, thereby effectually preventing the entrance of any liquid into the interior of the said bottle through the stopper. It will be further observed that when the bottle is inverted the spherical weight b^{18} becomes seated upon the flange b^{17} , and thus does not prevent the egress of the liquid from the bottle, which flows freely around the pendent flange b^{17} and through the aperture in the side thereof and through the plate b^{16} .

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an antirefilling bottle, the combination with the bottle proper; a valve mounted in the neck of the same; and a protecting-block mounted above the said valve and having an annular peripheral groove formed in its sides; a diametrical groove formed in its top and communicating with the annular groove at each end; a diametrical groove formed in its bottom and at right angles to the top and also communicating with the annular groove at each end, substantially as described.

2. In an antirefilling bottle; the combination with the bottle proper; of a hollow stopper adapted to be applied in the neck of the same and having internal vertical guide-grooves; a valve mounted in said stopper; a valve-stem connected to the valve; a lateral-extending guide-bar mounted on said valve-stem so that its opposite ends extend into the guide-grooves of the stopper, whereby it is guided in its movement and a weight mounted below said valve-stem so as to engage the latter when the bottle is inverted to open the valve, substantially as described.

3. In an antirefilling bottle, the combination with the bottle proper; of a hollow stopper adapted to be applied in the neck of the same, and having internal vertical guiding-grooves; a valve mounted in said stopper; a valve-stem connected to the said valve; a lateral guide-bar mounted on the said valve-stem so its opposite ends will enter the vertical guide-grooves of the stopper; a coil-spring mounted on said valve-stem and engaging said guide-bar to normally force the valve-stem downward, and a weight mounted below said plate so as to engage said stem when the bottle is inverted to open the valve against the tension of the spring, substantially as described.

4. In an antirefilling bottle; the combination with the bottle proper; of a hollow stopper adapted to be applied in the stem; a valve mounted in said stopper; a guard mounted above said valve; a valve-stem connected to the said valve; an apertured plate adapted to

guide said valve-stem; an annular apertured
flange formed on said plate; and a movable
weight mounted below said annular flange in
the stopper and adapted to become seated
5 upon said flange when the bottle is inverted
and also engage the lower end of the valve-
stem to open the valve, substantially as de-
scribed.

In testimony whereof I have signed this
specification in the presence of two subscrib- 10
ing witnesses.

GEORGE MCEACHRON.

Witnesses:

JAMES COLQUHOUN,

WILLIAM E. DEVERELL.