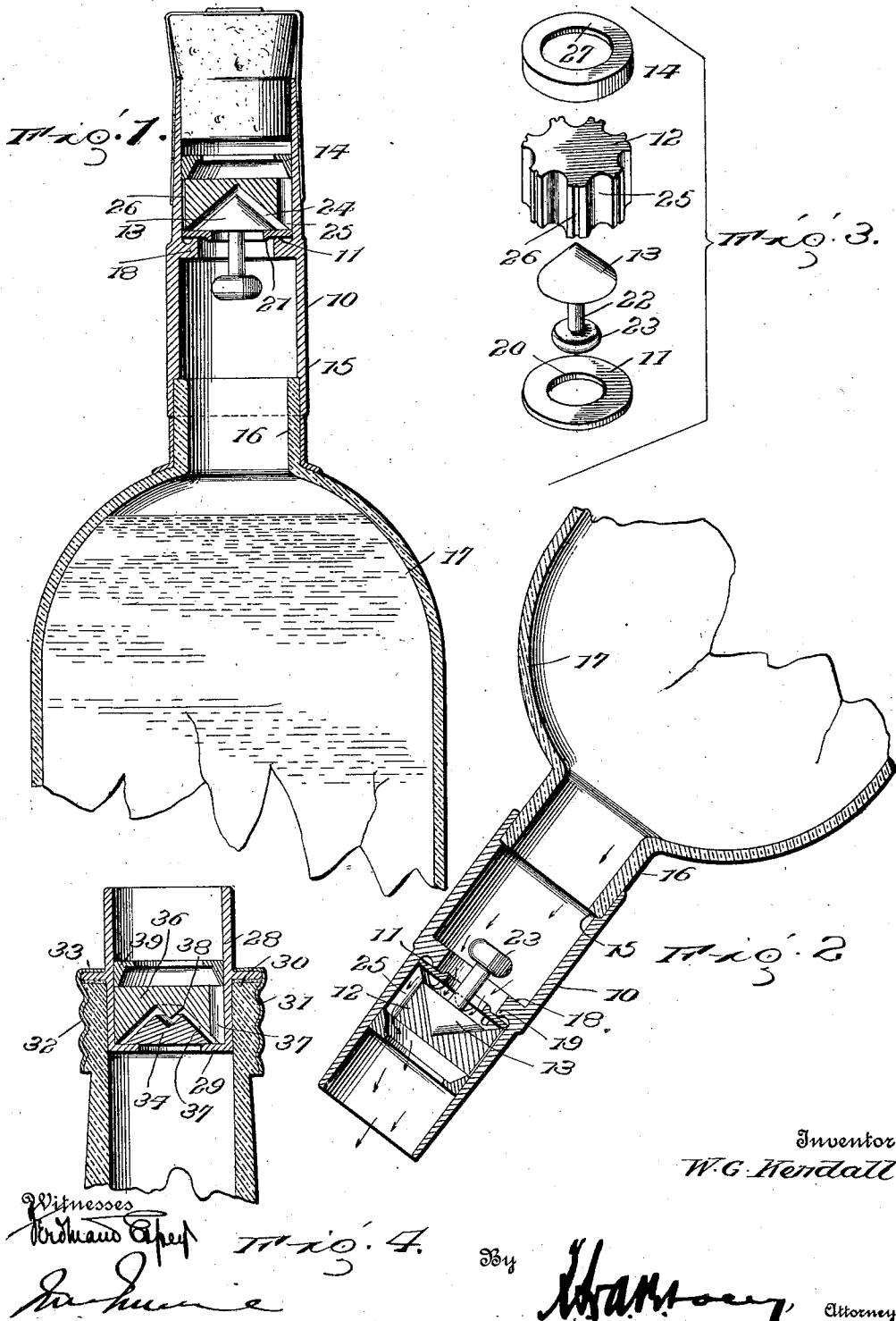


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NON-REFILLABLE BOTTLE.
APPLICATION FILED JULY 23, 1912.

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UNITED STATES PATENT OFFICE.

WILLIAM G. KENDALL, OF NEWARK, NEW JERSEY.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM G. KENDALL, citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention relates to new and useful improvements in non-refillable bottles, and the object of my invention is to provide a valve closure for a bottle or other receptacle which may be readily applied to the same and which, in addition to the valve for closing the bottle and for preventing the refilling of the same, is so arranged that it may be closed or sealed by the usual stopper of cork or rubber to avoid all possibility of leakage.

A further object of my invention is to so arrange the stopper receiving portion that the ordinary bottle corking machine may be employed in corking bottles having my improved non-refillable closure.

A further object of my invention is to provide a bottle closure including upper and lower valve seats, the former of which is self-centering, and a valve movable between the seats adapted to close the bottle when the latter is in upright position. And a still further object of my invention is to so construct the upper valve seat that when the valve is in engagement therewith, the liquid contained in the bottle may escape between the side of the valve seat and the bottle neck.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawing, and then specifically pointed out in the claim which is attached to and forms a part of this application.

In the drawing: Figure 1 is a vertical central section taken through a bottle having my improved closure; Fig. 2 is a similar view, showing the bottle inverted; Fig. 3 is a detail perspective view, showing the valve, valve seats and locking ring removed from the casing of the bottle closure; Fig. 4 is a fragmentary sectional view, showing a modified form of closure.

Corresponding and like parts are referred

to in the following description and indicated in all the views of the drawings by the same reference characters.

The preferred embodiment of my invention includes a tubular cylindrical casing 10 having lower and upper valve seats 11 and 12, a valve 13 movable between said seats and a locking ring 14 for securing the valve seats and valve in position. These parts may be formed of any suitable metal, or porcelain, glass, earthenware or celluloid and in any size desired.

The casing 10 is preferably slightly reduced interiorly at its lower end to form a shoulder 15 which seats upon the upper end of the bottle neck 16 of a bottle conventionally shown at 17. The casing may be secured in place upon the bottle in any suitable manner as by cementing the two together. The casing intermediate its length is preferably provided with an annular, inwardly directed stop flange 18 provided on its inner upper edge with an upwardly directed annular shoulder 19. The casing may be tapered somewhat from its lower to its upper end, if desired, but in any case, the bore of the casing above the shoulder will be uniform in diameter throughout its length.

The valve seat 11 is made in the form of an annular ring to provide a discharge opening 20 and the valve seat immediately about this opening is provided with a downwardly depending flange 21. The valve seat 11 is positioned in the casing in such a manner as to rest upon the upwardly directed shoulder 19 of the flange 18 and is proportioned to engage by its peripheral edge against the inner face of the casing 10. The upper face of this flange seat is plane surfaced for engagement by the plane surfaced base or lower face of the valve 13 which, as shown, is conical in shape and is provided with a centrally formed downwardly extending valve stem 22 terminating in an enlarged or weighted head 23. This head 23 is so proportioned that it may be passed through the discharge opening 20 of the valve seat 11 and the valve itself 13 is so proportioned as to completely cover the discharge opening 20 when seated upon the valve seat 11.

The upper valve seat 12 consists of a solid cylindrical body member equal in external diameter to the internal diameter of the casing 10 and provided in its lower face with a centrally formed conical recess 24. This valve seat 12 bears by its lower edge upon the upper face of the valve seat 11 and the recess 24 is so positioned that when the bottle is inverted, as shown in Fig. 2 to seat the valve therein, the base of the valve will be spaced a considerable distance from the lower valve seat 11.

In order to provide means for the passage of the liquid contents of the bottle, I have provided a plurality of spaced apart, longitudinally extending grooves or channels 25 formed in the peripheral face of the valve seat 12 and interposed between these grooves or channels is a second series of grooves or channels 26, the latter grooves being preferably considerably more shallow than the first. These grooves coöperate with the inner face of the casing 10 to form a plurality of concentrically arranged ducts or passages through which the contents of the bottle may escape. As these grooves extend throughout the entire length of the valve seat, they communicate at their lower ends with the outer portion of the recess 24 and therefore liquid passing through the discharge opening 20 of the valve seat 11 passes readily through these ducts.

The locking ring 14 is annular in shape and fits closely upon the upper end of the valve seat 12, having an inwardly directed flange 27 formed at its upper edge to overhang the upper ends of the grooves 25 and so prevent the insertion of any tool into these grooves for the purpose of raising the valve 13 with the bottle in upright position. This locking ring may be secured in place in any suitable manner, depending upon the material of which the closure casing and ring are formed. For instance, the ring may be a split ring seated in an internally formed groove in the casing 10 or it may be cemented or soldered in place. If the casing is formed of metal, portions of the metal may be struck or bent in directly above the ring to lock the same in place.

In Fig. 4 I have illustrated a slightly modified form of invention which, however, embodies the same general principles. In this closure, the casing 28 is cylindrical in shape and is provided at its lower end with an inwardly directed annular flange 29 and intermediate its length with an outwardly directed flange 30. This casing is so proportioned as to fit snugly within the neck of the bottle with the flange 30 bearing upon the end of the bottle neck, a packing ring of rubber or cork 31 being preferably interposed between the flange 30 and the neck of the bottle. When so positioned, the casing

is secured in place by a screw threaded locking ring or cap 32 having an inwardly directed annular shoulder 33 which engages over the outer edge of the flange 30. Any suitable cement is preferably applied to the neck of the bottle and the locking ring is then threaded over the same, thereby firmly securing the casing 28 in place. In this form of my invention, the flange 29 forms the lower valve seat and seating upon this flange is the valve 34 in the shape of a truncated cone, the base of which seats upon the flange and the upper end of which is provided with a conical recess 35. The upper valve seat 36 is somewhat similar to the valve seat 12, previously described, being cylindrical in shape and provided with the longitudinally extending grooves 37 formed in the peripheral face, these grooves corresponding to the grooves 25 of the valve seat 12. The grooves 26 are omitted in this case however, and the recess formed in the lower face of the valve seat 36 and designated as a whole by the numeral 37' is shaped to conform to the valve 34, being substantially frusto-conical in shape and having its inner face provided with a downwardly depending conical stud 38 adapted to seat in the conical recess 35 of the valve 34. The valve and valve seat 36 are maintained in position in the casing by a locking ring 39 which is identical in construction with the locking ring 14 and therefore requires no description.

The upper ends of the casings 10 and 28 both extend a considerable distance above the locking rings 14 and 39, respectively, in order to permit the application of a stopper of cork or rubber to the closure to prevent leakage during shipment.

By forming the recesses in the upper valve seats to conform with the upper portions of the valves, the valves will automatically seat in the recesses when the bottles are inverted to give the widest possible opening and to absolutely prevent the valves from blocking any of the ducts or passages formed by the grooves of the upper valve seats.

Having thus described the invention, what is claimed as new is:

A bottle closure including a tubular body member provided at one end with an interiorly directed annular flange forming a seat and defining a discharge port, said body member being further provided intermediate its length with an exteriorly formed annular flange, an annular ring mounted within the body member and secured in position against movement therein, a conical valve positioned within the body member and seating upon the interiorly formed flange, a cylindrical keeper provided about its peripheral edge with longitudinally extending

grooves forming passages positioned between the ring and valve and held against movement thereby, said keeper being provided with a conical recess in its lower face
5 somewhat greater in size than the valve, and a cap fitting loosely about the body and seating upon the exteriorly formed flange thereof, said cap being provided with a downwardly depending annular threaded flange for engagement with a bottle neck. 10

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM G. KENDALL. [L. s.]

Witnesses:

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