No. 869,201. PATENTED OCT. 22, 1907.

C. H. STONE.

NON-REFILLABLE BOTTLE.

APPLICATION FILED FEB. 13, 1907.

Fig. 1.

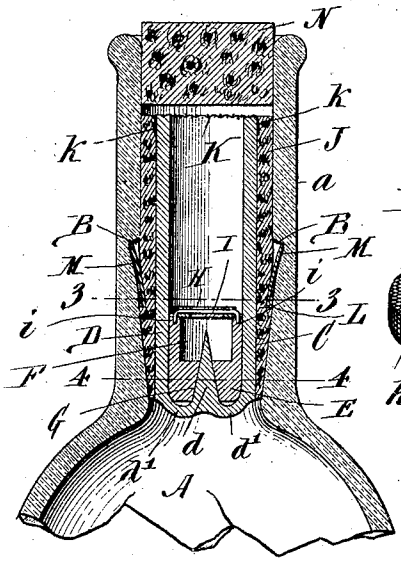


Fig. 2.

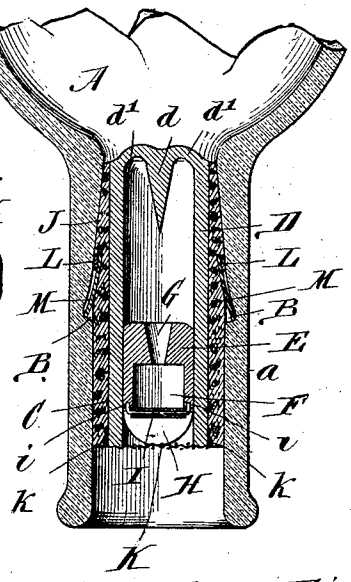


Fig. 10.

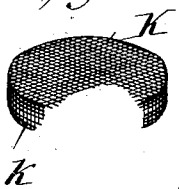


Fig. 3.

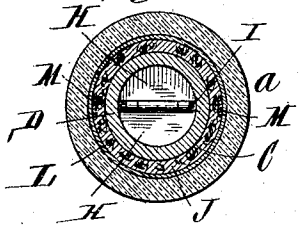


Fig. 4.

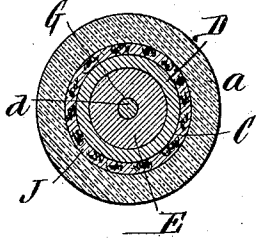


Fig. 5.

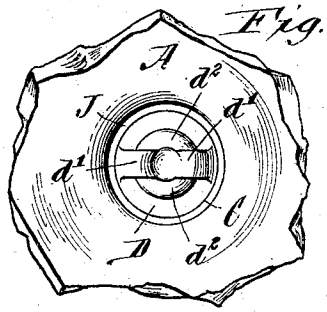


Fig. 6.

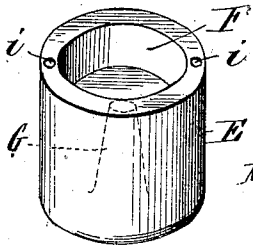


Fig. 7.

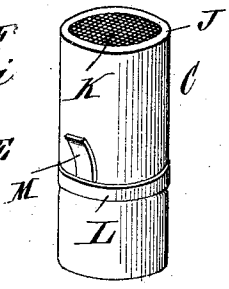


Fig. 8.

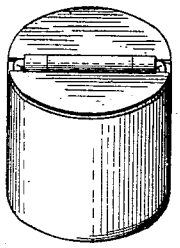
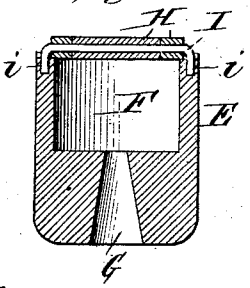


Fig. 9.



Witnesses:

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Charles H. Stone, Inventor

By Emil Neuhart

Attorney.

UNITED STATES PATENT OFFICE.

CHARLES H. STONE, OF BUFFALO, NEW YORK.

NON-REFILLABLE BOTTLE.

No. 869,201. Specification of Letters Patent. Patented Oct. 22, 1907.

Application filed February 13, 1907. Serial No. 357,161.

To all whom it may concern:

Be it known that I, CHARLES H. STONE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention relates to non-refillable bottles, but more particularly to stoppers to be inserted into the neck thereof.

The objects of my invention are the production of a simple, durable and effective stopper, which cannot be withdrawn from the bottle-neck, and which is provided with means to center and close the valve within the stopper; to provide the stopper with a compressible facing; to provide spring retainers and a band surrounding the stopper whereby said retainers are secured to the stopper; and to otherwise improve on the construction of bottle-stoppers of this type.

Referring to the drawings, Figure 1 is a central vertical section through the upper portion of a bottle equipped with my invention, the bottle being in its upright position. Fig. 2 is a similar section showing the bottle inverted. Fig. 3 is a horizontal section taken on line 3—3, Fig. 1. Fig. 4 is a horizontal section taken on line 4—4, Fig. 1. Fig. 5 is an inverted view of Fig. 1. Fig. 6 is an enlarged detached perspective view of the valve; the lids thereof being removed. Fig. 7 is a detached perspective view of the complete stopper, on a slightly reduced scale. Fig. 8 is an enlarged perspective view of the valve complete. Fig. 9 is an enlarged central vertical section through the valve. Fig. 10 is a detached sectional perspective view of the cap at the upper end of the tube.

Referring to the drawings in detail, like letters of reference refer to like parts in the several figures.

The letter A designates a portion of a bottle, and *a* the bottle-neck having an internal groove or depression B. The bore of the bottle-neck is preferably cylindrical from its upper end to said groove and gradually reduced in diameter from said groove to its inner end so as to prevent the stopper C from being forced too far into the bottle-neck.

The stopper comprises a tube D of glass, porcelain, or other suitable material open at its upper end and having at its lower end a longitudinal tapering stem *d* projecting centrally into the tube and connected with the sides of the latter by arms d^1, so as to provide liquid passages d^2 on either side of said arms; but if desired, the bottom of the tube may be closed and provided with perforations for the passage of liquid into said tube.

Vertically movable in tube D is a valve E fitting snugly against the walls of the tube to prevent leakage of liquid between the two; said valve having a depression F in its upper face to reduce the weight thereof while maintaining the proper length to prevent binding. Arranged centrally in said valve is a tapering aperture G into which the tapering stem *d* of the tube D fits. When the bottle is inverted, the valve gravitates toward the upper end of the bottle, and when thus removed from the stem *d*, the liquid may pass through the aperture G, as clearly shown in Fig. 2. Semi-circular lids H are pivotally affixed to a transversely disposed pintle I which is formed of wire and has its ends bent at a right-angle and entering sockets *i* in the top of the valve. When the bottle is in an upright position, or any position between upright and horizontal, lids H serve as guards to prevent the insertion of a tool below the top of the valve, and they also serve as a check against the introduction of liquid; and when the bottle is inverted, they swing outward, as shown in Fig. 2, and permit the free passage of liquid from the bottle.

Surrounding the tube D is a cork or similar facing or tube J and at the upper end of the stopper, I arrange a screen protector or cap K having a flange *k* fitting between tubes D and J; said protector serving as a primary guard against the insertion of a tool into the stopper to manipulate the valve. Secured to the stopper by a band L fitted over tube J, are two spring retainers M, the free ends thereof being adapted to enter the groove or depression B in the bottle-neck, and thus prevent withdrawal of the stopper from the bottle.

In placing the stopper within the bottle-neck, the outer cork tube is compressed, and particularly at its lower end, which is adapted to fit into the restricted portion of the bore of the neck. The free ends of the spring-retainers are forced against the stopper, until they pass beyond the upper wall of groove or depression B, when they spring into the groove and securely lock the stopper into the bottle. The band L and the attached ends of the spring retainers are compressed into the cork outer-tube so that they offer no obstruction to the insertion of the stopper into the bottle. If desired the open end of the bottle-neck may be closed by a cork N.

The tapering stem D assures a tight fit and positive closure of the valve at all times and provides for the proper centering of the same.

Having thus described my invention, what I claim is,—

1. The combination with a bottle, of a tube held in the neck thereof and having a tapering stud extending upward into the interior of the tube, and a valve movable within said tube and having a tapering aperture to be closed by said tapering stud when the bottle is in its upright position.

2. The combination with a bottle, of a tube held in the neck thereof and having a tapering stud extending upward into the interior of said tube, a valve slidable within the tube and having a tapering aperture to be closed by said tapering stud when the bottle is in upright position, and a guard at the upper end of said tube.

3. The combination with a bottle, of a tube held in the

neck thereof, a tapering stud extending upward into the tube and supported from the sides of the latter, a valve slidable within said tube and having a tapering aperture to be closed by said tapering stud when the bottle is in its upright position, and a guard at the upper end of said tube.

4. The combination with a bottle, of a tube held in the neck thereof, a compressible covering for said tube, an open-work guard closing the upper end of said tube and being secured between the latter and said covering, and a valve in said tube.

5. The combination with a bottle having the neck thereof provided with an internal depression, of a tube having an inwardly closing valve, a compressible covering around said tube, a band around said covering, a spring retainer having one end secured between said band and said covering and its other end engaging said depression in the neck of the bottle.

6. The combination with a bottle having the neck thereof provided with an internal groove, a tube within the neck having a tapering stud extending centrally therein to form the bottom thereof, a valve slidable in the tube and having a central tapering aperture into which said stud is adapted to fit, a compressible covering around said tube, a band around said covering, and retainers on opposite sides of said covering comprising flat pieces having one of their ends clamped between said compressible covering and said band and having their other ends engaging said internal groove in the neck of the bottle.

7. The combination with a bottle, of a tube within the neck thereof having a tapering stud extending centrally into said tube from the bottom thereof, a valve slidable in said tube having a depression in its top with a circumferential wall around said depression and a tapering aperture arranged centrally therethrough which said tapering stud is adapted to close, and oppositely opening lids closing the top of said depression.

8. The combination with a bottle, of a tube within the neck thereof having a tapering stud extending centrally into said tube from the bottom thereof, a valve slidable in said tube having a depression in its top with a circumferential wall around said depression and a tapering aperture arranged centrally therethrough which said tapering stud is adapted to close, a pintle arranged diametrically at the top of said valve, and semi-circular lids hinged to said pintle to close the top of said depression.

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

CHARLES H. STONE.

Witnesses:
W. D. PERRY,
EMIL NEUHART.