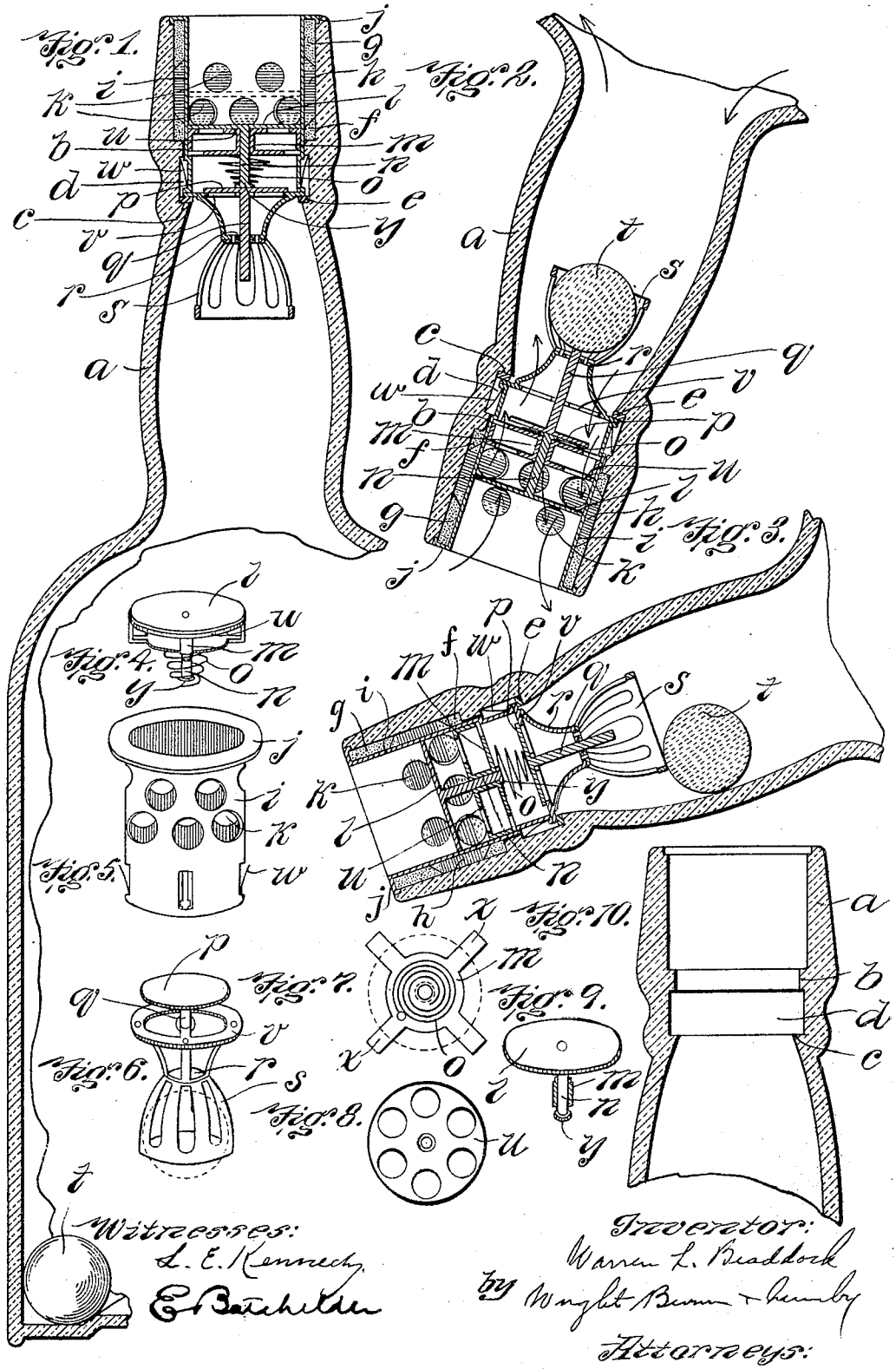
No. 804,924. PATENTED NOV. 21, 1905.

W. L. BRADDOCK.

NON-REFILLABLE BOTTLE.

APPLICATION FILED SEPT. 13, 1904.



UNITED STATES PATENT OFFICE.

WARREN L. BRADDOCK, OF TOGUS, MAINE, ASSIGNOR OF ONE-HALF TO HARRIS B. MITCHELL, OF MALDEN, MASSACHUSETTS.

NON-REFILLABLE BOTTLE.

No. 804,924. Specification of Letters Patent. Patented Nov. 21, 1905.

Application filed September 13, 1904. Serial No. 224,286.

To all whom it may concern:

Be it known that I, WARREN L. BRADDOCK, of Togus, in the county of Kennebec and State of Maine, 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, and has for its object to provide a bottle of this character having valves which normally remain in closed position and having a device contained in the bottle independently of the valves for opening the latter when the bottle is turned up for the purpose of emptying it in the usual way and in which the objectionable results due to expansion and contraction of the valves and valve-casing may be avoided, all without requiring any change in the external shape or appearance of the bottle or any substantial change in its construction and without objectionably retarding the discharge of liquid therefrom when the bottle is being emptied.

The invention consists in the novel features hereinafter described and claimed.

In the drawings, Figure 1 represents a longitudinal section of a portion of a bottle having applied thereto an attachment for preventing its refilling embodying my invention. Fig. 2 represents a similar view of the bottle-neck inverted, showing the parts of the attachment in position to permit discharge of the contents of the bottle. Fig. 3 represents a view showing the bottle-neck in an approximately horizontal position. Figs. 4, 5, 6, 7, 8, and 9 represent views showing in detail parts of the antirefilling attachment. Fig. 10 represents a longitudinal sectional view of a bottle-neck adapted to receive the attachment embodying my invention.

The same reference characters indicate the same parts in all the figures.

In the neck *a* of the bottle shown in the drawings are formed annular shoulders *b* and *c*, which are separated by a groove *d*. A cork packing-ring *e* is placed on the shoulder *c*, and upon this the base of a lower valve-seat and a tubular valve-casing *i* are set. The valve-casing is smaller in diameter than the internal diameter of the shoulder *b*, and above said shoulder in a space left between the casing and the neck of the bottle are placed cork jackets *f* and *g*, the lower jacket *f* resting on the shoulder *b* and the other jacket being near the top of the bottle-neck and held in place by a flange *j*, formed on the valve-casing, an annular space *h* being left between the jackets. In the side walls of the tubular casing are formed a plurality of holes *k*, which are located to open into the annular space and constitute passages communicating with said space. Below the lower edge of the space *h* a tubular perforated plate *u*, which forms a seat for an upper valve *l*, is set into the casing. A stem *n* is connected to the lower side of the valve *l* and extends through a guide *m*, which is attached to the plate *u*. The stem *n* is considerably longer than the guideway *m* and has formed on its end a flanged head *y*. This valve is held against its seat by gravity, and when the bottle is inverted and the stopper removed is adapted to separate from its seat under the influence of gravity until the head *y* of the stem rests against the lower limit of the guide *m*. The stem is of such length that when the head *y* rests against the end of the guide the valve will occupy a position approximately midway between the jackets *f* and *g*.

The valve *l* is of approximately the same diameter as the interior of the casing, and therefore practically fills the casing, so that a wire or other instrument cannot be inserted to open the lower valve. The bottom of the valve-casing *i* rests upon an annular disk *v*, which is pressed against the packing-ring and constitutes a seat for a lower disk valve *p*, which is normally held against the seat by a conical spiral spring *o*, connected to the lower portion of the guide member *m* and bearing on the upper side of the valve. A stem *q* is connected to the valve and extends downwardly through the guide *r*, connected to the seat *v*. To the lower portion of the guide *r* and surrounding the stem *q* is attached an inverted-cup member *s*, the edges of the cup being separated somewhat from the sides of the bottle-neck.

A weight *t*, which is preferably a ball of glass or other material which will not injuriously affect the contents of the bottle, is contained in the bottle. Spring-tongues *w* are connected to the lower portion of the valve-casing and are adapted when the valve-casing is inserted into the neck of the bottle to spring outwardly and engage the under side of the shoulder *b*, thus preventing the removal of the casing from the bottle and holding the casing in tight engagement with the disk *v* and the latter against the packing-ring. When

the liquid contained in the bottle is to be poured out, the bottle is tipped until the weight *t* can roll into the cup *s* and engage the stem *q*, the weight being heavy enough to compress the spring *o* and force the valve *p* from its seat, allowing the liquid to flow between the seat and the valve to the upper valve *l*, which is opened by the action of gravity and the weight of the liquid upon it, thus allowing the liquid to flow through the perforated plate *u*, which constitutes the upper valve-seat. As the valve *l* practically closes the opening of the bottle the liquid is caused to flow through the perforations *k* into the annular space *h* around the valve *l*, then back into the interior of the casing *i* and out through the mouth of the bottle.

By reason of the cup *s* being located as described with its edges separated from the sides of the neck of the bottle the weight *t* is unable to engage the stem *q* to open the lower valve until the bottle has been turned into a nearly-vertical position with the neck down, and the weight is caused to roll out of engagement with the stem *q* when the bottle is being righted before it has reached a horizontal position and while the neck is still downward, thus allowing the valve *p* to close under the influence of the spring *o*.

It will be seen that by this construction it is impossible to refill the bottle, since the inner valve will be closed when the bottle is in any position in which liquid could be caused to flow into the bottle, and the valve *l* will effectually prevent the insertion of any instrument or substance between the valve *p* and its seat for the purpose of holding the latter valve open when the bottle is upright. It will thus be seen that by my invention I have provided a device for preventing the refilling of bottles which is perfectly effective and is simple in construction and certain in operation.

Since the valve-casing is smaller in diameter than the neck of the bottle and does not come in contact with the glass, but is held by the yielding cork jackets, the valve-casing, which is preferably of metal, and the glass of the bottle are enabled to expand and contract on account of differences of temperature without liability of injury to either. I have thus been able to cure one of the defects which previously constituted one of the most serious objections to this class of devices.

The bottle may be closed or sealed in the usual way by inserting a stopper in the opening in the upper part of the casing above the valves.

I claim—

1. A non-refillable bottle having a valve-casing, a plurality of valves seated therein, one of said valves being of substantially the same diameter as the interior of the casing, the valve-casing being provided with passages arranged to permit liquid to flow out of said casing and around said valve, and a weight adapted to engage and open another of said valves when the bottle is inverted.

2. A non-refillable bottle having located in its neck a valve-seat, a valve adapted to close on said seat, a weight adapted to engage a portion of said valve to open the valve when the bottle is inverted, means for rendering the weight inoperative except when the bottle is inclined with the neck extending downwardly, and an auxiliary valve of substantially equal width with the opening into the bottle.

3. A non-refillable bottle having located in its neck a valve-seat, a valve adapted to close on said seat, a weight adapted to engage a portion of said valve to open the valve when the bottle is inverted, means for normally holding said valve against its seat, means for rendering the weight inoperative except when the bottle is inclined with the neck extending downwardly, and an auxiliary valve substantially coextensive with the opening into the bottle.

4. A non-refillable bottle having a casing inserted in its neck provided with perforations, the bottle-neck being provided with an annular space surrounding the casing adjacent said perforations, a seat in said casing located below said annular space when the bottle is upright, a valve of substantially the same diameter as the interior of the casing normally closed against said seat and adapted to separate from said seat and occupy a position between the limits of said annular space on inversion of the bottle, a second valve-seat, a second valve normally held by yielding means against said second seat, and means rendered operative by inverting the bottle for opening said second valve.

5. A non-refillable bottle having located in its neck a valve-seat, a valve adapted to close against said seat, yielding means for holding said valve against said seat, a guide connected to said valve-seat, a stem connected to said valve extending through said guide, an inverted stationary cup having flaring sides surrounding said stem and separated from the sides of the bottle-neck rigidly mounted on said guide, and a weight adapted to enter said cup and engage said stem when the bottle is inverted, to open said valve.

6. An antirefilling attachment for bottles comprising a tubular casing having perforated sides, a member comprising a perforated valve-seat and a guide mounted in said casing, a valve substantially of the same diameter as the interior of the casing adapted to close on said seat and having a stem extending through said guide, a second valve-seat, a guide connected thereto, a second valve having a stem mounted in said last-named guide, yielding means for holding said second valve against said seat, and an inverted cup connected to said guide and surrounding said stem.

7. A non-refillable bottle having located adjacent its outlet a valve-seat, a valve, yielding

means tending to retain the valve in contact with the seat, a stem connected to the valve extending downwardly therefrom, the bottle having an unobstructed passage from its body portion to the portion in which said valve-stem is located, a weight contained within the bottle and free to move into all parts thereof, and a stationary guard arranged to prevent the weight coming into engagement with the stem until the bottle has been turned to occupy a position in which the outlet is below the body portion of the bottle.

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

WARREN L. BRADDOCK.

Witnesses:

CHARLES B. CHOLLAR,

PERCY HANSON.