

UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 724,992, dated April 7, 1903.

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To all whom it may concern:

Be it known that I, JOHN B. CONGER, 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.

My invention relates to a non-refillable bottle; and one of the objects of the invention is to form the non-refilling mechanism in a plurality of parts which are fitted and secured in the bottle-neck.

It also relates to the novel form of valve employed and various details of construction of the non-refilling mechanism.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The invention is susceptible to various changes in the form, proportion, and minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a vertical central section through a portion of a bottle equipped with my non-refilling mechanism. Fig. 2 is a detached top plan view of the lower valve part. Fig. 3 is a detached bottom view of the lower intermediate part. Fig. 4 is a detached top view of the upper intermediate part. Fig. 5 is a detached bottom view of the upper intermediate part. Fig. 6 is a detached top view of the top part. Fig. 7 is a detached side view of the top part. Fig. 8 is a detached bottom view of the top part. Fig. 9 is a section on line *a a*, Fig. 2. Fig. 10 is an enlarged detached section through the valve, the ball, and the covering of the connecting rod or stem. Fig. 11 is a section on line *b b*, Fig. 6. Fig. 12 is a section on line *c c*, Fig. 3. Fig. 13 is a section on line *d d*, Fig. 4. Fig. 14 is a fragment of the stem and wire.

In referring to the drawings in detail like numerals designate like parts.

The bottle 1 is usually formed of glass and has a neck 2, which is provided with a central opening 3, the lower end of which is tapered, substantially as shown in Fig. 1.

The non-refilling mechanism is preferably formed in sections or parts, usually four, so that it may be easily and cheaply manufactured. These parts, as shown in my preferred construction, comprise a lower or valve part 4, which is adapted to seat in the lower end of the bottle-neck and has its circular exterior surface tapered to correspond to the tapered lower end of the opening in the bottle-neck, two intermediate parts 5 and 6, and a top part 7. The valve part 4 is formed substantially as shown in Figs. 1 and 2 and has a central bottom depression 8 and a central vertical opening 9. A wall 10 is formed at the lower end of the opening 9 and separates the depression 8 from the opening 9. This wall is provided with a central opening 11, affording communication between the depression 8 and opening 9, and a plurality of apertures 12, arranged in a circle around the opening 11 and extending from the opening 9 to the depression 8. The top of the valve part 4 is ground to form a valve-seat and has an annular groove 13 surrounding the opening 9. (See Fig. 2.)

The valve 14 is of a truncated-cone form, having a flat bottom surface, which normally fits upon the top of the valve part 4 to close the valve, a beveled side, and a flat top surface. A stem or rod 15 is secured at one end to the valve 14 and at the opposite end to a ball 16. The valve 14 is usually made of metal and coated with agate, glass, or similar material, although it may be made wholly of glass or other material, and the rod 15 may be formed of metal and coated in a similar manner. The ball 16 is preferably formed of glass and is usually secured to the stem by inserting the end of the stem in a depression in the ball and securing it in place with suitable cement. In securing the valve in place in the valve part 4 the stem 15 is passed through the opening in the valve part and the ball 16 is secured to the stem, as before described. The valve is sufficiently heavy to lift the ball when the bottle is turned into the position shown in dotted lines in Fig. 1, and thereby free itself from the seat and permit the liquid to flow from the bottle.

The lower intermediate part 5 is of a ring form, having a central tapering opening 17,

against the wall of which the beveled side of the valve rests when in open position. The opening 17 is in the form of a frustum of a cone, the walls of which converge in a lesser degree than the sides of the truncated-cone valve and of larger area than the truncated-cone valve, so that said valve will fit loosely within said opening. The valve in the opening turns, with its lower edge against the top of the bottom part and the lower portion of the converging walls of the opening 17, from the position shown in full lines in Fig. 1 to the position shown in dotted lines in said Fig. 1, in which its beveled side walls abut against the converging walls of the opening 17 for a portion of its circumference, and thus limit its opening movement.

The upper intermediate part 6 rests upon the lower intermediate part and has a central opening 18 and a series of vertical grooves 19 arranged around its periphery, substantially as shown in Figs. 4 and 5.

The top part 7 has a substantially central semispherical depression 20 and a series of vertical grooves 21 arranged around its periphery. (See Figs. 1, 6, 7, and 8.) The ribs or extensions 22 separating these grooves are beveled or pointed at their lower ends to provide more space for the passage of the liquid. (See Figs. 7 and 8.)

The rod or stem 15 is provided with an eye 23, which extends above the upper surface of the valve, and the lower end of a wire 24, which passes through the openings in the several parts of the non-refilling mechanism, is detachably secured to said eye and serves to hold the valve in open position when the bottle is originally filled. After the bottle is filled the wire is pulled from the eye to release the valve and permit it to close.

In assembling the non-refilling mechanism the several parts are fitted in their proper position in the bottle and the upper portion of the neck is reduced in any well-known manner to securely lock them in place.

It will be noticed by referring to Fig. 1 that the grooves 21 gradually deepen at the top to allow sufficient space for the outflow of liquid.

While these several parts are preferably made of glass, they may be formed of any other material suitable for the purpose.

In operation the cone-valve turns from one position to another on its lower peripheral edge which fits between the surface of the valve-seat and the tapering wall of the opening 7. In this way the cone-valve has a pivotal action or movement in opening or closing instead of a sliding action or movement and is therefore more sensitive. Another advantage is that the bottle only has to be tipped to a certain point and the valve will instantly swing open or close past the point.

The object of the rod 15 and ball 16 is to counterbalance the cone-valve sufficiently, so that it will turn on its edge instead of sliding on the surface of the wall.

I claim as my invention—

1. A bottle provided with non-refillable mechanism having a valve-seat member, a truncated-cone-valve member upon said valve-seat member having a counterbalancing part and a valve-restricting member provided with an opening in the form of a frustum of a cone loosely surrounding the truncated-cone-valve member; the cone-valve being adapted to turn on its peripheral edge in operating, substantially as described.

2. A non-refillable bottle having a neck and non-refilling mechanism in said neck composed of a lower valve-section having a valve-seat and an opening, a flat disk valve having beveled sides or of truncated-cone formation above said seat having a balancing-stem extending through the opening in the lower valve-section, and a section immediately above the valve having a central tapering opening loosely surrounding the valve; the walls of the opening converging in a lesser degree than the walls of the valve parts; the valve being adapted to turn on its lower peripheral edge from one position to another, substantially as set forth.

3. A non-refillable bottle having a neck, a non-refilling mechanism in said neck having an annular valve-seat, and a tapering opening above the valve-seat and a truncated-cone valve having a depending counterweight portion extending through the annular valve-seat; said cone-valve being adapted to turn from one position to another on its lower peripheral edge, substantially as set forth.

4. A non-refillable bottle having a neck provided with an opening having a reduced lower end and non-refilling mechanism composed of a lower valve-section having a valve-seat, a central opening, and a plurality of apertures around said central opening, a valve arranged above said seat, a lower intermediate section of ring formation having a central opening, an upper intermediate section having a central opening and a series of vertical peripheral grooves and a top section having a series of vertical peripheral grooves.

5. A non-refillable bottle having a neck provided with an opening having a reduced lower end and non-refilling mechanism composed of a lower valve-section having a valve-seat, a central opening and a plurality of apertures around said central opening, a valve of truncated-cone formation above said seat having a stem extending through the lower valve-section and a ball at the lower end of said stem, a lower intermediate section of ring formation having a central opening, an upper intermediate section having a central opening and a series of vertical peripheral grooves and a top section having a series of vertical peripheral grooves.

6. A bottle provided with non-refillable mechanism having a valve-seat member, a truncated-cone-valve member having a flat bottom surface adapted to seat upon said

valve-seat member and having a counterbal-
ancing part and a valve-restricting member
provided with an opening in the form of a
frustum of a cone loosely surrounding the
5 truncated-cone-valve member; the cone-valve
being adapted to turn on its peripheral edge
in operating, substantially as described.

7. A bottle provided with non - refillable
mechanism having an annular valve - seat
10 member, a truncated - cone - valve member
adapted to seat upon said valve-seat member
and having a counterbalancing part passing

through the annular valve-seat member and
a valve-restricting member provided with an
opening in the form of a frustum of a cone 15
loosely surrounding the truncated-cone-valve
member; the cone-valve turning on its pe-
ripheral edge in operating, substantially as de-
scribed.

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Witnesses:

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