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Patented Mar. 8, 1910.



Witnesses

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Attorneys.

UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

951,424.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed June 15, 1909. Serial No. 502,237.

To all whom it may concern:

Be it known that I, LEO J. LOEFFELMAN, subject of the Emperor of Austria-Hungary, residing at St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention has for its object a simple, and efficient construction of non-refillable bottle, the parts of which are so arranged that the bottle may be easily filled with its original contents, and may be easily emptied, while at the same time the construction and arrangement of parts will positively prevent the re-filling of the bottle.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists essentially in a bottle of this character provided with a valve which includes a piston arranged, as the bottle is tilted to force air into the body of the bottle so as to permit the liquid to flow easily out and unseat the main portion of the valve, and the invention also consists in certain constructions, and arrangements of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a longitudinal sectional view of a non-refillable bottle constructed in accordance with my invention; Fig. 2 is a similar view of the neck portion of the bottle, the section of Fig. 2 being taken substantially at right angles to the section of Fig. 1. Fig. 3 is a horizontal sectional view taken substantially on the line 3—3 of Fig. 1; Figs. 4 and 5 are similar views on the lines 4—4 and 5—5 respectively of Fig. 1; Fig. 6 is a top plan view of a bottom portion of the bottle; Fig. 7 is a diametrical section of the bottom portion of the bottle; and, Fig. 8 is a detail perspective view of a modified form of sleeve which is hereinafter specifically referred to.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

The body 1 and neck 2 of my improved non-refillable bottle may be of any desired shape, size, or design and construction except as hereinafter noted, although prefer-

ably the neck 2 is provided at its outer end with an outlet or discharge nozzle 3. The neck 2 is formed, preferably at its juncture with the nozzle 3, with an annular groove 4 in which fits the annular portion 5 of a crown or baffle element 6. The crown 6 is provided with a depending tubular portion 7 which is preferably longitudinally corrugated on its inner wall as indicated at 8 and which is provided on its outer wall with upper and lower beads or projections designated 9 and 10 respectively. The crown 6 is formed with segmental discharge slots or passages 11 and with recesses 12 in its upper end, the said recesses serving as deflectors to assist in preventing a wire or the like inserted into the mouth and neck of the bottle from reaching the valve and holding the same off its seat in an attempt to refill the bottle.

13 designates the main portion of the valve. This part is substantially cylindrical and tubular as shown with a closed lower end and an open upper end and is provided intermediate of its ends with a head or enlarged portion 14 adapted to fit upon the valve seat 15 which is formed by the inwardly extending crimp or contracted portion at the base of the neck 2. A gasket 16 of rubber or the like is preferably interposed between the head of the valve and the valve seat so as to secure a tight joint. As best seen in Figs. 1, and 5, the head 14 of the valve is formed with vertically disposed openings 17 extending therethrough and with a radially disposed and obliquely extending opening 18 leading from the exterior of the head into the tubular body portion of the valve.

19 designates a sleeve of rubber or the like which encircles the body portion 13 of the valve above the head 14 thereof, the upper end of said sleeve being secured over the projection 10 of the crown 6, while the lower end of the sleeve is secured to a bead which is formed on the upper edge of the head 14. An expansion spring 20 of metal or the like is mounted on the tubular body portion 13 and exerts its tension to hold the valve on its seat; or in lieu of a metal helical spring, it is to be understood that I may use a rubber spring such as that illustrated in Fig. 8, and designated 21. A piston 22 fits within the cylindrical body portion 13 of the valve and is preferably in the form of a spool, a

sleeve 23 encircling the body portion of the spool between the end flanges thereof and serving to hold the piston in an air and water tight manner in the body portion 13, while at the same time permitting said piston to have a free movement longitudinally of the valve.

In describing the practical operation of my improved bottle, it is to be understood that the spring holds the valve on its seat with a tension which can not be overcome by the weight of the liquid in the body portion of the bottle (the bottle being either partly or entirely filled) hence I provide the piston 22 which is adapted to move in the body portion 13 of the valve and will thus force air from said body portion out through the corrugations 8 of the crown 6 and through the passages 17 into the body portion of the bottle, thereby supplying air to the interior of the bottle and permitting the weight of the contents to unseat the valve and flow out around the same and through the slots 11 and nozzle 3. Manifestly the opening 18 admits air into the interior of the tubular body portion 13 of the valve when the piston 22 moves outwardly therein.

From the foregoing description in connection with the accompanying drawing, it will be seen that I have provided a very simple and effective arrangement of the parts whereby air is pumped into the body portion of the bottle so that the valve may be unseated.

In order to fill the bottle with its original contents, I have provided the following parts; the body 1 is provided in its lower end with an opening 24 and with diametrically opposed recesses 25 communicating with said opening, and a stopper 26 adapted to be inserted through said opening, and which is formed with an annular flange adapted to fit around the walls of the opening on the outside thereof, the said stopper being provided on its inner side with oppositely extending arms 28 preferably beveled as indicated at 29 and adapted to be passed through the recesses 25 so that by giving the stopper a quarter turn, the arms may be locked into engagement with the bottom of the bottle and securely hold the stopper in place. Preferably the stopper is provided with a many sided knob 30 which projects from its outer face so that a wrench or similar tool may be applied to the stopper and lock the same in position, after which the knob may be easily broken off to prevent the subsequent detachment of the stopper.

The crown 6 is of course secured in the neck of the bottle during the process of manufacture, but the other parts may be easily inserted through the bottom opening 24, and secured in their proper positions be-

fore the stopper 26 is applied, as all of the parts are of such diameter that they may be passed into the bottle neck, the gasket or washer 16 being the last element to be applied.

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

1. A non-refillable bottle provided with an interior valve seat, a valve arranged to be held on said seat, and means embodied in the valve for positively forcing air into the body of the bottle when the latter is tilted to pour out the contents.

2. A non-refillable bottle provided with an interior valve seat, a valve arranged to be held on said seat, and a piston mounted in said valve and arranged to positively force air into the body portion of the bottle when the same is tilted to pour out the contents.

3. A non-refillable bottle provided with an interior valve seat, a tubular valve adapted to rest on said seat, and a piston mounted to slide in said valve and arranged to positively force air into the body portion of the bottle when the latter is tilted to pour out the contents.

4. A non-refillable bottle provided with an interior valve seat, a valve adapted to fit on said seat and provided with a head having openings extending therethrough, a crown secured in the neck of the bottle above the valve and in which the upper end of the valve loosely fits, and a piston mounted in said valve and arranged to force air from the interior of the valve through said openings into the body portion of the bottle when the latter is tilted to pour out the contents.

5. A non-refillable bottle provided with an interior valve seat, a valve provided with a head adapted to rest on said seat, said head being formed with openings extending there-through from top to bottom and with an opening extending from the exterior of the head to the interior of the valve, and a piston mounted in said valve and arranged to force the air therefrom through the inlet opening into the body portion of the bottle.

6. A non-refillable bottle provided with an interior valve seat, a valve formed with a head adapted to rest on said seat, said head being formed with openings extending there-through from top to bottom and with an opening extending from the exterior of the head into the interior of the valve, a crown held within the neck of the bottle and in which the upper end of the valve is adapted to fit, a sleeve connecting the head of the valve to the crown, a piston mounted to move in said valve, and a spring arranged to hold the valve on the valve seat.

7. A non-refillable bottle provided with an interior valve seat, a tubular valve provided with a closed lower end and an open upper end and formed intermediate of its ends with a head adapted to fit on said seat, the head

being formed with openings extending there-
through from top to bottom, and with
another opening leading from the exterior
of the head into the interior of the valve, a
5 crown secured in the neck of the bottle and
formed with an inwardly extending tubular
portion fitting over the open outer end of
the valve, the inner wall of tubular portion
being corrugated, a flexible sleeve connecting
10 such tubular portion to the head of the valve,
and a spring mounted on said sleeve and
adapted to hold the valve on its seat.

8. A non-refillable bottle provided with an
interior valve seat a tubular valve adapted
15 to fit on said seat, a crown secured in the
neck of said bottle and formed with a de-
pending tubular portion in which the outer
end of the valve fits, said sleeve arranged to

hold the valve on its seat, and a piston
mounted in said valve, the valve being 20
formed with openings leading from the ex-
terior of the sleeve to the interior of the
body portion of the bottle.

9. A non-refillable bottle provided with an
interior valve seat, a valve arranged to be 25
held on said seat upon the tilting of the
bottle, and means for positively forcing air
into the body portion of the bottle when the
latter is tilted to pour out its contents.

In testimony whereof I affix my signature 30
in presence of two witnesses.

LEO J. LOEFFELMAN. [L. s.]

Witnesses:

JOHN SORES,

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