W. W. CLARK.

NON-REFILLABLE BOTTLE.

APPLICATION FILED FEB. 21, 1910.

1,011,580. **Patented Dec. 12, 1911.**

Fig. 1

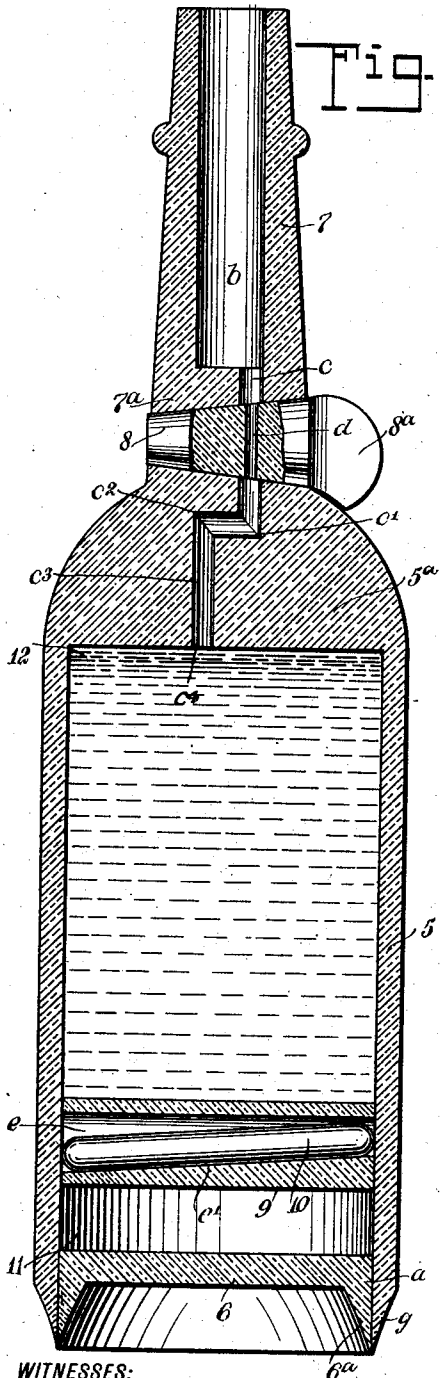


Fig. 2

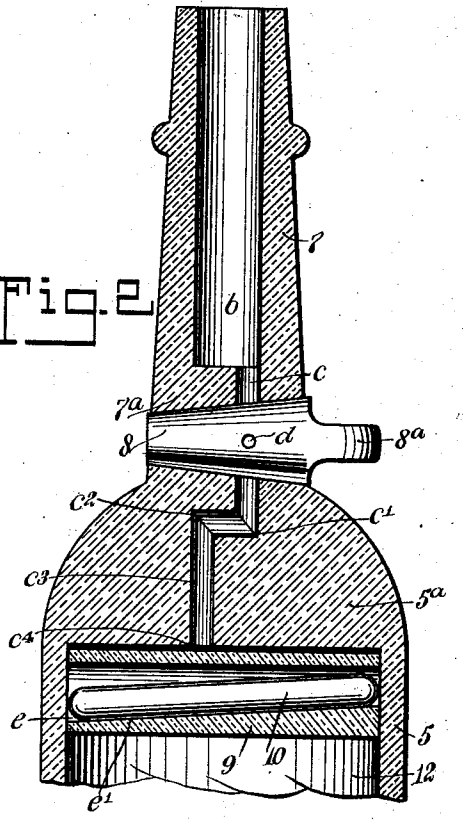
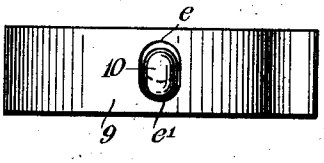


Fig. 3



WITNESSES:

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NON-REFILLABLE BOTTLE.

1,011,580. Specification of Letters Patent. Patented Dec. 12, 1911.

Application filed February 21, 1910. Serial No. 545,052.

To all whom it may concern:

Be it known that I, WILLIAM WHITE CLARK, a citizen of the United States, and a resident of Covington, in the county of Newton and State of Georgia, have invented a new and Improved Non-Refillable Bottle, of which the following is a full, clear, and exact description.

This invention relates to a class of liquid packages designed to prevent the refilling of the vessel after the original contents have been decanted.

The purpose of this improvement is to provide novel features of construction for a device of the character indicated, which will positively seal the bottle against applied pressure in case an attempt is made to refill the same by use of a force pump.

The invention consists in the novel construction and combination of parts, as is hereinafter described and defined in the appended claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a longitudinal sectional view of the improved non-refillable bottle, showing the same filled with liquid; Fig. 2 is a longitudinal sectional view showing the bottle emptied, and parts adjusted to seal the inlet to the bottle against the introduction of liquid; and Fig. 3 is a side view of a sealing valve forming a detail of the invention.

The body 5 of the bottle is preferably given cylindrical form, molded or blown from glass, the interior wall thereof being a true bore open at the lower end, wherein is closely fitted a preferably flat bottom 6 also formed of glass having a true peripheral wall a from which downwardly extends a tapered flange 6^a, as shown in Fig. 1.

The upper portion of the body 5 is contracted and thickened as at 5^a, forming a thick top wall from which the neck 7 of the bottle integrally projects, the lower portion 7^a of said neck being a solid extension of the body portion 5^a. Above the neck portion 7^a, the neck 7 is centrally bored as at b, said bore having sufficient dimensions to provide a liquid receiving compartment, that will also serve as a discharge passage for the outflow of liquid contained in the body 5, as will be hereinafter fully explained.

From the bottom wall of the receiving compartment b adjacent to the side wall of said compartment, a passage c, of less diameter than the bore b, is downwardly extended in the neck portion 7^a and body portion 5^a to a point c', where said passage is laterally extended to a point c^2, from which said passage is further extended downward as at c^3, to c^4, where it intersects the bore of the body 5 as shown in the drawings.

Transversely in the neck portion 7^a a tapered opening is formed that crosses the passage c, said opening being closed by a tapering plug valve 8, that is provided with a thumb piece 8^a on its larger end, for its manual rotation. In the plug valve body 8 a transverse passage d is formed, that is axially alined with the passage c, having less diameter than said passage, as is clearly shown in Figs. 1 and 2.

A disk valve 9, is fitted slidably but air tight within the cylindrical bore of the body 5, and transversely therein a slot e is formed, said slot having an inclined bottom wall e' and a horizontal top wall, thus rendering said slot tapering or wider at one end than the other, as is clearly shown in Figs. 1 and 3. A cylindrical locking rod or bar 10, is loosely fitted within the slot e, and at its ends has contact with the bore of the body 5 when at rest or lying on the inclined bottom wall e'.

The bottle is designed to receive and hold liquids of any density. When the bottle is in course of construction, the disk valve 9 is positioned in the bottle at the place ascribed to it in Fig. 1. The compartment 11 below the disk valve 9 is filled with compressed air after the compartment 12 above the disk valve 9 has been filled with compressed air. This precaution is taken so that the disk valve 9 will not slide up in the bottle when the compartment 11 is being filled with compressed air. The bottom 6 is then inserted within the lower end of the bottle body 5. The air pressure in the compartment 11 is easily sufficient to lift the combined weight of the disk valve 9 and a volume of the heaviest known liquid substance, which is equal in size to the volume of the compartment 12. The air pressure in the compartment 12 is made sufficient to counterbalance the force exerted in the compartment 11. As before mentioned, the depending flange 6^a on the bottom 6 is tapered, and to facilitate the attachment of the bottom to the lower edge of the bottle

body, said edge portion g is similarly tapered.

When the bottle is empty and is to be filled with liquid, the disk valve 9 is positioned about an inch from the bottom of the bottle (as shown in Fig. 1) and by suitable means the bottom 6 is secured within the lower edge of the body 5, preferably by fusing the lower edge of the flange 6^a and tapered edge g together. The disk valve 9 is held in this position by the counter-balancing pressures in the compartments 11 and 12 of the bottle. To fill the bottle with liquid, the plug valve 8 is closed, and the bore b in the neck 7 is filled with some of the liquid that is to be placed in the bottle. The operator now closes the open upper end of the neck 7 by pressing the palm of one hand forcibly down upon the mouth of the bore b, thus rendering said bore air-tight, and then turns the valve 8, to cause the passage d in said valve to register with the passage c and the continuation thereof through the body of the bottle. This is done so that the compressed air will not escape from the body of the bottle faster than the rate at which the liquid flows into the bottle, for in case the escape of such air is at a rate faster than the inward flow of the liquid, the disk valve 9 will rise and close the bottle before the latter is filled. The liquid in the bore b then descends through the passage c, the passage d in the valve 8 and the continuation of the passage c into the body of the bottle above the disk valve 9. As this takes place, the compressed air in the body of the bottle ascends by the same course and takes the place of the liquid as the latter leaves the bore b. The operator then removes his hand from the mouth of the bore b, and the operation above described is then repeated until the bottle is filled with the liquid.

Throughout the operation, although the compressed air is gradually diminished, its pressure remains the same, since the space which the air occupies is diminished in proportion by the inflowing liquid. The air below the disk valve 9 is compressed air, not simply compressed by the weight of the disk valve 9 and of the liquid above it, and the air contained in the body of the bottle above the disk valve 9 is also compressed air, to offset the pressure below the said valve.

It will be seen that as the liquid is decanted through the plug valve and bore b in the neck 7, the disk valve will rise, and when the contents of the bottle are completely removed the disk valve 9 will remain pressed by the air below it, so as to seal the lower end c^4 of the passage c (as shown in full lines in Fig. 2) and thus prevent the re-filling of the bottle. And it also will be apparent that the offset bends in the passage c will prevent the introduction of a wire or the like for holding the disk valve 9 open, so as to refill the bottle. When the bottle is filled, the open upper end of the bore b will be provided with a suitable closure, which will complete the filled bottle as an original liquid package.

As long as the disk valve 9 ascends, the rod 10 rests on the inclined bottom wall e' of the slot e, but the moment the disk valve starts to descend (when in any position in the bottle body), the upper wall of the slot e bears on the rod 10 and the latter is wedged within the bottle body, since the upper wall of the slot e is horizontal and the body of the round rod 10 is too long for said rod to assume a horizontal position within the bottle body, or in other words, the pressure will tend to cause the rod 10 to lie horizontally, but as said rod is too long for it to so lie, it will wedge itself in the bottle body.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination with a vessel, of a disk valve in the vessel and provided with a horizontal passage extending through it, and a member loosely held in the passage of the valve and permitting the free ascent of the valve but preventing its descent.

2. In a device of the character described, the combination with the cylindrical body having a true bore, of a disk valve slidably fitted in the said bore, said valve having a transverse horizontal passage therethrough and a freely movable locking rod in the said passage.

3. The combination with a vessel, of a disk valve movable in the vessel and provided with a transverse passage having one of its walls inclined, and an elongated member freely movable in the passage.

4. The combination with a vessel, of a disk valve movable in the vessel and provided with a horizontal passage having a horizontal top wall and an inclined bottom wall, and a rod in the passage of the valve and of a length greater than the diameter of said valve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM WHITE CLARK.

Witnesses:
W. H. JOHNSON,
C. J. RODEN.