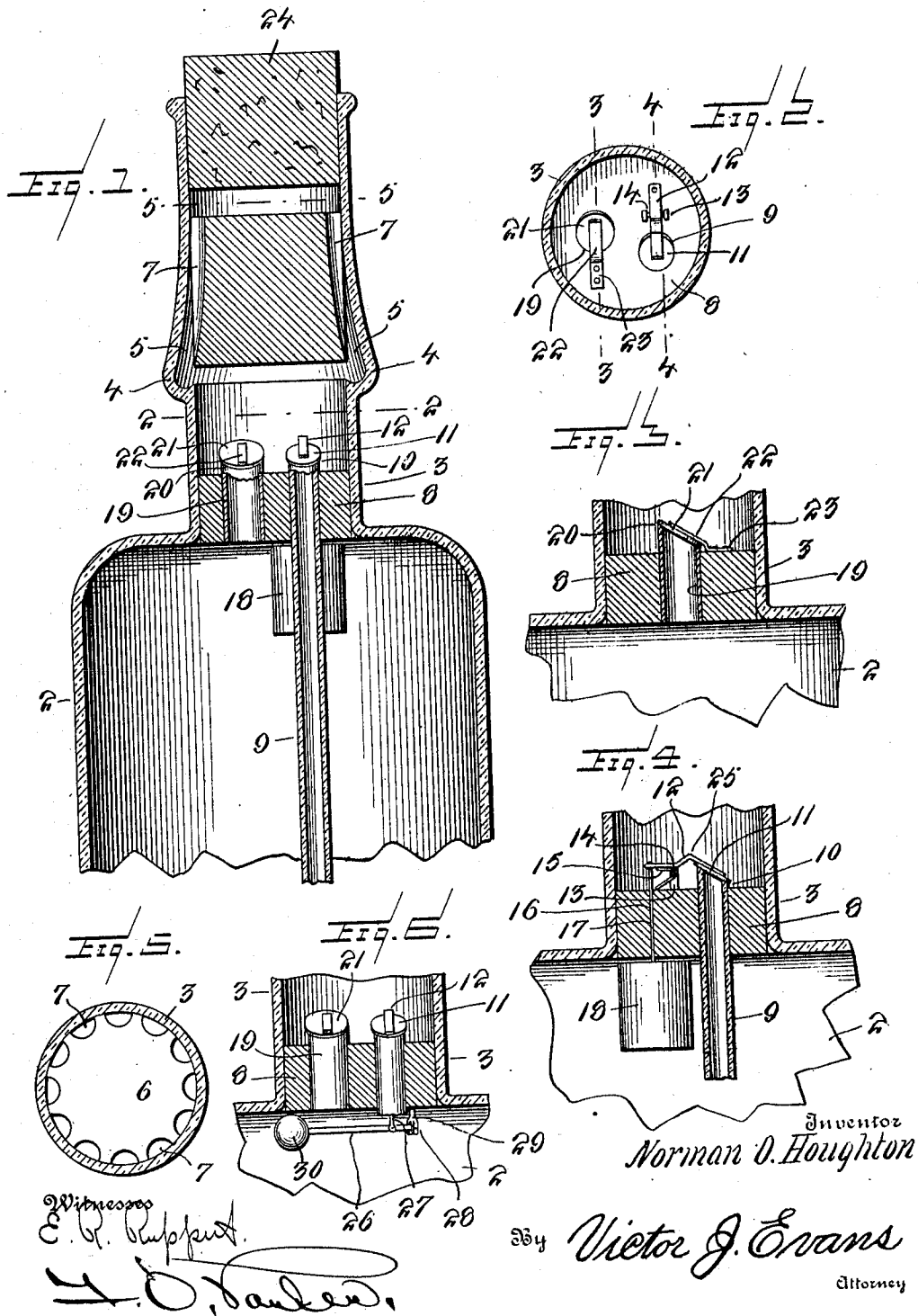


N. O. HOUGHTON.
NON-REFILLABLE BOTTLE.
APPLICATION FILED JULY 18, 1910.

Patented Apr. 4, 1911.

988,781.



UNITED STATES PATENT OFFICE.

NORMAN O. HOUGHTON, OF WASHINGTON, DISTRICT OF COLUMBIA.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NORMAN O. HOUGHTON, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

The invention relates to a bottle, and more particularly to the class of non-refillable bottles.

The primary object of the invention is the provision of a bottle of this character in which air is admitted to the interior of the bottle, whereby the liquid contents therein may be freely dispensed therefrom, the air inlet being controlled by a valve mechanism operated by said contents on the tilting of the bottle for the opening thereof to allow the egress of the liquid from the bottle.

Another object of the invention is the provision of a bottle of this character in which the neck thereof has permanently arranged therein independent liquid dispensing and air intake passages, both of which being controlled by valve mechanism, whereby on the tilting of the bottle the valve mechanism will be operated for dispensing the liquid therefrom under the action of the gravitation of liquid within the bottle, thus permitting the liquid to easily dispense therefrom, but upon the emptying of such bottle, it will be impossible for a malicious or unscrupulous person to refill the same.

A further object of the invention is the provision of a bottle of this character in which liquid contents therein may be freely discharged therefrom, although after said contents has been emptied from the bottle, it will be impossible to again fill the same, without injuring or destroying the original usefulness of the bottle, thereby making it apparent that the said bottle has been molested or tampered with for fraudulent purposes.

In the drawings accompanying and forming a part of this application, is illustrated the preferred forms of embodiment of the invention, which, to enable those skilled in the art to carry the invention into practice, will be set forth at length in the following description, while the novelty of the invention will be pointed out in the claims hereunto appended.

It is of course to be understood that changes, variations and modifications may

be resorted to, as come properly within the scope of the claims, without departing from the spirit of the invention, or sacrificing any of the advantages thereof.

In the drawings: Figure 1 is a fragmentary vertical longitudinal sectional view through a bottle constructed in accordance with the invention. Fig. 2 is a sectional view on the line 2—2 of Fig. 1. Fig. 3 is a sectional view on the line 3—3 of Fig. 2. Fig. 4 is a sectional view on the line 4—4 of Fig. 2. Fig. 5 is a sectional view on the line 5—5 of Fig. 1. Fig. 6 is a vertical fragmentary longitudinal sectional view of a bottle, showing a slight modification of the invention.

Similar reference characters indicate corresponding parts throughout the several views of the drawings.

Referring to the drawings by numerals, 2 designates a portion of the body of a bottle of ordinary construction, preferably formed from glass having a neck 3, and at a substantial medial point thereof is provided an outwardly flared portion 4 forming an annular outwardly tapered space 5, in the inner surface of the bottle neck spaced from its mouth edge for a purpose, as will be hereinafter more fully described.

In the bottle neck 3 is suitably cemented or otherwise secured a guard plug or shield 6, the latter being preferably constructed of glass, although it may be constructed of any other material, if found desirable, and is provided on its peripheral side face with a series of corrugations forming discharge grooves or channels 7, the same being outwardly curved at their inner ends to open through the sides of the plug or core contiguous the bottom face thereof, and communicating with the space 5 in the bottle neck. It is of course to be understood that should this plug or core be constructed of material other than glass, its bottom will be reinforced by a suitable medium, thus preventing access to the interior of the body 2 of the bottle should a malicious person puncture the said plug or core, or otherwise mutilate the same.

Below the plug or core 6 and spaced a suitable distance therefrom within the bottle neck 3 is a supporting disk 8, preferably constructed from glass, although the same may be made from other suitable material, and mounted therein is the upper end of a vertically disposed air tube 9, the latter be-

ing extended within the body 2 of the bottle and terminates at its lower end spaced from the bottom thereof, the tube 9 being preferably constructed of glass, although it may be formed from other suitable material. The upper end portion of this tube 9 protrudes slightly above the upper face of the disk 8 and is provided with a beveled valve seat extremity 10, upon which normally rests a disk air valve 11, the latter being preferably constructed from cork and is fixed to one end of a rocking arm or lever 12, the latter being pivotally connected, spaced from its ends, to a vertical bearing 13 by means of a pivot pin 14, the bearing being fixed in the outer face of the disk 8. Coiled upon the pivot pin 14 is a spring member 15, the latter acting upon the lever 12 to normally maintain the disk valve 11 seated upon the beveled end 10 of the air tube 9 to close the same. Connected to the free end of the lever 12 is one end of a flexible cord, preferably a silk thread 16, the latter being passed through a suitable passage 17 in the disk 8 and has fixed to its opposite end a cork float 18, the latter being arranged contiguous to the inner face of the disk 8, so as to float upon the surface of the liquid contained within the body and be acted on thereby in a manner, as will be hereinafter more fully described.

Spaced from the air tube 9 and suitably mounted in the disk 8 is a vertical discharge or delivery tube 19, the lower end of which terminates flush with the inner face of the said disk and its opposite end is slightly protruded beyond the outer face of the latter. This protruded end of the liquid delivery tube 19 is provided with a beveled valve seat 20 upon which normally rests a disk valve 21, preferably constructed from cork, the latter being fixed to one end of a leaf spring 22, the same being suitably fixed, as at 23, to the outer face of the supporting disk 8, the spring serving to sustain the disk valve 21 in normal closing position to permit the said valve to open under the action of the liquid contents in the bottle when the latter has been tilted for dispensing such contents. In the mouth end of the bottle neck 3 is inserted an ordinary cork stopper 24 which may be readily extracted when it is desired to dispense the liquid contained within the body of the bottle.

It is obvious that the lever 12, at its end connected to the air valve 11, is outwardly and inwardly bent, as at 25, so as to insure the positive seating of the said valve 11 on the beveled valve seat 10 of the air tube 9, and also to permit the said disk valve 11 to move in an arcuate path a considerable distance away from its valve seat 10 on the rocking of the lever 12, thus obviating any possibility of the sticking of the valve 11 by reason of vacuum existing within the bottle during the dispensing of liquid therefrom.

In Fig. 6, there is shown a slight modification wherein the lever 12 supporting the air disk valve 11 is connected with a swinging arm 26 through the medium of a flexible cord, preferably silk thread 27, the arm being pivoted, as at 28, to a hanger or bracket 29 secured to the supporting disk 8 and depending from its inner face. To the free end of the arm 26 is connected a ball float 30, the same being normally held in close proximity to the inner face of the supporting disk 8. It will be obvious that by this arrangement there is little space occupied by the float 30, so that the bottle may be filled to its fullest capacity with the assurance of the positive working of the float by the contents of the bottle when tilting the same for dispensing the liquid therein.

When it is desired to dispense the liquid contents of the bottle, the cork stopper 24 is extracted from the bottle neck 3 and upon the tilting of the body of the bottle, the liquid therein will flow toward the bottle neck 3 and by reason of the float being buoyant upon the surface of the liquid, the flow thereof toward the bottle neck will move the said float, so as to pull upon the flexible cord 17, thereby rocking the lever 12 which will raise the air disk valve 11 from its seat 10 so that communication between the air tube 9 and the atmosphere is had for the ingress of atmospheric air within the body 2 of the bottle, thus enabling the liquid to freely flow through the discharge tube 19. The gravitation of the liquid will automatically open the valve 21 controlling the discharge tube 19, so that the said liquid will flow from the bottle neck 3 through the grooves or channels 11 in the plug or core 6 therein. This plug or core 6 is designed to prevent an unscrupulous or malicious person inserting any tool or instrument within the bottle neck for the unseating of the disk valves after the contents has been entirely dispensed from the bottle for the purpose of refilling the same.

What is claimed is:

1. In a bottle of the class described, a disk mounted at the inner end of its neck and having liquid delivery and air intake passages, valves normally closing said passages, a rocking arm pivotally connected with said disk and supporting the valve closing the intake passage, a float arranged within the bottle, and connecting means between the float and the said arm, whereby on the tilting of the bottle its contents will displace the float thus pulling on the connecting means for opening the valve controlling the intake passage.

2. In a bottle, a disk mounted at the inner end of its neck and having liquid delivery and air intake passages, spring controlled valves normally closing said passages, buoyant means arranged within the bottle, a rock-

ing member carried by said disk and supporting the valve controlling the intake passage, and means connecting the rocking member with the float whereby on the movement of the float the said member will be rocked for opening the valve carried thereby.

3. In a bottle, a disk mounted at the inner end of its neck and having liquid delivery and air intake passages, spring controlled valves normally closing said passages, buoyant means arranged within the bottle, a rocking member carried by said disk and supporting the valve controlling the intake passage, means connecting the rocking member with the float whereby on the movement of the float the said member will be rocked for opening the valve carried thereby, and a guard disposed within the bottle neck spaced from said disk and having liquid delivery passages offset with respect to said valves.

4. In a bottle of the class described, a disk mounted at the inner end of its neck and having liquid delivery and air intake passages, valves normally closing said passages, a rocking arm pivotally connected with said disk and supporting the valve closing the intake passage, a float arranged within the bottle, connecting means between the float and the said arm, whereby on the tilting of the bottle its contents will displace the float thus pulling on the connecting means for opening the valve controlling the intake passage, and a guard disposed within the bottle neck and having liquid delivery passages, its periphery being offset with respect to said valves.

5. The combination with the neck of a bottle, means within the neck having liquid

discharge and air intake passages communicating with the interior of such bottle, a valve normally closing the intake passage, a rocking arm pivotally mounted upon said means and supporting said valve, a spring controlled valve normally closing the discharge passage and automatically opened by the gravitation of the contents thereof against in such bottle on the tilting thereof, and a float having connection with said arm whereby on the gravitation of the contents thereagainst in such bottle the arm will be moved for opening the said valve supported thereby.

6. The combination with a bottle having a neck provided with a bulged portion spaced from its mouth edge, of a guard member inserted within the neck in proximity to the bulged portion and having discharge passages at its periphery communicating with the bulged portion, a member secured within the bottle neck spaced below said guard member and having liquid discharge and air intake passages, spring closed valves controlling said passages, a rocking arm connected with the valve controlling the intake passage, and a buoyant element depending within the body of the bottle and having connection with the arm whereby on the tilting of the bottle its contents will move the buoyant element for rocking the arm to raise the valve to open position controlling the intake passage.

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

NORMAN O. HOUGHTON.

Witnesses:

E. EDMONSTON, Jr.,
G. O. PARDEN.