

No. 860,475.

PATENTED JULY 16, 1907.

H. B. HOPSON.
NON-REFILLABLE BOTTLE.
APPLICATION FILED DEC. 22, 1906.

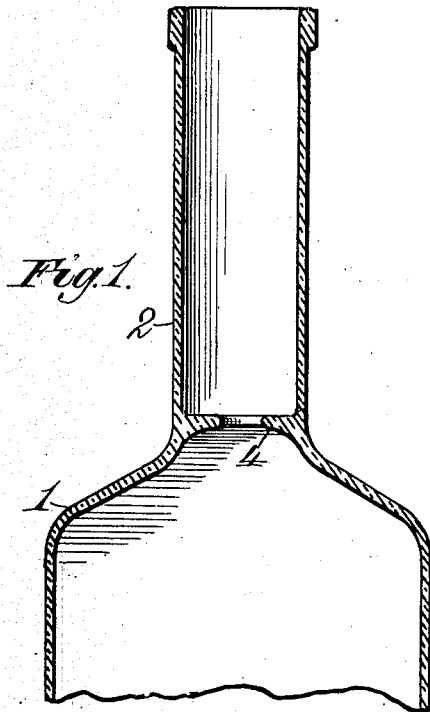


Fig. 2.

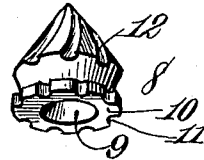


Fig. 3.



Fig. 4.

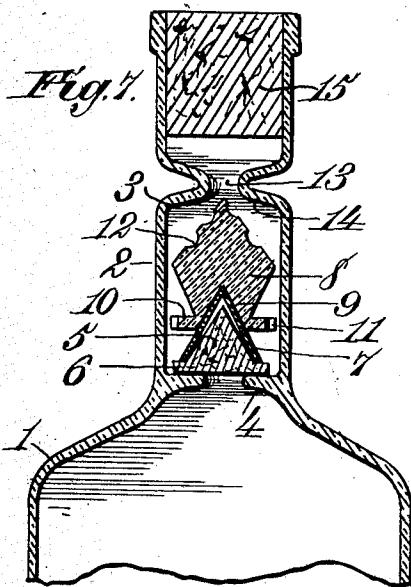
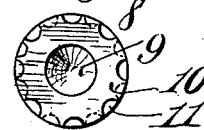


Fig. 5.



Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

No. 860,475.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed December 22, 1906. Serial No. 349,093.

To all whom it may concern:

Be it known that I, HARRY B. HOPSON, a citizen of the United States, residing at Macon, in the county of Bibb and State of Georgia, have invented 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 such class with means, in a manner as hereinafter set forth, to prevent the refilling of the bottle after the contents thereof has been discharged therefrom.

A further object of the invention is to provide a non-refillable bottle which shall be simple in its construction, strong, durable, efficient in its use, and comparatively inexpensive to manufacture.

With the foregoing and other objects in view, the invention consists in the novel construction, combination, and arrangements of parts hereinafter more specifically described and illustrated in the accompanying drawings, wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations, and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail, reference is had to the accompanying drawings, wherein like reference characters denote corresponding parts throughout the several views, and in which

Figure 1 is a vertical section of a portion of a bottle showing the construction of the bottle neck before the means to prevent the refilling of the bottle is mounted in the throat thereof. Fig. 2 is a perspective view of the combined interference and fluid director. Fig. 3 is a perspective view of the guide. Fig. 4 is a like view of the throat valve. Fig. 5 is a top plan of the combined interference and director. Fig. 6 is an inverted plan of the combined interference and director; and Fig. 7 is a vertical sectional view of a non-refillable bottle in accordance with this invention.

Referring to the drawings by reference characters, 1 denotes the body portion of the bottle which is broken away at one end, 2 the neck, 3 the throat, and 4 an inwardly extending annular ledge formed at the junction of the body portion with the neck, and which constitutes a valve seat.

Within the throat 3 of the bottle is positioned a float valve 5 conical in contour and having its lower end formed with an outwardly extending annular flange 6. The diameter of the lower portion of the float valve 5 is such as to enable the valve to shift within the neck. Arranged within the throat 3 of the bottle and positioned above the float valve 5 is a hollow valve guide 7 substantially conical in contour with the inner face thereof of a different angle than the periphery of the float valve 5. When the float valve 5 is in normal position, that is, engaging its seat 4, the guide 7 is superposed

upon the valve 5 and has its lower edge resting upon the flange 6. Arranged within the throat 3 of the bottle and above the guide 7 is a combined interference and fluid director 8 which is in the form of a double cone with the lower portion thereof truncated and formed with an opening 9 to receive the apex of the guide 7. The lower portion of the interference 8 terminates in a laterally extending annular flange 10 having a corrugated edge, as at 11. The diameter of the flanged portion of the interference 8 is such as to enable the interference to readily shift within the throat 3, and the corrugations 11 form passages for the liquid to pass through when the bottle is inverted to discharge the contents therefrom. The periphery of the upper portion of the interference 8 is formed with a plurality of spiral grooves 12 for directing the liquid to an outlet passage 13 formed by crimping inwardly a portion of the neck, such crimped portion constituting an abutment 14 for the interference 8 of the neck. Above said crimp a cork 15 is inserted to close the neck of the bottle.

The float valve 5, guide 7, and interference 8, the latter seating itself upon the guide 7 when the bottle is in an upright position, are positioned in the throat of the bottle before the crimp 14 is formed in the bottle neck. The float valve 5 is formed of any suitable buoyant material, preferably cork. The guide 7, as well as the interference 8, may be constructed of any suitable material which will not be affected by the contents of the bottle. Preferably the material is glass. The opening or passage 13 is of such diameter as to admit only a part of the top of the interference 8.

The bottle, as shown in Fig. 1, is first filled with the liquid which it is desired it should contain; the float valve, guide, and interference are then placed in position, as shown in Fig. 5. These elements are then inclosed in a suitable space, either by the crimping of the bottle neck, as shown in Fig. 5, or by any other suitable means. The bottle is then corked or sealed in a suitable manner, and is then ready for the market.

The consumer opens the package in the usual manner, and in emptying the bottle of its contents, the following operation takes place: When the bottle is first tipped or inverted, the interference 8 and guide 7 are caused by gravity to shift towards the passage 13, the apex of the interference 8 protruding through said passage, the apex of the guide holding a position similar to its position when the bottle is erect. The liquid, passing through the passage 16, flows forward and downward along the flanged end of the float valve 5 and flanged end of the interference 8, and is directed by the grooves 12 towards the passage 13. If the cork 15 is removed the liquid can be discharged.

It will be assumed that the bottle has been emptied and an endeavor is made to refill it in an ordinary

manner with the bottle erect. This will be prevented owing to the fact that the valve 5 has closed the passage 16 and is retained in such position owing to the weight of the guide 7 and interference 8. If the interference 8 is lifted by any suitable means so that its apex would fill the passage 13, it would be impossible to introduce any liquid passing by the interference into the bottle for the reason that the float valve 5 is still retained upon its seat by the guide 7.

It will now be assumed that an attempt is made to fill the bottle with a liquid when the bottle is in an inverted position. When the bottle is inverted, the interference 8, guide 7, and valve 5 will fall towards the passage 13. The liquid then introduced by pressure or otherwise passing through the spiral grooves 12 will eventually reach the flange 6 of the valve 5, and, as the valve is buoyant, the liquid would cause it to rise and completely close the passage 16 thereby preventing any liquid entering the body of the bottle.

It will now be assumed that an attempt is made to refill the bottle by immersing it in a liquid, during such operation the bottle being tilted to an angle of 45 degrees or to an angle of 90 degrees or less. The positions assumed by the elements 5, 7, and 8 would range from the normal, as described when the bottle is in an upright position, to its opposite, as described when the bottle is inverted. In any and all of these positions one of the two forces would operate. Either gravity will serve to seal the passage 13 if the bottle is tilted to an angle of less than 90 degrees from the position as described when the bottle is erect, or the buoyancy of the float valve 5 will tend to cause the valve to seat itself when it does not seat by gravity.

From the foregoing construction taken in connection with the accompanying drawings it will be evident that an exceedingly cheap and simple construction of non-refillable bottle is set up, and one that will enable the contents of the bottle to be discharged when occasion so requires and also prevent the refilling of the same after the contents has been removed.

What I claim is:

1. A non-refillable bottle comprising the combination with the neck of the bottle provided with a valve seat and an abutment forming an outlet passage, of a float valve adapted to engage the said seat, a valve guide superposed upon the valve, and an interference superposed upon the guide and provided with a plurality of fluid directing passages and adapted to extend in the outlet passage and engage the abutment.

2. A non-refillable bottle comprising the combination with the neck of the bottle provided with a valve seat and an abutment forming an outlet passage, of a valve adapted to engage the said seat, a valve guide superposed upon the valve, and an interference superposed upon the guide and provided with a plurality of fluid directing pas-

sages and adapted to extend in the outlet passage and engage the abutment.

3. A non-refillable bottle comprising the combination with the neck of the bottle provided with a valve seat and an abutment forming an outlet passage, of a float valve adapted to engage the said seat, a valve guide superposed upon the valve, and an interference superposed upon the guide and provided with a plurality of fluid directing passages and adapted to extend in the outlet passage and engage the abutment, said float valve and guides conical in contour and said interference in the form of a double cone.

4. A non-refillable bottle comprising the combination with the neck of the bottle provided with a valve seat and an abutment forming an outlet passage, of a valve adapted to engage the said seat, a valve guide superposed upon the valve, and an interference superposed upon the guide and provided with a plurality of fluid directing passages and adapted to extend in the outlet passage and engage the abutment, said valve and guides conical in contour and said interference in the form of a double cone.

5. In a non-refillable bottle, the combination with the neck thereof provided with a valve seat and an abutment forming an outlet passage, of a conical-shaped float valve having a flange at its lower end and adapted to engage the seat in the bottle neck, a hollow conical valve guide adapted to be superposed upon said float, and a combined interference and fluid director substantially in the form of a double cone and having a recess adapted to receive the apex of the guide, said combined interference and director provided upon its upper portion with a plurality of passages and having its lower portion formed with a laterally extending flange having a corrugated edge.

6. In a non-refillable bottle, the combination with the neck thereof provided with a contracted outlet passage and a valve seat, of a valve mounted in said neck and adapted to engage the seat, a guide for the valve, and an interference adapted to engage in the outlet passage, said interference, guide and valve adapted to nest one upon the other.

7. In a non-refillable bottle, the combination with the neck thereof provided with a contracted outlet passage and a valve seat, of a valve mounted in said neck and adapted to engage the seat, a guide for the valve, and an interference adapted to engage in the outlet passage, said interference, guide and valve adapted to nest one upon the other, and said interference and valve provided at their lower ends with a laterally extending flange.

8. In a non-refillable bottle, the combination with the neck portion thereof having a valve seat at its lower end and a contracted outlet passage, of a combined interference and fluid director arranged in the neck between the contracted outlet passage and the valve seat, a valve adapted to engage said seat, and a guide interposed between the interference and the valve, said interference, guide, and valve adapted to inter-engage with one another.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HARRY B. HOPSON.

Witnesses:

F. W. WORRILL,
CHAS. E. ROBERTS.