D. L. DOVER.

NON-REFILLABLE BOTTLE.

APPLICATION FILED MAY 6, 1913.

1,104,972.

Patented July 28, 1914.

Fig. 1.

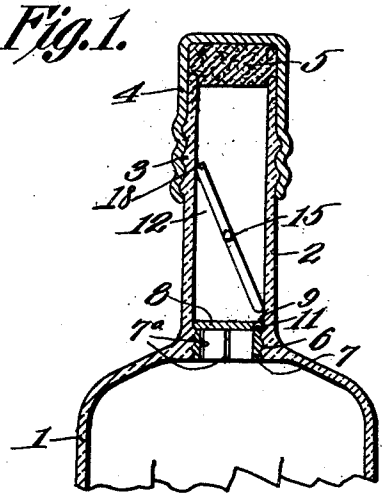


Fig. 2.

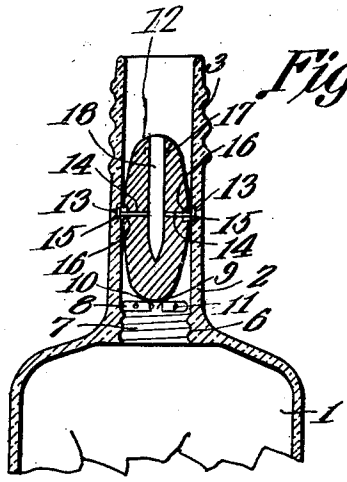


Fig. 3.

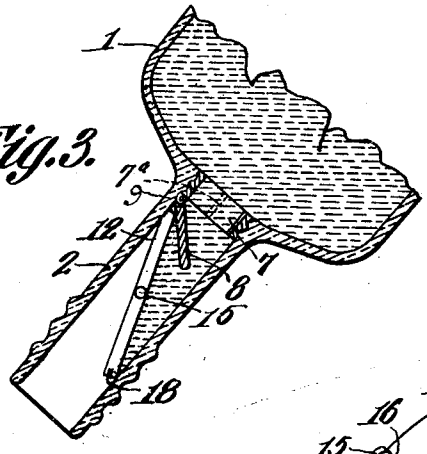


Fig. 4.

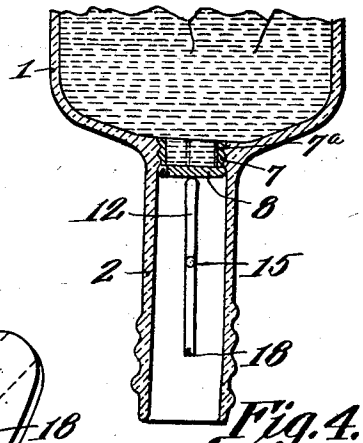
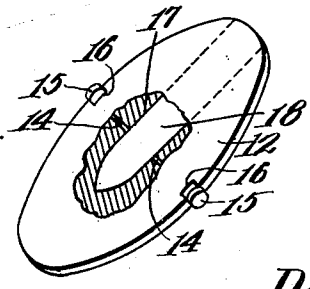


Fig. 5.



Witnesses

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NON-REFILLABLE BOTTLE.

1,104,972. Specification of Letters Patent. Patented July 28, 1914.

Application filed May 6, 1913. Serial No. 765,966.

To all whom it may concern:

Be it known that I, DAVID LEON DOVER, a subject of the King of England, residing at Seattle, in the county of King and State of Washington, have invented a new and useful Non-Refillable Bottle, of which the following is a specification.

The present invention appertains to non-refillable bottles, and aims to provide a novel and improved device of that character.

One of the objects of the present invention is to provide a device of the nature indicated, which shall necessitate a predetermined manipulation of the bottle in order to permit the contents of the bottle to be discharged.

Another object of the present invention is to provide a novel and improved means for pivoting the butterfly valve within the neck of the bottle.

A further object of the present invention is to provide a device of the nature indicated, which shall be comparatively simple, durable and inexpensive in construction, as well as being simple and efficient in its operation.

With the foregoing general objects outlined and with other objects in view, which will be apparent as the nature of the invention is better understood, the present invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention has been illustrated in its preferred embodiment in the accompanying drawing, wherein:—

Figure 1 is a fragmental section of a bottle embodying the present invention, the flap valve and its seat being shown in section and a butterfly valve being shown in full. Fig. 2 is a view similar to Fig. 1, and taken in a plane at right angles to the plane of section of Fig. 1, the cap being removed, the flap valve and its seat being shown in full, and the butterfly valve being shown in longitudinal section. Fig. 3 is a view similar to Fig. 1, showing the cap removed, and showing the bottle in position to open the flap valve and close the butterfly valve. Fig. 4 is a view similar to Fig. 3, showing the bottle in position to open the butterfly valve and close the flap valve. Fig. 5 is a perspective view of the butterfly valve, a portion being broken away.

Referring specifically to the drawing, the body of the bottle has been designated by the numeral 1, which may be of any suitable size and contour, and which is provided with the neck 2.

A suitable removable closure is provided for the neck 2, the neck being provided with the external screw-threads 3 at its outer end or adjoining the mouth, and a metallic cap 4 being threaded over the outer or upper end of the neck and having a cork or similar insert 5 disposed therein and adapted to seat on the mouth of the bottle neck to hermetically seal the same. The cap 4 may be readily attached to and detached from the bottle neck at will.

The neck 2 is provided with the internal screw-thread 6 at its lower or inner end, or adjoining the shoulder of the bottle, and a ring or annulus 7 is adapted to be threaded into engagement with the thread 6 after the bottle has been filled with the desired liquid. For facilitating the positioning of the ring 7, the same has been provided with a plurality of inner longitudinal grooves 7ª, with which a suitable implement may engage for screwing the ring 7 into position, as will be apparent. A flap valve 8 is pivoted in the ring 7, the ring serving as a seat for the valve. In pivoting the flap valve 8 to the ring 7, the ring is provided with the lug 9 projecting upwardly from one side, and the valve 8 is provided with a recess or notch 10 receiving the lug 9, a pivot pin 11 being passed chordally through the valve 8 so as to pass through the lug. Thus the free portion of the flap valve 8 is adapted to swing outwardly and upwardly when the bottle is properly inverted, the valve 8 normally seating on the ring 7 when the bottle is in erect position. There is also disposed within the neck 2, the butterfly valve 12, which is pivotally mounted within the neck after the ring 7 has been positioned. The butterfly valve is elliptical in contour and stands diagonally within the neck 2, one wing of the valve 12 being disposed adjoining the pivotal point of the flap valve 8.

For the purpose of pivoting the butterfly valve 12 within the bottle neck, the neck is provided with diametrically opposite recesses or sockets 13 intermediate its ends and a pair of pivot pins 14 are slidably engaged

into the side edges of the valve 12. The pins 14 are provided with heads 15 at their outer or remote ends, the inner ends of the pins 14 being disposed adjoining but spaced from each other within the valve 12. The valve is also provided with the recesses or notches 16 in its side edges adjoining the outer ends of the pins 14, and in which the heads 15 of the pins are adapted to normally be housed or received. The valve 12 is also provided with a passage 17 extending from its outer or upper end between the inner ends of the pins 14 and terminating short of the inner end or lower end of the valve. Into the passage 17, there is inserted a tongue or key 18 which has its inner end pointed or tapered.

In engaging or pivoting the butterfly valve 12 within the bottle neck, the tongue 18 is partly or entirely withdrawn from the valve 12, prior to the insertion of the valve within the bottle neck, and the pins 14 are retracted so that the heads 15 thereof are housed within the notches or recesses 16.

In this condition, the valve 12 may be readily inserted into the bottle neck to bring the heads 15 adjoining the respective sockets 13, and then by suitably holding the valve 12, the tongue 18 may be forced inwardly. The insertion of the tongue 18 will cause the tip of the tongue to engage between the pins 14 and thus spread or distend the pins so that the heads 15 thereof may engage with the sockets 13 and thereby pivoting or trunnioning the butterfly valve within the bottle neck. When the ends of the butterfly valve are swung against the opposite sides of the neck, the periphery of the butterfly valve is adapted to engage entirely around the inner walls of the neck to close the passage therethrough.

In practice, the valves 8 and 12 are preferably constructed of light wood or buoyant material, such a wood or other fibrous material, while the tongue 18 is preferably metallic, thus overbalancing the weight of the outer end of the butterfly valve.

Prior to the filling of the bottle, it will be noted from the foregoing, that the ring 7 with the flap valve 8, and the butterfly valve, are not associated with the bottle neck, so that the bottle may be readily filled, it being noted in this connection, that the bottle may be employed as a container for various liquids according to the use to which the bottle is to be put. Then, after the bottle has been filled, the ring 7 may be positioned as above described, and the butterfly valve 12 may then be properly engaged within the bottle neck, as will be apparent from the foregoing. When the bottle is erect, the flap valve 8 will seat on the ring 7, so as to close the passage through the neck, and the butterfly valve 12 will stand loosely within the neck 2, the lower end thereof being disposed adjoining the flap valve 8.

It will be evident that when the bottle is in erect position, the butterfly valve 12 will have a slight swinging movement above the flap-valve, and should a hook or other implement be inserted into the bottle neck, at one side or the other, of the butterfly valve, there will be a tendency to swing the butterfly valve into alinement with the axis of the bottle neck, and consequently, the lower or inner end of the butterfly valve will swing toward or against the flap-valve, to prevent the flap-valve from being lifted or unseated by the hook or other implement. The butterfly valve is shown in vertical position in Fig. 1, indicating how the flap-valve is locked when the butterfly valve is swung to vertical or axial position with respect to the bottle neck.

To pour the contents from the bottle, a predetermined operation or manipulation of the bottle is necessary, and to this end, the bottle is first tilted to an inclined position, as illustrated in Fig. 3, so that the flap valve 8 swings open and depends from the lug 9. The opening of the valve 8 is assisted by the pressure of the liquid, which flows through the ring 7, the valve 8 being swung against the inner end of the butterfly valve 12 and thereby swinging and holding the butterfly valve in closed position. The liquid is thus free to flow through the ring 7 to the butterfly valve 12, the periphery of the latter valve fitting snugly within the bottle neck to prevent the further flow of the liquid. Then, by swinging the bottle to a vertical inverted position, as illustrated in Fig. 4, the downward swinging tendency of the outer end of the butterfly valve 12, assisted by the pressure of the fluid, will cause the butterfly valve 12 to swing toward an erect position, whereby the inner end of the valve 12 will wipe against the flap valve 8 to seat the valve 8 against the ring 7, the valve 12 thus being opened will permit the liquid within the bottle neck to be discharged, it being noted, however, that the further flow of liquid is arrested by the valve 8, which is seated, the valve 8 being held in seated position by the inner end of the butterfly valve 12 assisted by the atmospheric pressure against the flap valve 8.

It will be noted that the two valves swing freely inasmuch as they are light or buoyant and by alternately swinging the bottle to the inclined position and vertical position, the contents may be discharged in intermittent predetermined quantities or doses. It is thus possible to regulate the discharge of the liquid to a nicety, it being impossible to accidentally discharge an excessive quantity of the liquid by inverting the bottle, and after the bottle has again been erected, the flap valve 8 will be seated on the ring 7 so as to close the entrance into the body of the bottle, and to thereby prevent the malicious

refilling of the bottle. It will be impracticable to refill the bottle, without breaking or injuring the valves, it being noted that the insertion of an implement toward the free end of the flap valve 8, would swing the valve 12 toward the axis of the bottle neck to lock the flap valve 8 closed, and as a result, the valve 8 could not be lifted or unseated. It is thus possible to leave the butterfly valve exposed, without the necessity of employing a guard to prevent the insertion of implements into the bottle neck, although a guard may be employed, the same being well known in the art, and it is therefore thought to be unnecessary to illustrate or describe the same in detail.

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

1. In combination, a bottle neck, and inner and outer juxtaposed valves pivoted therein, each valve being arranged to close the passage through the neck when the valve is swung away from the other valve, the inner valve being adapted to swing open outwardly and to swing against the outer valve when the outer valve is closed, and the outer valve being adapted to swing open toward and against the inner valve.

2. In combination, a bottle neck, an outwardly opening flap valve pivoted therein, and a butterfly valve pivoted within the neck beyond the outer side of the flap valve and arranged to close the passage through the bottle neck when the butterfly valve is in a diagonal position within the bottle neck, the inner end of the butterfly valve being arranged adjacent the pivot of the flap valve when the butterfly valve is closed, and being adapted to wipe along the outer side of the flap valve when the butterfly valve is opened, the flap valve being swingable against one side of the butterfly valve when the butterfly valve is closed.

3. In combination, a bottle neck, an outwardly opening buoyant flap valve pivoted therein, and a butterfly valve pivoted within the neck beyond the outer side of the flap valve and arranged to close the passage through the bottle neck when the butterfly valve is in a diagonal position within the bottle neck, the inner end of the butterfly valve being arranged adjacent the pivot of the flap valve when the butterfly valve is closed, and being adapted to wipe along the outer side of the flap valve when the butterfly valve is opened, the flap valve being swingable against one side of the butterfly valve when the butterfly valve is closed, the outer end of the butterfly valve being overbalanced.

4. In combination with a bottle neck, a butterfly valve disposed therein, trunnions slidably engaged to the butterfly valve, and means engageable with the valve and trunnions for projecting the trunnions into pivotal engagement with the bottle neck.

5. In combination with a bottle neck, a butterfly valve disposed therein, trunnions slidably engaging the valve, and a member insertible into the valve between the trunnions to project them into pivotal engagement with the bottle neck.

6. In combination with a bottle neck, a butterfly valve disposed therein, trunnions slidably engaging the valve, the valve having a passage extending from one end between the trunnions, and a tongue insertible into the passage to separate the trunnions into pivotal engagement with the bottle neck.

7. In combination with a bottle neck, having diametrically opposite sockets, a butterfly valve fitting within the neck and having notches in its side edges, trunnions slidably engaging the valve and having outer heads adapted to be housed within the said notches, and a member insertible into the valve to spread the trunnions for projecting the said heads into the said sockets.

8. In combination with a bottle neck, a flap valve pivoted therein, an elliptical butterfly valve disposed therein with its inner end adjoining the pivotal point of the flap valve, trunnions slidably engaging the side edges of the butterfly valve, and a tongue insertible into the outer end of the butterfly valve to spread the trunnions into pivotal engagement with the bottle neck, the said member overbalancing the outer end of the butterfly valve.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

DAVID LEON DOVER.

Witnesses:
B. W. Lockwood,
Edward Von Tobel.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."