

No. 750,937.

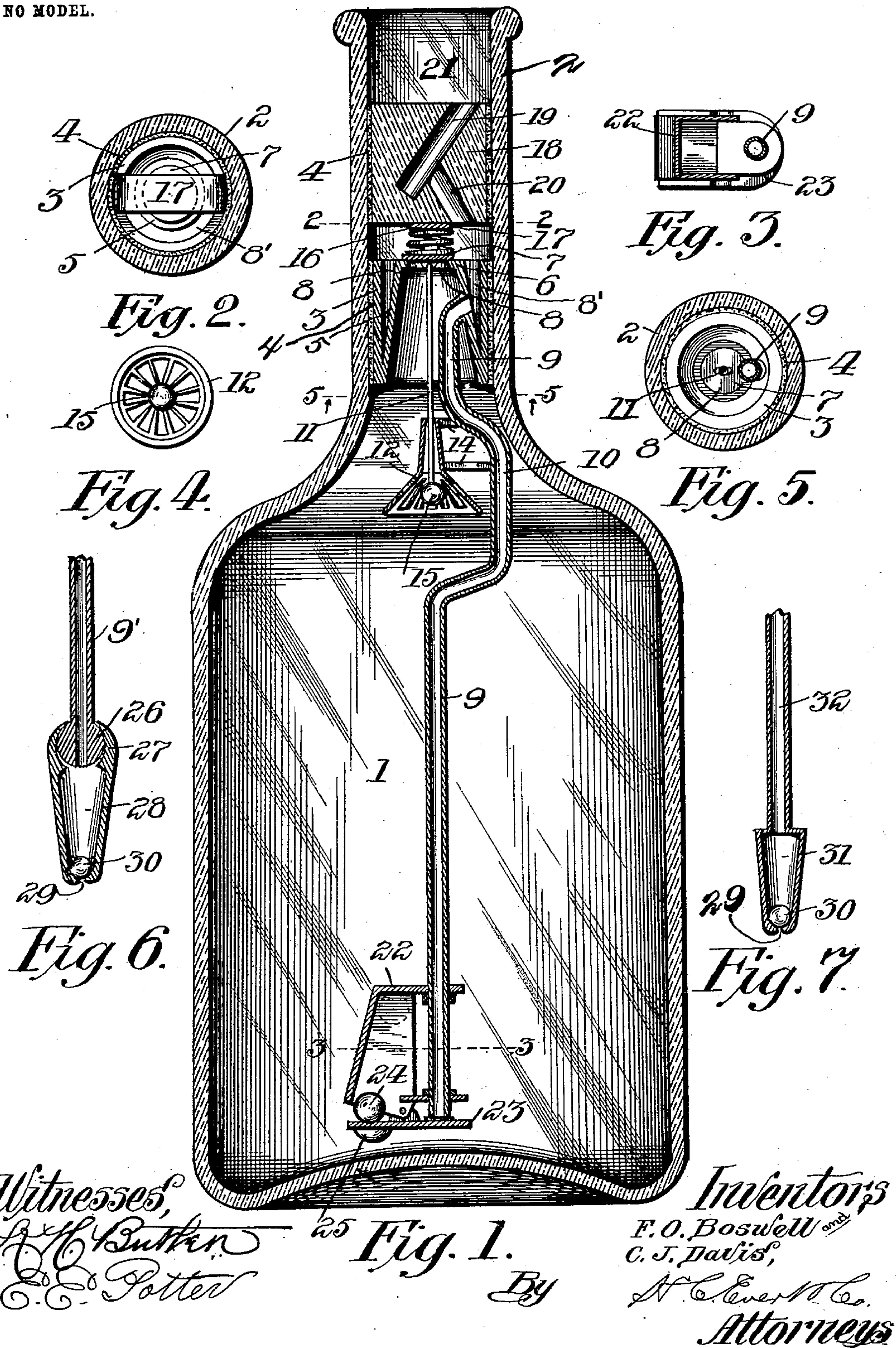
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NON-REFILLABLE BOTTLE.

APPLICATION FILED MAR. 30, 1903.

NO MODEL.



UNITED STATES PATENT OFFICE.

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NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 750,937, dated February 2, 1904.

Application filed March 30, 1903. Serial No. 150,236. (No model.)

To all whom it may concern:

Be it known that we, FLETCHER O. BOSWELL and CHARLES J. DAVIS, citizens of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in non-refillable bottles, the primary object of the invention being to construct a bottle from which the contents may be readily extracted, but which cannot be refilled after the contents have been removed.

Our invention has for its further object the provision of novel means for the admission of air to the bottle whereby to permit the ready flow of the liquid when the bottle is tilted, this means being normally operative to open for the admission of air when the bottle is tilted and operative automatically to close with the restoring of the bottle to its upright position.

The construction and operation of the invention in detail will be hereinafter more specifically described and then particularly pointed out in the appended claims, and in describing the invention in detail reference will be had to the accompanying drawings, forming a part of this application, and wherein like numerals of reference will be employed for designating like parts throughout the different views of the drawings, in which—

Figure 1 is a central vertical sectional view of a bottle with our improvements in position therein, showing the parts in their normal position when the bottle is in the upright position. Fig. 2 is a horizontal sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a like view taken on the line 3 3 of Fig. 1. Fig. 4 is a detached bottom plan view of the funnel-shaped guide for the seating-weight of the sealing-valve. Fig. 5 is a horizontal sectional view through the bottle-neck, taken on the line 5 5 of Fig. 1. Fig. 6 is a central vertical sectional view of a modified form of air-admission device, partly broken away; and Fig. 7 is a like view of another modification of the same.

Our device or attachment, which is adapted to be inserted into the bottle and permanently secured therein, will of course be constructed of a size to conform to the size of bottle in which it is desired to use the same.

The invention embodies a spring-held sealing-valve, a hollow stopper provided with an annular air-space with which communicates an air-tube extending into the bottle to a point adjacent to the lower end or bottom of the bottle. This air-tube carries at its inner or lower end means for closing the same when the bottle is in the upright position, which means is adapted upon the tilting of the bottle to automatically open the vent or air tube. Means is connected to the spring-pressed sealing-valve for assisting in holding same to its seat, the resistance of which means is overcome when the bottle is tilted so that its mouth or outlet is below the horizontal line, so that the liquid is only required to overcome the resistance of the spring back of the valve to unseat the same and permit the liquid to escape. In the bottle-neck above the hollow stopper is placed a safety-stopper having a tortuous passage which permits the liquid to flow therethrough, but prevents the insertion of an instrument whereby to gain access to the sealing-valve. The space in the bottle-neck above this safety-stopper may be closed by means of an ordinary stopper or other suitable means.

In the present illustration of our invention we have shown the same as applied in position in a bottle of the form generally known as a "quart" bottle, in which 1 indicates the body of the bottle, and 2 the neck thereof. In the neck 2 is placed a hollow stopper 3, which is placed in the neck, near the lower end thereof, and is securely fastened or held in position by cement 4 or other suitable means of like character. This hollow stopper is provided with an interior integral member 5 substantially frusto-conical in form, the upper end of which forms a seat 6 for the sealing-valve 7, said upper end having an outlet-port 8, normally closed by the valve 7.

Between the frusto-conical member 5 and the inner wall of the hollow stopper 3 is an annular air-space 8', with which communicates

an air or vent tube 9, that extends into the bottle 1 to a point adjacent to the bottom of said bottle. This air or vent tube is given a bend just after it is extended into the bottle, as seen at 10, which is done solely to permit the direct operation of the rod, cord, or other member 11, which is connected to the sealing-valve 7. This connecting member extends through a substantially funnel-shaped guide member 12, supported from the tube 9 by one or more arms 14, the body of the guide being preferably provided with slots in order that the liquid may not be obstructed thereby. On the lower end of the connecting member 11, which lies within the guide member 12, is a weight 15 to assist in holding said valve normally seated when the bottle is in the upright position. If the connecting member 11 be a rod, the weight will also assist in unseating the valve when the bottle is inverted, and if this connecting member be a cord the weight descending as the bottle is tilted will give slack to the cord and allow the liquid to unseat the valve. This valve is under the tension of a spring 16, placed between the valve and a cross strap or yoke 17. In the bottle-neck above the hollow stopper is placed a safety-stopper 18, provided with a tortuous passage 19 and 20, and which stopper is securely fastened in position by means of cement 4 or other equivalent means. A space 21 of sufficient size is left above the safety-stopper so that an ordinary stopper, (not shown,) cement, or the like can be placed therein.

At the lower end of the air or vent tube is provided means for automatically closing the vent-tube when the bottle is in the upright position and which means automatically releases to close the vent-tube when the bottle is returned to its upright position. This means in the preferred form embodies a cage 22, mounted to swing or revolve on the vent-tube, near the lower end thereof, and provided with a pivoted door 23, which acts as a valve to seal against the end of the vent-tube. This valve is held closed when the bottle is in the upright position by means of a weight 24, and when the bottle is tilted this weight moves toward the other end of the cage, and the weight 25, carried by the door or valve, opens said valve to permit the air to pass into the bottle. As this cage is rotatably mounted on the tube 9, it will be evident that the weighted portion of the cage will always hang downward, irrespective as to which side of the bottle is under when the same is tilted.

In Fig. 6 we show a modified form of controlling device for the air or vent tube, the tube 9' being provided with a ball 26 on its lower end to receive the socket end 27 of the cage 28, in which cage 28 is placed a weight 30 to close the port 29 in the lower end thereof when the bottle is in the upright position. In Fig. 7 is shown another modification of this air-controlling device, the cage 31 being made

integral with the tube 32. The port 29 and ball-valve 30 are employed also in this construction.

In operation it is to be observed that when the bottle is in the upright position, as shown, the air or vent tube will be closed at its lower end, and when the bottle is tilted so as to bring its mouth or outlet below the horizontal line the valve 23 automatically opens, and air entering through the air or vent tube allows the pressure of the liquid to unseat the valve 7, permitting the liquid to pass through port 8 and out through the tortuous passage in the safety-stopper 18. Whenever the bottle is re-inverted, the weight 15 draws valve 7 down upon its seat and valve 23 closes, requiring the tilting of the bottle again to open.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a non-refillable bottle, the combination with the bottle having a suitable neck, of a hollow stopper secured in said neck and provided with an interior frusto-conical member having a port in its upper end, said hollow stopper having an annular air-space, an air or vent tube communicating with said space and extending into the bottle, an air-controlling device for opening and closing said tube, a sliding valve normally engaging the upper end of the frusto-conical member to close the port in the latter, means for holding said sliding valve normally seated, and a safety-stopper secured in the bottle-neck and provided with a tortuous exit-passage, substantially as described.

2. In a non-refillable bottle, the combination with the bottle, of a hollow stopper secured in the bottle-neck and provided with a valve-seat on its upper end, a sliding valve normally engaging said valve-seat, and means for holding said valve in normally seated engagement, a safety-stopper in the bottle-neck above the hollow stopper, an air vent or tube communicating with the annular air-space in the hollow stopper and extending into the bottle, and means for controlling the admission of air through said air vent or tube, substantially as described.

3. In a non-refillable bottle, the combination with a bottle having a neck, of a stopper cemented in the bottle-neck and provided with an air-channel, an air vent or tube connected to the stopper and communicating with said air-channel means on the inner end of said air-tube for controlling the admission of air therethrough, a valve-seat on the upper end of the stopper for closing the exit-port for the liquid through said stopper, gravity means connected to said valve for normally holding the same seated, and a safety-stopper secured in the bottle-neck above the first-mentioned stopper and having an irregular or tortuous passage therethrough, substantially as described.

4. In a bottle of the character described the combination with the bottle, of a hollow stopper secured within the neck, said stopper being provided with an air-passage, a valve
5 normally closing said hollow stopper, a bent tube communicating with said air-passage and an upper safety-cork placed above said hollow stopper and provided with a tortuous chamber therein, the opening of said passage being
10 out of alinement with said valve closing the said first-named stopper, substantially as described.

5. The combination with a bottle-neck of a pair of corks secured therein, the upper of
15 said corks being formed with a passage, the lower cork being formed with an opening and an annular air-space and bent tube connecting

with the said air-space and a valve for closing said opening of the last-named cork.

6. In a non-refillable bottle the combination with the bottle, of a safety-stopper having a tortuous passage therein, a second hollow stopper having an opening therein and formed with an annular air-space, means for normally closing said opening, and a tube
25 connecting with said air-space, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

FLETCHER O. BOSWELL.

CHARLES J. DAVIS.

Witnesses:

A. M. WILSON,

K. H. BUTLER.