

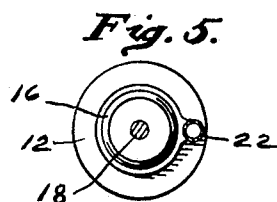
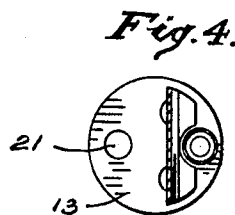
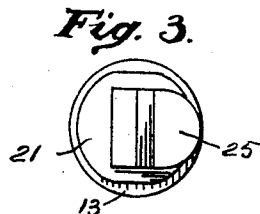
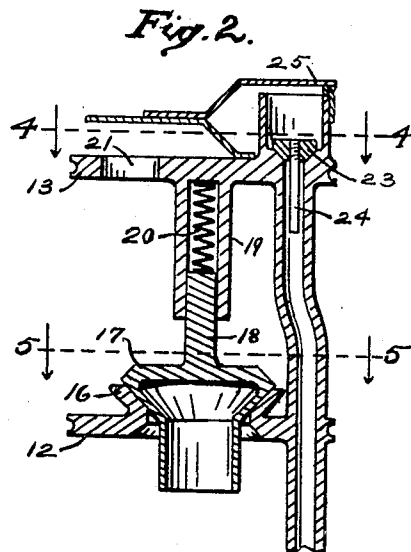
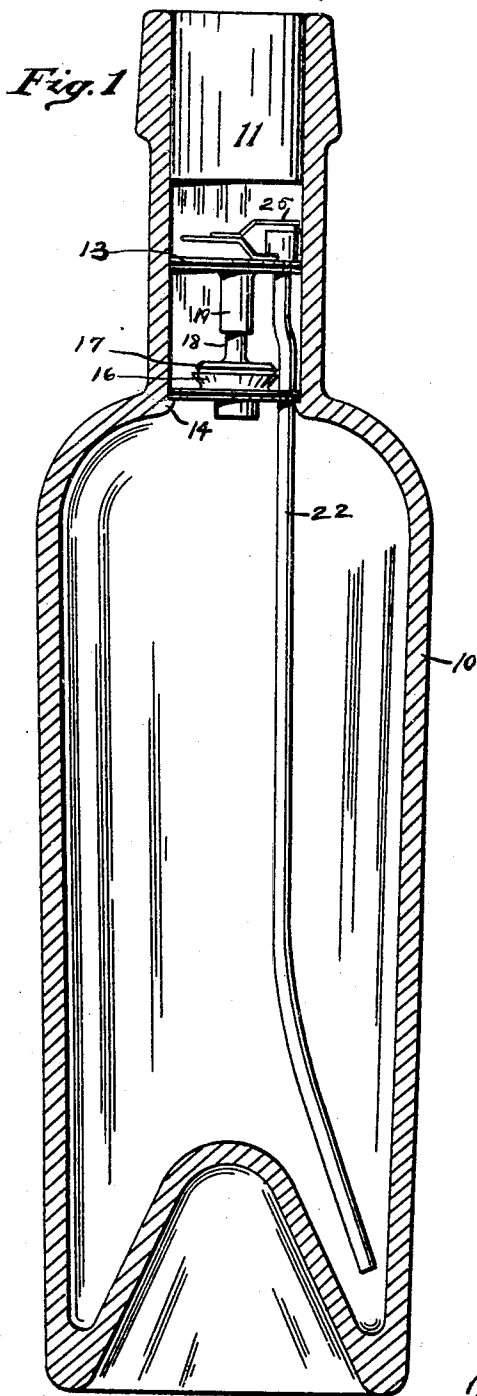
No. 809,249.

PATENTED JAN. 2, 1906.

F. J. DAVIS.

NON-REFILLABLE BOTTLE.

APPLICATION FILED MAR. 25, 1904. RENEWED JUNE 12, 1905.



Witnesses
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UNITED STATES PATENT OFFICE.

FRANK J. DAVIS, OF INDIANAPOLIS, INDIANA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HIMSELF, JOHN C. WALKER, AND FRED R. TAISEY, OF INDIANAPOLIS, INDIANA.

NON-REFILLABLE BOTTLE.

No. 809,249.

Specification of Letters Patent.

Patented Jan. 2, 1906.

Application filed March 25, 1904. Renewed June 12, 1905. Serial No. 264,943.

To all whom it may concern:

Be it known that I, FRANK J. DAVIS, of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Non-Refillable Bottle; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like figures refer to like parts.

The object of this invention is to provide a bottle that cannot be refilled and which will permit the ready discharge of liquid from the bottle and which can be made of glass, and therefore be free from the objections raised against non-refillable bottles containing metal parts.

The full nature of the invention will be understood from the accompanying drawings and the following description and claims.

In the drawings, Figure 1 is a central vertical section of a bottle with the device therein. Fig. 2 is a central vertical section, on an enlarged scale, of the means for preventing the refilling of the bottle, the lower part of the air-tube being broken away. Fig. 3 is a plan view of the means for preventing the refilling of the bottle. Fig. 4 is a transverse section on the line 4 4 of Fig. 2, but on a smaller scale. Fig. 5 is a transverse section on the line 5 5 of Fig. 2, but on a smaller scale.

In the drawings, 10 represents a bottle, and 11 a cork.

The non-refillable means consists of a lower valve-seat disk 12 and an upper or outer disk 13, that may be secured within the neck of the bottle by cement or by contracting the neck of the bottle on the disks by reduction of temperature. An annular shoulder or rib 14 is provided near the lower end of the neck of the bottle as a stop to limit the inward movement of the non-refilling means. It is not, however, necessary. The valve-seat disk 12 has a valve-seat located in it, and it is surrounded by an upwardly extending and flaring annular wall 16, which prevents gritty or granular matter entering the valve-seat between the seat and the valve 17, so as to hold the valve slightly open for the admission of liquid from the outside. This gritty matter, if introduced, collects on the valve-seat disk between the an-

nular extension 16 and the neck of the bottle and does not enter the valve-seat.

The valve 17 is composed of a conical upper portion and a cylindrical lower portion, the conical portion fitting in the valve-seat and the cylindrical lower portion extending inward below and beyond the valve-seat. The valve is a shell, and both the conical and cylindrical parts thereof are hollow. The valve-stem 18 extends upward and centrally therefrom into the guide-tube 19, that extends centrally downward from the upper disk 13. Within said guiding-tube 19 a spiral spring 20 is located for closing the valve. The upper disk 13 has an outlet-opening 21 for the fluid. An air-tube 22 extends through both disks and, as shown, is integral with them. This is a long tube extending substantially to the bottom of the bottle and at its lower end is turned outward into close proximity with the side of the bottle. This air-tube is on the side of the bottle opposite the outlet 21, and the bent under end of the air-tube extends in a direction opposite from the position of the outlet 21, the purpose being that in discharging, the bottle being turned with the outlet downward and on the lower side, the inner end of the air-tube will at once extend beyond and above the fluid, so as not to fill with fluid, and thus leave a clear tube for the admission of air into the bottle as the fluid discharges. This causes a rapid discharge of the fluid. At the outer end of the air-tube there is an air-tube valve 23. It is a curved valve and has a long stem 24 for guiding it, and it is prevented from escape by a protecting-cover 25. The protecting-cover 25 not only protects the outer end of the air-tube, but also the outlet 21, so that no one can introduce a piece of wire or other slender article into the device for the purpose of opening or moving the valves. Any such attempt will result in failure, as it will break and destroy the device, so that it cannot be further used. This cover 25, however, is sufficiently elevated above the disk 13 so as not to hinder the outlet of fluid and is sufficiently above the mouth of the air-tube so that it does not prevent the admission of air, but does prevent the admission of a piece of wire or the like.

The valve 17 is opened by the combined

action of gravity and the fluid within the valve. The chief agent for opening the valve, however, is the fluid, and the spring 20 is made weak enough to be overcome by the weight of the valve when it is filled with fluid. That is the function of the hollow valve. It is observed that the valve when inverted by reason of its hollow form has considerable capacity for liquid, and when this is filled with liquid the weight of the liquid and the valve overcomes the weight of the spring, but when not filled with liquid the spring will hold the valve closed.

Another effect and function of the hollow construction of valve is that the action of the fluid in the bottle against the valve will tend to center it and keep it centered, and thus tend to prevent the stem wedging in the tube 19 by reason of the excessive pressure laterally on one side of the valve. The hollow valve is made comparatively long or has an inward extension beyond the valve-seat in order to give it considerable capacity for holding liquid, so that the valve will be held open until every drop is emptied from the bottle.

The parts of the device are made of glass, excepting the spring 20, which is made of copper and is inclosed in the tube 19, so that the liquid does not gain access to the spring, and it would not corrode if the liquid should reach it. The cover 25 is made fragile purposely to prevent tampering with it or to make the whole thing useless if it be tampered with.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In means insertible within a bottle to prevent its being refilled, a suitable valve-

seat, a hollow valve extending through and inwardly beyond said seat and open at its inner end, and means for closing said valve that is overcome by the gravity of the valve when filled with liquid.

2. In means insertible within a bottle to prevent its being refilled, a valve-seat, a hollow valve the outer end of which is conical to fit the valve-seat and the inner end of which is cylindrical and extends beyond the valve-seat and is open at its inner end, and means for closing said valve that is overcome by the gravity of the valve when filled with liquid.

3. A device for rendering a bottle non-refillable consisting of two disks, the lower one having a valve-seat and the upper one having an outlet-opening, a hollow valve fitting in said valve-seat with a central outward stem, a tubular guide extending centrally from the outer disk toward the valve-seat to receive the stem of the valve, a spring in said tubular guide acting against the valve-stem, an air-tube extending through both disks, a valve at the outer end of said air-tube for closing the same, and a protecting-cover mounted on the outer disk and extending substantially over the outlet through the outer disk and inlet into the air-tube, substantially as set forth.

In witness whereof I have hereunto affixed my signature in the presence of the witnesses herein named.

FRANK J. DAVIS.

Witnesses:

N. ALLEMONG,
G. FOLTZ.