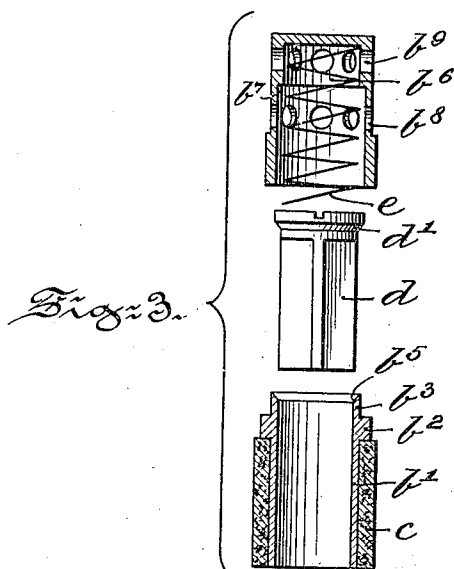
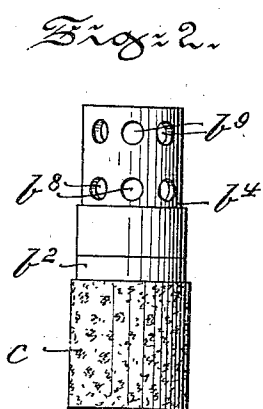
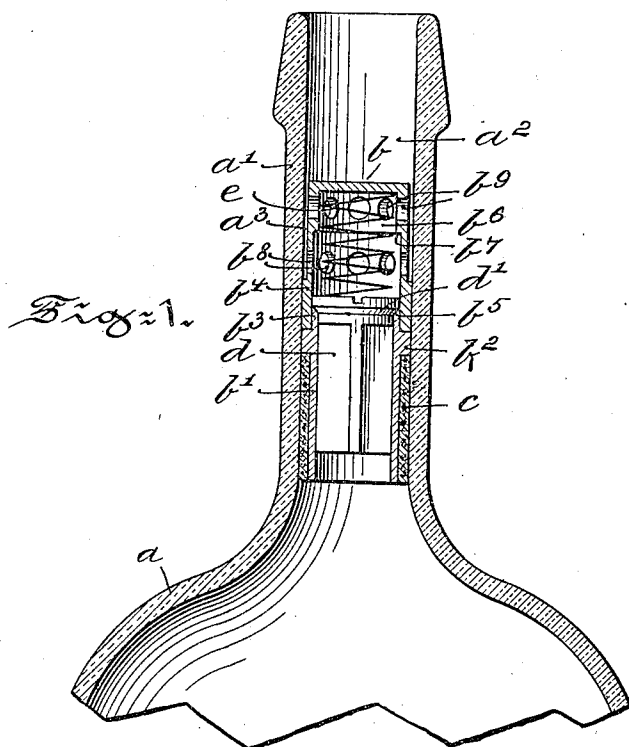


No. 838,186.

PATENTED DEC. 11, 1906.

S. R. HARRIS.
NON-REFILLABLE BOTTLE.
APPLICATION FILED MAR. 24, 1906.



Witnesses:
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UNITED STATES PATENT OFFICE.

SAMUEL R. HARRIS, OF PHILADELPHIA, PENNSYLVANIA.

NON-REFILLABLE BOTTLE.

No. 838,186.

Specification of Letters Patent.

Patented Dec. 11, 1906.

Application filed March 24, 1906. Serial No. 307,820.

To all whom it may concern:

Be it known that I, SAMUEL R. HARRIS, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

My invention has relation to a non-refillable bottle; and in such connection it relates more particularly to the construction and arrangement of a stopper which when a common stopper is removed from the bottle permits of the outflow of the contents of the same, but prevents the refilling of the bottle.

The principal objects of my invention are, first, to provide a bottle-stopper with a valve to support the same therein so that the valve can only be opened by a pressure brought to bear against the valve from the interior of the bottle; second, to provide the stopper with a yielding covering which when the same is driven into the neck of the bottle and is thus compressed offers sufficient resistance to hold the stopper in the position given to resist displacement or removal of the same from the neck; third, to form the stopper of a sectional cylindrical housing and to close the open end thereof by a valve which is held on its seat by a spring irrespective of the position the bottle may occupy when the same is empty, but which readily permits the outflow of the contents of the bottle up to the last portion thereof, and, fourth, to provide the housing outside the seat for the valve with a contracted portion forming a chamber and a shoulder which limits the movement of the valve when abutting therewith to prevent outflowing liquid passing through openings arranged in the end of the housing, but admitting the passage of liquid therethrough when the bottle is attempted to be refilled.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a view illustrating, partly in section and partly in elevation, the upper portion and neck of a bottle, with a stopper arranged in the neck embodying main features of my said invention. Fig. 2 is a view illustrating in elevation the stopper prior to its introduction into the neck of the bottle and the yielding ferrule projecting beyond the stopper; and Fig. 3 is a view illustrating,

partially in section and partially in elevation, the several parts of the stopper disconnected from each other.

Referring to the drawings, *a* represents a bottle provided with a neck *a'*, the interior channel *a²* of which is circular and of uniform diameter throughout to permit of the insertion of a metal stopper *b* therein without breaking the neck during the insertion of the same. The stopper *b* is inserted in the neck *a'* of the bottle *a* after the same has been filled with liquid, and the insertion of the stopper may be accomplished prior to the introduction and closing of the bottle by a common stopper, (not shown,) or this common stopper when driven into the neck *a'* by hand or machinery may be utilized to drive the stopper *b* into the neck *a'* in the position shown in Fig. 1, for which purpose the stopper *b* may be partially inserted into the neck in advance of the common stopper.

In order to hold the stopper *b* in the neck *a'* in the position given by the insertion of the common stopper, (not shown,) the housing *b'* thereof is provided with a ferrule *c*, preferably consisting of cork. As shown in Figs. 2 and 3, the ferrule *c* in its normal condition extends slightly beyond the housing *b'*, so as to permit of a compression of the same when the stopper *b* is inserted in the neck *a'* of the bottle *a*, and thus produce the necessary friction between the neck and stopper to hold the same securely in position in the neck. A shoulder *b²*, preferably formed integral with the housing *b'*, serves to prevent displacement of the ferrule *c* thereon and also forms a support for a cap *b⁴*, which fits over the end *b³* of the housing *b'*, as shown in Fig. 1. The end *b³* is provided with an inclined surface *b⁵*, which forms a seat for a valve *d*, having a range of sliding movement within the housing *b'* and cap *b⁴* and resting with its tapering portion *d'* upon the inclined surface *b⁵*, thus forming a liquid-tight closure. The interior of the cap *b⁴* at its end is of less diameter to form a chamber *b⁶* and a shoulder *b⁷*, against which the valve *d* abuts when the same is raised from its seat *b⁵* by liquid flowing from the bottle held in a tilted position. In this instance the liquid passes through a series of openings *b⁸*, arranged between the seat *b⁵* and shoulder *b⁷*, and enters a chamber *a³*, formed by the cap *b⁴* and the neck *a'* of the bottle *a*, and flows from thence through the neck *a'* into a receptacle placed beneath the same. By the abutting of the valve *d* against the

shoulder *b'* the liquid is prevented from entering the chamber *b⁶* and passing through openings *b⁹*, arranged in the end of the cap *b⁴*. By preventing the outflow of liquid through the openings *b⁹* the collection of sediment above the valve *d* is prevented, and by stopping the valve short of the openings *b⁹* it insures action upon the upper surface of the valve of any liquid entering the openings *b⁹*. In the chamber *b⁶* and housing *b'* is arranged a spring *e*, which bears with one end against the cap *b⁴* and with the other end against the valve *d*, as shown in Fig. 1. This spring *e* is sufficiently strong to support the valve *d* when the bottle *a* is tilted or is held with its neck *a'* downward in a vertical position. As long as liquid remains in the bottle *a* the same will readily overcome the force of the spring *e*, open the valve *d*, and leave the bottle through the openings *b⁸* of the stopper *b*. If, however, no liquid remains in the bottle *a*, the valve *d* will be held on its seat *b⁵* by the spring *e*, and any attempt to refill the bottle *a* in a tilted or upside-down position will thus be effectually prevented. On the other hand, if a refilling of the bottle *a* is attempted when the same is yet partially filled in order to overcome the force of the spring *e*, and thus keeping the valve *d* open, the liquid entering in this instance the stopper *b* first through the openings *b⁹* will assist the spring *e* in the closing of the valve *d*, and thus also prevent the refilling of the bottle in such a position.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a non-refillable bottle, a stopper consisting of a housing having a seat, a cap having superposed openings and a shoulder forming a seat, secured thereto, a valve arranged within said housing and cap and adapted to slide between the seats thereof, a spring arranged in said cap and adapted to hold said

valve on said housing-seat in the normal position of the bottle, and when empty or in tilted position, and the shoulder of said cap arranged to limit the movement of said valve by outflowing liquid against the tension of said spring.

2. In a non-refillable bottle, a stopper, consisting of a housing having a seat, a cap having a seat and superposed openings arranged on both sides thereof, said cap secured to said housing, a valve arranged in said housing and cap and adapted to slide between the seats thereof, a spring arranged in said cap and adapted to hold said valve on said housing-seat in the normal position of the bottle and when empty or tilted, and the seat of said cap arranged to prevent outflow of liquid through the upper row of openings when said valve is forced downward by the liquid against the tension of said spring.

3. In a non-refillable bottle, a stopper, consisting of a housing having a seat, a cap having a seat and superposed openings arranged on both sides thereof, said cap secured to said housing, a valve arranged in said housing and cap and adapted to slide between the seats thereof, a spring arranged in said cap and adapted to hold said valve on said housing-seat in the normal position of the bottle and when empty or tilted, and the seat of said cap arranged to prevent outflow of liquid through the upper row of openings when said valve is forced downward by the liquid against the tension of said spring, and means secured to said housing adapted to hold said stopper, by friction, in the neck of said bottle.

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

SAMUEL R. HARRIS.

Witnesses:

J. WALTER DOUGLASS,
THOMAS M. SMITH.