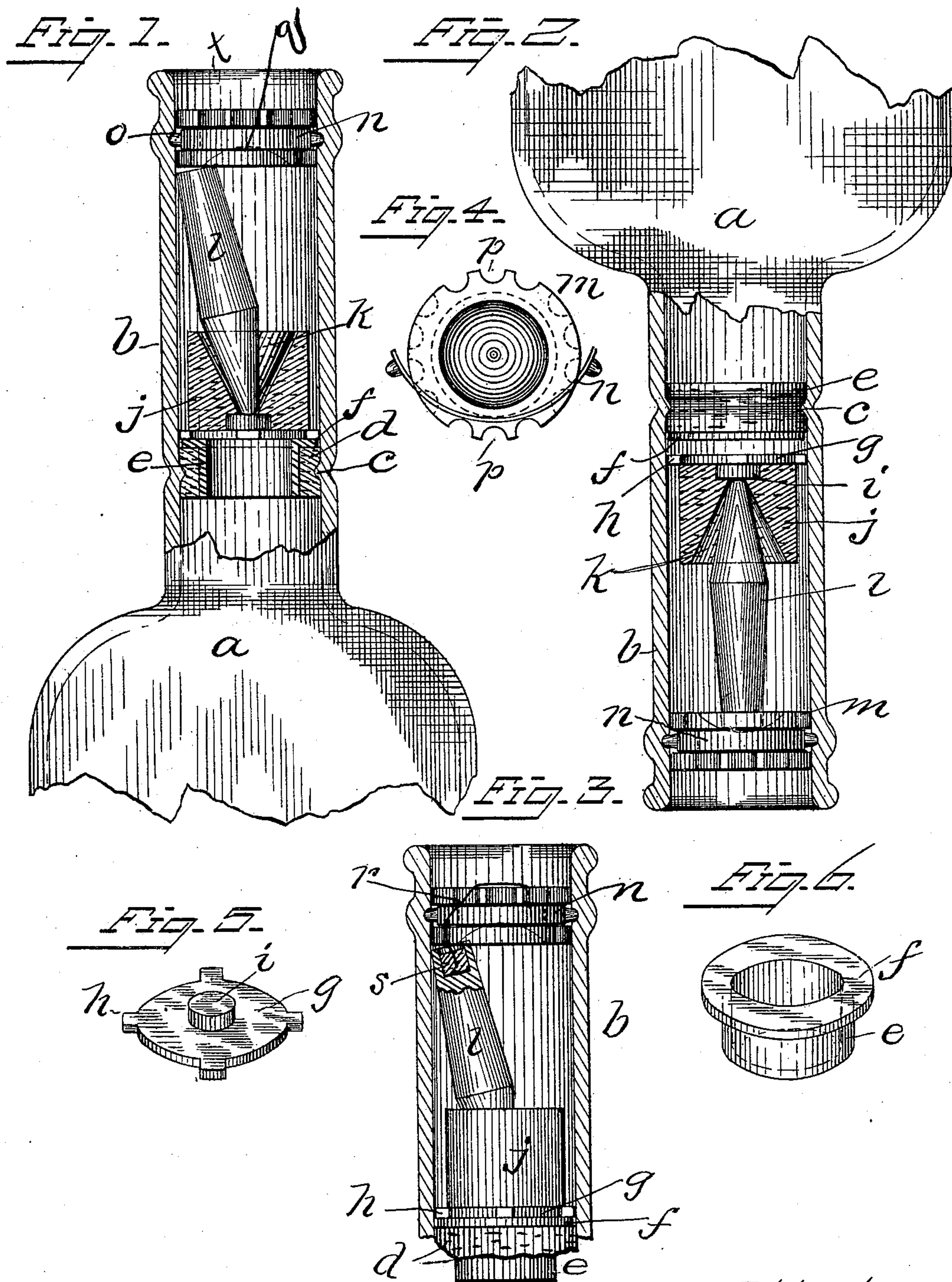


(No Model.)

W. H. GILMAN.
NON-REFILLABLE BOTTLE.

No. 583,011.

Patented May 18, 1897.



WITNESSES.
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UNITED STATES PATENT OFFICE.

WILLARD H. GILMAN, OF BOSTON, MASSACHUSETTS.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 583,011, dated May 18, 1897.

Application filed June 4, 1896. Serial No. 594,288. (No model.)

To all whom it may concern:

Be it known that I, WILLARD H. GILMAN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a description sufficiently full, clear, and exact to enable those skilled in the art to which it appertains or with which it is most nearly connected to make and use the same.

This invention has relation to that kind of bottle-stoppers which are designed to permit of the contents of a bottle being discharged, but not to allow of the refilling of the latter. It is the object of my invention to provide such improvements in non-refillable bottles as will render certain the sealing or closing of the stopper against refilling in whatever position the bottle may be placed or however it may be manipulated, and yet have such a construction and mode of operation as will permit of readily decanting the same, keeping in view simplicity and economy of construction as well as safety against tampering with the stopper.

To these ends the invention consists of a stopper comprising in its construction a fixed member in the lower part of the neck of the bottle provided with a port and forming a valve-seat, a movable member above the first-mentioned member provided with a valve, a second fixed member in the top of the neck of the bottle provided with offset outlet-ports to prevent tampering with the stopper, and a lock acting between the two fixed members and coöperating with the movable member in such manner that the stoppered bottle may be decanted, but so that the valve will be closed and locked and held against refilling the bottle in whatever position the latter may be placed or however it may be manipulated.

Reference is to be had to the annexed drawings, and to the letters marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the drawings, Figure 1 is a vertical central sectional view of the neck of a bottle in upright position provided with my improved stopper. Fig. 2 is a similar view, the bottle being reversed in position so as to be decanted. Fig. 3 is a view somewhat similar to

Fig. 1, showing the lock held so as to prevent decanting in whatever position the bottle may be placed. Fig. 4 is a plan view of the upper fixed member. Fig. 5 is a perspective view of the valve. Fig. 6 is a perspective view of the part of the lower fixed member which forms the valve-seat.

In the drawings, *a* designates the body of the bottle, and *b* the neck. In the lower part of the neck there is a rib or bead *c* to engage the packing *d*, surrounding the sleeve *e*, provided at its upper end with a flange *f*, forming a seat for the valve *g*, consisting of a disk adapted when seated to close the port formed through the sleeve *e* and open the said port when moved away from the said seat. The rib, packing, and sleeve, with the valve-seat described, constitute a member which is fixed in the neck of the bottle. Any equivalent manner for fixing or keeping the said member in place would answer as well.

The valve *g* is provided on its periphery with lugs *h*, which extend out into contact with the interior surface of the neck of the bottle and act as guides for the movement of the valve *g*, which is provided centrally on its upper side with a boss or projection *i*, which extends into and is secured to a movable cork *j*. The cork *j* is provided centrally on its upper side with a conical recess *k*, extending down to the top of the boss *i*.

In the recess *k* the lower conically-shaped end of the weighted lock *l* is arranged so that its lower end may be seated on the boss *i*.

m designates a fixed member arranged in the upper part of the neck of the bottle and consisting of a double disk, or a disk provided centrally with an annular groove, in which groove is arranged a spring *n*, the ends of which are arranged to expand into a groove *o*, formed in the neck of the bottle, and so hold the disk against withdrawal after once having been arranged in place. Each flange of the disk divided by the spring-groove is provided with peripheral recesses or notches *p* on opposite sides, the notches of one flange being offset from the notches of the other.

By having both the inner or lower and the outer or upper ends of the lock act upon inclined surfaces, as shown, the said lock acts to hold and lock the valve squarely on its seat whether the bottle be placed in upright

position or laid over on its side, and by leaving the upper end of the lock free to move from side to side when the valve is seated, while the lower end is made to bear centrally upon the valve. When the upper end of the lock drops to one side, the latter will still hold the valve locked upon its seat, as will be understood by viewing Fig. 1 of the drawings, in inverted position.

It is to be noted that a space *t* is left above the double-flanged disk *m*, so that a common or suitable stopper or cork may be placed therein when the filled bottles are to be packed or shipped, which stopper will of course be extracted in the ordinary way for decantation. Under this construction it will be seen that when the wire *r* is withdrawn the lock *l* will be free at its upper end to move laterally, and that when the bottle is inverted and the upper end of the lock falls into the conical depression *q* of the disk the valve *g* will drop from its seat *f*, allowing the contents of the bottle to readily flow out through the port formed by the sleeve *e* along the sides of the stopper *j* and out through the ports formed by the notches *p* in the double-flanged disk *m*.

Should it be attempted to refill the bottle, it will be observed that this cannot be done, since it is impossible to remove the double-flanged disk *m* for that purpose, and with all of the parts in place if the bottle should be placed in upright position, as shown in Figs. 1 and 3, the lock will rest upon the valve *g*, effectually closing the port through the sleeve *e*. If the bottle should be laid upon its side, the upper end of the lock acting against the rounded surface of the conical depression *q* will operate upon the lock in the same way, as will be seen by an inspection of Fig. 1. Again, if the bottle should be inverted, as represented in Fig. 2, liquid entering or forced into the neck of the bottle will first act upon the cork *j* and float the valve *g* to its seat, securely closing the port through the sleeve *e*, and the same result will take place if the bottle should be placed in any position and shaken while immersed in liquid.

All of the foregoing results have been ascertained by experiment, though at the same time it has been developed that formal changes may be made in some of the parts and features of the invention without altering their nature or departing from the spirit of the improvements.

I have termed the part marked *l* a "lock," inasmuch as it bears at one end upon the valve and at the other end upon a fixed part of the stopper and holds the valve braced or locked upon its seat when the bottle is in certain positions, the lock itself being braced under these conditions against movement longitudinally in the neck of the bottle, a thing not done, so far as I am aware, in any bottle-stopper as now constructed. The advantages gained by this construction are that the bottle cannot possibly be refilled by laying it upon its side immersed in a liquid nor by immers-

ing it in a liquid and shaking it endwise or longitudinally.

The lock *l* is, as shown in the drawings, elongated. This form is important to the invention, since by it I am enabled to make the part in question serve as a lock and brace between the fixed disk and valve when the latter is seated, and it subserves the purpose of preventing the bottle from being refilled by immersing it in liquid and then shaking it longitudinally, as before described, besides performing several other obviously useful offices, all of which would not be the case if the part marked *l* were a mere weight of spherical or other form that did not qualify it to act as a brace or lock, as described.

Having thus explained the nature of the invention and described a way of constructing and using the same, though without attempting to set forth all of the forms in which it may be made or all of the modes of its use, it is declared that what is claimed is—

1. A stopper for a non-refillable bottle comprising in its construction a fixed valve-seat, a valve to act upon the said seat and control the outlet-port, a fixed disk with offset ports therethrough and a concaved inner or lower surface, and a movable elongated lock between the valve and fixed disk, constructed to bear at one end upon the valve when seated and to bear or rest at the same time at the other end against the concaved inner or lower surface of the fixed disk, and so hold the valve braced or locked upon its seat.

2. A stopper for a non-refillable bottle comprising in its construction a fixed valve-seat, a floatable valve longitudinally movable in the neck of the bottle to act upon the said seat to control the outlet-port, a fixed disk with offset ports therethrough, and a concaved inner or lower surface, and a movable elongated lock between the valve and fixed disk, constructed to bear at one end upon the valve when seated and to bear or rest at the same time at the other end against the inner or lower surface of the fixed disk, and so hold the valve braced or locked upon its seat.

3. A stopper for a non-refillable bottle comprising in its construction a fixed valve-seat, a valve to act upon the said seat and control the outlet-port, a floatable substance connected with the said valve and provided in its upper side with a conical recess, a lock conically formed at its lower end and seated in said recess, said lock being free at its upper end to move from side to side in the neck of the bottle, and a fixed member provided with offset ports, against which the upper end of the lock may operate.

4. A stopper for a non-refillable bottle comprising in its construction a fixed valve-seat, a valve to act upon the said seat and control the outlet-port, a floatable substance connected with the said valve and provided in its upper side with a conical recess, a lock conically formed at its lower end and seated in said recess, said lock being free at its up-

per end to move laterally in the neck of the bottle, and a fixed member provided with offset ports and having a concave lower face against which the upper end of the lock may operate.

5. In a stopper for non-refillable bottles, the combination of the fixed valve-seat, with the floatable valve to cooperate therewith, and an elongated lock to act at one of its ends upon the valve when seated and at the same time to bear at its other end upon a fixed part of the stopper, the said fixed part having a concave surface against which the lock bears.

6. A stopper for a non-refillable bottle having, in combination, a fixed valve-seat, a valve to act upon said seat and control the outlet-port through the same; an oblong lock, constructed to bear at one end upon the valve, when seated, and at the other end to be braced against a fixed disk with offset ports there-through; which disk has a concave lower surface, so closely presented to the upper end of said lock that the lock can be lifted from the valve only when nearly or quite vertical having its longitudinal axis concentric with said concave lower surface of the disk, as set forth and explained.

7. The combination, with the fixed valve-seat and its outlet-port and the buoyant or floatable valve to control the said port, of the fixed disk and its outlet-port, the said fixed disk having an inclined lower or inner surface, and an elongated lock loosely seated at its inner or lower end on an axial or central

point on the top of the valve, and bearing at its upper or outer end against the inclined lower surface of the disk, as set forth and explained.

8. The combination with the fixed valve-seat of glass having a ground seat, and the buoyant or floatable valve having a ground-glass surface to cooperate with the ground-glass valve-seat, of the fixed disk and its outlet-port, the said fixed disk having an inclined lower or inner surface, and an elongated lock loosely seated at its inner or lower end on an axial or central point on the top of the valve, and bearing at its upper or outer end against the inclined lower surface of the disk, as set forth and explained.

9. In a stopper for non-refillable bottles, the combination of the fixed valve-seat, with the floatable valve to cooperate therewith, a lock to act at its lower or inner end upon and be maintained in the center of the valve when seated, and at the same time to bear at its other or inner end upon a fixed part of the stopper, and a removable wire for holding the upper end of the lock out of center in its locked position.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 3d day of June, A. D. 1896.

WILLARD H. GILMAN.

Witnesses:

ARTHUR W. CROSSLEY,
C. C. STECHER.