

No. 622,887.

Patented Apr. 11, 1899.

J. EVINOF.
NON-REFILLABLE BOTTLE.

(Application filed Aug. 26, 1898.)

(No Model.)

Fig. 6.

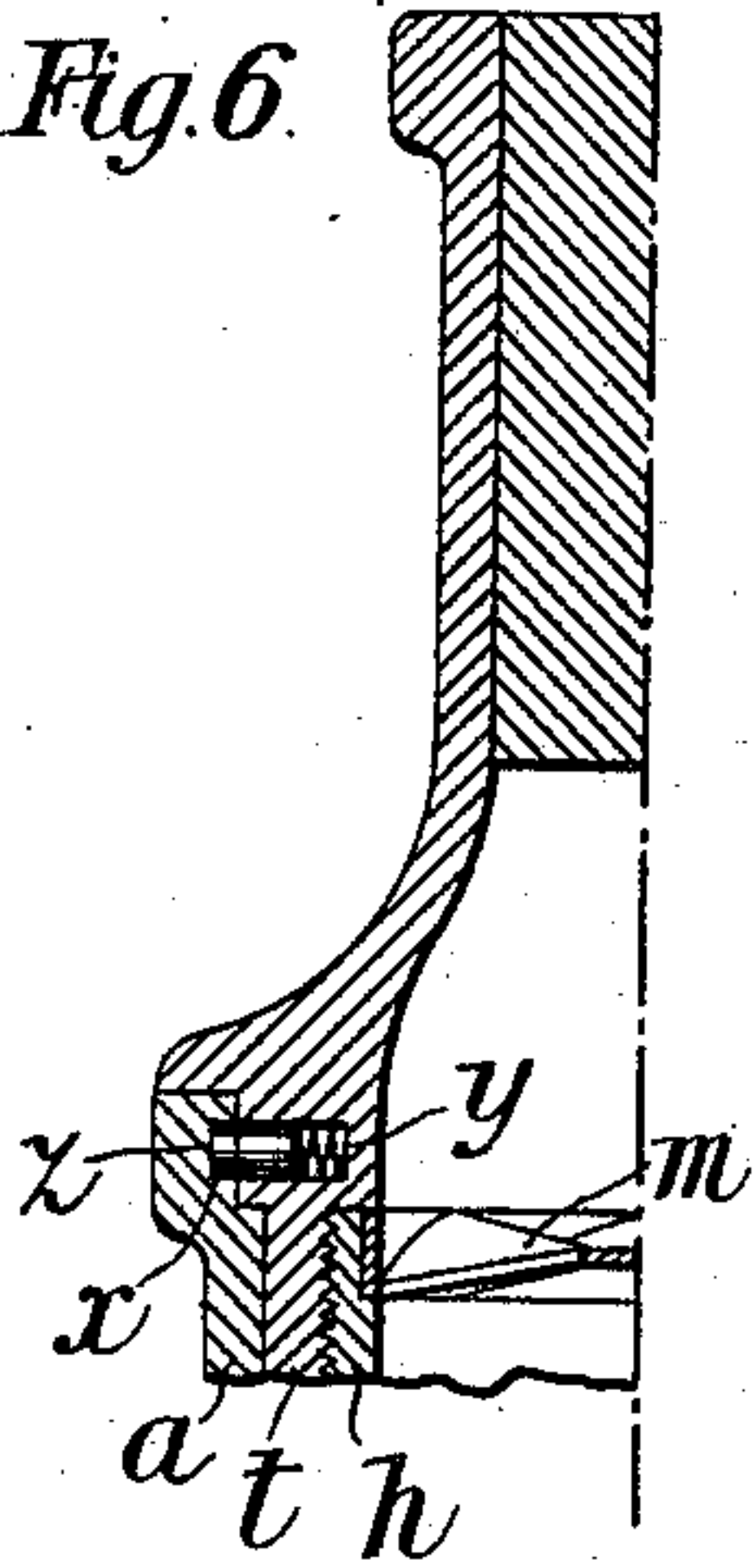


Fig. 5.

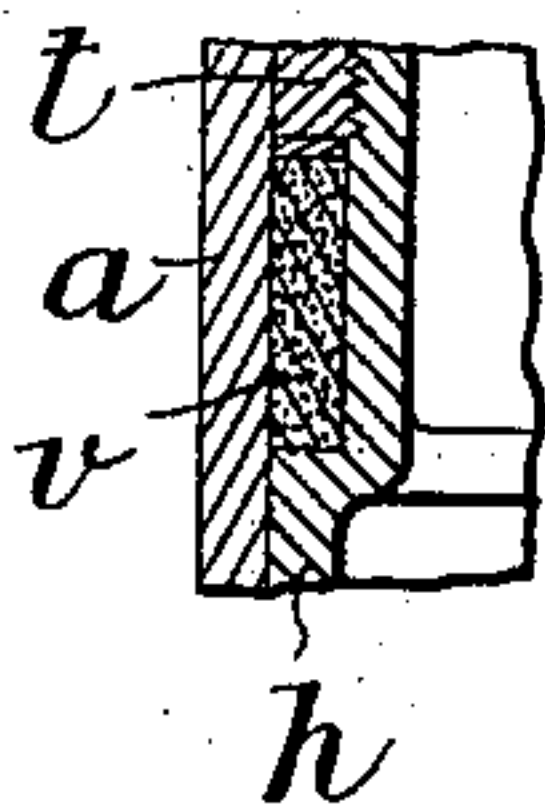


Fig. 1.

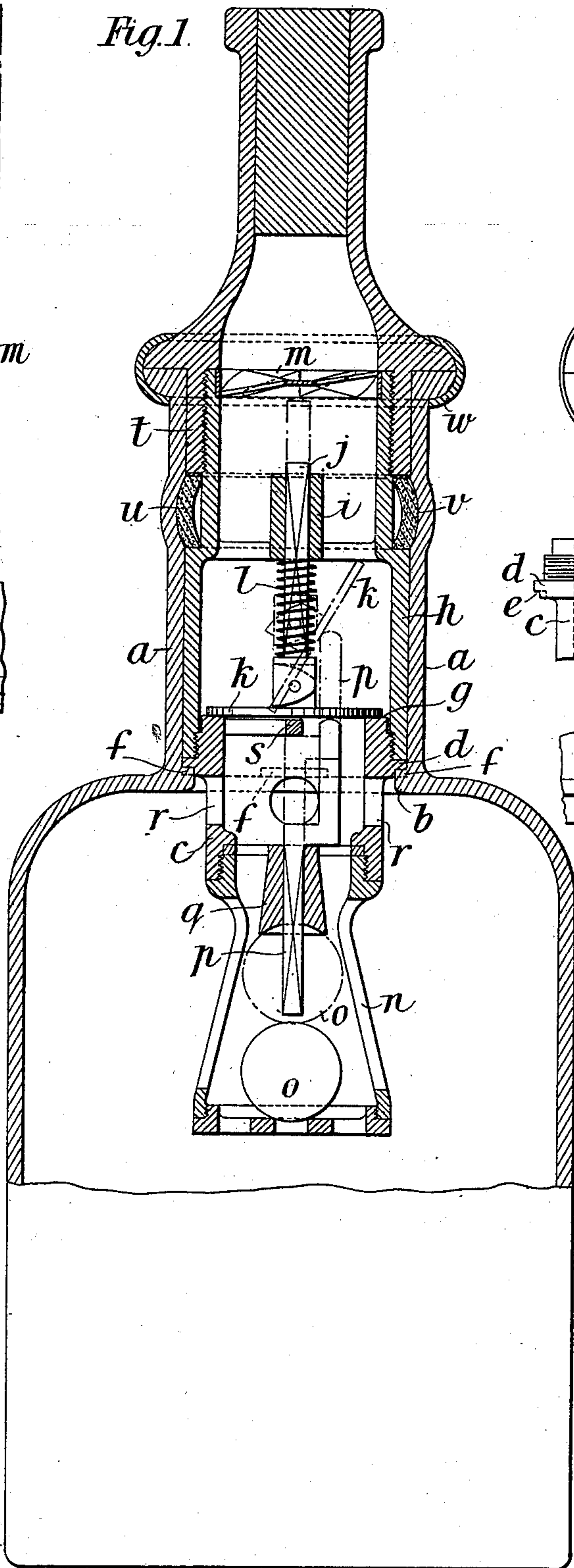


Fig. 4.

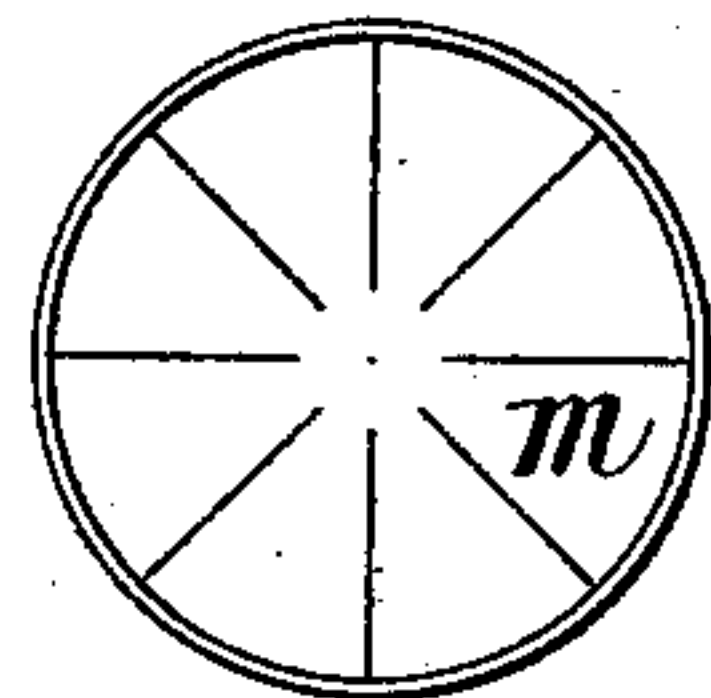


Fig. 2.

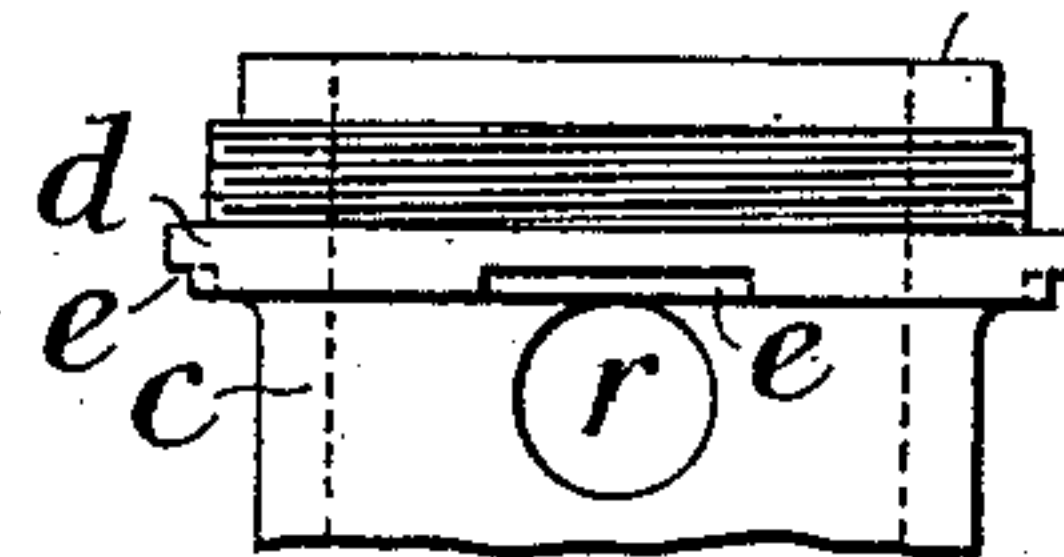
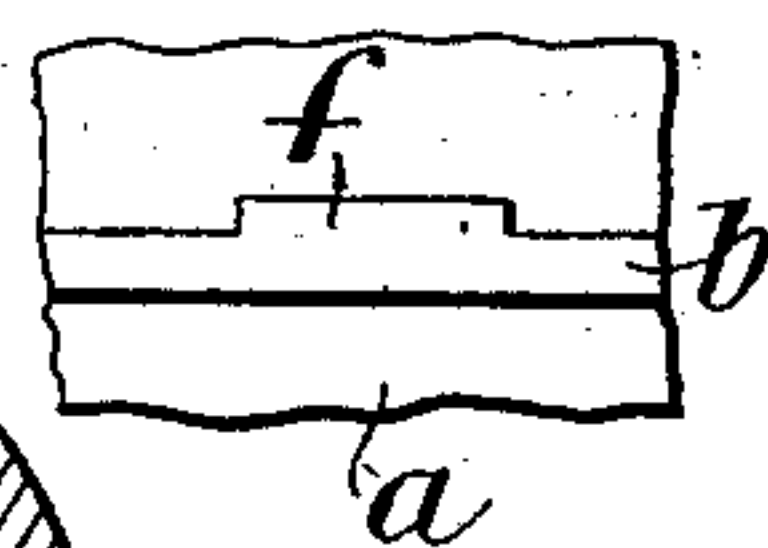


Fig. 3.



Witnesses.

G. J. Redfern
John E. Dousfield.

Inventor.

J. Evinof

UNITED STATES PATENT OFFICE.

JULIUS EVINOF, OF LONDON, ENGLAND.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 622,887, dated April 11, 1899.

Application filed August 26, 1898. Serial No. 689,607. (No model.)

To all whom it may concern:

Be it known that I, JULIUS EVINOF, a subject of the Emperor of Russia, residing at London, England, have invented new and useful Improvements in Non-Refillable Bottles, (for which I have applied for a patent in Great Britain, No. 12,961, dated June 9, 1898,) of which the following is a specification.

My invention relates to bottles provided with means for preventing the refilling of the same after the contents have been discharged.

According to my invention I arrange in the bottle-neck a valve which is normally held against a seat by means of a spring or the like, so as to prevent the introduction of liquid into the bottle, but is moved away from its seat to allow the liquid contained in the bottle to be poured out. The opening of the valve for the discharge of the liquid is effected by means of a weight which when the bottle is inclined to pour out the contents acts against the valve or against an intermediate piece which bears against the valve to move the same away from its seat. This weight is arranged in a cage the sides of which are inclined in such a manner that the said weight will not operate the valve until the bottle has been turned over with its mouth considerably below the horizontal axis of the bottle, this arrangement preventing the partial refilling of the bottle when in an inclined position.

In practice the valve, with its connected parts, is carried in a sleeve or bush, which is adapted to be slipped into the neck of a bottle after it has been filled and is supported upon a rib or lugs therein, the said sleeve being fixed by any suitable means. The mouth of the bottle is left clear to receive the usual cork or stopper. A shield is preferably arranged over the top of the sleeve containing the valve for preventing the introduction of a wire or instrument for tampering with the valve.

I advantageously make use of a special form of bottle having the upper part of the neck made separate from the lower part.

To enable my invention to be fully understood, I will describe the same by reference to the accompanying drawings, in which—

Figure 1 is a sectional elevation of a bottle having my improvements applied thereto; and Figs. 2, 3, and 4 are views illustrating de-

tails. Fig. 5 is a sectional view illustrating a slight modification, and Fig. 6 is a sectional view illustrating a further modification.

Similar letters of reference indicate corresponding parts in the several figures.

a is the bottle-neck, which at its lower end is formed with a projecting flange or rib *b*. *c* is a cylinder formed with an external flange *d*, which rests upon the rib *b*, which flange has upon its lower face one or more notches *e*, Fig. 2, which engage with a corresponding projection or corresponding projections *f*, Fig. 3, on the upper surface of the rib *b*, as clearly indicated in Fig. 1, for a purpose hereinafter described. The external surface of the cylinder *c* above the flange *d* is screw-threaded, as shown in Figs. 1 and 2, and the upper end of the said cylinder serves as a valve-seat *g*.

h is a sleeve or bush which fits into the bottle-neck and which at its lower end is screwed onto the screw-thread on the cylinder *c*. In this sleeve or bush is a cross-bar *i*, in which slides a stem *j*, having pivoted to its lower end a valve *k*, adapted to bear against the seating *g*, a spring *l*, surrounding the stem and bearing at one end against the cross-bar *i* and at the other against a collar upon the stem *j*, serving to normally press the valve against its seat to prevent the introduction of liquid into the bottle.

m is the shield, fixed in the upper end of the bush *h* above the valve-stem, the said shield, as shown, being in the form of a disk having a series of radial slits, as shown in Fig. 4, which permit of the different segments of the disk being bent into the form of a rotary fan, as clearly shown in Fig. 1, to form openings for the escape of the liquid, while at the same time preventing the introduction of a wire or an instrument for tampering with the valve.

n is the cage, attached to the lower end of the cylinder *c* and containing a weight in the form of a ball *o*, which, through the medium of a rod *p*, sliding through a cross-bar *q* in the upper end of the said cage, serves when the bottle is tilted to the required extent to push back the valve *k* against the pressure of the spring *l* to allow the liquid to escape. The sides of the cage *n* are inclined in such a manner that the weight will not roll against the stem until the bottle-mouth is turned below

the horizontal, thereby insuring that the bottle cannot be partially refilled by immersing it in liquid, as would be possible if the valve could be opened when the bottle-mouth was in a horizontal position or above the horizontal position, in which position some of the air contained in the bottle could escape.

It will be noticed by reference to Fig. 1 that the rod *p* is cranked near its upper end, so that it bears upon the valve *k*, to one side of the pivot of the latter, this arrangement being provided for the purpose of tilting the valve to the position indicated by the dotted lines in Fig. 1 for the purpose of affording a passage for the discharge of the liquid from the bottle, which is obstructed as little as possible by the valve.

r r, Figs. 1 and 2, are openings formed in the cylinder *c* for the passage of the liquid, and *s* is a grid which is fixed in the upper end of the cylinder *c* and serves for preventing the rod *p* from falling out of its guide in the cross-bar *q* when the bottle is reversed, the cranked portion of the said rod *p* impinging against the said grid, as indicated by the dotted lines in Fig. 1.

The device hereinbefore described can be fitted together before being inserted into the bottle and after the bottle is filled be introduced into the neck and fixed by any suitable means, so that it cannot be removed, the bottle being finally closed by means of the usual cork or stopper. In practice, however, I advantageously make use of a special form of bottle, wherein that part of the neck in which my device is fixed is made larger than the upper part of the neck, so as to permit of the device being made larger than would be possible if the device were adapted to be inserted through an opening which could be closed by an ordinary cork. With this arrangement the act of placing the upper part of the neck in position serves also for fixing my device. As shown in Fig. 1, the upper part of the sleeve *h* is made of smaller diameter externally than the internal diameter of the large part of the neck and is externally screw-threaded, while the smaller part of the neck is formed with a spigot end *t*, internally screw-threaded to engage with the upper end of the sleeve *h* and externally of a diameter to fit the interior of the large portion of the neck.

Around the lower part of the reduced portion of the sleeve is placed a ring *u*, of india-rubber or other suitable packing material, which ring is of such a depth that as the upper portion of the neck is screwed down the said ring will be compressed and forced outward into an internal groove or enlargement *v*, formed in the larger portion of the neck, the said ring then forming a rib which prevents the upper part of the neck with my device attached to it from being drawn out of the lower part of the neck and also serving to prevent leakage around the sleeve. The engagement of the recesses *e* on the under surface of the flange *d* of the cylinder *c* with

the projections *f* upon the rib *b*, hereinbefore described, serves to hold my device rigid while the upper part of the neck is being screwed into position. In some cases the enlargement *v* can be dispensed with, as shown in Fig. 5, the compression of the ring *u* against the inside of the bottle-neck when screwing down the upper neck portion being depended upon for holding the parts in position.

The upper part of the neck may be rendered immovable relatively with the lower part, when screwed down, by means of cement, or, if desired, a band *w*, of metal, may be spun over the adjacent edges of the two parts of the neck, as shown in Fig. 1, the said band when removed allowing of the parts being separated. In this case, however, it will be obvious that the band should be marked in such a manner by the manufacturer or bottler that its replacement by an unauthorized person would be noticeable.

I sometimes provide spring-pins *x* or the like in holes *y* in the upper portion of the neck, which pins are arranged to cooperate with a groove *z* in the lower portion of the neck, as shown in Fig. 6, in such a manner that when the loose portion of the neck is screwed home the said pins will spring into the said groove, and thus effectually prevent the removal of the upper portion of the neck without breaking the bottle.

It is to be understood that the various parts of my device must as far as possible be made of glass, porcelain, or like material, which will not have an injurious effect on or be acted upon by the liquid which the bottle contains.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a non-refillable bottle, the combination with the bottle-neck provided with a valve-seat, of a spring-actuated valve engaging said seat, a valve-actuating rod separate from the valve and having one end in position to engage the same, a guide for said rod, a movable weight adapted to engage the other end of the said rod and a cage surrounding said weight and provided with sides adapted to guide said weight into position to engage said rod, substantially as described.

2. In a non-refillable bottle, the combination with the bottle-neck provided with a valve-seat, a pivoted valve engaging said seat, a spring-actuated longitudinally-movable rod pivoted to said valve for holding it normally on its seat, a valve-operating rod separate from the valve, having one end engaging the valve at one side of its connection with said spring-actuated rod, a guide for the valve-actuating rod, a stop for limiting the movement of said rod in a direction to open the valve, a movable weight adapted to engage the said rod and actuate it, and a cage surrounding said weight and provided with sides for guiding the weight into engagement with the said rod, substantially as described.

3. In a non-refillable bottle, the combination with the bottle-neck provided with a valve-seat, of a spring-actuated valve on said seat, a valve-actuating rod separate from said valve,
 5 a cage extending below the said valve-seat provided with sides inclining inwardly from the bottom toward said valve-seat, and a movable weight in said cage adapted to engage said valve-actuating rod, whereby the said
 10 weight will be held from movement toward the valve by said tapering sides of the cage until the bottle is nearly inverted, substantially as described.

4. In a non-refillable bottle, the combination with the bottle-neck provided with a valve-seat and a spring-actuated valve on said seat, of a cage below said seat provided with sides inclining inwardly from the bottom toward said valve-seat and a movable valve-actuating weight in said cage whereby the inclined
 20 sides of said cage will prevent the weight from moving toward the valve until the bottle is nearly inverted, substantially as described.

5. In a non-refillable bottle, the combination with the bottle-neck provided with a valve-seat and a spring-actuated valve on said seat, of a rigidly-mounted cage extending below said valve-seat, and provided with sides inclining inwardly from the bottom toward said
 30 valve-seat and a guide below the valve-seat, a valve-actuating rod mounted in said guide and having a part in position to engage the valve to open it, and a movable weight in said cage adapted to engage and move said valve-
 35 actuating rod, substantially as described.

6. In a non-refillable bottle, the combination with the bottle-neck, of a cylindrical casing secured in the lower part of said neck provided at its upper end with a valve-seat, and
 40 adjacent to its lower end with inlet-apertures, a spring-actuated valve engaging said valve-seat, a cage rigidly secured to said casing and provided with sides inclining inward from the bottom toward the valve-seat, a movable
 45 weight in said cage, and a valve-actuating rod interposed between said weight and the valve, substantially as described.

7. In a non-refillable bottle, the combination with the bottle-neck provided with a valve-seat, of a sleeve secured in said neck and provided with a guide, a valve-stem mounted in said guide, a valve on said valve-seat pivotally secured to said stem, a spring for holding said
 50 valve on its seat, a cage below said valve-seat having its sides inclined inwardly from the

bottom toward said valve-seat, a movable weight in said cage, and a valve-actuating rod interposed between said weight and the valve and engaging said valve at a distance from its point of pivoting, substantially as de-
 60 scribed.

8. In a non-refillable bottle, the combination with the bottle-neck provided with a shoulder at its lower end of a cylindrical casing in the lower portion of the bottle-neck and pro-
 65 vided with a portion adapted to engage said shoulder a valve-seat at its upper end, apertures for the admission of liquid and a cross-bar provided with a guide, a cage secured to the lower end of said casing provided with
 70 sides tapering inwardly from the bottom upwardly, a weighted ball in said cage, a sliding valve-actuating rod working in said guide and adapted to be operated by said ball, a sleeve in the bottle-neck above said casing
 75 provided with a guide, a guide-rod engaging said guide, a valve pivotally connected to said rod engaging said valve-seat and located in the path of said valve-operating rod, a spring surrounding said rod for holding the valve
 80 upon its seat, and a shield in said sleeve above the valve and its connections, substantially as described.

9. In a non-refillable bottle wherein is a sleeve containing a valve operated by a spring
 85 to hold it against its seat and a weight to move it away from its seat, the combination of a loose upper neck portion adapted to screw onto the upper end of the said sleeve, a groove in the lower neck portion, a flexible packing-
 90 ring which as the upper neck portion is screwed onto the sleeve is expanded into the said groove and means for locking the upper neck portion to the lower neck portion, substantially as described.

10. In a non-refillable bottle wherein is a sleeve containing a valve operated by a spring to hold it against its seat and a weight to move it away from its seat, the combination of a loose upper neck portion adapted to screw
 100 onto the upper end of the said sleeve, and a flexible packing-ring which as the upper neck portion is screwed onto the sleeve is expanded against the wall of the bottle-neck and means for locking the upper neck portion to the lower
 105 neck portion, substantially as described.

JULIUS EVINOF.

Witnesses:

G. F. REDFERN,
 JOHN E. BOUSFIELD.