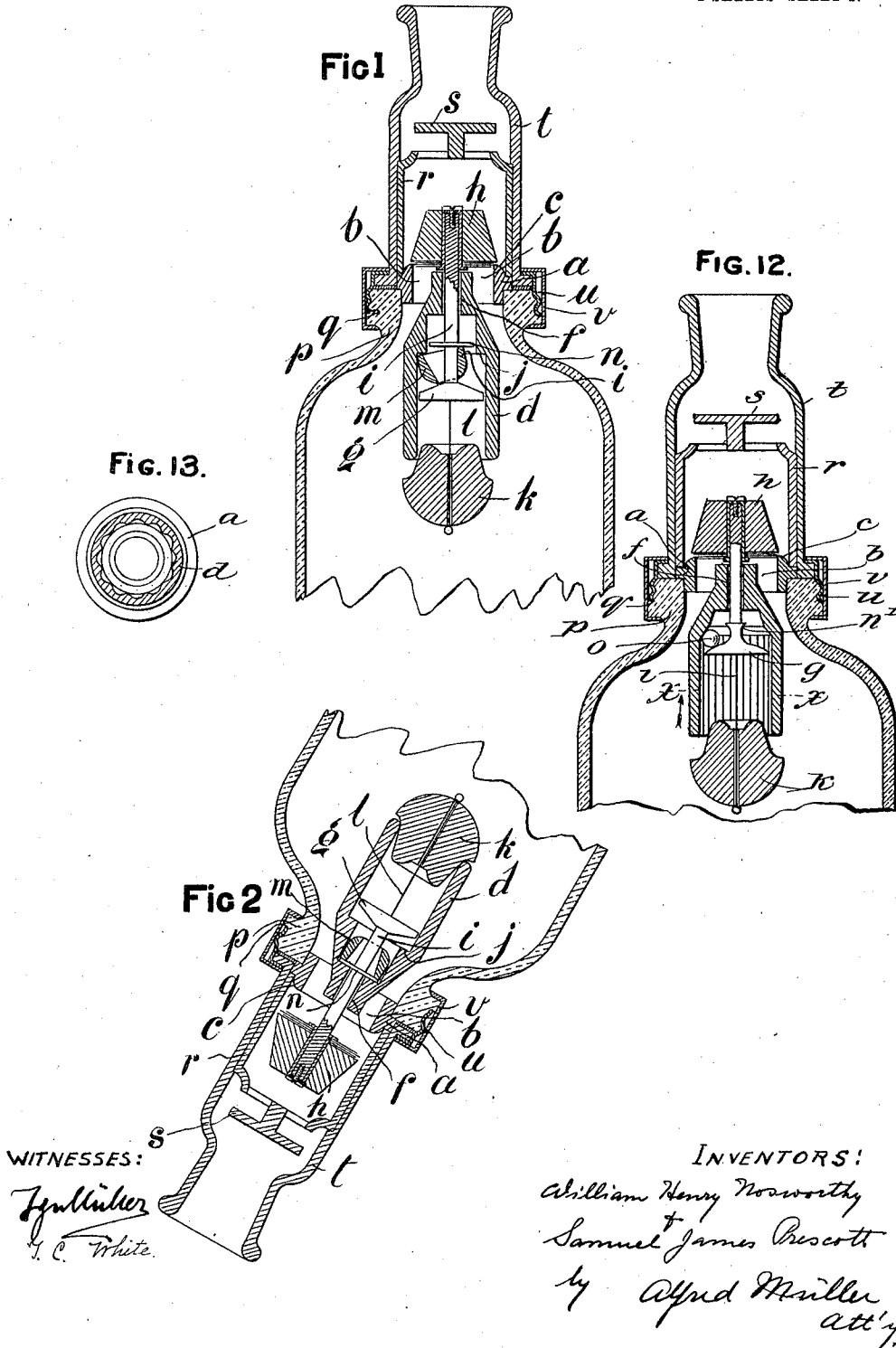


W. H. NOSWORTHY & S. J. PRESCOTT.
 NON-REFILLABLE BOTTLE OR LIKE VESSEL.
 APPLICATION FILED SEPT. 10, 1908.

1,036,889.

Patented Aug. 27, 1912.

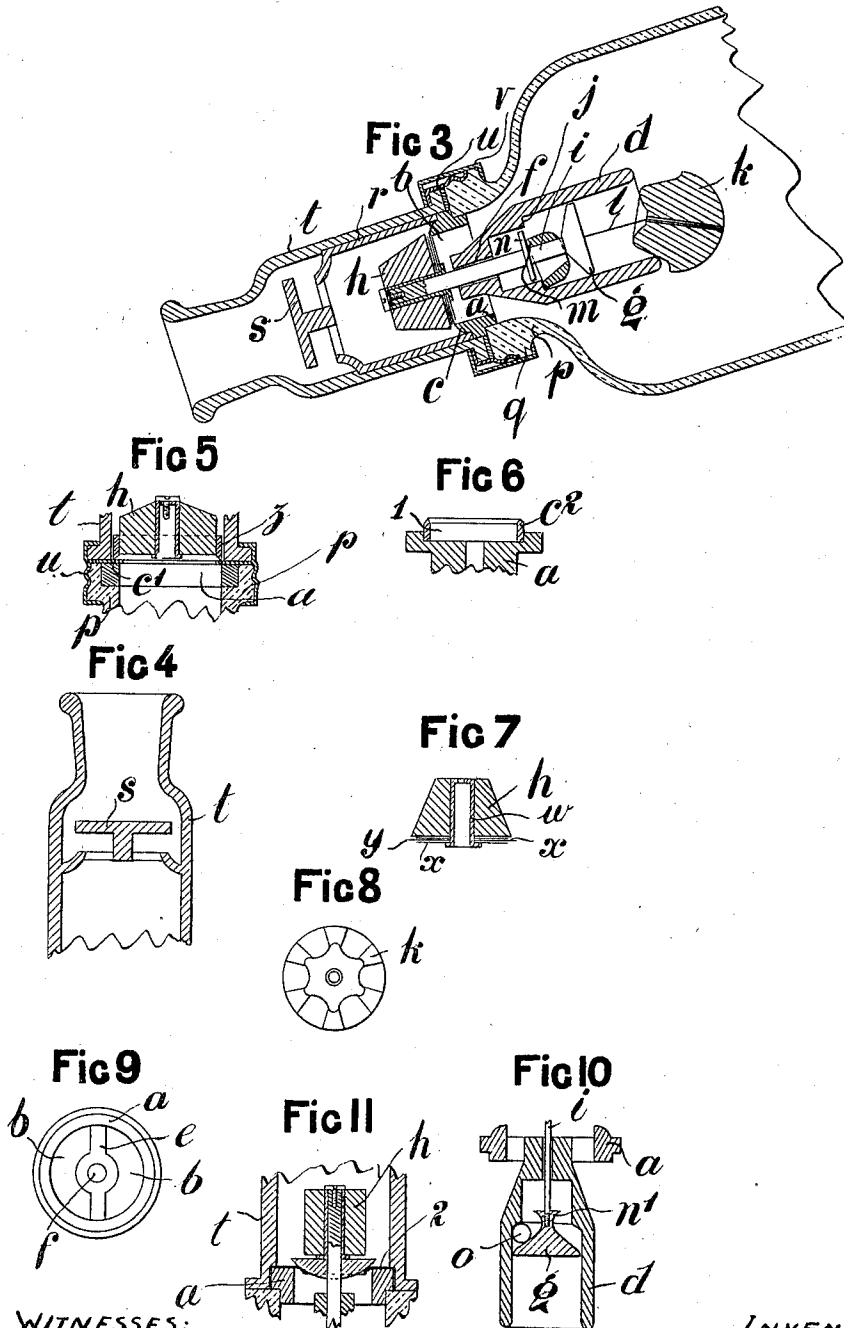
2 SHEETS—SHEET 1.



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UNITED STATES PATENT OFFICE.

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LONDON, ENGLAND.

NON-REFILLABLE BOTTLE OR LIKE VESSEL.

1,036,889.

Specification of Letters Patent.

Patented Aug. 27, 1912.

Application filed September 10, 1908. Serial No. 452,465.

To all whom it may concern:

Be it known that we, WILLIAM HENRY NOSWORTHY and SAMUEL JAMES PRESCOTT, subjects of Great Britain, residing at 45 Church street, Camberwell, London, England, have invented new and useful Improvements in Non-Refillable Bottles or Like Vessels, of which the following is a specification.

10 This invention relates to improved means for preventing a bottle or like vessel from being refilled in fraud of the original packer.

Particularly the present invention has for its object to provide simple and effective means which not only positively lock the closing valve upon its seating when the vessel is in an upright position, but also, and which is very important, will positively lock up the valve upon its seating some time before the vessel, after being inverted, arrives at a horizontal position. In attaining the positive locking up of the valve upon its seating, before the vessel after being inverted, arrives at a horizontal position, it is thereby rendered impossible to raise the valve by suction in an approximately horizontal position of the vessel to get any liquid into the vessel.

To make the invention clearly and readily understood, we will describe the same with reference to the accompanying two sheets of drawings, in which:—

Figure 1 Sheet 1 is a vertical section of a bottle arranged non-refillable under our invention. Fig. 2 illustrates the bottle positioned for pouring out the contents thereof. Fig. 3 illustrates how the valve is closed and locked upon its seating before the bottle, after being inverted as at Fig. 2, arrives at a horizontal position. Fig. 4 illustrates a modification in the formation of the separately formed bottle neck. Figs. 5 to 11 are detail views hereinafter referred to and Fig. 12 is a vertical section of a bottle with non-refillable means slightly modified over that shown by Fig. 1. Fig. 13 is a detail view, showing in horizontal section looking in the direction of the arrow Y, the tubular portion hereinafter referred to.

50 According to our invention we form a preferably circular frame *a* (shown in plan in Fig. 9) having passage ways *b b* for the liquid and air and arranged to provide a valve seating *c* (Fig. 1) or *c*¹ (Fig. 5) or *c*² (Fig. 6) for a floating valve *h*. Such frame *a*

carries centrally thereof a depending tubular portion *d* formed outwardly partly straight and partly tapering to suit the width of the bottle neck and conveniently made integral with the cross-piece *e* (see Fig. 9) of the frame *a*. The cross piece *e* has an opening *f* made centrally there-through leading to the tubular portion *d* and the wall of such opening forms a guide for the valve *h* by means of a pin or stem *i*, with which the valve is provided, working through the opening *f*.

At the lower end, the pin *i* is provided with a disk or flange *g* of such size that it also fits fairly close in the tubular portion *d* without jamming therein, the inner diameter of said portion *d* being reduced toward the upper part thereof to form a shoulder *j* with which coöperates a locking member supported by the valve pin. To the valve pin as by a length of gut *l* or in other suitable manner so that it may have a lever action as hereinafter described is connected a weight *k*. The upper part of the weight *k* is tapered off or reduced in diameter to pass into the tubular part *d* Fig. 2, and allow the necessary movement of the valve. Normally the reduced end of the weight *k* does not quite pass below the tubular portion *d*, see Fig. 1. In Fig. 8 the tapered end of the weight is shown fluted to permit of the ready passage of the fluid.

As shown in Fig. 1, the locking member which is to coöperate in the manner hereinafter described with the shoulder *j*, may consist of a ring *m*, the inner diameter of which is considerably larger than the width of the valve-pin *i*. One edge of the ring is rounded off and the inside is tapered, and being placed over the pin with the rounded edge and smallest internal diameter next to the disk *g* the upper side whereof slopes downwardly away from the pin, it will be understood that the tendency of the ring is to fall sidewise, when the parts are upright as in Fig. 1. This being so, the relation of the parts is so arranged that when they are upright as in Fig. 1 the ring *m* falling sidewise engages under the shoulder *j* and this occurs irrespective of the particular direction in which it may so fall sidewise.

In addition to the locking member *m* forming a positive lock against the valve being raised by suction or shaking when the parts are positioned as in Fig. 1, we are also

able to provide thereby that the valve is positively locked upon its seating some time before the parts, after having been inverted as in Fig. 2, arrive at a horizontal position. To attain this end the valve pin or stem *i* is provided with a flange or projection *n* at a suitable distance from the disk *g* that while the ring *m* is free to fall sidewise to engage under the shoulder *j* as in Fig. 1, such flange or projection *n* when the vessel is being returned from the position Fig. 2 to the position Fig. 1 will, when the valve and valve pin are drawn back by the weight *k* as hereinafter described before the parts arrive at the horizontal position, operate at the same time to pull back the ring and cause this to engage behind the shoulder *j*, thus locking up the valve upon its seating in a position of the bottle approximately as shown in Fig. 3. While therefore in approximately the position of the parts as shown in Fig. 3, it would be possible to raise the valve by suction against the weight *k*, this would be impossible with the positive holding of the valve upon its seating effected by us as above described. In this way, the valve *h* is positively locked upon its seating in a most effective manner. A slight shake or twist of the vessel when inverted permits the locking ring to slip from under the shoulder *j* and pass up into the narrower part of the tubular portion *d* thereby allowing the requisite movement of the valve and valve pin for pouring out the contents.

While we have found a locking member such as *m* to work well for the purpose specified we do not limit ourselves to that particular form. For instance in lieu of a ring, we may employ a ball or bead *o* Fig. 10 to cooperate with the shoulder *j* and the disk *g* by arranging the relation of the parts accordingly. In this case the disk or flange *g* may be formed so as to provide in itself a flange or shoulder *n'* to cooperate with the ball or bead in similar manner to that of the flange *n* with the ring *m* as hereinbefore described.

In fitting the parts in a bottle or like vessel we may make the latter with a short neck *p* which is externally threaded and provided with a shoulder or flange *q* so that after fitting in the parts, the bottle can be completed by securing a separate neck or stopper to the short neck *p* in such manner that by tearing or breaking an attaching ring, the whole of the parts can be used again by the original packers.

As shown in Fig. 1, the frame *a* is provided with a flange to rest on the neck *p*. A tubular portion *r* protected by a raised disk *s* and forming means for preventing tampering with the valve is then placed thereover and over this is finally placed a flanged neck or stopper *t*. A flanged screwed capsule *u* is then screwed onto the

neck *p* and a metal ring *v* is crimped over the shoulder or flange *q* and the neck or stopper flange. In lieu of the separate piece *v*, the means for preventing tampering with the valve may be formed integral with the neck or stopper *t* as shown in Fig. 4. Resilient rings or washers may be placed where found desirable to avoid possibility of leakage. The floating valve may also be formed as at Fig. 7 by a ring of cork mounted upon a flanged tube *w* of bone or other suitable material and two mica disks *x*, *x* and an intermediate parchment disk *y* of slightly larger diameter than the mica disks *x* so that the parchment disk makes contact with the valve seating and allows a slight spring movement to the valve *h* relative to its seating. This spring movement assists the locking member *m* or *o* to enter into locking engagement with the shoulder *j*, and also allows for slight inaccuracies in fitting the parts of the mechanism together as a slight lift of the valve is permitted without the disk *y* leaving the valve seating. The tube receives the valve pin *i* and is suitably attached thereto. Or as shown in Fig. 5 we may surround the cork ring with a glass ring *z* having a knife edge to make contact with a parchment or other suitable washer located between the bottle and neck or stopper *t*, the frame *a* in this case fitting in a recess of the bottle neck *p* so as to come flush with the edge thereof. In lieu also of the frame *a* directly forming the valve seating, a glass ring *1* may be employed for the purpose and let into the frame *a* as shown in Fig. 6. Or, as shown in Fig. 11, the valve *h* may be provided with a convex contact surface to rest upon the projecting inner part of a resilient ring *2* secured between the neck *t* and the frame *a*, the ring projecting inwardly over the inner edge of the frame *a*, so that the valve is practically suspended on the resilient ring. We do not however confine ourselves to an exact arrangement of the floating valve and its seating as other arrangements than that mentioned may be adopted with practically as good results.

The locking up of the valve upon its seating having been already described, it will now be understood that if the vessel is positioned mouth downward and it is given a slight shake the locking member is disengaged from the shoulder *j* and entering the narrower part of the tubular portion *d* permits the valve to move away from its seating, the weight *k* having fallen sufficiently into the tubular portion *d* to allow such movement of the valve to take place as will give free passage thereby for the liquid to flow out of the vessel. In returning the vessel to its normal position however the weight *k* fulcruming as it does on the lower edge of the tubular portion *d* falls away from the latter and leaves back the valve onto its

seating as shown in Fig. 3 some time before the bottle arrives at a horizontal position. At the same time the flange or projection n or n^1 pulls back the locking member and causes this to engage behind the shoulder j .

With a vessel arranged non-refillable according to our present invention it will now be clear that in addition to the valve being capable of floating back onto its seating and the valve being positively locked upon its seating when the vessel is approximately upright, the valve is positively locked up against its seating as soon as the vessel after being inverted arrives at approximately the position shown in Fig. 3. Such positive locking up of the valve upon its seating as soon as it arrives at such position, is, it will be seen, a distinct advance upon merely shutting the valve by a weight since it is possible to draw the valve open in a horizontal or approximately horizontal position of the vessel by suction against the weight, but with the positive lock effected under our invention this is impossible. To avoid any possibility of the weight holding to the tubular portion the inclined or reduced portion is preferably fluted as shown in Fig. 8. The tubular portion may also be internally fluted or perforated if found necessary or desirable.

The various parts designated by a , d , k , m , r , s and t we have made of porcelain and the valve pin and disk we prefer to make of glass, porcelain, ivory or bone.

It is to be understood that minor changes in the details of construction in carrying out the invention may be made without affecting the principle herein involved.

Having thus described our invention, what we desire to secure by Letters Patent is:—

1. A non-refillable receptacle for liquids comprising a valve seat, a valve, a weight adapted to close said valve and to retain it upon said seat by the action of gravity, a tubular extension of said valve seat, a stem attached to said valve, guided within said tubular extension, an abutment on said stem, an abutment within said tubular extension, a locking device adapted to be interposed by the action of gravity when and as soon as the valve is closed between the two said abutments, and means arranged between the outlet from the receptacle and said valve adapted to prevent interference.

2. A non-refillable receptacle for liquids comprising a valve seat, a valve, a weight adapted to close said valve and to retain it upon said seat by the action of gravity, a tubular extension of said valve seat, a stem attached to said valve guided within said tubular extension, an abutment on said stem, an abutment within said tubular extension, a locking device adapted to be interposed by the action of gravity, when and as soon as the valve is closed, between the two said

abutments, means for returning said locking device into position to be interposed between said abutments as the valve is moved toward its seat, and means arranged between the outlet from the receptacle and said valve adapted to prevent interference.

3. A non-refillable receptacle for liquids comprising a valve seat, a valve, a weight adapted by the action of gravity to close said valve and to retain it upon said seat before the receptacle is raised to the horizontal position, a stem on said valve provided with an abutment, a tube surrounding said stem provided with an abutment, a locking device adapted to be interposed by the action of gravity, when and as soon as the valve is closed, between the two said abutments, means operated by said weight for returning said locking device into position to be interposed as aforesaid between said abutments as the valve is moved toward its seat, and means arranged between the outlet from the receptacle and said valve adapted to prevent interference.

4. A non-refillable receptacle for liquids comprising a valve seat, a floating valve provided with a yielding face, a weight adapted to close said valve and to retain it upon said seat by the action of gravity, a tubular extension of said valve seat, a stem attached to said valve guided within said tubular extension, an abutment on said stem, an abutment within said tubular extension, a locking device adapted to be interposed by the action of gravity when and as soon as the valve is closed between the two said abutments, and means for returning said locking device into position to be interposed between said abutments, as the valve is moved toward its seat.

5. A non-refillable receptacle for liquids comprising a valve seat, a valve, a weight adapted to close said valve and to retain it upon said seat by the action of gravity, a tubular extension of said valve seat, a stem attached to said valve guided within said tubular extension, an abutment on said stem, an abutment within said tubular extension, a second abutment on said stem, a locking device arranged between said two abutments on said stem and adapted by the action of gravity, when and as soon as the valve is closed, to fall between said abutment on the tubular extension and the lower of said two abutments on said stem, and means arranged between the outlet from the receptacle and said valve adapted to prevent interference.

6. A non-refillable receptacle for liquids comprising a valve seat, a valve, a weight adapted by the action of gravity to close said valve and to retain it upon said seat before the receptacle is raised to the horizontal position, a stem on said valve provided with a sloping abutment, a tube surrounding said stem provided with a sloping abut-

ment, a locking ball adapted to roll by the action of gravity, when and as soon as the valve is closed, between the two said abutments, means for returning said ball into
5 position to roll between said abutments as the valve is moved toward its seat, and means arranged between the outlet from the receptacle and said valve adapted to prevent interference.

In testimony whereof we have signed our 10 names to this specification in the presence of two subscribing witnesses.

WILLIAM HENRY NOSWORTHY.
SAMUEL JAMES PRESCOTT.

Witnesses:

HENRY CONRAD HEIDE,
LEONARD COULSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C.