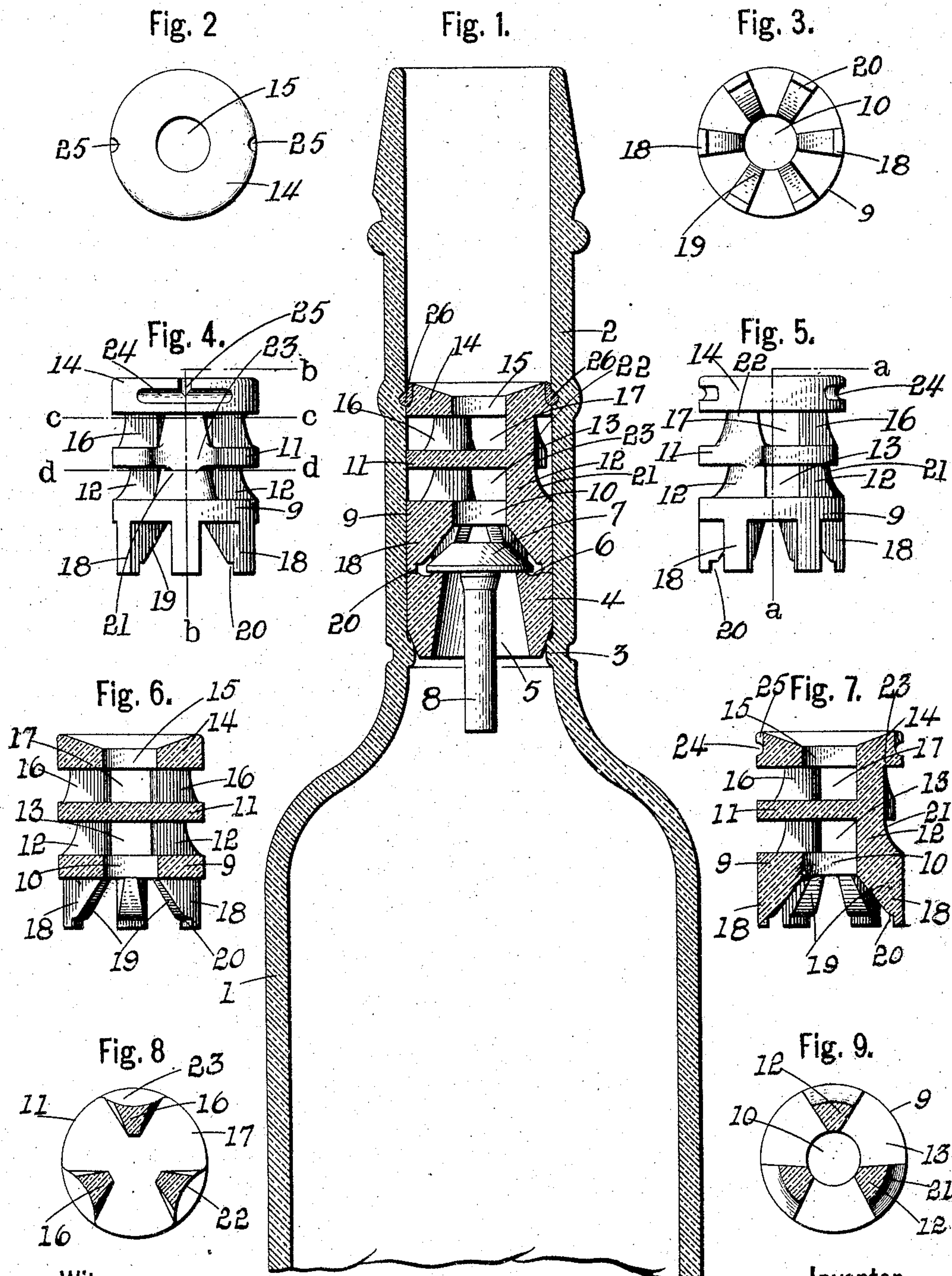


R. A. SCHWAB.
NON-REFILLABLE BOTTLE.
APPLICATION FILED MAY 26, 1903.



Witnesses.

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NON-REFILLABLE BOTTLE.

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To all whom it may concern:

Be it known that I, RICHARD A. SCHWAB, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention relates to a non-refilling mechanism for bottles, which is composed of a valve-seat member, a valve member, and a valve-retaining member, which is formed in one integral piece and provided with a tortuous passage-way for the liquid in the bottle.

One of the objects of the invention is to form the valve-retaining member in one integral piece, which lessens the number of parts, cheapens and strengthens the construction, and insures the correct and rapid assembling of the parts of the non-refilling mechanism.

Another object is to make the valve very sensitive by having it turn on its peripheral edge in a shallow groove or recess in the face of the valve-seat when operating, which forms a turning-seat for the edge of the valve and prevents it sliding into contact with the surrounding-wall.

Another object is to fasten the valve-retaining member in place in the bottle-neck by a key of suitable cement, which is poured in registering recesses in the bottle-neck and valve-retaining member in liquid form and hardens therein, rigidly securing the valve-retaining member in the bottle-neck.

The invention also relates to certain details of construction of the valve-retaining member, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a fragmentary central vertical section through a bottle equipped with the improved non-refilling mechanism. Fig. 2 is a top plan view of the upper or valve-retaining member. Fig. 3 is a bottom view of the upper or valve-retaining member. Fig. 4 is a side elevation of the upper or valve-retaining member. Fig. 5 is a side elevation of the upper or valve-retaining member looking approximately at right angles to the view shown in Fig. 4. Fig. 6 is a vertical section on line *a a*, Fig. 5, through the upper or valve-

retaining member. Fig. 7 is a vertical section on line *b b*, Fig. 4, through the valve-retaining member. Fig. 8 is a horizontal section on line *c c*, Fig. 4, through the upper member. Fig. 9 is a horizontal section on line *d d*, Fig. 4, through the upper member.

In referring to the drawings in detail like numerals designate like parts.

The bottle 1 may be of any ordinary form with the usual neck 2.

The non-refilling mechanism consists of an upper or valve-retaining member, a lower or valve-seat member, both of which are seated rigidly in the bottle by means hereinafter described, and a movable valve member.

The lower portion of the neck 2 is provided with an inwardly-extending ledge or shoulder 3, against which the lower tapering portion of the valve-seat member 4 is fitted. The valve-seat member 4 is annular in form, having a central tapering opening 5 and a shallow top annular groove 6. The valve member has a truncated-cone-valve part 7, which is adapted to fit against the top of the valve-seat member and a depending balancing stem 8, which projects through the opening 5 in the valve-seat member. The peripheral edge of the valve part is adapted to engage in the shallow groove 6 in the top surface of the valve-seat member as the valve member turns from one position to another in opening or closing, said groove forming a seat for the valve part and preventing it sliding into contact with the surrounding wall, which would materially restrict its full movement. The upper or valve-retaining member is formed or molded in one piece and has a lower section 9, which is in the form of a ring with a central opening 10, (see Fig. 9,) a flat intermediate section 11, which is supported at a suitable distance above the lower section 9 by a plurality of legs 12, which extend vertically up from the lower section 9, and are separated sufficiently to leave openings 13 for the passage of liquid, as shown in Fig. 9, and a top section 14, which also is in the form of a ring with a central opening 15, and is supported at a suitable distance above the intermediate section 11 by a plurality of legs 16, which extend vertically from the intermedi-

ate section 11 to the top part 14, and are separated to provide openings 17 for the passage of liquid. A plurality of legs 18 extend downward from the lower section 9, which have inclined or outwardly and downwardly extending inner surfaces 19, which extend at nearly the same angle as the inclined circular sides of the truncated-cone-valve part 7, (see Fig. 1,) and are notched at their lower ends, as shown at 20 in Figs. 1, 3, 4, 5, 6, and 7. The legs 12, which extend between the lower section 9 and the intermediate section 11, are cut away on their upper outer wall, as shown in Figs. 1, 4, 5, 6, and 9, to provide side openings 21 (see Fig. 1) for the passage of liquid around the legs and for the purpose of affording communication between the openings 13. The legs 16 are likewise cut away for the purpose of providing side openings 22 (see Fig. 1) for the passage of liquid between the openings 17. The intermediate section 11 is peripherally recessed, as shown at 23, Figs. 1, 4, 7, and 8, to provide openings for liquid-passage.

It will be noted that the top member by reason of its peculiar form has a series of horizontal sections, which are separated from each other by supporting-legs and are provided with openings for the passage of liquid, at least one of the openings being through one of the sections and another in the peripheral edge of a section.

The stationary parts of the non-refilling mechanism are rigidly fastened in place in the bottle-neck with the legs 18 resting on the top of the valve-seat member by means of a key of suitable cement run in registering recesses in the bottle-neck and the top member of the non-refilling mechanism. The cement employed is insoluble to anything, with the exception, perhaps, of acids which are powerful enough to eat and destroy glass, so that once set the non-refilling mechanism is permanently secured in the bottle-neck. The preferable cement is composed of nitric acid, oxid of zinc, phosphoric acid, and gelatin, the oxid of zinc being saturated with nitric acid and then dried and powdered and the phosphoric acid and gelatin mixed together and then mixed with the zinc mass, when it is desired to form a cement sufficient phosphoric acid and gelatin being added to make a semi-liquid plastic mass which can be forced into the recesses by any suitable syringe or other instrument.

In the adaptation shown the top section or part of the top member is provided on its peripheral edge with a plurality of grooves or recesses, and the bottle has corresponding grooves or recesses which register or aline with the grooves or recesses in the top section or part, and an opening or slot is provided through which suitable cement is poured, which fills in the two registering grooves and forms a locking-key when hardened.

Referring to Figs. 1, 4, 5, and 7, the section or part of the top member is provided with two opposite horizontal peripheral grooves or recesses 24 and the interior of the bottle-neck with corresponding grooves or recesses, as shown in Fig. 1. A slot 25 extends vertically up from each groove or recess 24 through the upper wall of the groove or recess and forms an opening through which suitable liquid cement is poured into the registering grooves or recesses to constitute a locking-key 26 when hardened, as shown in Fig. 1.

I claim as my invention—

1. A bottle having a non-refilling mechanism comprising a valve-seat member provided with an annular top groove and a valve device adapted to turn on its peripheral edge in the annular top groove of the valve-seat member, substantially as set forth.

2. A bottle having a non-refilling mechanism comprising a valve-seat member provided with an annular top groove, a valve-retaining member above the valve-seat member and a valve device adapted to turn on its peripheral edge in the annular top groove of the valve-seat member, substantially as set forth.

3. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece and having a plurality of sections separated by supporting-legs and provided with openings forming a tortuous passage-way for liquids.

4. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece and having a plurality of horizontal sections separated by supporting-legs and provided with openings forming a tortuous passage-way for liquids.

5. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece, and having a plurality of separated sections, and at least one section having an opening through itself and at least another section having a peripheral recess, said opening and recess forming a tortuous passage-way for liquids.

6. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece and having one section having a central opening and another a peripheral recess, said opening and recess forming a tortuous passage-way for liquids.

7. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece and having a lower section pro-

vided with a series of depending legs fitting on the valve-seat member and a central opening, an intermediate section having peripheral grooves, a top section having a central opening and supporting-legs extending between said sections, substantially as set forth.

8. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece, and having a lower section provided with a series of depending legs fitting on the valve-seat member and a central opening, an intermediate section having peripheral grooves, a top section having a central opening and supporting-legs extending between said sections, the spaces between legs providing openings for liquid-passage, substantially as set forth.

9. A bottle having a non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece and having a lower section pro-

vided with a series of depending legs fitting on the valve-seat member and a central opening, an intermediate section having peripheral grooves, a top section having a central opening and supporting-legs extending between said sections, the spaces between said legs providing openings for liquid-passage, and parts of the legs being cut away to provide communicating openings between the spaces, substantially as set forth.

10. A bottle having non-refilling mechanism comprising a valve-seat member, a movable valve member and a valve-retaining member, said valve-retaining member being in one integral piece and having a plurality of sections and legs between said sections, the sections having communicating openings and the legs being cut away to provide side openings, substantially as set forth.

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