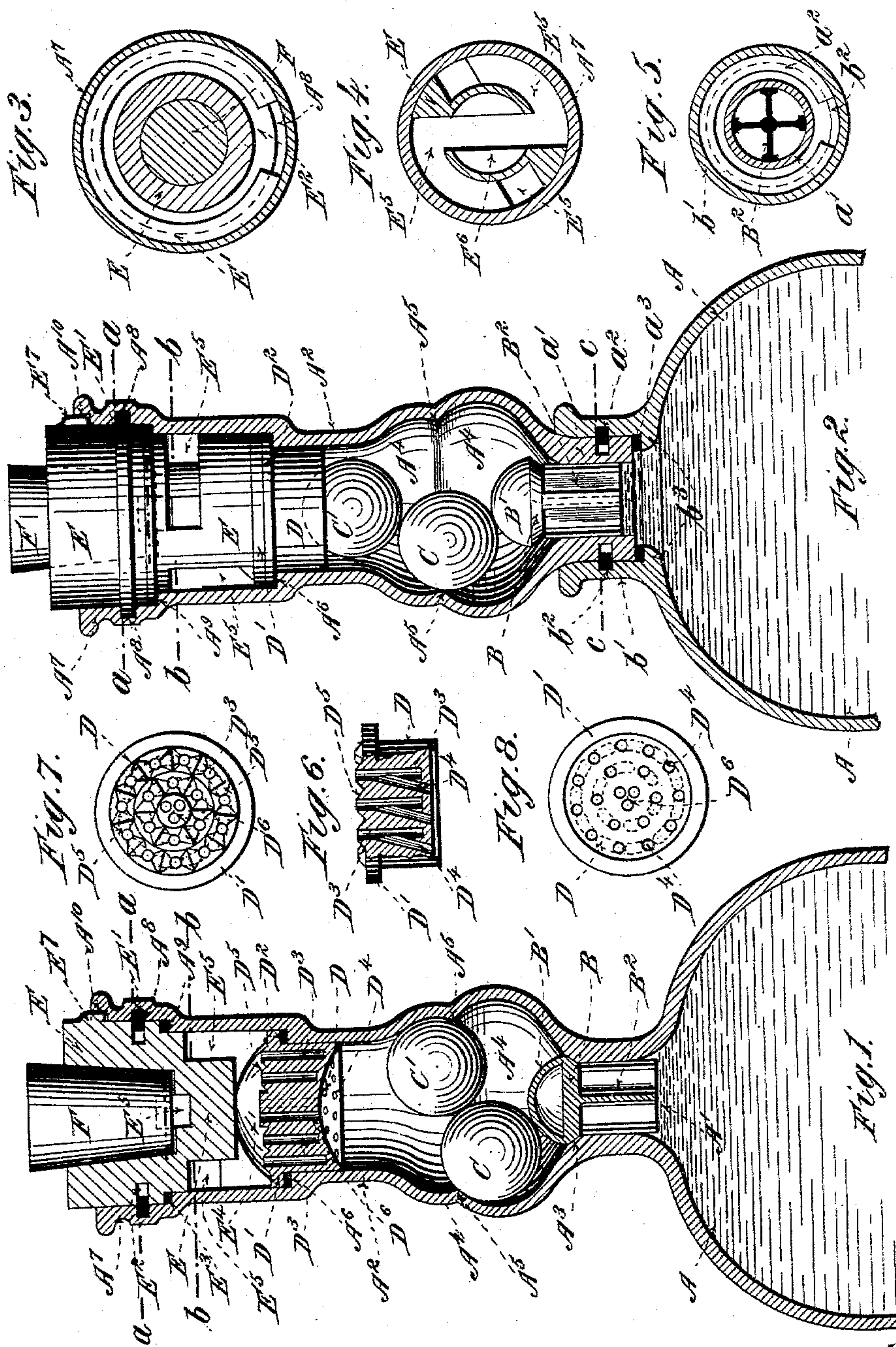


(No Model.)

J. D. MIDSON & F. W. SCHROEDER.  
STOPPERING DEVICE FOR PREVENTING REFILLING BOTTLES.

No. 597,998.

Patented Jan. 25, 1898.



Witnesses:  
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# UNITED STATES PATENT OFFICE.

JAMES DANIEL MIDSON, OF NORTH BOTANY, AND FREDERICK WILLIAM SCHROEDER, OF NEWTOWN, NEW SOUTH WALES, ASSIGNORS TO HUGH DIXSON, OF SYDNEY, NEW SOUTH WALES.

## STOPPERING DEVICE FOR PREVENTING REFILLING BOTTLES.

SPECIFICATION forming part of Letters Patent No. 597,998, dated January 25, 1898.

Application filed March 16, 1896. Serial No. 583,397. (No model.)

*To all whom it may concern:*

Be it known that we, JAMES DANIEL MIDSON, carpenter, a subject of the Queen of Great Britain, residing at North Botany, near Sydney, and FREDERICK WILLIAM SCHROEDER, engineer, a naturalized subject of the Queen of Great Britain, residing at Newtown, near Sydney, in the British Colony of New South Wales, have invented new and useful Improvements in and Relating to Stoppering Devices to Prevent the Refilling of Bottles, of which the following is a specification.

This invention relates to stoppering devices for bottles by the use of which the fraudulent interference with the contents of the bottle by adding other liquids to those contents is absolutely prevented and, in fact, the second use of bottles having such stoppering devices absolutely prohibited. By means of a bottle having such a stoppering the vender may be assured that his goods will reach his customer untampered with.

Stoppering devices for preventing the filling of bottles constructed according to this invention consist, primarily, of a hollow valve or ball and two or more, but preferably two, balls or globular weights contained within an enlargement of peculiar double globular or bulb-like formation in neck of the bottle and operating as a valve-chamber in which one ball, resting on top of the valve, will have superimposed upon it at a peculiar angle the other ball, which on the other side bears up against the inner curved face of the chamber. Above this chamber is a crown-piece or hood having peculiarly-constructed passages or ways therethrough for preventing the entrance of any hard foreign or injurious substance into the valve-chamber and so to the valve-seat, and above this again there is a plug or cork socket which locks and secures the whole device in position. This plug or cork socket has non-continuous passages leading from the outside of its lower end into the open interior of its upper, said open interior being adapted to receive, as ordinarily, a cork or other stopper. Around the inner face of the upper part of the neck of the bottle is a groove adapted to receive a spring-ring compressed within a similar groove around the

periphery of the plug or cork socket until said grooves come flush with each other, when the spring expands and engages both grooves, so that the plug or cork socket is keyed or fastened in the neck of the bottle immovably—that is to say, so that it cannot be removed without breaking the spring (a most unlikely contingency) or breaking the bottle and rendering it useless; but in order that this invention may be clearly understood reference will now be made to the drawings herewith, in which—

Figure 1 is a sectional elevation of the neck or upper portion of a bottle constructed according to these improvements. Fig. 2 is a similar view of a modified construction of the bottle hereinbefore described and also showing the disposition of the balls when the valve is open. Figs. 3 and 4 are sections on lines *a a* and *b b*, respectively, of Figs. 1 and 2, while Fig. 5 is a section on line *c c* of Fig. 2. Fig. 6 is an elevation, partly in section, of the crown-piece or hood, Fig. 7 being a plan, and Fig. 8 a reverse plan, respectively, of the same.

The body or container portion *A* of the bottle may be formed round, square, or of any other desired section with or without the dome-shaped top of the ordinary-shaped top of the ordinary-shaped bottle. In the aperture or orifice *A'* at the base of the neck where it joins the body is set a hollow valve *B*, closing down upon seat *A<sup>3</sup>* and having a hollow dome-shaped head *B'* and legs or webs *B<sup>2</sup>*. This valve is so constructed that in the event of the bottle being upended and liquid surreptitiously forced into the valve-chamber said valve will float upon the surface and be forced firmly onto its seat. Above said valve within the globular or bulb-like valve-chamber *A<sup>4</sup>* are placed two balls or globular weights *C C'*, which are of such a size and so arranged that when said valve *B* is closed one of said balls *C* will fall between the valve *B* and under a shoulder or corner *A<sup>5</sup>*, formed within the chamber *A<sup>4</sup>*, the top ball *C'* falling between said first or lower ball and the opposite side of the chamber *A<sup>4</sup>* in such a manner that the valve will be kept closed until by the tipping or reversing of the bottle the top ball *C'* is caused to move out of its place and so release



the first or lower ball and the valve B. In order that the valve may not be raised or opened by jiggling and to keep the valve firmly on its seat, the balls should be so arranged that the angle formed by a straight line joining the centers of the two balls and another line joining the center of the valve with the center of the lower ball should not be greater or less than from seventy degrees to one hundred degrees, but preferably ninety degrees. Above valve-chamber A<sup>4</sup> is a perforated crown piece or hood D, having flange D' and washer D<sup>2</sup> to take upon shoulder A<sup>6</sup> in neck A<sup>2</sup>. This crown-piece or hood D has peculiarly-constructed passages or ways D<sup>3</sup>, as shown, extending perpendicularly downward from the top face to a certain distance, but not right through said crown-piece or hood, the passages through to the valve-chamber being completed by inclined branches D<sup>4</sup> (see Fig. 6) for the purpose of catching grit or injurious or foreign substances and so preventing its admission to the valve-chamber. For the same purpose the upper surface of the crown-piece or hood is provided with small pyramidal or conical protuberances D<sup>5</sup>, (see Figs. 6 and 7,) the apices of which form the mouths of the ways or passages hereinbefore mentioned. In practice, however, it would be impossible and unnecessary to form all said ways or passages as just described, and the center ways or passages D<sup>6</sup> may therefore pass straight through the crown-piece or hood, the upper surface of which about said holes being slightly raised above the surrounding surface, this also conducing to the object mentioned. The crown-piece or hood D is pressed tightly down upon the shoulders A<sup>6</sup> by the plug or cork socket E, which fits within the expanded top or mouth A<sup>7</sup> of the neck, keyed or locked therein by spring-ring E' in groove E<sup>2</sup> on said socket E, and taking or expanding into the groove or recess A<sup>8</sup> when pressed tightly down upon the washer E<sup>3</sup> upon shoulder A<sup>9</sup> of the neck, so as to make an air-tight joint from the bottom or under side E<sup>4</sup> of the plug or cork socket E, which may be concaved above the center of the crown-piece, as shown. Passages E<sup>5</sup> are provided on opposite sides passing out from said concavity up and around the lower part of the plug or cork socket in opposite directions and enter the open interior E<sup>6</sup>, (see Fig. 4,) into which the cork or stopper F is tightly pressed when the bottle is filled, a small lug or stop-piece E<sup>7</sup> on the outer periphery of socket E, engaging in a slot or notch A<sup>10</sup> in the neck of the bottle, preventing said socket from turning when screwing a cork-screw into cork F or turning the cork or stopper by hand. On the outer face of said spring-ring E' above mentioned the name or mark of the person or firm manufacturing or distilling the contents of the bottle may be marked or impressed, which name or mark will be seen through the glass neck of the bottle by the purchaser.

It will be seen that by no external means

otherwise than by breaking some part of the bottle can the valve B be tampered with, said valve being opened or raised only by capsizing or upending the bottle, which action will cause the top ball C' to fall upon the inner side of the crown-piece and so release the ball C and allow the weight of the liquid in the body A of bottle to open the valve B and flow into the valve-chamber A<sup>4</sup>, through the ways or passages in crown-piece D, into the concavity above said crown-piece, and thence through passages E<sup>5</sup> into the open interior E<sup>6</sup> (see Fig. 4) of the plug or cork socket, the return of the bottle to its normal or upright position causing the balls to fall into their first position again and close the valve.

Should dust or grit or (for the purpose of mischief or fraud) a wire, pebbles, shot, or other like injurious or foreign substances be passed through passages E<sup>5</sup> in the plug or cork socket, they will be prevented from falling through holes D<sup>4</sup> into the globular valve-chamber A<sup>4</sup> and causing injury to the valve B or seating A by the small pyramidal or conical protuberance D<sup>5</sup> on the upper face of crown-piece D or be caught in the bottom of the perpendicular portion B<sup>3</sup> of the passages or ways in said crown-piece being baffled by means of the inclined branches D<sup>4</sup>, so that only by breaking part of the neck of the bottle or by drilling a hole in the top part of the body can said body A be refilled.

Instead of the hollow valve B it is obvious that a hollow ball operated upon as herein described would in a similar manner and might, if desired, be substituted therefor.

In order to obviate the necessity of destroying the whole of the bottle after being once used, the neck may be made separate and distinct from the body, as shown in Fig. 2, the base d' of said neck being secured to the upper part b' of the body of the bottle by a spring-ring a<sup>2</sup>, engaging in a groove b<sup>2</sup> and making an air-tight joint by washer-cement or like suitable packing a<sup>3</sup> against shoulder b<sup>3</sup> in the same manner as the plug or cork socket hereinbefore mentioned. Except that the stoppering device is removably attached to the bottle in the modification shown in Fig. 2 there is no difference in the construction and arrangement of the parts which bear similar letters of reference.

According to a modified arrangement of the valve-operating mechanism a number of smaller balls may be employed in place of the single lower ball C, said balls being acted upon by a single upper ball, such as C', of large diameter, in the manner hereinbefore described.

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

1. In a bottle, the combination with the neck having two globular enlargements, and a valve-seat formed below said enlargements, a hollow valve fitting said seat, and balls ar-



5 ranged in said enlargements one above the  
other and resting on said valve, of the hood  
D fitted in the neck between said enlarge-  
ments and the mouth, said hood being pro-  
vided with a plurality of perpendicular pas-  
sages D<sup>3</sup> extending from its top to near the  
bottom thereof and inclined branch passages  
D<sup>4</sup> communicating at their upper ends with  
the passages D<sup>3</sup> at points intermediate the  
top and bottom of the latter and extending  
through the bottom of the hood, protuberances  
formed on the top of said hood and surround-  
ing the upper ends of the passages D<sup>3</sup>, and a  
cork-socket immovably fitted in the mouth of  
the bottle-neck and provided with tortuous  
passages, substantially as described.

2. In a bottle, the combination with the neck  
having double globular enlargements and a  
valve-seat formed below said enlargements,  
of a hollow valve B seated on said valve-seat,  
globular weights C, C', arranged in said en-  
largements, the weight C resting on the valve  
and the upper globular weight C' bearing an-  
gularly between the lower weight C and the  
inner surface of its globular enlargement,  
whereby both weights are jammed above the  
valve and prevent the latter from being raised  
when the bottle is in an upright position, sub-  
stantially as shown and described.

3. In a bottle, the combination with the neck  
having double globular enlargements and a  
valve-seat formed below said enlargements,  
of a hollow valve B seated on said valve-seat,  
globular weights C, C', arranged in said en-  
largements, the weight C resting on the valve  
and the upper globular weight C' bearing an-  
gularly between the lower weight C and the  
inner surface of the globular enlargement,  
and a plug or cork socket locked in the up-  
per end of the bottle-neck and having an open  
interior for the reception of a cork and tor-

tuous passages connecting the open interior  
with the neck of the bottle, substantially as  
shown and described and for the purpose  
specified.

4. In a bottle, a hood or crown-piece fixed  
in the bottle-neck and having zigzag passages  
formed therein, and protuberances formed on  
the top of the hood or crown-piece and sur-  
rounding the upper ends of said passages,  
substantially as shown and described and for  
the purpose specified.

5. In a bottle, the combination with the neck  
having two globular enlargements separated  
by an annular shoulder and a valve-seat  
formed below said enlargements, a hollow  
valve fitting said seat, of globular weights  
superimposed one upon the other in said en-  
largements over said valve, a crown-piece or  
hood fixed in the neck above said globular  
weights and provided with a plurality of  
perpendicular passages D<sup>3</sup> extending from its  
top to near the bottom thereof and inclined  
branch passages D<sup>4</sup> communicating at their  
upper ends with the passages D<sup>3</sup> at points in-  
termediate the top and bottom of the latter  
and extending through the bottom of the  
hood, the lowermost of said globular weights,  
when the bottle is in a vertical position, jam-  
ming between the valve and the said annular  
shoulder, an upper globular weight jamming  
angularly between the lower weight and the  
inner surface of its enlargement, whereby both  
weights are locked in position and prevent the  
valve being raised until the bottle is inclined  
or inverted, substantially as described.

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