

(No Model.)

O. R. VAN VECHTEN.

DEVICE FOR PREVENTING REFILLING OF BOTTLES.

No. 591,902.

Patented Oct. 19, 1897

Fig.1.

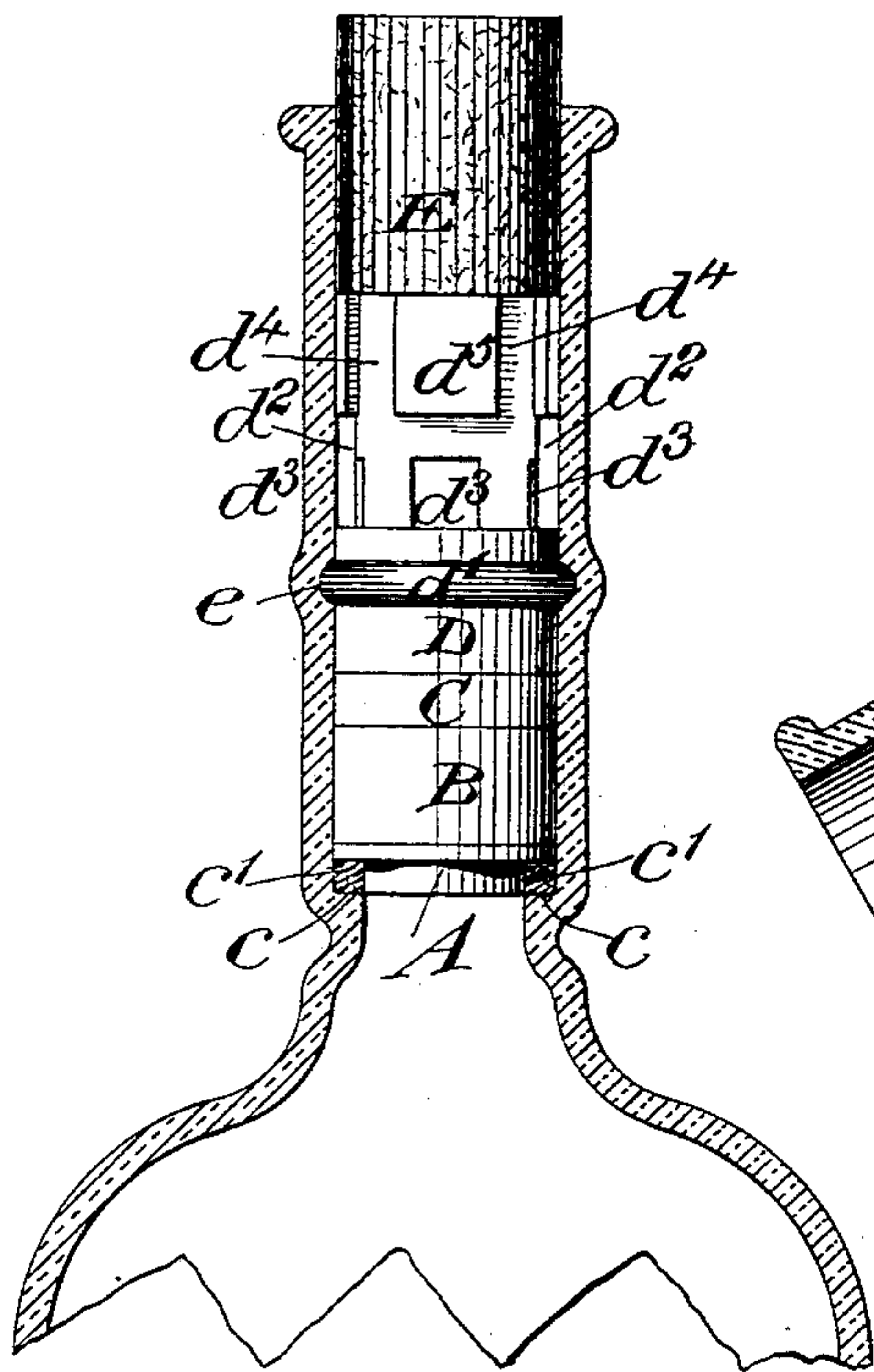


Fig.2.

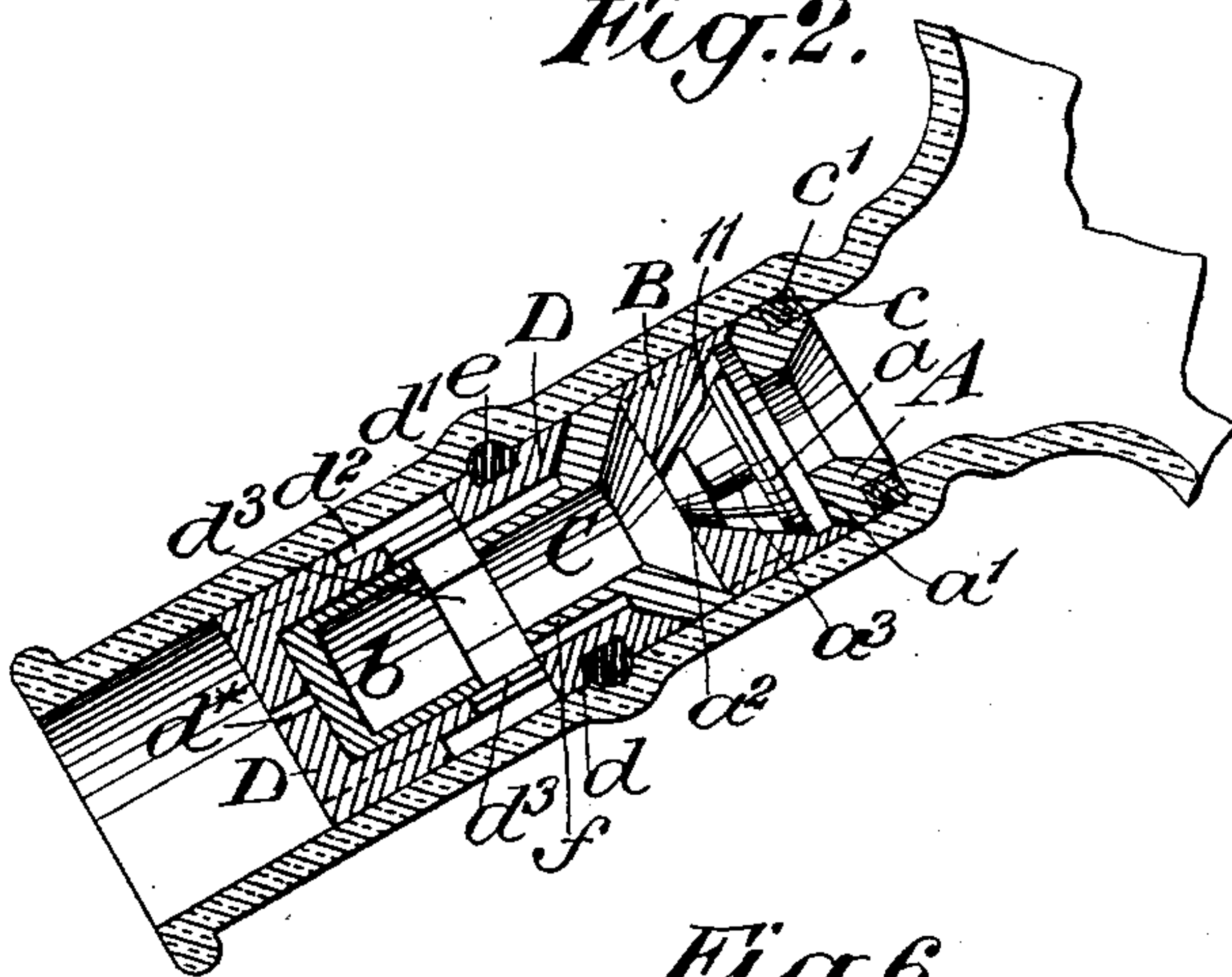


Fig. 6.

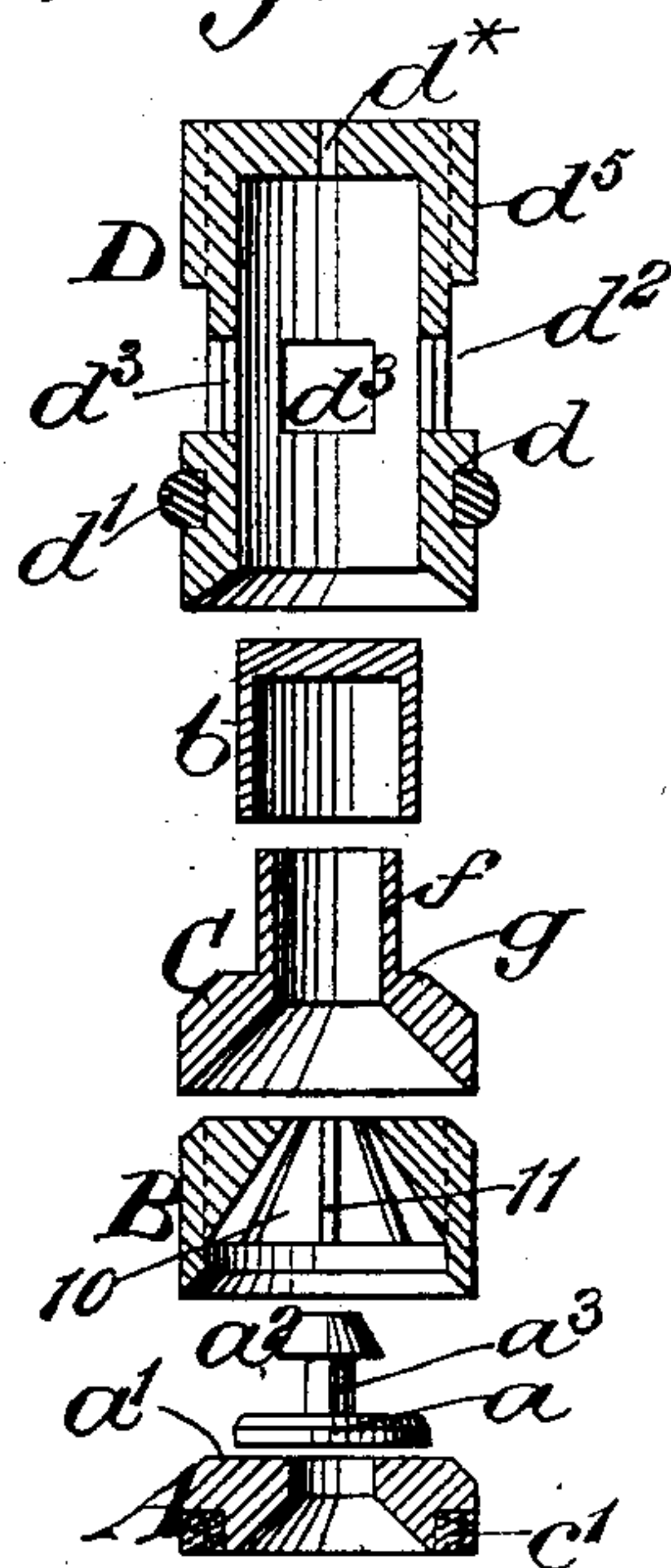


Fig.4.

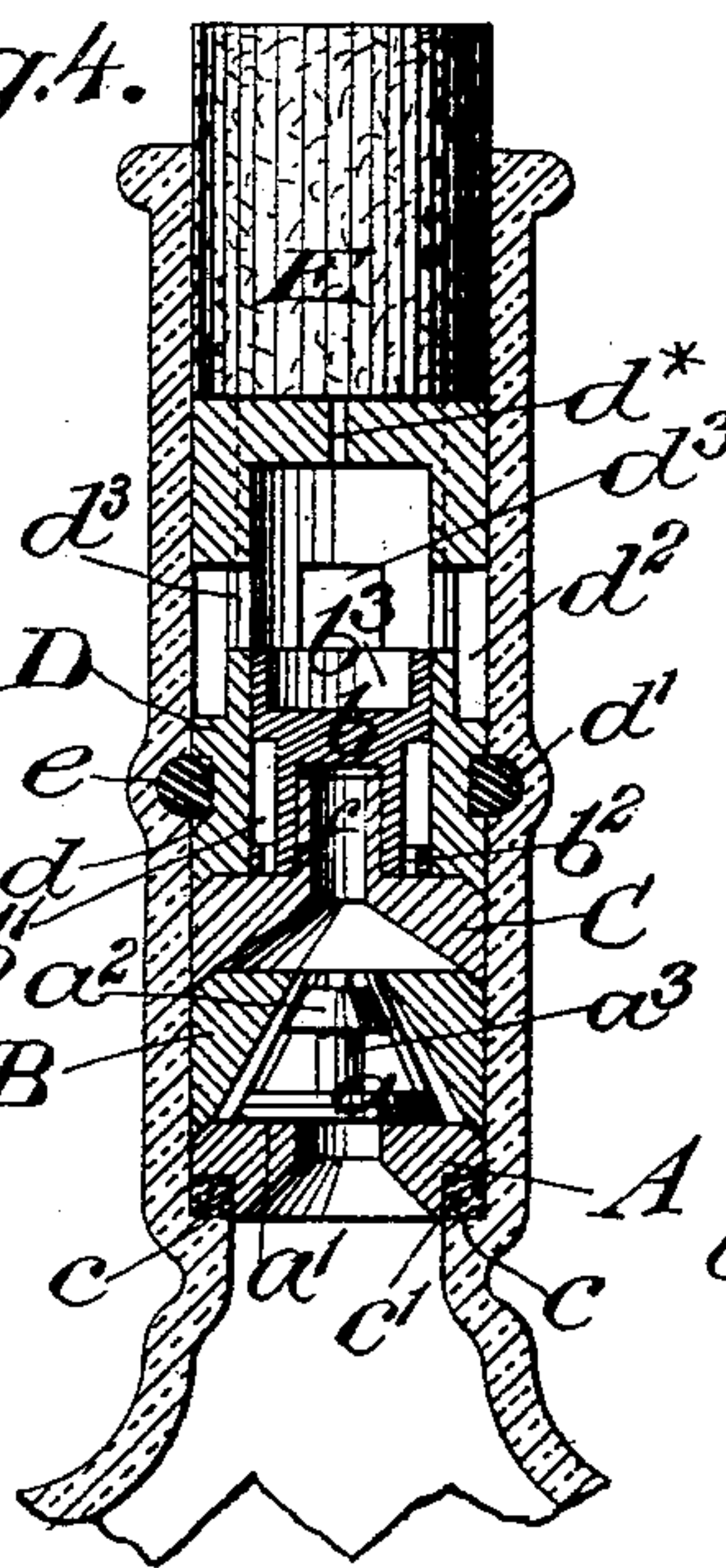


Fig. 3.

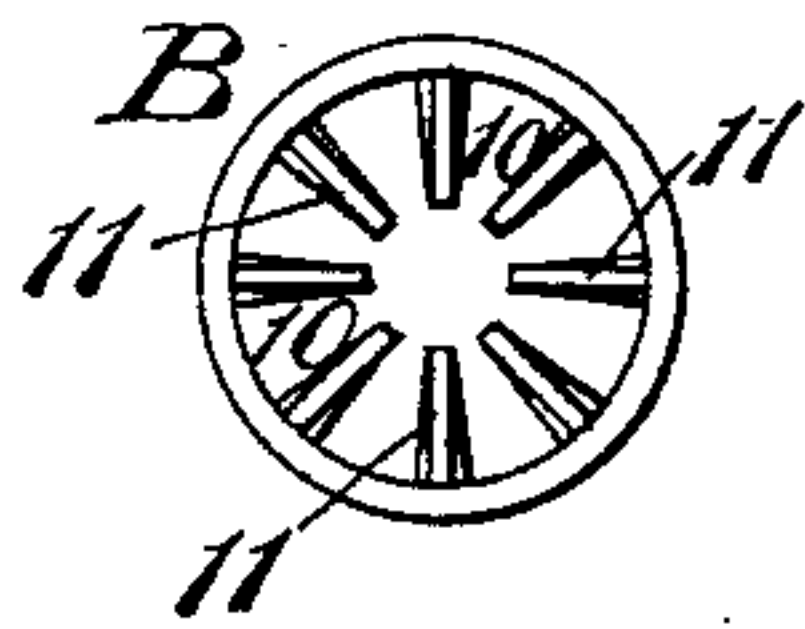


Fig.5



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UNITED STATES PATENT OFFICE.

ORVILLE R. VAN VECHTEN, OF NEW YORK, N. Y., ASSIGNOR TO STELLA A. VAN VECHTEN AND EDWARD E. POLLOCK, OF SAME PLACE.

DEVICE FOR PREVENTING REFILLING OF BOTTLES.

SPECIFICATION forming part of Letters Patent No. 591,902, dated October 19, 1897.

Application filed December 26, 1896. Serial No. 617,003. (No model.)

To all whom it may concern:

Be it known that I, ORVILLE R. VAN VECHTEN, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Devices for Preventing the Refilling of Bottles or other Vessels, of which the following is a specification.

I will first describe my invention with reference to the accompanying drawings and afterward point out its novelty in claims.

Figure 1 represents a sectional elevation of the neck and upper part of a bottle and a corresponding external view of the stopper and of one example of my device for preventing the refilling. Fig. 2 represents a central section of the same part of the bottle and a corresponding section of the device for preventing the refilling, the parts being shown with the mouth of the bottle inclined downward. Fig. 3 represents a face view of one of the parts of the device shown in Figs. 1 and 2, which will be hereinafter described. Fig. 4 represents a central sectional view of the upper part of a bottle, its stopper and my device for preventing the refilling, illustrating a modification of the invention. Fig. 5 is a face view of one of the parts shown in Fig. 4, which will be hereinafter described. Fig. 6 is a central sectional view of all the parts of my device shown in Figs. 1 and 2, representing them so far separated as to make the form of each distinguishable.

Similar letters and figures of reference designate corresponding parts in all the figures.

Referring first to that example of my invention represented in Figs. 1, 2, and 6, the device here consists of four pieces A B C D, forming parts of a plug in which there are two valves *a* and *b*. The parts may all be made of glass and those A B C D be fitted loosely together in any suitable manner—as, for example, by the pieces A B C being made with their upper ends conical to fit corresponding conical recesses in the lower pieces B C D, respectively, as shown in Figs. 2, 4, and 6. The entire plug is to be placed in the neck of the bottle on a shoulder *c* therein after the bottle has been filled, and when it is so placed the cork E or any tight stopper by which the closure of the bottle is to be effected is driven right down upon the plug

or placed tightly in the neck of the bottle above it. The upper piece D has in it a groove *d* for the reception of an elastic packing-ring *d'*, which, when the plug is in place, as shown in Figs. 1 and 2, engages with a groove *e* inside of the neck of the bottle and so locks the plug irremovably in place. The bottom piece A of the plug is also fitted with an elastic packing-ring *c'*, which makes a tight joint in the neck of the bottle above the shoulder *c*.

The lower piece A of the plug has at its upper end a seat *a'* for the inner valve *a*, by which the bottle under most circumstances is closed against refilling. The said valve *a* is represented of flat puppet form with a conical head or crown *a²*, between which and its foot or seating part it is grooved, as shown at *a³*, to form a channel for the free flow of liquid around it.

The piece B fits the piece A as a cap or cover to the valve and the upper part of its interior is conical and has grooves 10, which range upward and downward and form passages for the liquid around the valve, and which are closed at their backs and have no lateral outlets, the lands 11 between the said grooves forming a series of inclined bearings and guides for the valve, as will be hereinafter described.

The piece C fits as a cap to the piece B and has projecting from its upper part a neck or outwardly-projecting nozzle *f*, to the exterior of which is fitted the outer valve *b*, which is of cup form and the lower edges of which seat upon a seat *g*, consisting of a shoulder on the said piece C. The piece D forming the head of the plug fits to the piece C below the shoulder *g*. Its form is that of a hollow cylinder the bore of which is of a size for the outer valve *b* to work freely within it. Its upper part is closed except that it has a small central opening *d^{*}*. The upper and lower parts of its exterior are large enough to fill the neck of the bottle, but between the said upper and lower parts it is reduced in size to form an annular passage *d²* around it, and in the so-reduced part there are lateral openings *d³*. From the so-reduced part *d²* grooves *d⁴* extend lengthwise of the plug directly through the crown or top of the head. The

lands d^5 on the piece D, between the said grooves, fitting the neck of the bottle are immediately opposite or over the lateral openings d^3 , so that they prevent the said openings from being reached by any instrument inserted through the grooves d^4 to tamper with the cup-valve b .

The operation is as follows: When the cork or stopper E is removed, the contents of the bottle may be all poured out by holding it with the neck sufficiently inclined downward, as shown in Fig. 2, for the inner valve a to leave the seat a' . The liquid will then pass the said valve through the grooves 10 of the internally-conical valve-cap B and coming upon the cup-valve b will force it beyond the end of the nozzle f , as shown in Fig. 2. The contents will then pass the valve b to the lateral openings d^3 in the head-piece D, and thence downward through the grooves d^4 in the said piece, but no matter in what position the bottle may be held it cannot be refilled. Suppose, for example, that it should be held submerged in liquid with the neck inclined downward below a horizontal position. Even though the outer valve b might open, the inner valve a will remain closed owing to its dropping with its outer circumference and its guiding-crown a^2 against the inclined guiding-lands 11 between the grooves 10 in the cap B and its tendency to run by gravitation toward the lower part of the said lands. This closing will take place, for, even though the neck be inclined downward as far as shown in Fig. 2, the guiding-lands will have their inclination downward toward the seat a' . Or suppose again, for example, that an attempt be made to fill the bottle by setting it upright or with the neck upward and pouring liquid in above the cap D of the plug. The liquid thus poured in running through the grooves d^2 and lateral openings d^3 would be intercepted by both the valves a and b seating themselves. The inner valve a alone would prevent the bottle being so filled; but were it not for the outer valve b the bottle might be slowly filled by giving it a jumping motion by which the inner valve a might be raised repeatedly from its seat and allow the liquid to pass it little by little. To permit this, however, the valve b would have to make a corresponding upward-and-downward movement, but such movement of the outer valve b would be counteracted by the liquid accumulated in the upper part of the cavity of the cap-piece D, which would constitute a dash-pot in which the head of the valve b would operate as the plunger or dasher and have its upward movement checked.

Although the dash-pot thus formed would be generally filled by liquid running in through the grooves d^4 and lateral openings d^3 , the small opening d^* in the crown of the cap-piece D insures the filling of the dash-pot by the pouring in of liquid above the plug.

It is a matter of some importance that the lands d^5 between the grooves d^4 in the cap-

piece D are opposite the lateral openings d^3 , which would prevent the valve b being reached and opened by any small instrument inserted through the grooves d^4 from above.

All the pieces of the plug A B C D being of glass must of necessity fit loosely in the neck of the bottle. It is in order to prevent the refilling by letting the liquid run in slowly around the so-fitted plug that the packing-ring c' is provided. The packing-ring d' serves the same purpose of preventing the refilling by letting the liquid run slowly around the plug, but it also serves the additional purpose of a locking-ring to prevent the withdrawal of the plug, rendering it impossible to withdraw the plug without breaking the bottle.

The example of the invention illustrated in Figs. 4 and 5 is precisely similar to that illustrated in Figs. 1, 2, 3, and 6 and above described except that the inverted cup-valve b , a face view of which is shown in Fig. 5, has formed around it an annular groove b' , from which openings b^2 lead through its face, and on its upper end is formed a cup b^3 . The cup b^3 in the head of the dash-pot valve b (represented in Fig. 4) provides for the retention of a certain quantity of liquid, which makes the operation of the dash-pot more certain.

It is obvious that the device herein described might be adapted to other kinds of vessels than bottles—jars and jugs, for example.

What I claim as my invention is—

1. In a device for preventing the refilling of a bottle or other vessel, the combination with a plug which is open at its inner end and contains a dash-pot in its outer end and which is provided with an internal valve-seat from which a nozzle projects outwardly, of an inverted-cup-shaped valve which fits over said nozzle and seats against said seat and the head of which enters as a plunger into said dash-pot, substantially as herein described.

2. In a plug for preventing the refilling of a bottle or other vessel, the combination of an inner inwardly-closing valve and an outer inwardly-closing inverted-cup-shaped valve the head of which is received and operates as a plunger or dasher in a dash-pot constituted by a cavity in the upper part of the plug, the cup of said outer valve fitting over a nozzle which is provided within the said plug and which projects outwardly beyond said inner valve and the edge of said cup seating upon a seat provided in the plug around said nozzle, substantially as herein described.

3. In a device for preventing the refilling of a bottle or other vessel, the combination of an inner valve and a seat for the same, a nozzle above or outwardly beyond said valve and seat, an outer valve-seat surrounding said nozzle, an outer valve of cup form fitted to said seat, and a dash-pot in which the head of said cup-formed valve enters as a

plunger or dasher, substantially as herein described.

4. In a device for preventing the refilling
of a bottle, the combination of an inner valve
5 and a seat for the same, an internally-conical
valve-cap in which are grooves and interven-
ing lands forming respectively liquid-pas-
sages and valve-guides, a nozzle and an outer
valve-seat surrounding said nozzle both ar-
10 ranged above or outwardly beyond said valve-

cap, an outer valve of cup form the edges of
which seat on the latter seat, and a dash-pot
in which the head of said cup-shaped valve is
received and operates as a plunger or dasher,
substantially as herein described.

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