

(No Model.)

I. W. HEYSINGER.

VALVE STOPPER FOR PERFUME AND OTHER BOTTLES.

No. 316,147.

Patented Apr. 21, 1885.

Fig. 1.

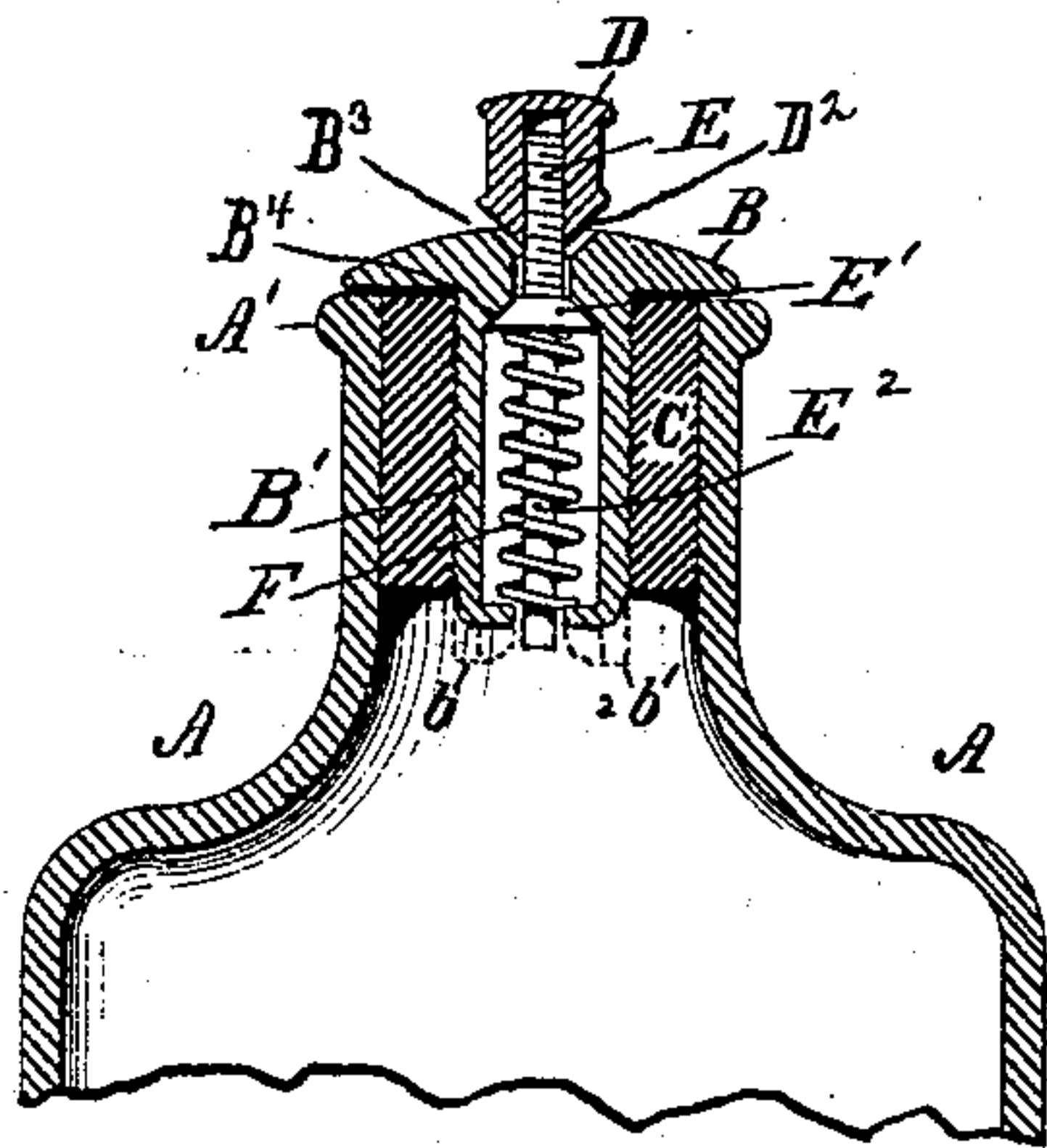


Fig. 5.

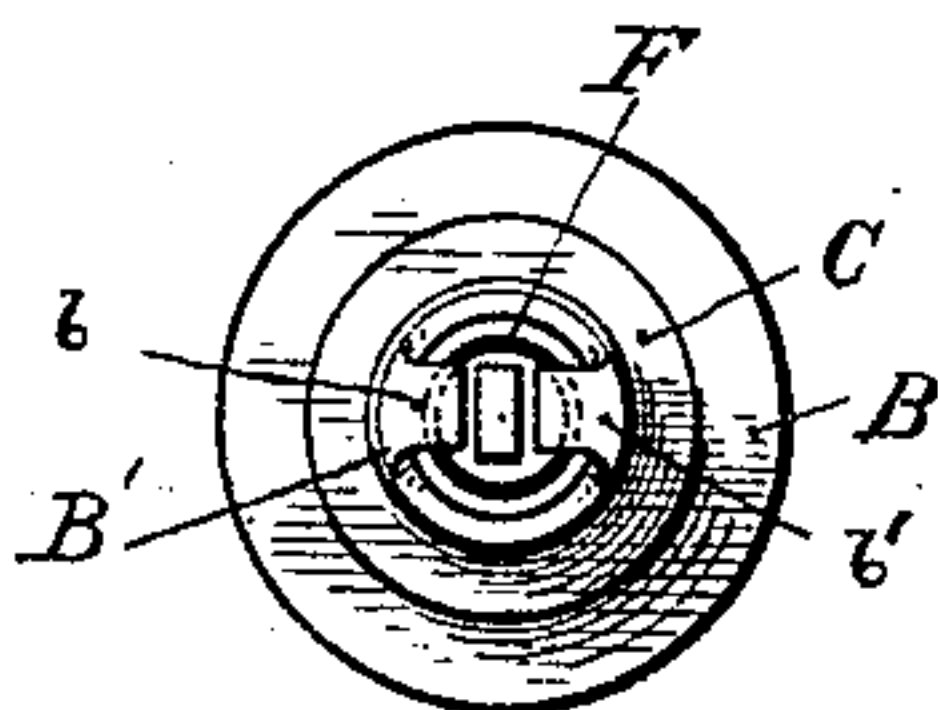


Fig. 6.

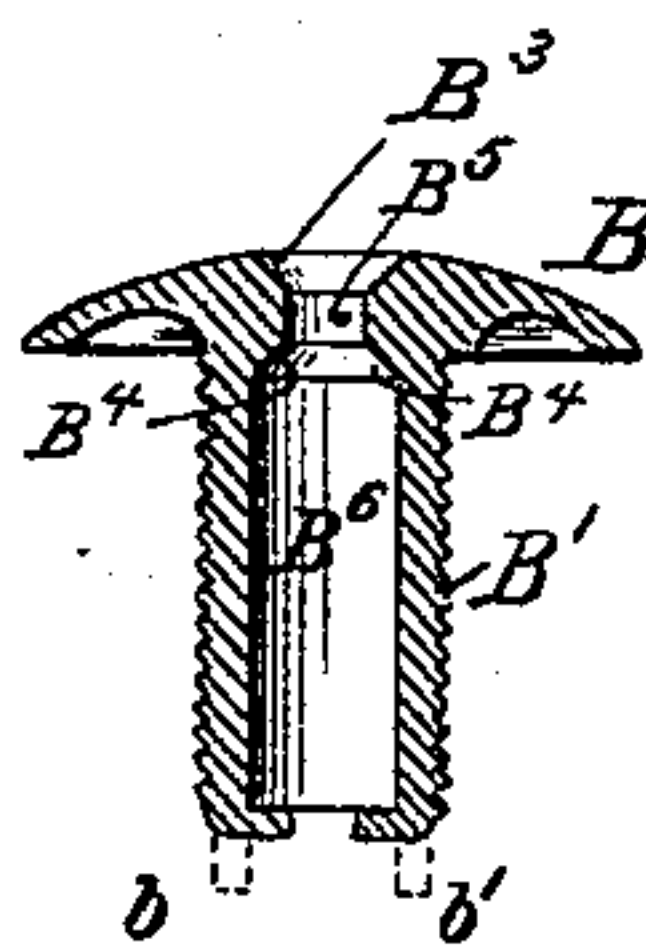


Fig. 4.

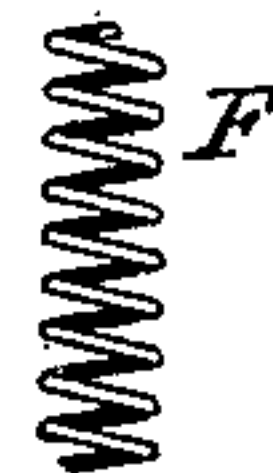


Fig. 3.

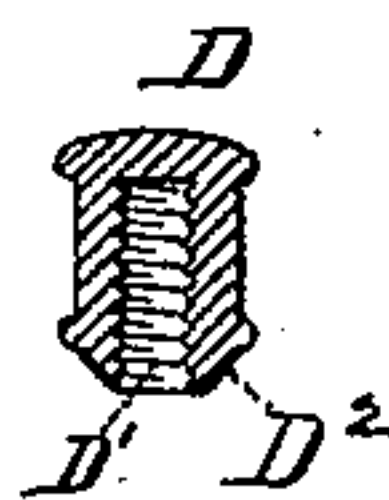
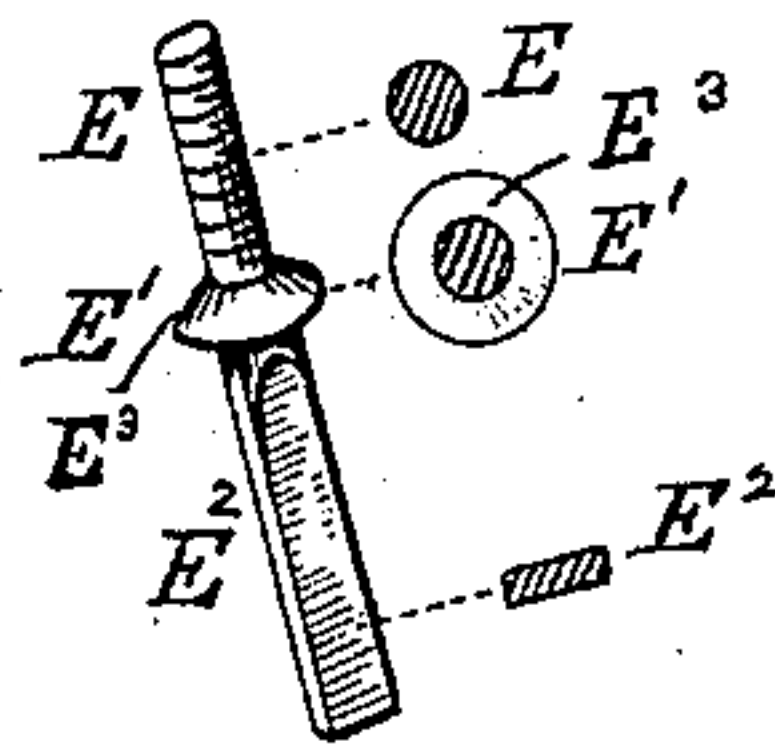


Fig. 2.



WITNESSES:

Attest
John W. Carr

INVENTOR

Isaac W. Heysinger.

UNITED STATES PATENT OFFICE.

ISAAC W. HEYSINGER, OF PHILADELPHIA, PENNSYLVANIA.

VALVE-STOPPER FOR PERFUME AND OTHER BOTTLES.

SPECIFICATION forming part of Letters Patent No. 316,147, dated April 21, 1885.

Application filed September 27, 1884. (No model.)

To all whom it may concern:

Be it known that I, ISAAC W. HEYSINGER, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Valve-Stoppers for Perfume and other Bottles and in the Manufacture thereof, of which the following is a full, clear, and exact description, reference being had to the drawings accompanying and forming a part of this specification, in which—

Figure 1 is a sectional view of the upper part of a bottle, showing my stopper in place and with the valve closed. Fig. 2 shows the valve-stem with its different portions removed from the stopper. Fig. 3 is a view of the stem-cap removed from the valve-stem. Fig. 4 shows the spring. Fig. 5 is a plan view from beneath of the stopper with all its parts in place; and Fig. 6 is a vertical section of the metal casing which carries the valve-stem, spring, and stem-cap, and is surrounded with a cork or other packing when in use, all these parts having been removed, as shown in the figure.

The lettering in all the figures is uniform.

My invention relates to the construction and adaptation of the parts of a valve-stopper for perfume or other bottles whereby I produce a stopper which is automatically closed, except when the valve is opened by pressure upon a stem projecting through the stopper by means of a handkerchief, the hand, or a like object, and in which the amount of the discharge can be accurately regulated for each impulse or throw of the bottle, and in which the bottle may be readily and securely closed against accidental opening, from pressure or otherwise, when packed for transportation, without the use of extraneous parts; and, furthermore, in the method of construction, whereby the spring is securely seated and held more cheaply and better than has been done heretofore.

Referring to the drawings, B is a metallic flanged head, in external appearance somewhat like those in ordinary use for covering cologne, extract, bay-rum, and other bottles. It consists of an expanded flange, B, which covers to a greater or less extent the exposed top of the neck A' of the bottle A, and is provided with a hollow barrel, B' B⁶, (see Fig. 6,) extending downward through the neck of the

bottle. I prefer to form a screw-thread upon the outer surface of this barrel, B', whereby the cork or other elastic sleeve, C, (shown in Fig. 1,) may be more securely attached to the same. But I sometimes dispense with the sleeve, C, and attach the barrel B' to the bottle directly, either by an outside shell or by screwing or cementing the same to the neck of the bottle A', or by forming it integral therewith. The inner part or chamber of this barrel B⁶ is cylindrical in cross-section, and at its upper part is provided with a conical or like shoulder or valve-seat, B⁴, which extends around the same and forms a secure and airtight seat for the valve E³. Upon the upper surface of B, and immediately over the valve-seat B⁴, I form a similar conical socket, B³, which is connected with B⁴ beneath by the opening B⁵, and in which is seated the bottom part, D², of the cap D, when the valves are firmly closed. Into this barrel B⁶ is inserted from beneath the valve-stem E. (Shown in Fig. 2.) It will be seen that this valve-stem may be described as consisting of three segments, E, E', and E². The upper part is a simple cylindrical screw-threaded stem, which, as shown in Fig. 1, passes loosely through the opening B⁵, (see Fig. 6,) and projects upward therefrom. The segment E' is expanded to form a conical valve, E³, which is matched accurately to the valve-seat B⁴, against which it abuts, and which it securely closes. The lower segment, E², is a flattened rod, which extends downward through the barrel B⁶ and slightly beyond. Around this lower part, E², and within the barrel B⁶, is a simple coiled spring, F, which abuts at its upper end against the under side of the valve-cone E'. To retain this spring in place, and to prevent the rotation of the valve-stem when the screw-cap D is screwed up, I form the lower part of the barrel B' with two lips, b b', Figs. 1, 5, and 6, which extend downward along the axis of the barrel B', on opposite sides thereof, and parallel with each other. I form the barrel usually of white-metal or any other material capable of being somewhat bent without breaking. After inserting the valve-stem E and the spring F into the barrel B⁶, I bend these lips b and b' toward each other, so that they shall lie at right angles with the axis of the barrel, and extend

nearly across the open lower end thereof, the free extremity of the flat valve-rod E, as shown in Figs. 1 and 5, occupying somewhat loosely the space between the adjacent margins of the lips *b* and *b'*, which now are in the positions shown in sectional view in Figs. 1 and 6, so that while the valve-rod E² may play freely up and down between the said lips, it shall not be capable of being rotated by reason of the lips *b b'* engaging with the flat sides thereof when rotation is attempted. The screw-cap D is now placed upon the top of the valve-stem E and screwed down, when it will engage at its conical lower end, D², with the conical valve-seat B³ and firmly close the same, at the same time drawing up the valve E³ more securely into its seat at B⁴. The valve of the bottle-stopper is now secure against all the accidents of transportation or volatilization of the contents consequent upon standing in stores or other places. When required for use, the cap D is screwed back slightly with the thumb and finger and the bottle inverted. If the cap D be pressed against the hand, a pocket-handkerchief, an article of dress, or other object, the valve-stem E E³ will be driven inward and the cone D² of the cap D will close the vent by impinging against the conical socket B³. The valve-cone E³ has by this motion been thrust backward in the barrel B⁶, and the liquid passes freely around it and fills the space between it and the cone D² of the cap D. When released the spring F drives the valve E³ along the barrel B⁶ like the piston of a syringe, though more loosely, and projects a definite quantity of the contained liquid suddenly into the handkerchief or like object against which it may be held, and this is repeated as often as may be required. It is evident that the farther the cap D is screwed back upon its stem E the longer will be the play of the piston in its channel or barrel B⁶ and the greater the quantity of interposed liquid ejected at each operation, so that the discharge may be graduated at pleasure, according to the nature of the contents, and with accuracy. As soon as the pressure is removed from the cap D, the valve E³ closes against its valve-seat B⁴ at the top of the barrel and prevents further escape or volatilization of the contents of the bottle, whether erect or inverted. By this means the loss of precious extracts from carelessness in closing the bottle is entirely done away with, and without thought or care upon the part of the owner. If even the cap D be lost, no harm results except where the bottle is to be packed away in such way as to endanger the security of the valve-stem by accidental pressure. I prefer to make the barrel and its attachments B B' *b b'* of white-metal or brass, as well as the other parts, including the cap D; but I sometimes make the latter of rubber, cork, or other elastic substance, or provide the valve-seats B³ B⁴ with a rubber packing; and I also sometimes form the cone-valve E³ of rubber or

coat it with the same or other like material; or the whole device may be made of vulcanite, horn, wood, or other suitable material. I also vary the special construction to suit various styles of bottles, and for use in barber-shops, &c., sometimes dispense with the spring F, so as to produce, when the bottle is vibrated in the hand, an intermittent jet of greater or less amount without pressure when used for shampooing, hair-dressing, &c. I sometimes also seat the valve E³ directly against a suitable shoulder or valve-seat in the neck of the bottle itself, or an elastic ring inserted therein, and in such cases I adjust the cap or stop D upon the stem E so as to engage against the top of the bottle-neck itself, and make the cap D of any desired shape. I also sometimes provide the cap D with a stem socketed into the top of the valve instead of the converse, and sometimes attach to the valve stem E a rod, chain, or lever, by which the same may be operated from the side of the bottle. I also sometimes dispense with the cap D, and form a suitable boss or head directly upon the stem E, and in such cases I do not, of course, thread the said stem, but finish it in various ornamental ways. Where rotation of the valve-stem is no objection, I form the part E² cylindrical in section; but in practice I usually prefer to construct and use the device substantially in the general form shown and described.

Having now described my invention, what I claim, and desire to secure by Letters Patent, is—

1. As an article of manufacture, a spring-valve bottle-stopper consisting of a hollow barrel adapted to enter the neck of a bottle, and provided with an internal valve-seat at its upper end, and a support for an internal spring at its lower part, a valve reciprocating within said barrel against a spring adapted by its upward pressure to close the same, and a screw-threaded stem projecting from the said valve loosely through the said valve-seat, and provided with a screw-cap adapted to be firmly screwed down upon the top of the said barrel so as to draw up and firmly close the valve, or to be screwed backward so as to allow a greater or less reciprocation of the said valve within the said barrel, substantially as described.

2. In combination with the barrel B⁶, the valve E³, adapted to reciprocate within the same, and having a stem, E, projecting through and loosely fitted in and passing through the valve-seat B⁴, and provided with an adjustable cap, D, constructed to be set at different distances along the said stem E so as to vary the length of reciprocation of the said valve E³ in the said barrel B⁶ and regulate the discharge of liquids passing through the said barrel, substantially as described.

3. In a bottle-stopper provided with an internal valve and spring, the flanged head B and barrel B', having the internal chamber, B⁶, and provided with the opposite lips *b b'*, bent

horizontally inward to retain and form a secure seat for the said internal spring, substantially as described.

4. In combination with the valve E' E³, having the screw-threaded stem E and the flat rod E², the barrel B⁶, in which the said valve reciprocates, the same being provided at its lower portion with turned-in lips b b', adapted to engage against the flat sides of the rod E² and prevent the rotation of the same, substantially as described.

5. In combination with a bottle-stopper having the upwardly-acting internal valve, E³, and the projecting stem E, the detachable and vertically-adjustable cap D, adapted to firmly fix the valve for transportation, and to be removed without impairing the action of the spring-valve, substantially as described.

6. The automatic spring-valve bottle-stopper having the head B, provided with the opposite valve-seats, B³ and B⁴, connected by the opening B⁵, in combination with the upwardly-closing spring-valve E³, the projecting screw-threaded stem E, and the downwardly-closing screw cap or valve D², the same being so constructed as when operated to draw the opposite valves toward each other and firmly socket the same in their respective seats, or to be mechanically adjusted to open or close the same, substantially as described.

7. The stopper for perfume or other bottles, consisting of the flanged head B, provided with the barrel B', the internal cylindrical chamber, B⁶, the valve-seats B³ B⁴, and the opening B⁵, connecting the same, the elastic packing-ring C, the valve and stem E E' E² E³, adapted to reciprocate in said cylinder or barrel B⁶, the upwardly-acting spring F, supported at its lower end upon the shoulders b b', and the screw-cap D D' D², the whole constructed and adapted to operate substantially as herein set forth.

8. The valve-stopper for perfume and other bottles, consisting of the barrel B' B⁶, provided with the valve-seat B⁴, and the upwardly-acting valve E³, reciprocating therein in the manner of a loosely-fitting piston, and provided with a projecting stem, E, having attached thereto and reciprocating therewith an upper cap or valve, D², adapted to close the opening B⁵ when pressed down upon the valve-seat B³, the whole being so constructed that when the bottle is inverted and pressure is applied to the cap D the inner valve will be opened and the outer one closed, and when the pressure is released the internal valve, E³, will be driven against its seat B⁴, firmly closing the same, and at the same time ejecting a part or all of the liquid contained between the said valve E³ and the said valve-seat B⁴, substantially as and for the purposes described.

9. In combination with the bottle A, having the contracted neck A', the upwardly-acting internal valve, E³, seated against the vent of said bottle, and provided with an upwardly-projecting stem, E, extending into and above the mouth of the said bottle, and the adjustable cap or stop D, adapted to be fixed at different distances along the said stem E in such manner that when closed down tightly it will engage with the top part of the bottle and firmly draw up the valve E³ and hold the same against displacement, and when adjusted at other points along the said stem E will allow the valve to be opened to a greater or less extent by pressure upon said stem, substantially as and for the purposes described.

ISAAC W. HEYSINGER.

Witnesses:

P. O'DONNELL,
F. L. ROEPKE.