

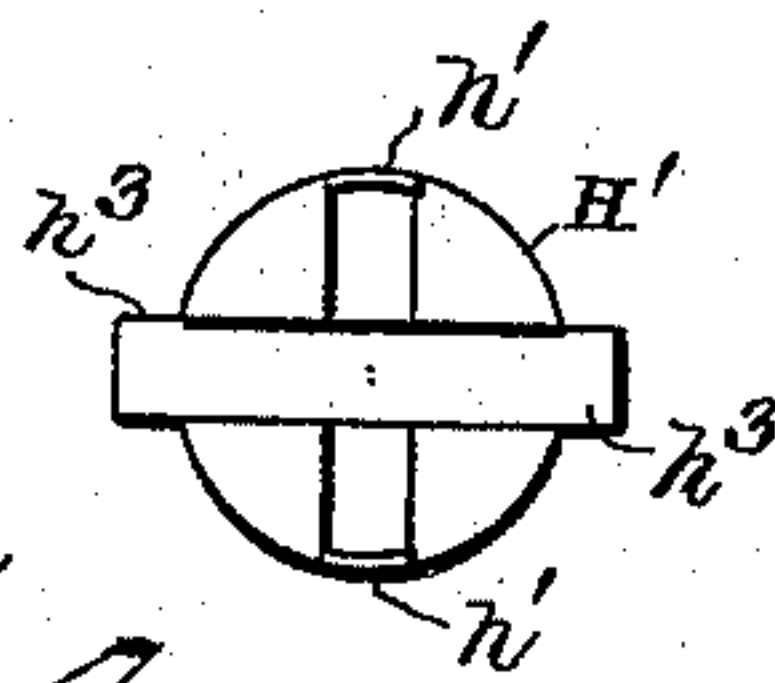
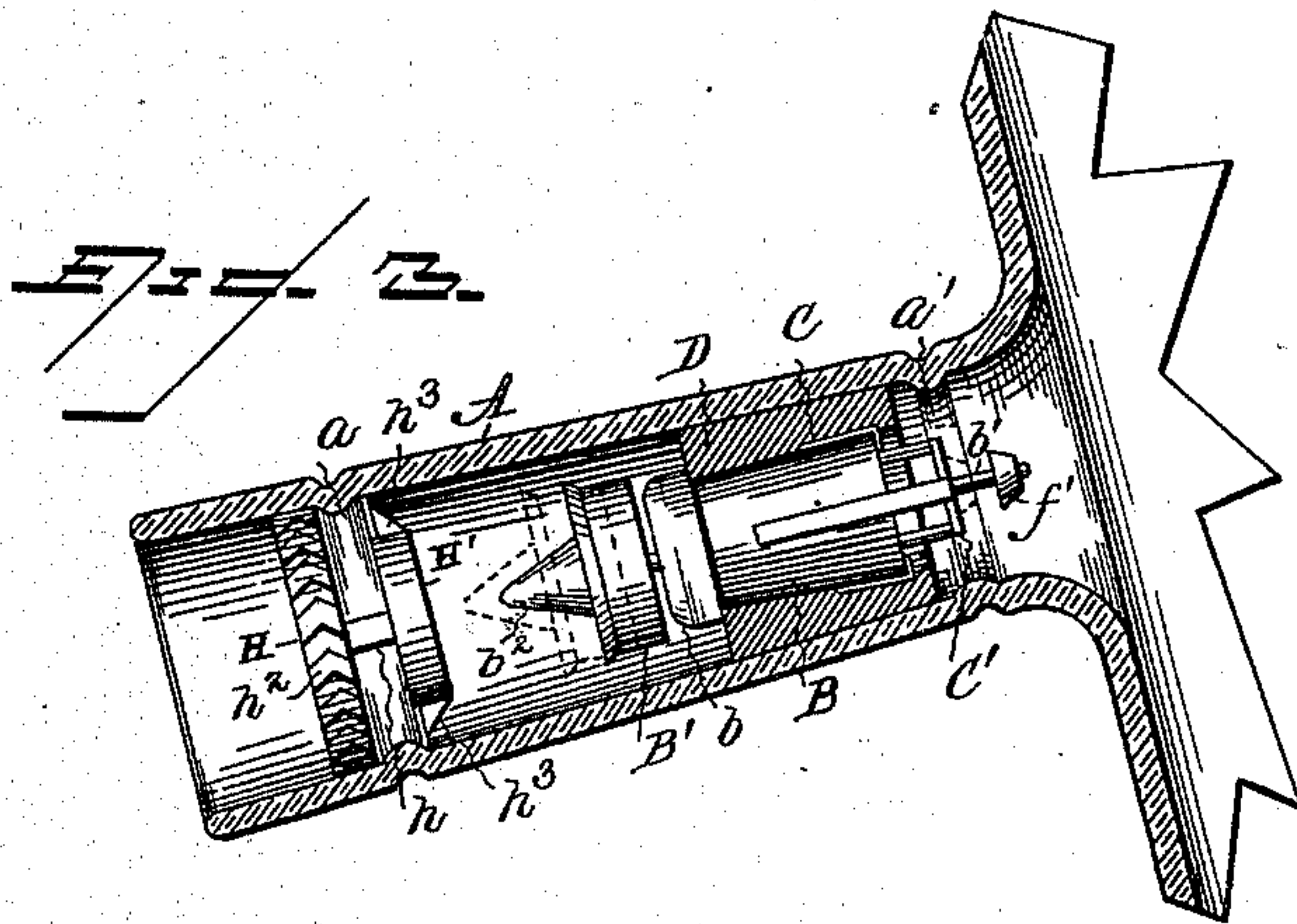
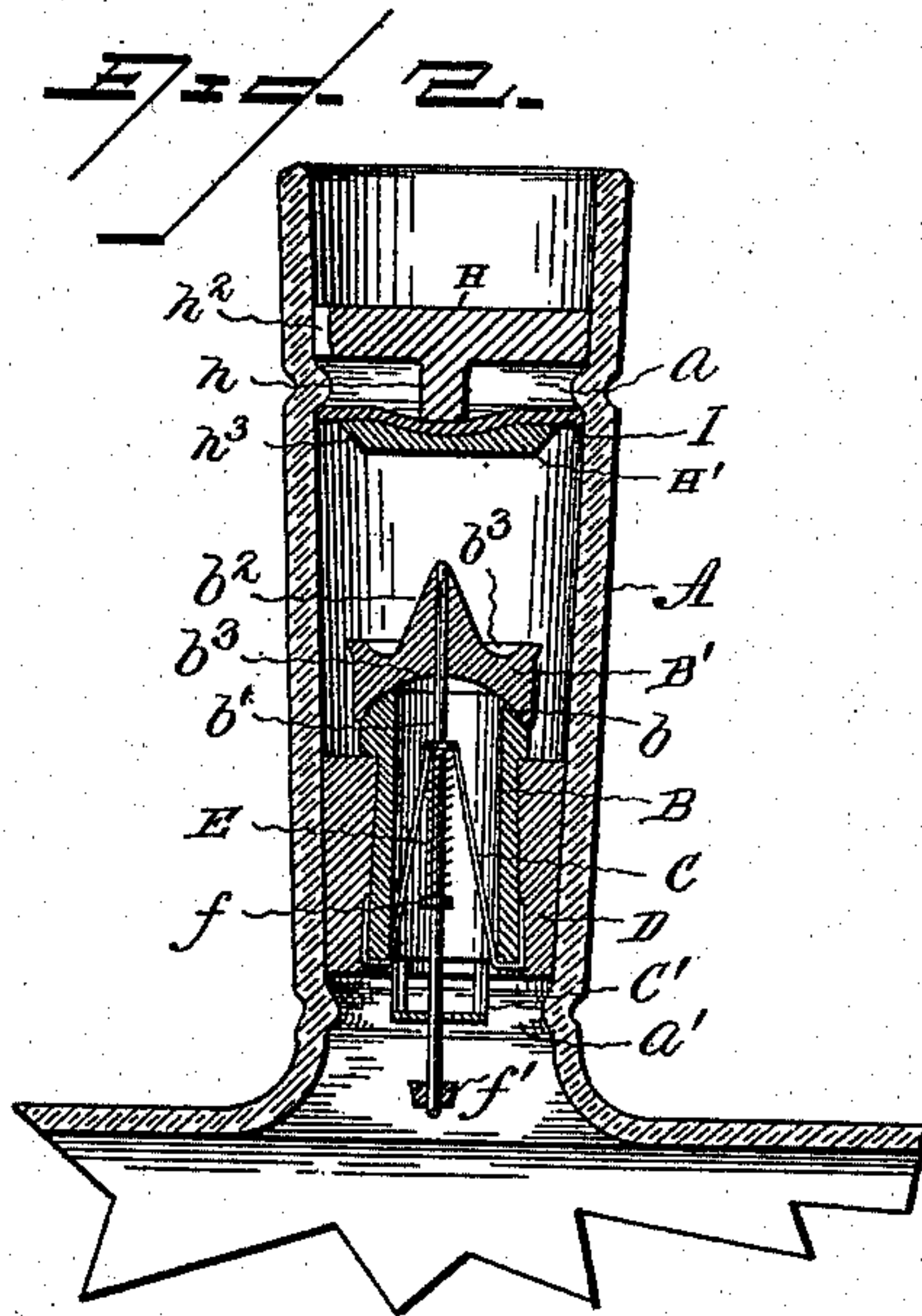
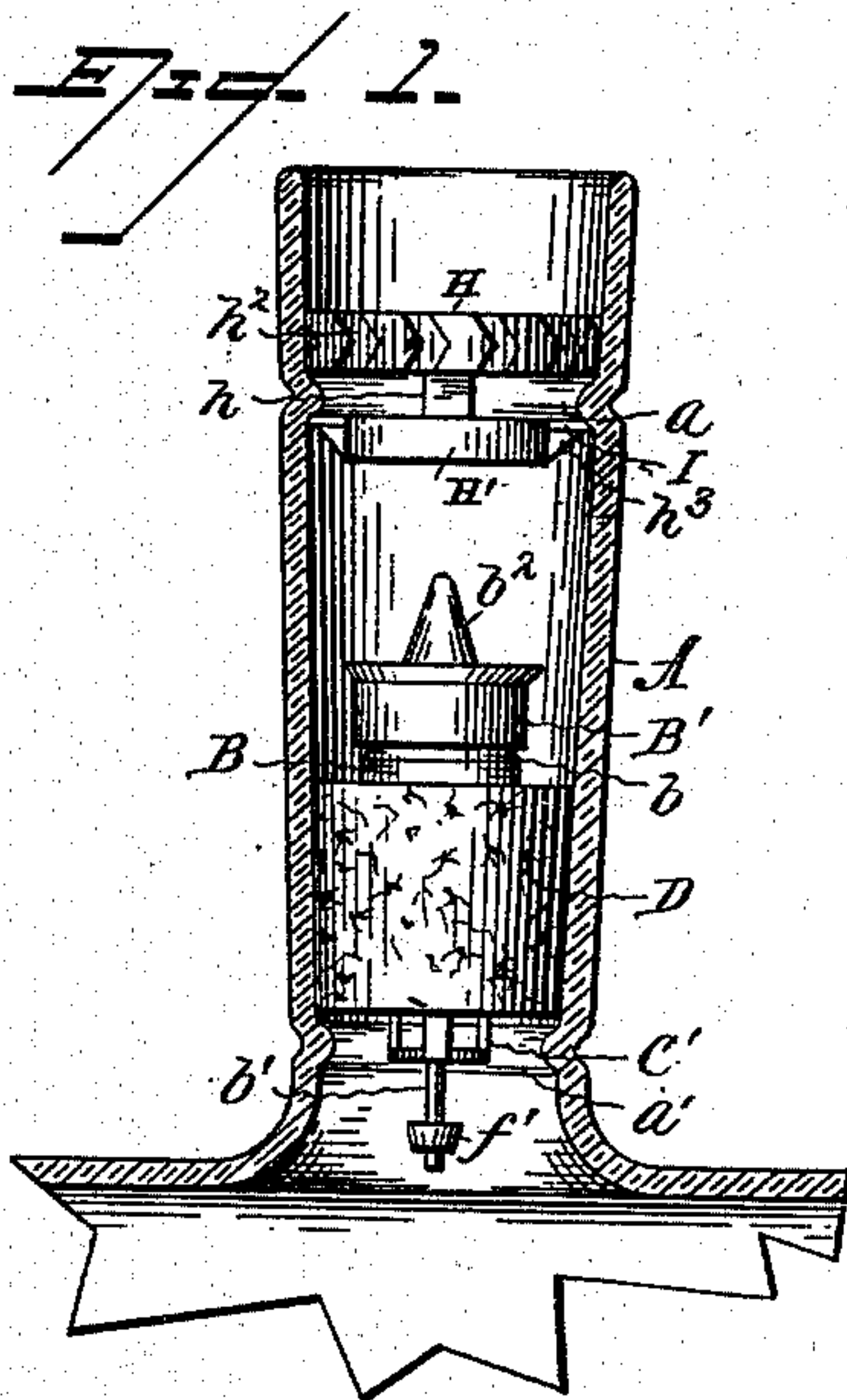
No. 714,656.

Patented Dec. 2, 1902.

U. S. ALZ.
NON-REFILLABLE BOTTLE.

(Application filed Mar. 29, 1902.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

URBAN S. ALZ, OF BALTIMORE, MARYLAND.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 714,656, dated December 2, 1902.

Application filed March 29, 1902. Serial No. 100,559. (No model.)

To all whom it may concern:

Be it known that I, URBAN S. ALZ, a citizen of the United States, and a resident of Baltimore, in the State of Maryland, have invented
5 certain new and useful Improvements in Non-Refillable Bottles, of which the following is a specification.

This invention is an improvement in non-refillable-bottle stoppers; and the object of
10 the invention is to provide a valved stopper which shall permit the contents of the bottle to readily flow through the same and also positively prevent refilling, the construction of the valved stopper being such and the parts
15 thereof so balanced that any attempt to force liquid into the bottle will act to effectually close said valve.

The invention contemplates a construction of valved stopper in which the contents of the
20 bottle flowing through the same will unseat the valve-plug and permit the bottle to be emptied and in which the said plug will return to its seat by gravity or by the slightest pressure, whereby to frustrate any attempt
25 to refill the bottle by turning the same upside down and forcing liquid upward into the same.

The invention also contemplates a construction of valved stopper in which the main parts thereof may be made of molded glass.

30 Having the foregoing objects in view, the invention consists in the particular construction and combination of parts, all as hereinafter particularly described, and more specifically set forth in the appended claims.

35 In the accompanying drawings, which form a part of this specification, Figure 1 is a side elevation showing the application of the invention, the neck of the bottle being in section. Fig. 2 is a vertical sectional view. Fig.
40 3 is a sectional view with the bottle tilted to show the position of the valve when the bottle is in this position, the dotted lines indicating the position of the plug when the liquid is flowing out. Fig. 4 is a detail plan
45 view of one of the parts of the protecting-cap.

Like letters of reference indicate like parts in the several views of the drawings.

A designates the neck of the bottle, which is preferably tapered, as shown, and is provided near its upper and lower ends with internal beads a and a' , respectively, the bead
50 a serving to engage the protecting-cap, here-

inafter described, while the lower bead, a' , serves to prevent the valved stopper from being forced into the body of the bottle. 55

The valved stopper consists principally of the hollow body portion B and movable plug B', the former being tapered inward from its lower end, as herein shown, and at its upper end is rounded to form the valve-seat b , while
60 the plug is slightly wider than said enlarged portion and is provided centrally with a stem b' , which extends through the hollow body portion. The lower end of the valve-plug B' is concave to closely fit the valve-seat b , and
65 the upper end thereof is flared outward at its outer edge and is provided centrally with a conical projection b^2 , at the base of which is an annular recess b^3 . Serving as guides for the valve-plug are two spiders C and C', the
70 ends of which embrace the lower end of the body portion B of the stopper and are clamped thereon by the cork packing D. The stem of the valve-plug passes through these spiders, and the spider C, in addition to forming a
75 guide, also forms a stop for a helical spring E, which acts to counterbalance the weight of the valve plug and stem, and thereby assist in moving said plug against its seat. The
80 spring E bears at its lower end against a collar f , which is clamped upon the stem b' . The lower end of the stem b' is provided with a collar f' to limit the movement of the valve-plug off its seat. The two parts of the valve
85 being made of glass, the engaging surfaces of the plug and seat are properly ground, so as to provide a close fit.

In applying the valved stopper to the bottle the parts of said stopper are assembled, as shown in the drawings, and when inserted in
90 the neck of the bottle the cylindrical packing D will hold the device in place and also form a tight joint around the body portion of the valve to prevent leakage. By having the neck of the bottle slightly tapered, as shown,
95 the device may be securely wedged and will be held firmly in place. It will be understood, of course, that the bottle is filled before the valved stopper is inserted, and after the device is inserted the contents of the bottle may
100 be poured out through the valve by tilting the bottle, as usual.

In order to protect the valved stopper from manipulation, I provide a cap which is lo-

cated in the mouth of the bottle and consists of two parts H and H', between which is a flat spring I, adapted to spring into engagement with the bead *a*. The part H of the cap is provided with a T-shaped projection *h*, the cross-bar of which fits in a groove in the other part H', the latter being provided with flanges *h'*, which are upset over the ends of said cross-bar to hold the two parts of the cap together.

The part H' is also provided with a groove extending across the same at right angles to the aforesaid groove and in which is seated the flat spring I. Said spring is of such length that the ends project slightly beyond lugs *h*³ on the part H', so that when said cap is forced into the mouth of the bottle the ends of the spring will ride over the bead *a* and spring into engagement with the under side of the same. The part H of the cap is provided peripherally with irregular grooves *h*², forming outlet-passages for the contents of the bottle. This protecting-cap will prevent a wire or other device being inserted into the neck of the bottle in an attempt to lift the valve-plug and hold it off its seat against the action of the spring or other pressure brought against it.

It will be readily seen that with a bottle provided with my improved devices the contents may be readily poured out and also that when the bottle is empty or at any time it will be impossible to pour or force liquid into the same. In pouring from the bottle the liquid will pass through the hollow body portion of the valve, and pressure of the same against the valve-plug will move the latter away from the seat to its fullest extent, allowing the liquid to flow freely past the valve and out of the bottle around the protecting-cap. Should an attempt be made to refill the bottle the plug will quickly move to its seat, either by gravity when the bottle is in an upright position or by pressure of liquid against said plug in an attempt to force liquid upward into the bottle with the latter turned upside down or inverted. In this latter position the weight of the plug is to a great extent overcome by the action of the spring, and consequently said plug is only slightly removed from its seat. Therefore the least pressure against the plug will move it against its seat and close the valve, and necessarily the liquid would be under pressure in an attempt to fill the bottle with the latter inverted. However, in order that the plug may quickly move to its seat it is flared at its outer edge, is provided with the conical projection, and is also provided with the annular recess at the base of said projection.

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

1. A non-refillable bottle, comprising a valved stopper consisting of a hollow body

portion enlarged at its upper end and said enlarged portion rounded to provide the valve-seat *b*, a valve-plug having a concave recess in its under side adapted to fit the valve-seat, a stem projecting from said valve-seat through the hollow body portion of the stopper, spiders forming guides for the stem, a spring interposed between one of the spiders and a collar on the valve-stem, and a cork packing placed over the body portion of the valve; combined with a protecting-cap consisting of two parts secured together and holding in place a flat spring the ends of which are adapted to engage a bead in the neck of the bottle.

2. In a non-refillable bottle, the combination, of a valved stopper comprising a hollow body portion enlarged at its upper end and said enlarged portion rounded to provide the valve-seat *b*, a valve-plug having a concave recess in its under side and provided with a conical projection, annular recess and flared edge, a stem projecting centrally from the valve-plug and passing through the hollow body portion of the stopper, spiders forming guides for said stem and having their ends embracing the lower end of the body portion of the stopper, a cylindrical cork packing placed over the said body portion and ends of the spiders, a collar clamped on the valve-stem, and a helical spring interposed between said collar and one of the spiders; together with a protecting-cap located in the mouth of the bottle and consisting of two parts secured together and a flat spring clamped between said parts and having projecting ends adapted to engage a bead in the mouth of the bottle.

3. In a non-refillable bottle, the combination, of a valved stopper, comprising a hollow body portion tapered inward from its lower end and at its upper end enlarged and rounded to form the valve-seat *b*, a valve-plug having a concave recess in its under side, a stem projecting from the plug through the hollow body portion, spiders forming guides for said stem and having their ends embracing the tapered portion of the body portion of the valve, a spring adapted to move the plug toward its seat, and a cylindrical cork placed over the tapered body portion and adapted to hold the valved stopper in the neck of the bottle; together with the protecting-cap comprising the parts H and H' connected together, the part H' having the lugs *h*³, and a flat spring interposed between the parts with its ends projecting slightly beyond the aforesaid lugs, as herein shown and described.

In testimony whereof I affix my signature in the presence of two witnesses.

URBAN S. ALZ.

Witnesses:

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