

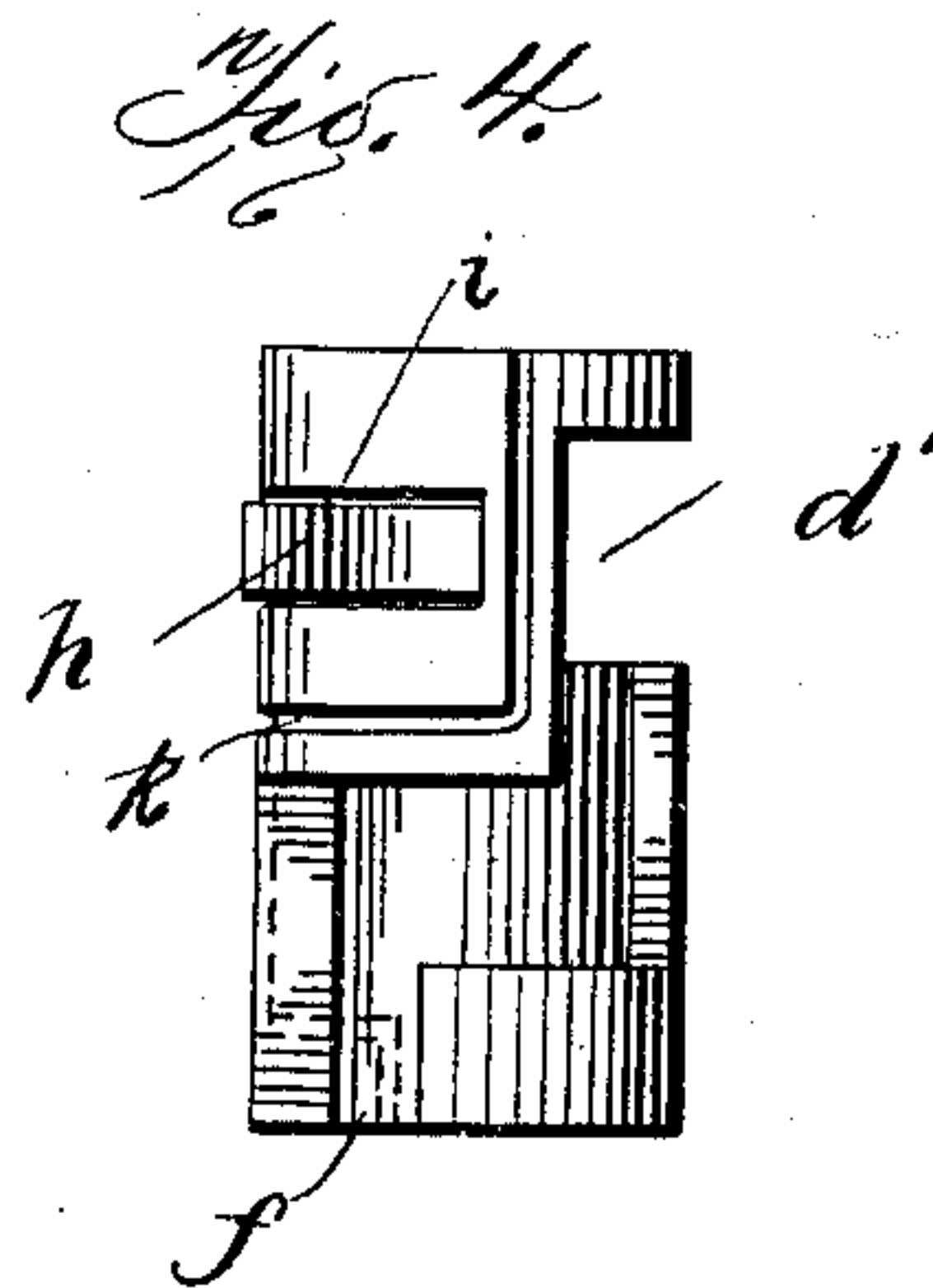
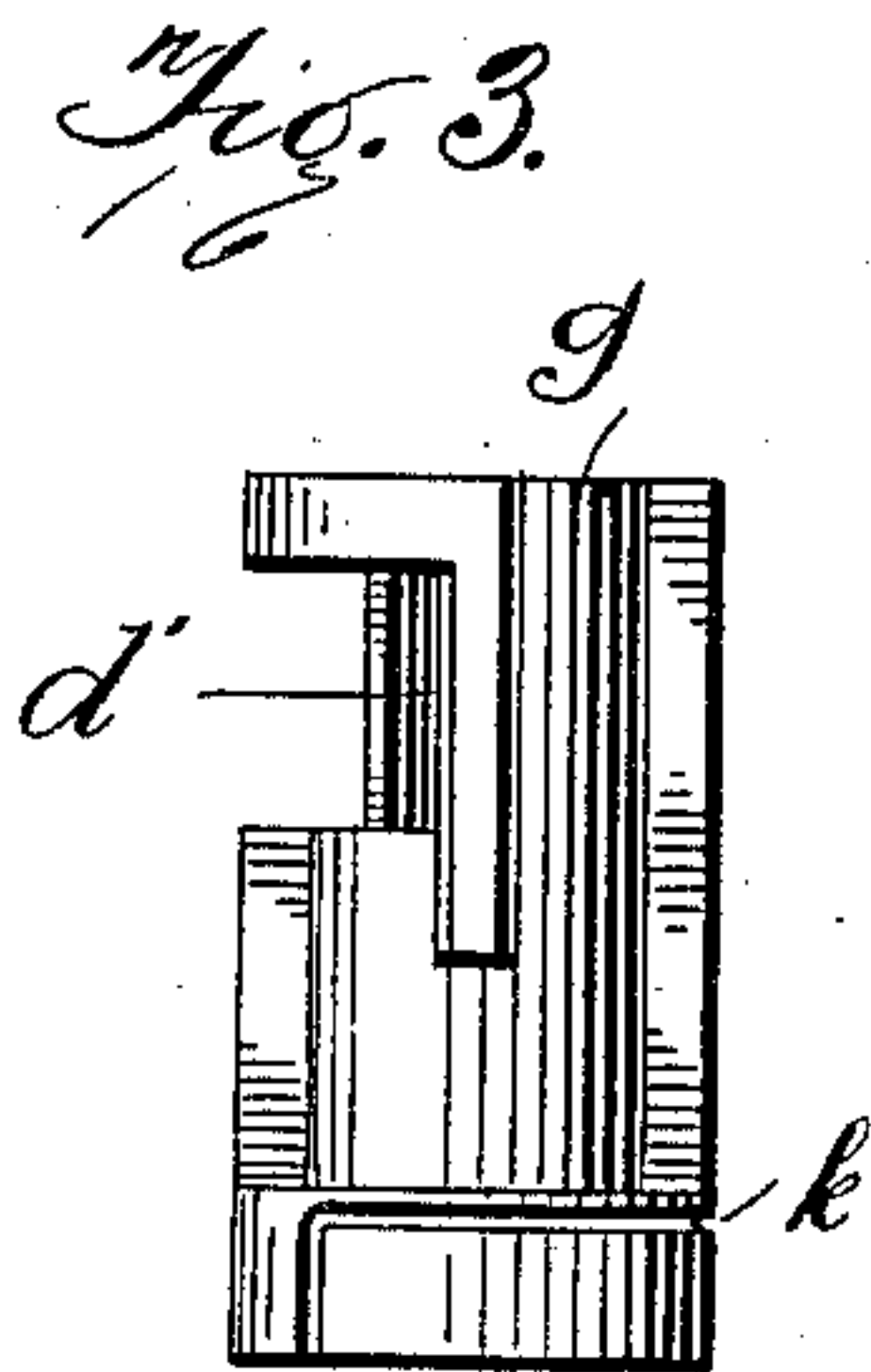
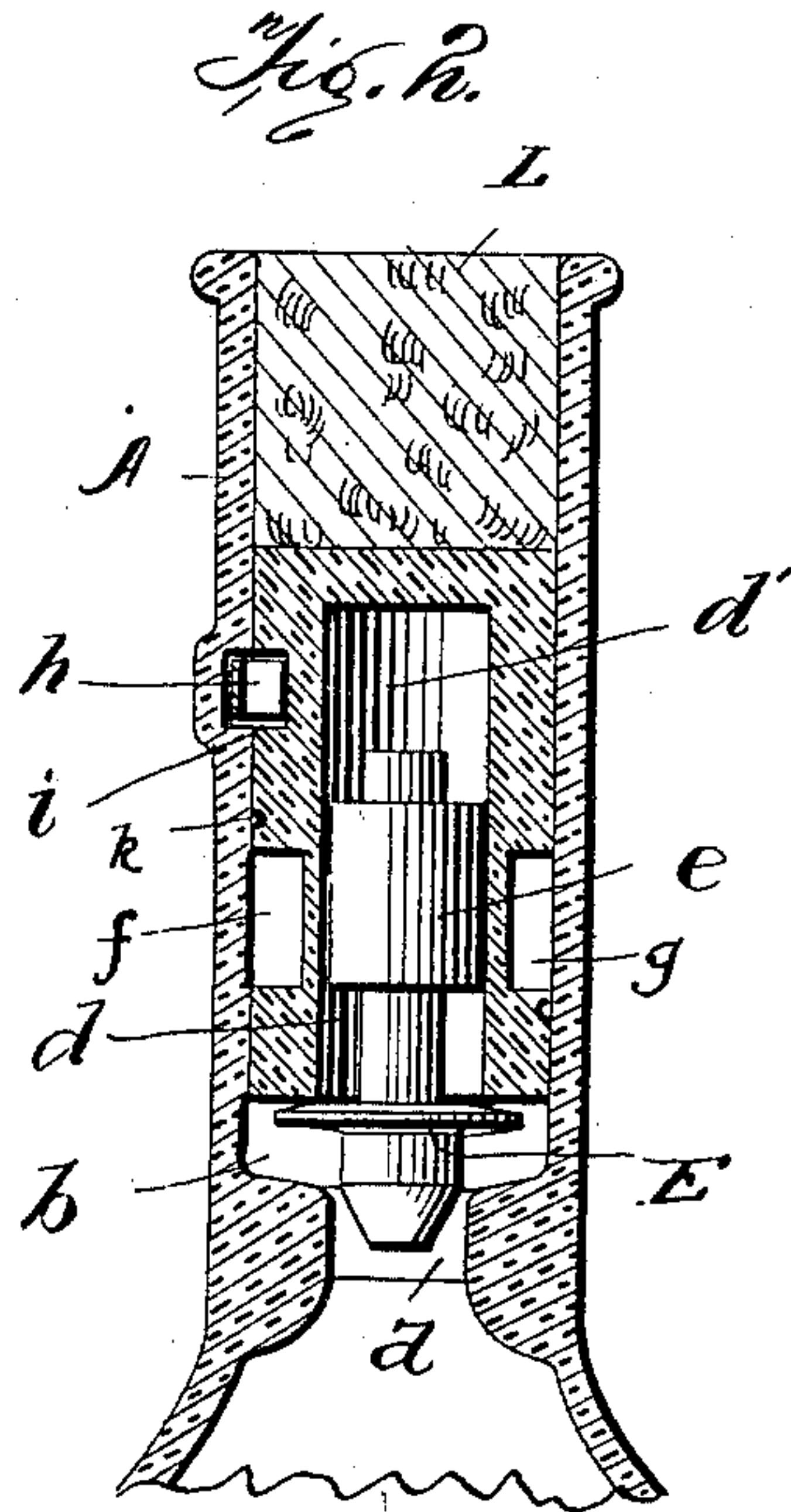
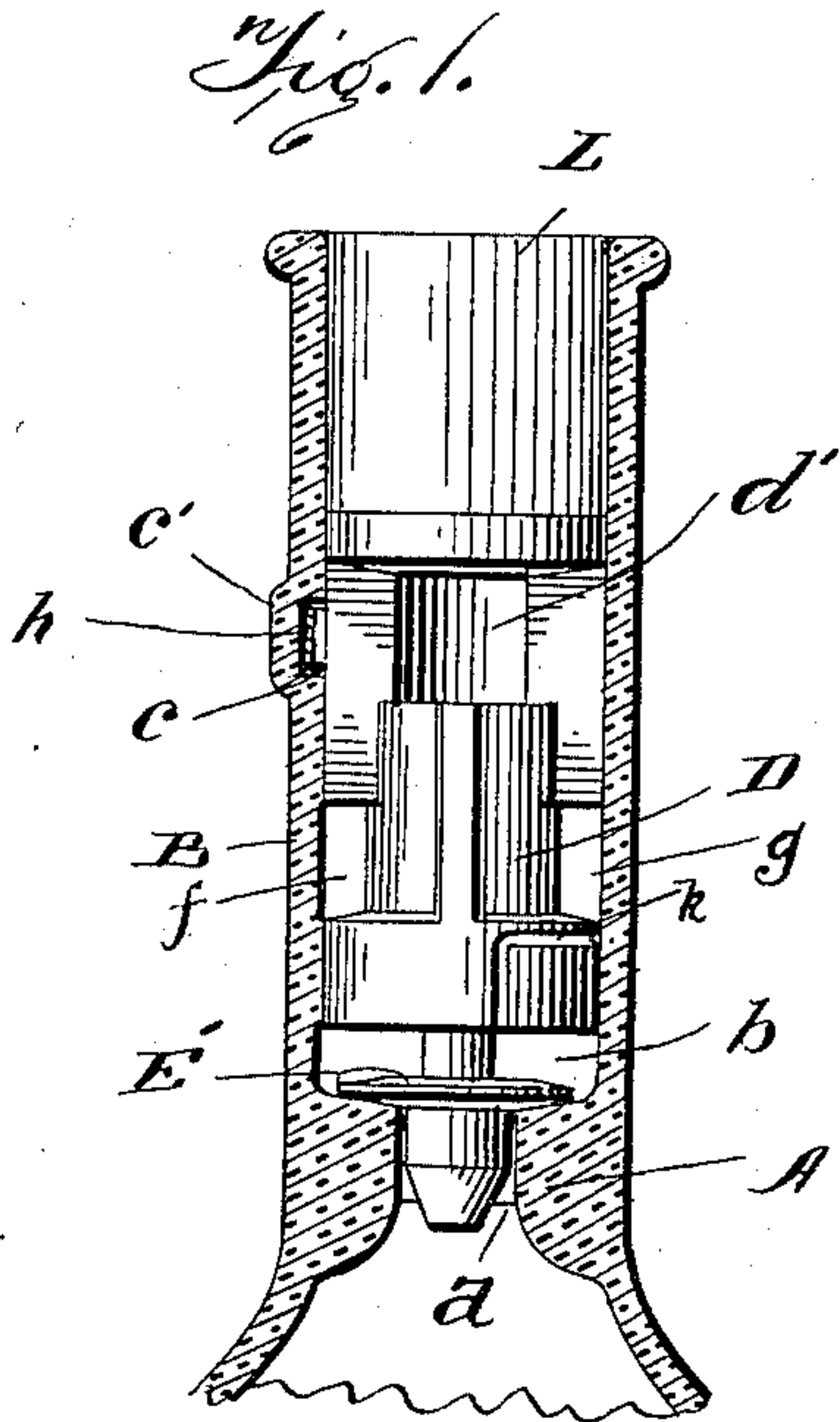
No. 673,337.

Patented Apr. 30, 1901.

J. B. DONOVAN.
NON-REFILLABLE BOTTLE.

(Application filed Feb. 23, 1901.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN B. DONOVAN, OF KNOXVILLE, TENNESSEE.

NON-REFILLABLE BOTTLE.

SPECIFICATION forming part of Letters Patent No. 673,337, dated April 30, 1901.

Application filed February 23, 1901. Serial No. 48,605. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. DONOVAN, a resident of Knoxville, Tennessee, have invented a new and useful Improvement in Non-Refillable Bottles, which invention is fully set forth in the following specification.

This invention relates to improvements in bottle-stoppers which while permitting the bottle to be emptied render it non-refillable.

The improvements constituting the invention can best be understood by reference to the accompanying drawings, illustrating the preferred embodiment thereof.

In said drawings, Figure 1 is a vertical sectional view through a portion of the bottle, showing the improved stopper in elevation and an ordinary cork stopper above the same. Fig. 2 is a similar view, with the stopper and cork also in section. Fig. 3 is an elevation of the stopper at right angles to the position in which said stopper is shown in Fig. 1, and Fig. 4 is a rear elevation of Fig. 3.

A is the neck of a bottle, having a passage *a* therethrough communicating at its lower end with the interior of the bottle.

B is the head of the bottle above the neck and having an interior chamber *b*, with which the upper end of the passage *a* communicates.

c is a recess or groove in the wall of chamber *b* and beneath the projection *c'* on the exterior of the head.

D is the bottle-stopper, preferably of glass or a suitable metal, adapted to fit closely within the head. A vertical passage *d* extends upward through the center of the stopper, to near the upper end thereof, where it opens outward through the side of the stopper at *d'*. (See Figs. 3 and 4.) A vertically-operating valve E, working in chamber *b* below stopper D, has a valve-rod which extends upward into vertical passage *d* and carries a piston *e*, which works closely in said passage. Valve E is adapted to open and close the upper end of passage *a* through the bottle-neck. The passage or groove *f*, formed in the outer surface of stopper D, extends upward from the lower end thereof, then in a lateral direction around the periphery of the stopper, and then upward again until it intersects passage *d* at *d'*. (See Figs. 1 and 4.) A second passage or groove *g*, also formed in the outer surface

of stopper D, extends downwardly from the upper end thereof, then in a lateral direction around the periphery of the stopper, and then upward until it also intersects passage *d* at *d'*, or, in other words, the passages *f* and *g* form one continuous passage intersecting the upper end of passage *d* and extending by a circuitous route from end to end of the stopper.

A bowed flat spring *h*, located in a recess *i* in the outer wall of the stopper, is adapted to spring out and engage in recess *c* in the inner wall of the head when the stopper reaches its proper position in the chamber *b*, thereby locking the stopper in the head and preventing its removal without breaking the bottle.

A small groove *k* extends upward about the surface of the stopper D, as most clearly shown in Figs. 1 and 4, providing a vent for the entrance of air when liquid is being poured from the bottle.

A cork stopper L, forced into the chamber B above the stopper D, must of course be removed when it is desired to pour the liquid out of the bottle.

In operation when the bottle is tilted up to pour out the contents thereof the valve E at once becomes unseated, as shown in Fig. 2, and the liquid passes out through passage *a* in the neck around the edge of valve E through passage *f*, and thence through passage *g* out of the bottle. Should attempt be made to refill the bottle, the liquid passing downward and then upward through passage *g* would first flow into the vertical passage *d* and pressing against the upper side of piston *e* would force valve E to its seat, as shown in Fig. 1, should it for any reason remain unseated when the bottle is brought to an upright position. The liquid then passing downward through passage *f* would of course be prevented from entering the bottle by the closed valve E.

As will be apparent, modifications may be made within wide limits without departing from the spirit of the invention.

What I claim is—

1. In combination, a bottle or analogous receptacle, a stopper having a passage extending upward from its inner end part way through the same and a second passage extending from end to end of the stopper and

communicating with the first-mentioned passage; a downwardly-seated valve for opening and closing the passage from the interior of the bottle to the under side of the stopper; 5 and means associated with said valve whereby the downward pressure of liquid in the first-mentioned passage will force the valve to its seat.

2. In combination, a bottle or analogous 10 receptacle; a stopper having a passage extending upward from its inner end part way through the same and a second passage extending downward from the upper end of the stopper thence upward into communication 15 with the first-mentioned passage, and thence downward through the lower end of the stopper; a downwardly-seated valve for opening and closing the passage from the interior of the bottle to the under side of the stopper; 20 and means associated with said valve whereby the downward pressure of liquid in the first-mentioned passage will force the valve to its seat.

3. In combination, a bottle or analogous 25 receptacle; a stopper having a passage extending upward from its inner end part way through the same, a second passage extending from end to end of the stopper and communicating with the first-mentioned passage, 30 and a small vent-passage extending from end to end of the stopper; a downwardly-seated valve for opening and closing the passage from the interior of the bottle to the under side of the stopper; and means associated 35 with said valve whereby the downward pres-

sure of liquid in the first-mentioned passage will force the valve to its seat.

4. In combination, a bottle or analogous receptacle; a stopper having a central passage 40 extending upward from its inner end and outward through its side wall, and a second passage or groove extending from end to end of the stopper formed in the outer wall thereof and intersecting the upper end of the first-mentioned passage; a downwardly-seated 45 valve for opening and closing the passage from the interior of the bottle to the under side of the stopper; and means associated with said valve whereby the downward pressure of liquid in the first-mentioned passage 50 will force the valve to its seat.

5. In combination, a bottle or analogous receptacle; a stopper having a passage extending upward from its inner end part way 55 through the same and a second passage extending from end to end of the stopper and communicating with the first-mentioned passage; a downwardly-seated valve for opening and closing the passage from the interior of the bottle to the under side of the stopper; 60 a stem on the valve; and a piston on the stem working in the first-mentioned passage.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN B. DONOVAN.

Witnesses:

JAS. H. WELCKER,

P. J. CLIFFORD.