

(No Model.)

J. VARLEY.

Apparatus to be used in Stoppering Bottles having
Internal Stoppers.

No. 243,414.

Patented June 28, 1881.

Fig. 7.

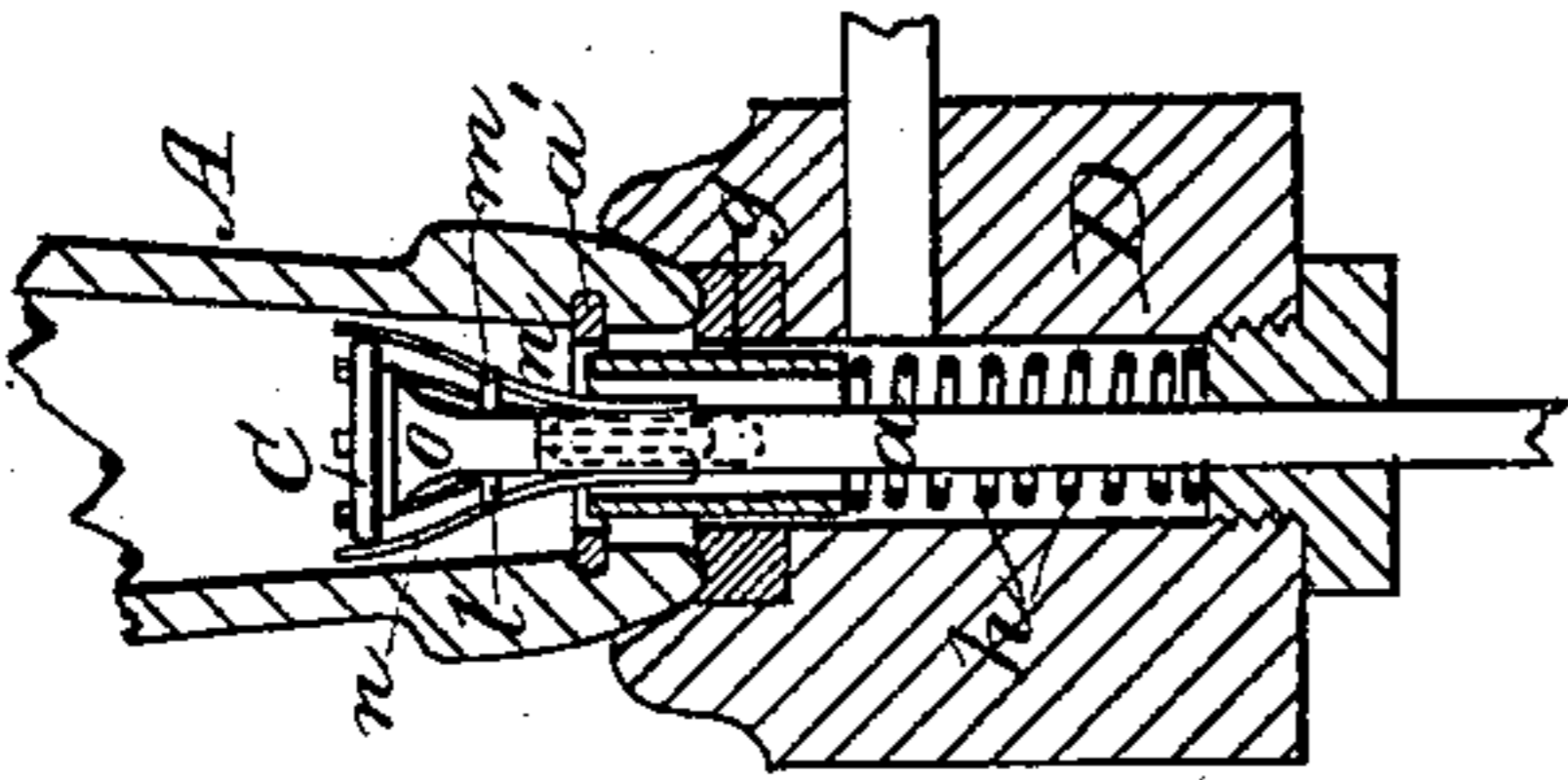


Fig. 6.

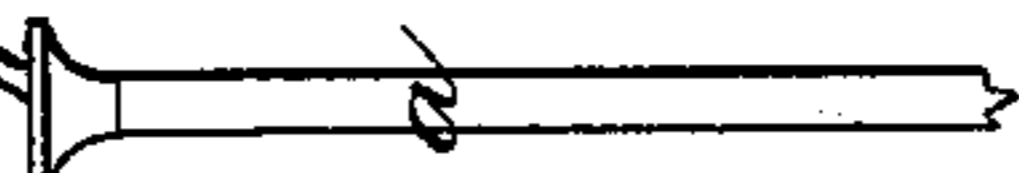


Fig. 5.

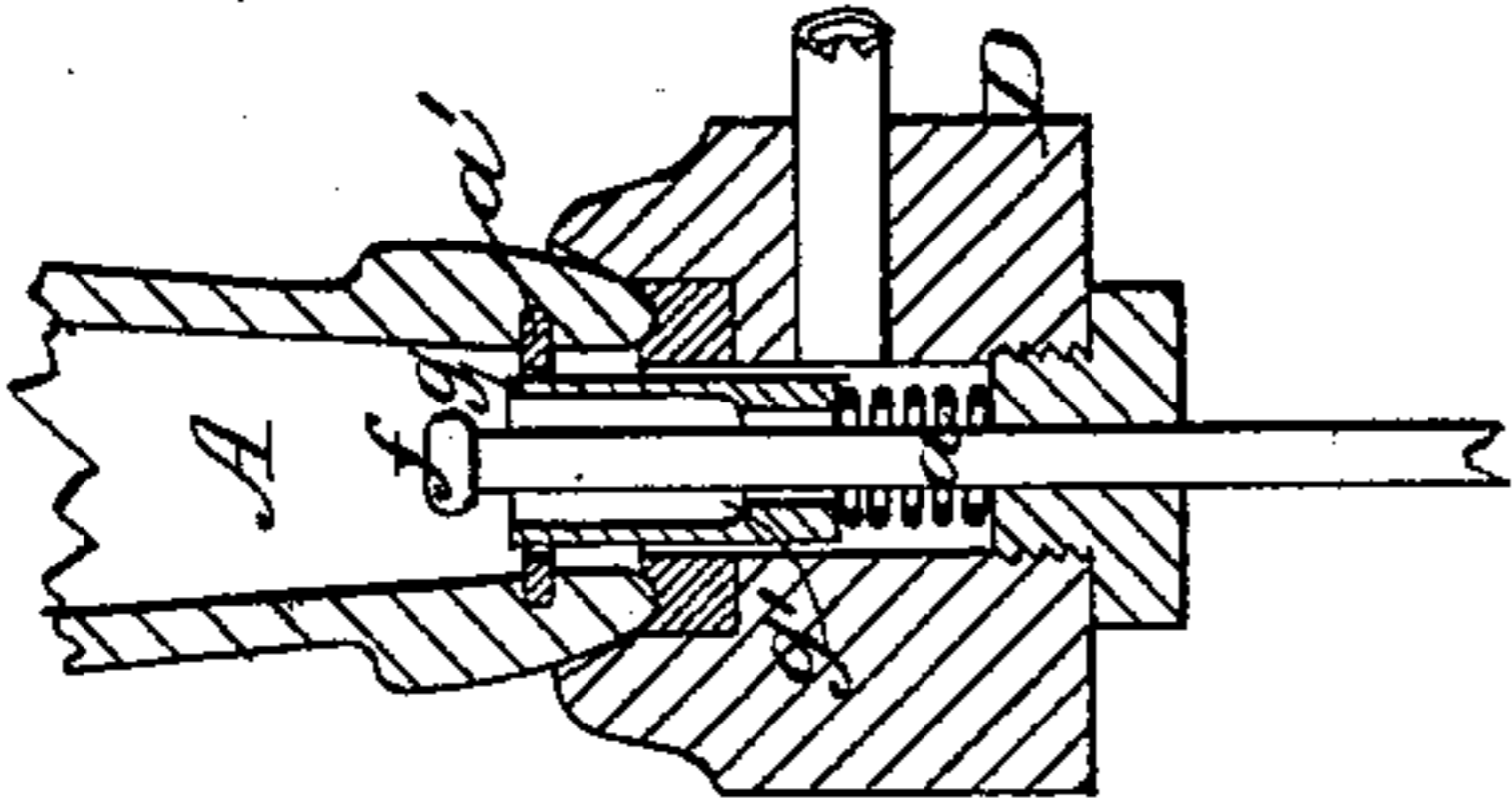


Fig. 4.

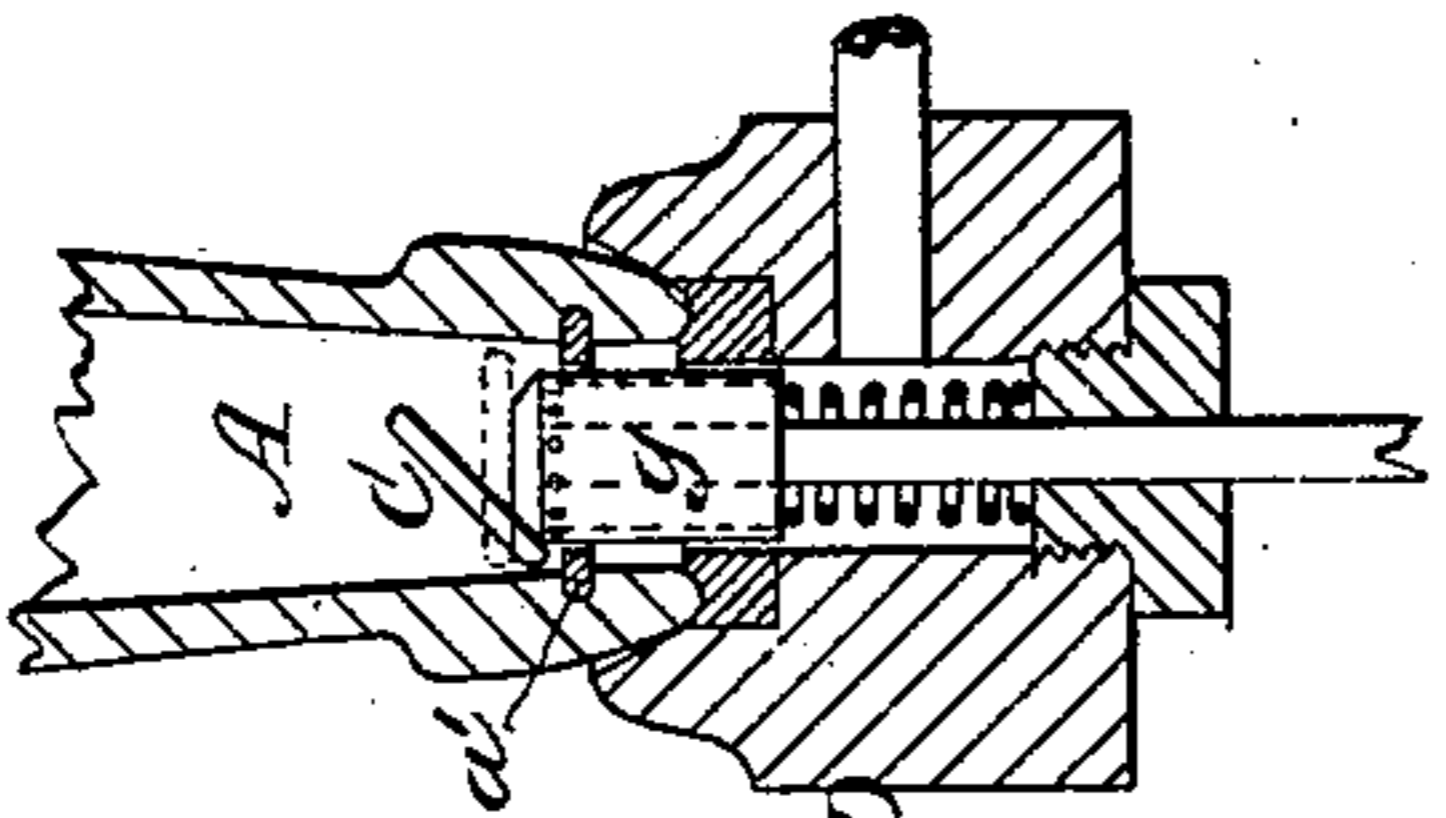


Fig. 3.

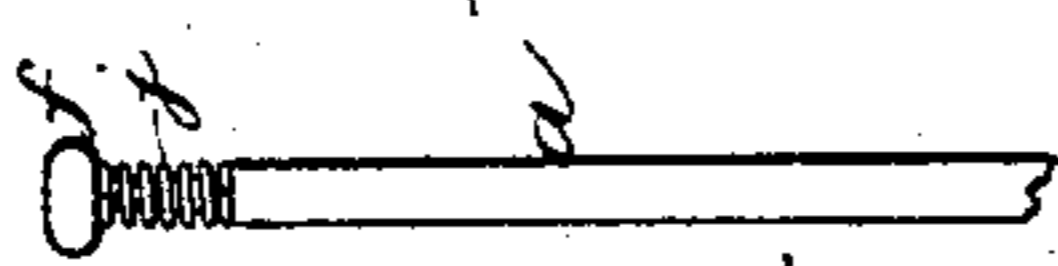


Fig. 2.

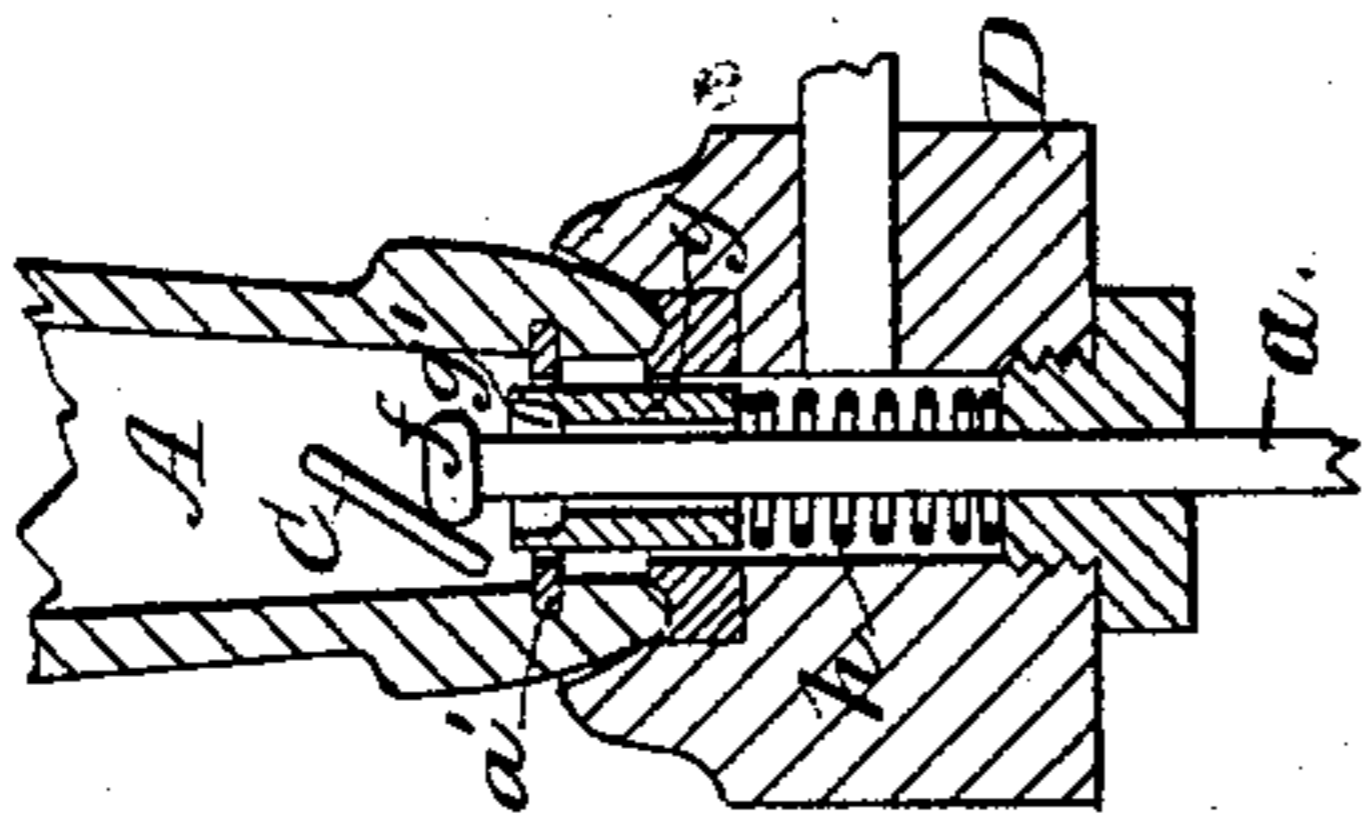


Fig. 1.

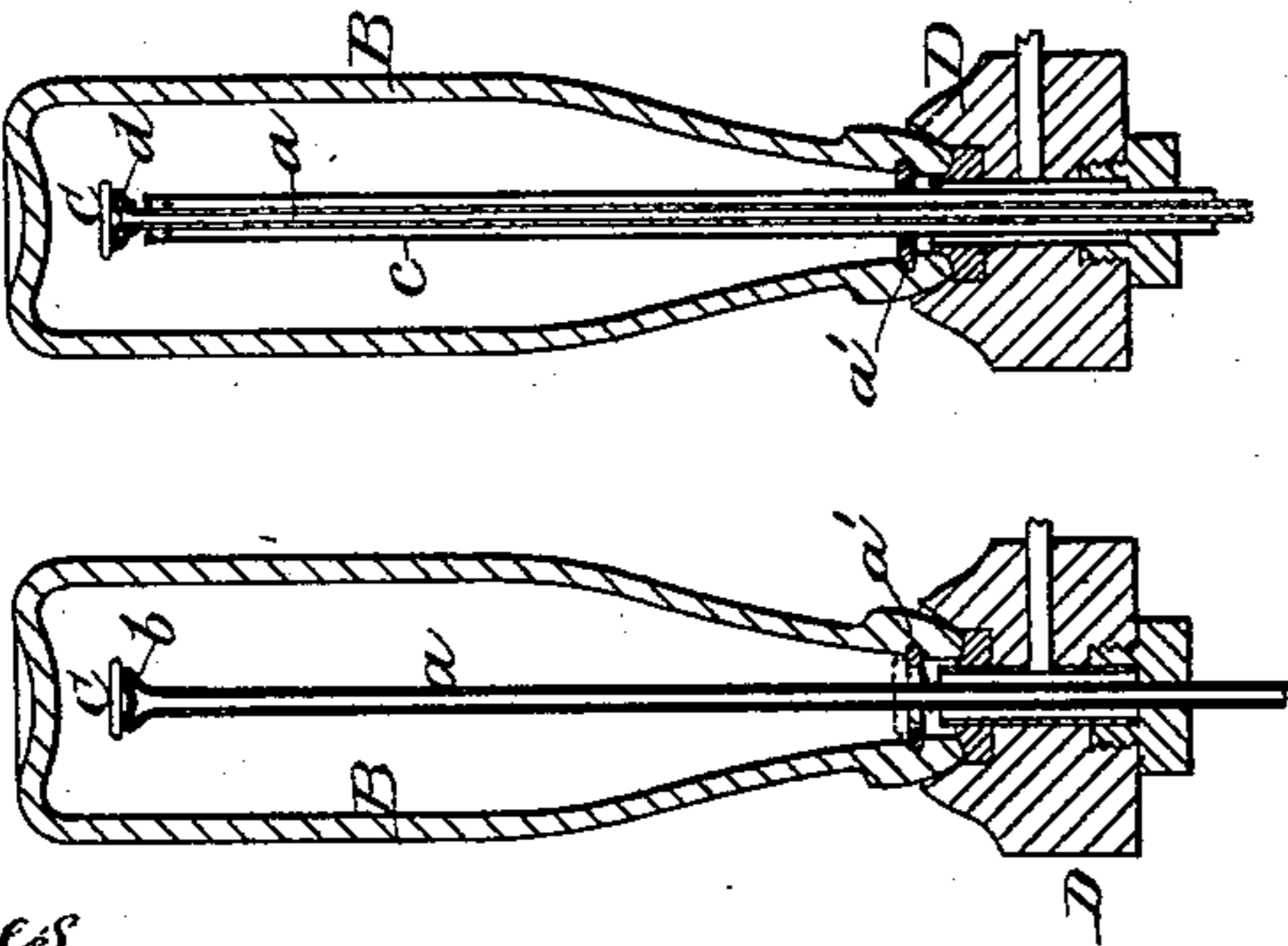


Fig. 11.

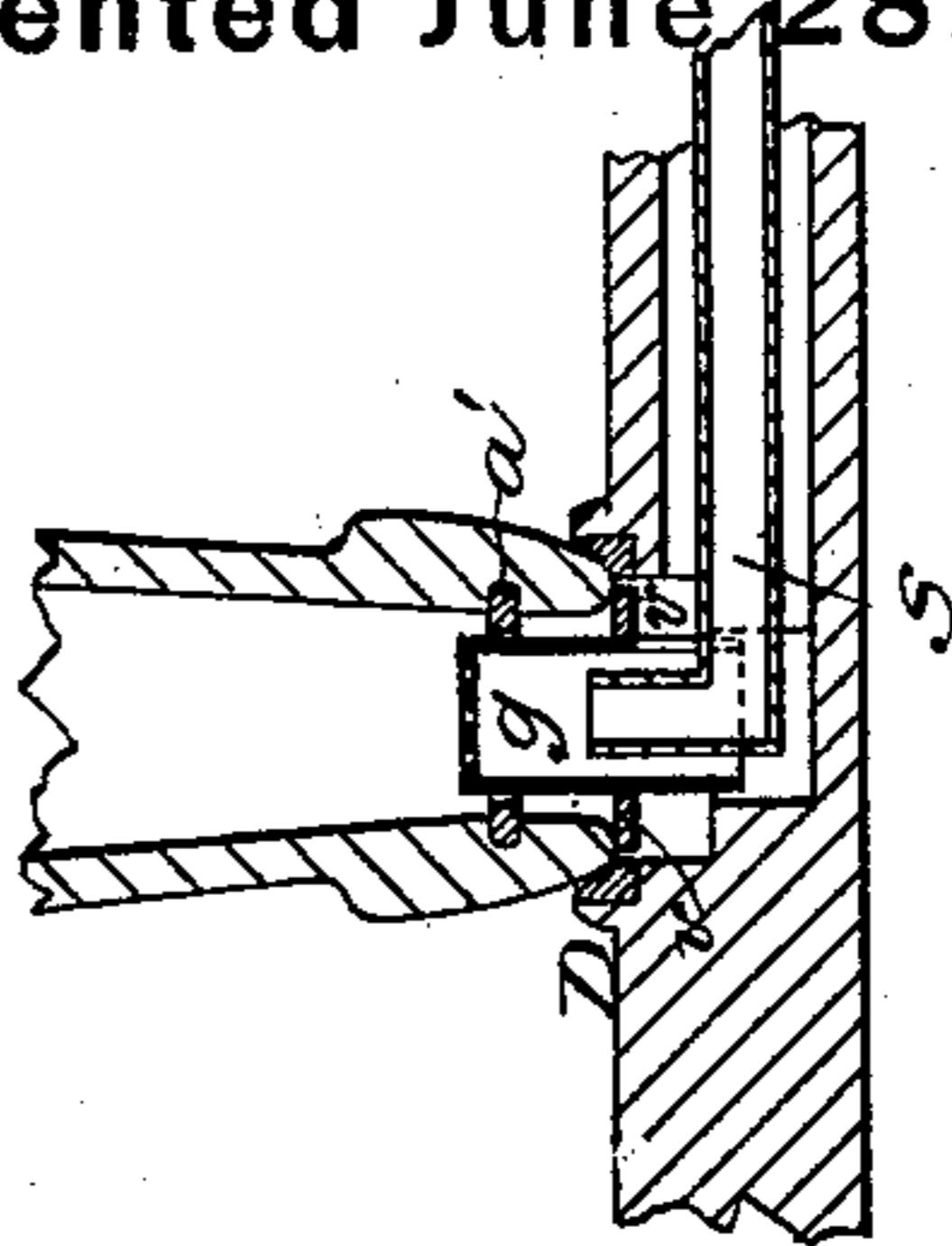


Fig. 9.

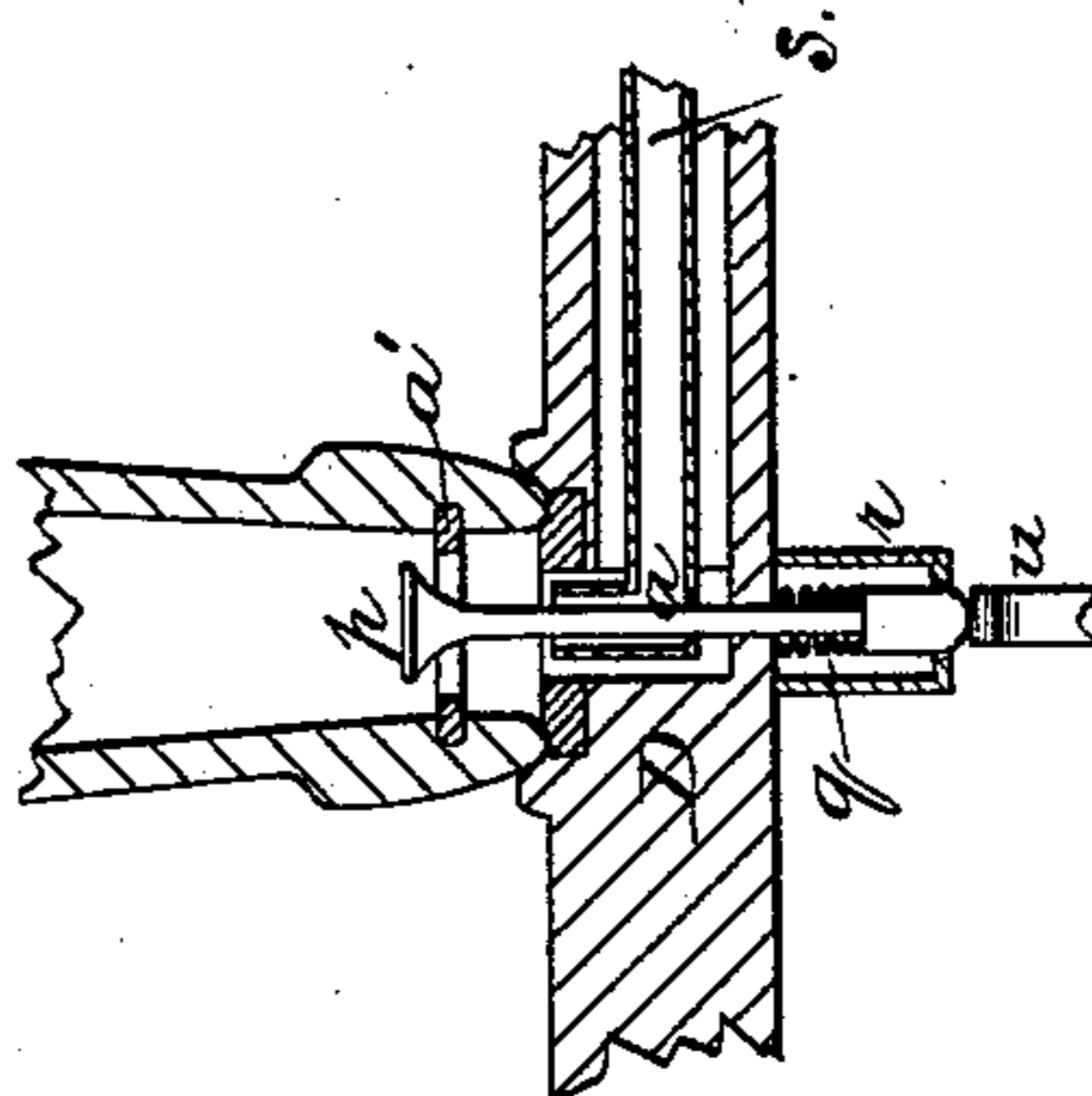


Fig. 10.

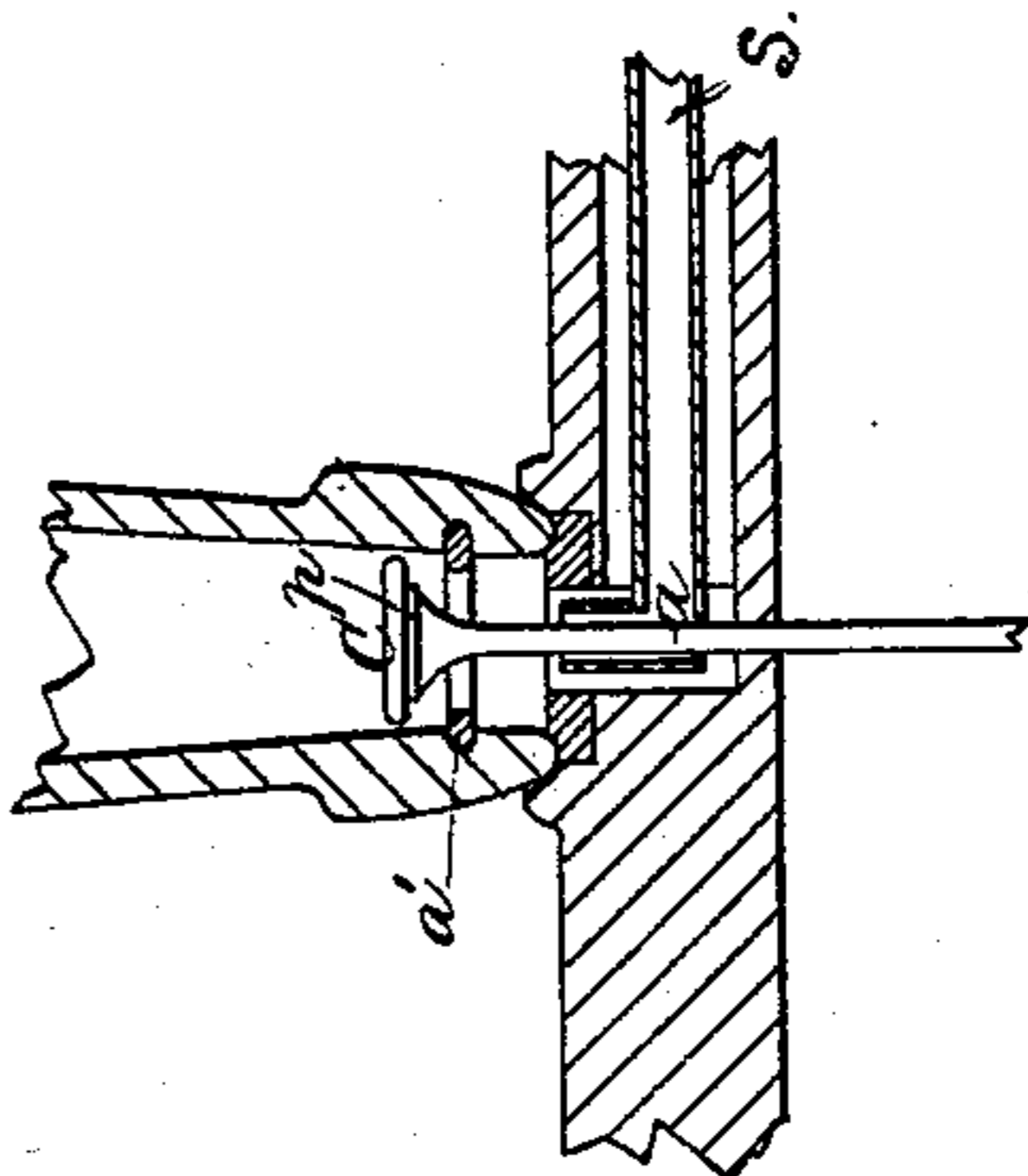
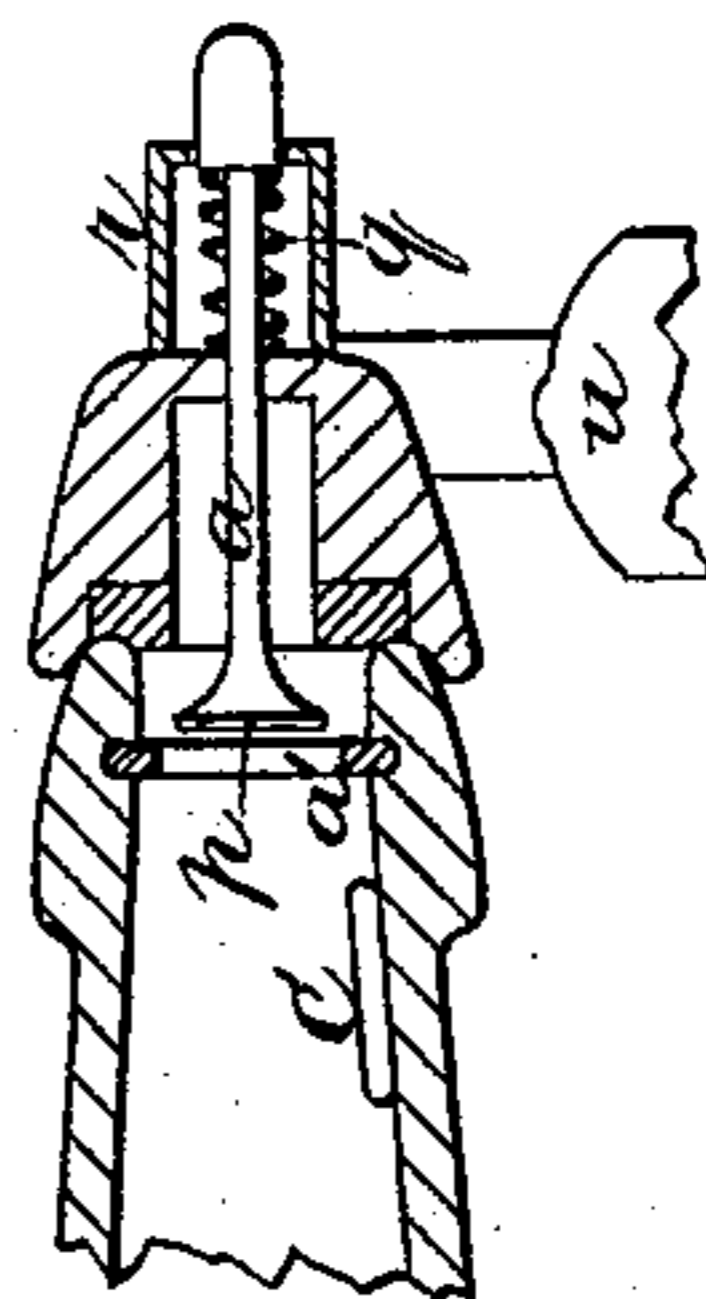


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN VARLEY, OF LONDON, ASSIGNOR TO HENRY BARRETT AND CHARLES GEORGE ELMERS, OF THE COUNTY OF MIDDLESEX, ENGLAND.

APPARATUS TO BE USED IN STOPPERING BOTTLES HAVING INTERNAL STOPPERS.

SPECIFICATION forming part of Letters Patent No. 243,414, dated June 28, 1881.

Application filed April 5, 1881. (No model.) Patented in England June 9, 1880.

To all whom it may concern:

Be it known that I, JOHN VARLEY, a subject of the Queen of Great Britain, residing at London, England, have invented new and useful
5 Improvements in Apparatus to be used in Stoppering Bottles Having Internal Stoppers, (for which I have obtained a patent in Great Britain, No. 2,320, bearing date 9th June, 1880, sealed 27th August, 1880,) of which the following is
10 a specification.

My invention relates to improvements in or applicable to apparatus to be used in stoppering bottles provided with internal stoppers, whereby the stoppers are brought or conducted
15 to their seat in the neck of the bottle in the operation of filling in a position suitable for their adjustment in the mouth of the bottle, whether a floating or sinkable stopper be used.

I have found in practice that flat or disk
20 stoppers—such as are described in the specification of Letters Patent granted to Henry Barrett and dated March 22, 1881, No. 239,015—are liable, when falling into their seat, to rest in a vertical position or edgewise in the neck
25 of the bottle. This arises from the fact that while filling a bottle with aerated water the disk-stopper is from the pressure driven about inside the bottle, and in order to come into its place in the neck it has to fall or settle down
30 in the neck and onto its seat, so as to form a joint which shall keep the bottle closed air-tight. Now, a stopper, such as the disk stopper, will not always fall into a proper position or properly adjust itself on its seat in the neck.

My improvements have for their object to
35 provide means for more effectually bringing the stopper to its seat in the mouth of the bottle when using a stopper which, owing to its shape, cannot be depended upon for adjusting
40 itself.

To make my invention better understood, I will proceed to describe the same by reference to the accompanying drawings.

Figure 1 is a sectional elevation, showing one
45 arrangement I employ in the case in which the filling or charging apparatus is provided with the ordinary air tube or rod. The upper end of this rod *a* is provided with a cup or dished end, *b*. The bottle *B* to be filled is placed in
50 the cup or socket *D* of the filling apparatus, which is of ordinary construction, and the said

air tube or rod *a* is passed into the bottle, and the cup or dished end *b*, coming against the stopper *C*, will raise it and retain it in a flat position, as shown, while the bottle is being
55 filled, and on the rod *a* being withdrawn it will leave the stopper *C* properly placed on its seat *a'* in the neck of the bottle, as shown in dotted lines.

In a modification of this arrangement shown
60 in the sectional elevation at Fig. 2 the rod *a* may be placed within a larger tube or hollow rod, *c*, in which case the rod *c* forms the outlet for the air, while the inner or smaller tube, *a*, is provided at its upper end with a seating, *d*, of
65 india-rubber, (of a size to allow it to pass in and out of the bottle,) the tube *a* being open to the atmosphere. If the double rod be passed into the bottle *B* to be stoppered, the disk stopper *C* will at once fall flat upon the india-
70 rubber seating *d*, and is thus in a suitable position to be placed on the seating *a'* in the neck. The rod *a* with the stopper thereon should be raised to a suitable height within the bottle. The bottle *B* is then filled, the air escaping there-
75 from down the outer tube, *c*, while the disk stopper *C* will be firmly held on the rubber seating *d* at the end of the open tube *a* by the force of the gas acting upon the disk in the same way as if the disk were already placed
80 upon its seating *a'* in the neck of the bottle. When the bottle is filled the rods *a* and *c* are lowered and passed out of the bottle, leaving the disk stopper *C* on its seat *a'* in the neck. Although I have described the outer tube, *c*,
85 as that by which the air in the bottle may escape, it will be understood that the tube *a* may be made to serve as the air-tube, and the tube *c* as the retaining-tube.

A suitable valve may, if necessary, be adapt-
90 ed to the air-tube as usual, or a simple outlet for the air may be provided.

A modification of the construction of apparatus, hereinbefore described, is shown in Fig.
3, which represents the neck *A* of a bottle fit-
95 ting in the ordinary socket or cup *D* of the filling-machine.

a is the air-tube, which I provide with a small spherical or other suitably-shaped projection, *f*.
g is a metal thimble, collar, or tube, fitting
10 and working in the socket *D*, and acted upon by the spring *h*, so as to cause the tube *g* to

pass up into the bottle, so that it will extend above the rubber ring or seat a' in the neck of the bottle. The object of this thimble or tube g is that it shall present an even surface for the disk-stopper C to fall or rest upon, thus keeping the disk from the ring a' until it is placed thereon by the knob or projection f at the upper end of the tube a . The drawing shows the disk in the act of falling over onto the top of the tube a , after the bottle has been filled in the usual way. This action of the disk takes place while the tube a is descending, and a slight check is given to this tube a by the projection f thereon coming against the flange g' in the tube g , and in being lowered it draws down with it the tube g until the neck A of the bottle is left clear and the disk is left flat on the ring or seating a' . I would observe that when the disk falls off the top of the tube a , in introducing this tube into the bottle, it falls edgewise, and remains on its edge between one side of the neck A and the tube a , and the small knob f , (which may be screwed on the top of the tube a ,) being larger in diameter than the tube, tilts the disk first one way and then the other, when it will fall onto the tube a , which is made flat on the top. In order to prevent this knob from damaging either the bottle or the disk-stopper C, I sometimes provide a flexible or yielding top for the tube a . This arrangement is shown in Fig. 4, in which the knob or projection f is attached to a coil of wire, j , or otherwise so arranged as to allow the knob to yield instead of forcing its way past, and thus avoid risk of damaging the disk.

In some cases the flanged thimble or tube g may be dispensed with, and the stopper allowed to rest upon the seating in the neck of the bottle; but I prefer the former method as being more effective or in cases in which an air-tube is not required for the filling operation I may use the flanged thimble or tube g alone. In this case the end of the thimble or tube g may be formed somewhat conical, as shown in Fig. 5, to assist in bringing the stopper C to its seat a' . The thimble or tube g may be withdrawn before the bottle is removed from the machine, or the bottle may be lifted up from it, but in either case the stopper will lie flat on its seat.

The arrangement shown in Fig. 3^a is similar to that shown in Fig. 3, except that, instead of the tube a bringing down the tube g as soon as the knob or projection f meets the top of the tube g , it, in this case, has to descend until it comes against the flange g' , which is formed lower down in the tube. This is in order to allow the tube g to rest a short time while the tube a is still passing downward, and to allow the disk stopper time to settle down flat before it is brought on the seating a' in the neck of the bottle.

In another modification (shown in Fig. 6) I place a metal disk, k , on the top of the tube a , just large enough to pass into the neck of the bottle. In this case, when the rod is passed

up into the bottle the disk-stopper is at once brought into a horizontal position and remains upon the disk k at the top of the tube until the bottle has been filled. It is then lowered out of the bottle and the stopper will be left on the seating in the neck.

Another modification of my improvements is shown in Fig. 7, in which the tube a is fitted with a number of expanding arms n , which embrace the disk-stopper C and keep it in position upon the top of the tube a , while the bottle is being filled, and while the tube is lowered down or out of the bottle. The top o of the tube a in this case is movable, and the two arms or projections, l and m , serve as a means of holding the disk up out of the way of the expanding arms n , in order that these arms may be contracted or drawn together inward at that part of the neck of the bottle containing the india-rubber ring or seating a' . This contraction is effected by the arms n passing (when the tube a is lowered) through the tube g placed in the socket D of the filling-machine. The arms l and m then come in contact with the top of the tube g , and the movable top o of the tube a is thus caused to remain stationary while the lower part carrying the expanded arms is continued to be drawn downward. The disk-stopper C will then be free of the expanding arms n , and rests for a short space of time upon the top o of the tube a until the arms n have been drawn out of the way, leaving the disk free to rest upon the seating so soon as the rod shall have been lowered sufficiently for that purpose. This is effected by compressing the spring h which will allow the tube g to clear itself of the neck of the bottle. The object of these arms n is to conduct the stopper C up and down the inside of the bottle and to render the stopper little liable to fall into the neck of the bottle.

The arrangements hereinbefore described are such as are applicable when using an upright machine, such as that known as "Barrett's patent machine," as described in the specification of English Letters Patent No. 2,708, dated the 2d day of September, 1868. I will now describe the means I employ for adjusting the stopper when using the machine known as "Codd's patent machine" which differs from the former machine, inasmuch as in the former case the bottle is filled while standing in an inverted upright position, while in the latter case, and in all so-called turnover machines, the bottle is filled while lying on its side, and is then turned so as to bring the bottle into an inverted position. In this and in all such cases I employ an arrangement, such as that shown in Figs. 8, 9, and 10. In this arrangement I pass a spindle, a , through a stuffing-box, r , up through the ordinary inlet-pipe s of a turnover filling-machine, and at the top of the spindle a , I fix a knob or a flat disk, p , of metal.

q is a spring for holding down the spindle a in its normal position, as shown in Fig. 8.

The bottle is placed in the machine on its

side in the usual manner, as shown in Fig. 8, and filled. It is then turned over as usual and the bottom brought upward, as shown in Figs. 9 and 10. The disk-stopper C will then fall 5 into the neck of the bottle and will strike or fall on the metal disk *p*, as shown in Fig. 10, on the spindle *a*, and will settle down flat on the top thereof; but in order to insure this action of the stopper I provide a cam, *u*, against 10 which the end of the spindle *a* strikes while the bottle is being turned, so that the cam will lift the spindle *a* or give it a sharp kick, which, should the stopper be resting in an unsuitable position, will at once bring it into place and the 15 bottle may then be taken out of the filling-machine. Instead of a cam, any other suitable arrangement for lifting the spindle *a* may be employed.

In Fig. 11 I show an arrangement which may 20 be adapted to either an upright or turnover machine. The arrangement consists of a short light tube, *g*, working freely in the socket D of the filling-machine, and of such dimensions that it will pass and fit into the neck of the bottle 25 as far as the india-rubber ring *a'* therein, and is there caused to stop by the projection *v*, with which it is provided, coming against the mouth of the bottle. Now, when the bottle is being filled in either an upright or a turnover ma-

chine, the force of the water entering the bottle 30 will press the tube *g* up as far as the projection or stop *v* will allow it to go, and when the bottle is full the supply of aerated liquid is shut off in the usual manner. The disk-stopper will 35 then settle on the top of the tube, and will rest thereon flatwise in proper position to be left on its seat, which will be effected so soon as the tube *g* has descended below the ring or seating, which it will commence to do as soon as 40 the supply of liquid to the bottle has been cut off and the pressure on the tube *g* removed.

Having thus described my said invention and the best means with which I am acquainted for carrying the same into effect, I wish it to be 45 understood that I claim—

The improvements in or applicable to apparatus for stoppering bottles having internal stoppers, consisting of a device adapted for insertion within and for withdrawal from the bottle, and provided at its inner end with a sur- 50 face adapted to receive and to adjust to its proper position for stoppering a flat-faced or disk-shaped stopper, substantially as shown and described.

JOHN VARLEY.

Witnesses:

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F. PRICE.