

No. 835,995.

PATENTED NOV. 13, 1906.

A. C. WAY.  
NON-REFILLABLE BOTTLE.  
APPLICATION FILED MAR. 12, 1906.

Fig. 1.

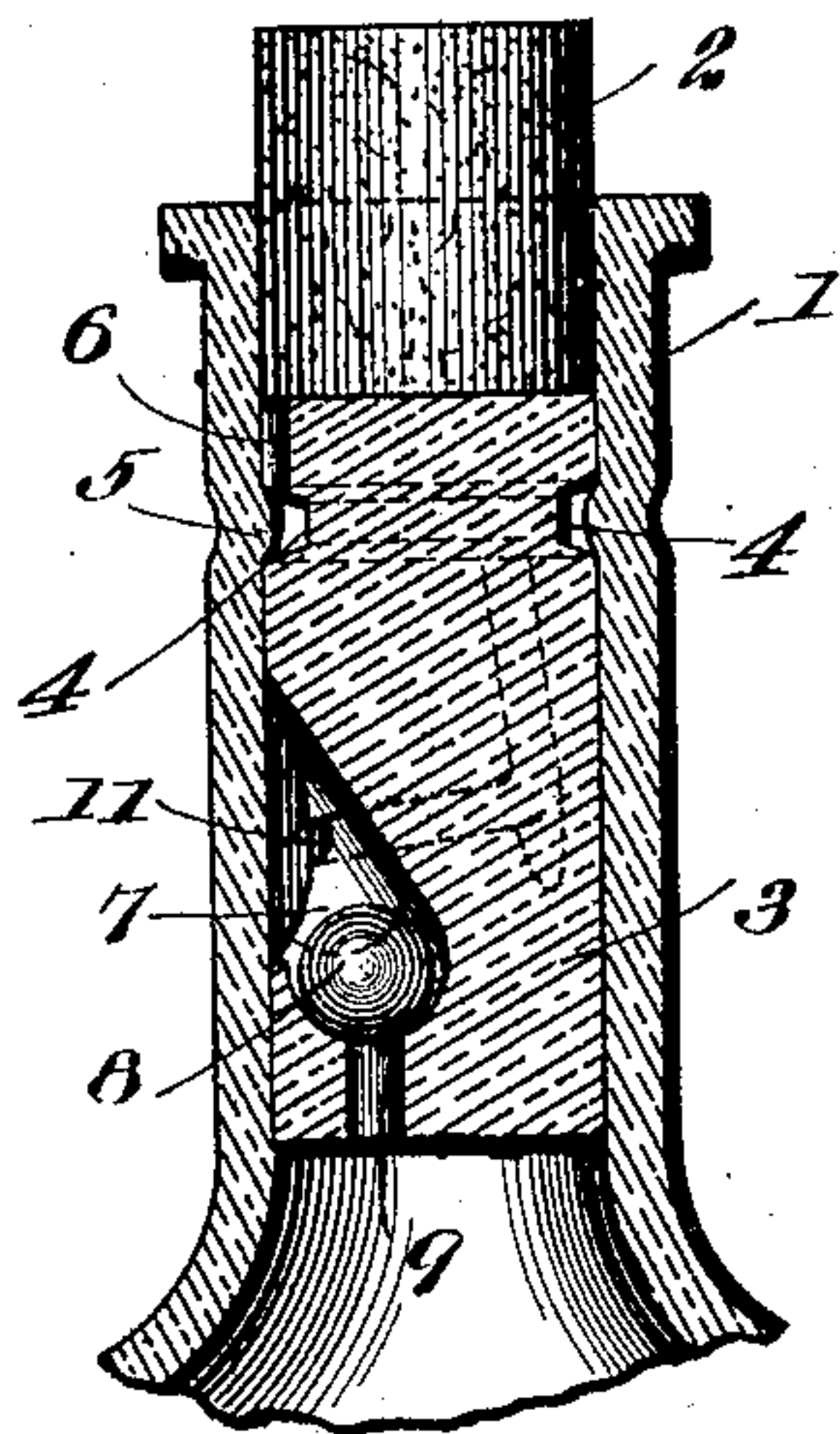


Fig. 2.

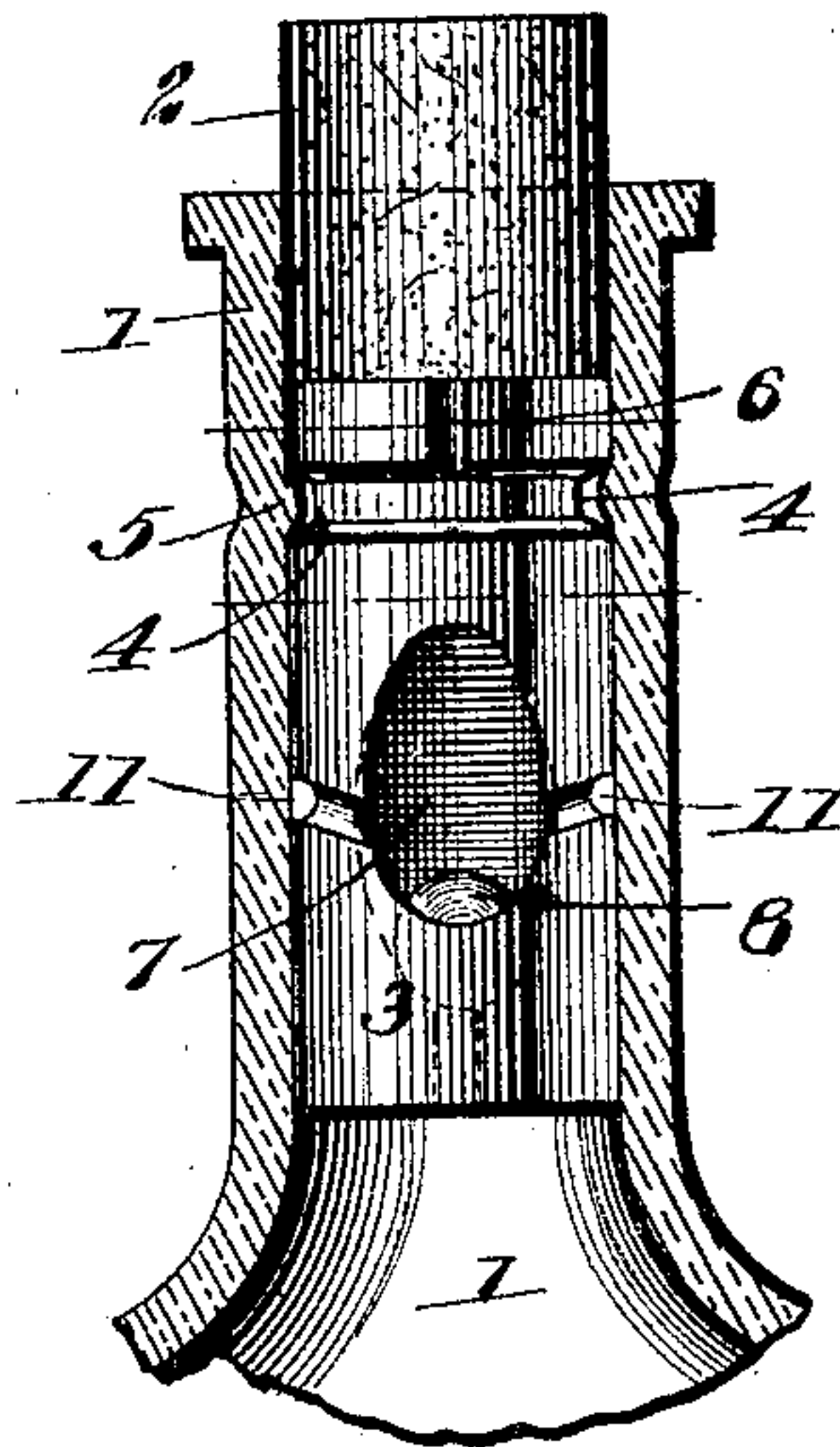


Fig. 3.

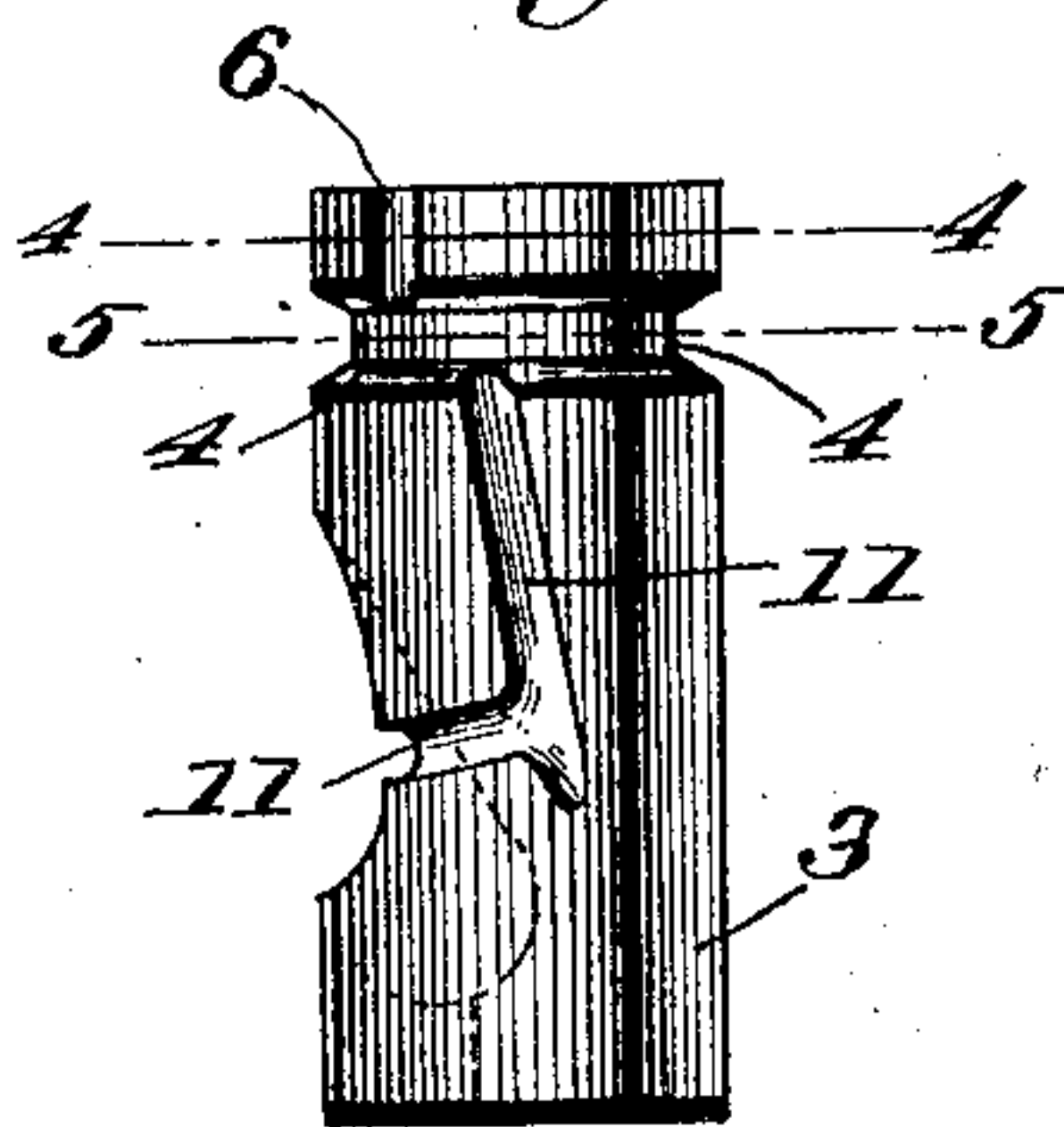


Fig. 6.

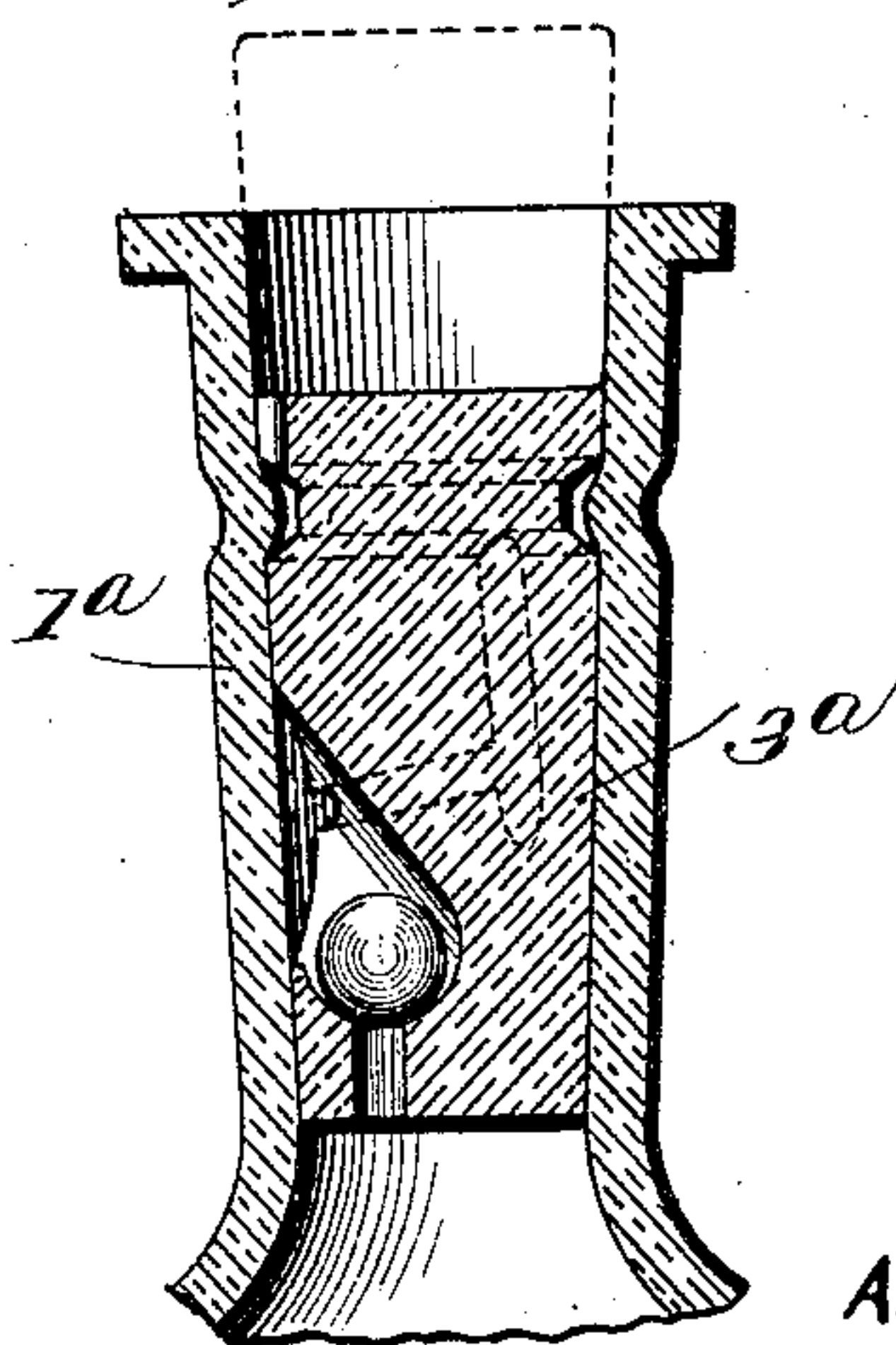


Fig. 4.

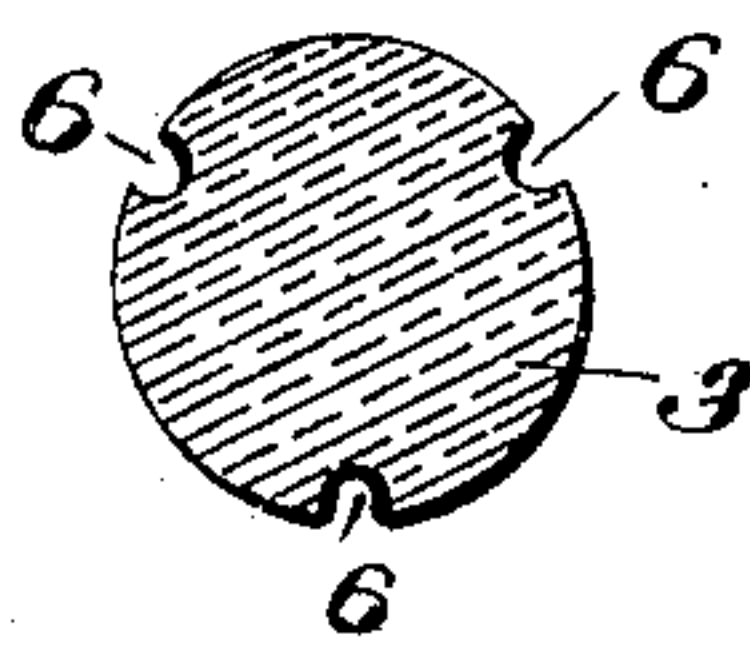
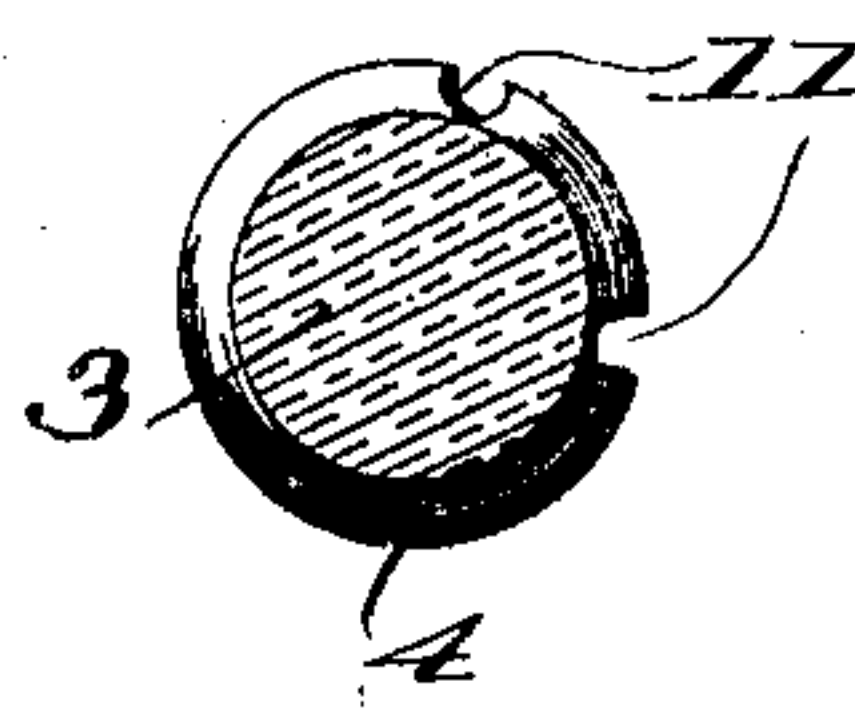


Fig. 5.



WITNESSES:  
*E. M. Callaghan,*  
*Amos W. Hart*

INVENTOR  
ALBERT C. WAY  
BY *Munn & Co.*  
ATTORNEYS



# UNITED STATES PATENT OFFICE.

ALBERT C. WAY, OF PERRY CENTER, NEW YORK.

## NON-REFILLABLE BOTTLE.

No. 835,995.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed March 12, 1906. Serial No. 305,517.

*To all whom it may concern:*

Be it known that I, ALBERT C. WAY, a citizen of the United States, and a resident of Perry Center, in the county of Wyoming and State of New York, have invented a new and Improved Non-Refillable Bottle, of which the following is a specification.

My invention is an improvement in that class of non-refillable bottles which are provided with one or more internal stoppers having a movable valve for closing an exit-passage. The improvement is embodied in the construction, arrangement, and combination of parts hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a bottle-neck and my improved stopper secured therein. Fig. 2 includes a longitudinal section of the bottle-neck and a side view of the stopper secured therein. Fig. 3 is a side view of my improved stopper. Fig. 4 is a cross-section of the stopper on the line 4 4 of Fig. 3. Fig. 5 is a cross-section on the line 5 5 of Fig. 3. Fig. 6 is a longitudinal section of a bottle-neck and stopper having a tapered form.

I will first describe the invention as shown in Figs. 1 to 5, inclusive. A glass bottle-neck 1 is provided with an ordinary removable stopper 2, composed of cork or some other soft elastic material which is impervious to liquids and gases. The stopper 2 closes the end of the neck in the usual way, and a portion of it preferably projects so that the stopper may be readily removed when required. Within the neck is arranged a glass stopper 3, the same being essentially cylindrical in form and fitting neatly within the neck, as shown in Figs. 1 and 2. Near its upper end the stopper 3 is provided with a circumferential groove 4, which subserves two functions—namely, it receives an inwardly-bent portion of the bottle-neck, whereby the stopper is permanently secured in the latter, and it has also a passage through which the contents of the bottle are discharged. Before insertion of the stopper in the bottle-neck the latter is cylindrical within and without and the projection 5 is formed subsequently—that is to say, that portion of the neck opposite the groove in the stopper is heated and softened, so that it is rendered flexible and compressible, and then pressure is applied exteriorly to force such portion inward to a greater or less de-

gree, so it may enter the groove and lock the stopper firmly in place. Heat may be applied in various ways—for instance, by means of a gas-flame—and the compression of the neck may also be effected in various ways—for example, by placing it between rotating rollers or by means of pincers or forceps or any other suitable hand-tool. It will be perceived that the compression of the neck at a single point will suffice to retain the stopper in place; but it is more convenient to compress it at two opposite points or at many opposite points, or the neck may be compressed its entire circumference; but in any case the inward projection 5 does not extend to the bottom of the groove formed in the stopper, so that a passage for liquid remains open. The portion of the stopper above the groove is provided with three vertical grooves or notches 6. (See Figs. 1 and 4.) In the side of the stopper is formed an inclined pocket 7, (see Figs. 1 and 2,) in which is located a ball or sphere 8, the diameter of the latter being such that it has free movement in the pocket. The latter is inclined at an angle of about forty-five degrees, and the side of the stopper is cut away in forming the mouth of the pocket, as indicated in Figs. 1 and 3. A passage 9 (see Fig. 1) leads downwardly from the pocket and opens at the lower end of the stopper. The pocket is put in communication with the groove 4 by means of right-angular grooves 11, formed in the sides of the stopper, as will be readily understood from Figs. 1, 2, 3. The upper ends of these angular grooves are out of alinement with the top grooves 6, and hence a wire or other device cannot be inserted through the two grooves. This would, however, be practically prevented by the angularity of the grooves 11, even if the upper groove 6 were in alinement therewith.

The operation of my invention is obvious. When the ball 8 is in the position indicated in Fig. 1, it closes the lower passage 9 of the stopper against ingress of liquid; but upon tilting the bottle so that the ball rolls forward to the upper end of the pocket, as indicated by dotted line, Fig. 1, the passage 9 is opened, and liquid may then flow around the ball through the angular side grooves 11, thus into the circumferential groove 4 of the stopper, and out through the top groove 6.

It will be seen that the upper portion of the valve-pocket 7 is too shallow at the point where the grooves 11 open into it to permit



the valve to obstruct flow of liquid into or from the grooves. Hence if the bottle be inverted and an attempt be made to fill it by aid of a pump the liquid will enter the pocket above the valve, and thus carry the valve to its seat and prevent the liquid passing through the passage 9.

As shown in Fig. 3, the upper portions of the stopper-grooves 11 are extended downward below their point of junction with the shorter portions of the grooves that communicate with the pocket 7. Hence if a wire be inserted from above it cannot be turned at the angle of a groove 11 toward the pocket 7, but will enter the extension referred to and its further advance be arrested thereby.

In Fig. 6 the bottle-neck 1<sup>a</sup> and its contained stopper 3<sup>a</sup> are slightly tapered, whereby the latter is prevented from slipping too far into the neck when inserted. In other words, the glass stopper is arrested when its top is far enough below the top of the neck to allow space for the cork stopper.

What I claim is—

1. The combination, with the bottle-neck having an internal projection, of a stopper which is provided with a circumferential groove to receive such projection, also with liquid-discharge grooves leading upward from the said circumferential groove, and with an inclined pocket opening at the side of the stopper, and a passage leading downwardly from said groove and opening at the lower end of the stopper, the latter being also constructed with angular grooves formed in the sides of its body and connecting the said pocket with the circumferential groove, and a ball-valve which is located and has free play in the pocket, substantially as described.

2. The combination with the bottle-neck having an interior projection, of a stopper constructed with a circumferential groove that receives said projection and with a liquid-discharge groove leading upward from the circumferential one, also with an inclined pocket which is formed in the body of

the stopper and opens at the side of the same, and with a passage leading downwardly from the pocket to the lower end of the stopper, the stopper having also side grooves extending upward from the pocket into communication with the circumferential groove and arranged with their upper ends out of alignment with the upper groove, substantially as described.

3. The combination with a glass bottle-neck, of a glass stopper having near its upper end a lateral cavity, into which the neck is compressed, and a groove leading upwardly from said cavity, the stopper provided also with an inclined pocket formed in its side and a liquid-passage extending downwardly therefrom and with an angular liquid-discharge passage leading from the pocket up to said cavity, as described.

4. A stopper proper comprising a symmetrical body having an inclined side pocket for receiving a ball-valve, and a passage leading downwardly from the pocket, also side grooves leading upward from the pocket, and a circumferential groove with which the side grooves communicate, the stopper having likewise top grooves leading upward from said circumferential grooves to the top of stopper, as described.

5. The combination with the bottle-neck of the stopper having a side valve-pocket and a passage leading downward therefrom, the stopper provided also with an angular groove extending upward from the pocket, the upper portion of the groove extending below the lateral or transverse portion, and a valve arranged in said pocket, as shown and described.

6. The combination with a bottle-neck, of a valve and a stopper having a side pocket that contains said valve and an angular groove communicating with said pocket at a point above that to which the valve can advance, as and for the purpose specified.

ALBERT C. WAY.

Witnesses:

PAUL M. HOEPFNER,  
A. L. AIME.