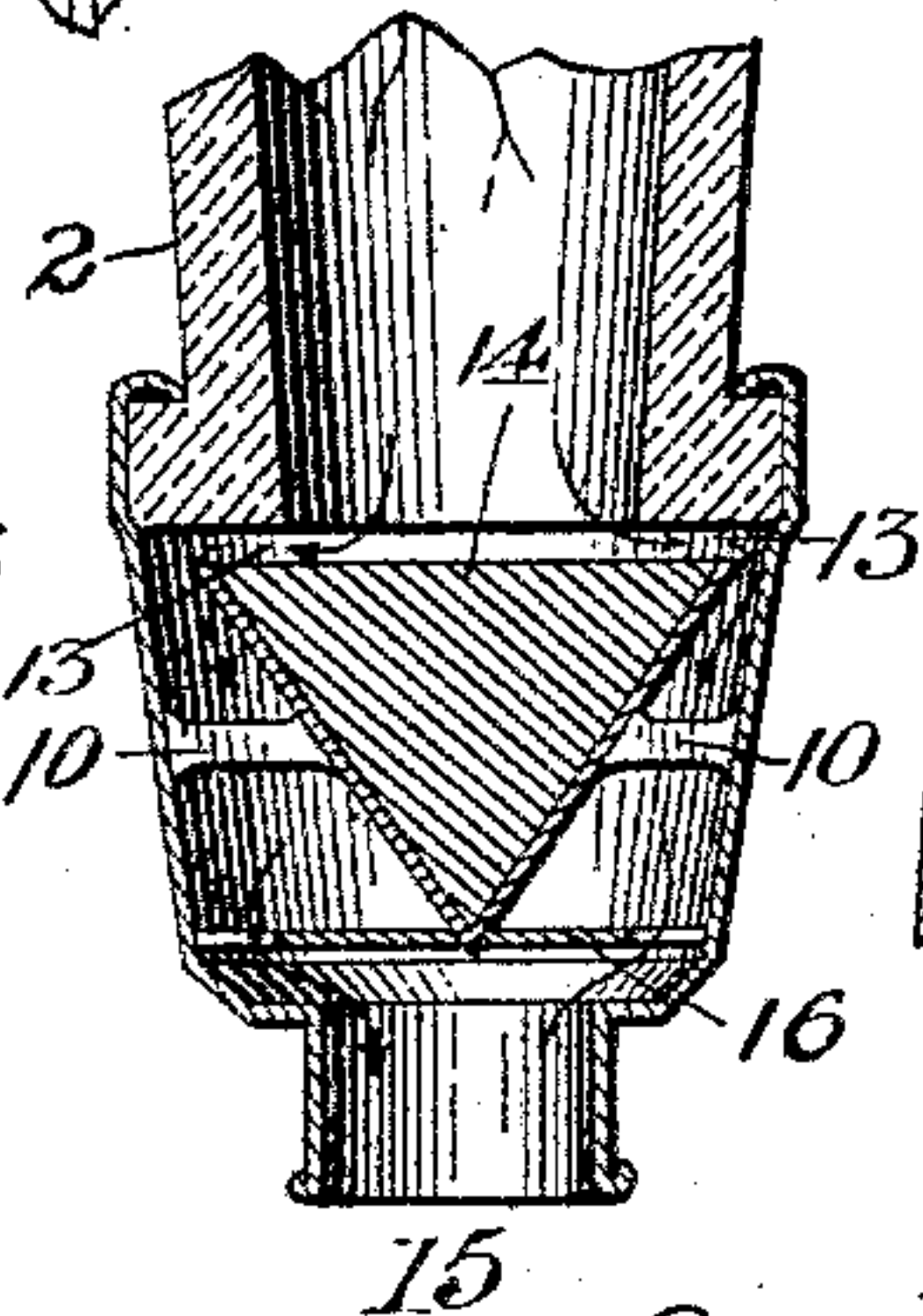
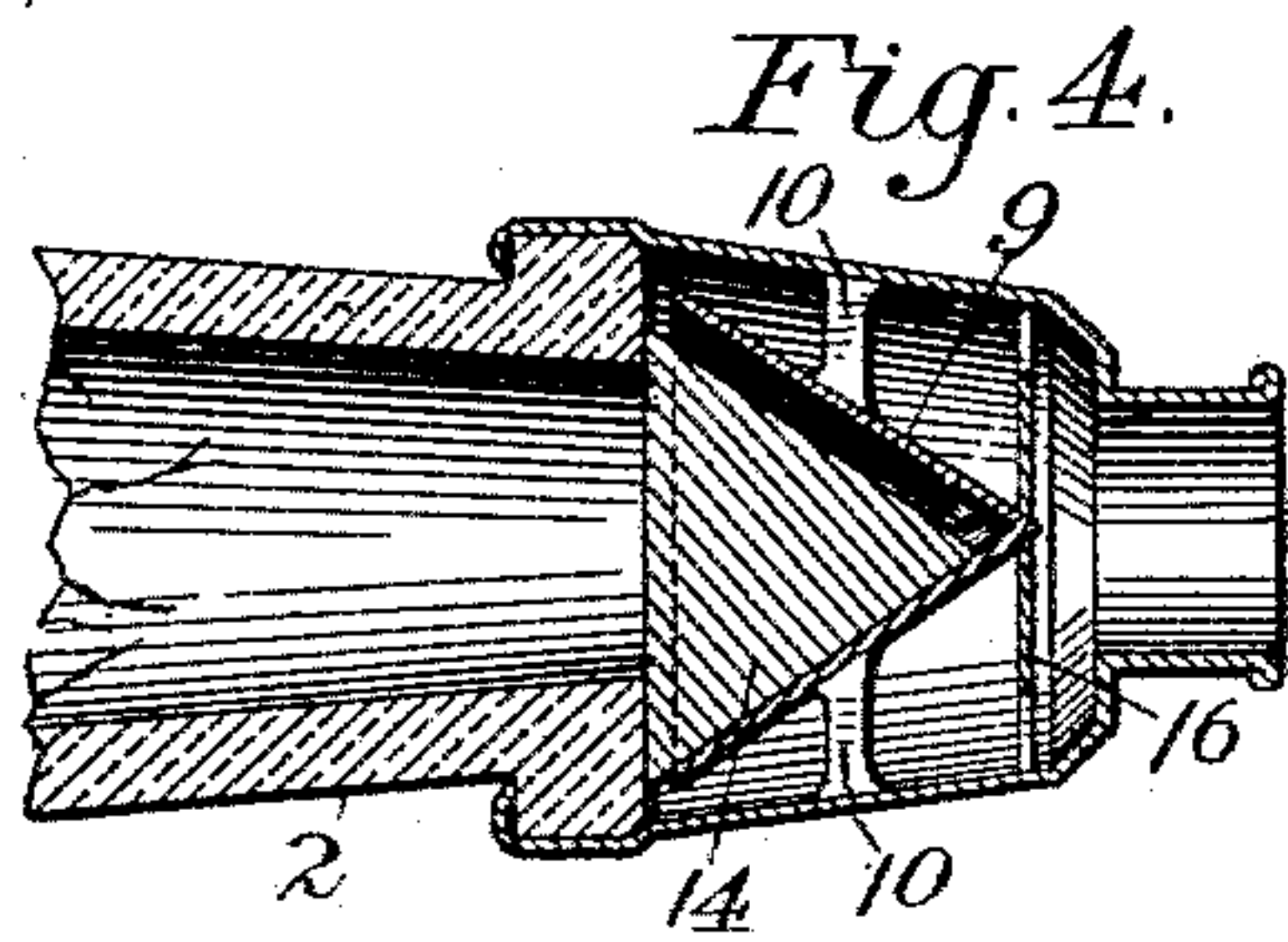
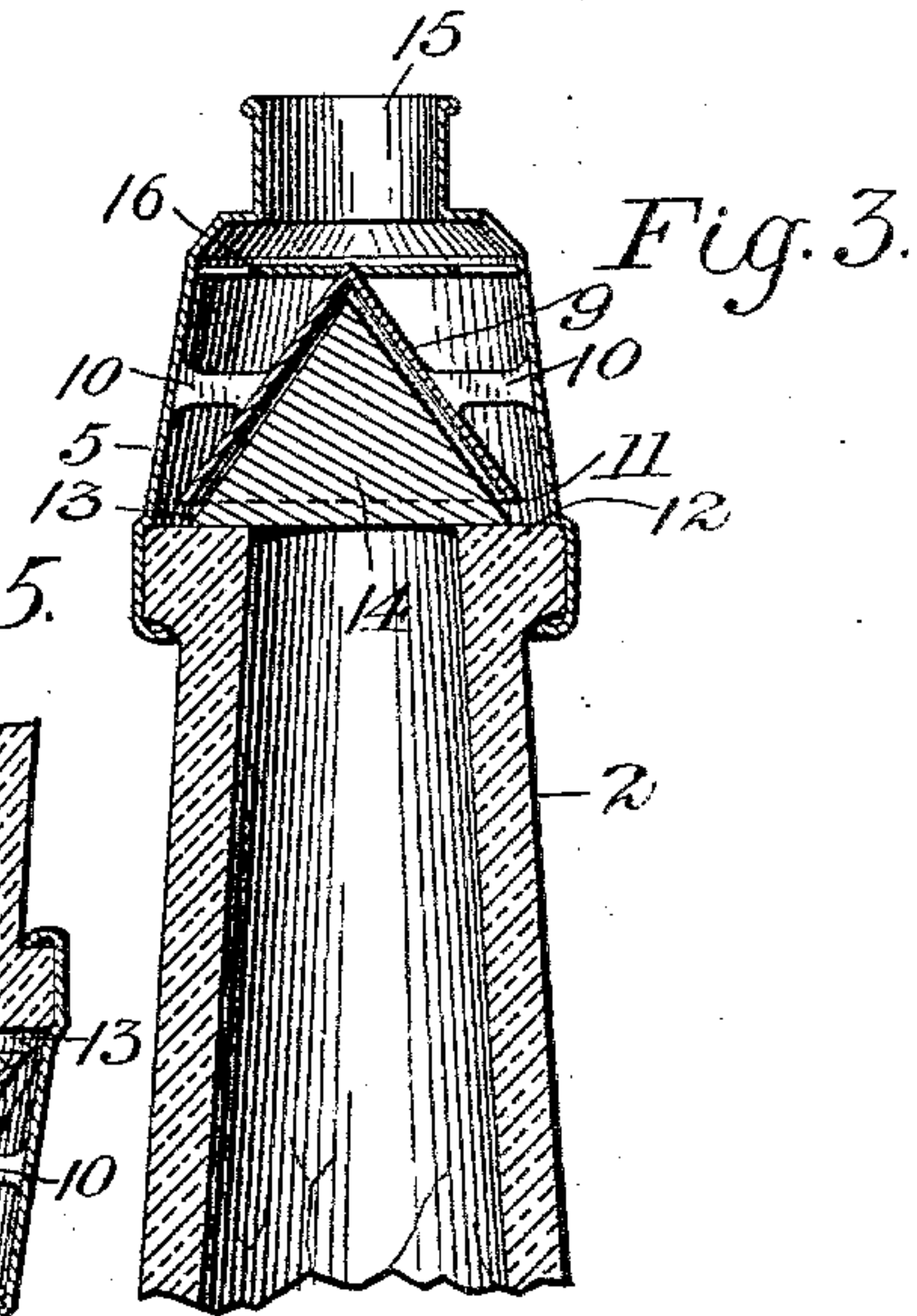
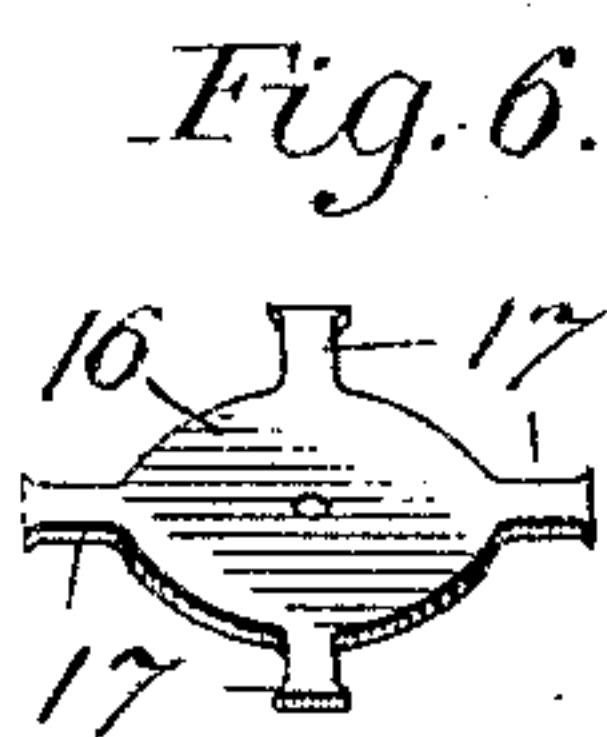
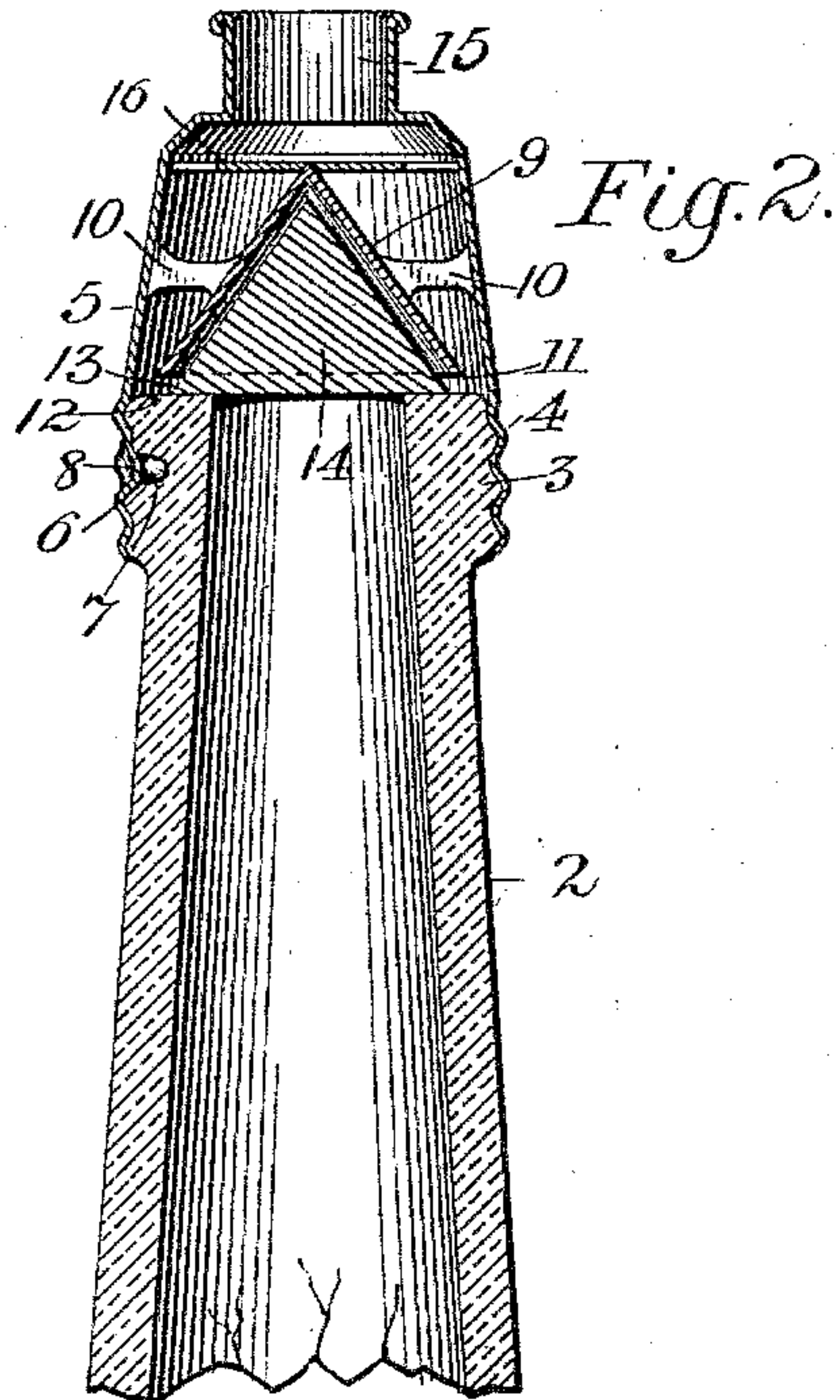
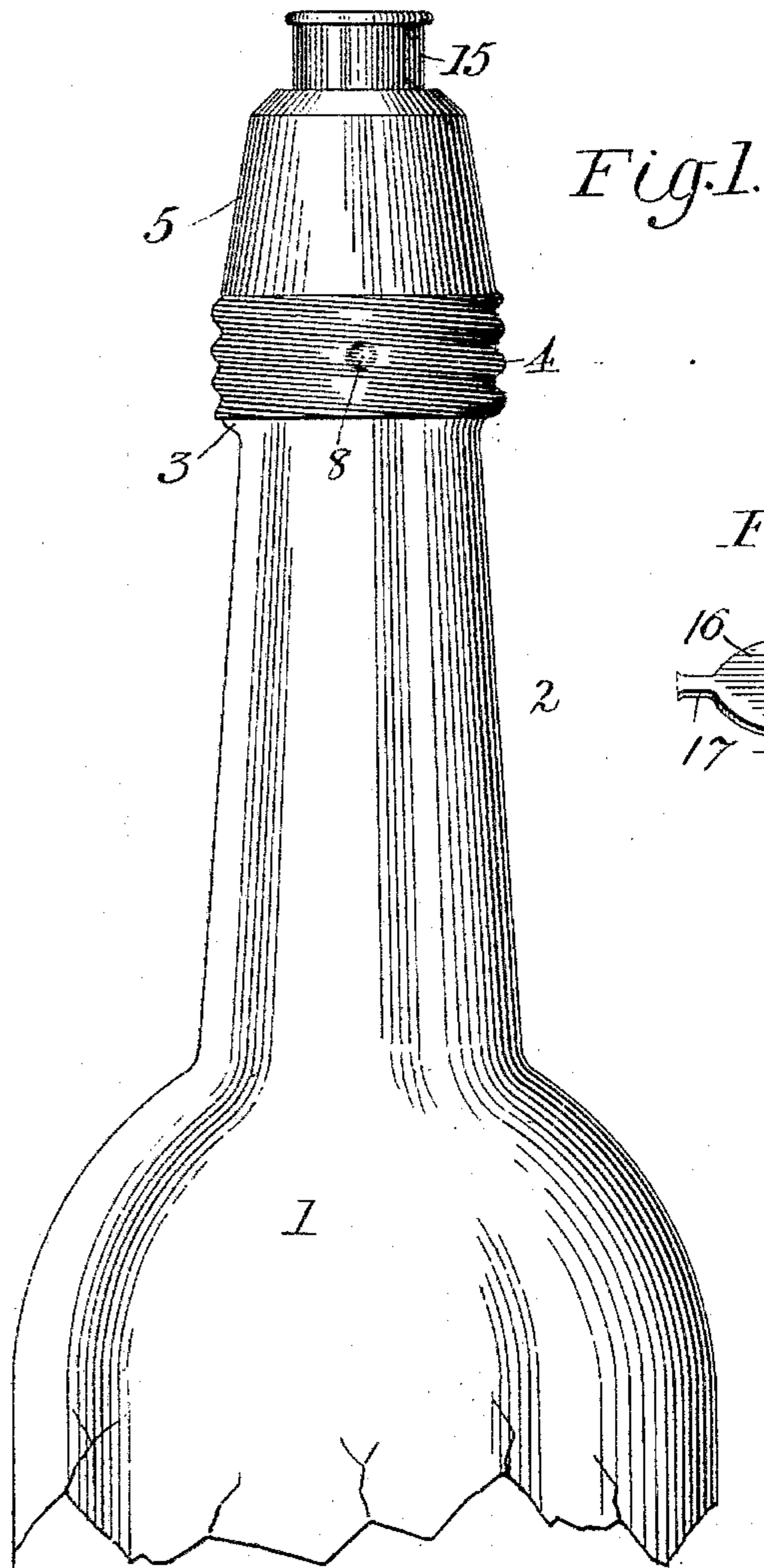


(No Model.)

E. T. KNIGHT.
BOTTLE STOPPER.

No. 597,852.

Patented Jan. 25, 1898.



Witnesses:
E. E. Clement
J. D. McCleary.

Inventor:
Ellwood T. Knight,
by Lewis & Goldsborough,
Attys.

UNITED STATES PATENT OFFICE.

ELLWOOD T. KNIGHT, OF WILMINGTON, DELAWARE, ASSIGNOR OF TWO-THIRDS TO JOHN T. AHRENS AND ROBERT G. HARMON, OF SAME PLACE.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 597,852, dated January 25, 1898.

Application filed April 23, 1897. Serial No. 633,528. (No model.)

To all whom it may concern:

Be it known that I, ELLWOOD T. KNIGHT, a citizen of the United States, residing at Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Bottle-Stoppers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to bottle-stoppers of the class which permit the decanting or discharge of the contents of a bottle, but prevent the unauthorized refilling of the same.

A characteristic feature of my invention is the arrangement of the valve and stopper devices hereinafter described within a cap secured to the neck of the bottle, as distinguished from the location of these parts within the bottle-neck.

Other novel features of the invention will be described hereinafter and defined in the appended claims.

In the accompanying drawings, Figure 1 is an elevation of a portion of a bottle provided with my improvement. Fig. 2 is a central vertical section of a bottle-neck with my improved stopper applied thereto. Figs. 3, 4, and 5 are longitudinal sectional views showing the invention with the bottle-neck in different positions, and Fig. 6 is a view in perspective of the guard or protector detached from the cap.

The reference-numeral 1 indicates a bottle having a neck 2. In Figs. 1 and 2 the neck 2 is provided at its upper end with external screw-threads 3 to engage corresponding threads 4, formed on the lower depending portion of the cap 5. While I do not restrict myself to any specific means for securing the cap upon the bottle-neck, I have shown in Figs. 1 and 2 means for this purpose which I have found to be efficient. I form a small circular depression 6 in one of the threads of the neck 2, capable of receiving a small spherical body, such as a shot 7, and in one of the depressions between the threads of the cap a circular outward bulge or enlargement 8 is

provided, into which the shot is placed before the cap is applied. After the cap is screwed to place upon the bottle-neck the shot drops into the depression 6, and the projection 8, which will then be opposite the depression, is pressed inwardly by any suitable instrument, forcing the shot and the metal of the bulge into the depression 8, thus locking the cap in place and preventing its being turned upon the neck 2.

9 indicates a conical valve-retainer suspended within the cap 5 by one or more radial arms 10, secured at their inner ends to the valve-retainer and at their outer ends to the inner surface of the cap. The lower edge 11 of this retainer is supported above the top edge 12 of the bottle-neck when the cap is in place to leave an opening 13 for the escape of liquid from the bottle when the valve drops away from its seat. 14 indicates the valve, which is of conical form to fit within the retainer 9, and, as shown in Figs. 2 and 3, the base of the cone-shaped valve rests normally upon the flat top 12 of the neck to close the latter against the introduction of liquid into the bottle. The upper end of the cap 5 is provided with a tubular mouth 15, adapted to be closed by a cork or other stopper.

To prevent tampering with the valve by the introduction of a wire or other device through the opening 15, I provide a guard or protector comprising a disk 16, secured within the cap above and preferably to the retainer 9, arms 17 being provided to secure it to the side walls of the cap.

It will be apparent that so long as the bottle is in upright position the valve 14 retains its position upon the top of the neck 2, and even when the bottle is tilted to a horizontal position, as shown in Fig. 4, the valve is so guided by the retainer 9 as to maintain the parallelism of its base with the top of the bottle-neck to close the latter. When, however, the bottle is inverted, as shown in Fig. 5, the valve drops by gravity into the retainer 9, thus permitting the liquid to flow out of the bottle, as indicated by arrows in Fig. 5.

In Figs. 3, 4, and 5 the screw-threaded engagement between the cap and bottle is not

shown, but instead the depending end of the cap is bent or crimped to take under the usual flange on the bottle-neck.

By combining with the bottle-neck the cap above described, containing the valve devices, I avoid the necessity of providing supplemental means for the introduction of air into the bottle to aid in expelling its contents. It will be apparent that when the valve is in the position shown in Fig. 5 an annular space of ample proportions is afforded for the introduction of air into the bottle, said space being obviously of greater area than would be afforded if the conical valve and its supporting devices were arranged within the contracted bottle-neck.

Again, an important advantage of my improvement is found in the fact that the cap with its contained valve devices may be removed from the bottle for refilling by authorized parties without destroying the bottle, a new cap with identifying-labels being supplied. It is also to be noted that no seat for the valve is required in the cap, the flat base of the valve fitting directly and squarely upon the outer edge of the mouth of the bottle, which is preferably ground off smooth and flat for this purpose.

Having thus described my invention, what I claim is—

1. As a new article of manufacture, a bottle attachment comprising a cap adapted to fit on the end of the bottle-neck, a bottomless conical valve-retainer secured within the cap so as to leave an intervening space between it and the end of the bottle-neck and an annular space around the retainer outside of the neck-opening for the inlet of air and outlet of liquid, and a conical valve having a base of greater diameter than the neck-opening and adapted to seat directly upon the end of the neck, said valve being retained in po-

sition between the end of the neck and the interior of the retainer by the engagement of the cap with the neck.

2. The combination with a bottle-neck, of a separate cap fitting on the end thereof, an imperforate conical valve-retainer secured within the cap above the end of the bottle-neck so as to leave an annular space around the retainer for the escape of liquid, said space increasing in width toward the end of the cap-opening, a conical valve having a base exceeding in diameter that of the neck-opening, and adapted to seat upon the end of the neck, said valve being retained in position between the end of the neck and the interior of the retainer by the engagement of the cap with the neck, and being guided in its movements by the retainer.

3. The combination with a bottle-neck, of a separate cap fitting on the end thereof, an imperforate conical valve-retainer secured within the cap above the end of the bottle-neck so as to leave an annular space around the retainer for the escape of liquid, said space increasing in width toward the outer end of the cap, a conical valve having a base exceeding in diameter that of the neck-opening, and adapted to seat upon the end of the neck, said valve being retained in position between the end of the neck and the interior of the retainer by the engagement of the cap with the neck, and being guided in its movements by the retainer, and a guard or protector secured within the cap between the retainer and the cap-opening.

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

ELLWOOD T. KNIGHT.

Witnesses:

WM. W. PRITCHETT,
PAUL J. BOGAN.