

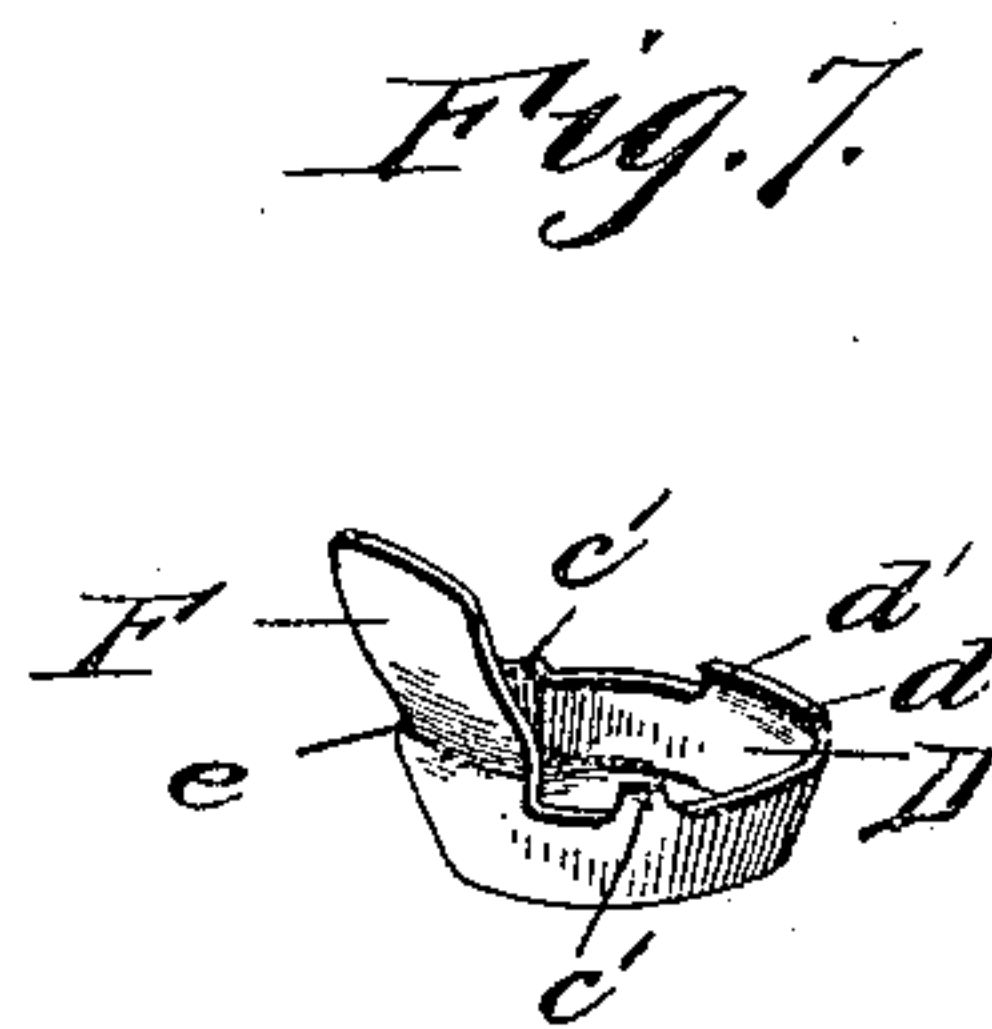
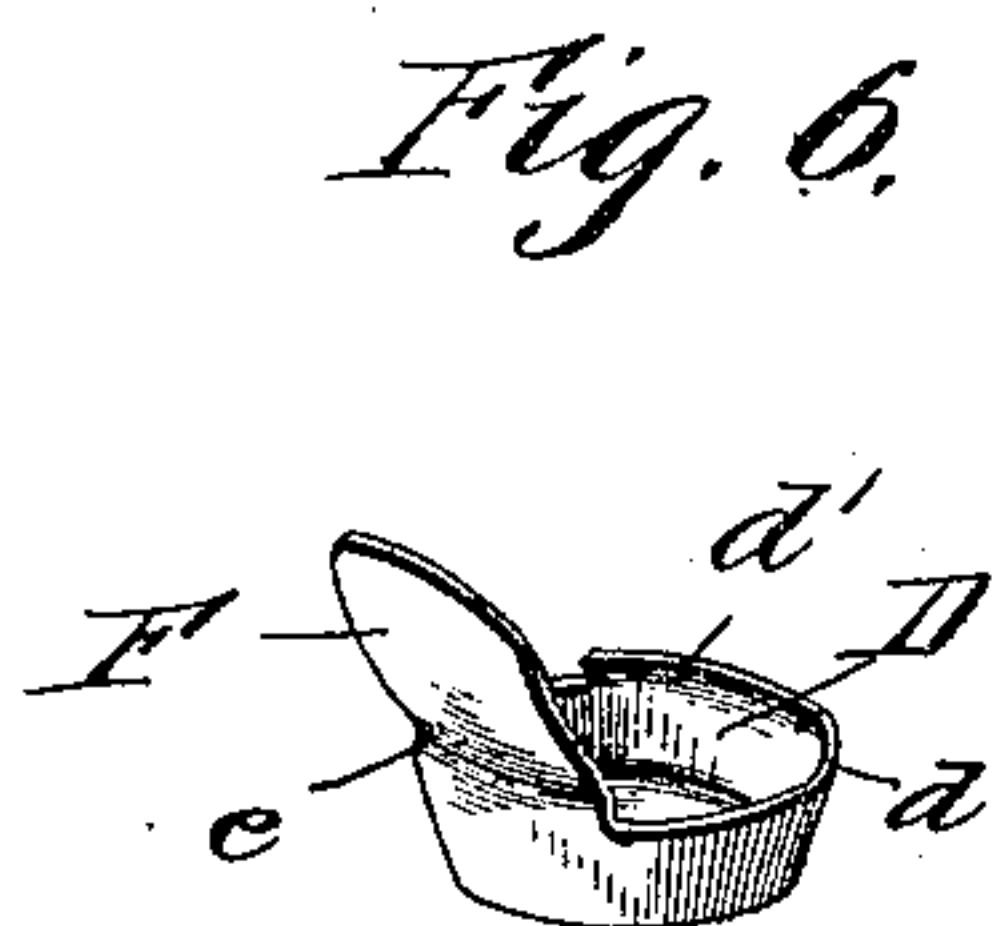
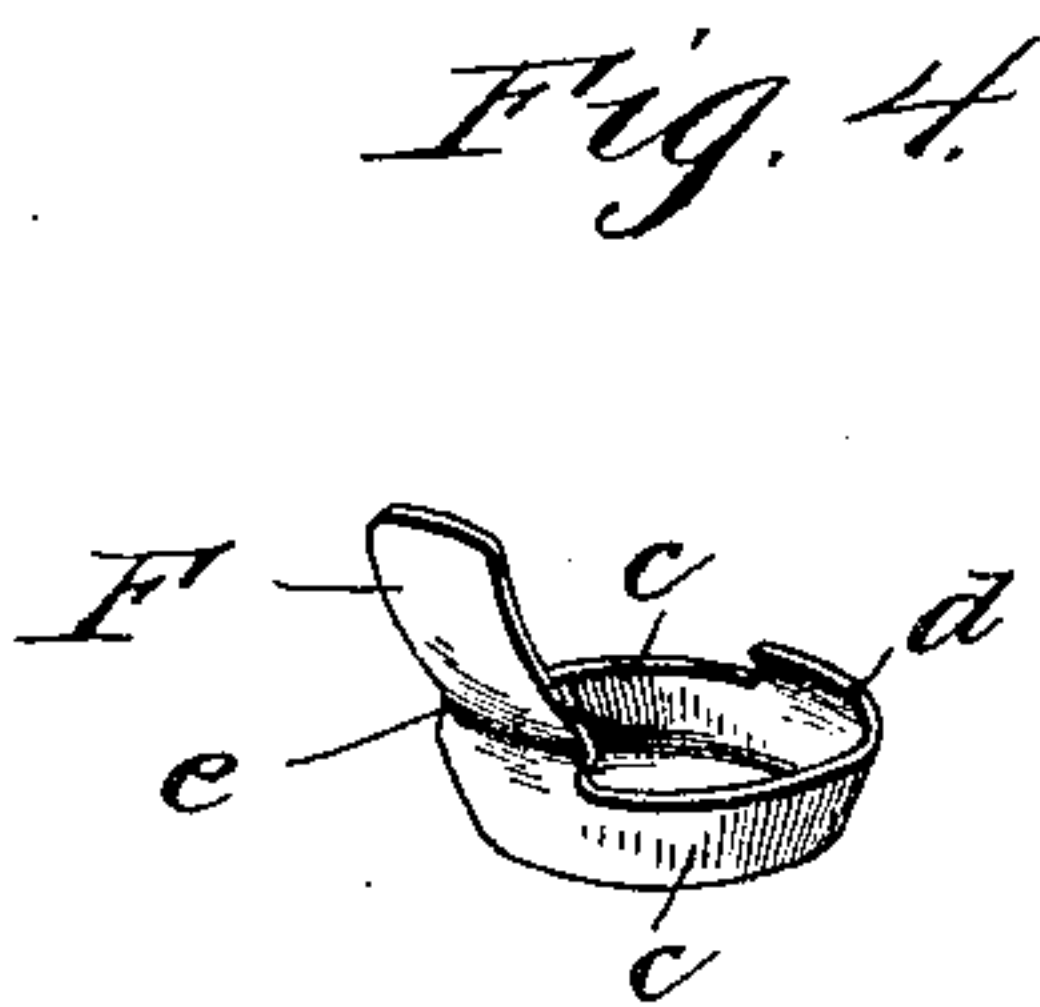
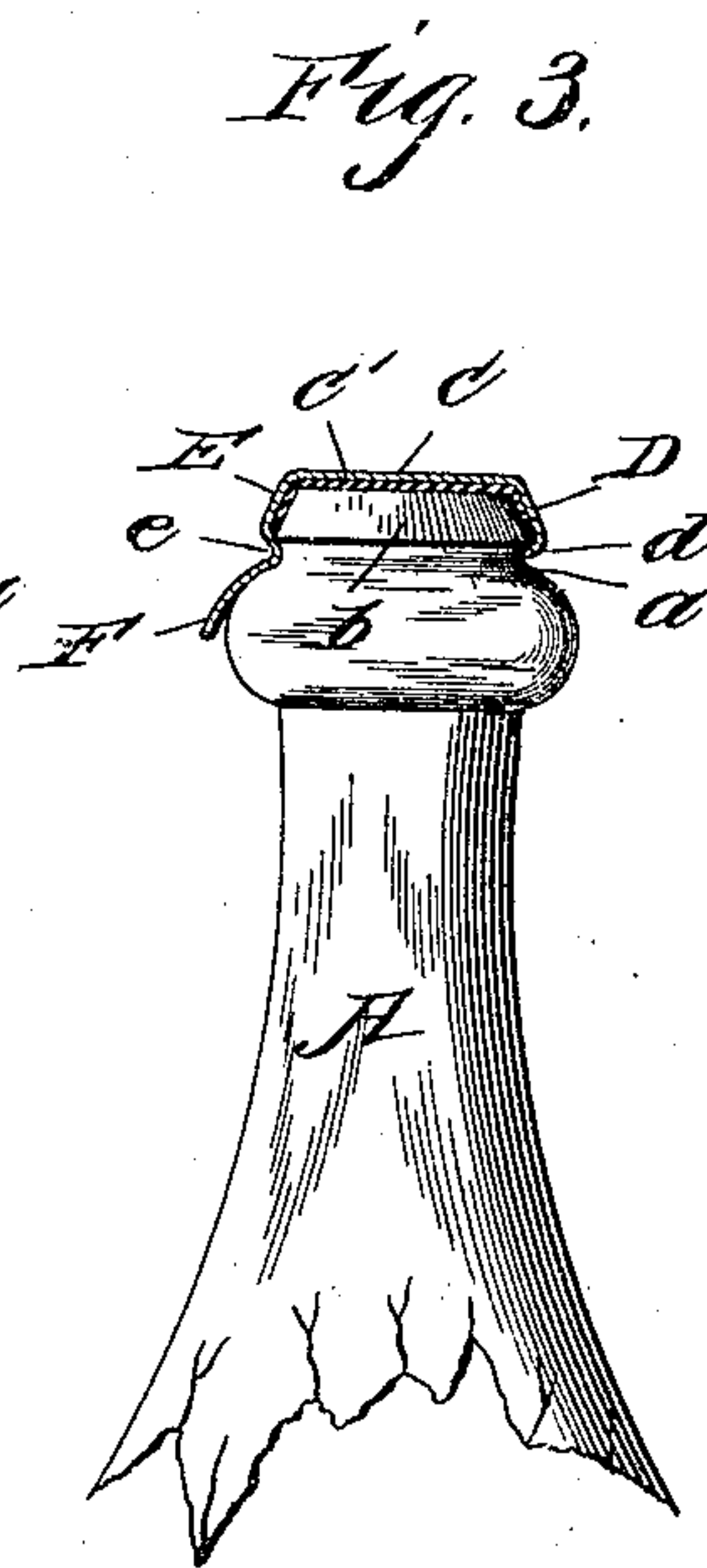
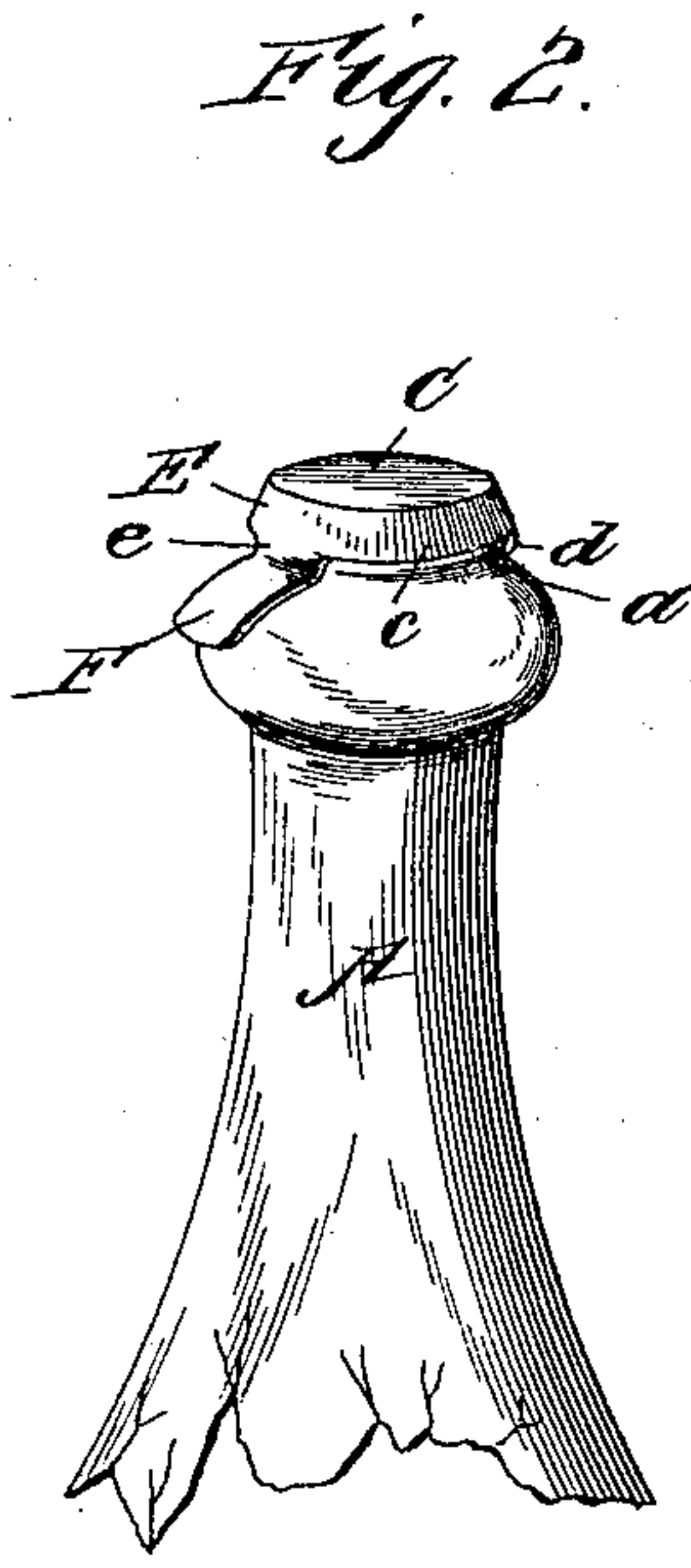
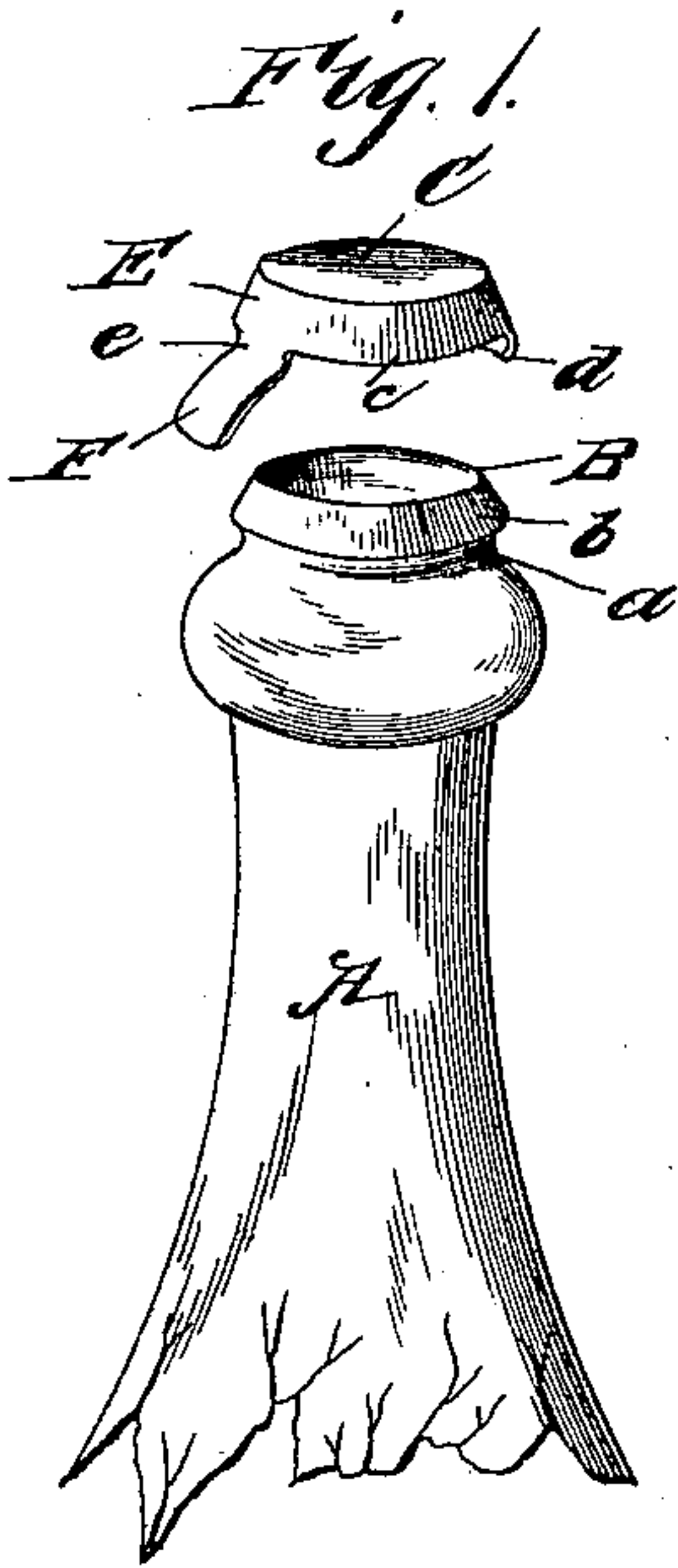
No. 629,619.

Patented July 25, 1899.

J. W. SMITH.
BOTTLE STOPPER.

(Application filed Feb. 15, 1899.)

(No Model.)



WITNESSES
F. H. Kiser.
R. S. Cruik

John W. Smith, INVENTOR,

By H. W. Donbey,
Attorney.

UNITED STATES PATENT OFFICE.

JOHN W. SMITH, OF BALTIMORE, MARYLAND.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 629,619, dated July 25, 1899.

Application filed February 15, 1899. Serial No. 705,555. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. SMITH, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Bottle-Stoppers, of which the following is a specification, reference being had therein to the accompanying drawings.

The principal object of this invention is the production as a new article of manufacture of a bottle-stopper made from a single piece of sheet metal, in which certain parts thereof, at any rate, have sufficient elasticity to insure that they may be thrust down over a rib or shoulder which projects from the neck of the bottle, near its mouth, and will then engage with the under side of said rib in such manner as will insure the effectual closing or sealing of the bottle, as will be fully explained herein.

Figure 1 is a perspective showing the mouth of a bottle and my improved stopper in position for application thereto. Fig. 2 is a similar view with the stopper in position after its application to close the bottle. Fig. 3 is a side elevation, partly in section. Fig. 4 is a detached view in perspective of the stopper, taken from the under side. Fig. 5 is the blank from which the stopper is formed. Figs. 6 and 7 illustrate a modification. Fig. 8 shows the form of a blank for the said modification.

Like reference-letters indicate similar parts in all the figures.

A indicates the neck of a bottle, having an annular groove *a* a short distance below the edge B of the bottle-mouth, whereby there is produced a rib or shoulder *b* on the outer surface of the neck and in a plane parallel with the edge B of the mouth.

The cap part proper of the stopper consists or may consist of a circular disk-like portion C and two diametrically opposite downward-projecting lips *c c*, the lower edges of which are preferably, but not necessarily, inclined inward slightly to facilitate the retention of a packing-washer C', of cork or other suitable material. As it is sometimes desirable to have the diameter of said packing-washer great enough to insure that it shall project a little all around the edge of the bottle-mouth the lower edges of the depending lips or

flanges *c c* can be inclined inward enough to insure against the accidental displacement of the washer without interfering with a proper fitting of the parts in all respects. Each of these lips extends in the illustration of the invention here given about one-quarter of the circumference of the disk C, and D *d d'* is a permanently-bent locking clip-like part disposed between two adjacent ends of these lips, of which the portion D is practically at right angles to the disk-like portion C, the portion *d* being turned inward to engage with the under surface of the rib or shoulder *b* and preferably cut away at the central part, as is indicated at *d'*, to insure a proper fit around the round neck of the bottle. I prefer to designate locking clip-like part as permanently bent in order to more clearly distinguish it from that sort of fastening which consists of a continuous or practically continuous depending flange which is cylindrical, so that it can be placed upon the bottle-neck without change of shape and is afterward spun or otherwise bent underneath the shoulder of the bottle-neck and necessarily requires the use of a tool for that purpose, whereas in my invention the locking clip-like part is bent into permanent form as a part of its manufacture and is when applied in practical use forced outward at its lower edge to pass over the shoulder *b* of the bottle-neck and afterward returns to its normal shape and position to grip automatically said shoulder. At the opposite side of the cap and between the opposite ends of the lips or flanges *c c* there is the other member of the clamp or locking clip-like parts, and of which the portion E corresponds substantially to the portion D on the opposite side of the disk C, with a permanently-bent inward-turned edge *e* to take hold of the under side of the rib or shoulder *b*. Both these clip-like parts or members are integral with the disk C and the lips or flanges *c c*, and the metal of the part E *e* is continued backward, outward, and somewhat downward, so as to constitute a thumb-piece F, which may be conveniently utilized for the purpose of releasing the stopper from the bottle by thrusting under it the thumb or a finger of the hand, which grasps the bottle-neck, as will be readily understood without further explanation.

The above-described metal parts are formed from a single blank, (shown in plan in Fig. 5,) and are therefore integral. They may be made by any of the usual or approved methods employed in the manufacture of sheet-metal goods—as, for instance, by striking up by means of suitably-shaped dies—and they should be made of some metal which has such character as regards elasticity in the sheet or will have it conferred or imparted during the swaging operation at the clip-like parts that they will yield readily to pass over the rib or shoulder *b* and will return to or toward their normal position, so as to grip the packing-washer tightly to the edge *B* of the bottle-neck. Sufficient grip at such points can be secured with a comparatively thin sheet of metal, for two reasons—first, the spring of a quite wide plate or body of metal is secured, it being limited practically only by the width of that which is necessarily used by the downward-projecting lips *c c*, and, secondly, by the fact, which is quite important, that the line of junction between the portions *D E* with the disk-like part *C* is an arc of a circle, whereby the flexure or springing outward of the clip-like parts *d e* involves a resistance on the part of the adjacent metal of the disk-like portion *C* in a way quite different from that which would ensue were the said line of junction straight. Again, as these clip-like members contribute or may be made to contribute to a proper centering of the washer upon the bottle-mouth, especially when the parts *d' e'* fit reasonably well to the bottle-neck, those said lines of junction may be made of such length, and therefore the parts *d e*, to represent such length of arcs as will in this particular construction secure the desired ends in the above-indicated respects, according to the size of the bottle in diame-

ter of neck, the internal pressure which the stopper is to resist, the kind of metal to be used in its construction, and any other varying conditions which may be found to exist in each particular case. For instance, the clip-like parts *d e* may be made of such length of arc that they will hold the packing-washer from accidental displacement under ordinary conditions of use and also to have more resistance to outward flexure and more grip upon the rib or shoulder *b*, the lips *c c* being omitted in such construction, (see Fig. 6,) or the cap part proper may be made with clip-like parts *c' c'*, formed as continuations or extensions of the lips or flanges *c c*, either supplemental to or in place of those represented by *d e*, (see Fig. 7,) the blank for such last-indicated form being shown in Fig. 8.

I do not desire to be limited to the details of construction shown, because many modifications will suggest themselves to a person skilled in the art without departing from the spirit of my invention or going outside of its scope.

What I claim is—

A bottle-stopper comprising, in combination, the disk-like portion, the permanently-bent elastic locking clip-like part, projecting downward from one side of said disk-like portion, and the permanently-bent elastic locking clip-like part projecting downward from the opposite side of said disk-like portion and provided with the thumb-piece, all made from a single piece of metal, substantially as set forth.

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

JOHN W. SMITH.

Witnesses:

C. C. BUCKMAN,
H. B. RASCH.