

No. 615,607.

Patented Dec. 6, 1898.

L. H. BROOME.
BOTTLE STOPPER.

(Application filed Feb. 25, 1898.)

(No Model.)

Fig. 1.

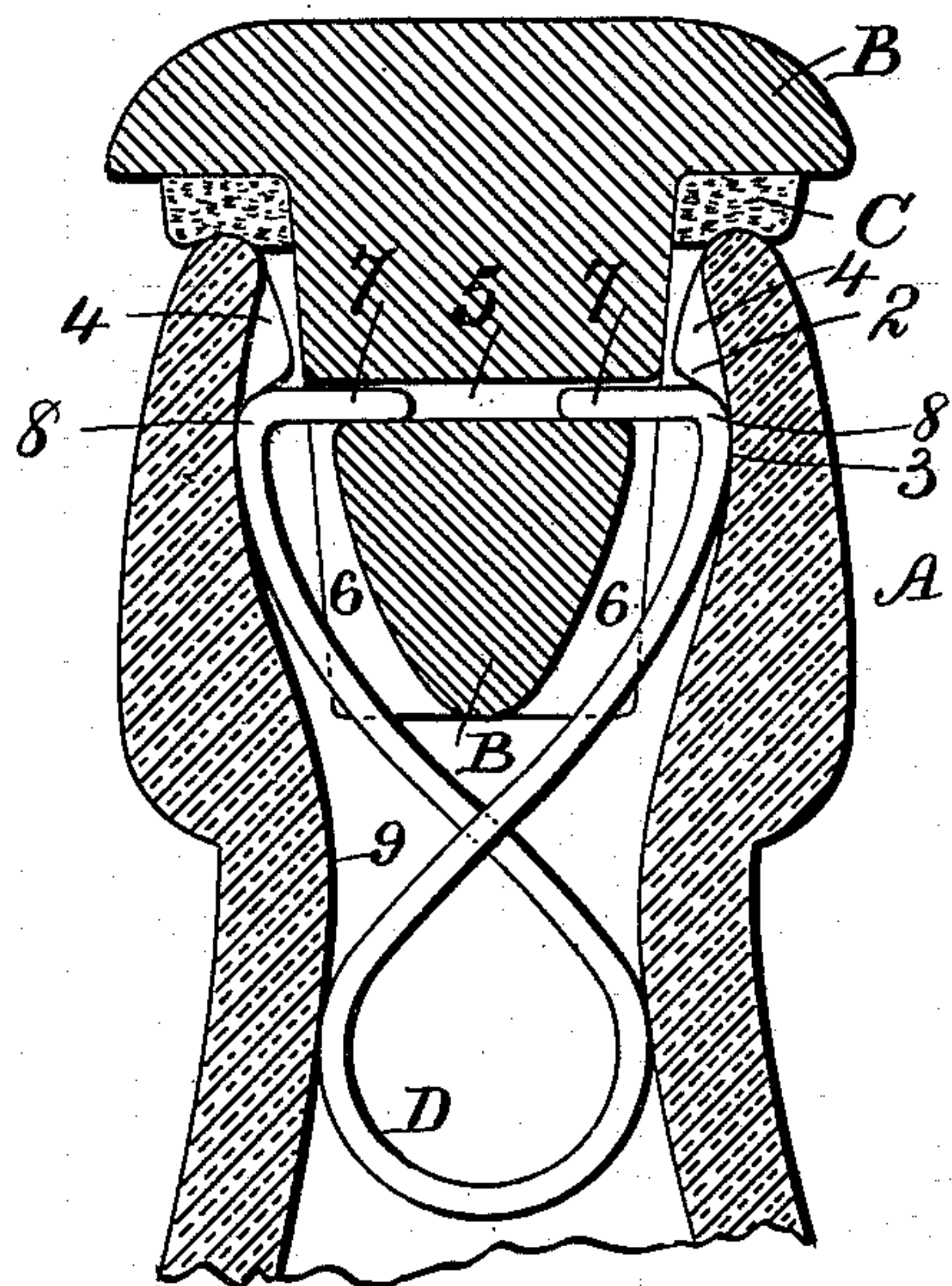


Fig. 2.

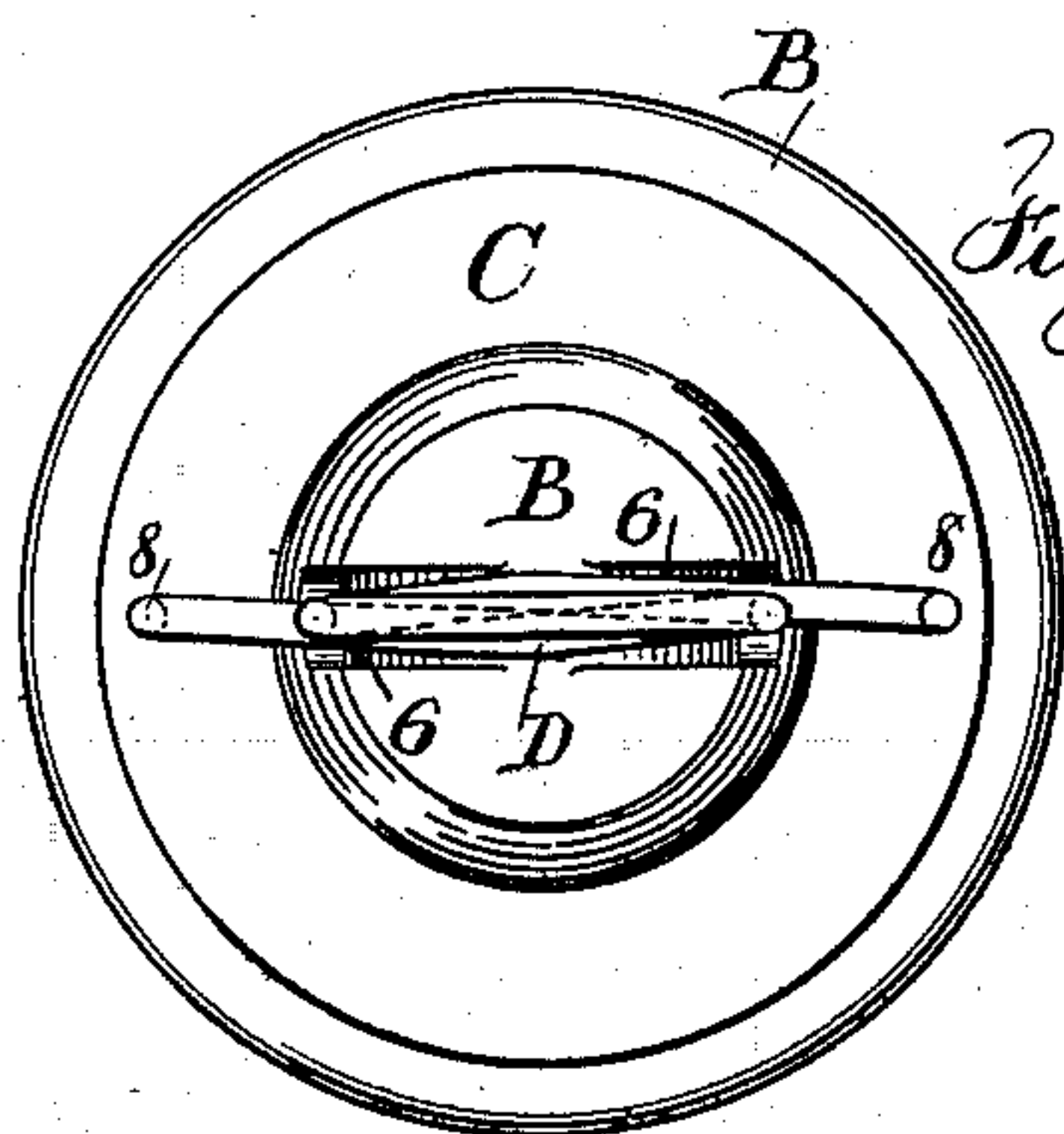
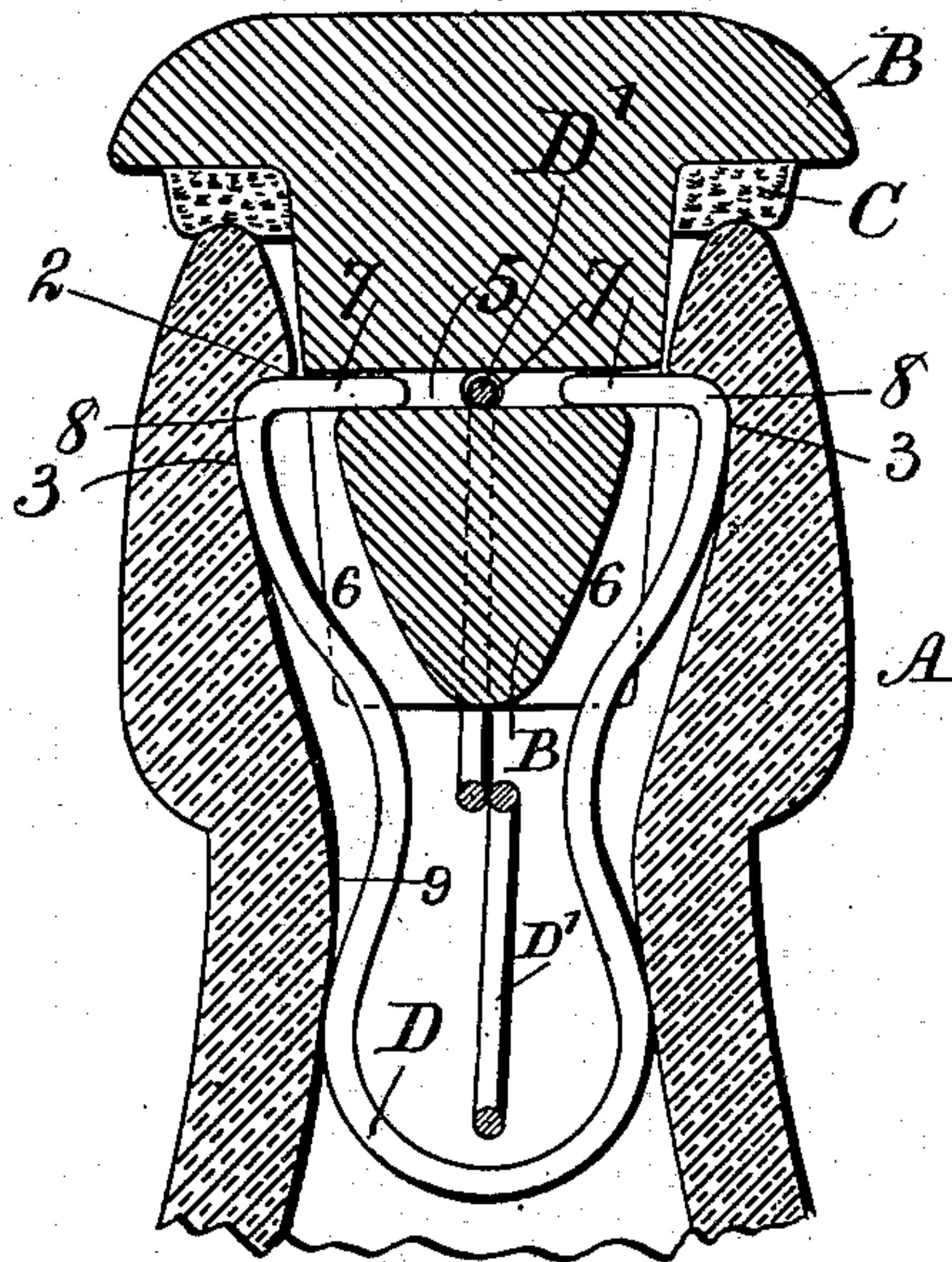


Fig. 4.

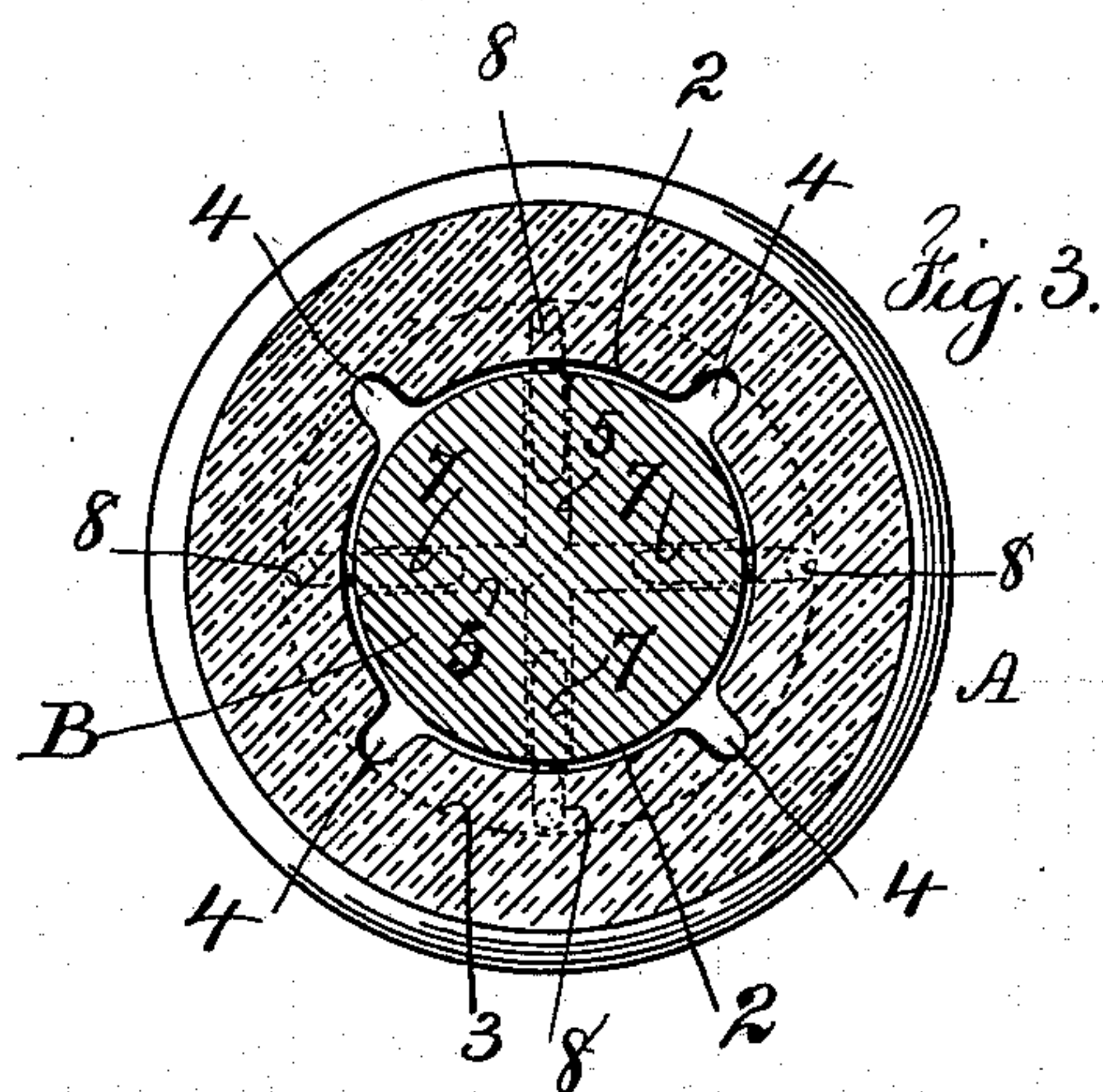


Fig. 3.

Witnesses
Chas. H. Smith
J. Staib

Inventor
Lewis H. Broome
by L. W. Serrell & Son
attys.

UNITED STATES PATENT OFFICE.

LEWIS H. BROOME, OF JERSEY CITY, NEW JERSEY.

BOTTLE-STOPPER.

SPECIFICATION forming part of Letters Patent No. 615,607, dated December 6, 1898.

Application filed February 25, 1898. Serial No. 671,547. (No model.)

To all whom it may concern:

Be it known that I, LEWIS H. BROOME, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented an Improvement in Bottle-Stoppers, of which the following is a specification.

Bottle-stoppers have heretofore been made with an annular groove around the interior of the neck to be engaged by springs upon the stopper. In the present invention the stopper is made with holes passing into it from opposite sides, and a spring-loop of wire is made, with the ends of the wire bent toward each other, to pass into the holes in the stopper, and the loop extends down into the neck of the bottle, and the bends upon the wire pass into the groove within the neck of the bottle to hold the stopper in position, and the lower end of the wire loop is wider than the diameter of the interior of the bottle-neck, so that upon thrusting the loop and stopper into the neck of the bottle the loop springs past the narrowest portion of the neck and holds the stopper in position, and it also allows for the stopper to be partially withdrawn to empty the contents after the bends in the spring-loop have been disconnected from the annular groove, so that it is not necessary to entirely withdraw the stopper from the bottle. The sides of the stopper are grooved for the wire of the loop to pass into, so that the wire is free to spring as the stopper is thrust into position.

In the drawings, Figure 1 is a vertical section with the wire bent approximately to the shape of the figure 8. Fig. 2 shows the wire loop and the second loop at right angles to the first. Fig. 3 is a sectional plan view illustrating the position of the springs in relation to the bottle-neck, and Fig. 4 is an inverted plan of the stopper and spring-loop.

The neck of the bottle A is of any desired size or character, and it is made with an annular groove 3 beneath the shoulders 2, and it is advantageous to notch the shoulders at 4 to allow the spring-loop to be passed through the notches, and then the stopper and loop are turned around to cause the spring-loop to hold beneath the shoulders.

The stopper B is of any desired material—such as porcelain, wood, glass, or metal—and

the washer C, of cork, rubber, or other material, intervenes between the flange of the stopper and the top of the bottle when the bottle is closed.

In the sides of the stopper holes 5 are made from opposite sides running toward each other, or one hole may pass right through the stopper, and the stopper is channeled longitudinally from the holes 5 down to the end of the stopper, as shown at 6, and the spring-loop D is advantageously made of wire of the proper strength and quality, and the upper ends of the loop are bent toward each other, as shown at 7, to enter the holes 5, and the bends or shoulders upon the spring-loop at 8 are more or less sharp or angular and engage the shoulders 2 of the bottle-neck when the stopper is forced into place, and I remark that the channels 6 allow the ends of the spring to be pressed toward each other as the spring-loop is forced into the bottle, and then the loop springs out again to hold the stopper by engaging the shoulders 2, and if the under sides of the shoulders 2 in the bottle-neck are beveled and the shoulders 8 or bends upon the spring-loop are sufficiently rounding the stopper may be pulled out by sufficient power, the inclines causing the loop to spring inward; but when a more positive connection is required, especially for effervescing liquids, the shoulders 2 and 8 are sufficiently angular to hold firmly, and the notches 4 in the bottle-neck are required for withdrawing the spring-loop after the stopper and loop have been partially rotated to bring the spring-loop in line with the notches 4, and the stopper is firmly connected by the reverse movement.

The lower end of the spring-loop D is wider than the narrowest portion 9 of the bottle-neck, which, coming above the position of the wider portion of the spring-loop, compresses such spring-loop as the stopper is forced into place, and this narrow portion 9 of the neck also holds the spring-loop sufficiently to keep the stopper in the bottle even when the shoulders 8 are not in engagement with the shoulders 2.

In some instances it is advantageous to make the spring-loop approximately in the shape of the figure 8, the wire at one side crossing over to the other side, as shown in

Fig. 1; but usually the spring-loop is advantageously made in the shape represented in Fig. 2, wherein the sides are drawn inward as compound curves.

5 Where the stopper is exposed to heavy pressures, it is sometimes advantageous to employ two spring-loops and to perforate the stopper in the same plane with holes intersecting each other at right angles. In this
10 instance a second loop D' may be made use of, the same, however, being either shorter or longer, so that the lower bend of the second spring-loop will pass either above or below the bend of the first spring-loop. In Fig.
15 2 this second spring-loop D' is represented as shorter than the spring-loop D and is approximately the same shape as the spring-loop shown in Fig. 1, and where two spring-loops are made use of the interior of the bottle-
20 neck may be notched at four places, so as to allow for the easy insertion of the spring-loops and stopper, and in this case the stopper is turned about forty-five degrees after insertion and while the washer C is under
25 sufficient compression to make the parts airtight.

It will be evident that this improvement is distinguished from devices that had preceded it by the stopper having a head that rests
30 upon the washer to close the bottle-mouth tightly and projections at opposite sides of the portion of the stopper that enters the bottle-neck, such projections passing through the grooves and being turned into the groove
35 below the shoulder, so as to hold the stopper firmly in position.

I claim as my invention—

1. A bottle having an annular groove around within the neck and adjacent shoulders
40 in combination with a washer and stopper adapted to close the mouth of the bottle there being holes passing in at opposite sides of the stopper, a spring-loop of wire with the lower portions crossing each other and the
45 ends passing into the holes in the stopper, there being channels in the sides of the stopper below the holes for receiving the upper portions of the spring-loop, substantially as set forth.

50 2. The bottle-stopper having a head and washer and holes passing in at opposite sides and channels extending from the holes to the lower end, in combination with a spring wire loop having its ends turned inward and passing
55 into the holes, the wire of the loop being within the channels, said loop extending down into the neck of the bottle and the shoulders

or bends of the loop adapted to engage the shoulders within the bottle-neck, substantially as set forth. 60

3. A bottle having an annular groove around within the neck and adjacent shoulders, in combination with a stopper and washer adapted to close the mouth of the bottle, there being holes passing in at opposite
65 sides of the stopper, and a spring-loop of wire with the ends bent toward each other and passing into the holes in the stopper, the lower portion of the loop being wider than the diameter of the bottle-neck at the narrowest portion so that the lower portion of
70 the wire loop is compressed as it is thrust into the bottle, substantially as set forth.

4. The combination with the bottle having a groove around within the neck and adjacent
75 shoulders notched at opposite sides above the groove, of a washer and a stopper, flanged to press upon the washer and having a body that passes down into the neck below the internal shoulders and having holes passing in from
80 opposite sides and a wire spring with its ends entering the holes and with bends, projecting from the stopper to lock below the shoulders within the bottle-neck, substantially as set forth. 85

5. The combination with the bottle having an annular groove and adjacent shoulders within the neck, of a stopper and washer adapted to close the mouth of the bottle, there
90 being holes and adjacent channels in the opposite sides of the stopper, a spring-loop having its ends bent toward each other and passing into the holes in the stopper, the channels receiving and guiding the upper portions of
95 the spring-loop, and the lower portion of the spring-loop being wider and extending below the narrowest portion of the neck of the bottle, substantially as set forth.

6. A bottle having an annular groove around within the neck and adjacent shoulders, in combination with a stopper and
100 washer adapted to close the mouth of the bottle, and two spring-loops having inwardly-bent ends, and one of the spring-loops being longer than the other, so they may pass by
105 each other, there being holes and channels in the sides of the stopper extending from the holes downward and forming guides for the spring-loops, substantially as set forth.

Signed by me this 23d day of February, 1898. 110

L. H. BROOME.

Witnesses:

GEO. T. PINCKNEY,
S. T. HAVILAND.