

(No Model.)

G. P. GOULDING.
BOTTLE WASHER.

No. 602,071.

Patented Apr. 12, 1898.

Fig. 1.

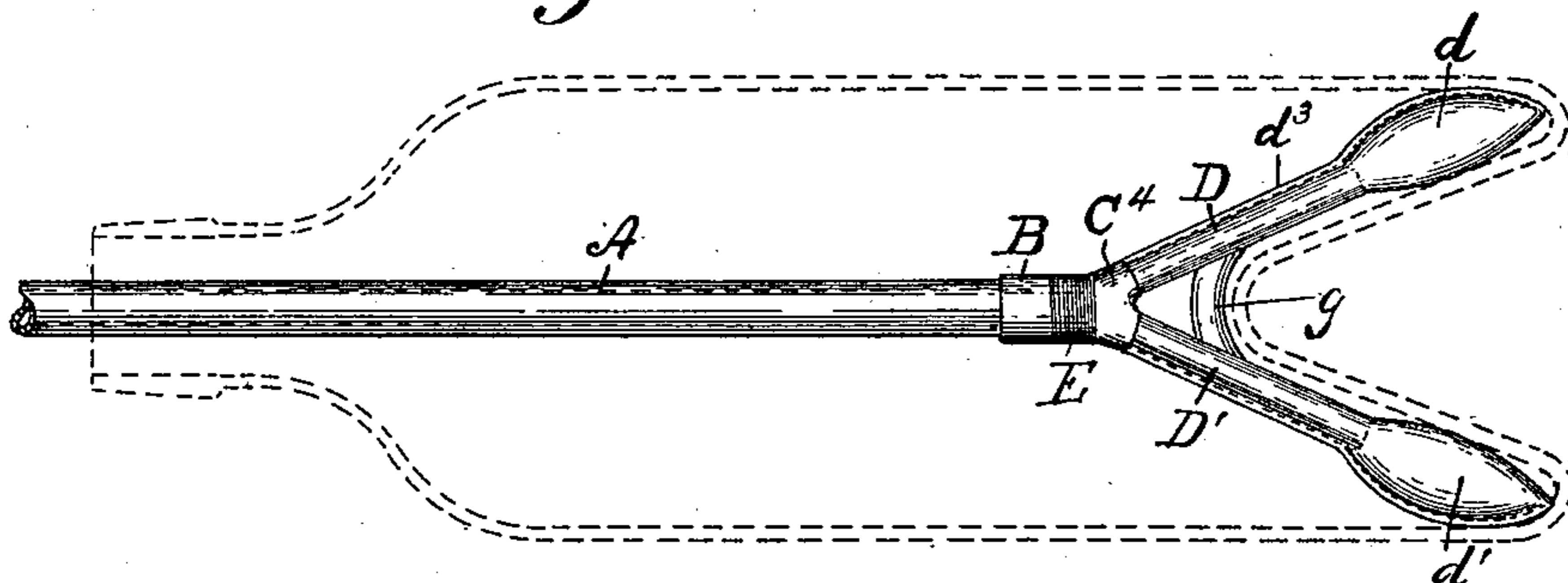


Fig. 2.

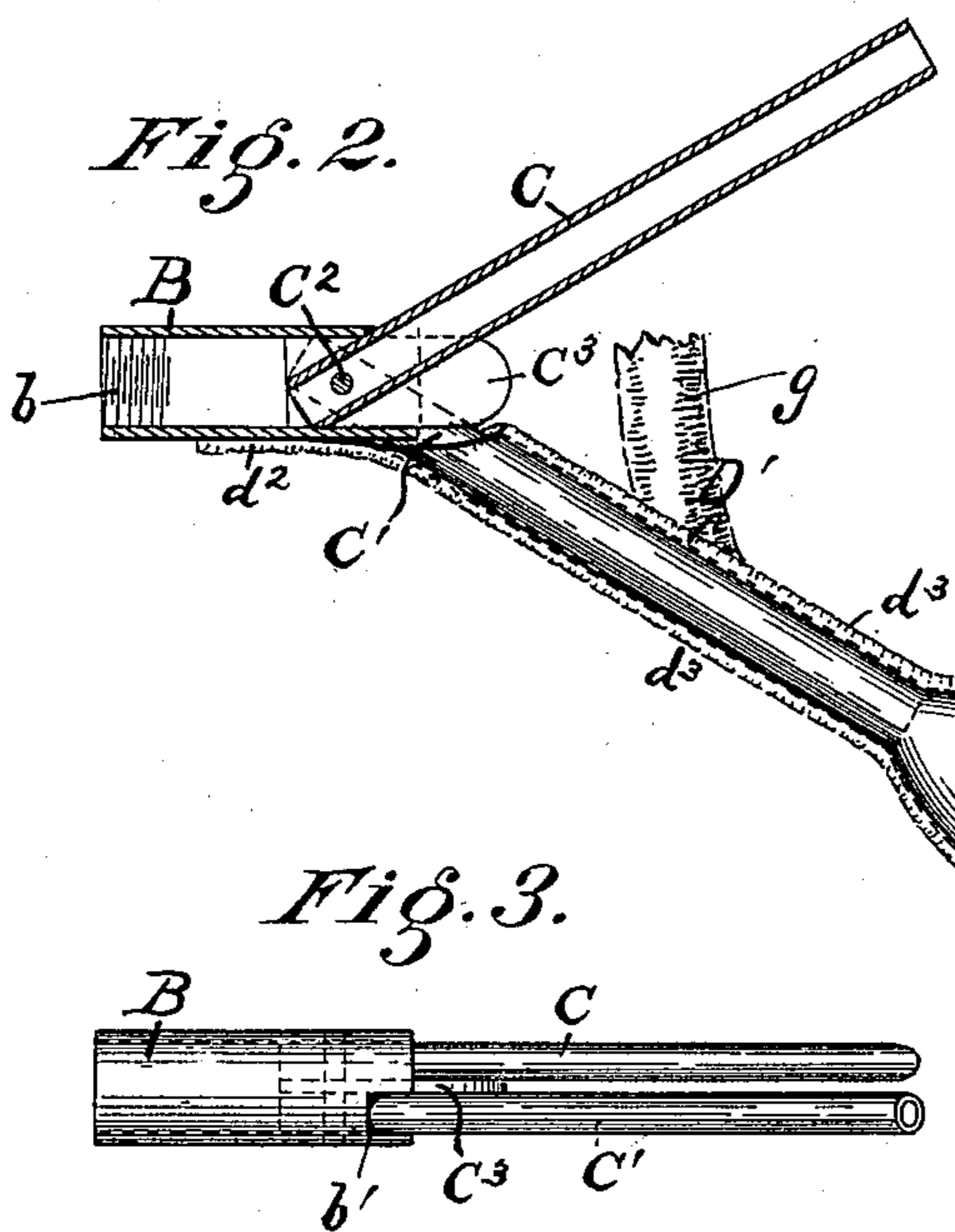


Fig. 3.

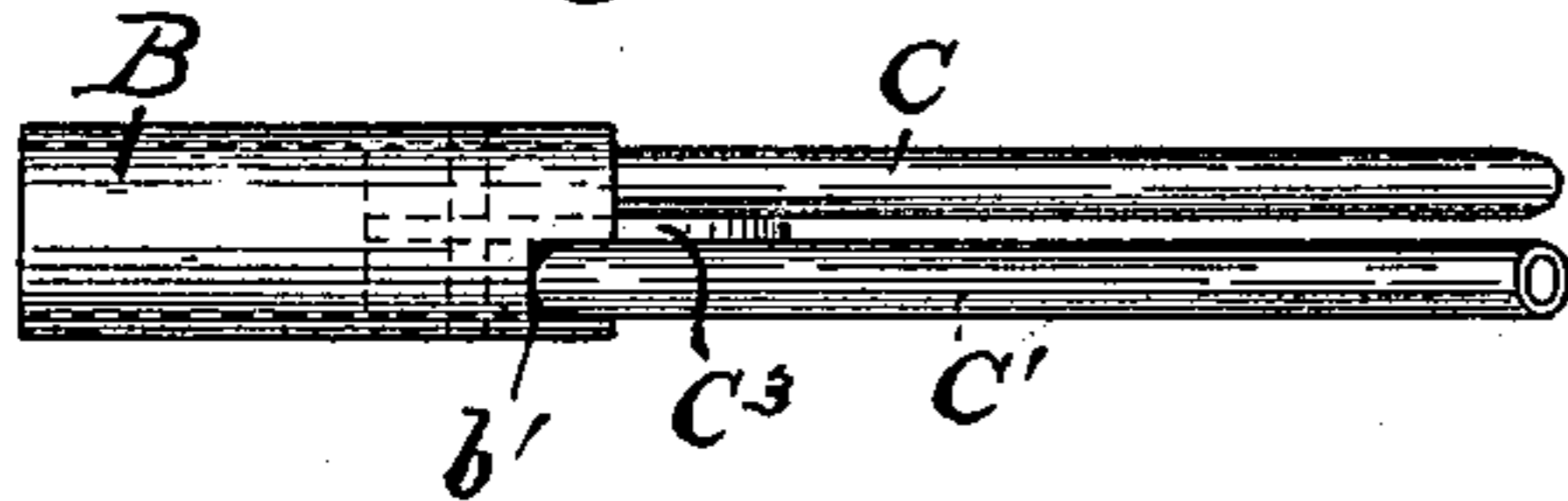


Fig. 5.

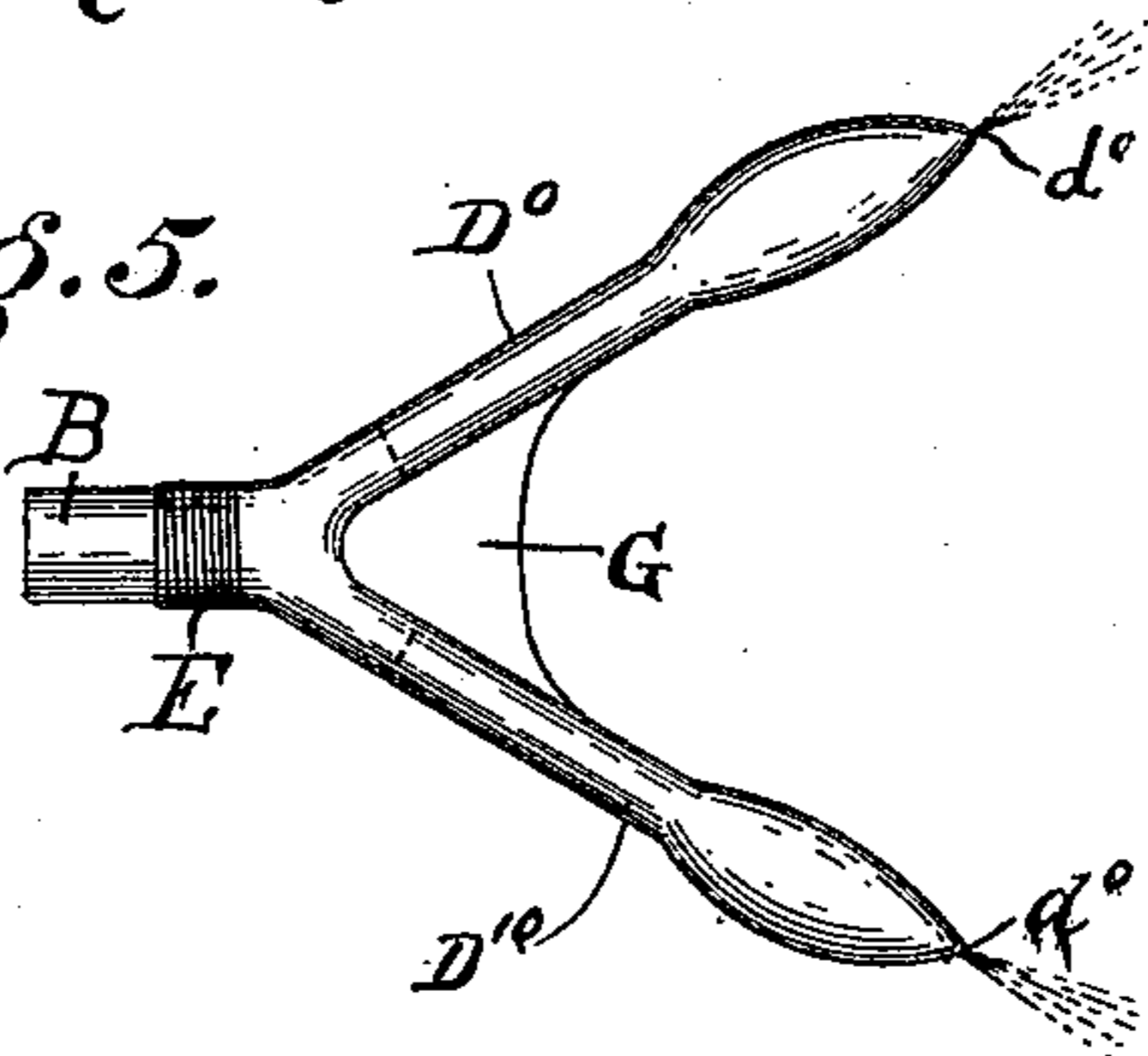


Fig. 4.

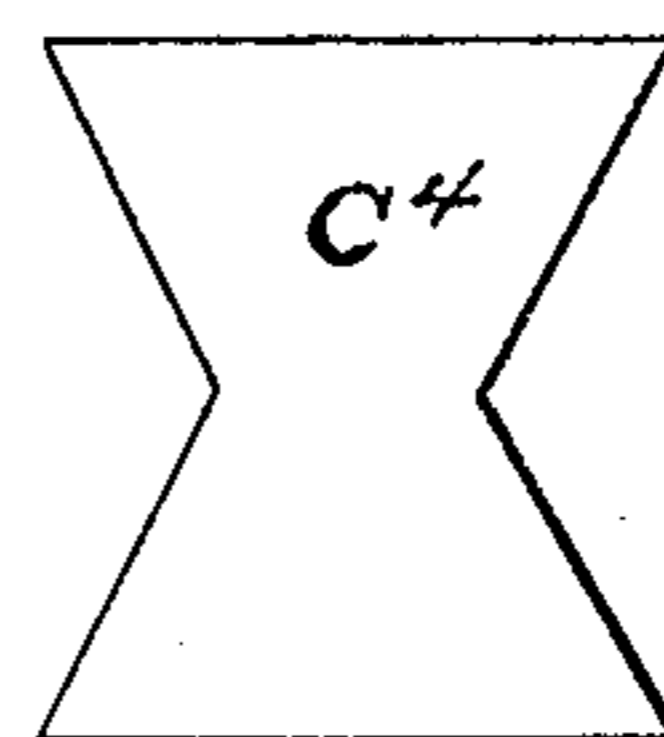
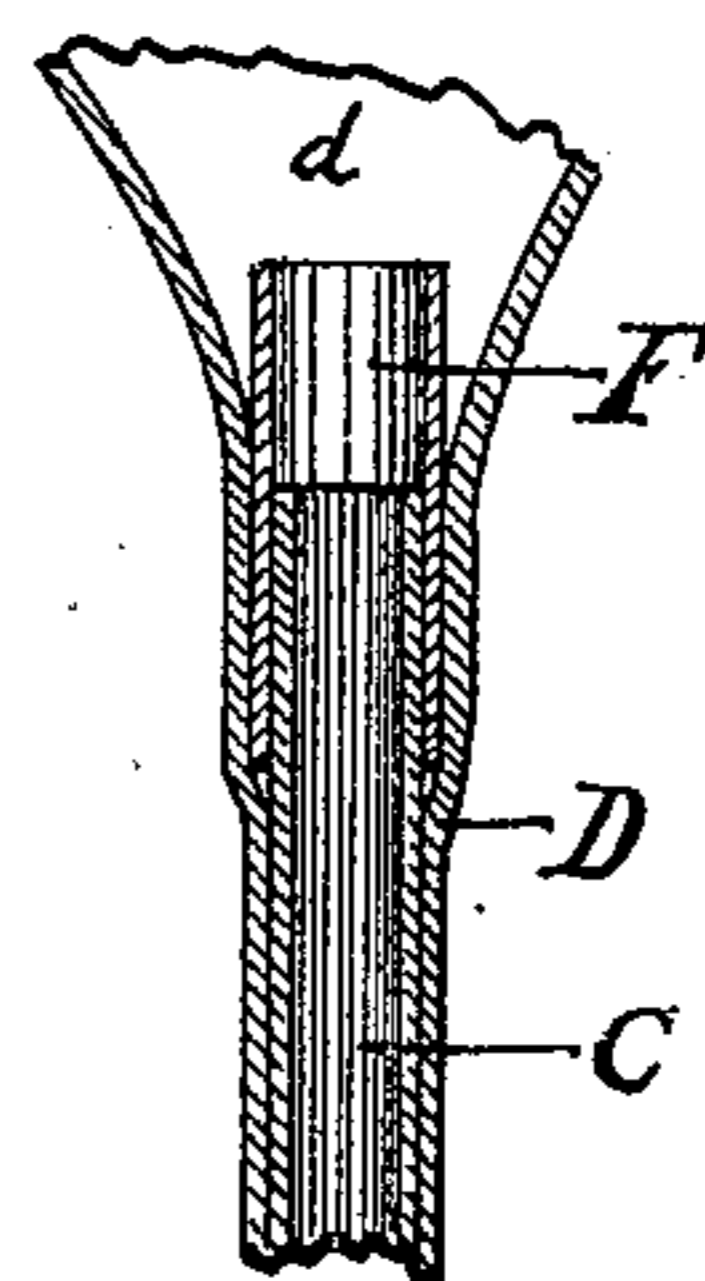


Fig. 6.



Witnesses.

A. R. Selden.
C. H. Marcellus.

Inventor.

George P. Goulding
by Howard L. Osgood

Attorney.

UNITED STATES PATENT OFFICE.

GEORGE P. GOULDING, OF CHARLOTTE, MONROE COUNTY, NEW YORK.

BOTTLE-WASHER.

SPECIFICATION forming part of Letters Patent No. 602,071, dated April 12, 1898.

Application filed December 22, 1896. Serial No. 616,641. (No model.)

To all whom it may concern:

Be it known that I, GEORGE P. GOULDING, a citizen of the United States, and a resident of the village of Charlotte, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Bottle-Washing Devices, of which the following is a specification, reference being had to the accompanying drawings, in which—

10 Figure 1 shows one of my bottle-washing devices in place in a bottle, the bottle being shown in dotted lines. Fig. 2 is a vertical section through the ferrule and one of the tubular stiffening-arms of one of my devices, 15 a flexible tube of a modified form being shown upon the other tubular stiffening-arm. Fig. 3 is a side elevation of the ferrule and tubular stiffening-arms of one of my devices. Fig. 4 is a pattern for the covering-piece at the 20 juncture of the ferrule and tubes. Fig. 5 is a view of one of my devices made of india-rubber, and Fig. 6 shows a modification having a reinforcing layer or tube around the end of a tubular stiffening-arm and inside the flexible tube. 25

In the devices heretofore produced for the rapid washing of bottles in large numbers it has been found necessary to carry a stream of water having considerable force into the 30 interior of the bottle and at the same time to scrub the bottle on the interior. The point at which it is difficult to perform the scrubbing is at the lower interior angle of the bottom of the bottle, where sediment has principally 35 deposited from the fluid which has been in the bottle. The washing devices for this purpose of which I am aware do not deliver the stream of water directly at the point where the most thorough scrubbing should occur— 40 viz., the most remote portion of the bottle—but deliver the stream at some distance from the lower corners of the bottle, and consequently the washing effects derived from the force of the water and from the scrubbing 45 are not as complete and perfect as they should be, for the reasons, among others, that the dirt and sediment clog upon and stick to the brush, and the current of water is not such as to cleanse the brush while the latter is 50 cleansing the bottle.

Bottle-washing machines of a well-known type have a long pipe A, through which water

may be conducted with a considerable head, and the said pipe A is carried by a whirling device, which rotates the pipe upon its axis with 55 high speed. I employ such a machine, and upon the end of the pipe A, I fasten a hollow base-piece or ferrule B by means of the screw-threads *b*, Fig. 2. From the other end of the ferrule project two tubular arms C C', rigid 60 or of stiffening material, open at both ends. One end of each of these arms is within the ferrule and is transversely pivoted thereto by the pin C², said arms being separated by a plate C³, fastened to the ferrule. Notches *b'* 65 are cut in the edge of the end of the ferrule B, in which the arms C C' may rest when swung upon their pivots C² into the position of greatest angle with reference to each other. The arms can thus move from a position of 70 parallelism (for insertion through the neck of a bottle) to an angular position with reference to each other. The angular position is shown in the drawings. The arms C C' are hollow throughout, and water which enters 75 the ferrule is conducted through the arms to their ends.

In the form of device shown in Figs. 1 and 2 each of the arms C C' has a cover D D', 80 formed of a flexible tube of suitable strong fabric, such as canvas or drilling, which fits upon the arm throughout the whole or the greater part of its length, and each of these flexible tubes has a bulbous end *d d'*, provided at its extreme tip with a small perforation *d'*, 85 through which a stream of water may pass. The fabric of which this flexible tube and bulbous end are formed is closely woven, so that there is comparatively little leakage of water through it. The arms C C' thus are 90 stiffening means for the flexible tubes or covers D D'. It is obvious that each stiffening-arm and its flexible tube or cover together constitute a stiffened tube for conducting the water from the ferrule to the flexible and per- 95 forated end. In order to close the end of the ferrule and the spaces around the ends of the arms C C' adjacent to their points of insertion into the ferrule, I insert, in the form of device shown in Fig. 1, over the end of the 100 plate C³ a piece of cloth C⁴, cut as shown in Fig. 4, the narrowest portion being placed over the end of the plate, and the arms C C' rest in the angles adjacent to said narrowest por-

tion. This piece of fabric is then folded around the pipe A and the arms and around the ferrule and then is wired, as shown at E, Fig. 1, to the ferrule. The flexible tubes D D' for the arms C and C' preferably have extensions, as d^2 , Fig. 2, which extend down to and under the wiring E, and the parts are thus held firmly together. The flexible tube forming the cover for the stiffening-arm which is shown in Fig. 1 is made of one piece of cloth, which is folded upon itself and is sewed along the outer edge, leaving a fringe d^3 or brush-like edge which is effective for scrubbing the surface of the bottle; but the flexible tubes or covers may be made in two pieces and may have fringes on both the inner and outer edges, as shown in Fig. 2. The flexible tubes D D' when in use bend over the edges of the ends of the arms C C' and are apt to wear rapidly or cut at the place of bending when they rub against the bottle. In order to cure this difficulty, I introduce a tubular layer F of soft material, such as india-rubber or fabric, between the end of the stiffening-arm and the flexible tube, so as to make a softer and thicker body over the edge of the stiffening-arm C or C'.

In Fig. 5 is shown a form of flexible tube made of one piece of india-rubber, which extends, still in one piece, down to and over the ferrule, so as to have a Y shape, and it is provided with internal rigid or stiffening arms and bulb-like ends and with small perforations at the extremities of these ends through which streams of water may flow. A web or band G may connect the tubes D⁰ D⁰ in the apex of the angle between them in this form of my device, for the purpose hereinafter described, and in the forms of my device shown in Figs. 1 and 2 a web or band g may connect the tubes D D' for the same purpose; but the web or band in each case may of course be dispensed with in devices used for washing bottles where its function is not required. In both forms of my device the inner stiffening-arm or stiffener is of harder material and the flexible or cover tube is of softer material.

If now my device is at rest, the tubes may be folded or shut together, so as to be close to each other or substantially parallel, inasmuch as the arms may turn upon the pin C², and thus the two tubes with the deflated bulbs $d d'$ may be inserted through the neck of a bottle of small size. If now the water-supply is turned on and the pipe A is whirled, the water flows through the tubes into the bulbous ends, which swell out and are held straightened out by the force of the water at a considerable tension and separating under the action of the centrifugal force press outward against the inner surface of the bottle and into the lower corners thereof and thoroughly scrub it. The softness of the bulbous ends $d d'$ when filled by water permit the corners and interior contour of the bottle to be closely fitted and to be rubbed by a considerable surface and according to the pressure exerted by

the operator in holding the bottle against the scrubbing device. When the material of which the flexible tubes or covers are made is porous, some water will flow through the walls of the bulbous ends and the surface of the fabric will be cleansed while removing the dirt from the bottle. The stream of water emerging through the end of the bulb, as shown in Fig. 2, issues with force and drives away from the surfaces rubbed by my device or which the stream touches and from the most remote parts of the bottle the particles of dirt which are free to move and carries them out through the mouth of the bottle.

In Fig. 1 is shown in dotted lines a form of bottle having a conical intumed bottom. In order to scrub the whole of this cone, including its summit, by the revolutions of my device I add a flexible web of suitable material at the apex of the angle between the two arms, as indicated at G, Fig. 5. In this figure it is shown as made of india-rubber and in one piece with the tubular covers and bulbs; but a flexible band g , Fig. 1, of suitable material may be equally well fastened to the flexible tubes and may extend across from one tube of the device to the other, as shown in Figs. 1 and 2.

It is obvious that the tubes may be folded together to be inserted through the neck of a bottle and that rotation of the pipe A will cause the flexible ends of the tubes to separate and fly apart by centrifugal force, and that in so doing the ends and the adjacent portions of the flexible tubes must press against the interior of the sides of the bottle, and that the bottle when moved in and out while the pipe A revolves may be thoroughly scrubbed from its extreme bottom corner to the top and at the same time is rinsed by a stream of water projected at or close to the point of scrubbing.

I do not intend to limit my claims to the specific forms of device shown and described herein, nor more than their terms necessarily imply.

What I claim is—

1. In a bottle-washing device, a hollow base-piece adapted for connection with a water-supply device, tubes extending therefrom whereby water is conducted from said base-piece and delivered at the extremities of said tubes, said tubes being adapted to fold together for insertion through the neck of a bottle, and a flexible web or band connecting said tubes.

2. In a bottle-washing device, a hollow base-piece adapted for connection with a water-supply device, flexible tubes extending from said base-piece whereby water may be conducted from said base-piece and delivered at the extremities of said tubes, stiffening means for each of said flexible tubes, and a flexible web or band connecting said flexible tubes.

3. In a bottle-washing device, a hollow base-piece adapted for connection with a revolvable water-supply device, and angularly-sep-

arable stiffened tubes connected to said base-piece whereby water may be conducted therefrom and delivered at the extremities of said tubes, said tubes being adapted to fold together for insertion through the neck of a bottle, each tube having a flexible end, and a flexible web or band connecting said tubes.

4. In a bottle-washing device, a ferrule adapted for connection with a revoluble water-supply device, a pair of rigid tubular arms pivoted to said ferrule and having their ends within the same, and a flexible tube of soft material around each arm and perforated at the end for emergence of water.

5. In a bottle-washing device, a ferrule adapted for connection with a revoluble water-supply device, a pair of rigid tubular arms pivoted to and within said ferrule and extending therefrom, and a flexible tube on each rigid arm having a bulbous end of soft material, and a perforation at the extremity of said end for delivery of water therefrom.

6. In a bottle-washing device, a ferrule adapted for connection with a revoluble water-supply device, a pair of rigid tubular arms pivoted to and within said ferrule and extending therefrom and adapted to be folded together and to move to an angular position with reference to each other, and a flexible tube of fabric on each rigid arm having a fringed, fibrous edge and a bulbous end, and a perforation at the extremity of said bulbous end for the delivery of water therefrom.

7. In a bottle-washing device, a ferrule B adapted for connection with a revoluble water-supply device, having a central plate C³ therein, a pair of rigid, open tubular arms C C' having one end of each within said ferrule and on each side of said plate, a pivoting-pin C² passing transversely through said ferrule, plate and arms, and a flexible tube of soft material on each arm provided with a perforation.

8. In a bottle-washing device, a ferrule B adapted for connection with a revoluble water-supply device, having a central plate C³ therein, a pair of rigid, open tubular arms C C' having one end of each within said ferrule and on each side of said plate, a pivoting-pin C² passing transversely through said ferrule, plate and arms, and a flexible tube D D' having a perforated bulbous end *d d'* on each arm.

9. In a bottle-washing device, a ferrule B adapted for connection with a revoluble water-supply device, having a central plate C³ therein, a pair of rigid, open tubular arms C C' having one end of each within said ferrule and on each side of said plate, a pivoting-pin C² passing transversely through said ferrule, plate and arms, a flexible tube D D' having a perforated bulbous end *d d'* on each arm, and a web or band extending from one tube to the other.

10. In a bottle-washing device, a hollow base-piece adapted for connection with a revoluble water-supply device, a pair of flexible tubes and a tubular stiffening-arm within each flexible tube, whereby water is conducted from said base-piece and delivered at the extremity of said flexible tube, and a flexible reinforcing-layer between the extremity of each arm and its flexible tube.

11. In a bottle-washing device, a hollow base-piece adapted for connection with a water-supply device and tubes extending therefrom whereby water is conducted from said base-piece and delivered at the extremities of said tubes, said tubes having flexible ends and being adapted to fold together for insertion through the neck of a bottle.

GEORGE P. GOULDING.

Witnesses:

HENRY GECK, Jr.,
E. H. MARSELLUS.