

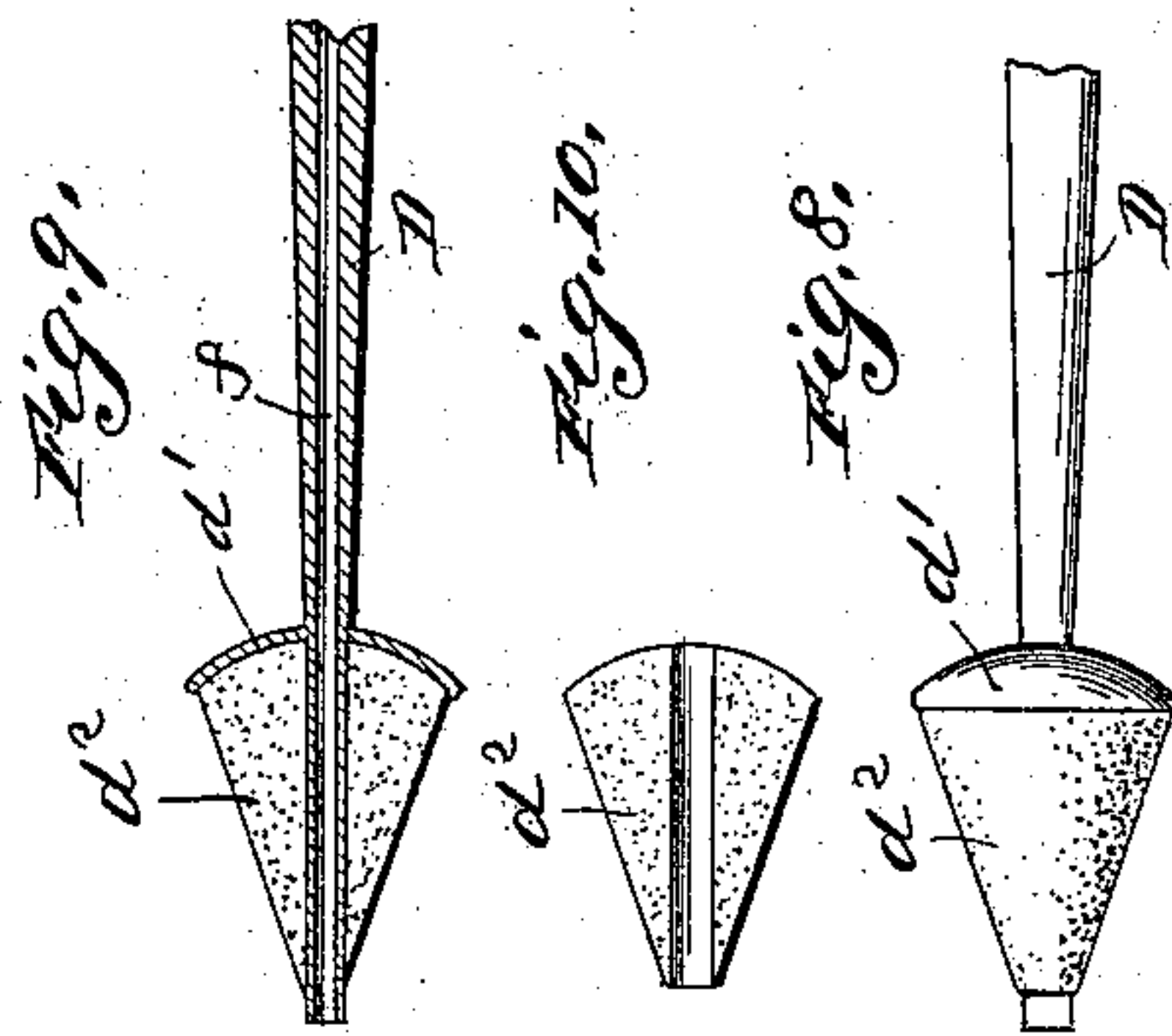
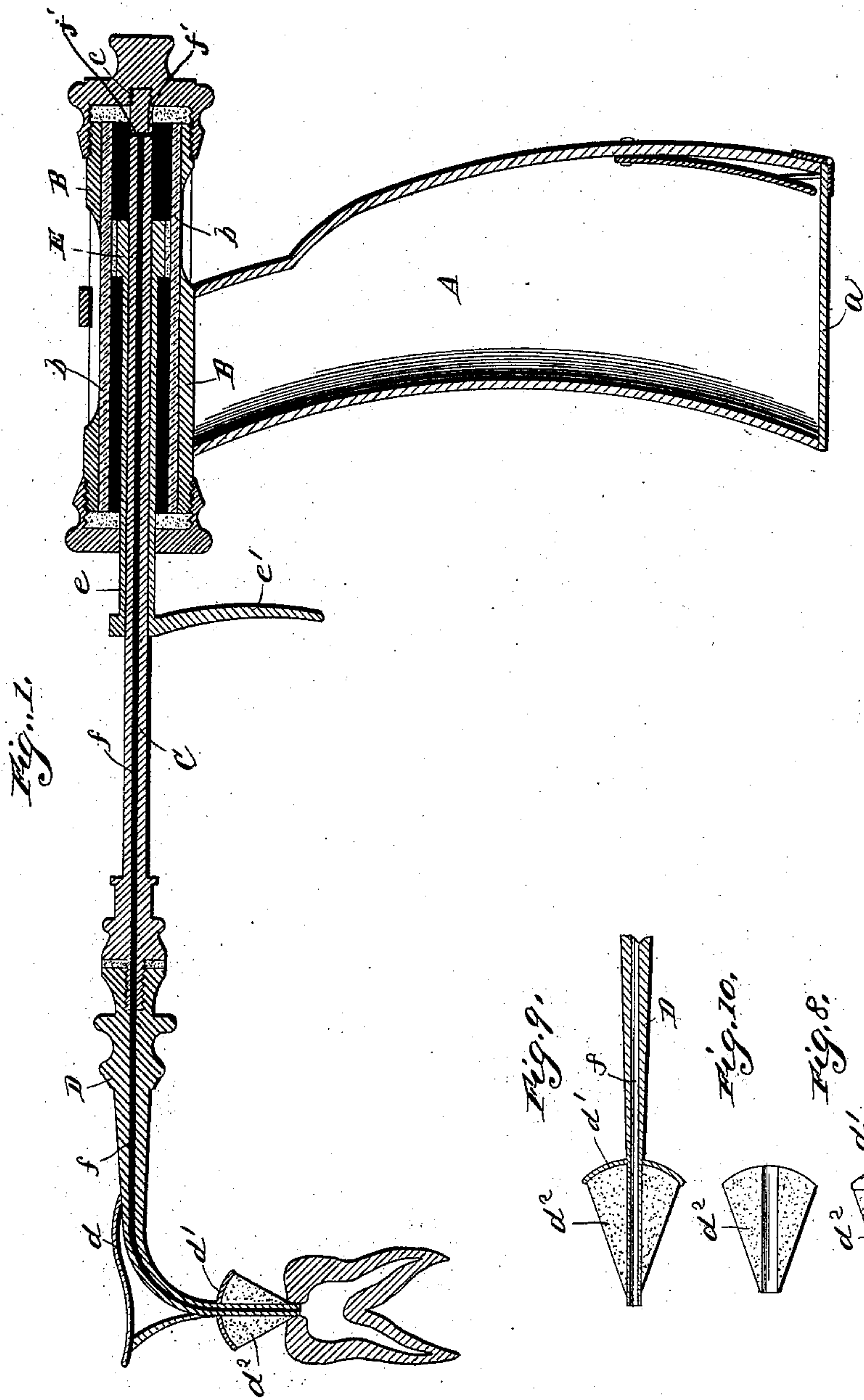
(No Model.)

2 Sheets—Sheet 1.

W. H. RICHARDS.
DENTAL SYRINGE.

No. 375,427.

Patented Dec. 27, 1887.



Witnesses

E. B. Taylor
E. G. Siggers

Inventor
Wm. H. Richards

By *His* Attorneys

C. A. Howells

(No Model.)

W. H. RICHARDS.

2 Sheets—Sheet 2.

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Fig. 11.

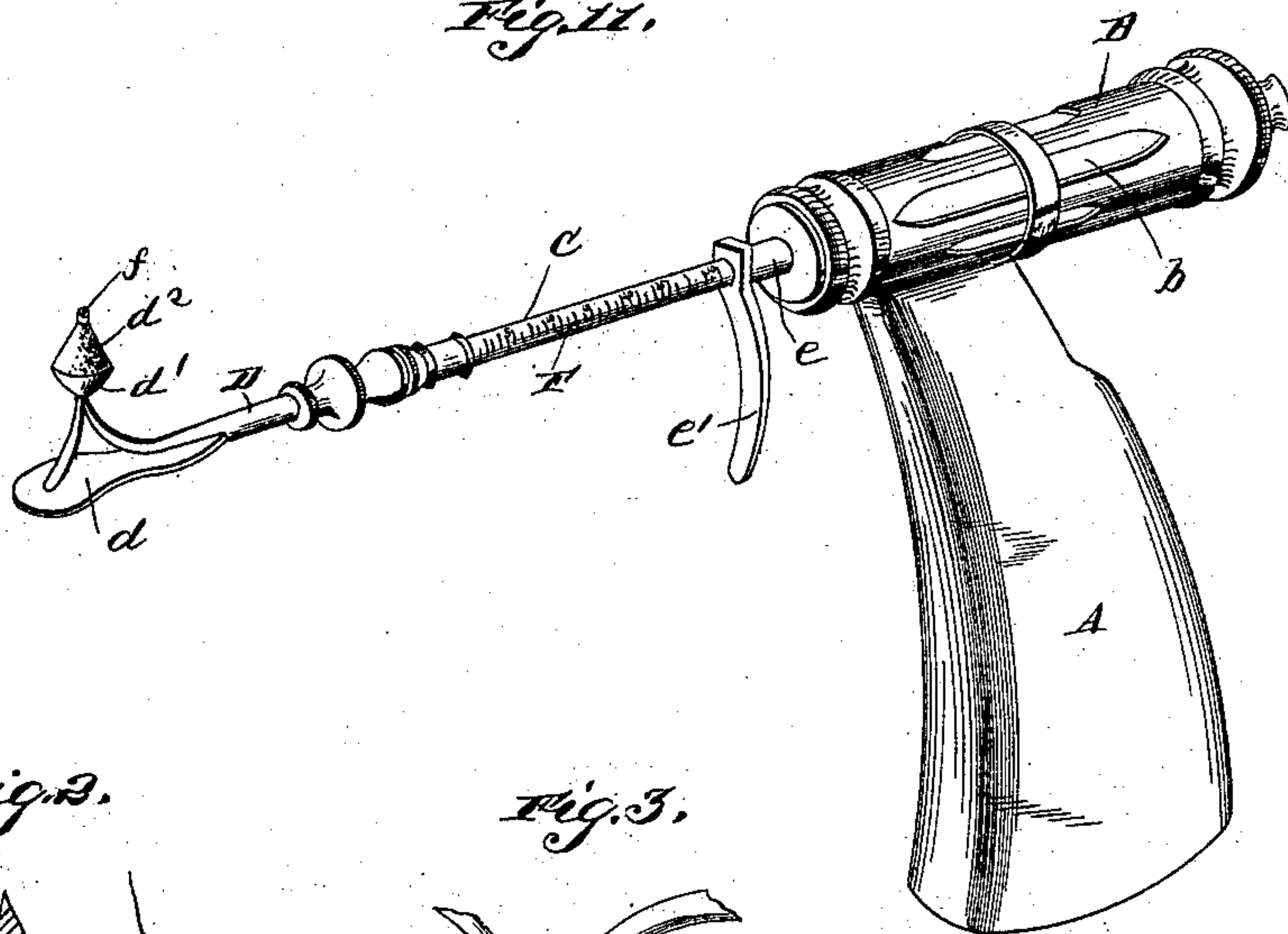


Fig. 2.

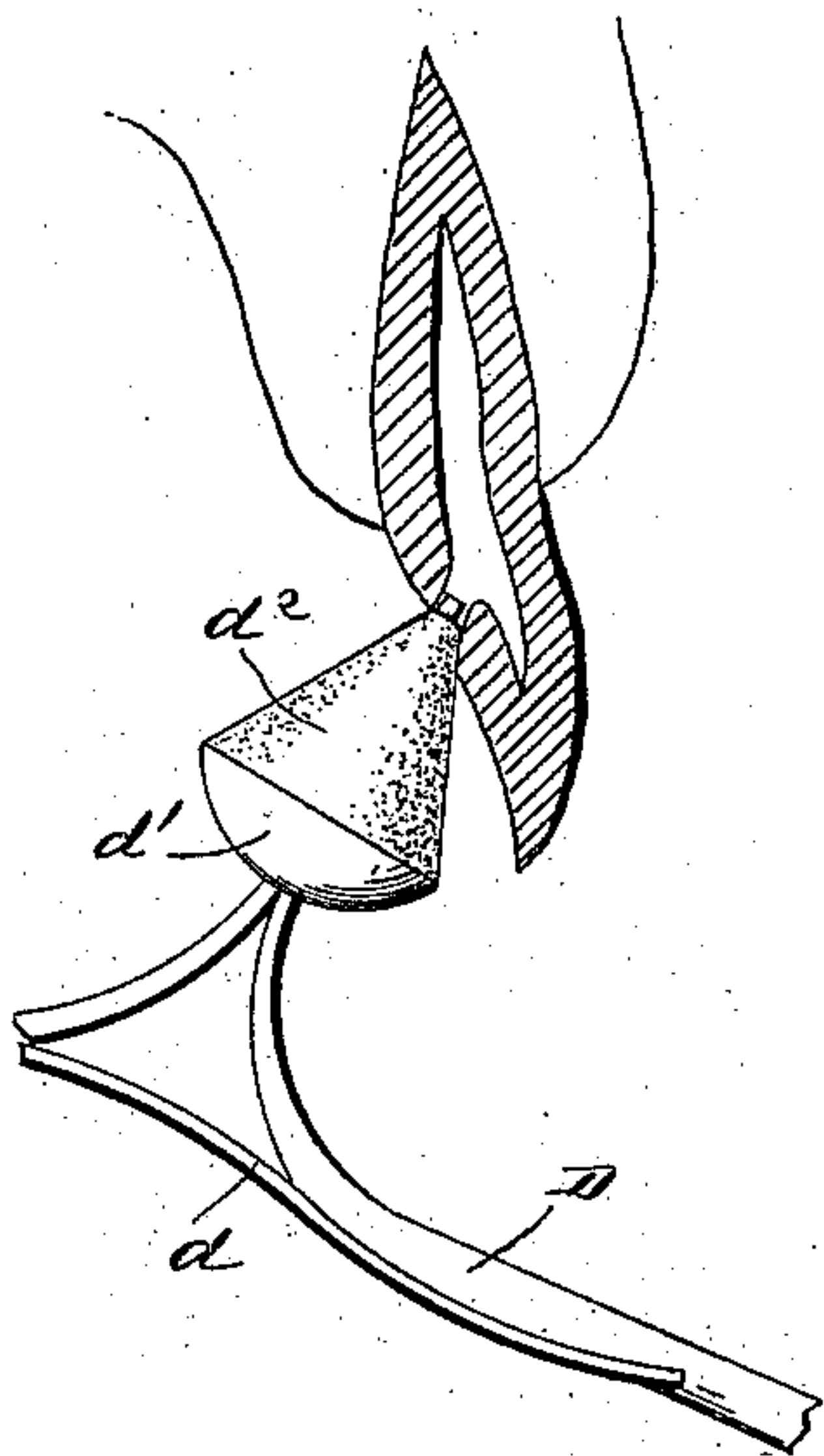


Fig. 3.

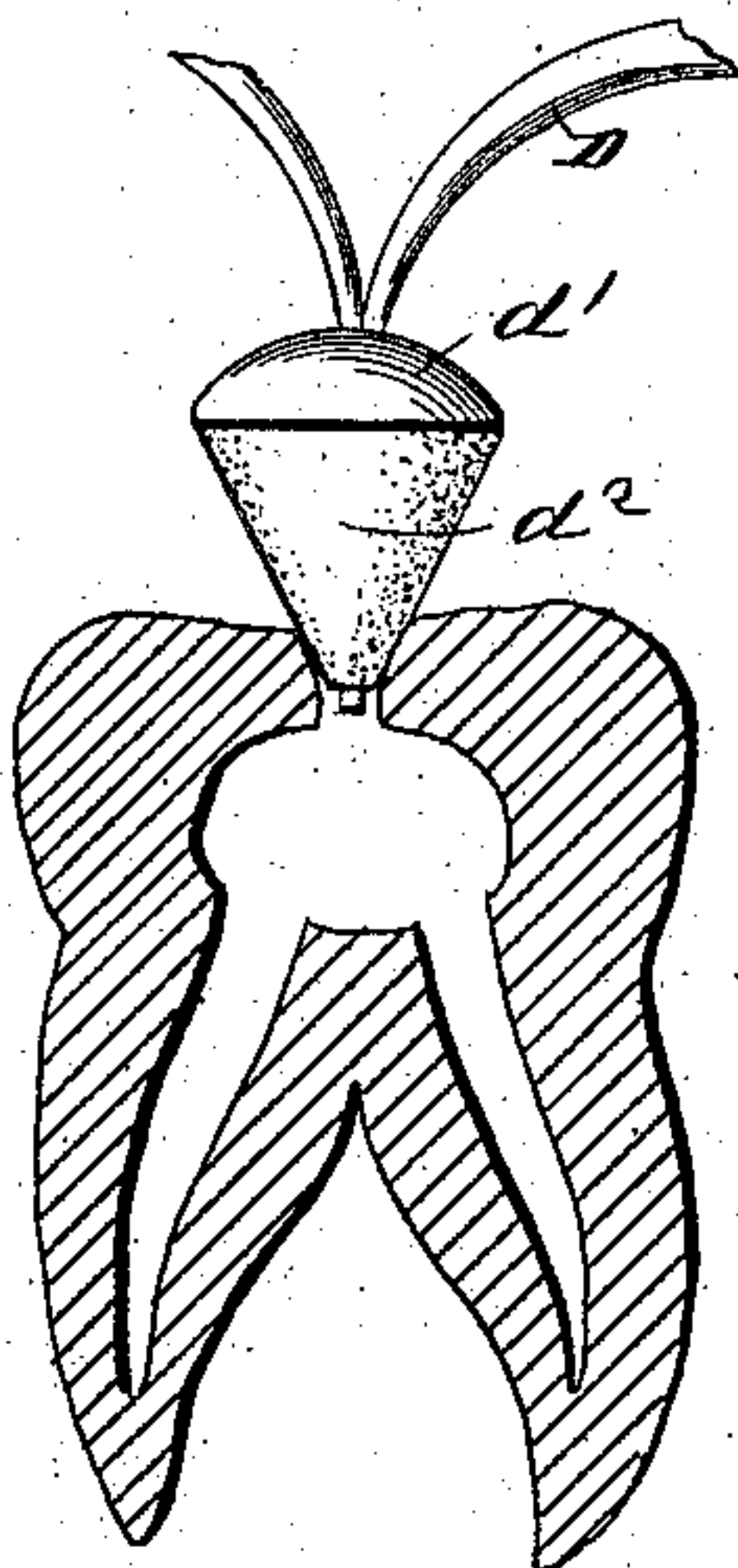


Fig. 5.

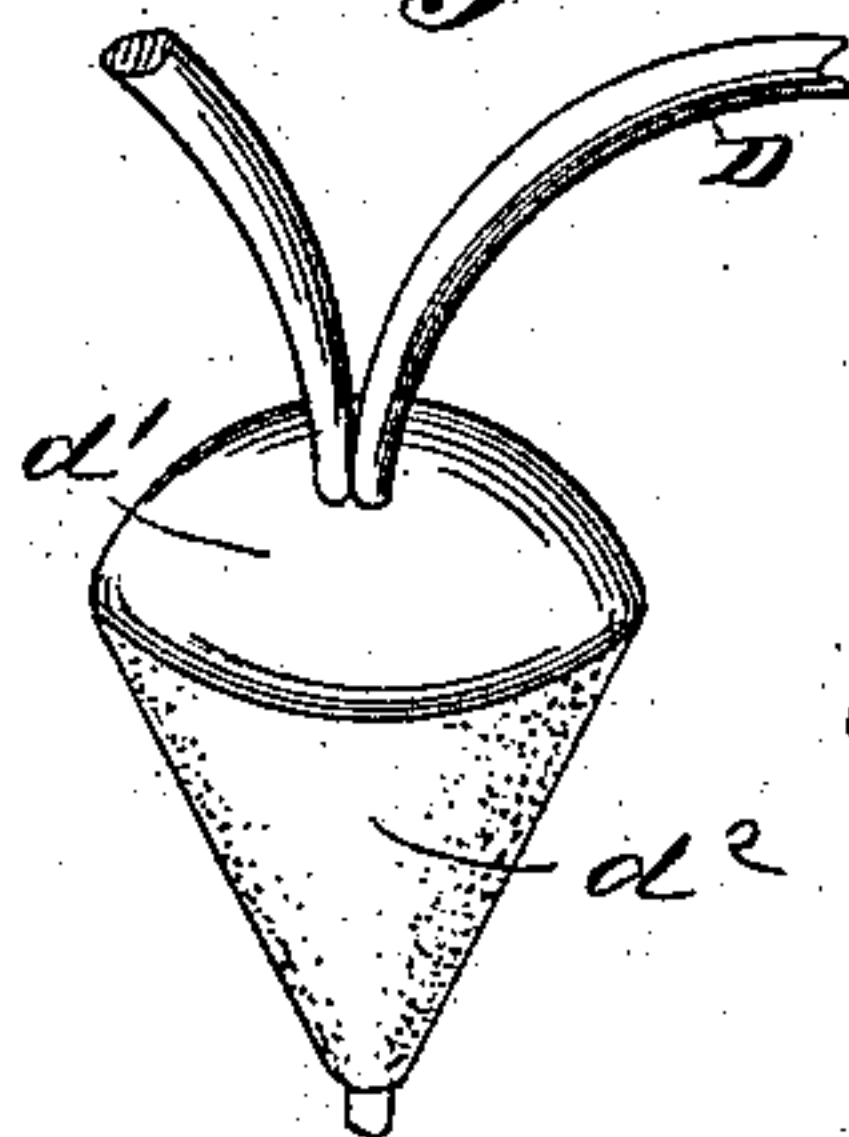


Fig. 6.

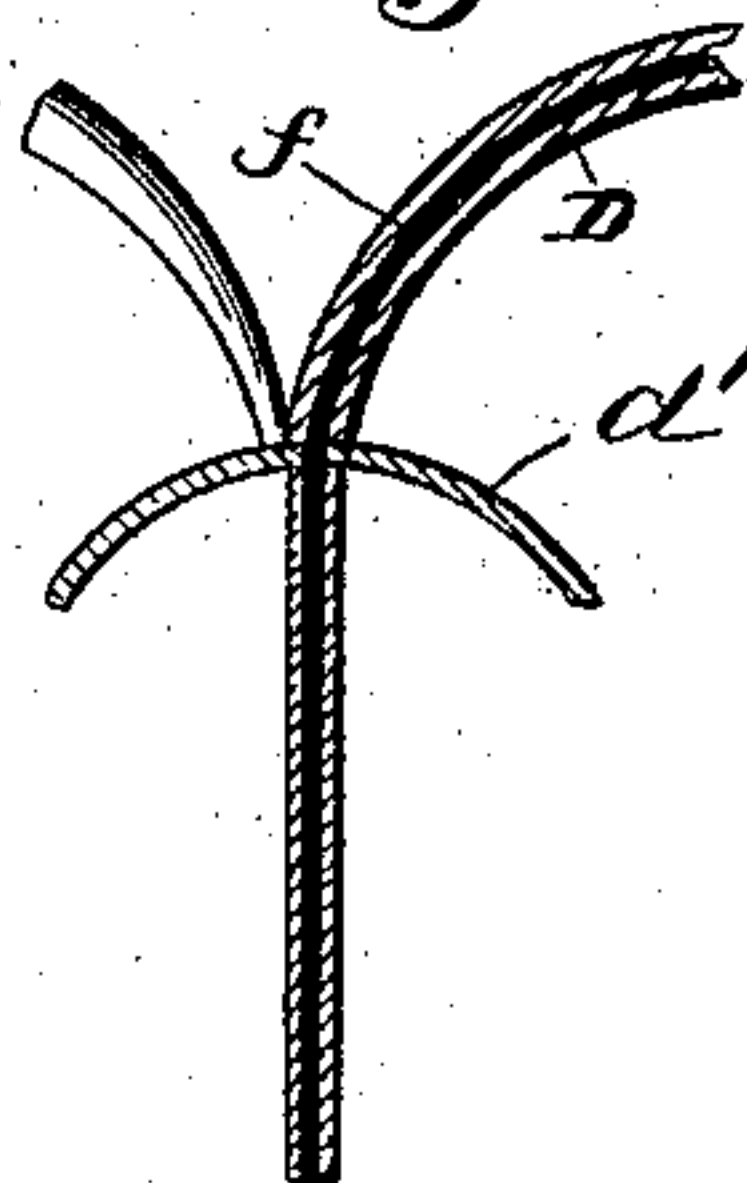


Fig. 7.

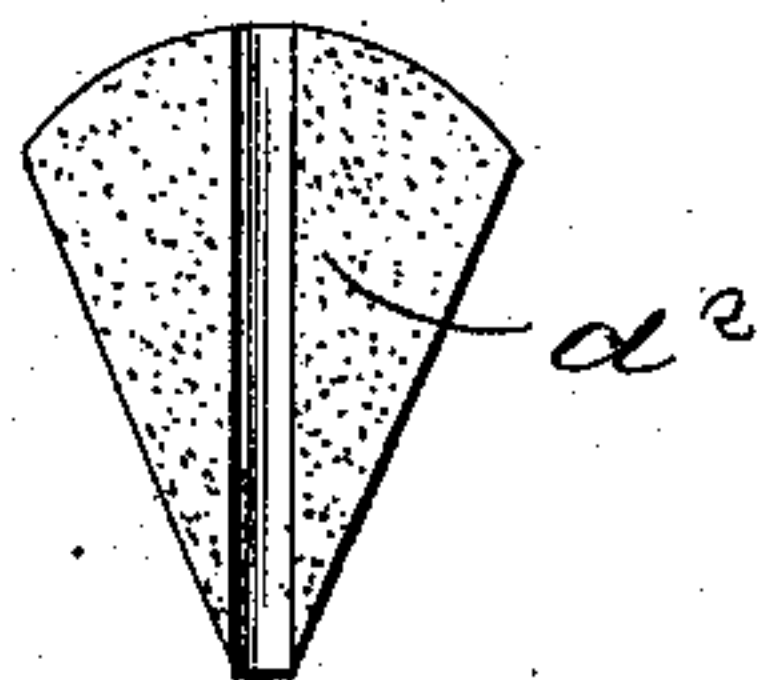
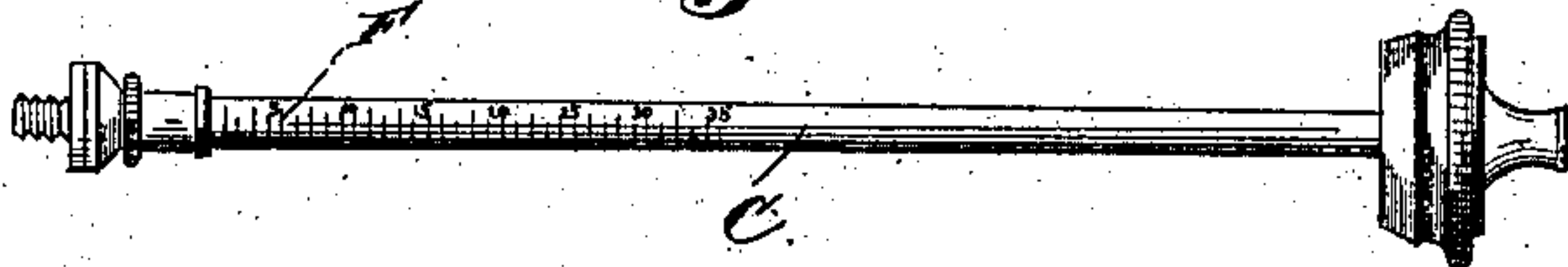


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY RICHARDS, OF KNOXVILLE, TENNESSEE.

DENTAL SYRINGE.

SPECIFICATION forming part of Letters Patent No. 375,427, dated December 27, 1887.

Application filed February 15, 1887. Serial No. 227,700. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HENRY RICHARDS, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Improvement in Dental Syringes, of which the following is a specification.

This invention relates to improvements in syringes, particularly such as are used hypodermically, or to inject fluids into the cavities of diseased teeth and into the antrum, the main object being to perform the operation desired more effectually, more directly upon the diseased surface, with less pain to the patient, with a saving of time to the operator, and with less chance of applying ex-
coriating-fluids upon parts adjacent to those diseased.

The invention consists, mainly, in a syringe so constructed that by pulling a small trigger outwardly, and thereby moving the piston outwardly, the fluid will be injected inwardly, or in the opposite direction to the movement of the piston.

It further consists in certain details of construction and arrangement of the various parts, hereinafter described, illustrated in the drawings, and pointed out in the claims here-
to appended.

In the accompanying drawings, Figure 1 represents a central longitudinal section of the device applied to a diseased tooth. Fig. 2 represents the point of the device when applied to an upper front tooth. Fig. 3 represents the said point when the device is applied to a lower molar tooth. Fig. 4 represents the graduations on the discharge-tube to indicate how much fluid has been injected. Figs. 5, 6, and 7 are detail views to show the construction and arrangement of the parts of the point of the discharging-tube of the device. Figs. 8, 9, and 10 are detail views of the same when a straight tapered end is used with the said tube. Fig. 11 is a detail perspective view of the syringe, showing the discharge-point thrown upward.

Referring to the drawings, A represents the hollow handle of the device, shaped like a pistol-butt, and having as a base or end plate the door *a*, hinged at its rear edge. The handle

A is adapted to carry such articles as hypodermic needles and the vials of medicine to be used with the device.

Secured to the top of the handle is the metallic part B of the cylinder of the device, within which fits snugly the glass tube *b*, that forms the cylinder proper. The part B is provided with long longitudinal slots, for the purpose of noticing the inside of the cylinder and perceiving whether it fills up properly with fluid. The part B is provided at its ends with detachable screw-caps, for the purpose of easily cleaning out the cylinder.

C is a tube running axially through the cylinder, and having its closed end therewith in connected by a screw, *c*, with the rear screw-cap. The said tube passes through a central opening in the front screw-cap. The front end of the tube C is threaded and provided with a circumferential shoulder, to engage with and bear against the internally-threaded end of the syringe-point D, as shown in Fig. 1.

In the form of point that is used in operating on teeth the extremity of the point is curved over until it is at right angles to the main portion thereof, and a finger-plate, *d*, is secured and stayed above the bend, as shown. *d'* is a cap at a suitable distance from the extremity of the point D, and *d''* is a small conical block of soft rubber surrounding the tube for a certain distance below the cap and with its base resting therein, the cap having its concavity downward. When used hypodermically the point D is removed and a suitable hypodermic needle is used with the device.

E is the piston, and *e* is a tube having its inner end secured centrally to the piston surrounding the tube, and with the trigger-like arm *e'* secured to its outer end. The tube C is about twice the length of the cylinder, the tube E being about equal in length to the latter, and upon the tube C are marked the graduations F. When the piston is at the front end of the cylinder, the arm *e'* will be at the outer end of the tube C. Upon pulling with the finger on the arm the piston is moved rearwardly, and the liquid in the cylinder is forced through the small openings *f' f'* in the tube C near the rear screw-cap, and through the point D to the desired place. As the arm

moves back, the graduations on the tube C become uncovered and indicate the amount of liquid driven out of the cylinder.

In operation the point of the rubber block is placed just within the orifice of the hole drilled in the tooth, and the part of the point D below said block enters the hole and should be long enough to pass a short distance within the orifice of the hole drilled in the tooth. The block is then held tightly to said orifice, so as to make a close joint, by pressing with a finger of one hand on the finger-plate *d*, which is suitably shaped for the purpose. If the hole in the tooth is sufficiently large, the rubber block accompanies the metal point into the tooth and secures a tight joint. If the hole is not large enough, the metal point enters the hole, leaving the rubber block compressed on the outside of the tooth, securing the same result in making the tight joint. The block also prevents the liquid from escaping out of the orifice in which the pipe is inserted and excoriating the gums and other adjacent parts. The following are some of the advantages of the machine:

It can be operated by one hand, the finger of the other hand being used only to keep the joint tight, as described. There need be no undue pressure on the orifice, as the arm is drawn upon and not pushed to operate the machine, and but little pressure with the finger will keep the joint tight. The pistol-shaped handle allows the pressure in drawing the arm to be firm and steady. The rubber block insures a close joint between the point of the instrument and the cavity to be operated upon, and the handle can be used as a case to carry the necessary attachments and medicines.

The medicine is carried immediately to the diseased point and thrown thereon. The cylinder is filled by inserting its discharge-tube in the proper liquid and drawing the arm outward from the cylinder.

Having described my invention, I claim—

1. In a syringe, the combination of the cyl-

inder, the discharge-tube C, projecting from the cylinder and communicating with the interior thereof, the reciprocating-tube *e*, surrounding the discharge-tube and extending into the cylinder, the piston attached to the inner end of the tube *e* and fitting in the cylinder, and the arm *e'*, depending from the outer end of the tube *e*, substantially as described.

2. In a syringe, the combination of the cylinder having the pistol-handle A, the discharge-tube extending through the cylinder, projecting from the same and communicating with the interior thereof, the outer portion of the discharge tube having the graduations F, the sliding tube *e*, surrounding the discharge-tube and extending into the cylinder and provided with the piston, and the arm *e'*, depending from the outer end of the tube *e*, substantially as described.

3. In a syringe, the combination, with the discharge-tube, of the discharge-point bent laterally at its discharge end, the finger-plate *d*, secured over said bent portion, the cap *d'* on the bent portion, and having its concavity, the discharge end, and the cone-shaped soft-rubber block, all constructed and arranged substantially as and for the purpose specified.

4. In a syringe, the combination, with the discharge-tube, of the detachable discharge-point fitted to the tube and communicating therewith and adapted to turn axially on the discharge-tube, the end of the discharge-point being bent laterally to one side, whereby the discharge-point may be turned to present the bent end in any direction, and the rubber tapering block fitted upon the bent end of the discharge-point, the smaller end of the rubber block terminating at a slight distance above the end of the point, as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

WILLIAM HENRY RICHARDS.

Witnesses:

JAS. JOHNSTON,
J. E. HICKMAN.