

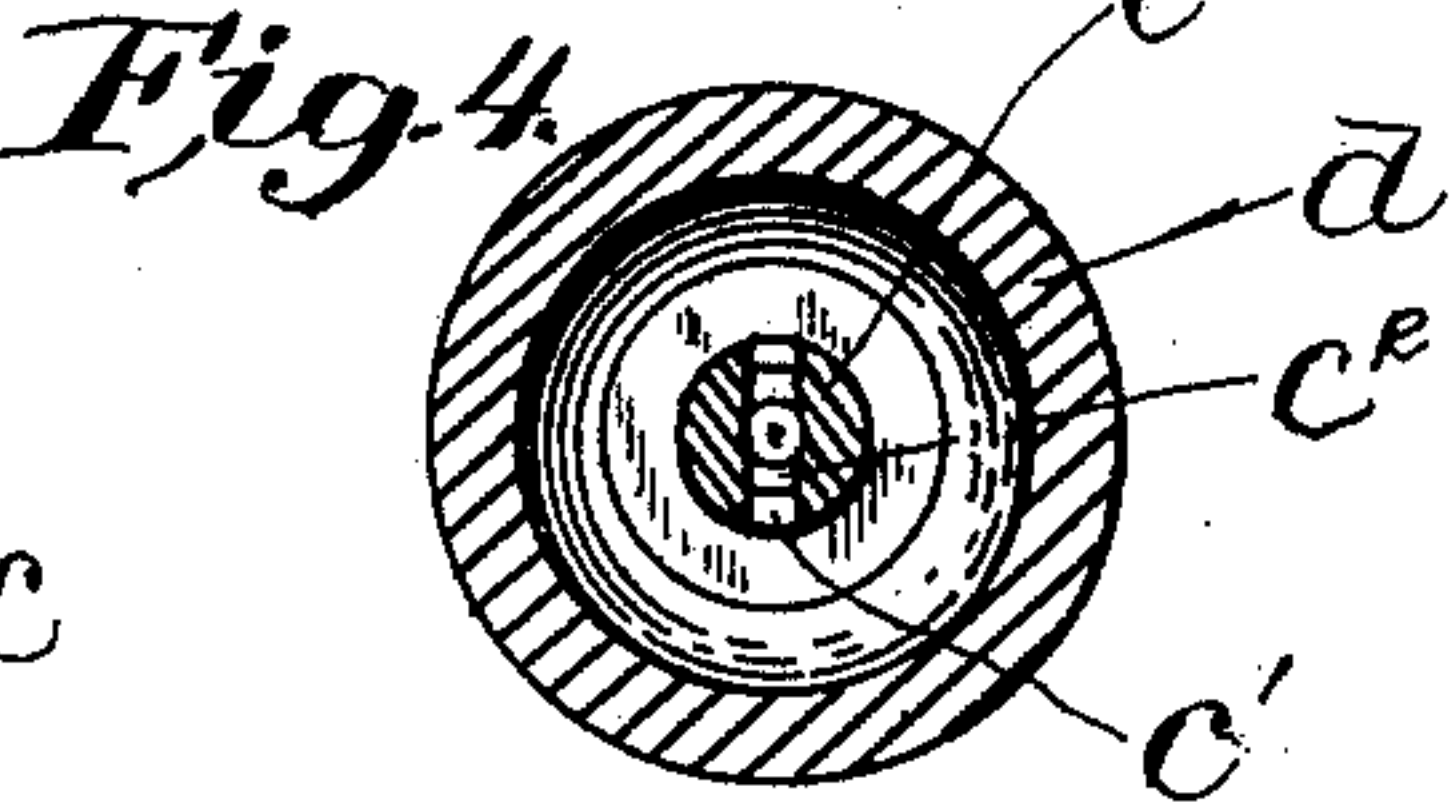
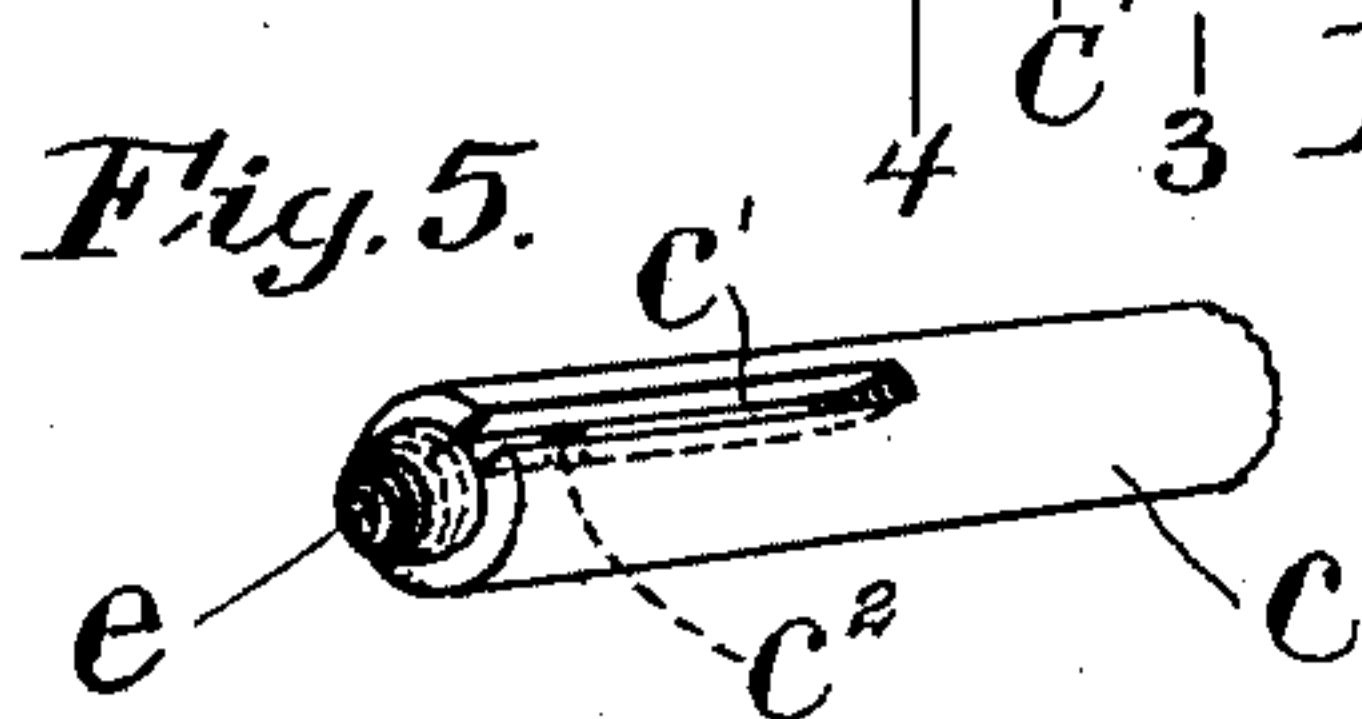
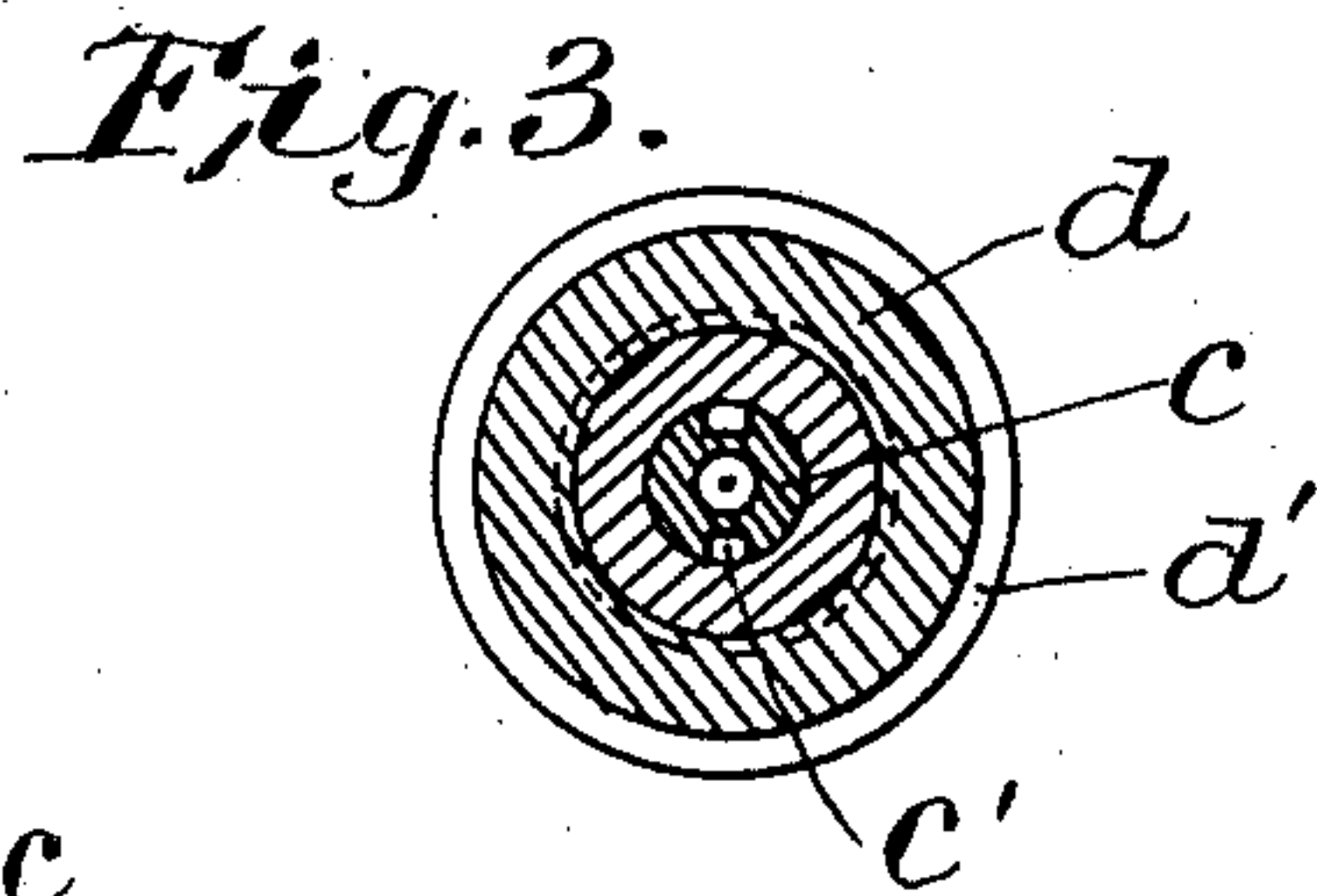
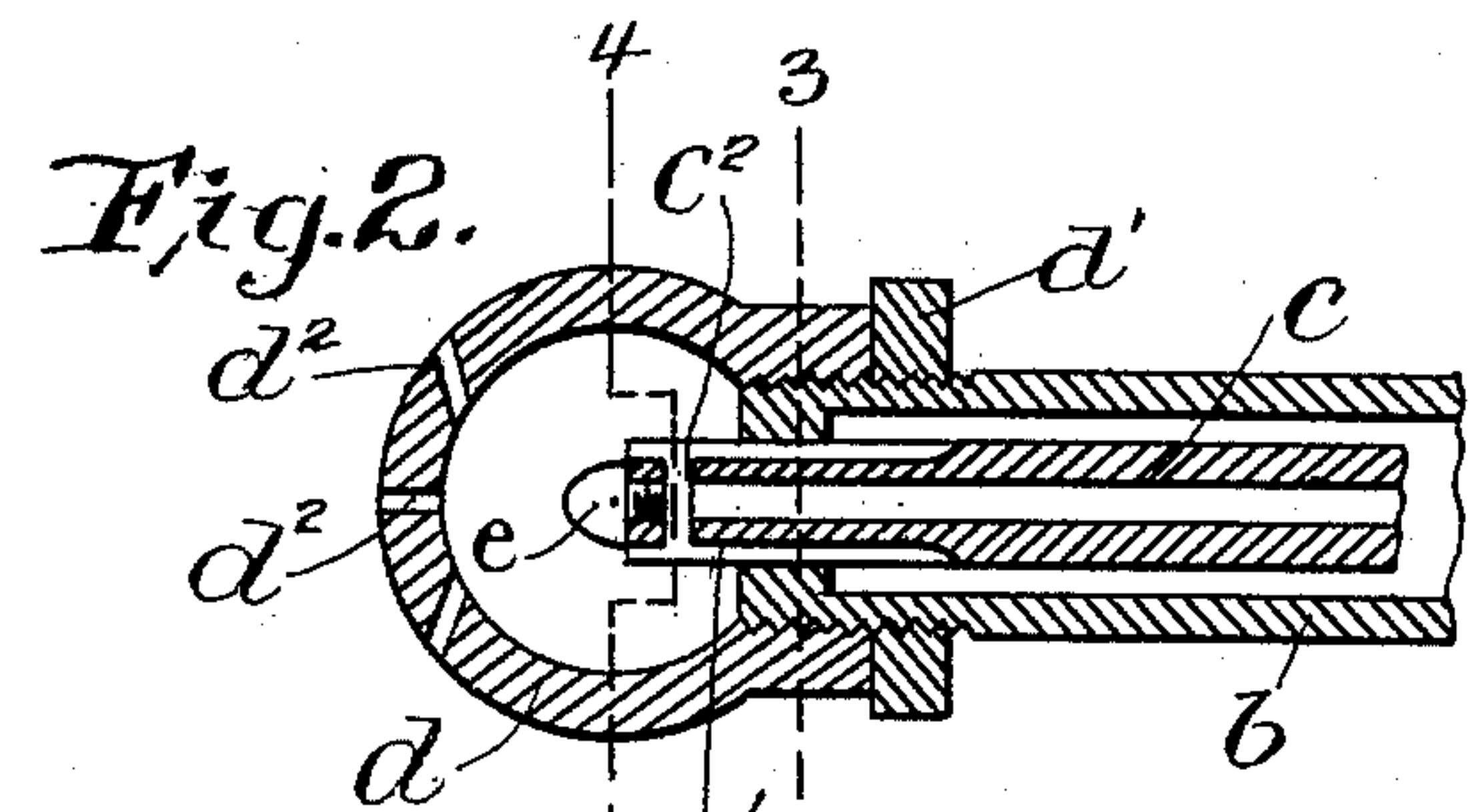
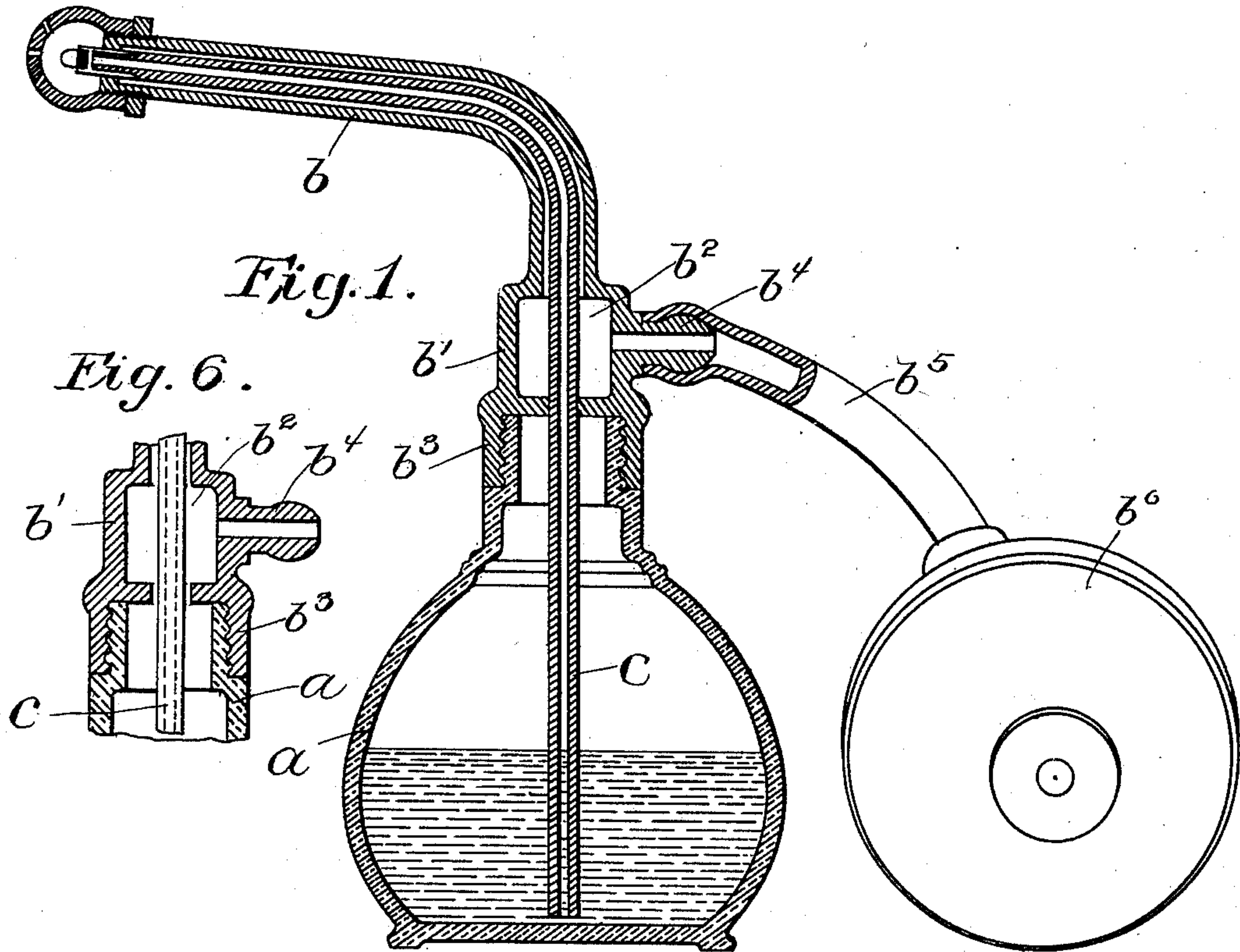
No. 719,588.

PATENTED FEB. 3, 1903.

S. HASBROUCK.  
SPRAYING DEVICE.

APPLICATION FILED AUG. 27, 1902.

NO MODEL.



Witnesses:

A. Klyver.  
C. C. Stecher

Inventor:

Sayer Hasbrouck  
by Wright Brown & Quincy  
his attys



# UNITED STATES PATENT OFFICE.

SAYER HASBROUCK, OF PROVIDENCE, RHODE ISLAND.

## SPRAYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 719,588, dated February 3, 1903.

Application filed August 27, 1902. Serial No. 121,226. (No model.)

*To all whom it may concern:*

Be it known that I, SAYER HASBROUCK, of Providence, in the county of Providence and State of Rhode Island, have invented certain  
5 new and useful Improvements in Spraying Devices, of which the following is a specification.

This invention has relation to appliances for atomizing or nebulizing substances of various densities, such as liquids and pulverized solids, of the same general type as the atomizer illustrated in my copending application, Serial No. 110,609, filed June 7, 1902.

The object of the present invention is to  
15 provide for the accurate location of the apertures for the discharge of the material to be nebulized or atomized and for the air which is delivered under pressure.

On the accompanying drawings, Figure 1  
20 represents in section an atomizing or nebulizing device embodying the invention. Fig. 2 represents an enlarged section of the tip of the same. Figs. 3 and 4 respectively represent sections on lines 3-3 and 4-4 of Fig. 2.  
25 Fig. 5 represents in perspective view the end of the inner tube. Fig. 6 represents a form of device in which the liquid may be forced into the inner tube by air-pressure.

On the drawings, *a* represents a receptacle  
30 adapted for the reception of the material to be sprayed or nebulized.

*b* indicates the outer tube, which may be straight or bent and which is enlarged at *b'* to form an air-chamber *b<sup>2</sup>*. At the base of  
35 the enlargement there is an internally-threaded portion *b<sup>3</sup>*, adapted for attachment to the neck of the receptacle *a*. Projecting laterally from the enlargement *b'* there is a nipple *b<sup>4</sup>*, over which may extend the end of a  
40 conduit *b<sup>5</sup>*, leading from an air-compressor, such as the valved bulb *b<sup>6</sup>*. The air-chamber *b<sup>2</sup>* may communicate with the interior of the receptacle, as indicated in Fig. 6, or may be closed therefrom, as shown in Fig. 1. An  
45 inner tube *c* extends through the air-chamber and through the end of the inner tube *b*, so as to completely close said end, as shown in Fig. 2. On the end of the outer tube which is externally threaded there is a spherical tip *d* and a check or lock nut *d'*, whose  
50 function is to prevent accidental dislocation

of the tip and effect an air-tight closure between the tip and the outer tube. The bore at the end of the inner tube is threaded to receive the shank of a substantially conical  
stud *e*, which closes the end of the inner tube  
55 and which may be removed to permit access to the bore thereof for the purpose of cleaning the same and removing impediments therefrom. The end of the inner tube is also  
60 provided with one or more longitudinal grooves *c'*, and for the purpose of illustration I have shown two of them. These grooves extend from the extremity of the inner tube to a point inside of the end of the outer tube,  
65 and they form apertures for the discharge of air from the outer tube. The inner tube is likewise provided with two ports or apertures *c<sup>2</sup>*, leading laterally from the interior thereof and registering with the grooves *c'*. By thus  
70 forming the ports and the grooves in the inner tube they are always caused to register, so that the streams of air issuing through the grooves or, as I may call them, the "ports" *c'* intersect the material issuing from the ports *c<sup>2</sup>*, so  
75 as to throw the material violently against the concave inner walls of the tip and break it into a fine spray or cloud. The cloud, spray, or nebula issues from the tip through one or  
80 more ports or apertures *d<sup>2</sup>*, which are out of alinement with the spray or sprays of material being broken up by the air-jet.

The operation of the device is substantially as follows: With that form illustrated in Fig. 1 the compressed air passes from the air-  
85 chamber *b<sup>2</sup>* through the ports *c'* and by education draws up the material through the inner tube *c* until it is discharged from the ports *c<sup>2</sup>*. The jet of air intersecting the material issuing from the ports *c<sup>2</sup>* breaks it up and  
90 blows it violently against the concave walls of the tip. As the broken material is deflected at various times against the walls of the tip, it is broken into a finer and finer condition and is finally discharged through the  
95 apertures *d<sup>2</sup>*.

The only difference in operation between the device in Fig. 1 and that shown in Fig. 6 is that in the latter the material is forced through the inner tube by the direct pressure  
100 of air from the air-chamber *b<sup>2</sup>*.

This appliance may be employed for me-

dicinal insufflators, atomizers, and nebulizers, for disinfecting apparatus, for spraying paint, for vaporizing oil, and for various other purposes which will suggest themselves to those skilled in the art to which the invention relates.

Having thus explained the nature of the invention and described a way of constructing and using the same, although without attempting to set forth all of the forms in which it may be made or all of the modes of its use, I declare that what I claim is—

1. A device of the character specified having an outer air-tube, an inner fluid-tube, passing through said outer tube, said inner tube being formed with an external groove for the discharge of air from the outer tube,

and a lateral port registering in line with said groove.

2. A device of the character specified comprising an outer air-tube closed at its end, an inner tube passing through said outer tube and having a portion projecting through the closed end thereof, said projecting portion being provided with a lateral port and with an external groove registering in line with said port.

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

SAYER HASBROUCK.

Witnesses:

SAMUEL S. STORER,  
ALFRED S. JOHNSON.