

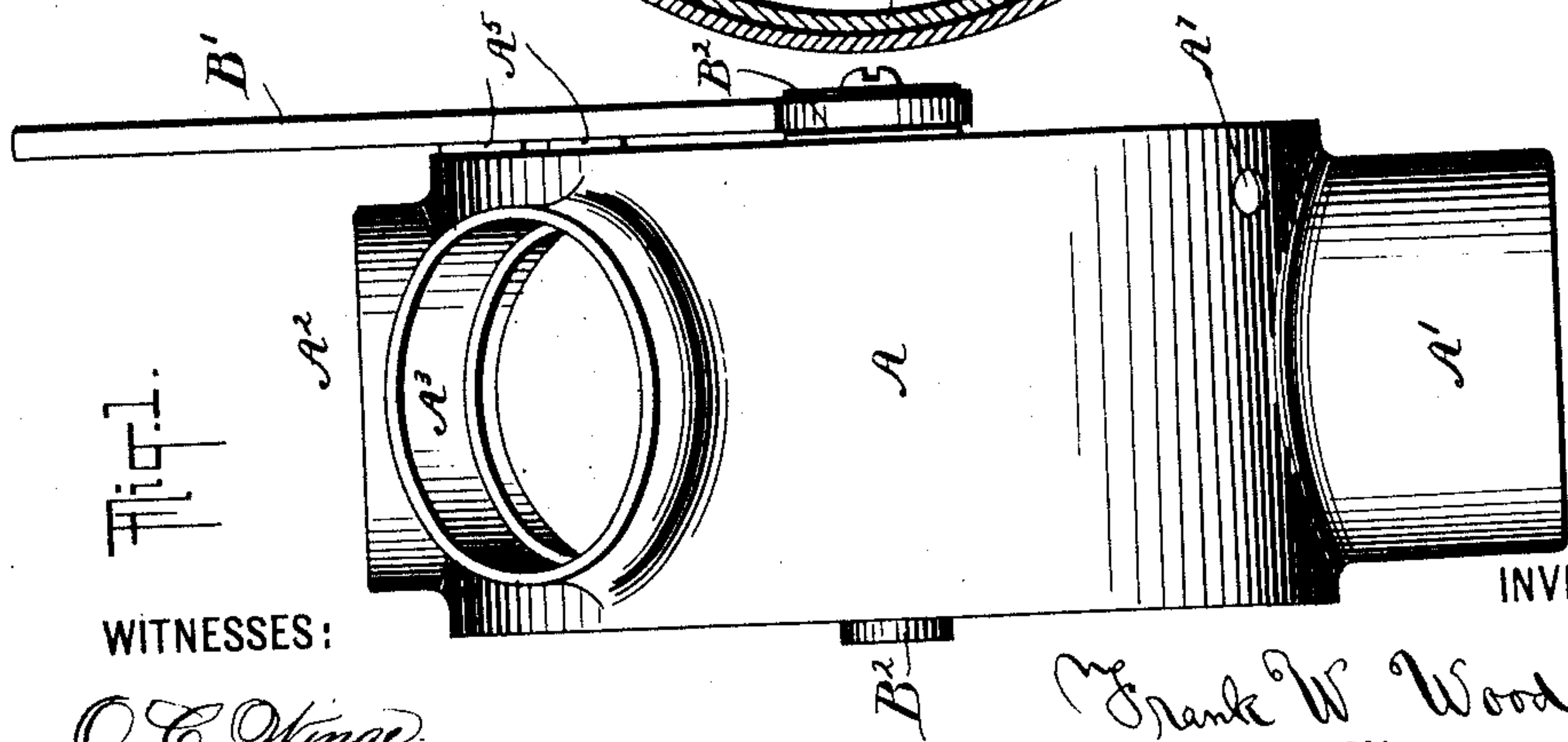
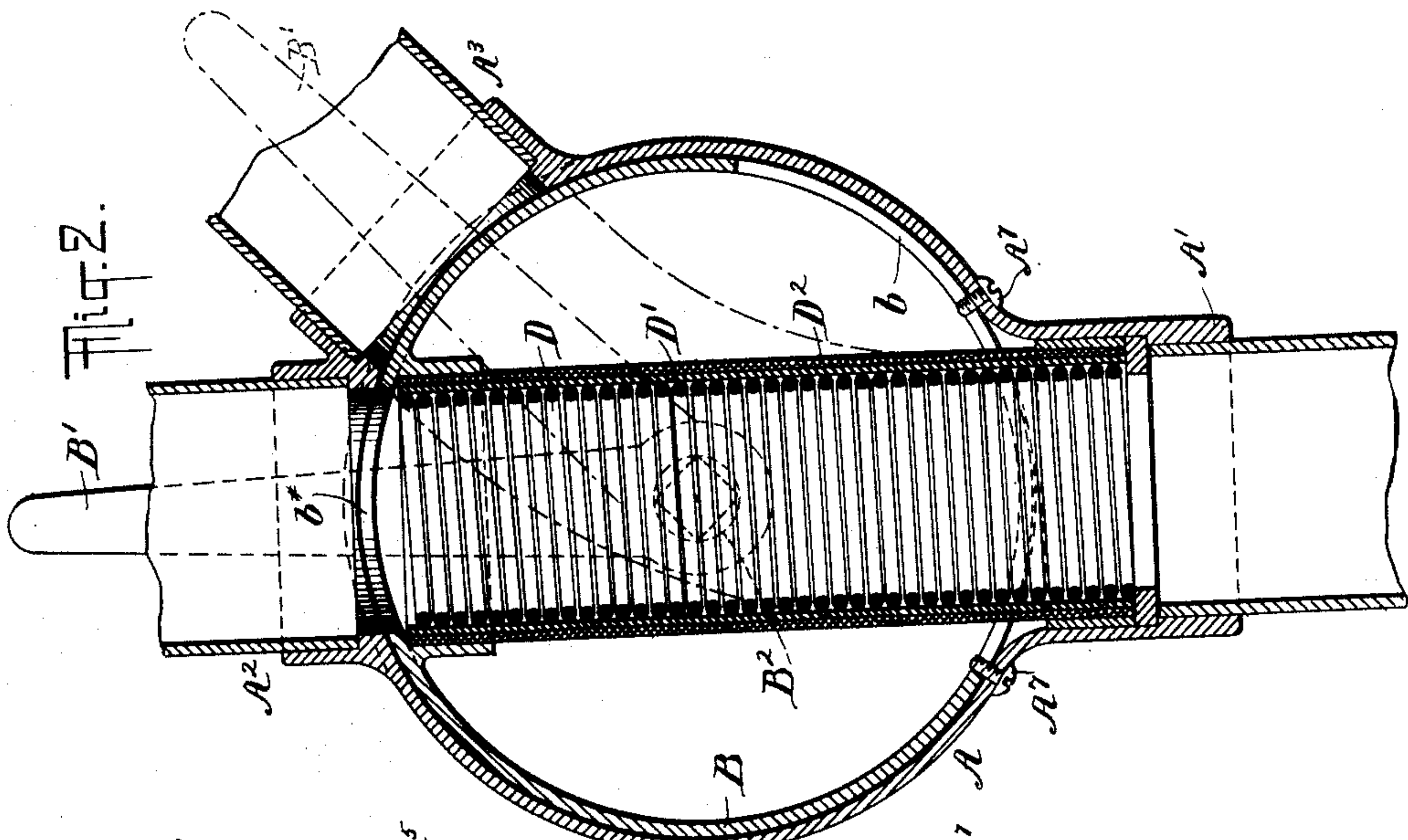
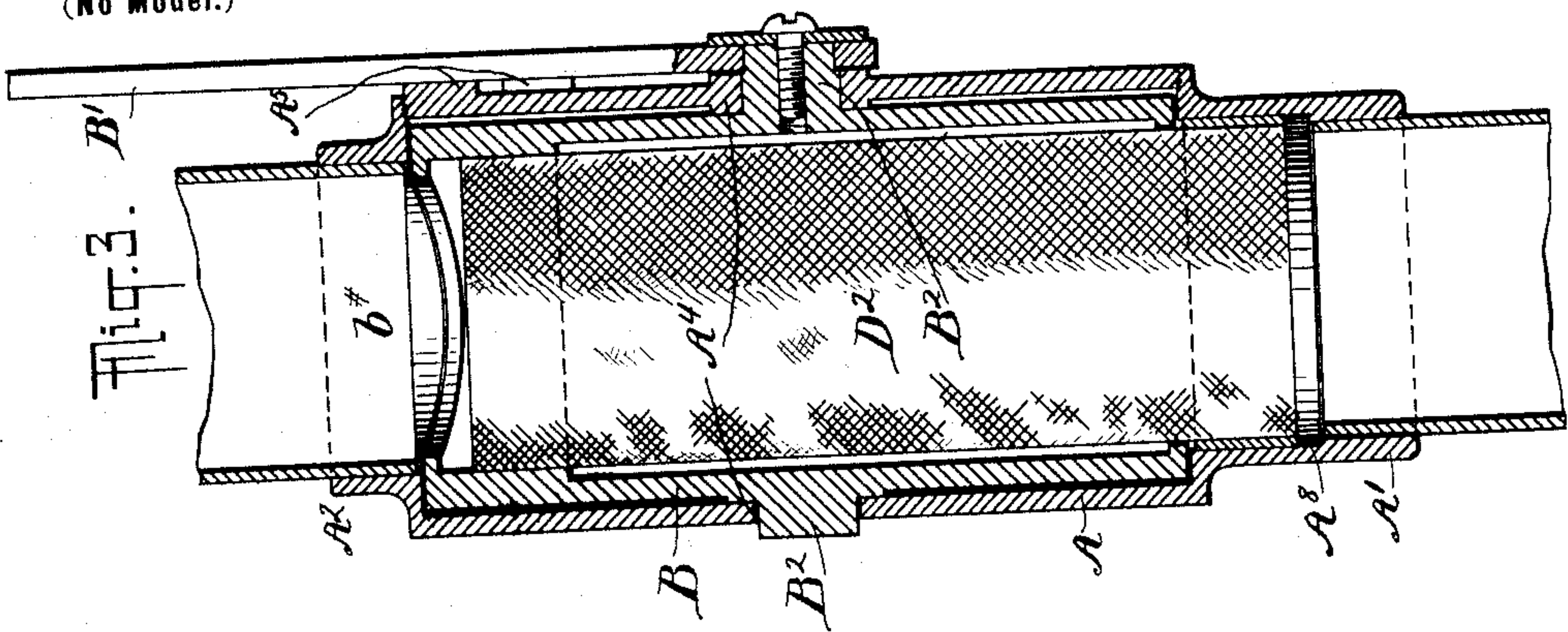
**No. 616,175.**

**Patented Dec. 20, 1898.**

F. W. WOOD.  
SWITCH FOR SPEAKING TUBES.

(Application filed Sept. 16, 1898.)

(No Model.)



WITNESSES:

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# UNITED STATES PATENT OFFICE.

FRANK W. WOOD, OF NEWPORT NEWS, VIRGINIA, ASSIGNOR TO CHARLES CORY AND JOHN M. CORY, OF NEW YORK, N. Y.

## SWITCH FOR SPEAKING-TUBES.

SPECIFICATION forming part of Letters Patent No. 616,175, dated December 20, 1898.

Application filed September 16, 1898. Serial No. 691,090. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK W. WOOD, a citizen of the United States, residing at Newport News, in the county of Warwick, in the State of Virginia, have invented a certain new and useful Improvement in Switches for Speaking-Tubes, of which the following is a specification.

My invention is intended to serve in any position where it may be required to direct the voice at will into one of two or more pipes or passages. It is particularly useful on steamships, where it may be important for the officer of the deck to communicate with the engineer and with another or others, as the man at the helm, the captain in his saloon, or some other officer, as the sailing-master.

I will describe the invention as applied on shipboard to direct the voice simply into one of two divergent pipes, one to the helmsman and one to the engineer.

I provide a smooth and gently-curved passage for the voice through the switch. I effect this by providing a metal-lined tube capable of holding itself properly extended and yet bending to the required moderate extent and mount this within a metal casing, which latter turns in a stationary casing, much in the manner of what is known as a "three-way" cock; but the parts may be lighter and less nicely finished. The turning may be effected by a lever connected to the turning portion of the metal.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a side elevation with the pipes omitted. Fig. 2 is a central vertical section, and Fig. 3 is a corresponding section at right angles thereto with the flexible tube and a washer at one end thereof in elevation.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

A is a fixed casing, of brass or other suitable material, having a generally cylindrical form.

A' is the pipe, which brings the voice from a mouthpiece, (not shown,) and A<sup>2</sup> and A<sup>3</sup> are

two separate pipes, one or the other of which receives and conveys away the voice, according as the interior parts are turned.

B is a casing, of brass or other suitable rigid material, having a generally cylindrical form of less size than that of the casing A, so that it may be easily turned therein.

B' is a lever fixed on one side of the turning part B. I have shown it as fixed on the shaft B<sup>2</sup>, on which the turning part B is mounted and turns, being supported and guided by shaft-bearings A<sup>4</sup>, constituting a part of the casing A, so that the part B can be easily turned to the required limited extent by the hand applied to the lever B'. This turning part B is hollow and has an induction-opening *b* extending a considerable distance around the periphery. There is also an education-opening *b*<sup>#</sup>, which by turning the handle to a small extent can be brought to coincide with one or the other of the pipes A<sup>2</sup> A<sup>3</sup> at will.

I provide a short tube of an interior diameter coinciding with that of the pipes A' A<sup>2</sup> A<sup>3</sup>, peculiarly constructed and arranged to perform the important function of maintaining a continuous passage of uniform size from the pipe A' to either the pipe A<sup>2</sup> or A<sup>3</sup>, as may be required, and preventing the voice from traversing the pipe which is thus thrown out of connection. It is composed of a continuous homogeneous tube D' of vulcanized rubber, an exterior tube D<sup>2</sup> of fibrous material braided or knit together, and an interior tube D of metal in the form of a helically-bent wire, spring-tempered and of sufficient size to maintain the fullness and perfection of form of the more yielding material of D' and D<sup>2</sup> outside thereof, and yet sufficiently elastic to easily bend to the required extent and to again resume its original form when permitted. The entire tube, composed, first, of the inner layer D of spiral wire, next the continuous tube D' of soft vulcanized rubber, and, third, the fibrous enveloping tube or covering D<sup>2</sup>, manufactured from yarn, is firmly engaged in a socket A<sup>8</sup> at the point where the pipe A' connects with the casing A. The other end of this compound yielding pipe is held in the opening *b*<sup>#</sup>, carried in the casing B. So long



as the handle B' is held in one position the delivery end of the pipe D coincides with the pipe A<sup>2</sup> and words spoken into the pipe A' are communicated freely through the pipe D into the pipe A<sup>2</sup> and are heard in the engine-room and nowhere else. When, on the contrary, the casing B and the flexible tube D D' D<sup>2</sup> are turned at an angle of about forty-five degrees, the words spoken into the pipe A' are conducted through the bent tube D D' D<sup>2</sup> into the pipe A<sup>3</sup> and are heard in the pilot-house alone.

I provide means, as frictional projections A<sup>5</sup>, for making a sufficient friction with the lever B' to hold the turning parts firmly in place, and I provide a stop, in the form of a screw A<sup>7</sup>, at each of the points proper to arrest the turning of the lever B', so that it is certain to coincide exactly with the proper pipe when it is turned to the extreme extent that these stops will allow.

I attach importance to the construction of the pipe D D' D<sup>2</sup> with different layers for the reason that the internal layer, being metal, will carry the sound without loss. The next tube is continuous and holds the sound against spreading, and the third layer D<sup>2</sup>, of fibrous material, is well adapted to endure wear and serves as a tasteful finish.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. Other means, as a pin engaging in holes, may be provided in place of the frictional projections A<sup>5</sup> and the stops A<sup>7</sup> to hold the part B in the correct position exactly coincident with the tube A<sup>2</sup> or A<sup>3</sup>, as the case may be, into which it is desired to direct the voice.

The rubber tube D' may by properly coating with rubber cement be caused to adhere to the helical wire D on the inside or to the fibrous coating D<sup>2</sup> on the outside, or both.

Parts of the invention can be used without the whole. The fibrous coating on the exterior of the rubber may be dispensed with.

I claim as my invention—

1. The pipes A', A<sup>2</sup>, A<sup>3</sup>, and the flexible pipe D' kept constantly connected with the pipe A', and changeably connected with the other pipes, in combination with a partially-revoluble casing B, controlling said flexible pipe and means for turning the casing and flexible pipe to the required extent at will, all substantially as herein specified.

2. The pipes A', A<sup>2</sup>, A<sup>3</sup>, and the flexible pipe D' kept constantly connected with the

pipe A' and changeably connected with the other pipes, in combination with a partially-revoluble casing B controlling said flexible pipe and means for turning the casing and flexible pipe to the required extent at will, and for holding the parts in the position required, all substantially as herein specified.

3. The pipes A', A<sup>2</sup>, A<sup>3</sup>, and the flexible pipe D' kept constantly connected with the pipe A', by being received in a socket A<sup>8</sup> adjacent thereto, and changeably connected with the other pipes, in combination with a partially-revoluble casing B, having a long hole b and a smaller hole b<sup>x</sup>, substantially as herein specified.

4. The pipes A', A<sup>2</sup>, A<sup>3</sup>, and the flexible pipe D' having a metal lining D, kept constantly connected with the pipe A' and changeably connected with the other pipes, in combination with a partially-revoluble casing B controlling said flexible pipe, having the arm or lever B', and with the frictional projections A<sup>5</sup> and stops A<sup>7</sup>, all arranged for joint operation substantially as herein specified.

5. The pipes A', A<sup>2</sup>, A<sup>3</sup>, and the flexible pipe D' kept constantly connected with the pipe A' and changeably connected with the other pipes, in combination with a partially-revoluble casing B, controlling said flexible pipe and means for turning the casing and flexible pipe to the required extent at will, and with the coiled spring D arranged to perform the double function of a metal lining to preserve the sound and of a resilient case or spring to maintain the distention of the flexible pipe D', all substantially as herein specified.

6. The pipes A', A<sup>2</sup>, A<sup>3</sup>, and the flexible pipe D' of rubber or analogous material, with the metal layer D in its interior and the fibrous layer D<sup>2</sup> on its exterior all in contact and serving together as a single pipe having the properties described, kept constantly connected with the pipe A' and changeably connected with the other pipes, in combination with a partially-revoluble casing B controlling said flexible pipe, and means for turning the casing and flexible pipe to the required extent at will, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

FRANK W. WOOD.

Witnesses:

W. J. NELMS,

W. M. TAYLOR, Jr.