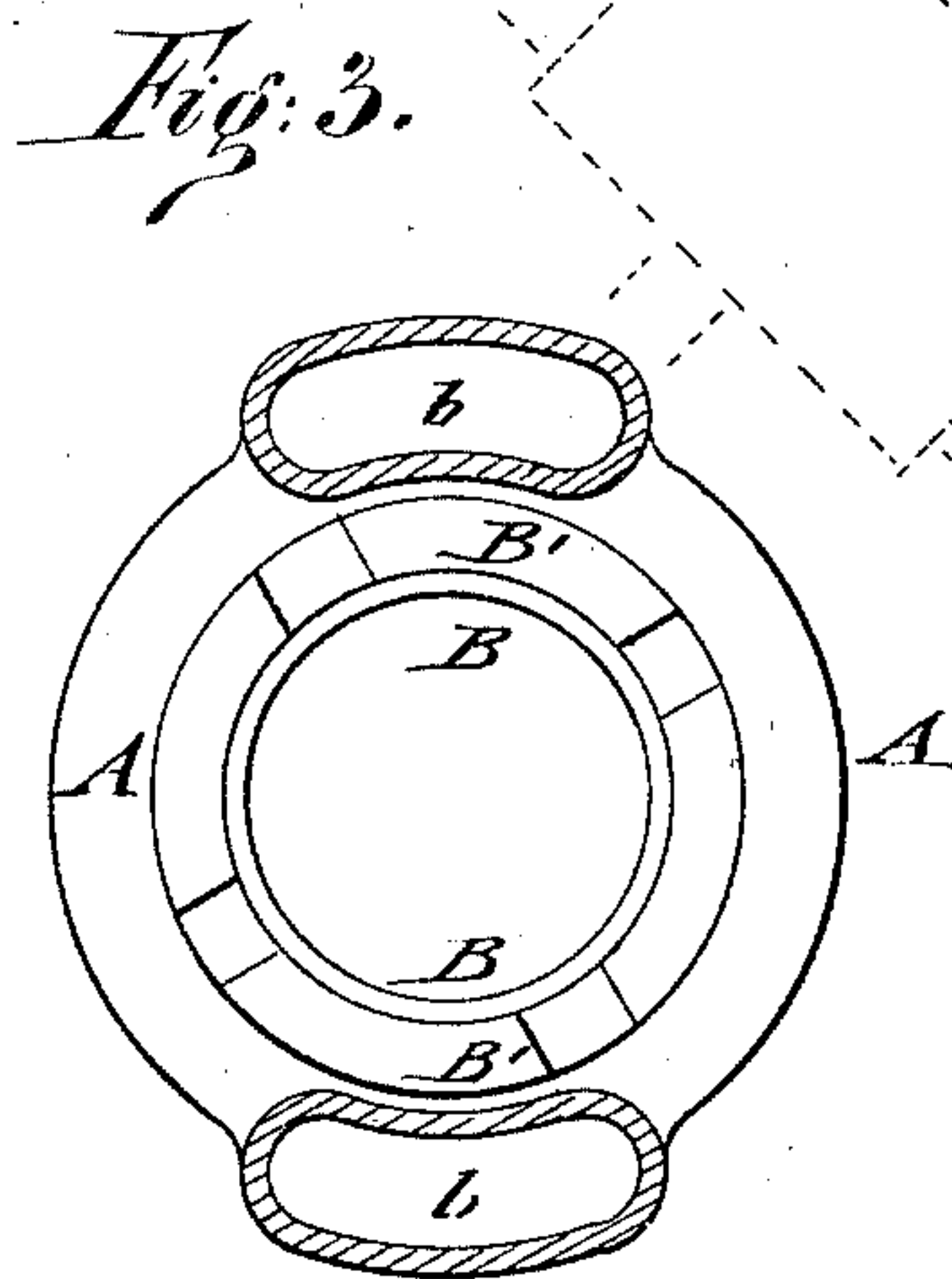
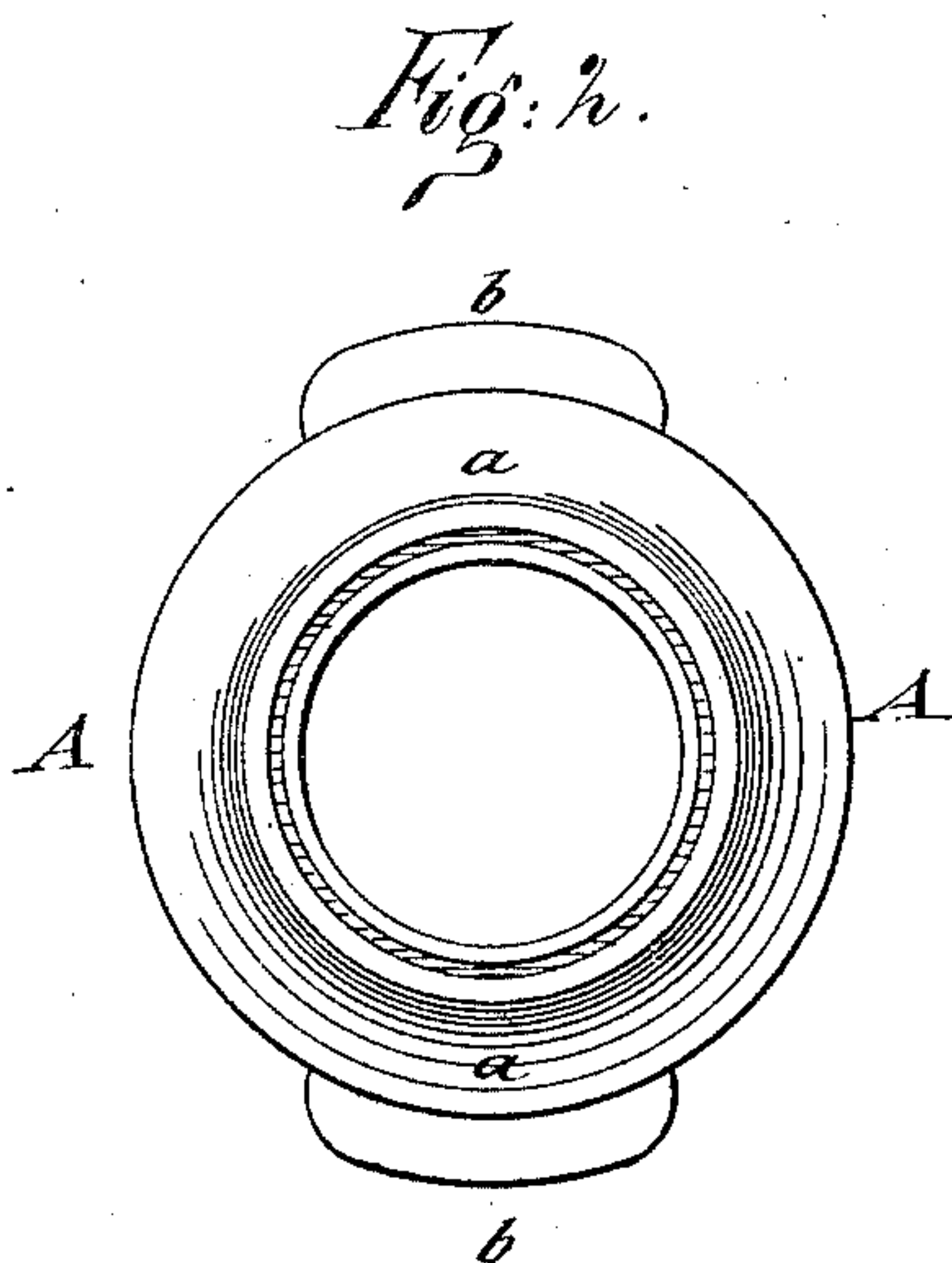
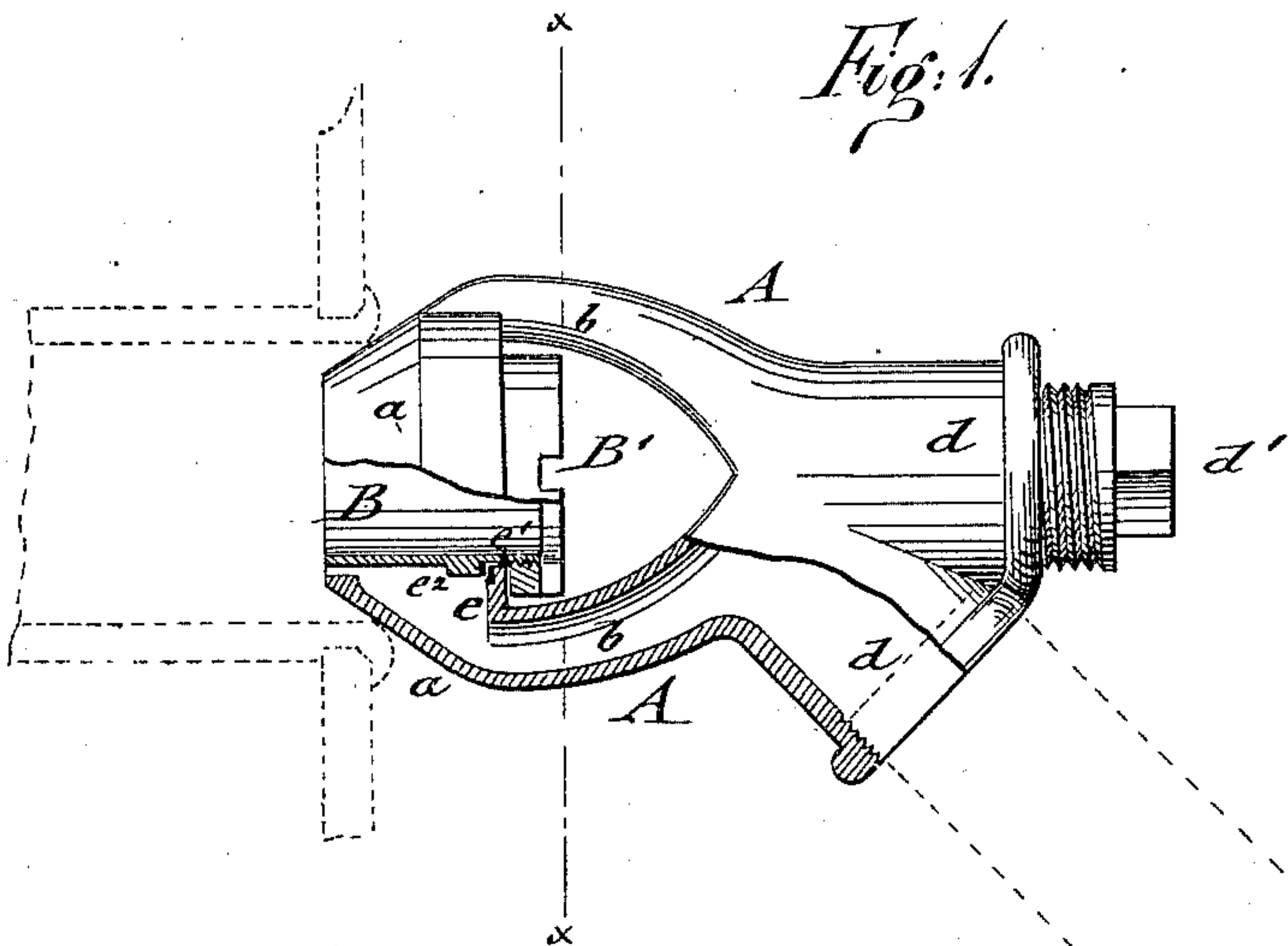


H. E. PARSON.
Boiler Flue Cleaner.

No. 232,294.

Patented Sept. 14, 1880.



WITNESSES:

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HENRY E. PARSON, OF NEW YORK, N. Y.

BOILER-FLUE CLEANER.

SPECIFICATION forming part of Letters Patent No. 232,294, dated September 14, 1880.

Application filed December 27, 1879.

To all whom it may concern:

Be it known that I, HENRY E. PARSON, of the city, county, and State of New York, have invented certain new and useful Improvements in Boiler-Tube Cleaners, of which the following is a specification.

In the accompanying drawings, Figure 1 represents a side elevation, partly in section, of my improved boiler-tube cleaner; and Figs. 2 and 3 are, respectively, an end view and a vertical transverse section of the same on line xx , Fig. 1.

Similar letters of reference indicate corresponding parts.

This invention relates to an improved device for cleaning the tubes and flues of steam-boilers from soot, ashes, and scales in a very reliable and quick manner by the joint action of steam and air; and the invention consists, essentially, of a conically-tapering nozzle with an annular steam-chamber and discharge-throat and of a central air-passage.

The steam is supplied to the annular steam-chamber by a forked pipe, forming two supply-channels. At the rear end of the pipe is a socket in line with the axis of the nozzle, and a second socket at an angle thereto, for screwing the steam-conducting pipe into either socket while closing the other by a plug. The central air-supply passage is formed by an interior cylindrical tube, which is tightly screwed down by a ring-shaped nut to a seat on an interior flange of the steam-chamber.

Referring to the drawings, A represents the main piece of my improved boiler-tube cleaner, which is made of one casting, having a conically-tapering nozzle, a , at the front end, two connecting pipes or channels, $b b$, at the middle part, and screw-sockets $d d$ at the rear end. The pipes $b b$ branch out from the rear part, and support the nozzle and ring-shaped flange e , which extends inwardly in a plane at right angles to the central axis of the cleaner.

A seat, e' , is ground into the front face of flange e , and a cylindrical tube, B, of somewhat smaller exterior diameter than the clear opening of the nozzle a , screwed by a ring-shaped nut, that engages the threaded rear end of the tube B, down on the seat of the flange until a collar, a^2 , of the tube forms a tight joint with the flange. The fastening-nut and seat pro-

duce at the same time the true centering of the tube B to the axis and opening of the nozzle.

The ring-shaped nut B' is provided with recesses at diametrically-opposite points, so that the nut may be tightened or loosened with great facility by inserting a lever handle or rod.

The interior tube, B, forms, with the conical nozzle a , an annular chamber, which diminishes gradually in width from the base toward the annular throat through which the steam issues. The inner face of the nozzle, a short distance from the edge, is preferably made of cylindrical shape, as shown in Fig. 1, so as to be parallel with the tube and form a short throat of cylindrical shape.

One of the screw-sockets $d d$ of the main piece A is arranged in line with the axis of the cleaner, while the other is placed at a suitable angle thereto. A steam-pipe, which forms the connection with a steam-hose from the boiler, is screwed into either one of the sockets d , as required, the other socket being closed by a screw-plug, d' . The connecting pipe-section is provided with handles, by which the cleaner is held in proper position for cleaning the tube.

The tube-cleaner is operated as follows: When boiler-tubes which are within easy reach are to be cleaned the connecting handle-pipe is screwed into that socket which is in line with the nozzle. The other socket is then plugged. In case tubes have to be cleaned which are out of reach the handle-pipe is screwed into the socket arranged at an angle of inclination to the axis, and the other socket plugged. This facilitates the convenient inserting and fitting of the nozzle into all the tubes of a boiler, whether within easy reach or not. By letting on the steam the same is thrown through the narrow throat of the cleaner into the boiler-tube. At the same time a cylindrical column of air is drawn in with the steam, which enters at a temperature of the outer air, but is gradually heated up to a higher temperature as it advances into the tube. The heat inside of the tube causes the expansion of the air, so that the same acts as an air piston or cushion for the enveloping steam and prevents not only the condensation of the same, but, on the contrary, causes the forcible impact of the same with the soot, ashes, scales, or other sediment deposited on the surface of the tube. The steam, instead

of spending its force at some distance from the mouth of the tube, and before it reaches the end of the tube, is propelled by the gradual expansion and increase of temperature of the air with increased instead of diminished force through the tube, so as to clean it most effectively throughout. This cleaning action is kept up throughout the entire length of the tube, and thereby the tube cleaned in a reliable manner from all the soots, ashes, and scales deposited therein.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A boiler-tube cleaner having an annular steam-chamber with issuing-throat and interior air-passage, the whole adapted to supply a compound column of steam and air to the boiler-tube, substantially as set forth.

2. A boiler-tube cleaner provided with an annular steam-chamber and issuing-throat and with an interior air-passage, the steam being supplied by independent branch pipes or channels to the steam-chamber to admit the passage of air to the central open portion of the cleaner, substantially as described.

3. In a boiler-tube cleaner, the main piece A,

composed of a conical nozzle, *a*, forked connecting pipes or channels *b b*, and sockets *d d*, all cast in one piece, substantially as specified.

4. The combination, with the main piece or casting A, having a tapering nozzle, *a*, of an interior tube, B, secured to the main piece and extended to be flush with the edge of the nozzle, so as to form a steam-chamber and issuing-throat therewith, substantially as described.

5. The combination of a main piece or casting, A, having an interior flange and seat, *e e'*, with an interior tube, B, having collar *e²*, and with a ring-shaped centering-nut, B', all as and for the purpose set forth.

6. In a boiler-tube cleaner, the main piece or casting A, having a rear socket in line with the axis of the same and a second socket at an angle thereto, essentially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 20th day of December, 1879.

HENRY E. PARSON.

Witnesses:

PAUL GOEPEL,
ADOLF DENGLE.