

R. W. HAMANN.
NOZZLE FOR BOILER TUBE CLEANERS.
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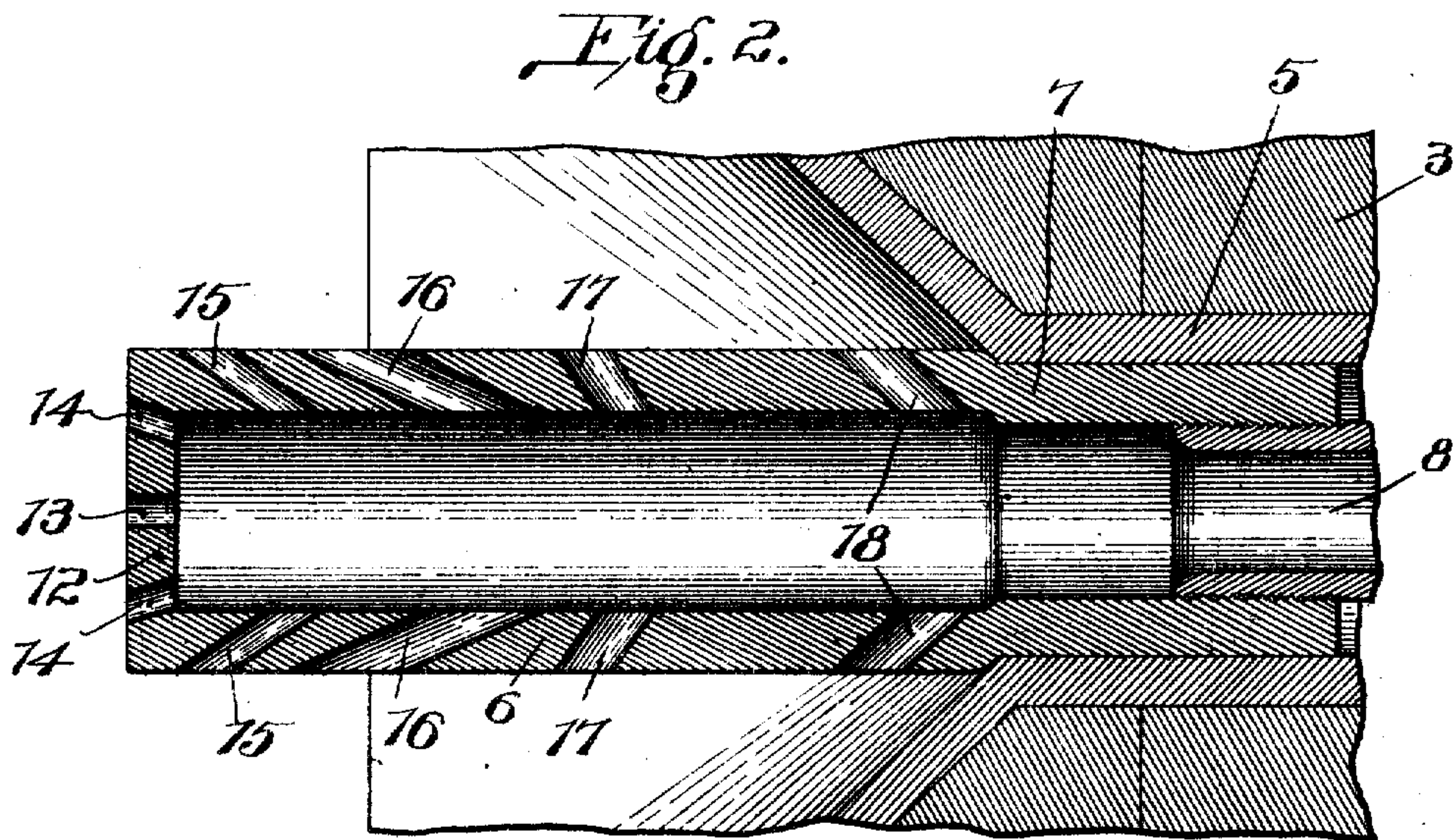
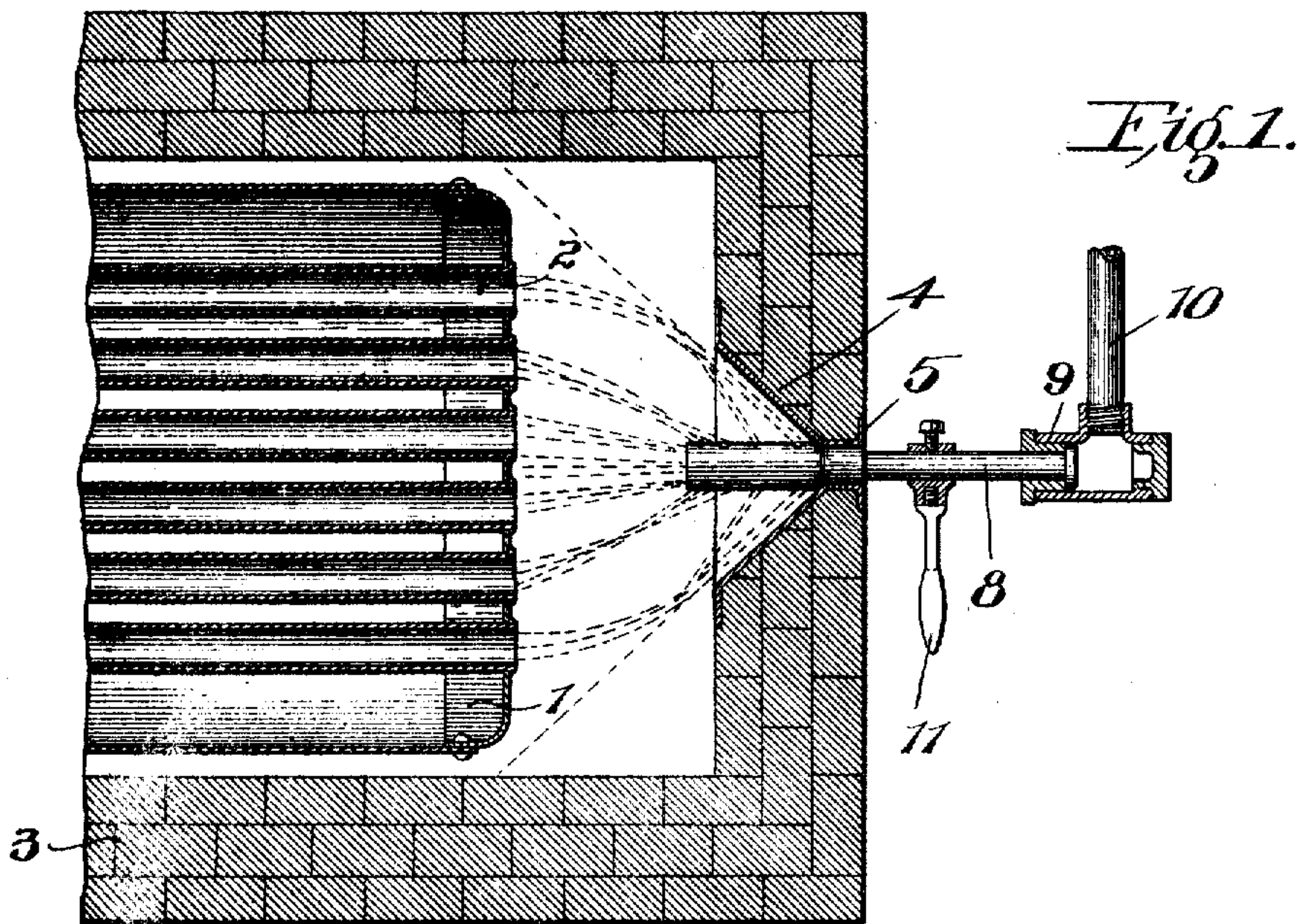
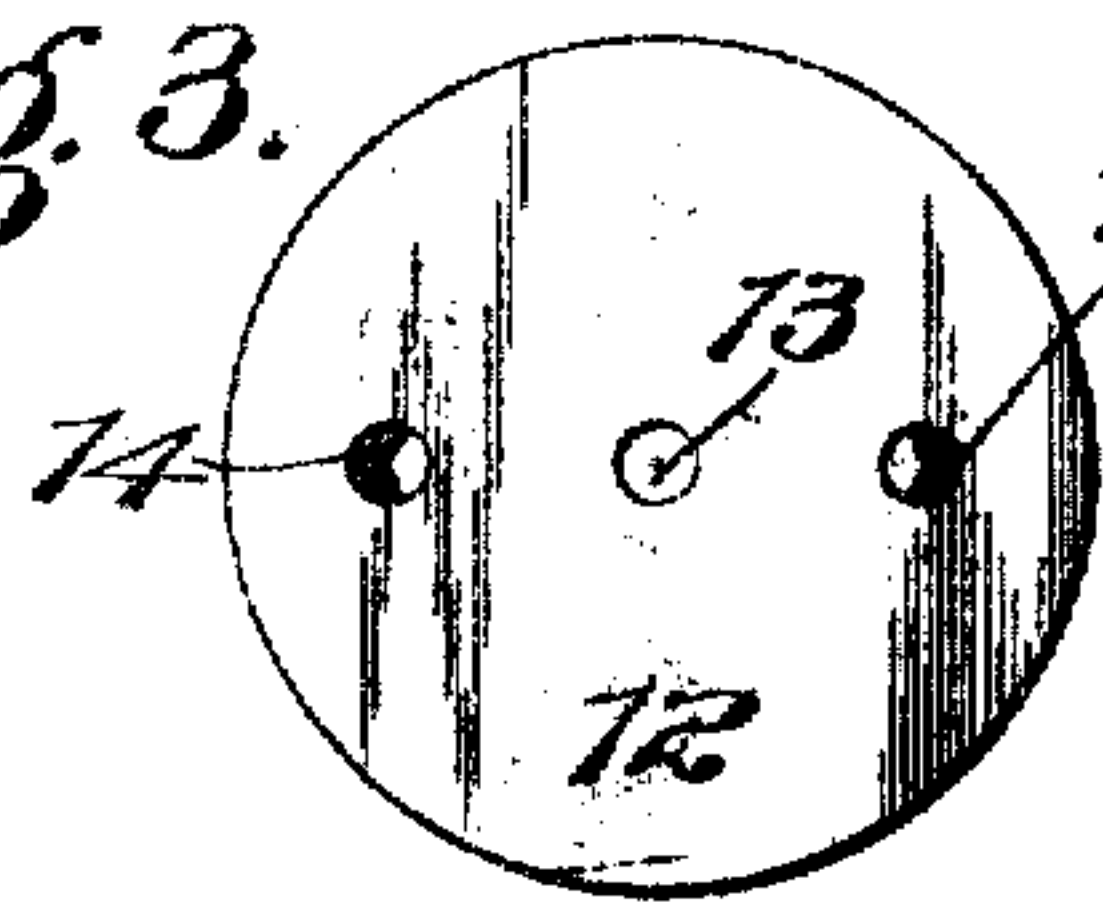


Fig. 3.



Attest.

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UNITED STATES PATENT OFFICE.

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NOZZLE FOR BOILER-TUBE CLEANERS.

No. 908,565.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RICHARD W. HAMANN, a citizen of the United States, and resident of St. Louis, Missouri, have invented certain new and useful Improvements in Nozzles for Boiler-Flue Cleaners, of which the following is a specification containing a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to a nozzle for boiler flue cleaners, and the object of my invention is to provide a simple and inexpensive nozzle for boiler flue cleaners, which is adapted for delivering jets of steam or compressed air into and through the boiler tubes or flues to remove the soot and like accumulation therefrom.

To the above purposes, my invention consists in certain novel features of construction and arrangement of parts, which will be hereinafter more fully set forth, pointed out in the claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a horizontal section taken through the rear portion of a boiler and boiler setting, and showing my improved nozzle in position in the rear wall of the boiler setting; Fig. 2 is a horizontal section taken through the center of the nozzle; Fig. 3 is an end elevation of the nozzle.

Referring by numerals to the accompanying drawings:—1 designates a boiler, provided with the usual tubes 2; and positioned in the usual boiler setting 3.

Arranged in the rear wall of the boiler setting, directly opposite the center of the boiler tube area, is a funnel shaped housing 4, the wide open end of which opens toward the rear end of the boiler; and formed integral with the outer or rear end of this housing 4 is a cylindrical bearing 5.

The main body of my improved nozzle comprises a tube or cylinder 6, with the rear end of which is formed integral a tubular extension 7, which fits snugly in the bearing 5; and screw seated in said extension 7 is the end of a horizontally disposed tube 8, the outer end of which is arranged for rotation in a slip joint 9 arranged on the end of a steam or compressed air supply pipe 10.

Fixed in any suitable manner on the tube 8 is an operating handle 11.

The forward end of the body 6 of the nozzle is closed by a disk or plate 12, and formed in the center thereof is a straight aperture 13. Formed on opposite sides of this centrally disposed aperture, and adjacent the edges of the plate or disk 12, is a pair of apertures 14, which are approximately the same diameter as is the aperture 13, and said apertures 14 being formed on slight angles relative the aperture 13, in order that the jets of steam or air issuing from said apertures 14 will diverge slightly from the jet issuing from the aperture 13.

Formed in the forward portion of the body of the nozzle 6, and in the same horizontal plane with the apertures 13 and 14, is a pair of apertures 15; and formed through the body of nozzle 6, immediately to the rear of these apertures 15, is a pair of apertures 16, slightly larger in diameter than are said apertures 15, and being formed on such angles relative the angles on which the apertures 15 are formed as that the jets of steam or air issuing from said apertures 16 will join the jets of steam or air issuing from the apertures 15, a short distance away from the nozzle.

Formed through opposite sides of the body 6 of the nozzle and in the same plane as the apertures hereinbefore described is a pair of apertures 17, approximately equal in diameter to the diameter of the apertures 16; and formed through the rear portion of the body 6 of the nozzle, and in the same plane with the plane occupied by the hereinbefore described apertures, is a pair of apertures 18, slightly larger in diameter than are the apertures 17; and being formed on such angles as that the jets of steam or air issuing from said apertures 18 will meet the jets of steam or air issuing from the apertures 17, a short distance away from the nozzle.

It will be noted that the apertures 18 are paired with the apertures 17, and the apertures 16 are paired with the apertures 15, to bring the corresponding jets of steam or air together a short distance away from the nozzle, and this same arrangement may be carried out indefinitely by lengthening the nozzle 6. And when steam or air is turned

on through the supply pipe 10, it is delivered to the nozzle 6 by means of the pipe 8, and will issue from the various apertures or jet holes; and owing to the angularity of said apertures, a diverging or fan-like series of jets of steam or air will issue from the nozzle; and which jets all occupy the same horizontal or vertical plane, depending on the position of the nozzle, which is rotated by means of the handle 11.

The jets of steam or air issuing from the apertures 16 and 18 are larger and, therefore, stronger than the jets issuing from the apertures 15 and 17; and, therefore, when the jets issuing from the apertures 15 and 17 join with the jets issuing from the apertures 16 and 18, the stronger pressure of the larger jets will deflect the smaller jets so that the same travel in approximate straight lines forward into the rear ends of the boiler tubes and blow therethrough, and thus remove the soot and like accumulation. This action is graphically disclosed by dotted lines in Fig. 1; and thus by the angular arrangement and relative sizes of the apertures forming the jet openings, I am enabled to deliver the approximate full pressure of the steam or air straight through the tubes; and, as a result, obtain a thorough cleaning action entirely through the tubes.

When the device is in use, the pipe 8 and nozzle 6 are rocked in both directions by manipulating the handle 11, and thus the jets of steam or air are delivered over the entire tube area of the boiler.

The nozzle can be made in different sizes to suit different conditions; and, in some instances, it may be found desirable to utilize a second set of apertures, or jet openings; and, when such arrangement is carried out, the two sets of apertures are preferably arranged at right angles to one another.

A device so constructed is very simple, inexpensive, easily applied for use, and is very efficient in blowing soot and like accumulation from the boiler tubes.

I claim:—

1. A nozzle for boiler flue cleaners, comprising a cylinder, in the side wall of which is formed a plurality of pairs of discharge apertures, and all of which apertures occupy a plane passing lengthwise through the center of the cylinder.

2. A nozzle for boiler flue cleaners, comprising a cylinder, in the wall of the body of which is formed a plurality of pairs of discharge apertures, all of which apertures occupy a plane passing lengthwise through the center of the cylinder, and one of the apertures of each pair being larger than the remaining aperture.

3. A nozzle for boiler flue cleaners, comprising a cylinder, closed at one end, there

being a transverse row of apertures formed through the closed end of the cylinder, and there being a plurality of apertures formed through opposite sides of the wall forming the body of the cylinder, which last mentioned apertures occupy the same plane with the apertures in the end of the nozzle.

4. A nozzle for boiler flue cleaners, comprising a cylinder, closed at one end, there being a transverse row of apertures formed through the closed end of the cylinder, there being a plurality of apertures formed through opposite sides of the wall forming the body of the cylinder, and which last mentioned apertures are arranged at angles relative the axis of the cylinder.

5. A nozzle for boiler flue cleaners, comprising a cylinder, closed at one end, there being a transverse row of apertures formed through the closed end of the cylinder, there being a plurality of apertures formed through opposite sides of the wall forming the body of the cylinder, which last mentioned apertures are arranged at angles relative the axis of the cylinder, and at different angles relative one another.

6. A nozzle for boiler flue cleaners, comprising a cylinder, closed at one end, there being a transverse row of apertures formed through the closed end of the cylinder, and there being a plurality of pairs of apertures formed through opposite sides of the wall forming the body of the nozzle.

7. A nozzle for boiler flue cleaners, comprising a cylinder, closed at one end, there being a transverse row of apertures formed through the closed end of the cylinder, there being a plurality of pairs of apertures formed through opposite sides of the wall forming the body of the nozzle, and one aperture of each pair being larger than the remaining aperture.

8. A nozzle for boiler flue cleaners, comprising a cylinder, closed at one end, there being a transverse row of apertures formed through the closed end of the cylinder, there being a plurality of pairs of apertures formed through opposite sides of the wall forming the body of the nozzle, one aperture of each pair being larger than the remaining aperture, and the apertures of each pair being formed on different angles.

9. A nozzle for boiler flue cleaners, comprising a cylinder, having one closed end, a supply pipe leading to the opposite end of the nozzle, means whereby the nozzle and supply pipe are rocked, there being a plurality of apertures formed through the closed end of the nozzle, there being a plurality of discharge apertures formed through opposite sides of the wall forming the body of the nozzle, and which last mentioned apertures occupy the same plane with the row of apertures in the end.

10. A nozzle for boiler flue cleaners, comprising a cylinder, having one closed end, a supply pipe leading to the opposite end of the nozzle, means whereby the nozzle and supply
5 pipe are rocked, there being a plurality of apertures formed through the closed end of the nozzle, there being a plurality of discharge apertures formed through opposite sides of the wall forming the body of the
10 nozzle, and which last mentioned apertures

are formed at angles relative to the axis of the nozzle.

In testimony whereof, I have signed my name to this specification, in presence of two subscribing witnesses.

RICHARD W. HAMANN.

Witnesses:

EUGENE J. FEINER,
M. P. SMITH.