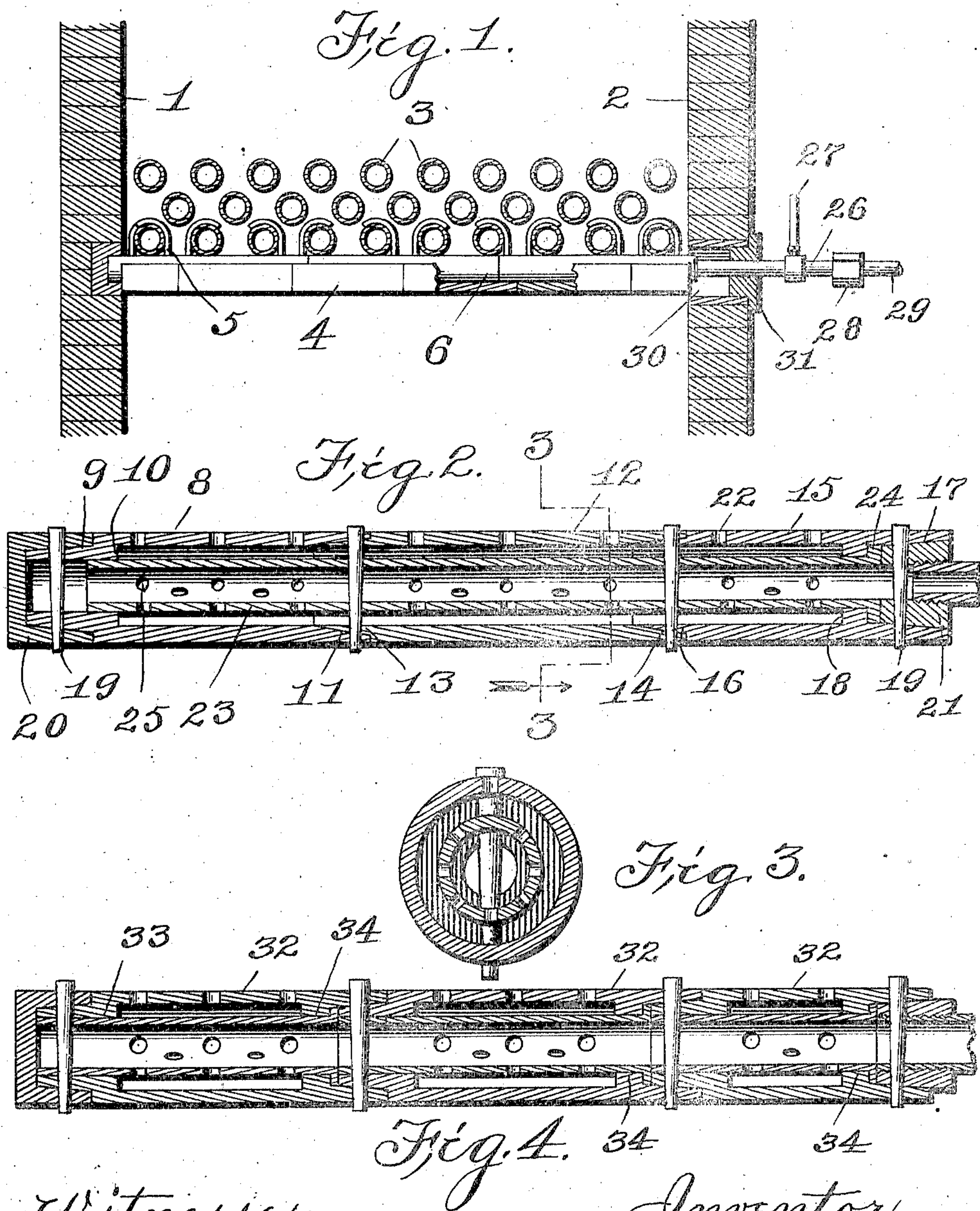


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BOILER TUBE CLEANER NOZZLE.  
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950,694

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Witnesses:  
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by Edwin J. Longan, Attys.



# UNITED STATES PATENT OFFICE.

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## BOILER-TUBE-CLEANER NOZZLE.

950,694.

Specification of Letters Patent.

Patented Mar. 1, 1910.

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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 Boiler-Tube-Cleaner Nozzles, 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.

This invention relates to boiler tube cleaners, and has for its object the provision of a nozzle which will eliminate the annoyance and danger incident to moisture collecting in devices of this class.

A further object of my invention is to provide a sectional nozzle which will make it possible and practical to apply such a device to either a single boiler or to a battery of boilers.

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

Figure 1 shows my improved nozzle in position in a boiler; Fig. 2 is a longitudinal sectional elevation of the nozzle; Fig. 3 is a transverse sectional elevation on the line 3—3 of Fig. 1; and Fig. 4 is a longitudinal sectional elevation showing a modified form of nozzle.

Referring by numerals to the accompanying drawings: 1 and 2 designate the side walls of a single boiler setting. 3 indicates a series of tubes positioned therein.

4 indicates a series of heat insulating blocks supported from the tubes 3 by the hangers 5. Supported within and partially embraced by the blocks 4, is a sectional nozzle 6. Inserted between the walls of the nozzle 6 is a perforated tube.

The nozzle 6 comprises a section 8 having a tapered flange 9, a shoulder 10 and an annularly beveled end 11. A section 12 comprising an annular flange extension 13 at its one end, and a face 14 corresponding to the faces 11 of section 8. A section 15 having at its one end a flange 16 identical with the flange 13 in section 12, and an annular flange 17 and shoulder 18. Pins 19 are arranged to be placed within openings formed in the flanges 9, 11, 13, 14, 16 and 17 to hold the sections against separation.

A cap 20 is placed over the flange 9 of the section 8, and secured thereto by one of the pins 19. A nipple 21 is arranged within the bevel face 17 of section 15 and is internally threaded and held within the section 15 by one of the pins 19. Each of the sections 8, 12 and 15 is provided with a series of apertures 22. A tube 23 is positioned within the sections 8, 12 and 15 and held and embraced at its one end by the shoulder 10 of section 8, and at its other end by the shoulder 18 of section 15, the tube 23 being provided at its one end with a flange collar 24, which flange collar is designed to prevent movement of the tube 23 longitudinally relative to the sections 8, 12 and 15. A series of apertures 25 is formed in the tube 23 out of alignment with the apertures 22. A section of tubing 26 is threaded within the nipple 21 and a lever 27 is fixed thereto. A coupling 28 is fixed to the free end of the tube 26 and is loosely fixed to a steam supply pipe 29. The wall 2 of the boiler setting is provided with an annular sleeve 30, and a cap 31 is arranged to embrace the tube 26 and close the opening formed by the sleeve 30.

The nozzle shown in Fig. 4 comprises a series of sections 32, interlocking in a manner similar to the form shown in Fig. 3, each of which sections is provided with an annular bearing 33 at its one end portion and an annular bearing 34 at its other end portion. The inner tube in this form is shown in sections, each of which sections is designed to fit within one of the sections 32 and supported in the bearings 33 and 34.

In the practical operation of this device, it is to be understood that this nozzle is arranged for permanent fixture within a boiler setting and designed to dislodge and remove soot, ashes and other sediment from boiler tubes, it being understood further, that the heat insulating blocks are necessary to protect the nozzle against the heat within the boiler.

The lever 27 is arranged for a rotary movement of the tubes, which provide a means for covering a greater area within the boiler by the steam issuing from the apertures 22.

It will be obvious that moisture contained within the steam supply pipe 29, connecting pipe 26 and the tube 23, will, when live, dry steam is applied, be driven into the space be-



tween the sections 8, 12, and 15 and the tube 23, whereby the action of the heat from the furnace will evaporate or convert such moisture into steam and discharge nothing but  
 5 live, dry steam through the apertures 22 in the boiler.

I claim:

1. A nozzle for boiler tube cleaners, comprising an inner and outer casing spaced  
 10 apart so as to form a chamber between them, both of said casings being provided with a series of openings throughout their length and means to prevent movement of the casings relative to each other.

15 2. A nozzle for boiler tube cleaners, comprising an inner and outer casing spaced apart so as to form a chamber between the inner wall of the outer casing and the outer wall of the inner casing, both of said casings  
 20 being provided with a series of openings throughout their length and means to prevent movement of the casings relative to each other.

3. A nozzle for boiler tube cleaners, comprising a sectional outer casing and a sectional inner casing, said casings being spaced  
 25 apart so as to form a chamber between them, means for locking the sections against movement relative to each other and apertures formed in each of the sections throughout  
 30 their length.

4. A nozzle of the class described, comprising an outer casing provided with a series of openings, an inner casing provided  
 35 with a series of openings disposed in said outer casing, there being a continuous chamber between the exterior surface of said inner casing and the inner surface of the outer casing and means to prevent movement of  
 40 the casings relative to each other.

5. A nozzle of the class described, comprising an outer casing provided with a series of openings, an inner casing provided with a series of openings of less size than  
 45 the openings formed in the outer casing, disposed in said outer casing, there being a continuous chamber between the exterior surface of said inner casing and the inner surface of the outer casing and means to prevent  
 50 rotary movement of the casings relative to each other.

6. A nozzle for boiler tube cleaners, comprising an outer tube having a series of apertures formed therein in longitudinal  
 55 alinement, a tube within the outer tube having a plurality of openings formed therein,

none of which openings aline with the apertures in the outer tubing, means for closing the one end of the outer tubing, means for connecting a steam supply pipe with the opposite end of the inner tubing means for locking the tubes against movement relative to each other and means for rocking the tubes.

7. A nozzle for boiler tube cleaners, comprising an outer tubing composed of sections, means for locking said sections together, a series of apertures formed therein in longitudinal alinement, a tube within the outer tube having a plurality of openings formed therein, none of which openings  
 70 aline with the apertures in the outer tubing, means for closing the one end of the outer tubing means for connecting a steam supply pipe with the opposite end of the inner tubing means for locking the tubes against  
 75 rotary movement relative to each other and means for rocking the tubes in unison.

8. In a nozzle for boiler tube cleaners, an outer tube composed of sections, tapering joints at each end portion of each section  
 80 and pins for locking said sections together, a series of apertures formed therein in longitudinal alinement, a tube within the outer tube having a plurality of openings formed therein, none of which openings aline with  
 85 the apertures in the outer tubing, means for closing the one end of the outer tubing and means for connecting a steam supply pipe with the opposite end of the inner tubing.

9. In a nozzle for boiler tube cleaners, an outer tube composed of sections having pins  
 90 for locking the sections together, a cap for closing the one end of the nozzle, a means for connecting a steam supply pipe with the other end of the nozzle, apertures formed  
 95 in the various sections in longitudinal alinement, a tube placed within each section of the outer tube, a plurality of apertures formed therein, none of which will aline with the apertures in the outer tubing, heat  
 100 insulating blocks arranged to partially embrace the nozzle, means for supporting the blocks within the boiler setting and means for rotating the nozzle within the heat insulating blocks.

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

RICHARD W. HAMANN.

Witnesses:

E. E. LONGAN,  
 E. L. WALLACE.