

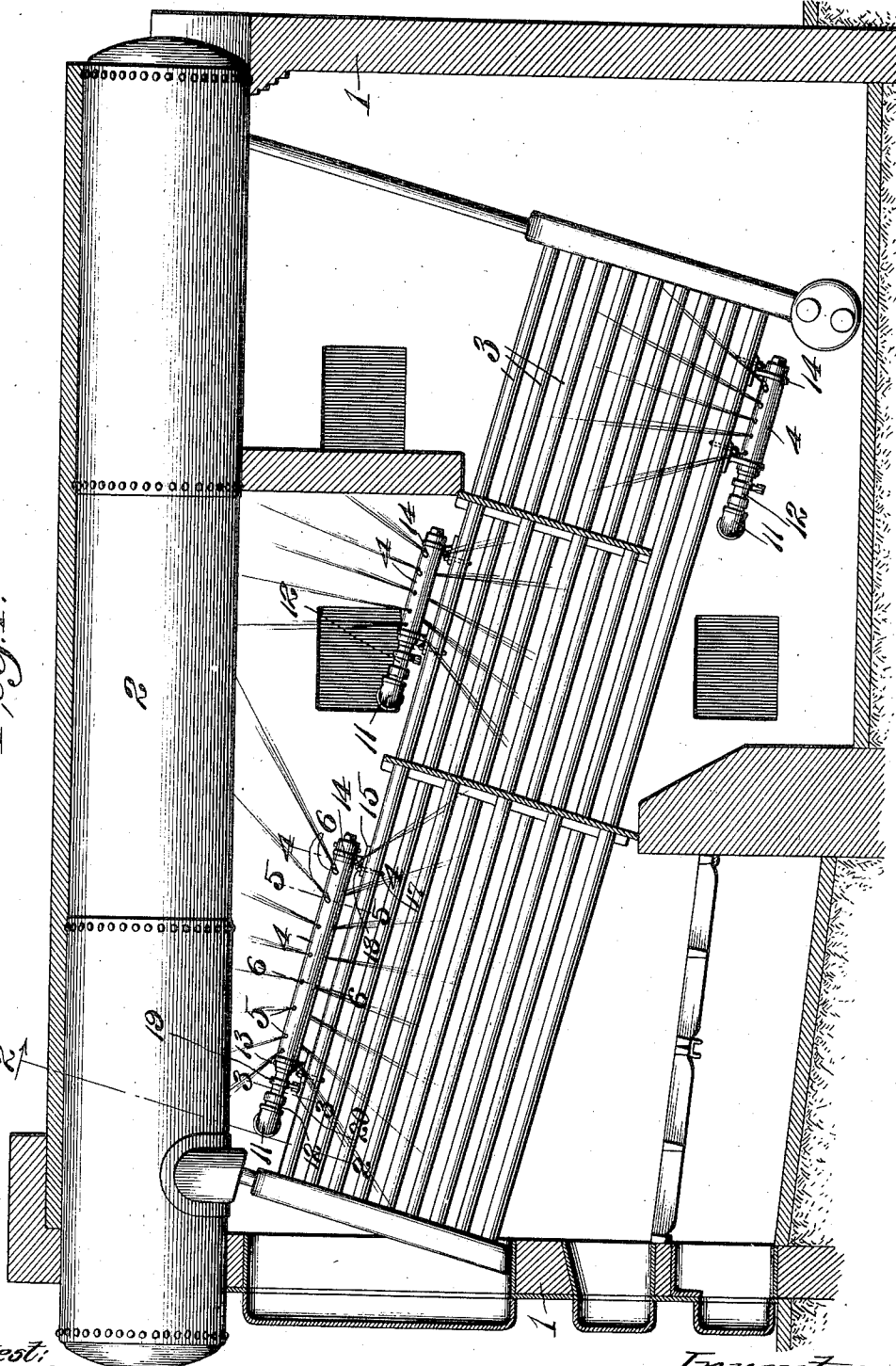
1,037,245.

R. W. HAMANN.
BOILER TUBE CLEANER.
APPLICATION FILED FEB. 13, 1911.

Patented Sept. 3, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



Attest:
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E. L. Wallace.

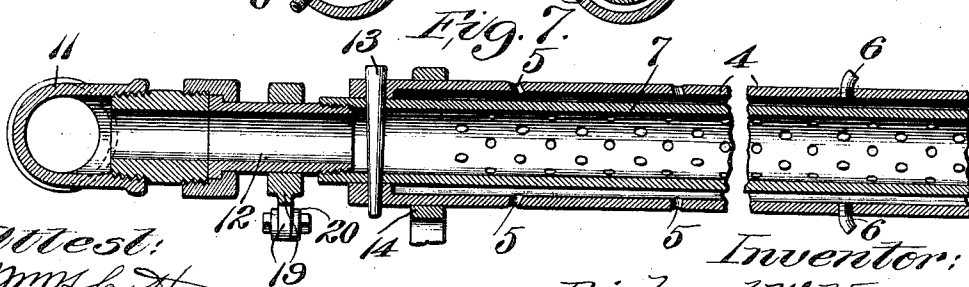
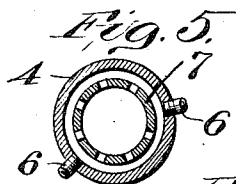
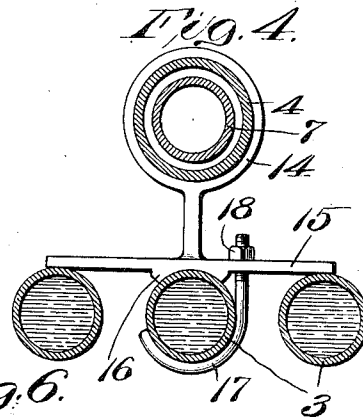
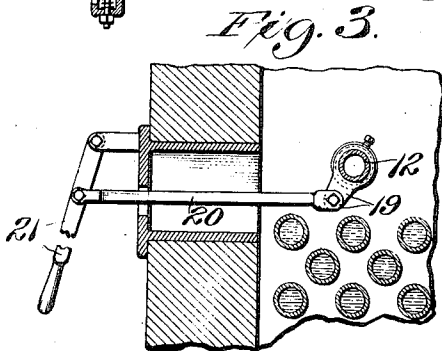
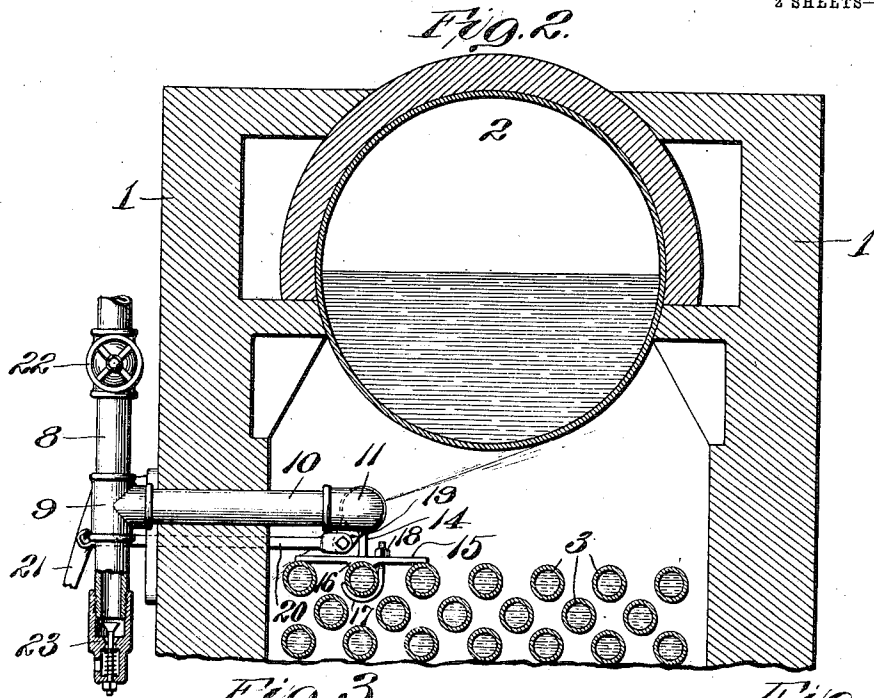
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

RICHARD W. HAMANN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO EUGENE J. FEINER, OF ST. LOUIS, MISSOURI.

BOILER-TUBE CLEANER.

1,037,245.

Specification of Letters Patent.

Patented Sept. 3, 1912.

Application filed February 13, 1911. Serial No. 608,305.

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 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 improvements in boiler tube cleaners and has for its object the construction of a cleaning device which may be readily applied to the tubes in such manner as to adapt a rocking nozzle to be employed in connection with the tubes regardless of their inclines.

Heretofore nozzles arranged to clean the exterior of water tubes have been mounted in the walls of the setting and generally extend transversely of the tubes. In my improved construction the nozzle is mounted upon the tubes and parallel therewith so that the nozzle is in operative position no matter what incline the tubes may be.

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

Figure 1 is a longitudinal, sectional elevation of a furnace of the Babcock and Wilcox type and shows a plurality of cleaning nozzles applied to the tubes of the boiler; Fig. 2 is an enlarged, transverse, sectional elevation illustrating one of my improved cleaners in position on the tubes, the connections with a source of fluid under pressure, a portion of the means for rocking the nozzle and certain of the parts of the connection being broken away to illustrate an automatic air inlet valve, the view being taken approximately on the line 2—2 of Fig. 1; Fig. 3 is a fragmental, sectional elevation illustrating the means whereby the nozzle may be rocked, and is taken approximately on the line 3—3 of Fig. 1; Fig. 4 is an enlarged, transverse, sectional elevation illustrating one of the supports for a cleaning nozzle taken on the line 4—4 of Fig. 1; Fig. 5 is a transverse, sectional elevation through one of the cleaning nozzles and illustrates a pair of elbows whereby the incline of direction of flow of a cleaning fluid may be varied,

and is taken on the line 5—5 of Fig. 1; Fig. 6 is a view, similar to Fig. 5, illustrating a pair of jet openings and their relations to openings in an inner supply tube and is taken on the line 6—6 of Fig. 1; and Fig. 7 is a longitudinal, sectional elevation illustrating in detail the construction of one of the nozzles and its connection with a fluid pressure supply.

Referring by numerals to the accompanying drawings: 1 designates the furnace setting, 2 the boiler and 3 the water tubes, all of which are of ordinary construction, the construction illustrated being that of a type known as a Babcock and Wilcox boiler furnace.

4 designates the nozzle proper which is provided with one or more rows of jet openings 5, some of which are provided with L-couplings 6 so that the direction of flow of a fluid under pressure, discharged from the nozzle, may be changed, as will be more fully set forth hereinafter.

7 designates an inner, perforated tube embraced by the nozzle 4, the perforations of the inner tube being arranged out of registration with any of the openings 5 in the nozzle proper.

8 designates a supply pipe for a fluid under pressure. 9 designates a T-coupling arranged on the pipe 8 and connected with a pipe 10 extending through the wall of the setting for connection with the inner perforated tube 7 through an elbow 11 and a connection 12 between the elbow 11 and inner tube 7 of the nozzle, the connection 12 being secured for rotation with the nozzle and arranged to be rotated relative the elbow 11.

13 designates a pin for connecting the nozzle proper with the inner tube 7 so that the nozzle and tube 7 are held in fixed relations with each other, as required to keep their perforations out of registration at all times.

14 designate bearings which embrace the nozzles and in which bearings the nozzles may be rotated. Each of the bearings is provided with a base 15, a saddle 16, arranged to partially embrace one of the water tubes, and the base being of sufficient length to extend to adjacent water tubes as required to prevent its rotation around the tubes supporting the saddle, and for securing the base in place, I have provided a hook 17 which embraces the tube opposite

said saddle and is secured to the base 15 by means of a nut 18.

Secured to the connection 12 is a lever 19, which is connected by the pitman 20, and a hand lever 21 located outside the furnace setting. By a manipulation of the lever 21 the nozzle may be rocked or partially rotated so that the position of the discharging jets is changed as required to remove soot from the exposed portion of the boiler shell and all of the water tubes. The supply pipe 8 is provided with a valve 22, whereby the fluid under pressure may be cut off or supplied to the nozzle as required. The end of the T-coupling 9, opposed to the end connected with the pipe 8 is provided with an automatic air inlet valve 23 arranged to be cut off when the valve 22 is open and automatically open itself to admit air to the nozzle when the valve 22 is closed. In other words, for the reason that the nozzle is located in the heat of the furnace, it will be necessary to permit atmospheric air to circulate through the nozzle when not in use, hence the provision of the automatic air inlet valve 23.

While I have shown and described a double-tubed nozzle, I do not wish to be understood as limiting myself to this construction as it is obvious that any nozzle may be employed with practically the same results:

One of the distinctive features of my invention is the novel means of supporting the tube cleaning nozzle upon and lengthwise of the tube, thereby adapting the same nozzle to be employed on tubes arranged at various angles, for it is well known that, in water tube boilers, the tubes are arranged according to their settings.

I claim:

1. In combination with a water tube of a boiler, a cleaning nozzle disposed lengthwise of said tube, and means for securing the nozzle to and parallel with the tube.

2. In combination with a water tube of a boiler, a cleaning nozzle disposed lengthwise of said tube, detachable means for se-

curing the nozzle to the tube, and means for rocking the nozzle.

3. In a tube cleaner of the class described, the combination with a rotatable nozzle connected with a source of fluid under pressure, of bearings for the nozzle, and detachable means for securing the bearings to the tubes of the boiler so that the nozzle will be substantially parallel with the tubes.

4. In a device of the class described, the combination with a nozzle, a supply pipe for a fluid under pressure and a swivel connection between the nozzle and said pipe, of bearings arranged to be detachably secured to one of the water tubes of a boiler to support said nozzle parallel with said tube, and means for rotating the nozzle in said bearings.

5. In a device of the class described, the combination with a nozzle, a supply pipe for a fluid under pressure and a swivel connection between the nozzle and said pipe, of bearings arranged to be detachably secured to one of the water tubes of a boiler to support said nozzle parallel with said tube, means for rotating the nozzle in said bearings, and means for admitting air to the nozzle at times when said fluid under pressure is cut off.

6. In a boiler tube cleaner of the class described, the combination with a rotatable nozzle connected with a source of fluid under pressure and means for rotating the nozzle, a number of bearings for supporting the nozzle, integral bases for the bearings arranged to rest on two or more of the boiler tubes, and means, carried by each of said bases, whereby the bases may be detachably secured to one of the boiler tubes, substantially as shown and for the purposes stated.

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

RICHARD W. HAMANN.

Witnesses:

E. L. WALLACE,
N. G. BUTLER.