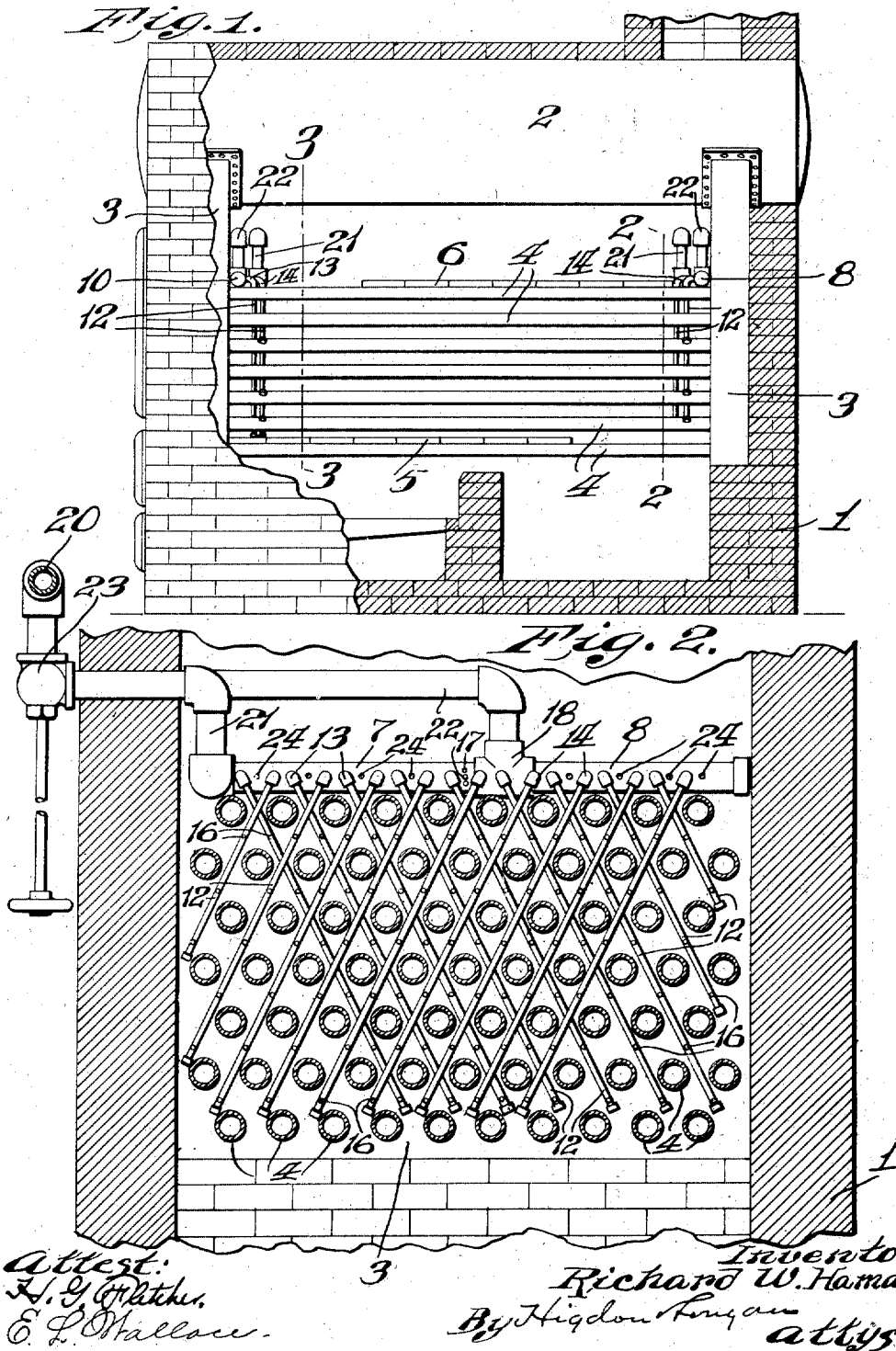


R. W. HAMANN.
BOILER AND TUBE CLEANER.
APPLICATION FILED SEPT. 23, 1910.

995,534.

Patented June 20, 1911.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

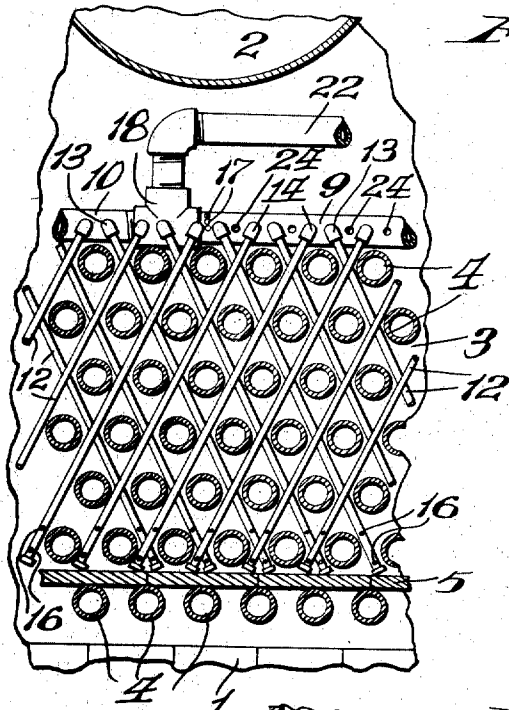


Fig. 3.

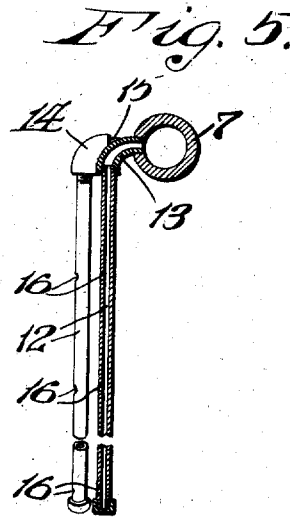


Fig. 5.

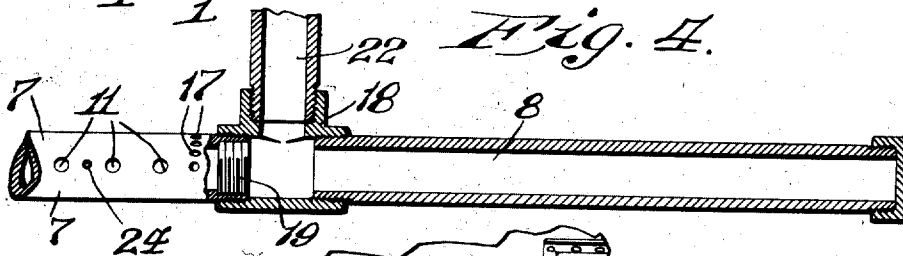


Fig. 4.

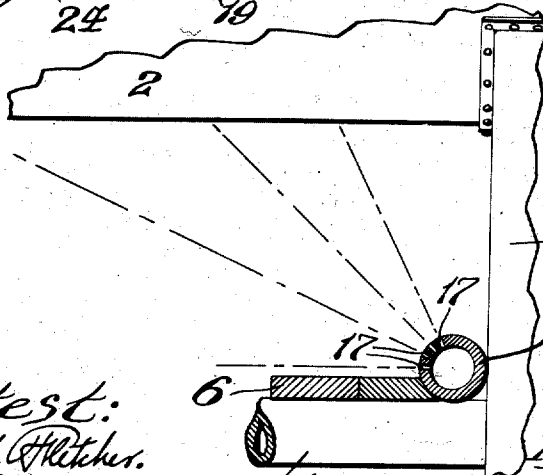


Fig. 6.

attest:

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UNITED STATES PATENT OFFICE.

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BOILER AND TUBE CLEANER.

995,534.

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Application filed September 23, 1910. Serial No. 583,335.

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 and 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 and tube cleaners, the object of my invention being to construct a cleaner for boilers and boiler tubes which is permanently fitted in the boiler setting and the operation of which requires only the supplying thereto of a fluid under pressure.

A further object of my invention is to construct a cleaner of the class described which will simultaneously discharge a fluid under pressure against a number of the tubes which are placed in such positions relative each other as to prohibit the use of vertical cleaning tubes.

For the above purposes 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 an elevation of a boiler setting equipped with my improved boiler tube cleaners; Fig. 2 is an enlarged, transverse, sectional elevation taken on the line 2—2 of Fig. 1; Fig. 3 is an enlarged, detail, sectional elevation of a portion of the setting, a portion of the boiler and a number of the tubes showing the arrangement of my improved cleaners and which is taken on the line 3—3 of Fig. 1; Fig. 4 is an enlarged, detail view illustrating a coupling between two header or manifold sections; Fig. 5 is a view illustrating the arrangement of the cleaner tubes relative the header; and Fig. 6 is a detail view illustrating the arrangement of the perforations in the header for discharging a fluid against the boiler.

Referring by numerals to the accompanying drawings: 1 designates the boiler setting, 2 the boiler, 3—3 water legs and 4 the boiler tubes, all of which are or may be of ordinary construction.

5 designates the usual tiling arranged over the lowermost row of tubes 4, and 6

designates the tiling arranged over the uppermost row of the tubes.

7 and 8 designate the forward headers and 9 and 10 designate the rearmost headers. These headers are each provided with a number of tapped openings 11 arranged to support, in communication with the headers, the cleaner pipes 12. As shown, the first of the series of the pipes 12 is connected with the header by a reducing coupling 13, the second pipe 12 being connected with the header by an L-coupling 14 and a nipple 15. By this arrangement the pipes may be held in different planes relative the header as required to cross them as shown.

At intervals throughout the lengths of the pipes 12 are arranged the jet openings 16, the openings being spaced so that when placed in position the jet openings will be between the boiler tubes. By placing a series of pipes 12, provided with such openings, all surfaces of all the boiler tubes will be simultaneously cleaned, the cleaning being in the direction of the natural draft of the furnace.

Where there is a multiple header employed, as illustrated, one of the rearmost headers is provided with a series of openings 17 arranged, as shown in Fig. 6 to discharge a fluid under pressure against the boiler proper and also to cleanse the upper surface of the tiling 6 on top of the tubes.

At the forward end of the furnace the cleaning apparatus shown is for the purpose of cleaning that portion of the boiler not reached by the rearmost header and for the purpose of cleaning the tiling 5, the cleaning pipes, suspended from the forward headers, being provided with jet openings only at their lower ends adjacent the tiling 5.

When two or more headers are employed they are connected by a T-coupling 18, the one header section being internally threaded and a plug 19 seated therein. The header to one side, of said coupling is connected with a supply pipe 20, leading from a source of steam or other fluid under pressure, by the pipe 21 and the header to the other side of said T-coupling being connected with the supply pipe by a pipe 22, each of which pipes is provided with valves such as 23 for admitting steam from the pipe 20.

In addition to the openings 17 in the headers there are openings 24 which discharge in

line with the tiling 6. These openings are at intervals throughout the entire lengths of the headers.

It is obvious that when a boiler setting is equipped with the cleaners as shown all points within the setting, including the boiler or drum and the boiler tubes, may be thoroughly cleansed and, as previously described, this cleansing is accomplished without the employment of movable parts.

By reason of the construction employing independently connected header sections different parts of the setting may be independently cleaned, also, by reason of the independent header sections, the headers may be constructed of a size convenient to handle in assembling and setting up.

By reason of the force of fluid under pressure all parts of the setting may be thoroughly cleansed without scrapers or other extraneous implements.

By so dividing the cleaner pipes the combined areas of their jet openings, that is the jet openings connected with a single header section, will not be in excess of the capacity of the supply pipe.

While I have shown only two header sections, each of which has an independent connection with the steam pipe 20, it is obvious that when it is desired to equip a furnace of greater width it will be only necessary to add another header and its connection with the steam supply pipe.

I claim:

1. In a device of the class described, a sectional header, a connection between each section of said header and a supply of fluid under pressure, a number of pipes connected with each section of said header, which pipes are arranged between diagonal rows of the boiler tubes, there being jet openings in said pipes.

2. In a device of the class described, a header, a connection between said header and a supply of fluid under pressure, pipes connected with said header, which pipes are arranged between the boiler tubes, a number of said pipes crossing other pipes so as to reach all of the tubes, there being jet openings in each of said pipes.

3. In a device of the class described, a

header, a connection between said header and a source of fluid supply under pressure, pipes connected with said header and arranged between the boiler pipes, a number of the pipes crossing other pipes so as to reach all of said tubes, there being jet openings in said pipes at intervals and jet openings in the header arranged to discharge onto the boiler and parts of the setting.

4. In a device of the class described, a header comprising a number of non-communicating sections, means for independently connecting the different sections with a source of fluid supply under pressure, pipes connected with the different sections of the header and arranged between the tubes of the boiler, there being jet openings in said pipes arranged to discharge in a direction approximately parallel with the boiler tubes.

5. In a device of the class described, a header, a connection between the header and a source of fluid supply under pressure, a number of pipes connected with said header, which pipes are extended between diagonal rows of boiler tubes, a number of which pipes are crossed as required to reach all of the tubes, and connections between said pipes and the header for holding said pipes in different planes laterally removed from the header, there being openings in said pipes at intervals.

6. In combination with a boiler, boiler tubes and their setting, of headers arranged at either end of the boiler setting independent connections with each header and a source of fluid supply under pressure, pipes connected with said headers and arranged between the boiler tubes, there being jet openings in said pipes arranged to discharge in a direction approximately parallel with the boiler tubes, and there being jet openings in said headers, 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. E. LONGAN,
E. L. WALLACE.