

J. MOORE.
BOILER FLUE CLEANER SYSTEM.
APPLICATION FILED JAN. 26, 1912.

1,041,141.

Patented Oct. 15, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

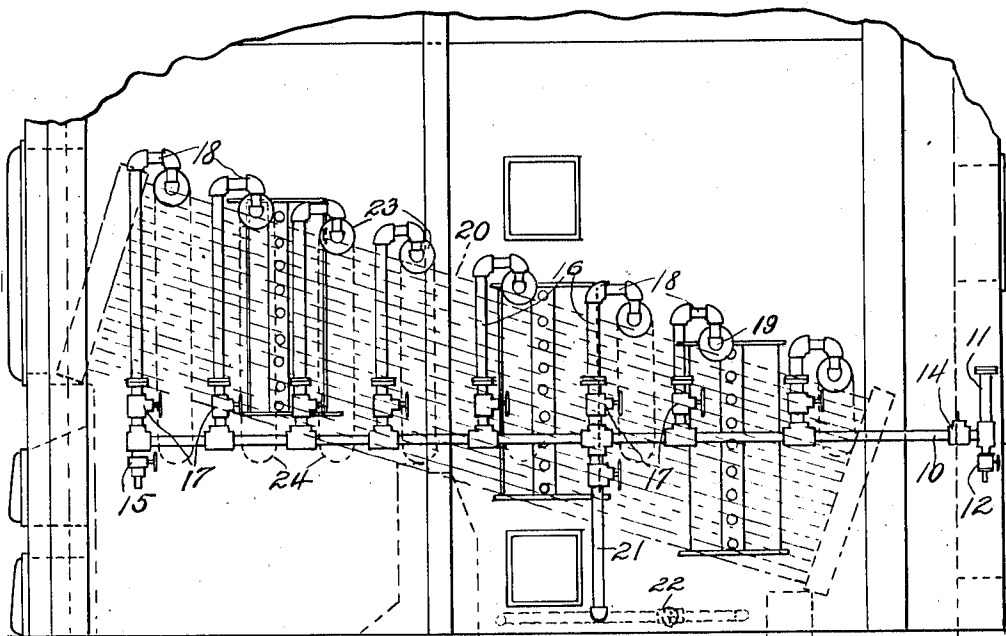
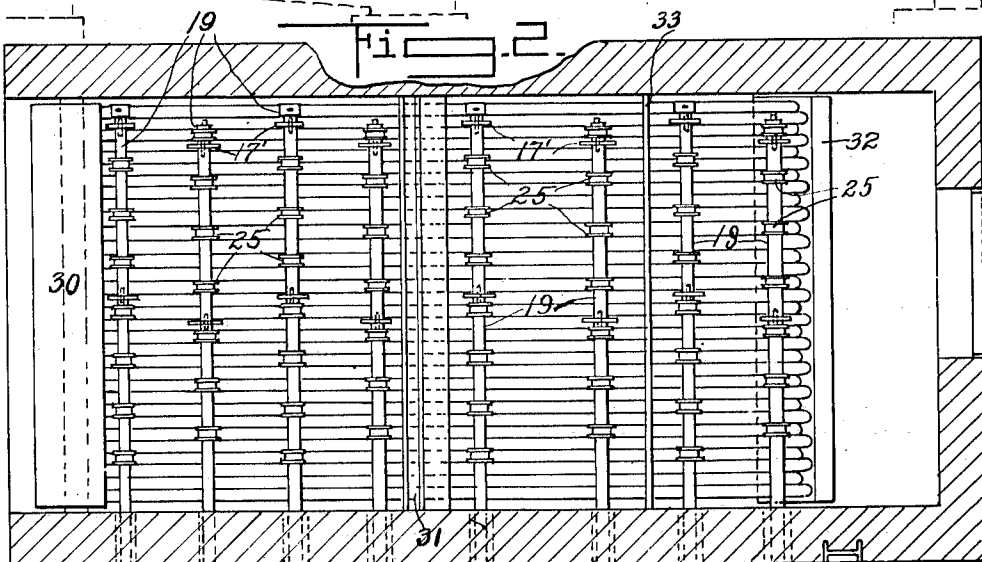


Fig. 2.



WITNESSES

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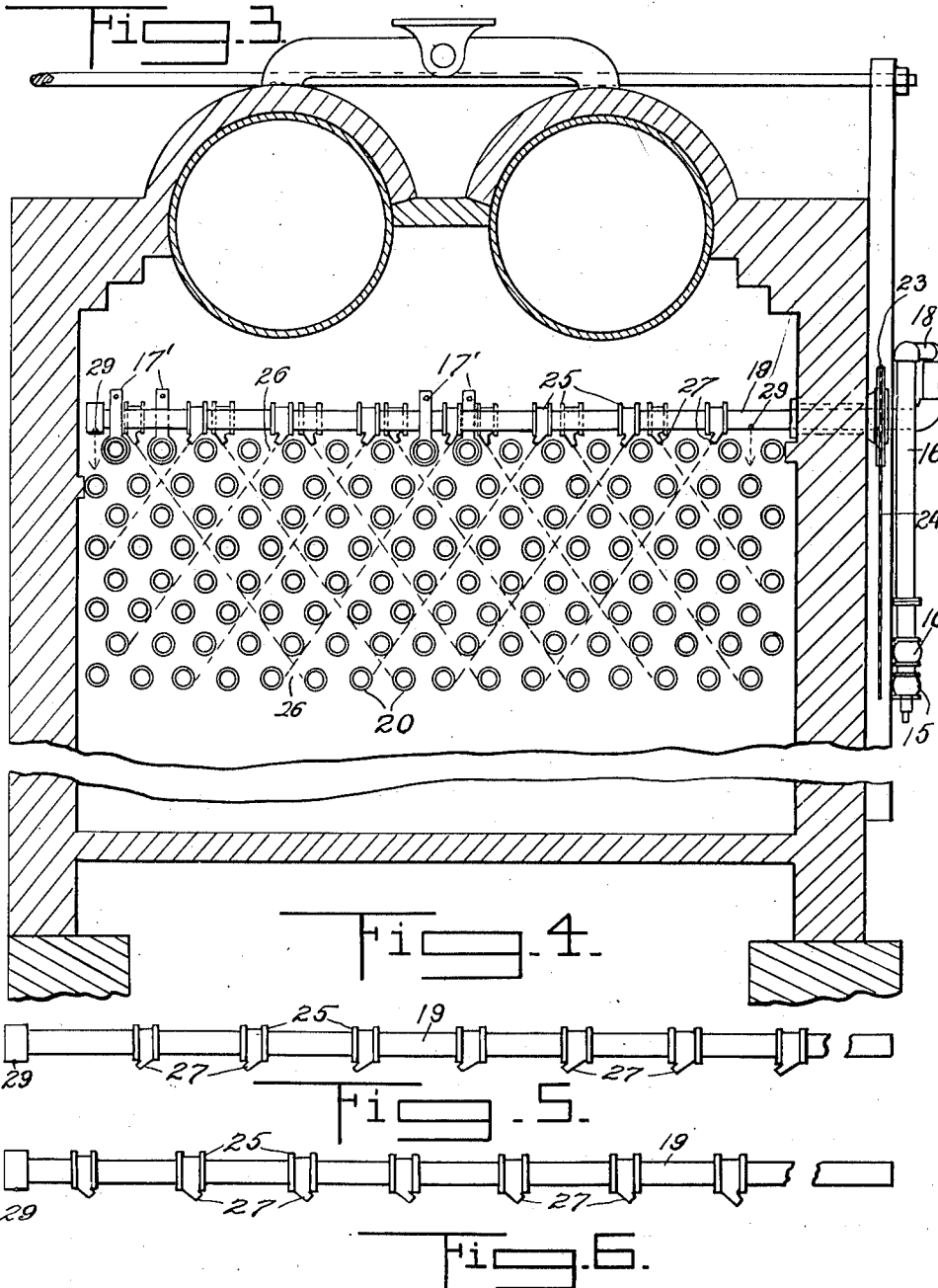
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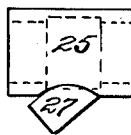
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2 SHEETS-SHEET 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

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BOILER-FLUE-CLEANER SYSTEM.

1,041,141.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed January 26, 1912. Serial No. 673,643.

To all whom it may concern:

Be it known that I, JAMES MOORE, a citizen of the United States, and residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Boiler-Flue-Cleaner Systems, of which the following is a specification.

This invention relates to certain new and useful improvements in boiler flue cleaner systems, and relates more particularly to that type of flue cleaners in which a fluid, as steam, is employed as a cleaning agent for removing soot from the flues and preventing an accumulation of soot on the flues.

The present invention is an improvement upon flue cleaners of the type shown, described, and claimed in Letters Patent # 705,912, granted July 29, 1902, to William Eichelberger for soot cleaners for boilers; Letters Patent #801,858, Oct. 17, 1905, soot cleaners for boilers, to the same party, and Letters Patent #984,919, Feb. 21, 1911, boiler flue cleaner systems, granted to De Los E. Hibner.

The present invention relates to improvements in the general type of flue cleaner disclosed in the above noted patents, and has for its main object to provide a flue cleaner of this type in which the distributing pipes for the cleaning agent are rotatably mounted, and which are provided each with a plurality of nozzles having outlet nipples that are projected on a line so as to discharge the cleaning agent at an oblique angle to the axis of the tube, and which outlet nozzles are so disposed with relation to the rows of tubes comprising a battery of tubes or boiler, that as the distributing pipe is revolved, the angle of projection is altered whereby the entire surface of the tubes is effectually cleaned by the steam or other fluid cleaning agent.

It is also an object of the present invention to provide novel, simple, and effective means for rotating the distributing pipes and to permit such operation of the distributing pipes being readily accomplished at a point some distance from the pipe or pipes, that is, to provide for the easy rotation of the pipes from the bottom of the boiler setting, in cases where the distributing pipes are arranged at a point materially above the base of such boiler setting.

With the above and other objects in view, the invention consists of the novel construction, combination, and arrangement of parts as will be hereinafter more particularly described, and then claimed, and in describing the invention in detail, reference will be had to the accompanying drawings illustrating a preferred embodiment of the invention, and wherein like numerals of reference will be employed for indicating like parts throughout the different views of the drawings, in which:

Figure 1 is a view in elevation with the boiler setting broken away, showing a flue cleaner system in accordance with my invention, it being understood that in practice, the branch pipes and feed pipe are outside the boiler setting, as shown in Fig. 2. Fig. 2 is a horizontal sectional view of a boiler setting showing a plan of the cleaner system installed in position with relation to the tubes of a boiler of the well-known B and W type. Fig. 3 is a transverse vertical sectional view of a boiler and its setting such as shown in Fig. 1, and partly broken away illustrating the cleaner system in position, and showing the arrangement and disposition of the nozzles carried by the distributing pipes with respect to the passageways between adjacent rows of tubes. Fig. 4, is a detail view in plan partly broken away of one of the distributing pipes showing the inclination of the discharge nipples of the nozzles. Fig. 5 is a similar view of one of the distributing pipes showing the reverse disposition of the discharge nipples, and, Fig. 6 is a detail plan view of one of the discharge nozzles.

The embodiment of my invention herein shown for illustrative purposes, is of a flue cleaner system in accordance with my invention applied to a boiler of the well-known B and W type.

When applied to a boiler of this type, the construction and arrangement of the nozzles interposed in the distributing pipes, enables me to arrange the distributing pipes at spaced points directly overlying the battery of tubes, thus overcoming and obviating any difficulty in disposing of the distributing pipes among the tubes of the battery or boiler, and also obviating the necessity for supplemental jet or distributing pipes terminating at or near the boiler setting as

shown in Patent #984,919 above referred to, although it will be obvious that such supplemental jet or distributing pipes could be readily connected to the branch pipes of the system herein involved, should it so be desired.

A flue cleaner of the type shown, embodies a feed pipe 10, one end of which is in communication with a suitable steam pipe 11 having a drain valve 12, the feed pipe being provided adjacent the supply pipe with a cut-off valve 14. The said feed pipe 10 is also preferably provided at or adjacent its other end with a drain valve 15, and connected with the feed pipe at as many points as desired throughout its length are upwardly-extending branch pipes 16, each of which is provided at a suitable point, preferably, near its connection with the feed pipe 10, with a shut-off valve 17. Elbow pipes as 18 connect the upper ends of the branch pipes 16 with the distributing pipes 19 arranged above the tubes 20 of the boiler. These distributing pipes are extended through one side wall of the boiler setting and may be journaled at their inner ends in the opposite side wall, but I prefer to support the pipes intermediate their inner ends and the installation wall by means of bracket clamps as 17' which are clamped on the water tubes of the boiler being provided with openings for the distributing pipes so as to constitute journals for the latter. A branch pipe 21 connects with the feed line 10 at a suitable point extending down into the final chamber of the boiler setting and connecting with one or more transversely-disposed pipes as 22 which create a blast of steam directed toward the stack of the boiler, thus making a strong draft which will carry out throughout the stack, the soot which has been dislodged from the tube, together with the accumulation of ashes that has lodged in the said combustion chamber.

As above described generally, the system is similar to that shown, described and claimed in the above noted patents. In Patent #705,912 above referred to, certain of the distributing pipes are shown as provided with handles adjacent their connecting ends by means of which the distributing pipes may be rotated on their axis. It frequently occurs, that the feed line 10 and the distributing pipes are located at such a height with respect to the floor of the room in which the boiler is located, that ready access may not be had to the pipes for the purpose of rotating the same, and one of the objects of my invention, as heretofore stated, is to provide simple and effective means for rotating the distributing pipes from the floor of the room in which the boiler is located. To this end, I provide on each of the distributing pipes 19, at a point just outside of the front wall of the boiler setting, a

sprocket or like wheel 23 over which operates an endless chain as 24, of such a length that the same will depend to or below the feed line 10, so that it can be readily reached by the operator when desired.

Another of the objects of the present invention, as above stated, is the provision of a specific form of nozzle, and the location of this nozzle with respect to the boiler tubes or flues, with the cleaning agent projected between the lines of the different rows of tubes, the angle of the discharge nipple of said nozzle being slightly greater than the angle of the space between the adjacent rows of tubes, as best illustrated in Fig. 3 of the drawings.

The nozzles 25 are illustrated in detail in Fig. 6 of the drawings, each nozzle comprising a body having a straight way there-through, to receive the sections of pipe which make up the distributing pipe 19 as a whole. Water tube boilers of the horizontal or B and W type, as shown, have their flues or tubes so disposed as to provide the spaces 26 which lie in a straight line extending at an angle of substantially 60° throughout the depth of the battery of tubes or flues, and in view of such arrangement of the tubes in boilers of this type, I dispose the outlet nipples 27 of the nozzles at an angle of substantially 63° to the axis of the nozzle, and by this arrangement of the outlet nipple with respect to the axis of the nozzle, it will be observed that steam issuing from the nipple will be projected through the space 26 in such a manner that as the distributing pipe is rotated, the arc traversed increases so that the projected steam strikes the flues more or less as the bottom flues of the battery are reached, the steam being projected in the space cleaning the flues on opposite sides and its later contact with the flues direct serving to dislodge all soot which may have dropped thereon from the flues above. In order to keep the soot cleaned from the sides of the boiler setting, each distributing pipe is provided adjacent the ends with an opening as 29 projecting downwardly at direct right angles to the axis of the pipe, and cleaning the inner side of the boiler setting, as well as the flues which are located adjacent to such sides of the boiler setting.

As above stated, the invention resides particularly in the disposition of the nozzles and the arrangement of the discharge nipples of said nozzles at an angle slightly greater than the angle of the spaces between adjacent rows of the tubes or flues of the boiler, it being understood that the nozzles are arranged alternately on alternating distributing pipes, and are so disposed in the distributing pipes as may be required by the proximity of the baffle plates of the headers of the furnace with respect to the

location of the distributing pipes, that is, the distributing pipe 19 located adjacent to the header 30, Fig. 2, will have the nipples 27 projected angularly toward the side wall opposite from which the installation is made, the pipe 19 adjacent baffle plate 31 will have the nipples of the nozzles project toward the side wall through which the installation is made, while the nipples of the two intermediate pipes will alternate with these two pipes respectively. And these pipes in rotating will project the steam toward header 30 and baffle plate 31. The pipes as shown arranged between the baffle plate 31 and the header 32 and baffles 31 and 33 will be similarly disposed, such arrangement providing for an oblique projection of the cleaning agent between all of the tubes or flues of the battery.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a flue cleaner system, a flue, a rotatably-mounted fluid distributing pipe arranged at an angle to said flue, a feed pipe therefor, a supply pipe to which the feed pipe is connected, and a plurality of nozzles interposed in the pipe and each provided with an outlet disposed obliquely to the axis of the pipe.

2. In a flue cleaner system, a flue, a rotatably-mounted distributing pipe arranged at an angle to said flue, a supply pipe, a feed pipe connecting the supply pipe and the distributing pipe, a plurality of nozzles interposed in the pipe and each having an outlet

disposed to project fluid at an oblique angle to the axis of the pipe, and means for rotating the pipe.

3. In a flue cleaner system, a flue, a rotatably-mounted steam distributing pipe arranged at an angle to said flue, a supply pipe, a feed pipe connecting the distributing pipe to the supply pipe, and a plurality of nozzles in the distributing pipe having lateral outlets disposed to project the steam obliquely to the direction of draft of the products of combustion passing around the flue.

4. In a flue cleaner system, a flue, a plurality of rotatably-mounted distributing pipes arranged at an angle to said flue, a supply pipe, feed pipes connecting the supply pipe and the distributing pipes, a sprocket carried by each distributing pipe, and depending operating chains, one for each distributing pipe.

5. In a flue cleaner system, a flue, a plurality of independent rotatably-mounted distributing pipes arranged at an angle to said flue, a feed pipe common to all of the distributing pipes, a sprocket carried by each distributing pipe, and depending chains operating over said sprockets, separate chains being provided for each sprocket.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES MOORE.

Witnesses:

ALMORE C. BUGBEE,
HARRY L. KENSON.