

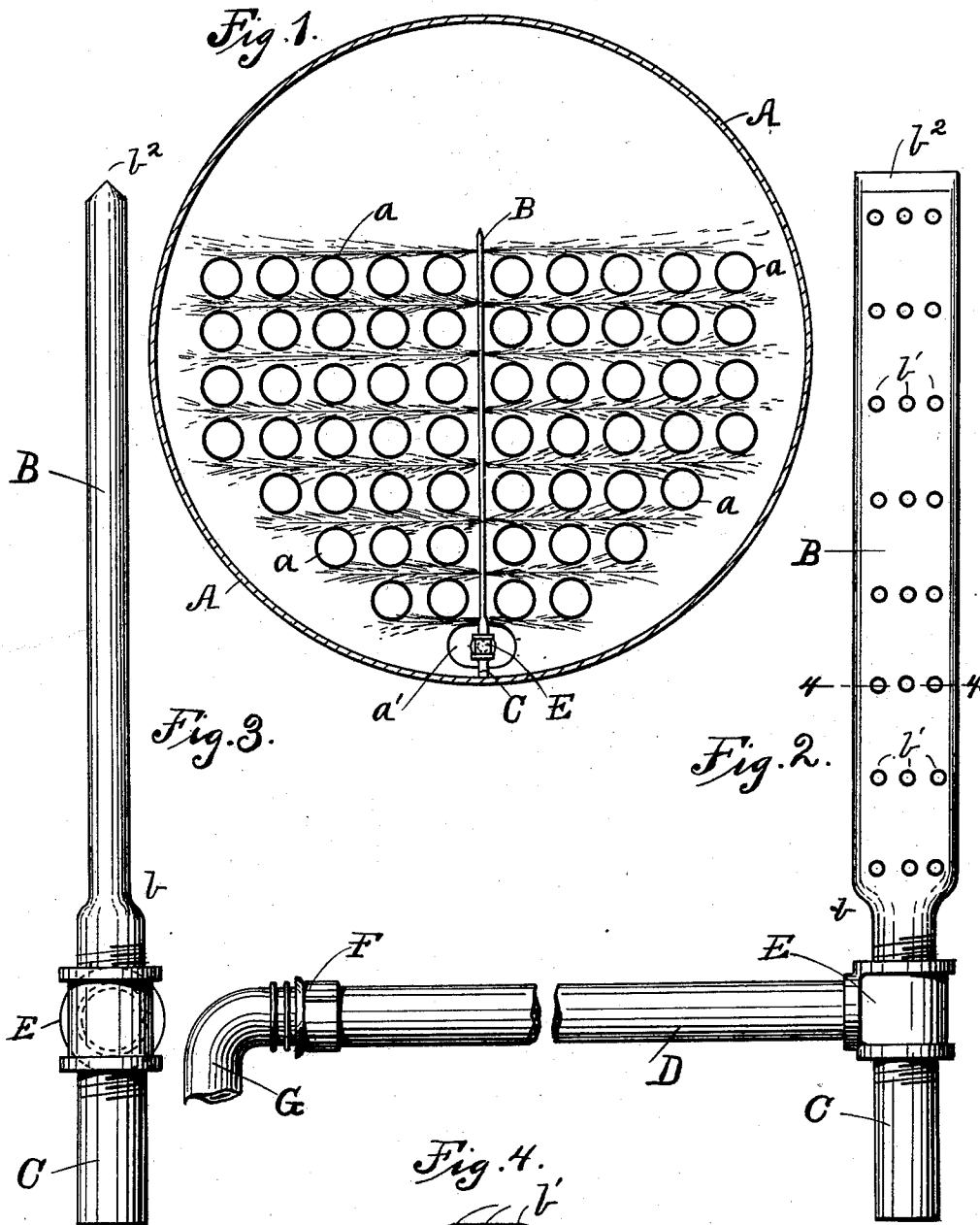
No. 609,845.

Patented Aug. 30, 1898.

J. STEPHENSON.
APPARATUS FOR CLEANING BOILERS.

(Application filed Oct. 9, 1897.)

(No Model.)



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APPARATUS FOR CLEANING BOILERS.

SPECIFICATION forming part of Letters Patent No. 609,845, dated August 30, 1898.

Application filed October 9, 1897. Serial No. 654,665. (No model.)

To all whom it may concern:

Be it known that I, JOHN STEPHENSON, a citizen of the United States, and a resident of Newark, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Cleaning Boilers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which
15 similar letters of reference indicate corresponding parts.

This invention relates to devices or apparatus for interiorly cleaning boilers, and it has special relation to an improved device for exteriorly cleaning the flues or tubes within the boiler.

Ordinarily in the processes of cleaning the exterior surface of boiler flues or tubes the operator enters the boiler through the usual manhole and cleans the exterior surface of the tubes by hand. Aside from the laborious and expensive features of this method of cleaning it is practically impossible to effectively reach by hand the top surfaces of the
25 middle or inclosed sets of tubes, and effective cleaning of any other than the outside sets of tubes is therefore precluded.

The object of my invention and improvements is to provide a simple mechanical apparatus by means of which the exterior surfaces, and particularly the top surface of all the tubes, may be automatically and thoroughly cleaned without occasion for the operator entering the boiler.

A further object of my invention is to provide a simple and improved device or apparatus of this character which will possess advantages in point of convenience, ease of operation, positive action, effectiveness, economy, and general efficiency.

In the drawings, Figure 1 is a vertical transverse section of a boiler, showing my improved cleaning device in position with relation to the flues. Fig. 2 is a detail side view of the cleaning apparatus. Fig. 3 is a detail edge view. Fig. 4 is a detail horizontal sectional view taken on the line 4 4, Fig. 3.

Referring to the drawings, A designates a boiler having any ordinary or usual arrangement of longitudinally and horizontally-arranged tubes or flues *a*, the flues being ar-

ranged in the usual horizontal and vertical series, as shown. At one end of the boiler, near the bottom, is provided a hand-hole *a'* of any suitable or adapted construction, 55 through which the cleaning apparatus is adapted to be inserted in preparation for the operation of cleaning.

My improved apparatus comprises a vertical tubular arm or pipe B, which is preferably 60 flattened at its sides, as shown at *b*, to provide parallel flat side planes, in which are formed a horizontal series of openings, as at *b'*, preferably three in number, said horizontal series of openings corresponding to the spaces 65 between the horizontal series of boiler flues or tubes and being arranged above each other throughout the length of the tubular arm or pipe member B. The member B is adapted to project upwardly within and between the set of boiler flues or tubes, as shown in Fig. 1 of the drawings, preferably in central relation thereto, and it is flattened, as hereinbefore set forth, to enable its convenient adjustment in this position when the flues are arranged closely together, with but little intervening space. The parallel flat or plane side faces of the member B are also provided, so that the side openings *b'* will be on the same horizontal plane, whereby the jets of water 80 from the same will be in a direct parallel line over and between the horizontal series of flues instead of in a radial direction, as would be the case if the set of horizontal jet-openings *b'* were formed in a curved or cylindrical side 85 of the pipe. The top end of the perforated pipe or member B is closed and is preferably pointed, as shown at *b*², to facilitate the introduction of the device between the flues.

The perforated pipe or member B is supported on a step or foot C at its bottom, which foot-piece rests upon the bottom of the shell of the boiler and is adapted to slide thereon during the movement of the apparatus in its operation. 95

Connected with the perforated pipe or member B is a horizontal pipe D, this connection being preferably formed by means of a coupling, as shown at E, connecting the bottom of the member, the end of the feed-pipe D, and 100 the foot or step C.

The length of the feed-pipe D preferably

corresponds to the interior length of the boiler, and it is provided at its outer end with a suitable coupling F, to which a hose G is connected in any desired manner. In operation
5 the feed-pipe D will project through the hand-hole *a'*.

The operation and advantages of my invention will be readily understood. When it is desired to clean the exterior surface of the
10 boiler flues and tubes, and especially the top surface of the same, the apparatus is introduced within the boiler through the hand-hole into the position shown, when water under suitable pressure is fed through the
15 hose G and feed-pipe D to the vertical perforated tubular arm or pipe B and passes laterally from the same through the side openings *b'* in direct jets over and between the horizontal series of flues. The top surface
20 of the flues is thus directly reached, and every part of their exterior surface will be thoroughly and effectively cleansed. The apparatus may be slid longitudinally within the boiler upon the step or rest C to bring the
25 jets into play upon the full length of the flues.

It will be understood by manifest adaptation of the apparatus it may be effectively employed either in a vertical or horizontal position, according to the character of the boiler
30 or the specific arrangement of the flues.

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

1. A boiler-cleaning apparatus, comprising
35 a tubular arm or pipe provided with openings in its side walls and adapted to be operated between the boiler-flues, and feed devices connected with said perforated member, substantially as and for the purpose set forth.

40 2. A boiler-cleaning apparatus, comprising a tubular arm or pipe having flat sides in which are formed jet-openings, said perforated member being adapted to be inserted and operated between the boiler-flues, and
45 feed devices connected with said perforated member, substantially as and for the purpose set forth.

3. A boiler-cleaning apparatus, comprising
50 a tubular arm or pipe provided with openings in its side walls and adapted to be inserted

and operated between the boiler-flues, a step or foot upon which said perforated member is supported within the boiler, and feed devices connected with said perforated member, substantially as and for the purpose set forth. 55

4. A boiler-cleaning apparatus, comprising a vertical arm or member having openings in its side walls, a horizontal feed-pipe connected with said perforated member at its bottom, and the bottom foot or step forming a rest for
60 the apparatus, substantially as and for the purpose set forth.

5. A boiler-cleaning apparatus, comprising the vertical tubular arm or pipe having flattened sides in which are formed the series of
65 perforations, the horizontal feed-pipe connected with said perforated member, and the foot or step forming a rest or support at the bottom, substantially as and for the purpose set forth. 70

6. In a boiler-cleaning apparatus of the class described, a tubular arm or pipe having the series of openings in its side walls on the same plane, said separate series of openings being
75 arranged one above the other, substantially as set forth, whereby when the perforated member is inserted and operated between the boiler-flues the jets from said openings will pass between the flues, and feed devices connected with said perforated member, substantially
80 as and for the purpose set forth.

7. In a boiler-cleaning apparatus of the class described, the vertical tubular arm or pipe having flattened sides in which are formed
85 the horizontal series of jet-openings, said horizontal series being arranged respectively one above the other, whereby when the perforated member is inserted and operated between the flues the jets from the openings will pass in
90 a direct line between the flues, and feed devices connected with said perforated member, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 5th day of October, 1897. 95

JOHN STEPHENSON.

Witnesses:

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