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BOILER CLEANER

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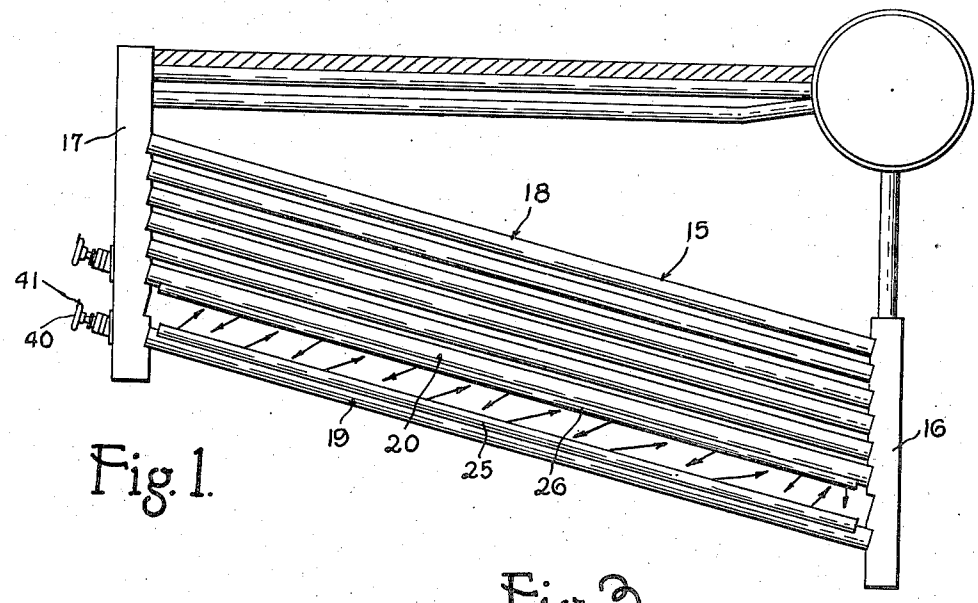
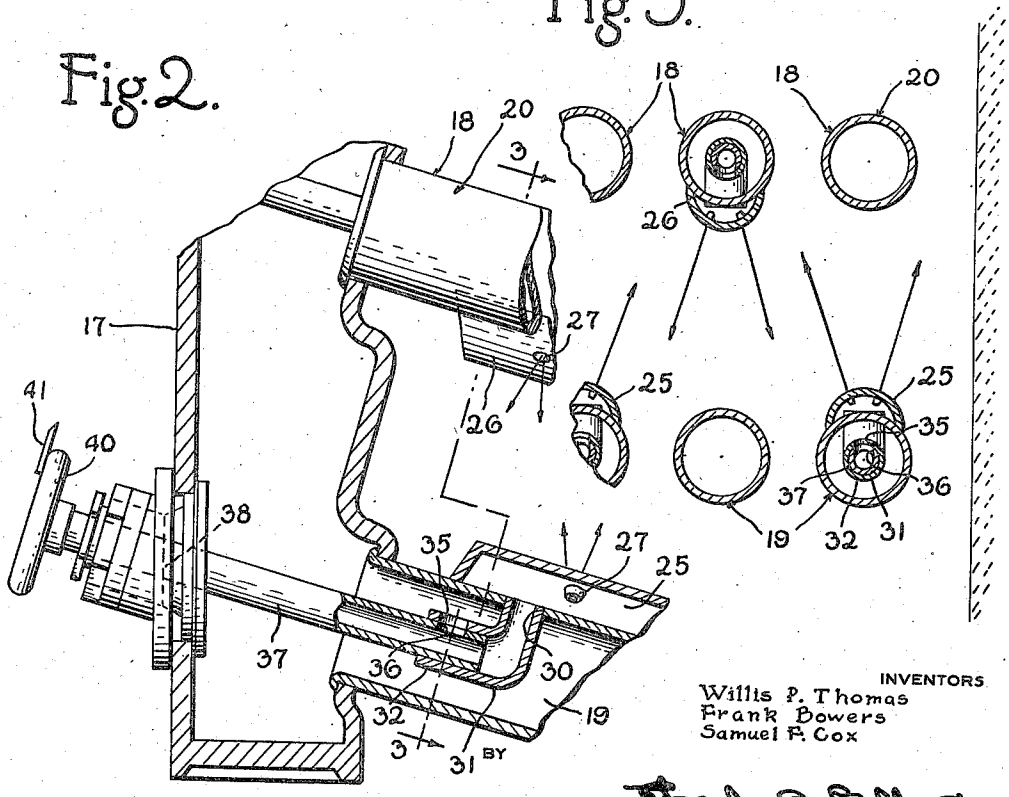


Fig. 1.

Fig. 3.

Fig. 2.



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BOILER CLEANER

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1 Claim. (Cl. 122—392)

This invention relates to boiler cleaners and has particular reference to cleaners of the type which have blower elements adapted to discharge cleaning fluid adjacent parts of the boiler to be cleaned.

The invention contemplates the provision of an improved means for supplying cleaning fluid to the blower elements of boiler cleaners of the above mentioned character.

The numerous objects and advantages of the invention will become apparent as the following description proceeds, particularly when reference is had to the accompanying drawing wherein

Fig. 1 is a semi-diagrammatic side elevational view of a boiler showing the invention applied to the same;

Fig. 2 is an enlarged detail view partly in section of a portion of the construction shown in Fig. 1;

Fig. 3 is a fragmentary sectional view taken substantially on the line 3—3 of Fig. 2.

In boiler cleaner constructions of the type to which this invention relates, difficulty has been encountered in preventing not only the blower elements but also the cleaning fluid supply lines or connections for the blower elements from being destroyed by the heat of the boiler during the periods when cleaning fluid is not being supplied to the blower elements. Insofar as the blower elements themselves are concerned, this problem has been practically solved by locating the blower elements closely adjacent the boiler tubes and within the cooling radius of the boiler tubes and by in many instances integrally uniting the blower elements with the boiler tubes. Insofar as the cleaning fluid supply lines for the blower elements, however, are concerned, little progress has been made in protecting these elements and the present invention contemplates therefore the provision of means whereby the cleaning fluid supply connections for the blower elements as well as the blower elements themselves will be adequately protected from the heat of the boiler gases.

Referring then particularly to the drawing wherein like reference characters designate corresponding parts throughout all views, the numeral 15 designates generally a boiler having the headers 16 and 17 between which run the bank of tubes designated generally by the reference character 18. At the lower part of the boiler tube bank adjacent the combustion furnace, there is disclosed what may be termed a special drop tube construction. In effect this comprises the omission of a row of tubes forming a space between the first two rows of tubes next to the furnace, these two rows being designated by the reference characters 19 and 20, the row 19 being nearest the furnace and the row 20 being the next row above, but being spaced from the row 19 by the space resulting from the omission of a row of tubes.

To alternate tubes of row 19 are secured blower elements 25, while to alternate tubes of row 20 are secured blower elements 26, the elements in row 19 being intermediate the elements in row 20 as clearly illustrated in Fig. 3 of the drawing. These blower elements extend longitudinally of their respective tubes and are integrally secured thereto and are preferably of such size that they are wholly within the relatively cool zones surrounding the tubes whereby these blower elements are themselves prevented by the relatively cool boiler tubes from being destroyed by the heat of the furnace gases. The elements are provided with discharge openings 27 as clearly illustrated in Fig. 2 of the drawing whereby cleaning fluid may be discharged adjacent the parts of the boiler to be cleaned, the direction of discharge of the cleaning fluid being diagrammatically illustrated in Fig. 3 of the drawing.

For the purpose of supplying cleaning fluid to the blower elements 25 and 26 there is provided means for placing these blower elements in communication with the water space of the boiler header or boiler tubes. Since all of the blower elements are supplied with cleaning fluid in the same manner, the mechanism connected with one blower element only will be described in detail.

Referring then more particularly to Fig. 2, it will be noted that the boiler tube 19 with which the blower element 25 is associated is provided with an opening 30 which communicates with the interior of the blower element. Welded or otherwise suitably secured in the opening 30 is an elbow 31, the free leg 32 of which is preferably directed toward the adjacent header 17.

The portion 32 of the elbow 30 constitutes a part of a valve structure in that it is provided with a port 35 with which a port 36 in a tubular member 37 rotatably mounted in the elbow is adapted to register. The tubular member extends through a packed joint 38 formed in the outer wall of the header 17 and is provided on its outer end exteriorly of the boiler setting with a hand wheel 40 by which the tubular member may be rotated. The outer end of the tubular member is closed so that when the ports 35 and 36 are in registry as shown in Fig. 2 of the

drawing, water from the header 17 and the boiler tube 19 may pass through the elbow 31 and into the blower element. Obviously, to cut off the supply of water to the blower element it is only necessary to rotate the tubular member 37 by means of the hand wheel to move the ports 35 and 36 out of registration with each other. An indicator 41 on the hand wheel is preferably provided to indicate the position of port 36 to thus indicate whether or not the valve is open.

It will be apparent that with the construction as above described, cleaning fluid is obtained directly from the circulatory system of the boiler and the valves which control the flow of cleaning fluid to the blower elements are located wholly within the water space of the boiler and are thus fully protected from the heat of the furnace gases.

For the sake of convenience, the invention has been described as being embodied in a cleaner for cleaning boilers. It will be apparent, however, that the inventive principles disclosed may be embodied in devices for cleaning apparatuses similar to boilers and it is to be understood that wherever the word "boilers" is utilized, it is to be construed as meaning heat exchange apparatus of any type whatever, while the words "boiler cleaner" are to be understood as meaning a cleaner for any such type of apparatus. From the above it will be apparent that the invention provides a boiler cleaner installation in which not only the blower elements or nozzles but also the cleaning fluid supply connections are wholly protected from the heat of the furnace gases. Thus the installations may be made in the hottest portions of the boiler without danger of the blower elements or supply connections being destroyed by the heat to which they are subjected.

While the invention has been described with some detail, it is to be understood that the description is for the purposes of illustration only and that the right is reserved to make such changes in the details of construction and arrangement of parts as will fall within the purview of the attached claim.

What we claim as our invention is:

In a boiler cleaner for a boiler of the type which includes spaced headers and boiler tubes connecting said headers, a blower element extending longitudinally of one of said boiler tubes and integrally secured to the same, an elbow located within the boiler tube and communicating with the blower element, a valve member cooperating with said elbow for controlling communication between the boiler tube and the blower element, and means extending through one of said headers to a point exteriorly of the boiler setting for controlling the actuation of said valve.

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