Dec. 4, 1928. 1,694,346

S. RADWAY

BOILER WASHER

Filed Dec. 1, 1926 2 Sheets-Sheet 1

Fig. 1.

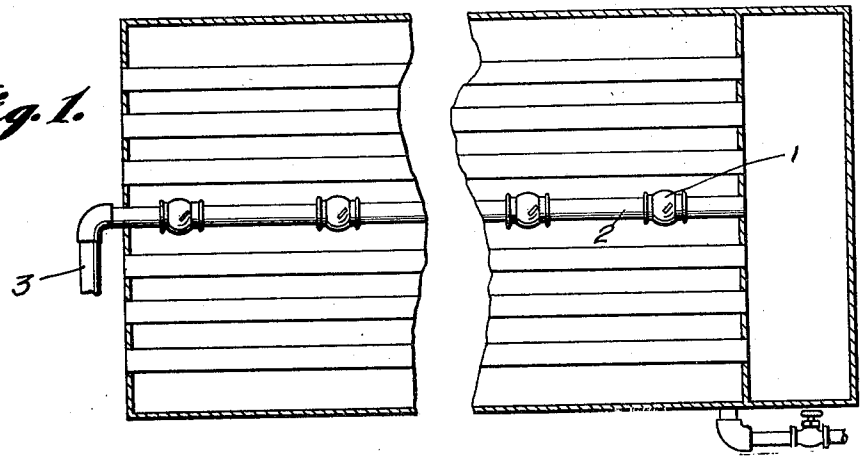


Fig. 2.

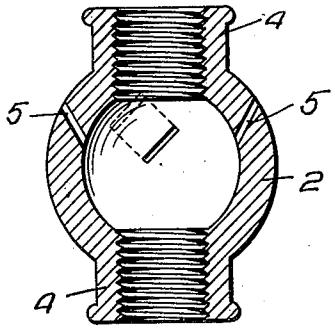
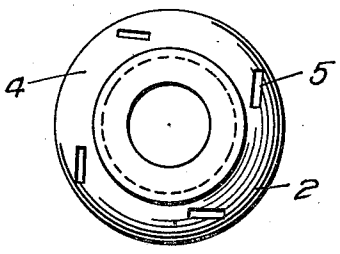


Fig. 3.



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Fig. 4.

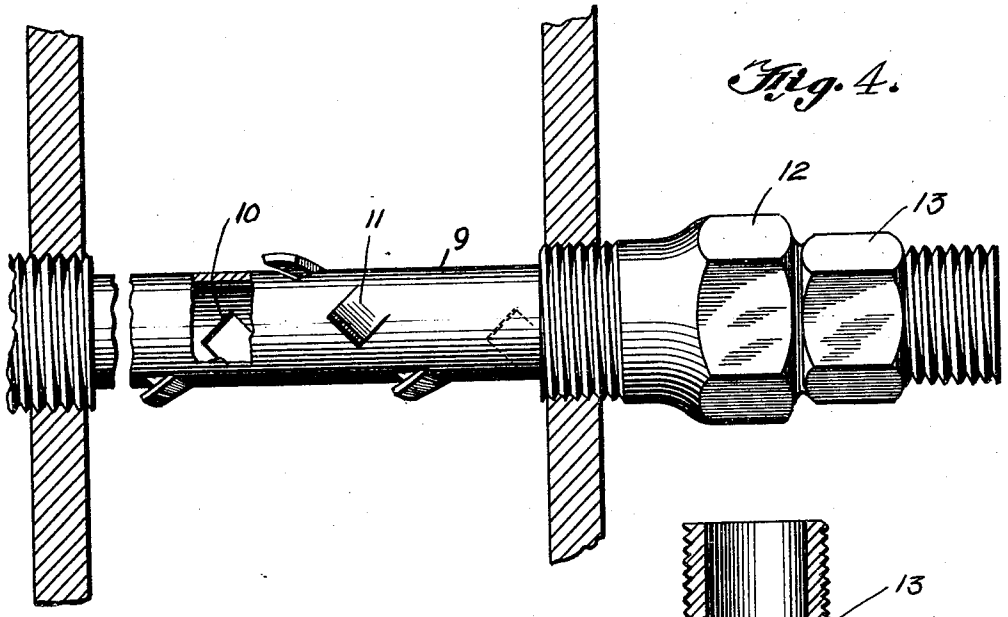


Fig. 5.

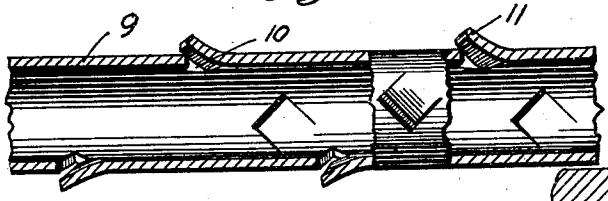


Fig. 6.

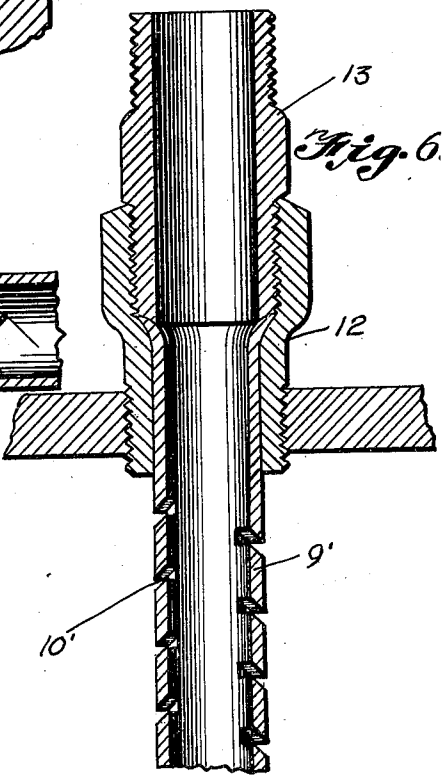
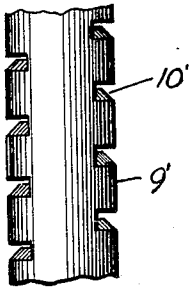


Fig. 7.



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UNITED STATES PATENT OFFICE.

SAMUEL RADWAY, OF WEST FRANKFORT, ILLINOIS.

BOILER WASHER.

Application filed December 1, 1926. Serial No. 151,967.

This invention relates to means for washing boilers, the general object of the invention being to provide a tubular member provided with a plurality of nozzles or ports and which is adapted to be connected with a fluid supply so that water or other cleaning material can be forced through the member, the water or other cleaning fluid escaping through the nozzles or ports against the interior parts of the boiler to clean the same.

Another object of the invention is to so form the nozzles or port openings in a manner so that the fluid is given a whirling rotational motion which increases its cleaning effect.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings and specifically pointed out in the appended claims.

In describing my invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a view showing a boiler equipped with one form of my cleaning device.

Figure 2 is a sectional view through one of the nozzle members of the tubular member.

Figure 3 is an end view of said head.

Figure 4 is a view showing a modified form of my invention.

Figure 5 is a sectional view taken through this modification.

Figures 6 and 7 are views of a further modification.

Figure 1 shows a plurality of heads 1 connected together by tubes 2 to form a tubular member having its ends suitably connected to parts of the boiler as shown and one end is in connection with a source of cleaning fluid by means of the exterior line 3 so that when the line is opened, the cleaning material will escape through the cleaner heads and come in contact with the interior parts of the boiler to clean the same. The heads 1 are each formed with a spherical body 2 having opposing end nipples 4 which are threaded to receive the ends of the tubes 2. Each body is provided with a series of nozzle openings or ports 5, the openings or ports being shaped in elongated form and are inclined to the longitudinal center of the head. Each opening has its longitudinal center arranged on a 45° angle in relation to the length of the head, as clearly shown in Figure 2 in dotted lines and by this construction, it will be apparent that the fluid escaping from the head through the ports will be given a whirling rotational motion which will increase its cleaning effect. The boiler is provided with a suitable blow-off or sludge outlet, and the nozzle openings are directed toward this outlet as suggested in Figure 1.

The device may be suitably closed at one end and the other end may be connected with the regular feed line of the boiler, and when in operation, the cleaning fluid is given a continuous whirling motion within the body of the boiler so that the interior parts of the boiler are freed of scale, deposits and other foreign matter and this matter is divided into small particles and forced out of the boiler.

The device can easily be cleaned by allowing water or other fluid to flow through the same in a reverse direction and it can be used as a flue blower by closing one end and attaching the other to a pipe inserted into the tubes and it can also be used as a soot blower and as a draft producer.

Figures 4 and 5 show a modified form of the invention in which a tubular member 9 is formed with elongated nozzle openings or ports 10. These ports 10 are each formed by cutting the metal of the tube to form a tongue 11 which is pushed outwardly, as shown. These ports 10 are preferably formed at an angle of 45°, with the axis of the tube and they are progressively staggered around the tube. The tube may have one end closed and is preferably placed in the boiler by being inserted through a nipple 12 which is threaded in front of the boiler, with the opposite end of the tube expanded in the nipple. The coupling 13 is then screwed in the nipple 12, with one end engaging the upset portion of the tube 9 which holds the parts in position. This coupling 13 may be connected with the supply pipe 3.

The arrangement of the ports 10 will also give a rotary motion to the fluid passing through them so that a whirling motion is imparted to the fluid which will increase its cleaning action. This nipple may be introduced into the boiler through the hole drilled and threaded for the connecting plug thereof, thus greatly simplifying the construction and cheapening the cost of installation.

A die arrangement can be readily introduced into the tube and the ports cut by

stamping, thereby cheapening the cost over sawing or moulding. If a copper tubing is used, it will not corrode, rust or loosen in its fastenings and will also give longer service.

The device can be operated by simply manually turning on valves or the valves can be automatically turned by electrically operated means.

In badly scaled boilers it may be necessary to have the boiler washed by the boiler washer anywhere from three to five minutes per hour while the boiler is in use until the scale is removed. When the boiler is clean, then the washings can be reduced to five or ten minutes per working day.

Figures 6 and 7 show a modification similar to that shown in Figures 4 and 5, but the ports which are indicated by the reference numeral 10′ are formed by cutting kerfs in the tube 9′. These ports 10′ are inclinedly arranged, as shown, so as to also produce a rotatable movement of the cleaning fluid.

What I claim is:—

1. The combination with a boiler, of a washing device comprising a tubular member horizontally disposed in said boiler in spaced relation to the walls thereof, said member closed at one end and connected to a supply of cleaning fluid at its opposite end, said member being provided with circumferentially and axially spaced ports arranged to discharge in a generally forward and spiral direction with respect to said member, whereby to induce a rotational movement of the cleaning fluid within the boiler.

2. The combination with a boiler, of a washing device comprising a tubular member horizontally disposed in said boiler in spaced relation to the walls thereof, said member closed at one end and connected to a supply of cleaning fluid at its opposite end, said member being provided with circumferentially and axially spaced ports arranged to discharge toward the same end of said member, the ports being so shaped and disposed as to effect by their discharge a rotational movement of the cleaning fluid in the boiler into which they discharge.

3. The combination with a boiler, of a device comprising a malleable tubular member disposed in said boiler in spaced relation to the walls thereof, said member closed at one end and connected to a supply of fluid at its opposite end, said member being provided with circumferentially and axially spaced ports arranged to discharge toward the closed end of said member, each of said ports being in part defined by an outwardly-punched, forwardly directed tongue.

In testimony whereof I affix my signature.

SAMUEL RADWAY.