R. O. THOMAS.
DIRECT FEED CHAMBER FOR BOILERS.
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2 SHEETS-SHEET 1.

Fig. 1.

Fig. 2.

Witnesses:

Robert O. Thomas.

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To all whom it may concern:

Be it known that I, ROBERT O. THOMAS, of Connelsville, Pennsylvania, inventor of the direct feed-chamber for boilers herein described, have invented new and useful improvements in Direct Feed-Chambers for Boilers, of which the following is a specification.

This invention relates to apparatus for feeding chemicals, lubricants, or similar liquids to a boiler.

The object of the invention is the provision of means for thoroughly mixing the feed liquid with the boiler feed water so that the same may be evenly distributed throughout the boiler and its pipe connections, greatly eliminating the injurious effect of water on the same.

Further objects of the invention will appear as the following specific description is read in connection with the accompanying drawing which forms a part of this application and in which:

Figure 1 is a longitudinal sectional view of a preferred embodiment of the device. Fig. 2 is a perspective view of the deflector when removed from the chamber. Fig. 3 is a front elevation of the same. Fig. 4 is a longitudinal sectional view of a modified form of the device.

Referring now to the drawing and to Fig. 1 in particular, the numeral 1 designates a cylindrical feed chamber having its ends open and externally screwed threaded. The top of the chamber 1 is provided with an internally threaded nipple 2. A reservoir 3 is positioned above the chamber and communicates with the same through a pipe 4, which is connected to the nipple 2, and the interposed valve 5. A cock 6 is connected with a nipple 7 provided in the bottom of the chamber. A cap 8 provided with centrally located, internal and external nipples 9 and 10 respectively is threaded on to one end of the chamber. The boiler feed pipe 11 is connected to the nipple 10, a valve 13 being located in the line adjacent said nipple. A down-turned tube 13 projects into the chamber from the internal nipple 9 and is adapted to direct the feed water stream downwardly against a deflector 14, which latter is clearly shown in Fig. 2 of the drawing. This deflector is inserted into the chamber through its opposite end, its outer extremity being provided with a centrally apertured, circular plate 14, equal in diameter to the outside diameter of the chamber. The edges of the plate 14 offer a flange which bears against the end of the chamber. The inner end of the deflector has an inclined face 15 which is provided with a central channel 16. The upper end of the channel 16 flares upwardly as at 17. A lug 18 formed on the base of the deflector adjacent its outer extremity is received by a recess 19 in the chamber and prevents rotation of the deflector when in position. A cap 20, having a central, external nipple 21, when secured on to this end of the chamber engages the deflector flange and clamps the same in position. The feed pipe line is continued from this nipple 21 through the valve 22 to the boiler.

The operation of the device is as follows: The valves 12 and 22 are first closed, and then the cock 6 is opened so as to drain the chamber 1. The cock is then closed, and the chemical solution or lubricant contained in the reservoir 3, is admitted to the chamber by opening the valve 5. The valve 5 is next closed and the valve 22 opened. Upon gradually opening the valve 12, the feed water is allowed to enter the chamber. Its stream which is directed downwardly by the tube 13 impinges against the liquid in the bottom of the chamber and drives it upwardly through the channel 16 of the deflector plate. Here the liquid strikes the abrupt curvature 17 and is converted into a rising film, which is broken by the onrushing feed water stream into comminuted particles. The atomized solution thoroughly mixes with the feed water and passes on to the boiler where it is evenly distributed.

In Fig. 4 there is shown a slightly modified view of the device. The inwardly projecting, down-turned tube 13, shown in Fig. 1, is replaced by a straight tube 13'. The corresponding end of the chamber is provided on its under side with an external, angularly arranged nipple 23. A pipe connection 24 from a fluid pressure supply is connected to this nipple. A curved tube 25 projects into the chamber from the nipple 23, so that compressed fluid entering through this tube will impinge against the solution contained in the chamber and drive it against the abruptly curved channel end 17 of the deflector, where it is converted into a film which has been previously described. The straight tube 13' directs the feed water stream against this film at right angles,
thus causing it to be more effectively atomized and mixed with the feed water. After sufficient time has elapsed the fluid pressure connection is closed by means of a valve 26.

From the foregoing description taken in connection with the drawings it will be seen that I have provided simple and effective means for feeding a boiler compound lubricant, or the like, to the feed water of the boiler so that it is thoroughly mixed with the same and may be evenly distributed throughout the boiler and its pipe connections.

Having thus described my invention, what

I claim as new is:

1. A device of the class described comprising a feed chamber connected in the feed pipe line of a boiler, valves located in the pipe line adjacent each connection with the chamber, a reservoir connected to the chamber, and adapted to feed chemical solution to the said chamber, a valve interposed between the reservoir and chamber, a drain outlet for said chamber, a removable deflector mounted within said chamber and adapted to direct the chemical solution upwardly in the form of a thin film upon movement of said solution, and means within said chamber for directing the feed water against the said chemical solution and the deflector to cause movement of the former.

2. A device of the class described comprising a feed chamber connected in the feed pipe line of a boiler, valves located in the pipe line adjacent each connection with the chamber, a reservoir connected to the chamber, and adapted to feed chemical solution to the said chamber, a valve interposed between the reservoir and chamber, a drain outlet for said chamber, a removable deflector mounted within said chamber and adapted to direct the chemical solution upwardly in the form of a thin film upon movement of said solution, and means within said chamber for directing the feed water against the said chemical solution and the deflector to cause movement of the former.

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

ROBERT O. THOMAS.

Witnesses:
GUO. W. MUNSON,
EUGENE T. NORTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."