UNITED STATES PATENT OFFICE

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CONDITIONING APPARATUS FOR STEAM HEATING SYSTEMS TO REMOVE SCALE, CORROSION, ETC.

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1 Claim. (Cl. 219—39)

My invention pertains to an apparatus for treating steam heating systems, more particularly to a unit for introducing chemical corrective into all parts of the steam line or heating system for removing scale, corrosion, rust and oil therefrom.

A specific object of my invention is to provide a motor driven pump in communication with a T or chamber which is connected to the pump and a steam service pipe whereby chemical is delivered to the chamber or T in drops, which are converted into steam, through an electric unit whereby the converted chemical is delivered to the service pipe.

The invention has primarily for its object to simplify and increase the efficiency of the apparatus of the foregoing character.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts, substantially as hereinafter described, and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claim.

The drawing illustrates a diagrammatic view with parts broken away and in section to more clearly illustrate my invention.

Referring by characters to the drawings, 1 indicates a reciprocative pump connected by a check valve controlled pipe 2 to a fluid chemical tank 3, the said fluid being of an alkaline nature to resist scale, or the like.

A pipe 4 having a restricted check valve 5 is connected to the pump and the upper portion of a T or chamber 6.

One leg 6' of the T is connected to a steam supply pipe 7.

The lower end of the T or chamber in this exemplification of my invention has fitted therein a standard "glow plug" 8, it being understood that any suitable electric heating unit may be substituted for the "glow plug." In utilizing the standard "glow plug," now on the market, it is understood that the cost of production with reference to the installation, is produced.

An electric motor 9 is connected by a belt 9' to a suitable pulley carried by the motor 1 whereby the same is driven. The motor is supplied by electric line wires 10, 10' connected to the motor and said line is provided with a manually controlled make and break switch 11. The "glow plug" or electric unit is connected by conductor wires 12, 12' to the motor circuit wires 10, 10', as indicated, whereby when the motor is energized, sufficient current is supplied to the "glow plug" or electric unit 3 to develop sufficient heat therein for converting drops of the chemical fluid into steam within the chamber. Thus, it will be seen that the chemical impregnated steam will be maintained at a high pressure whereby it will, through the chamber connections, enter and co-mingle with the steam supply in the pipe 7.

Briefly, herefore, due to steam back pressure in the supply pipe 7 it has been difficult to inject directly therein a chemical solution, whereby the said solution will thoroughly impregnate the steam supply to prevent scale, corrosion, or the like, in said pipe. By providing an outside chamber which communicates directly with the steam supply pipe and also the check valve control chemical solution pipe, it is apparent that a small quantity of the high pressure steam in pipe 7 will fill the chamber and also the chemical supply pipe 4. Hence, the steam pressure in said pipe and chamber will correspond to the pressure in pipe 7, and due to the fact that the heating unit 8 is in communication with the auxiliary chamber, when the drop by drop of the chemical solution is forcibly discharged into the chamber, it will be converted into steam pressure of higher temperature than the main supply, whereby it co-mingles uniformly with said main supply.

It is understood that while the diagrammatic view illustrates the generic principles involved, changes in the structural features may be made without departing from the scope of the claim, when said claim is interpreted by those skilled in the art.

1 claim:

A conditioning apparatus for steam heating units, comprising a chemical reservoir, a reciprocative pump in pipe connection with the reservoir, a steam supply pipe, a steam chamber in communication with the steam supply pipe, a check valve controlled chemical solution feed pipe communicating with the upper portion of the chamber, pump and steam supply pipe,
whereby the chemical solution is converted into steam and mixed therewith, an electric heating element extending into the bottom of said chamber, an electric motor in driving connection with the pump, an electric switch controlled supply wire in circuit with the motor and supply wire connections between the motor circuit and heating element, whereby chemical fluid entering the chamber will be converted into steam.

FRANK J. MILLER.

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