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CONTAMINATING CONTROL DEVICE

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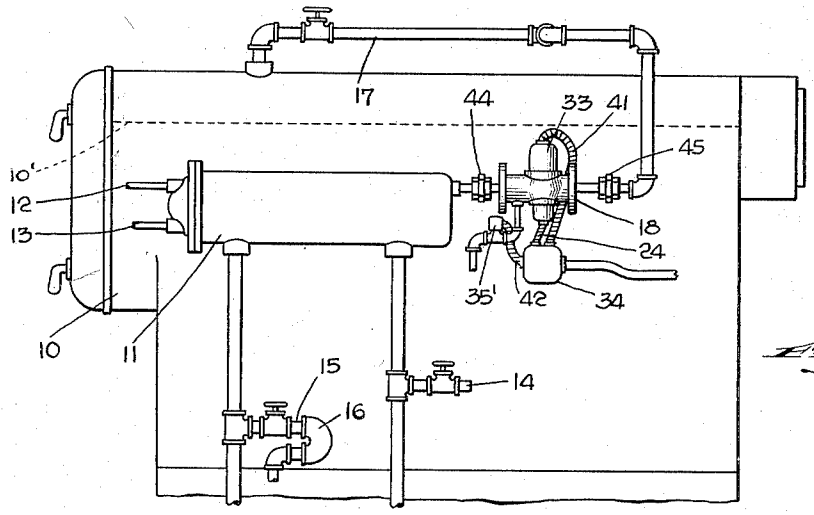


Fig. 1.

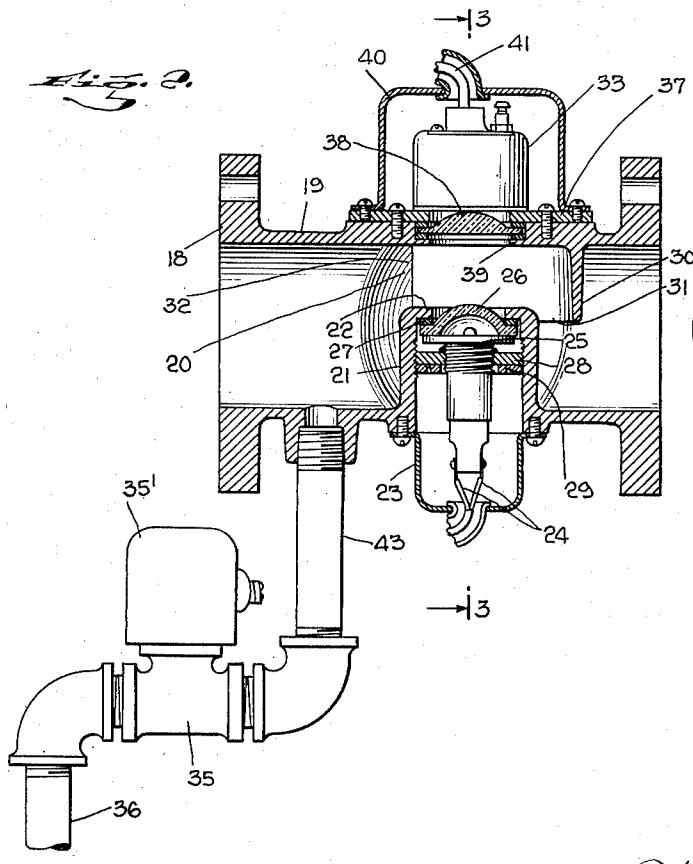


Fig. 2.

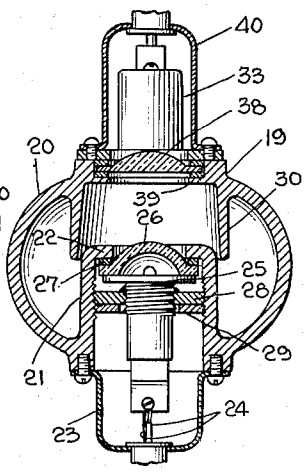


Fig. 3.

INVENTORS
ABRAHAM A. ARVINTZ
NATHAN A. ARVINS
BY ROBERT A. ARVINTZ
Howard R. Thompson
ATTORNEY

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CONTAMINATING CONTROL DEVICE

Abraham A. Arvintz, Bellrose, Nathan A. Arvins, Brooklyn, and Robert A. Arvintz, New York, N. Y., assignors to Sanicom Company, Inc., Brooklyn, N. Y., a corporation of New York

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4 Claims. (Cl. 250—218)

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This invention relates to apparatus for controlling contamination in boiler or heating systems, brought about by oil tube failure in a heat exchanger or preheater. More particularly, the invention deals with a control conduit or device having electric eye means for automatically shutting off the water supply to a boiler in the event of contamination and provision of means of draining the contaminated water in renewal of the system operation after appropriate repairs have been made.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a diagrammatic view illustrating part of a control system which we employ.

Fig. 2 is an enlarged sectional view through the control device, detached; and

Fig. 3 is a section on the line 3—3 of Fig. 2.

In Fig. 1 of the drawing, we have diagrammatically illustrated at 10 the boiler. At 11 is shown an oil preheater and at 12 and 13 are the oil circulating pipes for the heater. Connected with the lower portion of the preheater is a valve control drain 14 and a valve controlled condensate discharge 15, including a trap 16.

While the invention is applicable to various types and kinds of heating systems operated by oil burners, in Fig. 1 of the drawing, we have shown a system, wherein a valve control pipe 17 is coupled with the boiler 10 above the water line 10', so that steam can be utilized for heating the oil in the preheater 11. Interposed in the pipe 17, preferably adjacent the preheater, is a contamination control conduit or device 18.

The device 18 is shown in sectional detail in Figs. 2 and 3 of the drawing, the device comprising a flanged body 19 having an enlarged or bulged central portion 20, as will be apparent from a consideration of Fig. 3. The central portion of the body 19 has an upwardly extending housing 21 terminating at its upper end in an inturned flange 22, the housing opening through the bottom of the body 19 and this opening is closed by a cap 23. Extending through the cap 23 are circuit wires 24 which control a pilot light 25 constituting part of an electric eye mechanism. The dome portion 26 of the light seats upon a neoprene gasket 27 which abuts the flange 22.

Fixed to the light 25 is a nut portion 28 which operates in the threaded portion of the housing

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and a lock nut 29 engages the threads of the housing to secure the light in the desired position. Extending downwardly into the body of the device is a flow direction vane or baffle 30 which closely envelopes the opposed sides of the housing 21, note Fig. 3, but is widely spaced from one end of the housing to form a large opening 31. The vane 30 opens into the other end of the body 19, as at 32.

It will thus be seen that, in the event of leakage in the oil tubing, the oil will extend into the body 19 and create a discolored condition over the dome 26, which condition will cause the electric eye mechanism 33 to be actuated, thus through a suitable electric circuit incorporating one or more well-known controls, one of which is shown at 34 in Fig. 1 of the drawing, the burner of the boiler will be shut off and a solenoid valve 35 will be actuated, to drain the device and in some instances the system, through the drain pipe 36 extending from the solenoid valve.

The electric eye mechanism 33 is mounted upon the top of the device 18, through the medium of a mounting plate 37, which plate supports the magnifying lens 38 of the electric eye mechanism, the lens seating in a flange portion 39 at the top of the body 19. The lens 38 is in direct alinement with the light 25. The electric eye mechanism 33 is supported in a housing or cap 40, from which the circuit wires, as at 41, extend to the control 34, to which the wires 24 also extend. Circuit wires 42 from the control 34 also extend to the solenoid 35' of the valve 35.

The rest of the electrical system is not disclosed, as this system forms no direct part of the present invention.

It will appear from a consideration of Fig. 2 of the drawing that the solenoid valve 35 couples with one side of the valve body 19 through a pipe nipple 43.

It is immaterial whether the control conduit or device is operating on a fluid or vapor system or, in fact, in any type or kind of fluid control where contamination or off-color conditions prevail. The minute a clouded or off-color condition exists in the body 19 and between the dome 26 of the light and the magnifying lens 38, the mechanism 33 will be actuated for the intended control purposes, the latter being governed by the apparatus and the electric system employed.

It will be noted that the device 18 is mounted in the pipe 17 or extensions thereof through the medium of quick detachable couplings 44 or 45, so that this control device can be readily cleaned, as and when contamination has prevailed and at the time that the necessary repair is being cared

for to eliminate the contaminating condition. This detachability of the control device 18 can be accomplished without disturbing the remainder of the installation.

Having fully described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A device for use in pipe lines through which fluids or vapors are adapted to pass, said device having electric-eye means actuated upon the presence of discoloration in the fluid or vapor passed through the device, said electric-eye means comprising an electric-eye mechanism mounted on one wall of the device, a light mounted in the opposed walls of the device in alinement with said mechanism, said light being arranged in a housing portion extending into the device, and the first named wall of the device having a baffle encircling the major portion of said housing.

2. A device for use in pipe lines through which fluids or vapors are adapted to pass, said device having electric-eye means actuated upon the presence of discoloration in the fluid or vapor passed through the device, said electric-eye means comprising an electric-eye mechanism mounted on one wall of the device, a light mounted in the opposed walls of the device in alinement with said mechanism, said light being arranged in a housing portion extending into the device, the first named wall of the device having a baffle encircling the major portion of said housing, and said light including a domed reflector sealed in the inner end of the housing.

3. A device for use in pipe lines through which fluids or vapors are adapted to pass, said device having electric-eye means actuated upon the presence of discoloration in the fluid or vapor passed through the device, said electric-eye means comprising an electric-eye mechanism mounted on one wall of the device, a light mounted in the opposed walls of the device in alinement with said mechanism, said light being arranged in a housing portion extending into the device, the first named wall of the device having a baffle encircling the major portion of said housing, said light including a domed reflector sealed in the inner end of the housing, and a magnifying lens supported and sealed in the first wall of the device between said light and said mechanism.

4. A device for use in pipe lines through which fluids or vapors are adapted to pass, said device having electric-eye means actuated upon the presence of discoloration in the fluid or vapor passed through the device, said electric-eye means comprising an electric-eye mechanism mounted on one wall of the device, a light mounted in the opposed walls of the device in alinement with said mechanism, said light being arranged in a housing portion extending into the device, the first named wall of the device having a baffle encircling the major portion of said housing, said light including a domed reflector sealed in the inner end of the housing, a magnifying lens supported and sealed in the first wall of the device between said light and said mechanism, and said device having hood portions covering said mechanism and the outer end portion of said light.

ABRAHAM A. ARVINTZ.
NATHAN A. ARVINS.
ROBERT A. ARVINTZ.

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