

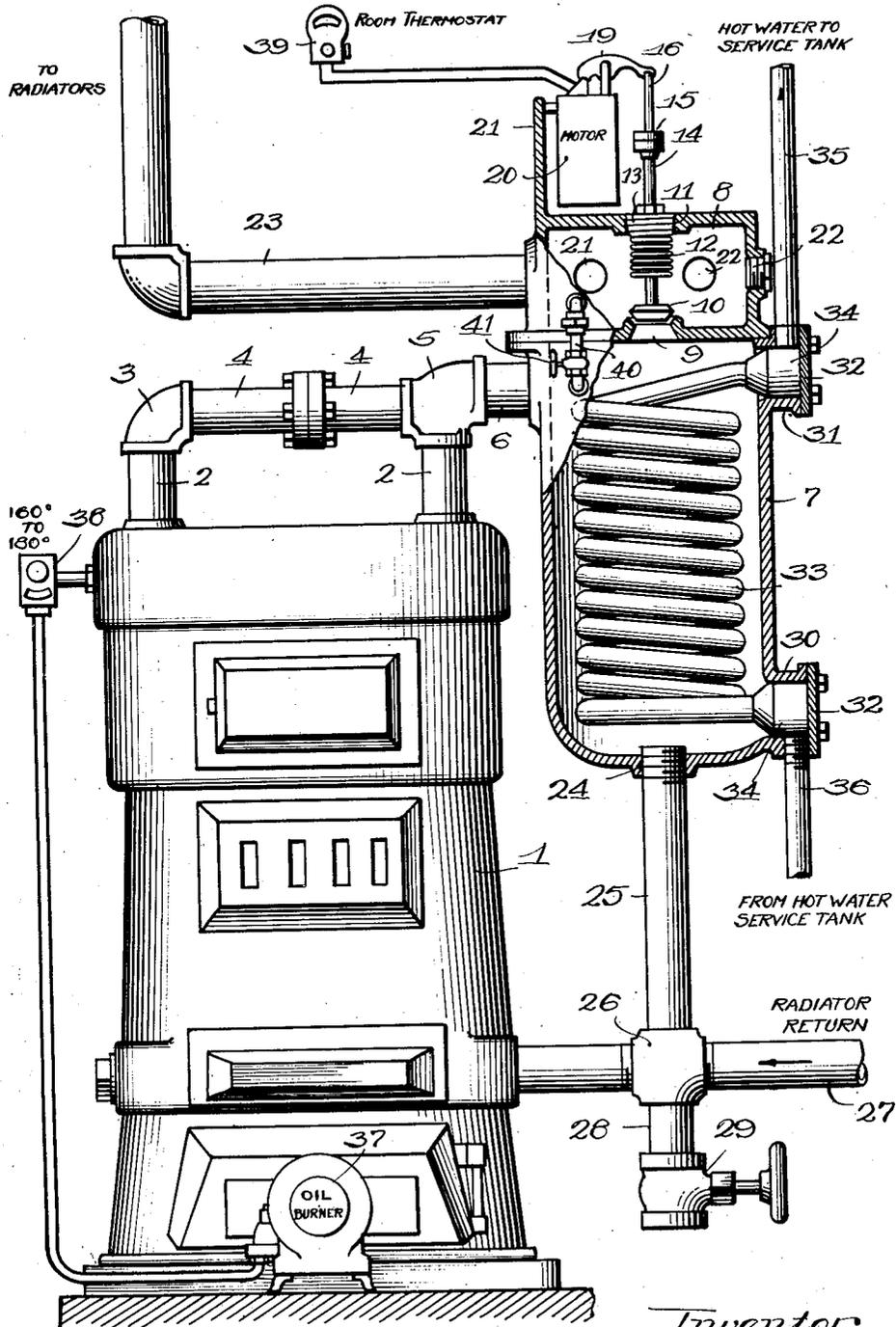
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R. E. MOORE

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HOT WATER HEATING DEVICE

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Chas. R. Kousch.

Robert Edwin Moore
Benj. J. Goodhouse, Atty.

UNITED STATES PATENT OFFICE

ROBERT EDWIN MOORE, OF CHICAGO, ILLINOIS, ASSIGNOR TO BELL & GOSSETT COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

HOT WATER HEATING DEVICE

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My present invention relates to improvements in hot water heating devices and has for its object the provision of a relatively simple unitary structure capable of being installed in connection with a hot water house heating boiler and radiator system for securing hot water for washing and other service purposes, and, at the same time, rendering the house heating system quicker and more efficient in its house heating functions.

As will be hereafter apparent my device is peculiarly applicable to, and advantageous in connection with, systems in which fluid fuel is employed, because in such systems the combustion is intermittent in accordance with the heating demands placed upon the system and when the water in the house heating system is not circulating the boiler is only employing such an amount of fuel as is necessary to heat the supply of service water. Also, when a circulation is required in the heating system the water in the boiler is maintained at a much higher temperature than without my structure, which water immediately flows into the house heating system and much reduces the time ordinarily required in bringing the temperature of the house heating system up to the requisite point.

As will be hereafter apparent, my device may be made in a factory and installed in connection with a hot water house heating plant without any changes in the plant except in the relocation of a length or so of pipe.

I have attained the foregoing objects and results by means of the structure illustrated in the accompanying drawing, showing in elevation a standard form of hot water house heating boiler with leads to and from the radiators, and my device shown in section in association therewith.

A hot water house heating boiler, designated in the drawing by the reference character 1, ordinarily has a plurality of leads 2—2 connected with the top thereof leading to and supplying the radiators. These leads I connect together by means of the elbow 3, union stubs 4—4 and T 5. One arm of the T 5 is connected through nipple 6 with my device, which consists of a lower cylindrical casing 7 and an upper casing 8 which is secured to the top of the lower casing and constitutes a closure for the upper end thereof. The lower or bottom wall of the upper casing is provided with a port 9 controlled by a valve 10. Immediately above the port 9 in the upper casing 8 is a tapped opening 11 through which the valve 10 may be inserted. This valve 10 is of a well known packless variety consisting of a circumferentially corrugated cylinder 12 with the bottom thereof closed, provided with a threaded top 13 which screws into the threaded opening 11, the valve stem 14 being sealed in the bottom of the cylinder 12 and extending above the casing 8 and terminating in a swivel union 15. The union 15 assembles with the lower end of the link 16, the upper end of which engages a lever arm 19, being a part of a thermostatically controlled motor 20 which is secured to an upwardly extended flange 21 rising from the top of the casing 8. The casing 8 is conveniently provided with a plurality of ports 22 for connection with the pipe 23 and such other feed pipes or risers as may be required in a particular installation which go to the radiators. In the bottom of the casing 7 is a port 24 from which runs a pipe 25 to a cross 26 in the boiler return 27. The lower opening in the cross is conveniently provided with a nipple 28 running to a valve 29 for clean-out purposes, but the valve 29 is not a necessary portion of my present invention.

Adjacent the bottom and top upon the side of the casing 7 are hollow embossments 30 and 31 closed by plates 32. Installed within the casing 7 is a heating coil 33 the ends 34 whereof are enlarged to fit within the embossments 30 and 31. The top of the embossment 31 is bored for the passage of the pipe 35 leading to the hot water storage tank, the lower end of which pipe 35 makes connection through the enlarged end 34 with the top of the coil 33. In the bottom of the embossment 30 is a port through which passes a tube 36, the end whereof connects with the lower end of the coil 33 and which

tube 36 constitutes the return from the service water storage tank.

I have illustrated in connection with the boiler a conventional form of oil burner 37 which is now ordinarily controlled by what is known as an aquastat 38 located in the upper part of the boiler. This aquastat is set to 160 or 180 degrees so that the fire of the oil burner is reduced or discontinued when the temperature of the boiler water reaches 160° or 180°, as the case may be.

In the premises to be heated is installed a thermostat 39 which is connected with the motor 20.

The operation of the system is as follows: The aquastat 38 closes the circuit thereby energizing the burner to increase the fire in the oil burner 37 at sufficient intervals to maintain the water in the boiler at the predetermined temperature. When the house heating system is not drawing on the boiler the amount of fire for maintaining the desired temperature in the boiler water is relatively small. When the premises falls below the temperature at which the thermostat is set the thermostat 39 causes the motor 20 to operate which lifts the valve 10 and permits the heated boiler water to flow into the radiator or house heating portion of the system and this flow continues until the premises are heated when the thermostat operates to energize the motor 20 to close the valve 10. In the meantime, however, a circulation of the boiler water through the casing 7 is constantly maintained to heat the service water supply.

I have found that it is desirable to maintain a small constant circulation in the house heating portion of the system as well as the service water portion in order to prevent the creation of local circulations in this part of the system and this constant circulation in the house heating portion of the system I secure by a by-pass 40 extending between the casings 7 and 8. In this by-pass 40, I include a hand operated valve 41 by which the flow in the by-pass may be regulated and by which the by-pass may be entirely closed in summer when no house heating circulation is required.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A structure for use in connection with hot water premises heating and hot water service supply systems consisting of a casing having a transverse partition providing an upper chamber and a lower chamber, said partition having a port establishing communication between said upper and lower chambers, the portion of said casing comprising said lower chamber having two pairs of inlet and outlet ports therein, one pair of inlet and outlet ports for connection with a boiler, a heating coil included in said low-

er chamber and connected with the other pair of said inlet and outlet ports, the portion of said casing comprising said upper chamber having a plurality of discharge ports therefrom, a valve controlling the port in said transverse partition and thermostatically controlled means for operating said valve.

2. A structure for use in connection with hot water premises heating and hot water service supply systems consisting of a casing having a transverse partition providing an upper chamber and a lower chamber, said partition having a port establishing communication between said upper and lower chambers, the portion of said casing comprising said lower chamber having two pairs of inlet and outlet ports therein, one pair of inlet and outlet ports for connection with a boiler, a heating coil included in said lower chamber and connected with the other pair of said inlet and outlet ports, the portion of said casing comprising said upper chamber having a discharge port therefrom, a valve controlling the port in said transverse partition and thermostatically controlled means for operating said valve.

3. A structure for use in connection with hot water premises heating and hot water service supply systems consisting of a casing having a transverse partition providing an upper chamber and a lower chamber, said partition having a port establishing communication between said upper and lower chambers, the portion of said casing comprising said lower chamber having two pairs of inlet and outlet ports therein, one pair of inlet and outlet ports for connection with a boiler, a heating coil included in said lower chamber and connected with the other pair of said inlet and outlet ports, the portion of said casing comprising said upper chamber having a discharge port therefrom, a valve controlling the port in said transverse partition, thermostatically controlled means for operating said valve and a manually controlled by-pass between said chambers.

ROBERT EDWIN MOORE.