

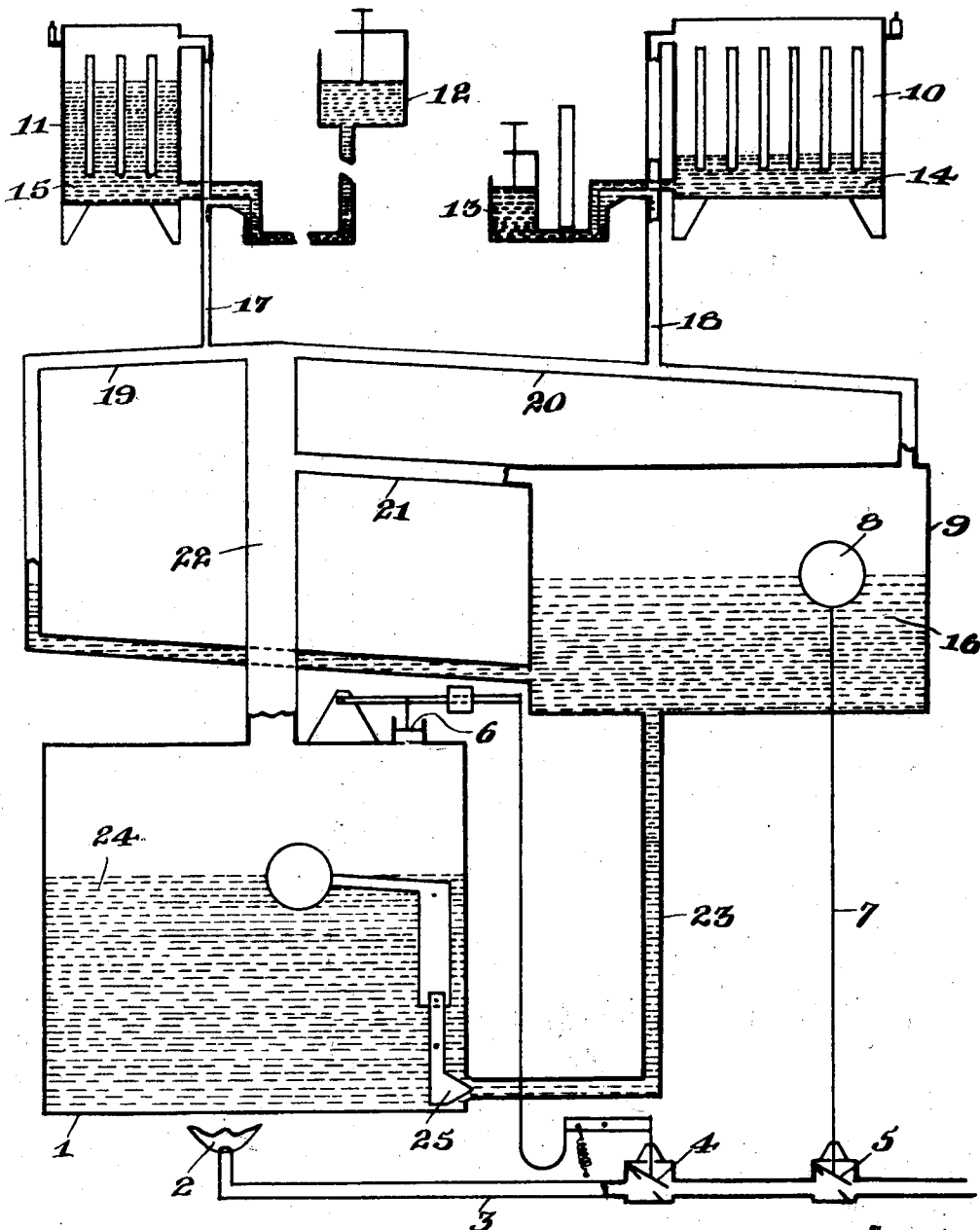
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AUTOMATIC REGULATION OF STEAM HEATING SYSTEMS

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AUTOMATIC REGULATION OF STEAM HEATING SYSTEMS.

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This invention relates to improvements in steam heating systems, particularly to improvements in the automatic control of the boiler heating means wherein the heating means is controlled by the average demand of the condensate controlled radiators in the system as evidenced by the non-return of the condensate.

An object of this invention is to provide a control means which will greatly economize in fuel consumption over the devices in common use for the control of heating systems.

An object of this invention is to provide a heating control means which will automatically reduce the fuel consumption of the boiler heating device on the rise of temperature in the rooms to be heated.

A further object of this invention is to provide a heat control means whereby the fuel consumption of the heating device for the boiler may be materially reduced at the discretion of the operator or the occupants of the rooms to be heated.

Further objects of this invention will appear from the following detailed description and from the disclosure in the single sheet of drawings which is a part of this application.

In the drawing:

The drawing illustrates a diagrammatic view of the heating system.

In the diagrammatic view, the heating means is disclosed as a gas burner 2, having a suitable supply line 3, and valves 4 and 5. Valve 4 is preferably connected through suitable elements to a pressure operated device 6 located at the top of the boiler 1. The valve 6 functions as a safety valve for the boiler pressure operating only on excessive pressure in the ordinary manner. Valve 5 is connected by some suitable means 7 to a float element 8 located within the condensate storage tank 9 which is adapted to receive the condensate returning from the radiators 10 and 11. The radiators 10 and 11 in this invention are controlled by any suitable thermostatic device which will function to regulate the condensate in the radiators such as the device disclosed in diagrammatic form at 12 and 13. The condensate in the radiators is designated by numerals 14 and 15 and the rise and fall of the condensate in the radiators 10 and 11 will function in this invention to determine the amount of fuel consumption for the heating of the boiler water 24. When the condensate is trapped in the radiator there will be a fall of the level of the condensate 16 in

the return storage tank 9, which fall of condensate level will function to close the valve 5 in the fuel line 3, thereby materially reducing the fuel consumption.

The radiators 10 and 11 are connected to the heating system and the boiler by means of suitable risers 17 and 18, the risers 17 and 18 being in turn arranged in proper open communication with headers 19 and 20 in the ordinary manner. A pressure or equalizer pipe 21 is adapted to extend from the upper portion of the return condensate tank 9 to a riser 22 which extends from the boiler 1. The headers 19 and 20 are adapted to drain in the ordinary manner into the condensate tank 9. A boiler feed line 23 extends from the bottom of the condensate tank 9 to the boiler 1. The boiler water 24 is adapted to be automatically maintained at a constant level by means of a float controlled valve 25 which functions to close the boiler feed line 23, whenever a predetermined level in the boiler 1 has been reached.

On the lowering of the condensate 14 and 15 in the radiators, which occurs ordinarily on the lowering of temperatures in the room to be heated, the condensate 16 in tank 9 will tend to rise thereby lifting the float control 8 which will function to open the valve 5 thereby admitting fuel to the heating device 2 and supplying an additional amount of heat for raising steam pressure in the boiler. The condensate level in the radiators in each room is dependent obviously, upon the particular temperature of the particular room, and the average of these condensate levels for all the rooms will determine the level of the condensate in the tank 9, thereby regulating the fuel consumption to the required amount for the average demand.

It is to be understood that the above description and the disclosure in the single sheet of drawings which is a part of this application, covers but one modification of the invention. Variations and substitutions may be made covering the type of heating device for the boiler and thermostatic control for the radiators and general form of the system within the scope of the invention without in any way affecting the merits thereof.

What I claim is:

1. In a heating system, a boiler, a heating means for the boiler, a condensate storage tank, radiators in open communication with the tank and the boiler, a feed line extending from the tank to the boiler, a device con-

trolled by changes in level in the storage tank for controlling the heating means, and means controlling the return of the condensate to the tank.

- 5 2. A steam heating system having, a boiler, heating means for the boiler, controlling means for the heating means, a condensate controlled radiator, a condensate storage tank, a system of risers and headers supply-
10 ing steam from the boiler to the radiators,

and returning the condensate from the radiators to the condensate tank, the controlling means for the heating means being automatically controlled by the rise and fall of the level of the water in the condensate storage tank so as to increase the heat generated upon the rise of level and decrease it upon the lowering of the level in said tank. 15

In testimony whereof I affix my signature.
EDWARD S. PORTER.