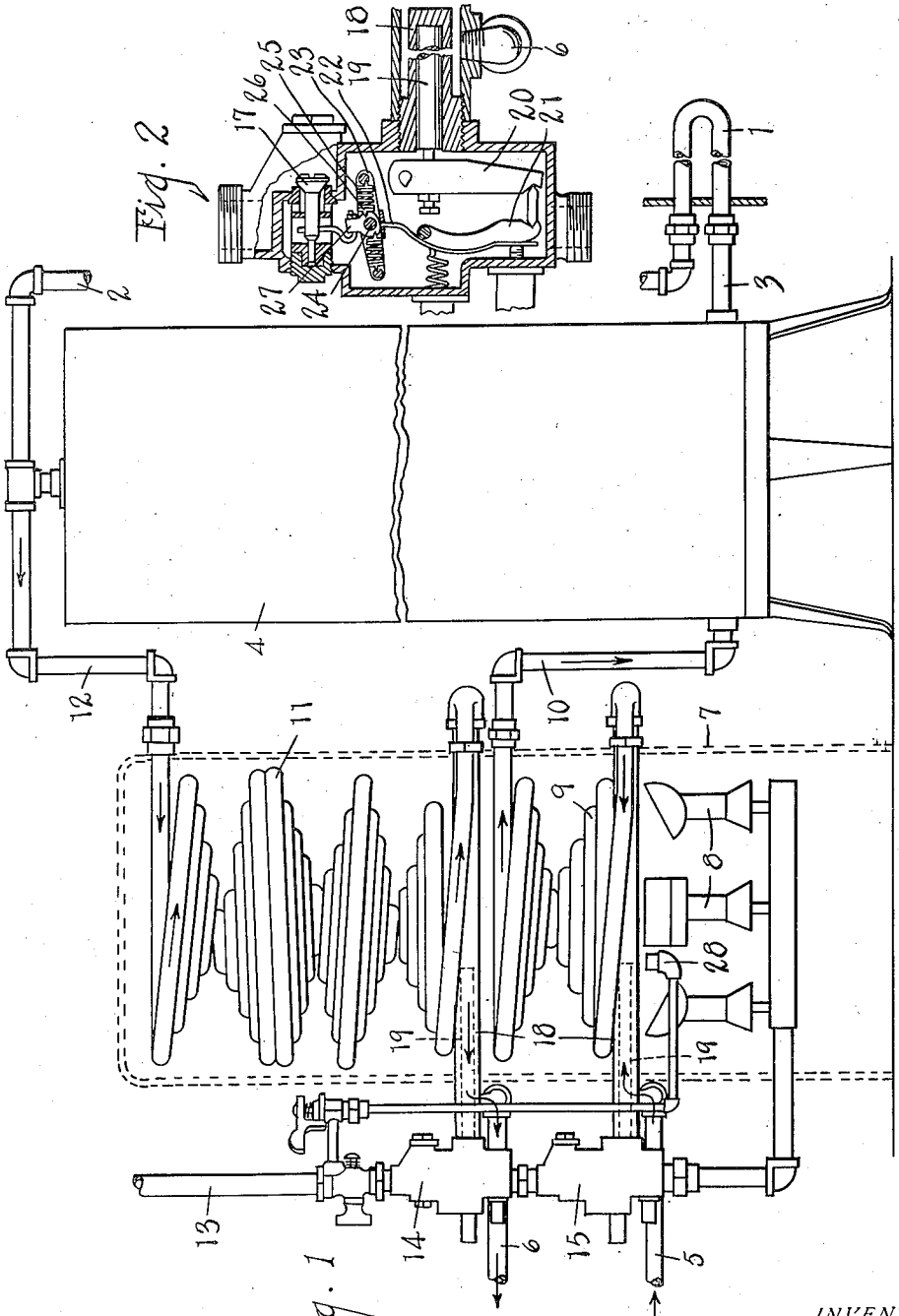
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WATER HEATER

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WATER HEATER

Application filed December 26, 1929. Serial No. 416,385.

The main object of this invention is to provide an improved water heater adapted for use in connection with furnace coils or the like, which is highly efficient, the water heater remaining inoperative in the event the water is sufficiently heated by the furnace coil or main heater.

Objects pertaining to details and economies of my invention will definitely appear from the description to follow. The invention is defined in the claims.

A structure which embodies the features of my invention is clearly illustrated in the accompanying drawings, in which:

Fig. 1 is a fragmentary side elevation of a heating apparatus embodying my invention.

Fig. 2 is a detail view mainly in section of one of the thermostatic control valve units.

In the embodiment illustrated 1 represents the coil of a furnace or main heater, this being shown conventionally. This heater is connected by the pipes 2 and 3 to a tank or reservoir 4 so that the water is circulated through this reservoir. 5 indicates the water supply and 6 the hot water discharge pipe or system.

I provide an auxiliary heater consisting of a casing 7 indicated by dotted lines in Fig. 1 within which I mount a gas burner 8. Above the burner is a coil heater unit 9, the bottom coil of which is connected to the water inlet 5 and the top coil is connected by the pipe 10 to the bottom of the reservoir 4. A second heater unit 11 is arranged within the casing above the coil 9, the top coil of the unit 11 being connected by the pipe 12 to the top of the tank 4. The bottom coil of the unit 11 is connected to the discharge 6.

The gas supply pipe 13 has a pair of thermostat control valve units 14 and 15 arranged therein in series. These units being duplicates only one is illustrated. The valve is shown at 17.

The thermostat unit 14 is operatively associated with the hot water discharge while the unit 15 is operatively associated with the cold water inlet. This thermostat valve mechanism is substantially that shown in my Patent No. 1,590,516 dated June 29, 1926, and in general comprises a tubular element 18 arranged within the water pipe, either the cold water inlet or hot water discharge. Within this element 18 is a rod 19 which engages the lever 20 adapted to operate on a lever 21 having a finger 22 engaging the rocker 23. This rocker 23 is mounted on a pivot 24 and carries a pair of springs 25 acting on the thrust blocks 26 engaging the lever 27 which acts upon the valve.

Therefore, as the rocker is rocked the thrust blocks are shifted to opposite sides of the pivot for the lever and actuate the valve with a snap action, that is, the valve is either fully opened or fully closed. The first control valve is normally open while the second valve is normally closed, the second valve being opened, however, by the incoming cold water.

In the event the temperature of the discharge water exceeds a predetermined degree, the first control valve is closed and remains closed until the temperature of the outgoing water falls below such predetermined point.

A pilot 28 is provided for the burner.

My improved water heating apparatus is highly efficient and is not likely to get out of repair. In the event that the temperature of the water is maintained by the main heating apparatus, the auxiliary heater remains inoperative as the supply of gas to the burner is cut off by the main heater and it comes into operation only as the water drawn off falls below the desired temperature.

My improved water heating apparatus is of large capacity and highly efficient. I have illustrated certain parts in conventional form as the structural details thereof do not constitute a part of this invention. It is believed, however, that this disclosure will enable those skilled in the art to embody or adapt my improvements as may be desired.

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

1. In a water heater, the combination with a burner, of a reservoir, a water heating unit having a circulating connection therewith, a second water heating unit comprising a plurality of water coil units arranged in superimposed relation, the bottom coil of the bot-

tom unit being provided with a cold water inlet, its top coil being connected to the bottom of said reservoir, the top of said reservoir being connected to the top of the top coil unit the bottom coil of the top unit being provided with a hot water discharge, said burner being in operative relation with said second heating unit, a pair of control valves for said burner arranged in series, a thermostat subject to the hot water discharge and operatively associated with the first control valve, and a second thermostat subject to the cold water inlet and operatively associated with the second control valve, said thermostats being adapted to open and close their respective valves with a snap action.

2. In a water heater, the combination with a burner, of a reservoir, a water heating unit having a circulating connection therewith, a second water heating unit comprising a plurality of water coil units arranged in superimposed relation, the bottom coil of the bottom unit being provided with a cold water inlet, its top coil being connected to the bottom of said reservoir, the top of said reservoir being connected to the top of the top coil unit, the bottom coil of the top unit being provided with a hot water discharge, said burner being in operative relation with said second heating unit, a pair of control valves for said burner arranged in series, a thermostat subject to the hot water discharge and operatively associated with the first control valve, and a second thermostat subject to the cold water inlet and operatively associated with the second control valve.

3. In a water heater, the combination with a reservoir, a water heating unit having a circulating connection therewith, a second water heating means including a burner, a plurality of water heating units operatively associated with said burner, one of said units being connected to the bottom of said reservoir and provided with a cold water inlet, the other unit being connected to the top of said reservoir and provided with a hot water discharge, a pair of control valves for said burner arranged in series, a thermostat subject to the hot water discharge and operatively associated with the first control valve, and a second thermostat subject to the cold water inlet and operatively associated with the second control valve, said thermostats being adapted to open and close their respective valves with a snap action.

4. In a water heater, the combination with a reservoir, a water heating unit having a circulating connection therewith, a second water heating means including a burner, a plurality of water heating units operatively associated with said burner, one of said units being connected to the bottom of said reservoir and provided with a cold water inlet, the other unit being connected to the top of said reservoir and provided with a hot water discharge, a pair of control valves for said burner arranged in series, a thermostat subject to the hot water discharge and operatively associated with the first control valve, and a second thermostat subject to the cold water inlet and operatively associated with the second control valve.

5. In a water heater, the combination with a reservoir, a heating means including a burner, a water heating unit having a circulating connection therewith, a second water heating unit comprising a plurality of water heating units operatively associated with said burner, one of said units being connected to the bottom of said reservoir and provided with a cold water inlet, the other unit being connected to the top of said reservoir and provided with a hot water discharge, said burner being in operative relation with said second heating unit, a pair of control valves for said burner arranged in series, a thermostat subject to the hot water discharge and operatively associated with the first control valve, and a second thermostat subject to the cold water inlet and operatively associated with the second control valve, said thermostats being adapted to open and close their respective valves with a snap action.

6. In a water heater, the combination with a reservoir, a heating means including a burner, a water heating unit having a circulating connection therewith, a second water heating unit comprising a plurality of water heating units operatively associated with said burner, one of said units being connected to the bottom of said reservoir and provided with a cold water inlet, the other unit being connected to the top of said reservoir and provided with a hot water discharge, said burner being in operative relation with said second heating unit, a pair of control valves for said burner arranged in series, a thermostat subject to the hot water discharge and operatively associated with the first control valve, and a second thermostat subject to the cold water inlet and operatively associated with the second control valve.

In witness whereof I have hereunto set my hand.

HERBERT S. HUMPHREY.