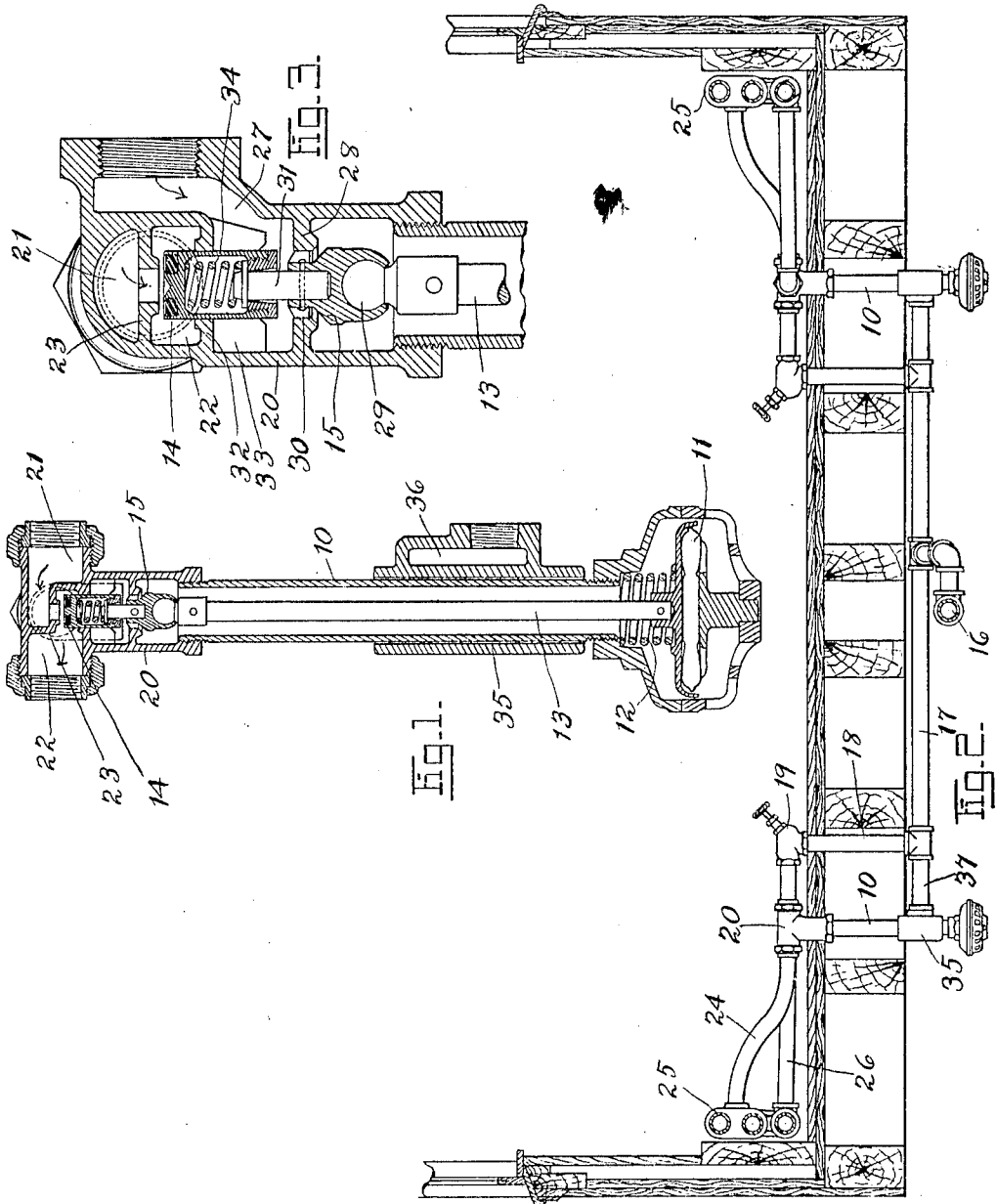


J. F. McELROY.
 THERMOSTATIC CONTROLLER FOR CAR HEATING SYSTEMS.
 APPLICATION FILED APR. 12, 1906.

949,285.

Patented Feb. 15, 1910.



Witnesses
 L. L. Shaw
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Inventor
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Attest.

UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO CONSOLIDATED CAR HEATING COMPANY, OF ALBANY, NEW YORK, A CORPORATION OF WEST VIRGINIA.

THERMOSTATIC CONTROLLER FOR CAR-HEATING SYSTEMS.

949,285.

Specification of Letters Patent.

Patented Feb. 15, 1910.

Application filed April 12, 1906. Serial No. 311,227.

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Thermostatic Controllers for Car-Heating Systems, of which the following specification and accompanying drawings illustrate the invention in a form which I now regard as the best out of the various forms in which it may be embodied.

This invention relates to means for controlling car-heating and other steam-heating systems and its object is to provide an improved arrangement for conjointly controlling the inlet and discharge of the radiator, according to which the inlet- and discharge-valves are yieldingly connected, and so disposed that the inlet-valve closes before the discharge-valve. The construction of such a controller is preferably such that the inlet-valve or both the inlet- and discharge-valves are located at or above the level of the car floor, which therefore requires a long controller-casing in order to bring the discharge-orifice and thermostat below the car floor and exposed to the outside air.

Of the accompanying drawings, Figure 1 represents a vertical section of a thermostatic controller embodying my invention. Fig. 2 represents a cross-section of a car showing the controllers and piping. Fig. 3 represents an enlarged section transverse to the plane of Fig. 1, showing the valves and valve-chambers.

The same reference characters represent the same parts in all the views.

In the drawings, 10 is the trap or thermostat-casing having an open mouth or cage at its lower end in which is located the expansible fluid cell 11 normally collapsed by a spring 12 and connecting by a rod 13 which passes upwardly through the casing with the steam inlet and discharge valves 14, 15. Steam passes from the main steam-pipe 16 extending longitudinally under the car through lateral branch pipes 17 and risers 18 past the hand-valves 19 to the valve-casings 20 at the upper ends of the two controllers. In this casing the steam enters an ante-chamber 21 and passes into an inlet-chamber 22 through a port in a partition 23 separating the said chambers,

under control of the inlet-valve 14. Chamber 22 connects with a branch pipe 24 supplying the car radiator 25, and the lower or discharge end of the radiator connects by a branch-pipe 26 with a chamber 27 in the valve-casing seen in Fig. 3 and leading to a port in a partition 28 controlled by the discharge-valve 15. Thus the inlet and discharge of the radiator are both controlled by the thermostat 11.

The body of discharge-valve 15 is connected with stem 13 by a ball-and-socket joint 29 permitting a slight amount of universal movement of said stem with respect to the valve. This joint is made by first cupping the valve-body to fit the ball and then spinning the edges of the cup over upon the ball, the result being a joint without lost motion. Above the valve 15 the valve-body is formed with wings 30 for guiding it in the port in partition 28, and to the valve-body is pinned an upwardly-extending stem 31 having a head located within the cylindrical body of inlet-valve 14. The latter is guided within an aperture formed in a partition 32 separating the inlet and discharge chambers 22 and 27, and is further guided by wings 33 below said aperture. Between the valve 14 and the head of stem 31 is interposed a spring 34. During an upward closing movement of stem 13 caused by expansion of the thermostat, inlet-valve 14 closes first, slightly before the discharge-valve 15, and spring 34 then permits further upward movement of the thermostat-stem and closure of the discharge-valve 15. Both valves are capable of limited universal movement and their even seating is thus promoted.

The above arrangement not only permits proper seating of both the inlet- and discharge-valves of the radiator but it also closes the inlet-valve first and the discharge-valve last when steam has so filled the radiator as to have reached the mouth of the trap-casing 10 and expanded the thermostat. When the thermostat has sufficiently cooled down to withdraw the valves from their seats, the discharge-valve 15 opens first and the inlet-valve 14 last. Thereby I avoid the accumulation of any considerable steam-pressure within the radiator at times of steam-inlet, or the formation of any considerable vacuum when the inlet-valve is closed.

I do not herein claim broadly the joint control of the inlet and discharge of the radiator by valves located upon the same stem, or in the same casing and subject to the same thermostat, or by a thermostat of the kind described. Those present improvements which relate to the valves are directed more especially to the yielding connection and to the closure of the discharge-valve subsequent to that of the inlet-valve.

It will be seen that the foregoing arrangement is such that the inlet-valve 14 will pass through the port in partition 28, and the stem 13 and both valves connected therewith may, together with the thermostat 11, be withdrawn downwardly through the mouth of the casing by unfastening the lower half of the thermostat-cage, which opens in the usual manner.

Near the lower end of the controller-casing 10, the pipe or neck forming its body is embraced by a cast steam-jacket 35 having a steam-chamber 36 connecting by a short pipe-section 37 with the branch steam-pipe 17 so that live steam is supplied to the jacket and warms the lower part of the controller-casing, thus preventing freezing of the discharge water in cold weather. This jacket has a close but not friction-tight fit upon the neck of the trap casing so that while it affords a hot metallic contact it also enables the lower part of the trap-casing to be withdrawn from said jacket by unscrewing the neck of the casing from valve-casing 20. This jacket and the short pipe 37 also afford a support for the lower part of the trap casing against lateral movement, thereby effectively bracing it. These latter details however, while preferred, are not essential to my invention.

What I claim as new and desire to secure by Letters Patent is:

1. In a steam heating system, the combination with a heater, of positively-seating valves controlling the heater inlet and discharge, a thermostat subject to the discharge of the heater and operatively connected with said valves, and a spring permitting the discharge valve to close after the inlet valve is seated.

2. In a steam heating system, the combi-

nation with a heater, of a valve controlling the heater inlet, a second valve controlling the heater discharge, means permitting the latter valve to close after the closing of the inlet valve, and a thermostat located posterior to the discharge valve in the line of the outflow, and operatively connected with said valves.

3. A controller for steam-heating systems comprising, in combination with the steam heater, a thermostat subject to the discharge of said heater, an inlet-valve and a discharge-valve controlling respectively the supply of steam to the heater and the discharge therefrom, and means operatively connecting said thermostat with the valves, said means including a yielding connection between said valves permitting one of said valves to close after the other is seated.

4. A thermostatic controller comprising inlet and discharge chambers, a port leading into the inlet-chamber, a second port leading out of the discharge-chamber, a thermostat-stem, inlet and discharge valves connected with said stem and controlling the respective ports, a spring interposed between said valves and permitting the discharge-valve to close after the inlet-valve is seated, and a thermostat connected with said stem and subject to the discharge from said discharge-port.

5. A thermostatic controller comprising a valve-casing having inlet and discharge chambers and ports, a thermostat subject to the outflow from the discharge-port and having a stem, a discharge-valve controlling said discharge-port and having a universal connection with said stem, a second stem attached to said valve and having a head, an inlet-valve controlling said inlet-port and having a hollow body inclosing said head, and a spring inclosed in said body and interposed between said head and inlet-valve.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses, this 10th day of April, 1906.

JAMES F. McELROY.

Witnesses:

BEULAH CARLE,
ERNEST D. JANSEN.