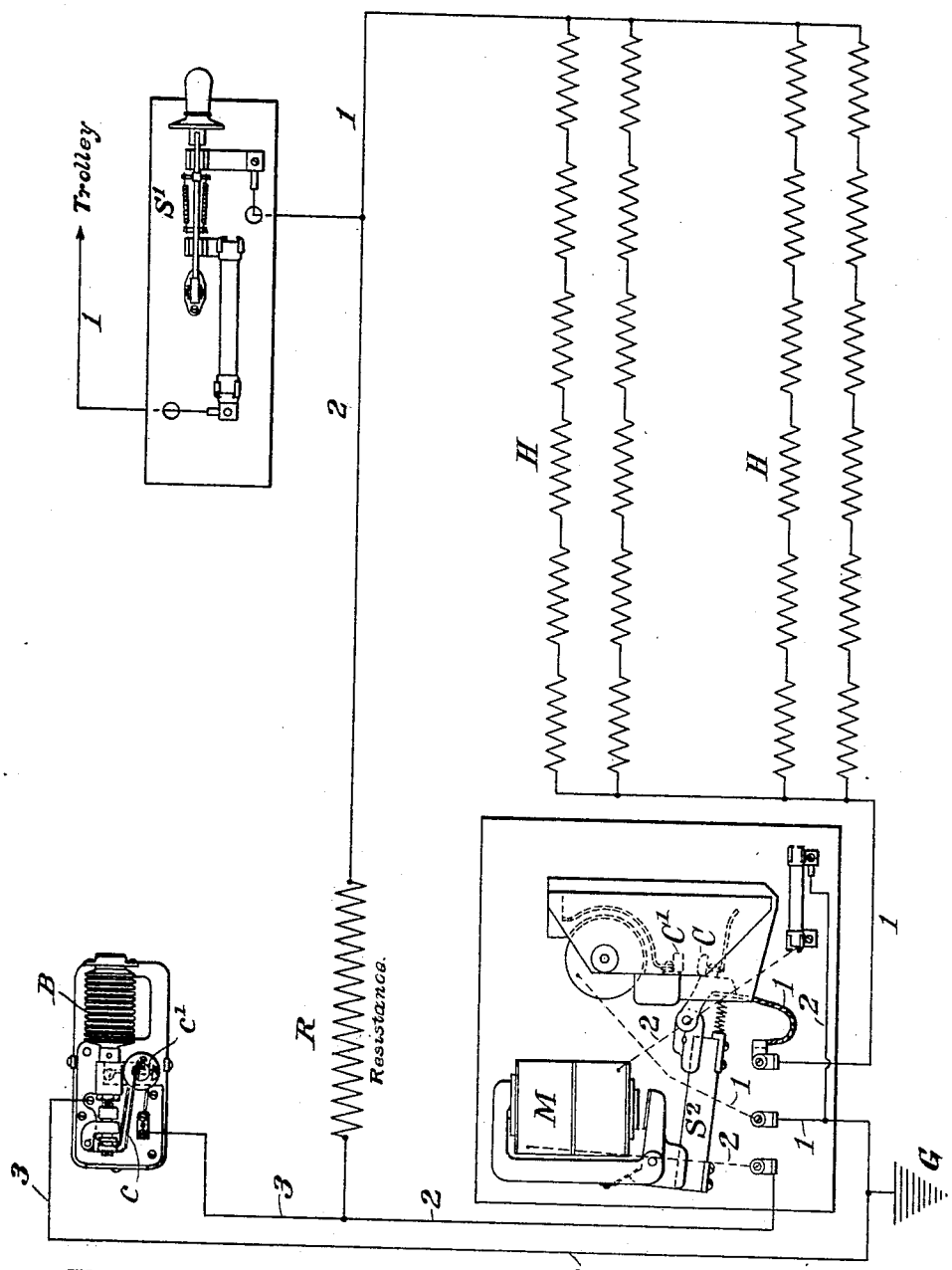
J. F. McELROY.

THERMOSTATICALLY CONTROLLED CIRCUIT.

APPLICATION FILED NOV. 3, 1914.

1,270,851.

Patented July 2, 1918.



WITNESSES:

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UNITED STATES PATENT OFFICE.

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THERMOSTATICALLY-CONTROLLED CIRCUIT.

1,270,851. Specification of Letters Patent. Patented July 2, 1918.

Application filed November 3, 1914. Serial No. 870,079.

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States, residing at Albany, county of Albany, State of New York, have invented certain new and useful Improvements in Thermostatically-Controlled Circuits, the following being a full, clear, and exact disclosure of the one form of my invention which I at present deem preferable.

For a detailed description of the present form of my invention, reference may be had to the following specification and to the accompanying drawings, which illustrate my invention.

My invention relates to circuits which are under thermostatic control. In particular, I have applied my invention to an electric heater circuit.

I place in the circuit to be controlled a switch for opening or closing it and provide a magnet which when energized will act to close the switch, and when deënergized will allow the switch to fall open by gravity or by a spring. This magnet is placed in a branch circuit around the heaters in series therein with a substantial resistance. In a second branch circuit which shunts the said magnet I place contacts controlled by a thermostat so that when the temperature rises the thermostat will close the said contacts and thereby divert sufficient current from the said switch-operating magnet to cause it to release its armature thereby opening the heater circuit. Conversely when the temperature falls the thermostat will open the said contacts thereby opening the shunt circuit around the magnet to cause it to attract its armature and close the heater circuit. It will be observed that the resistance aforesaid is in series with both the magnet and the thermostat-controlled shunt circuit. Hence only a limited amount of current can flow in either circuit which current can be diverted from or restored to the magnet according as the thermostat closes or opens its contacts. Moreover the potential-difference between the contacts can not exceed that which is determined by the resistance of the magnet coils, which resistance may be small by virtue of the high external resistance in series therewith. I am thus able to use this arrangement with circuits of 1200 volts or more such as have recently come into use on electric railways, it being my special purpose to thus control electric heaters on electric railway cars.

Referring to the drawing, the invention is diagrammatically illustrated, and as shown comprises a magnet M supported upon a suitable base and provided with means for pivotally supporting a movable switch member S^2 provided with a contact C, arranged to coöperate with a stationary contact C′, connected with a blow-out magnet conventionally shown. The magnet M, or movable switch member, and contacts, may be of any preferred construction, well known in the art, the said parts being conventionally shown for the purpose of illustration. H—H designate two electric heater sections, included within a circuit, the conductors of which are designated by the numeral 1. The said circuit leads from the trolley through a manual switch S′, of any desired construction, and from thence through the heater sections to the movable contact C carried by the blade S^2 and from thence through the blow-out magnet to ground G, the wires buried in the supporting base being indicated in dotted lines. Leading from the circuit 1, is a branch circuit 2 including a resistance R, the circuit wires leading from said resistance through the supporting base to the magnet M, from thence preferably to a fuse of any preferred form and from thence to ground G.

A second branch circuit leading from a point between the resistance and the magnet consists of conductors 3 leading to a thermostatic element B provided with movable contact *c* and stationary contact *c′*, the wires 3 leading from the thermostat to ground G, the last mentioned branch circuit being in parallel with the magnet and in series with the resistance. The thermostat B may be of any preferred construction.

In the drawing the parts are shown with the current passing through the thermostat and shunting both the heaters H and magnet M. When the temperature drops sufficiently, the branch circuit 3 is broken by the thermostat, and as a consequence the current will pass through branch 2, to the circuit magnet M, thereby effecting an operation of the switch blade S^2, bringing the contacts C C′ together, thereby causing the circuit 1 to pass through the heaters H. When the temperature rises sufficiently to effect a reverse operation of the thermostat, the branch

circuit 3 is closed, thereby shunting the magnet M and as a consequence the blade S^2 will drop, breaking the circuit at C, C′ so that the current will no longer pass through the heaters H and such current as may pass through the magnet will be insufficient to attract the armature thereof.

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

1. An improvement in thermostatically controlled circuits comprising means for providing a heater circuit, an electric heater within said circuit, a switch controlling said circuit, means for providing a branch circuit from said heater circuit, a magnet permanently in said branch circuit, an external resistance also in said branch circuit, means for providing a second branch circuit in parallel with the magnet and in series with the resistance, and a thermostat controlling the last mentioned branch circuit.

2. An improvement in thermostatically controlled circuits comprising means for providing a heater circuit, an electric heater within said circuit, a switch controlling said circuit, means for providing a branch circuit from said heater circuit, a magnet permanently in said branch circuit, an external resistance in said branch circuit in series with said magnet, means for providing a second branch circuit in parallel with said magnet and in series with the resistance, and a thermostat for controlling the last mentioned branch circuit.

In witness whereof I have hereunto set my hand, before two subscribing witnesses, this 21st day of October, 1914.

JAMES F. McELROY.

Witnesses:
HERBERT A. CALKINS,
FREDK. C. MANNING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."