

No Model.)

M. MARTIN.

THERMOSTATIC CIRCUIT CONTROLLING DEVICE.

No. 342,114.

Patented May 18, 1886.

Fig:1.

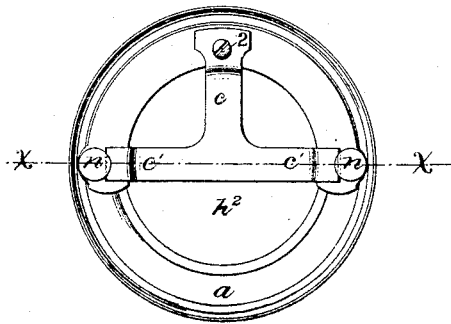
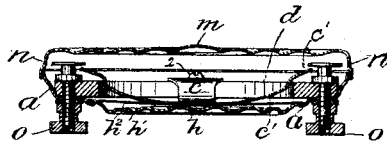


Fig:2.



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## THERMOSTATIC CIRCUIT-CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 342,114, dated May 18, 1886.

Application filed May 4, 1885. Serial No. 164,265. (No model.)

*To all whom it may concern:*

Be it known that I, MORRIS MARTIN, of Malden, county of Middlesex, and State of Massachusetts, have invented an Improvement in Thermostatic Circuit-Controlling Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to produce a simple and inexpensive device capable of operating by the rise and fall of temperature in the apartment in which it is placed to automatically produce a change in an electric circuit and give a suitable alarm or signal, and is intended as an improvement upon the device shown and described in application Serial No. 157,043, to which reference may be had.

The present invention consists of a frame provided with a central opening and an independent reservoir or capsule filled with a volatile liquid and supported by said frame, combined with a circuit-controlling device consisting, as herein shown, of a three-armed circuit-closer secured by one of its arms to an insulating-block, the other two arms diametrically crossing the reservoir or capsule, and serving as contact-pieces to co-operate with contact-screws, which pass through the opposite ends of the insulating-block and frame, headed nuts insulated from the frame turning on said contact-screws and binding the parts together.

The reservoir or capsule is preferably hermetically sealed, and one of its sides, made of flexible material, is capable of expansion or distortion by the volatilization of the inclosed liquid, due to a rise in temperature, such distortion or bulging out of the flexible face, which normally bears against the circuit-closer, causing said circuit-closer to rise, forcing its contact-pieces against the contact-screws and completing the circuit.

The entire mechanism is concealed by a suitable cover adapted to fit snugly and spring slightly over the frame.

The device is capable of co-operation with signaling mechanism, so that a change of electric circuit will cause a suitable alarm to be given.

Figure 1 shows in plan view a thermostatic

circuit-controlling device embodying my invention, the cover being removed; and Fig. 2 a cross-section of Fig. 1, taken on the dotted line  $x x$ , the cover being attached.

The frame  $a$ , provided with a central opening, the independent reservoir or capsule  $h$ , of larger area than the central opening in the frame  $a$  and supported therein, said reservoir having a rigid side,  $h'$ , and a flexible side,  $h''$ , and being filled with a suitable liquid—such, for instance, as naphtha—the volatilization of which causes the flexible side  $h''$  to expand, bulge out, or become distorted, and the cap or cover  $m$ , to conceal the operative parts and protect the same from dust, &c., are all as in the application above referred to, so need not be herein specifically described.

The circuit-controlling device in the present instance is of entirely different construction and the circuit normally open. The circuit-closer (shown as a three-armed or T-shaped metal plate) has one of its arms,  $c$ , secured by screw 2 to the insulating-block  $d$ . The other two arms or branches,  $c'$ , of the circuit-closer are extended diametrically across the reservoir or capsule  $h$ , leaving the junction of the three arms or branches at the center of the flexible side  $h''$  of the reservoir or capsule and normally bearing thereon. This circuit-closer is made of thin flexible metal, and is capable of vibrating to respond to the action of the reservoir or capsule.

The two branches or contact-pieces,  $c'$ , of the circuit-closer are bent up at their ends and located in proper position to co-operate with headed contact screws  $n$ , at opposite sides of the frame  $a$ , to complete the circuit. The contact-screws  $n$ , passed through the opposite ends of the insulating-block  $d$  and through the frame  $a$ , are provided with headed nuts  $o$  at the opposite side of the frame  $a$  and insulated therefrom, the rotation of the said nuts in the proper direction tightly binding the said insulating-block with its attached circuit-closer to the frame  $a$ .

The capsule  $h$  is filled with any suitable volatile liquid, and when subjected to a rise in temperature—as, for instance, in case of fire—its flexible face  $h''$  is distorted or bulged out by the volatilization of the inclosed liquid, and the yielding circuit-closer, which bears against

the face  $h^2$ , and is thus moved by the expanding reservoir, moves until the contact-pieces  $c'$  touch the heads of the contact-screws  $n$ , when the circuit is completed.

5 The apparatus is capable of co-operation with any suitable signaling mechanism, the terminals of the electric circuit in which the said signal mechanism is located being suitably connected with the apparatus by means  
10 of the nuts  $o$  and contact-screws. The circuit is normally open, but when closed by the responsive action of the contact-pieces  $c'$  a suitable alarm may be sounded or signal given.

15 The reservoir or capsule  $h$  may be readily removed from the frame and replaced by loosening or removing the nuts  $o$ .

Although the apparatus is shown and described with its circuit normally open, yet it is obvious that the circuit may be normally  
20 closed and the breaking of the same arranged to produce the alarm.

A three-armed or T-shaped circuit-closer constructed as described is less liable to vibrate and thereby close the circuit than those  
25 heretofore known to me, such advantage being of great importance when the thermostats are placed in buildings where heavy machinery is at work, thereby jarring the building, causing an accidental closing of the circuit.

30 I claim—

1. In a thermostatic circuit-controlling in-

strument, the combination, with an actuating device sensitive to a rise in temperature, of contact-screws connected with the terminals of the circuit controlled by the instrument, 35 and a three-armed or T-shaped circuit-closer responsive to the action of the said actuating device and held in position by one of its arms, the other two arms serving as contact-pieces and co-operating with the contact-screws to  
40 complete the circuit, substantially as described.

2. In a thermostatic circuit-controlling device, a frame, and a reservoir or capsule,  $h$ , supported thereby, combined with a three-armed circuit-closer responsive to the action of the reservoir  $h$ , an insulating-block secured to said frame and to which said circuit-closer is attached, contact-screws and headed nuts for securing the insulating-block to the frame, 50 two arms of the said circuit-closer crossing the central part of the said reservoir or capsule  $h$ , and co-operating with the contact-screws to complete the circuit, substantially as described. 55

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MORRIS MARTIN.

Witnesses:

B. J. NOYES,  
F. CUTTER.