No. 721,451. PATENTED FEB. 24, 1903.

J. M. LATIMER.

THERMOSTAT.

APPLICATION FILED JULY 27, 1901.

NO MODEL.

Fig. 1.

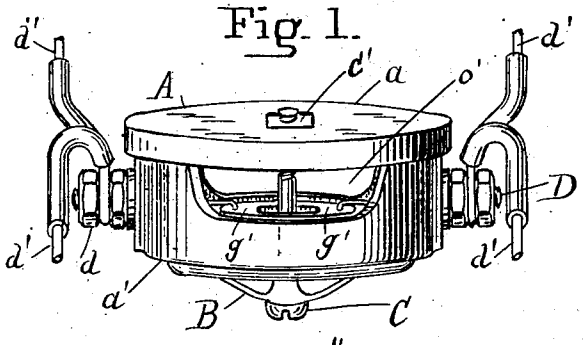


Fig. 2.

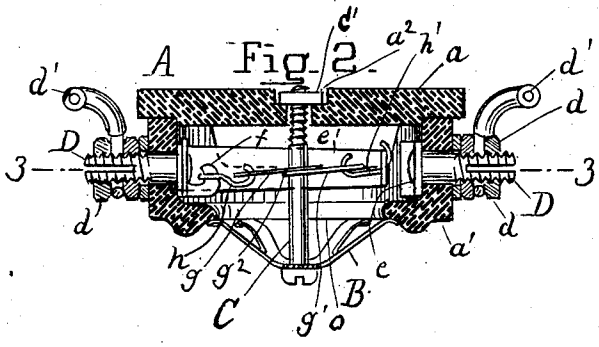


Fig. 3.

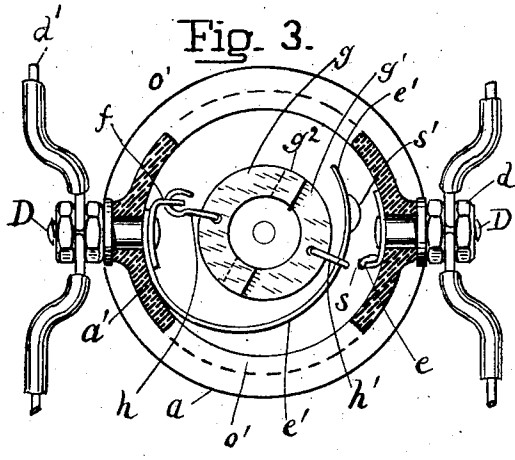
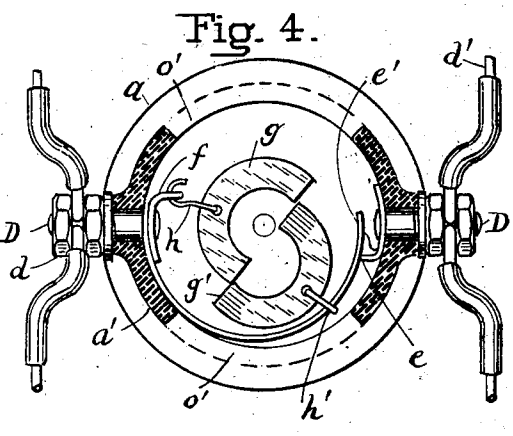


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN MORRIS LATIMER, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO THE UNITED PNEUMATIC FIRE ALARM TELEGRAPH COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

THERMOSTAT.

SPECIFICATION forming part of Letters Patent No. 721,451, dated February 24, 1903.

Application filed July 27, 1901. Serial No. 69,949. (No model.)

To all whom it may concern:

Be it known that I, JOHN MORRIS LATIMER, a citizen of the United States of America, and a resident of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Thermostats, of which the following is a specification.

The object of the present invention is to provide a thermostat for automatic electric fire-alarm systems, which is reliable and efficient in action, it being in normally open circuit and so constructed as that it is extremely sensitive to the action of heat caused by fire in the room in which the thermostat is located. The present form of thermostat is of substantial construction and is different from that class of thermostats in which the movable contact is composed of two metals of different coefficiencies of expansion and contraction, the parts being so combined and arranged as that vibrations caused by shock to the building or structure will not act to close the contacts and cause an accidental sounding of the alarm, as is often the case with said class of thermostats.

A further object is to so construct the thermostat as that the hot air caused by the fire may find free access thereinto.

A still further object is to insure a perfect electrical contact and the maintenance of the closure of the circuit after the contact has been made.

My invention consists of certain features of construction and combinations of parts to be hereinafter described and then claimed.

In the accompanying drawings, Figure 1 is a perspective view of my improved thermostat. Fig. 2 is a diametrical section thereof. Fig. 3 is a section on the line 3 3 of Fig. 2, parts being in elevation and the thermostat being in normal open-circuit condition; and Fig. 4 is a similar section of the thermostat, showing it after it has operated.

Referring to the drawings, the case or box A of the thermostat is composed, preferably, of a plate a, upon which is seated the hollow member or cap a', these parts being connected together by means of a central metallic or other spider-frame B, which is seated against the cap or hollow member a', and a bolt C, which passes through the center of the spider and at its threaded end through a central perforation in the plate a, which plate is countersunk at a^2 to provide a cavity for the locking-nut C'. Binding-posts D D preferably pass diametrically through the cap or hollow member a' and are threaded at their outer ends for the nuts d, which secure the line-wires d', forming a part of an automatic electric fire-alarm system.

The inner ends of the binding-posts support upon the inner wall of the cap or hollow member the fixed and movable contacts e e, respectively, for closing the electric circuit. The fixed contact consists of a piece of metal, preferably provided with an outturned toe or lip which forms a contact proper, while the movable contact e' consists of a long strip of metal which is placed under tension and is thereby bent into volute or helical form, as shown clearly in Fig. 3, by the following means: f indicates a metallic anchor hook or eye which is fixed to the binding-post of the movable contact e', and g g' indicate semi-sections of a ring-shaped fuse member, the adjoining ends of which sections g g' are connected together by solder at g^2, and the sections g g' of the fuse member are provided with hooks or links h h', constructed to engage, respectively, with the anchor hook or eye f and in the outer end of the movable spring-contact e'. The fuse or fuse member g g' and the hooks or links h h' thereby form a means for placing the movable spring-contact under tension and bending it into volute or other form, so that the result is that the said pieces are located within the space inclosed by the movable spring-contact and the fuse or fuse member g g' is located centrally within the chamber of the box or case A and directly opposite a central ventilating-opening o, formed in the cap or hollow member a'. The sides of the cap are preferably cut out at o' to also form ventilating-openings, so that in connection with the central opening o ample provision is made for the entrance of the hot air caused by the fire into

the box or case. The fuse or fuse member g g' is composed of very thin metal, and as the case or box is quite open the fuse or fuse member is thus quite sensitive to heat. It will also be noted that the hooks or links h h' form but small contact with the fuse or fuse member, thereby isolating the latter as far as practicable from the body of the thermostat.

It will be observed that the parts are so arranged as to take up but small space in the case A, that they are fully exposed, and that they are arranged so as to obtain the best effect in such small space. This is due in part to the form and location of the various parts. The contacts are both located in one plane, so that the volute-shaped movable contact will spring toward and touch the fixed contact in the plane of the volute, while the annular fuse is in the plane of both contacts with the movable contact partially encircling it, in consequence of which the plane of separation of the fuse-sections is in the plane of the volute.

When the fire occurs, the heat thereof will act upon the fuse or fuse member g g' and melt the solder at g^2, thus freeing the sections of the fuse member from each other and permitting the movable contact e' to move toward and against the fixed contact e, and thereby close the electric circuit through such contacts, the parts moving into the position shown in Fig. 4. To assure the closing of the circuit and the continued sounding of the alarm, the contacts e e' are preferably tipped or loaded with solder or fusible metal at s s', which when the contacts close melts and insures a perfect electrical contact.

The parts of the device may be readily assembled in the course of manufacture, and as the case or box A is made of porcelain or similar material the construction is quite cheap, while at the same time a reliable thermostat is produced.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a thermostat, the combination of a fixed contact, a movable contact of volute form, said fixed contact being located in the plane of the volute, and a fuse hung within the movable contact between its ends, for placing the movable contact under tension, substantially as described.

2. In a thermostat, the combination of a fixed contact, a movable contact of volute form, and a fuse of annular shape suitably hung within the movable contact to place it under tension in the plane of the fuse and of the volute, said volute contact partially encircling the circumference of the fuse, substantially as described.

3. In a thermostat, the combination of a fixed contact, a spring-strip fixed at one end, and a fuse supported at the fixed end of the strip and toward which the other end of the strip is bent and attached so as to form a single volute movable contact restrained away from the fixed contact in the plane of the volute, and within which the fuse is located to so restrain the volute movable contact, substantially as described.

4. In a thermostat, the combination of a fixed contact, a movable contact, a fuse consisting of thin metallic sections soldered together, and separate removable hooked links separate from the fuse, anchoring the fuse to a fixed support and connecting it with the movable contact, such links having a minimum amount of contact with the fuse or other part, substantially as described.

5. In a thermostat, the combination of a base-plate, a cap having an enlarged central opening, a spider-frame centered over the opening and resting on the cap, a bolt connecting the spider-frame with the base-plate, a fixed contact, a movable contact, both located within the cap, and a fuse restraining the movable contact and located directly opposite said opening, substantially as described.

6. In a thermostat, the combination of means of support, terminals thereon, thermally-released mechanism normally operative to hold the terminals separated from each other, means to bring the terminals into contact with each other, and a coating, fusible in the presence of abnormal heat, applied to the contact portions of the terminals, substantially as described.

Signed at New York, N. Y., this 23d day of July, 1901.

JOHN MORRIS LATIMER.

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