J. N. VANDEGRIFT.

CIRCUIT CLOSING THERMOSTAT.

APPLICATION FILED FEB. 17, 1919.

1,348,338. Patented Aug. 3, 1920.

Fig. 1.

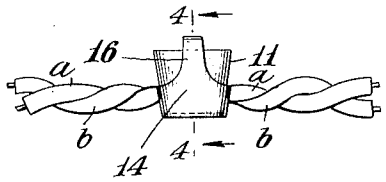


Fig. 4.

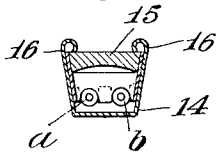


Fig. 2.

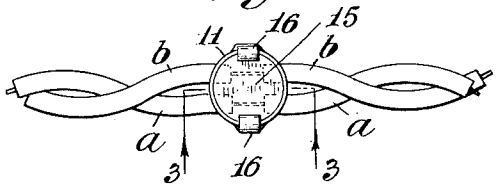


Fig. 5.

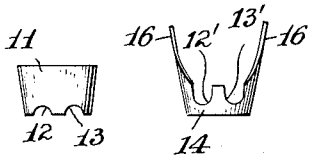


Fig. 3.

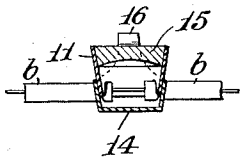


Fig. 6.

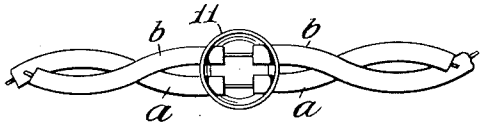


Fig. 7.

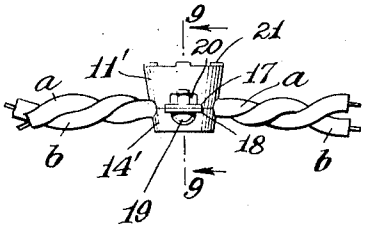


Fig. 8.

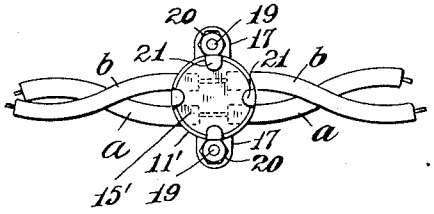
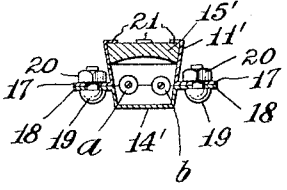


Fig. 9.



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CIRCUIT-CLOSING THERMOSTAT.

1,348,338. Specification of Letters Patent. Patented Aug. 3, 1920.

Application filed February 17, 1919. Serial No. 277,434.

To all whom it may concern:

Be it known that I, JAMES N. VANDEGRIFT, a citizen of the United States, and a resident of Red Bank, county of Monmouth, and State of New Jersey, have invented certain new and useful Improvements in Circuit-Closing Thermostats, of which the following is a specification.

This invention relates generally to circuit closing thermostats, with more particular reference to that type of device in which the melting of a readily fusible alloy results in the deposit of the latter in such place and manner as to electrically connect the two wires of a normally open circuit. The device of my invention may doubtless serve many useful purposes, but I have especially in mind a thermal circuit closing device for employment in connection with automatic fire-alarm systems.

The principal objects of the present invention are, first, the provision of a device which may be applied after installation of the wiring system at any desired point, merely requiring removal of minor portions of the insulation and without cutting the wires or the necessity of providing terminals or terminal binding posts; second, the provision of a device which is exceedingly small in size and which may therefore be easily concealed and not impair the general sightliness of the decorations of a room or chamber; third, the provision of a device which is practically dust-proof—it being well known that the accumulation of dust to a certain degree prevents the establishment of electrical connection—and this without losing sight of the idea of simplicity of construction and application, and, fourth, the utmost simplicity of construction compatible with dependability of operation and, therefore, inexpensiveness.

My invention will be more readily understood by reference to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of a practical and convenient embodiment of the invention;

Fig. 2 is a top plan view thereof;

Fig. 3 is a vertical section, taken substantially on the line 3—3 of Fig. 2;

Fig. 4 is a transverse vertical section, taken substantially on the line 4—4 of Fig. 1.

Fig. 5 is a detail view of the two parts of the casing in unassembled condition;

Fig. 6 is a view similar to Fig. 2 with the fusible plug or disk and the outer retaining shell or cap removed.

Fig. 7 is a view similar to Fig. 1 of a modified form of the device;

Fig. 8 is a plan view of the same, and

Fig. 9 is a transverse vertical section taken substantially on the line 9—9 of Fig. 7.

Referring now to the drawings in detail, *a* and *b* designate the insulated wires of an ordinary electric circuit, which may be one of any number of similar circuits, from the same or different sources of electric energy, leading through various parts, sections or rooms of a building, and having the usual connections in a common annunciator or separate annunciators, suitably located, to simultaneously sound an alarm and indicate the location of trouble in the usual and well-known manner under conditions as hereinafter explained. It is to be understood that the circuit is normally open.

The circuit closing thermostat of my invention comprises a preferably circular and slightly tapering sheet-metal shell 11 having oppositely-disposed pairs of notches 12 and 13 in the lower edge or rim thereof adapted to receive and snugly contain the insulated wires *a* and *b*. I have shown a cup-shaped shell or bottom cap 14 adapted to be telescoped on the lower end of the shell 11 and close the same, the upper edge or rim of the shell 14 being provided with notches 12′ and 13′ which correspond with the notches 12 and 13 in the shell 11, whereby when the two parts 11 and 14 are assembled, as shown in the drawings, a thimble-shaped casing is provided which is apertured for the passage therethrough of the wires *a* and *b*. Prior to the assembly of these parts on the wires, the insulation is cut from the latter for a distance slightly less than the diameter of the shell 11 at its lower end, whereby the edges of the notches in the parts 11 and 14, when assembled, will engage the insulation and not come in contact with the bare wires.

A disk, plug or cap 15, the same being formed from a more or less readily fusible alloy, is adapted to fit snugly within the upper and larger end of the shell 11. Alloys compounded for the purpose of fusion at comparatively low abnormal temperatures are too well known in this art to necessitate

detailed description here. Suffice to say, for the purposes of this description, that upon the raising of the temperature in the immediate vicinity of the device above what may be termed the maximum normal, this disk 15 will be melted and the molten fluid drop or flow to the bottom of the chamber within the assembled parts 11 and 14, thus establishing an electrical connection between the exposed wires therein and closing the circuit—with result as herein-before set forth.

I have shown the cup-shaped bottom cap or shell 14 provided with upwardly-projecting and preferably integral arms 16 16 which extend above the upper rim of the shell 11, whereby the extremities of said arms may be bent over to engage the disk 15 and retain the same in place. It will be apparent that these arms 16 16 serve the two-fold purpose of retaining the disk 15 in place in the shell 11 and the sealing-cap 14 in place on the lower end of said shell.

In Figs. 7, 8 and 9, I have shown the shell 11′ provided with lugs 17 17 projecting laterally from the lower edge or rim thereof, and the sealing cup or shell 14′ provided with corresponding lugs 18 18 on the upper edge or rim thereof, the two parts being adapted to be secured together by small bolts 19 19 passing through the superposed lugs whereby the same are clamped together by means of the nuts 20 20. In this construction, I do not provide the cap or shell 14′ with the upwardly-projecting arms, but form the shell 11′ with lugs or ears 21 21 on the upper edge or rim thereof, adapted to be bent over the disk 15′ of fusible material to retain the same in place.

In use, after the wiring has been installed, and the locations for the thermostats having been selected, the insulation is cut from the wires in the usual manner at these points, care being taken to expose the wires only throughout the desired distances, whereupon the shell 11 (or 11′) is first properly positioned, the disk 15 (or 15′) having been mounted therein, then the cap 14 (or 14′) is assembled therewith in the manner herein-before described, and either the ends of the arms 16 16 or the lugs or ears 21 21—as the case may be—bent downwardly to engage said disk, whereupon the installation—for this particular station—is complete.

While I have referred to the wires *a* and *b* as providing a "normally open" circuit, it is well known that automatic fire-alarm systems, as a rule, include an ordinary closed supervising circuit between battery terminals of which one of these wires forms a part, the other wire connecting the fire-alarm gongs and annunciators, remaining a part of the circuit which is "normally open" until said wire is connected with the first-mentioned wire by the fused alloy of the thermostat.

Many modifications of minor details of my improved circuit closing thermostat will doubtless readily suggest themselves to those skilled in the art to which it appertains, and I therefore do not desire to limit my invention to the specific construction herein shown and described.

I claim:

1. In a device of the character described, the combination of a cup-shaped receptacle through which the insulated wires of an electric circuit are adapted to be passed with a minor portion of the insulation on each wire within said receptacle removed, and a body of readily fusible metallic material mounted and retained above the de-insulated portions of said wires.

2. In a device of the character described, the combination of two separable members assembled to form a cup-shaped apertured shell through the lower part of which the insulated wires of an electric circuit are adapted to be passed with a minor portion of the insulation on each wire within said shell removed, and a body of readily fusible metallic material mounted and retained in said shell above the de-insulated portions of said wires.

3. In a device of the character described, the combination of two separable and inter-fitting members assembled in telescopic arrangement to form a cup-shaped apertured shell through the lower part of which the insulated wires of an electric circuit are adapted to be passed with a minor portion of the insulation on each wire within said shell removed, and a body of readily fusible metallic material mounted and retained in said shell above the de-insulated portions of said wires.

4. In a device of the character described, the combination of two separable members assembled to form a cup-shaped apertured shell through the lower part of which the insulated wires of an electric circuit are adapted to be passed with a minor portion of the insulation on each wire within said shell removed, and a body of readily fusible metallic material in said shell above the de-insulated portions of said wires, one of said members being provided with means for removably retaining said body in place.

5. In a device of the character described, the combination of two separable members assembled to form a cup-shaped apertured shell through the lower part of which the insulated wires of an electric circuit are adapted to be passed with a minor portion of the insulation on each wire within said shell removed, a body of readily fusible metallic material mounted and retained in said shell above the de-insulated portions of said wires, and means for detachably securing said members together in assembled condition.

6. In a device of the character described, the combination of two separable members assembled to form a cup-shaped apertured shell through the lower part of which the insulated wires of an electric circuit are adapted to be passed with a minor portion of the insulation on each wire within said shell removed, a body of readily fusible metallic material in said shell above the de-insulated portions of said wires, and means which at the same time secures said members together in assembled condition and retains said body in place.

7. In a device of the character described, the combination of an annular shell, a cup-shaped shell having telescopic connection therewith to close one end thereof, the edges of said elements being provided with registering notches adapted to form wire-containing apertures when said elements are assembled, a disk of readily fusible metallic material fitting within the open end of said annular shell, and means on said cup-shaped shell for retaining said disk in place.

8. In a device of the character described, the combination of an annular shell, a cup-shaped shell having telescopic connection therewith to close one end thereof, the edges of said elements being provided with registering notches adapted to form wire-containing apertures when said elements are assembled, and a disk of readily fusible metallic material fitting within the open end of said annular shell, said cup-shaped shell being provided with arms projecting above the upper edge of said annular shell and adapted to be bent over said edge to retain said disk in place and said shells in assembled condition.

9. In a device of the character described, the combination, with contiguously arranged insulated wires of an electric circuit, of a cup-shaped receptacle through which said wires pass and within which a minor portion of the insulation has been removed from each wire, and a body of readily fusible metallic material mounted and retained above the de-insulated portions of said wires.

10. In a device of the character described, the combination, with the contiguously arranged insulated wires of an electric circuit, of two members assembled to form a cup-shaped apertured shell through the lower part of which said wires pass and within which a minor portion of the insulation has been removed from each wire, and a body of readily fusible metallic material mounted in said shell above the de-insulated portions of said wires.

In testimony of the foregoing, I have hereunto set my hand in the presence of two witnesses.

JAMES N. VANDEGRIFT.

Witnesses:
ELEANOR C. KELLY,
FRED H. BOWERSOCK.