J. F. SCHEUER.

THERMAL CIRCUIT CLOSER.

APPLICATION FILED JUNE 17, 1914.

1,159,602.

Patented Nov. 9, 1915.

Fig. 1.

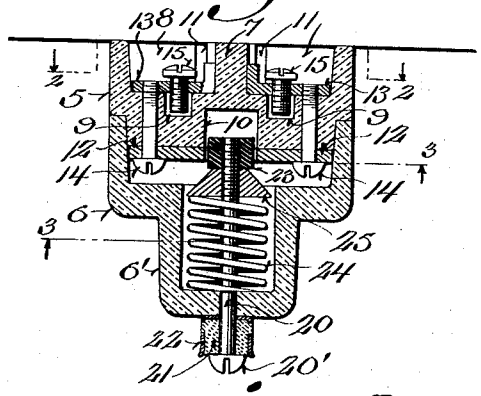


Fig. 2.

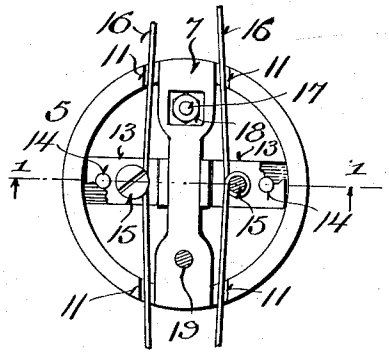
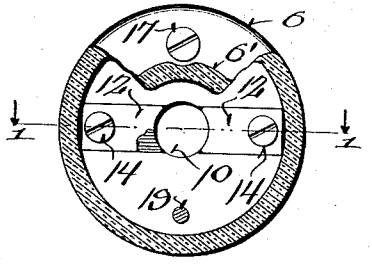


Fig. 4.



Fig. 3.



Witnesses:
Edmund E. Young
May Downey.

Inventor
Joseph F. Scheuer.
By Chapman & Young.
Attorneys.

UNITED STATES PATENT OFFICE.

JOSEPH F. SCHEUER, OF TWO RIVERS, WISCONSIN.

THERMAL CIRCUIT-CLOSER.

1,159,602. Specification of Letters Patent. Patented Nov. 9, 1915.

Application filed June 17, 1914. Serial No. 845,547.

To all whom it may concern:

Be it known that I, JOSEPH F. SCHEUER, a citizen of the United States, and resident of Two Rivers, in the county of Manitowoc and State of Wisconsin, have invented certain new and useful Improvements in Thermal Circuit-Closers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention consists in what is herein particularly set forth with reference to the accompanying drawings and pointed out in the claims of this specification, and its object is to provide simple, economical and efficient thermal circuit-closers of the fusible type and which are applicable as parts of automatic electric-signaling apparatus to be individually operative in the event of an increase of temperature in the vicinity thereof beyond a predetermined degree, a sleeve of readily fusible metallic composition molded in supporting cap having wall apertures being an important feature.

Figure 1 of the drawings represents a vertical sectional view of a fusible-plug thermal circuit-closer in acordance with my invention depending from a ceiling to which it is attached, the plane of the section being indicated by line 1—1 in Figs. 2 and 3; Fig. 2, an end view of the circuit-closer indicated by line 2—2 in Fig. 1; Fig. 3, a partly horizontal sectional view of said device indicated by line 3—3 in Fig. 1, and Fig. 4, a perspective view of a cap in which to mold a sleeve of readily fusible metallic composition.

Referring by numerals to the drawings, 5 indicates a preferably circular insulator block outwardly shouldered for engagement with a cover shell 6 having a central hollow boss extension 6′. The inner end of the block is recessed in opposite directions from a central rib 7, and from each recess 8, a countersink 9 extends longitudinally of said block. The outer end of the block is provided with a central circular recess 10, and opposite wall apertures 11 of said block communicate with each of the recesses 8 aforesaid.

Opposing the outer end of the block 5 to be flush with or lap the recess 10 thereof is a pair of conductor-plates 12, and a similar plate 13 is seated in each recess 8 of said block. Each conductor-plate 12 is held in electric-connection with a similar plate 13 by a conductor-screw 14, for which an aperture is provided in the otherwise solid portion of the block. Extending through each conductor-plate 13, into a countersink 9 of the block, but free of said block, is a binding screw 15 for an electric-current distribution wire 16 that extends through two of the wall apertures 11 aforesaid, these apertures being alined.

The cover 6 is held in place by a screw 17 engaging a nut 18 for which a seat is provided in the rib 7 of the block 5, and another screw 19 extends through said cover and block to fasten the circuit closer to a ceiling or other support.

Extending through a central aperture of the boss projection 6′ of the cover 6 is an outwardly headed stem 20, its head 20′ being opposed to a sleeve 21 of metallic composition molded in a sufficiently stiff cap 22 having a central opening in its crown and apertures in its wall adjacent to said crown. The crown of the cap opposes the boss projection of said cover and the sleeve molded in said cap is fusible at a predetermined degree of temperature. On the inner end of the stem is a nut 23 of insulating material extending into the recess 10 of the insulator block 5, and arranged on said stem, between said nut and a spiral-spring 24, is a conical washer 25 of conductor material normally out of contact with the plates 12, 12, the spring being under tension between the washer and the boss-end of the block-cover.

The expansive force of the spring 24 is such that there is a tendency of the fusible sleeve 21 to collapse unless it is molded in a cap 22 as herein specified. The cap is preferably aluminum and the metallic composition of the sleeve 21 fills the wall apertures of said cap.

When a fusion of the sleeve 21 takes place the inward movement of the stem 20, due to expansive force of the spring 24 against the opposing washer 25, causes the head 20′ of said stem to crowd the material of said sleeve through the wall apertures of the cap 22, and at the same time there is a wedging of said washer between the plates 12, 12, to thereby close an electric-circuit through said plates, the screws 14, plates 13 and the electric-current distribution wires 16 held in electric-contact with said plates 13 by the binding-screws 15. The closing of the elec-

tric-circuit effects an energization of an electric-signaling apparatus (not shown) in the same circuit.

I claim:

1. A thermal circuit closer comprising circuit terminals, an outwardly headed stem carrying a contact by which to bridge said terminals, a spring opposing said contact, and a sleeve of fusible-metal composition molded in a cap having wall apertures and slipped therewith on the stem between the head of said stem and an adjacent stop surface to thereby normally hold said contact away from said terminals against resistance of said spring, the cap being permanent against said surface and the stem head of less diameter than said cap into which it slides when there is fusion of said sleeve.

2. A thermal circuit-closer comprising an insulator-block recessed at its inner and outer ends and provided with wall apertures communicating with its inner recessed portion, said block being attachable to a support; conductor-plates facing the outer end of the block in proximity to the adjacent recess of the same, similar plates seated in the inner recessed portion of the block, conductor-screws connecting the outer and inner plates in pairs through apertures in the otherwise solid portion of the block, binding-screws engaging the innermost plates clear of the block for connection with electric-current distribution wires extending through said wall apertures, a cover shell in detachable connection with the block, a stem extending through the shell, a sleeve of fusible metal composition molded in a cap having apertures in its wall adjacent to its crown, the sleeve and cap being held on the outer end of the stem against the shell; an insulator-nut on the inner end of the stem engaging the outer recess of the block, a conical washer on the stem forward of the nut, and a spiral-spring under tension between the washer and the shell.

3. A thermal circuit-closer comprising an insulator-block recessed at its inner and outer ends and provided with wall apertures communicating with its inner recessed portion, said block being attachable to a support; conductor-plates facing the outer end of the block in proximity to the adjacent recess of the same, similar plates seated in the inner recessed portion of the block, conductor-screws connecting the outer and inner plates in pairs through apertures in the otherwise solid portion of the block, binding-screws engaging the innermost plates clear of the block for connection with electric-current distribution wires extending through said wall apertures, a cover shell in detachable connection with the block, a headed stem extending through the shell, a sleeve of fusible-metal composition molded in a cap having apertures in its wall adjacent to its crown, the sleeve and cap being on the stem between its head and the shell; an insulator-nut on the inner end of the stem engaging the outer recess of the block, a conical washer on the stem forward of the nut, and a spiral-spring under tension between the washer and the shell.

4. A thermal circuit-closer comprising an insulator-block recessed at its inner end in opposite directions from a central rib, and provided with an outer central recess as well as with wall apertures communicating with the recesses first aforesaid, said block being attachable to a support; conductor-plates facing the outer end of the block in proximity to the adjacent recess of the same, similar plates seated in the inner recesses of the block, conductor-screws connecting the outer and inner plates in pairs through apertures in the otherwise solid portion of the block, binding-screws engaging the innermost plates clear of the block for connection with electric-current distribution wires extending through said wall apertures, a cover shell in detachable connection with the rib of the block, a stem extending through the shell, a sleeve of fusible metal composition molded in a cap having apertures in its wall adjacent to its crown, the sleeve and cap being held on the outer end of the stem against the shell; an insulator-nut on the inner end of the stem engaging the outer recess of the block, a conical washer on the stem forward of the nut, and a spiral-spring under tension between the washer and the shell.

In testimony that I claim the foregoing I have hereunto set my hand at Milwaukee in the county of Milwaukee and State of Wisconsin in the presence of two witnesses.

JOS. F. SCHEUER.

Witnesses:

N. E. OLIPHANT,

M. E. DOWNEY.