

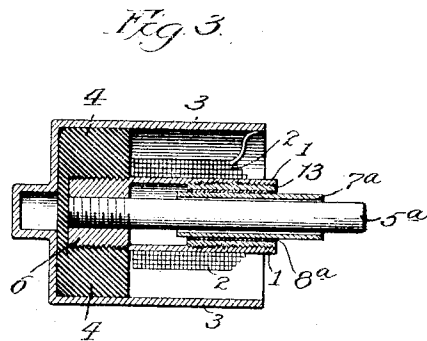
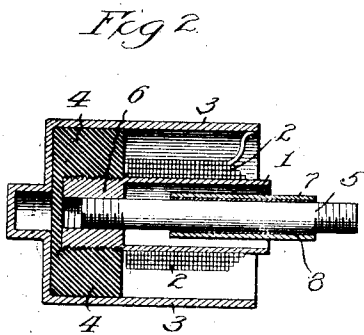
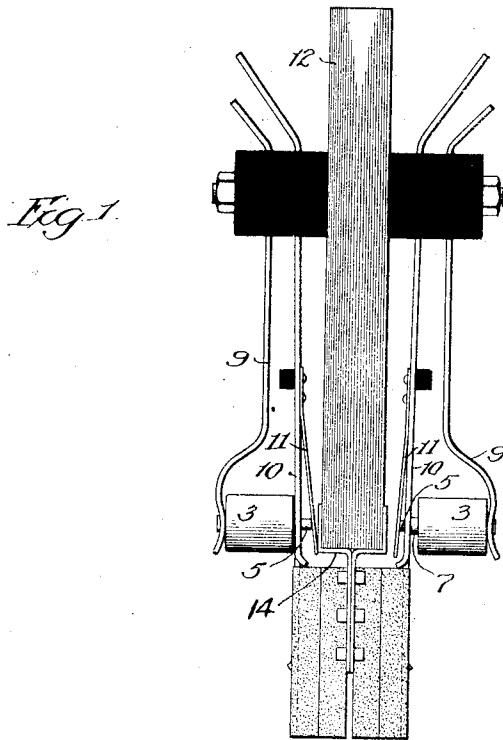
W. L. COURSEN.

HEAT COIL.

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944,540

Patented Dec. 28, 1909



Witnesses:

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UNITED STATES PATENT OFFICE.

WALTER LESLIE COURSEN, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO WESTERN
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HEAT-COIL.

944,540.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WALTER LESLIE COURSEN, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented a certain new and useful Improvement in Heat-Coils, of which the following is a full, clear, and exact description.

My invention relates to heat-coil protecting devices for electrical circuits, and its object is to provide an improved heat cartridge which is capable of use with the ordinary protector-strip.

My invention contemplates a heat cartridge in which the member or element operated by the action of abnormal currents in the coil is adapted after such operation to be reversed with relation to the heat coil.

The several features of my invention may be more readily understood by reference to the accompanying drawings, wherein—

Figure 1 is a plan view of a protector-strip showing a pair of heat cartridges held therein, one of said cartridges being shown as operated to ground the circuit; Fig. 2 is a longitudinal section of a heat cartridge embodying my invention; and Fig. 3 is a similar view of a modified form.

Like parts are designated by similar characters of reference throughout the several views.

The hollow metallic spool 1 has a coil of heat-producing wire 2 wound thereon, one end of said wire being attached as usual to the spool 1 and the other end to the metallic shell 3. In the bottom of the shell is a disk 4 of insulating material in which the spool 1 is threaded or otherwise secured, said spool being thus insulatedly mounted within the shell.

Referring more particularly to the embodiment of my invention shown in Fig. 2, a pin 5 is reversibly mounted in the spool 1, said pin being preferably threaded at each end, so that either end thereof may be threaded in the head 6 of the spool. Secured about the pin 5 is a member or tube 7, which is normally held in fixed position on the pin but which is adapted to be released when heated by abnormal current in the coil 2. Said tube is preferably held in place by low-fusing solder 8.

Both the pin 5 and the tube 7 project beyond the end of the coil 2, the pin itself extending beyond the tube. The normal position

in which the heat cartridge is held on the protector strip is indicated at the right in Fig. 1, such cartridge being shown in connection with a well-known type of protector-strip. The cartridge is held between the springs 9 and 10, the tension of the spring 9 tending to slide the tube 7 farther into the shell 3. When the solder 8 is melted by abnormal currents in the heat coil, such movement of the tube is effected and the pin 5 which bears against the spring 11 is free to press said spring against the ground strip 14 to which plate 12 is connected as indicated at the left of Fig. 1. thus grounding the circuit in a well-known manner. After the cartridge has thus operated, it can be reset by merely reversing the pin 5 and the tube 7 carried thereby, the remaining parts of the heat cartridge being non-reversible.

In the slightly modified form of my invention shown in Fig. 3 the pin 5^a is not reversible. The reversible tube 7^a is secured by solder 8^a, or in other suitable manner, within a collar 13 which is reversibly mounted in the open end of the spool 1, said collar being preferably threaded in said spool. To reset the cartridge after it has operated it is necessary merely to reverse the collar 13 in the spool 1.

I have thus provided a protective device for electrical circuits in which the heat coil itself and the shell within which it is mounted are non-reversible, the resetting of the heat coil after each operation involving instead the reversing of the operated member of the heat cartridge.

What I claim is:

1. In a protector for electrical circuits, the combination with a heat coil, of a member surrounded by said coil and projecting from one end thereof, said member being reversible with relation to said coil.

2. In a protector for electrical circuits, the combination with a non-reversible heat coil, of a reversibly mounted member projecting through said coil.

3. In a protector for electrical circuits, the combination with a spool, of a heat coil wound upon said spool, and a member passing through the spool and projecting from one end thereof, said member being reversible with relation to said spool.

4. In a protector for electrical circuits, the combination with a heat coil, of a member

surrounded by said coil and projecting from one end thereof, and means for reversibly mounting said member in said coil, said member being normally fixed with relation to said coil but adapted under the influence of heat developed by said coil to have a sliding motion relative thereto.

5. A heat cartridge comprising a spool, a heat coil wound thereon, a member surrounded by said spool and projecting from one end thereof, and means for reversibly mounting said member within said spool, said member being normally secured to the mounting means but sliding thereon under the influence of the abnormal heat developed by said coil.

6. A heat cartridge comprising a spool, a heat coil wound thereon, a mounting piece reversibly secured within said spool, and a member carried by said mounting piece, said member being normally fixed with relation to the mounting piece but arranged to be released by the effect of abnormal heat developed by said coil.

7. A heat cartridge comprising a spool, a heat coil wound thereon, a pin mounted within said spool and projecting from one end thereof, and a tube surrounding said pin and reversibly mounted in said spool with one end projecting beyond the end thereof, said tube being normally fixed with relation to said spool but arranged to be released by the effect of abnormal heat developed by said coil.

8. In a protector for electrical circuits, the combination with a shell, of a spool mounted within said shell and insulated therefrom, a coil wound upon said spool, one end of said coil being connected to said shell and the other to said spool, a mounting piece reversibly secured within said spool, and a member carried by said mounting piece, said member being normally fixed with relation to the mounting piece but arranged to be released by the effect of abnormal heat developed by said coil.

9. In a protector for electrical circuits, the combination with a shell, of a spool mounted within said shell and insulated

therefrom, a coil wound upon said spool, one end of said coil being connected to said shell and the other to said spool, a pin mounted within said spool and projecting from one end thereof, and a tube surrounding said pin and reversibly mounted in said spool with one end projecting beyond the end thereof, said tube being normally fixed with relation to said spool but arranged to be released by the effect of abnormal heat developed by said coil.

10. The combination with a hollow spool, of a heat coil wound thereon, a collar reversibly mounted in one end of said spool, and a member mounted within said collar and normally held in fixed relation thereto, said member being adapted to be released by the action of abnormal heat developed by said coil.

11. The combination with a hollow spool, of a heat coil wound thereon, a collar reversibly mounted in one end of said spool, a tube mounted within said collar and normally held in fixed relation thereto, said tube being adapted to be released by the action of abnormal heat developed by said coil, and a pin secured to the opposite end of said spool and projecting through said tube.

12. In a protector for electrical circuits, the combination with a shell, of a spool mounted within said shell and insulated therefrom, a coil wound upon said spool one end of said coil being connected to said shell and the other to said spool, a collar reversibly mounted in one end of said spool, a tube mounted within said collar and normally held in fixed relation thereto, said tube being adapted to be released by the action of abnormal heat developed by said coil, and a pin secured to the opposite end of said spool and projecting through said tube.

In witness whereof, I hereunto subscribe my name this 14th day of January A. D. 1908.

WALTER LESLIE COURSEN.

Witnesses:

JOHN J. LYNG,
CLARENCE G. STOTT.