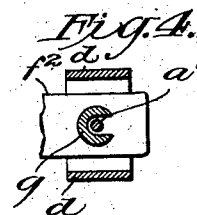
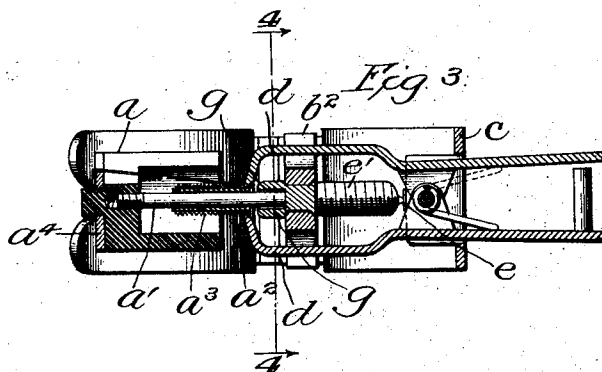
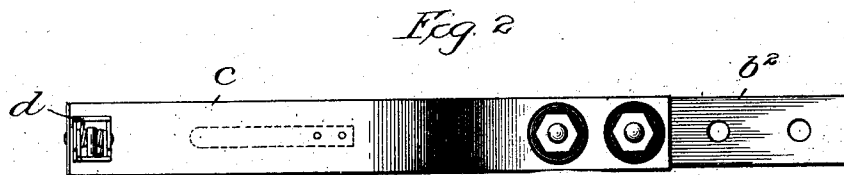
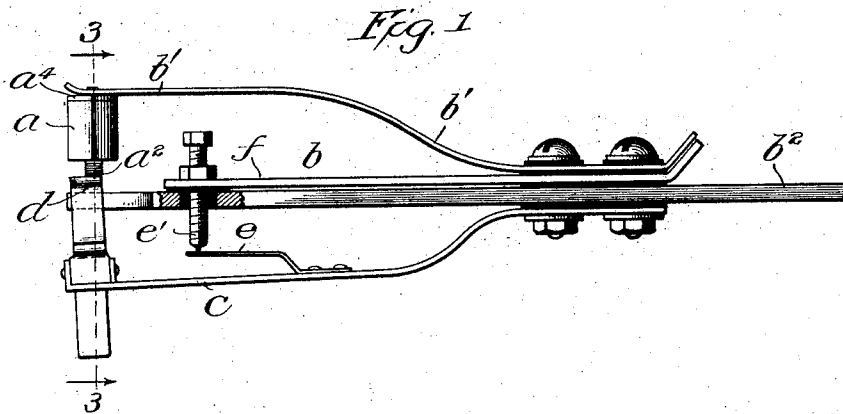


F. R. CHAPIN.
 RESETTING DEVICE FOR HEAT COILS.
 APPLICATION FILED MAR. 23, 1907.

1,059,348.

Patented Apr. 22, 1913.



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UNITED STATES PATENT OFFICE.

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RESETTING DEVICE FOR HEAT-COILS.

1,059,348.

Specification of Letters Patent.

Patented Apr. 22, 1913.

Application filed March 23, 1907. Serial No. 364,078.

To all whom it may concern:

Be it known that I, FREDERICK R. CHAPIN, citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented a certain new and useful Improvement in Resetting Devices for Heat-Coils, of which the following is a full, clear, concise, and exact description.

My invention relates to a resetting device for electro-thermal projections, as used more particularly in telephony, and has for its object to provide improved and simple means for automatically restoring a protector from its operated to its normal condition—that is, for resetting the protector—upon the application of heat thereto.

In carrying out my invention, I preferably provide a holder comprising a pair of supporting members adapted to receive a thermal protector, such as a heat coil, which has been operated, and which has an operating part rigidly secured in a displaced position due to the operation of the device. Means is provided in association with said supporting members for restoring the displaced part to normal position upon the application of heat to the coil and as shown in the drawings such means may comprise a spring-actuated gripping device adapted to grasp the displaced part of said heat coil and serve, together with the holder, as a means for conducting current through the coil to heat the same, whereupon the said operating part is freed. The gripping device, after the operating part is free, moves the said part into its normal or operating position, and contacts controlling the circuit connections of the coil are opened, said contacts being preferably controlled by said spring-actuated gripping device. I also may provide means for limiting the return movement of the operating part, such, for example, as a latching device carried by the holder and arranged to stop the return movement of the displaced part.

I will describe my invention by reference to the accompanying drawing, which illustrates the preferred form thereof, reserving, however, for the appended claims a state-

ment of the parts, improvements and combinations which I consider novel with me.

In the drawings, Figure 1 is a plan view of a resetting device embodying my invention; Fig. 2 is a view in side elevation thereof; and Fig. 3 is an enlarged view partly in section on line 3—3 of Fig. 1, showing a heat coil in position to be reset; and Fig. 4 is a fragmentary sectional view on the line 4—4 of Fig. 3.

The same letters of reference are used to designate the same parts wherever they are shown.

The heat coil *a*, with which I have chosen to illustrate my invention, is of the non-reversible type, and is provided with a pin *a*¹ secured at one end of the frame of the coil, and carrying a sleeve *a*² secured to the pin *a*¹ by solder, around which is placed a coil of wire *a*³ which is connected with the terminal *a*⁴ of the coil and with the sleeve *a*². Thus the sleeve *a*² and plate *a*⁴ form the terminals of the heat coil. In the normal operating condition of the heat coil, the sleeve *a*² surrounds the pin *a*¹ near its free end, as is well known; and in practice, when a heavy current is applied to the heat coil, the pressure of the supporting spring of the protector mounting causes the sleeve *a*², in a manner well known in the art, to move toward the fixed end of pin *a*¹, when the solder is melted, and the pin *a*¹ is forced into position to close a circuit in the usual way.

By means of my invention, the sleeve *a*² of a heat coil which has operated may be quickly and easily restored to normal position. I provide a holder *b* for the operated coil, said holder comprising an insulated spring *b*¹ adapted to engage the terminal plate *a*⁴ of the heat coil, and an insulated post *b*² carrying a cup *g* adapted to support the pin *a*¹ of the coil. The cup *g* is secured to the post *b*² in line with the portion of the spring *b*¹ which engages the terminal plate *a*⁴ of the heat coil, said cup being open at the side (as is clear from Fig. 4) to more readily receive the end of pin *a*¹. Spring actuating mechanism is provided adapted to be placed under tension to grasp the

sleeve a^2 and slide the same along the pin a^1 when current is applied to the coil a^3 to melt the solder and free the sleeve. Said means may comprise a spring c mounted at one end on the post b^2 , but insulated therefrom, and carrying at its other end in line with the sleeve a^2 a pair of spring-actuated gripping jaws d, d , adapted to grasp the same, and serving, when the solder holding the sleeve a^2 to the pin a^1 has been melted by the application of current to the coil, to pull the sleeve outwardly to its normal position.

A pair of contacts control the circuit connections of the heat coil, and are arranged to be opened when the sleeve has reached its normal operating position. These contacts may be operated by the spring c and may preferably comprise a spring finger e carried by said spring c , and having a contact anvil e^1 carried by the post b^2 and insulated therefrom, and electrically connected with a terminal plate f . It will thus be seen that the circuit of the heat coil leads from the spring b^1 through the coil a^3 to the sleeve a^2 , jaws d, d and spring c , through contacts e, e^1 , to the terminal plate f .

The outward pull of the jaws d, d upon the sleeve a^2 is limited or gaged by the cup g , which receives and supports the pin a^1 , the rim of said cup acting as a stop for said sleeve when it has reached the normal position, and since the heat generating circuit has been opened at contacts e and e^1 , the solder hardens and again fixes the sleeve a^2 to the pin in its normal position. I thus provide an accurate means for maintaining uniform the distance between the free end of the pin a^1 and the sleeve a^2 in all reset coils.

It will be apparent that other types of coils than the one shown may be reset by means of my invention. By my device it is simply necessary to insert a coil in the holder and apply current to the same, whereupon the coil will be automatically reset and the current cut off when the sleeve a^2 has been restored to its normal position.

I claim:

1. A tool for resetting relatively displaced parts of an operated thermal protector comprising supporting members for said protector, and means for restoring the normal relation of said parts upon the application of heat thereto.

2. A tool for resetting a displaced part of an operated thermal protector comprising a holder for said protector, and a spring-actuated device adapted to grip said displaced part and restore the same upon the application of heat to said protector.

3. A tool for resetting a displaced part of

an operated thermal protector, comprising a holder for the protector, and a tension device for causing said displaced part to be returned to normal position, said holder and tension device conveying the current to release said displaced part.

4. A tool for reestablishing the initial relation between two soldered rigid parts of a thermal protector, comprising a holder for said protector, spring-actuated means for causing a relative movement of said parts, said holder and spring-actuated means serving to conduct current to said protector to release said parts.

5. A tool for resetting a displaced part of an operated thermal protector comprising a holder for the protector, means for supplying current to said protector to release said displaced part, tension devices for causing the displaced part to be restored to normal position, and contacts in the path of said current opened when the displaced part is operated.

6. A tool for resetting a soldered displaced part forming one terminal of a thermal protector, a spring engaging and supporting the other terminal, a pair of spring-actuated jaws adapted to engage said displaced part and complete the circuit connections of said protector, and adapted upon the release of said part to restore the same to normal.

7. A tool for resetting a soldered displaced part forming one terminal of a thermal protector, comprising a pair of spring-actuated gripping jaws for engaging said displaced part, a spring supporting the other terminal of said protector, a source of current connected with said spring and jaws, and contacts in the path of said current opened by the movement of said jaws when the displaced part returns to normal position.

8. A tool for resetting a soldered displaced element of a thermal protector, comprising means for supporting said protector, means for releasing said displaced element, a tension device for restoring said displaced element, and gaging means limiting the return movement of said displaced element.

9. A tool for resetting a heat coil having an axial pin and a sleeve fused thereto in a displaced position, comprising a support for one end of said pin, a cup-shaped support for the other end of said pin, and a tension device adapted to engage said displaced sleeve, a circuit for supplying current to said coil to release said sleeve to permit said tension device to move it along said pin into engagement with said cup when said circuit is opened.

10. A tool for resetting a heat coil hav-

ing a sleeve soldered in a displaced position to an axial pin, a support for the ends of said pin, spring-actuated jaws adapted to grip said sleeve and draw the same along
5 said pin upon the application of heat to said coil, said cup limiting the return movement of said sleeve upon said pin.

In witness whereof, I, hereunto subscribe my name this 4th day of March A. D., 1907.

FRED R. CHAPIN.

Witnesses:

F. B. SAUNDERS,
E. C. LASKEY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."