

1,039,810.

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CUT-OUT FOR ELECTRIC HEATING DEVICES.

1,039,810.

Specification of Letters Patent.

Patented Oct. 1, 1912.

Application filed November 8, 1909. Serial No. 526,822.

To all whom it may concern:

Be it known that I, EDWARD E. ROSE, a citizen of the United States, and a resident of Swissvale, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Cut-Outs for Electric Heating Devices, of which the following is a specification.

My invention relates to electric heating devices and it has special reference to electric sad irons and similar heating devices which are liable to set fire to adjacent inflammable material, or, at least, to become heated to an objectionable degree, if they are not disconnected from the supply circuit when out of service for a considerable length of time.

The object of my invention is to provide automatic means for interrupting the supply circuit of a device of the class referred to above which shall be independent of the volume of current in the resistance element, but which shall be responsive to a predetermined temperature in the device.

The danger of setting fire to surrounding objects by an electric sad iron is not necessarily dependent upon the amount of current supplied to the resistance element since, when the device is in service, a large amount of heat may be dissipated, while, if the iron is inadvertently left in contact with inflammable material in a more or less confined space, a small amount of current may produce a sufficient amount of heat, if applied for a considerable period of time, to ignite such material.

According to my present invention, I locate a plunger in a body of metal which will become fused by a predetermined temperature in the iron. A relatively strong spring is provided for moving the plunger in one direction whenever the fusible material is softened, in order to interrupt the supply circuit of the device and, at the same time, to release itself from the plunger and permit an oppositely acting weaker spring to immediately return the plunger to its original position before the fusible material has an opportunity to set. In this way, the circuit may be readily closed when it is again desired to use the device.

Figure 1 of the accompanying drawings is a partially sectional elevation of an electric sad iron constructed in accordance with

my invention, and Fig. 2 is a plan view of the device shown in Fig. 1, the cap and handle being removed.

Referring to the drawings, the electric sad iron here shown comprises a base plate 1, a resistance element 2, a body member 3, a cap 4, a handle 5, a terminal member 6 and an automatic cut-out device 7. The resistance element 2 may be of any suitable type, but I prefer to employ a flat structure similar to that shown in application Serial No. 445,199, filed by William S. Hadaway, Jr., July 24, 1908; this element being assembled between the base plate 1 and the body casting 3. The terminals of the resistance element are secured to connector plugs 8 which form parts of the terminal member 6 of the sad iron. This terminal structure comprises a suitable socket connector 9 which is adapted to cooperate with the plugs 8 and to which a supply line conductor in the form of a flexible cable 10 is connected.

The automatic cut-out device 7 comprises a small body 11 of fusible material, such as solder or Babbitt metal, the composition of which is such that it is softened when the temperature of the sad iron body exceeds a predetermined amount; a plunger 12 which is normally set in the material 11, a latch 13 pivotally secured to the plunger, a lever 14 pivotally secured to the body of the iron at one end and adapted to eject the connector 9 and thereby interrupt the circuit when the fusible material is softened. A relatively strong spring 15 tends to actuate the lever 14 but the arrangement of parts is such that the latch 13 retracts the spring 15 until the plunger is permitted to move longitudinally upon the softening of the material 11.

The operation of the cut-out is as follows: Assuming that the resistance element 2 is supplied with energy from any suitable source (not shown), and the arrangement of parts conforms to what is shown in Fig. 1, if the sad iron remains out of service for a considerable length of time, the temperature of the body member 3 will gradually increase until the fusible material 11 is softened. The plunger 12, being thus released, will be raised by the spring 15, acting through the lever 14 upon the latch 13, until the position of the plunger is such

that the lever 14 is released from the latch 13. Further movement of the lever 14 under the action of the spring 15, will interrupt the circuit of the resistance element 5 by separating the socket connector 9 from the terminal plugs 8. As soon as the plunger is released from the lever 14, a spring 16, which acts in opposition to the relatively strong spring 15, immediately 10 forces the plunger into its original position before the fusible material 11 has had an opportunity to harden, and, consequently, when this fusible material is again set, the plunger is in proper position for a second 15 operation. After the cut-out has operated, the resistance element may be again connected in circuit by merely forcing the socket connector into its closed-circuit position, thereby re-setting the lever 14 under 20 the latch 13.

Other means may be employed for electrically interrupting the circuit without departing from the spirit of my invention, and I desire that only such limitations 25 shall be imposed as are indicated in the appended claims.

I claim as my invention:

1. In an electric heating device, the combination with a circuit-interrupting device, 30 and means for actuating said device, of a reciprocatory plunger and a body of fusible material for locking and releasing said actuating means, and automatic means for returning the plunger to its embedded posi-

tion in said fusible material as soon as the 35 circuit is interrupted.

2. In an electric heating device, the combination with a resistance element, a circuit interrupting device, a spring-actuated member for operating said interrupting device, a 40 stationary plunger normally set in fusible material, and a latch pivotally secured to the plunger and adapted to hold the spring-actuated member in retracted position, of 45 means for returning the plunger to its original position after it has been displaced and the spring-actuated member released.

3. In an electric sad iron, the combination with a resistance element, a body of fusible material adapted to be influenced by the 50 temperature of the iron, a plunger set in said body of fusible material, a latch pivotally secured to said plunger, and a spring-actuated lever normally held in retracted position by the latch, of a circuit interrupt- 55 ing device comprising a relatively movable member actuated by the lever to open the circuit when the fusible material is softened, and means for returning the plunger to its original position after the lever is 60 operated.

In testimony whereof, I have hereunto subscribed my name this 22nd day of October, 1909.

EDWARD E. ROSE.

Witnesses:

R. J. DEARBORN,
B. B. HINES.