AUTOMATIC CUT-OFF FOR ELECTRIC IRONS

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Fig. 1.

Fig. 5.

Fig. 6.

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This invention relates to electrically heated flatirons and more particularly to means for controlling the circuit of an electrically heated iron whereby to interrupt the circuit in the event the iron becomes overheated or when the iron is tilted and not in use.

The invention together with its objects and advantages will be best understood from a study of the following description taken in connection with the accompanying drawings wherein:

Figure 1 is a side elevational view of an electrically heated iron with parts broken away and illustrating the application of the invention.

Figure 2 is a view similar to Figure 1 showing the iron in a tilted or substantially vertical position.

Figure 3 is a longitudinal sectional view through a mercury switch with the mercury in the lower tube of the switch for completing the circuit.

Figure 4 is a similar view showing the switch in a vertical position and part of the mercury in each of the tubes.

Figure 5 is a view similar to Figure 1 and showing the mercury in the upper tube for interrupting the circuit.

Figure 6 is a sectional view taken substantially on the line 6—6 of Figure 1.

Referring to the drawings by reference numerals it will be seen that 6 indicates generally an electric iron which includes among other parts a handle 6 and a resistance heater 7. Arranged in circuit with the heater 7 and suitably mounted within the body or hood 8 of the iron and secured in position within said hood 8 through the medium of straps 9 is a mercury switch indicated generally by the reference numeral 10.

The switch 10 comprises a pair of integral tubular members 11 and 12 having a common partition wall 13 therebetween. The lower tube 11 is provided at its respective opposite end with plugs 14 of insulating material. Extending through the plugs 14 are electrodes 15 which in the normal position and condition of the switch are connected by the body of mercury 16.

The partition wall 13 adjacent one end thereof is provided with an opening 17 through which the mercury passes from one of the tubes 11, 12 to the other of the tubes.

From the above, it will be apparent that under normal operating conditions the mercury in the lower tube 11 connects the electrodes 15 for completing the circuit through the switch.

When the temperature of the working surface of the iron exceeds a predetermined degree a sufficient quantity of the mercury in the tube 11 is vaporized to reduce the level in said tube to a point below the electrodes 15 so that the circuit through the electrodes is broken the vapor passing through the port 17 into the tube 12. As the iron cools due to such interruption of the circuit the vapor in the tube 12 is condensed and drains back into the tube 11 through the port 17. After the iron is tilted in the proper direction all of the condensation may be caused to drain from tube 12 into tube 11. The upper tube 12 is larger than the tube 11 to provide adequate surface for condensing the vapor therein.

Also when the iron is placed in a tilted or substantially vertical position, as for example, if placed in the position as shown in Figure 2 the mercury 16 will tend to settle in the lower ends of the tubes 11 and 12. Some part of the mercury flowing through the port 17 into the tube 12 whereby the circuit through the uppermost electrode 15 and consequently through the switch is interrupted. Upon return of the iron from the position shown in Figure 2 to the position shown in Figure 1, the mercury from the tube 12 will flow back through the port 17 into the tube 11 for connecting the electrodes 15 and thereby reestablish the circuit through the switch.

It is thought that a clear understanding of the construction, utility and advantages of an invention of this character will be had without a more detailed description.

Having thus described the invention, what is claimed is:

1. A mercury switch, a pair of integral parallel sealed tubes one of which is larger than the other and constituting a main tube and a condensing tube together with an integral partition wall common to the tubes and provided at one end with an opening therethrough connecting said tubes, a body of mercury in said main tube and electrodes extending through the respective opposite end walls of the main tube and extending into said body of mercury.

2. In a mercury switch, a pair of integral parallel sealed tubes constituting a main tube and a condensing tube together with an integral partition wall common to the tubes and provided at one end with an opening therethrough connecting said tubes, a body of mercury in said main tube, electrodes extending through the respective opposite end walls of the main tube and extending into said body of mercury, the main tube being substantially cylindrical in cross section, and the condensing tube being substantially rectangular in cross-section, and larger than the main tube to provide for a greater wall area therein for the collection of condensation thereon.

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