

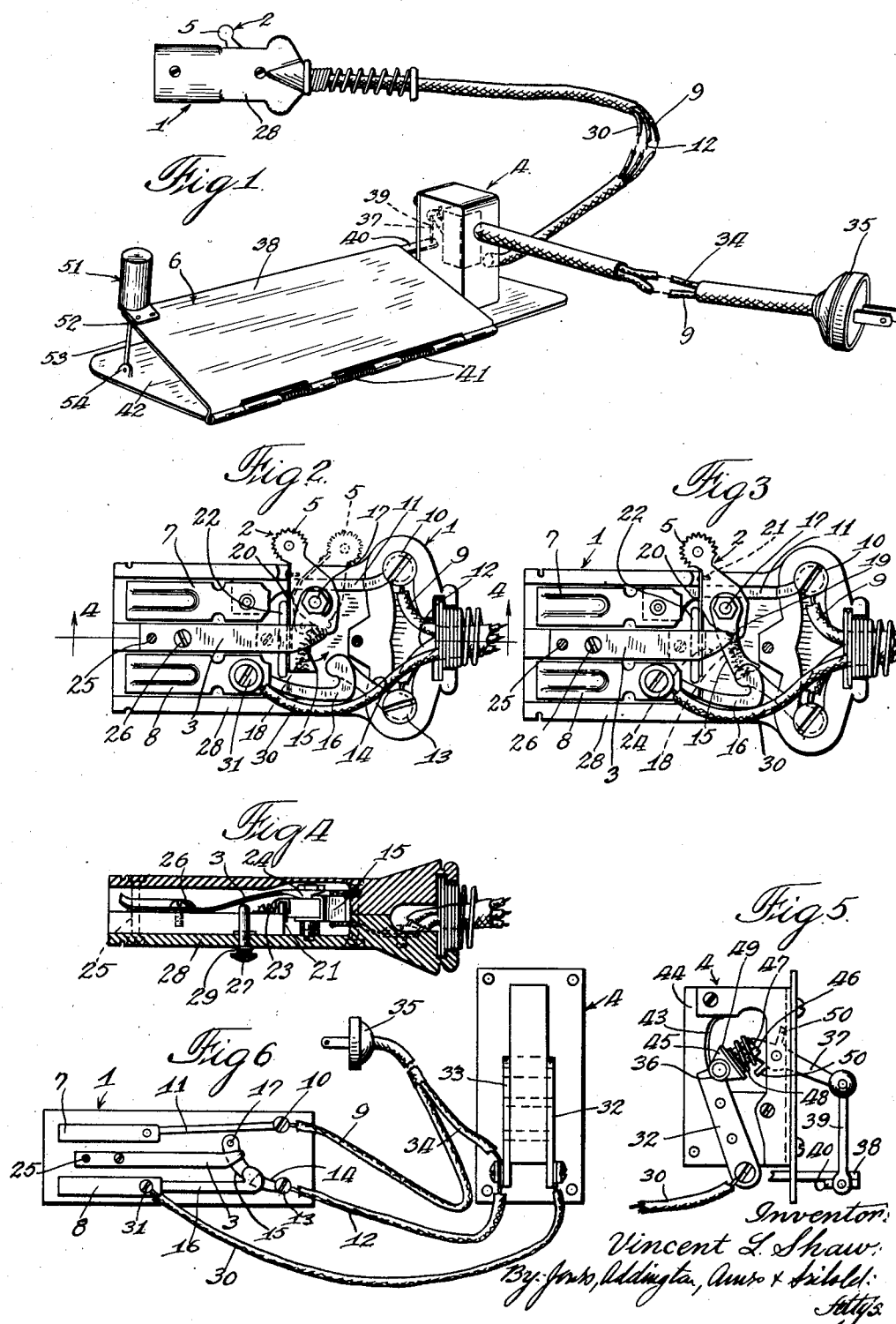
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CIRCUIT CONTROLLING APPARATUS FOR ELECTRIC IRONS

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CIRCUIT-CONTROLLING APPARATUS FOR
ELECTRIC IRONS

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4 Claims. (Cl. 219—25)

My invention relates to circuit-controlling apparatus for electric irons.

One of the objects of my invention is to provide a circuit-controlling apparatus which will lessen the fire hazard.

A further object is to provide apparatus which will enable the user to initiate the supply of current to the iron and in which the current supply will be cut off automatically when the iron reaches the desired temperature and in which additional means controllable by the user are provided for controlling the supply of current independently of the thermostatic control.

A further object of my invention is to provide such an apparatus which can be used with the usual electric irons now on the market.

Further objects and advantages of the invention will be apparent from the description and claims.

In the drawing, in which one form of my invention is shown,—

Figure 1 is a perspective view of the apparatus;

Fig. 2 is a view of the interior of the plug connector carrying the manually operable, thermostatically controlled switch, the switch being shown in open position.

Fig. 3 is a view similar to Fig. 2 but showing the switch latched in closed position.

Fig. 4 is a section on the line 4—4 of Fig. 2;

Fig. 5 is a view of the interior construction of the foot control switch; and

Fig. 6 is a somewhat diagrammatic view showing the wiring arrangement.

Referring to the drawing in detail, the apparatus shown comprises a connector member 1 for plugging into the iron, a switch 2 carried by the connector member and movable manually to closed latched position to cause current to be supplied to the iron, a thermostatic device 3 controlled by the temperature of the iron and carried by said connector member for causing the switch to move to open position by unlatching it when the iron has reached the desired temperature, and means including a second switch 4 which is manually operable to cause current to be supplied to the iron when the thermostatically controlled switch is in open position. With this construction, the user can plug into the iron, move the switch lever 5 to cause the switch to be latched in closed position, and then leave the iron for a few minutes while it is heating up. If the user should forget to return, there would be no danger of fire, as the thermostatic element 3 will unlatch the switch and permit it to open before the iron becomes dangerously hot. Assuming

that the user returns at about the time that the iron is hot enough to use, the control from thence forward will be through the foot treadle switch 4 which can be turned on or off as desired, simply by placing the foot on the operating treadle 6 or by removing it therefrom.

Referring more in detail to the structure, the connector device is provided with a pair of contacts 7 and 8 for engaging cooperating contacts on the iron, one of the contacts 7 being connected with the feed wire 9 through the binding screw 10 and conductor strip 11 and the other contact 8 being connected with the feed wire 12 through the binding terminal 13, switch contact 14, bridging member 15 and switch contact 16.

The switch mechanism shown comprises the two aforesaid spring contact members 14 and 16, the bridging member 15 of conducting material pivotally mounted at 17, the thumb lever 5 pivotally mounted coaxially with the bridging member 15, a coil compression spring 18 connected with the thumb piece at 19 and bearing on the swinging end of the bridging piece and movable past a dead center position as the thumb lever 5 is moved, and a leaf spring 20 which serves to return the thumb lever when released by the thumb to return this thumb lever to the full-line position shown in Fig. 2. This returning spring 20 is fixed at 21 to the thumb lever and has its free portion slidably guided by an abutment 22 on the insulating housing portion of the connector and by a hook-like guide member 23 (Fig. 4) which embraces the edge of the leaf spring 21 to guide it in its movement. The bridging member 15 is latched when moved to closed position by means of a lug 24 formed on the bimetallic thermostatic element 3 which engages an edge of the U-shaped bridging member as shown in Figs. 3 and 4.

In using this part of the apparatus, the user plugs into the iron, moves the thumb lever 5 from the full-line to the dotted-line position shown in Fig. 2, which will cause the bridging member 15 to move to closed position and to be latched in closed position. When the user releases the thumb lever 5, the leaf spring 20 returns the thumb lever 5 to the full-line position but leaves the bridging member 15 in closed position, as shown in Fig. 3, the bridging member being latched in this position by means of the finger projection 24 on the thermostatic element. The iron will then heat up and when it reaches the desired temperature the thermostatic element will have moved to a position in which the latching projection 24 on the thermostatic element will

free the edge of the bridging member and enable the coil compression spring 18 to snap the bridging element 15 back to the position shown in Fig. 2, leaving the switch in open position. The thermostatic element is secured to the insulating housing by means of a screw 25. The thermostatic element may be adjusted by means of a screw 26 which will enable the thermostatic element to spring slightly when unloosened to vary the temperature to which the iron will be heated. It may sometimes be desirable to unlatch the switch before the iron becomes hot—for instance, if the user should decide not to use the iron after moving the switch to closed position—
 15 and for this purpose a push button 27 (Fig. 4) is provided slidable in an opening in the housing 28, the end of this push button being opposite the thermostatic element so that pressing in on the push button will cause the thermostatic element to be sprung out of latching engagement.
 20 A coil compression spring 29 may be provided for returning the push button.

In order to enable current to be supplied to the iron after the thermostatically controlled
 25 switch is moved to open position, an additional wire 30 is connected to a binding terminal 31 for the contact 8, which wire 30 leads to a contact 32 of the foot controlled switch 4, as shown in Fig. 6. The other contact 33 of the foot controlled switch is connected with a feed wire 34
 30 leading to the attachment plug 35 which plugs into the wall receptacle. This switch contact 33 is also connected with the binding terminal 13 for the switch contact 14 by means of the wire 12.

The switch itself may be any suitable type of switch, such as a snap switch comprising a bridging member 36 of conducting material which in one position closes the circuit between the two switch contacts 32 and 33 and in another position
 40 opens them. The switch lever 37 of this snap switch may be connected with the movable leaf 38 of the foot treadle 6 by means of a link 39 pivotally connecting the switch lever 37 with a finger 40 on the leaf 38 (Figs. 1 and 5). The treadle is
 45 normally held in raised position, as shown in Fig. 1, by means of coil torsion springs 41, tending to separate the leaf portion 38 from the floor engaging base portion 42. The snap switch mechanism (Fig. 5) shown comprises the roller
 50 bridging member 36 which rolls on a curved trackway 43 on an insulating block 44 secured to the switch frame, a roller shifting member 45 in which the roller bridging member 36 is rotatably mounted, having a bifurcated portion 46 to
 55 receive a pin 47 on the switch lever 37, and a coil compression spring 48, one end of which engages the pin 47 on the switch lever and the other end of which bears against a shoulder 49 on the roller shifting member 45. When the switch lever is
 60 shifted, the pin 47 moves past a dead center position and snaps the bridging roller from switch-closing to open position, and vice versa. In order to insure movement of the bridging member, a pair of kick-off arms 50 are provided
 65 on the switch lever, which will cause pressure to be brought on the roller-shifting member 45 in case the switch parts should stick. The tension of the torsion springs 41 which tend to raise the
 70 leaf 38 is sufficient to open the switch when the foot is removed from the leaf, notwithstanding the restraining action of the coil compression spring 48 of the switch mechanism. In using this foot-controlled switch, the user simply holds one foot on the treadle when it is desired that heat

should be supplied to the iron and removes the foot when the iron is hot enough.

Some users may find it inconvenient to keep a foot on the treadle long enough to keep the iron up to the desired temperature. For such users, it may be desirable to provide a delayed action switch so that when once the foot switch is thrown on, it will stay on for some time regardless of whether or not the user holds the switch treadle down. For this purpose, some delayed action mechanism, such as a time-controlled release or a dash pot construction, may be provided. In Fig. 1, I have shown such a construction, including a cylinder and piston dash pot 51, pivotally secured at 52 to the edge of the leaf 38
 15 and having the connecting rod 53 for the piston pivotally secured to the stationary leaf 42 of the treadle at 54. This dash pot 51 may be of any suitable type designed so that the leaf 38 may be easily depressed but so that it will be slow
 20 in returning, causing a delay in the opening of the foot switch.

It will be seen that the use of the apparatus described will greatly lessen the fire hazard in connection with electric irons; that the apparatus may be used with irons already on the market; that the user can start the heating of the iron simply by turning on the thermostatically controlled switch; that the thermostat will cut off the current before the iron becomes excessively hot, and that the user can keep the iron up to the desired temperature when using it by the use of a simple foot-controlled switch.

Further modifications will be apparent to those skilled in the art and it is desired, therefore, that the invention be limited only by the prior art and the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. An electrical iron control comprising a pair of conductors for completing a circuit from a power source through an electric iron, a switch in said circuit, a heat responsive means for opening said switch at a predetermined temperature, a normally open branch circuit shunting said switch, automatically opening foot-controlled means for closing said branch circuit, and means to materially delay the opening of said foot-controlled means after the foot is removed therefrom.

2. An electrical iron control comprising a pair of conductors for completing a circuit from a power source through an electric iron, a switch in said circuit, a heat responsive means for opening said switch at a predetermined temperature, a normally open branch circuit shunting said switch, and means adapted to be positioned on the floor and independently controlled by foot pressure to close said branch circuit while using said iron and to automatically open said branch circuit when the foot is removed, and means to materially delay the opening of said branch circuit when the foot pressure is removed.

3. A current controlling apparatus for electric irons comprising a pair of conductors having an attachment plug at one end and a connector at the opposite end for attachment to an electric iron, a temperature controlled switch associated with said connector for breaking the circuit at a predetermined temperature, and means positioned on the floor remote from said connector and controlled by foot pressure thereon to shunt said temperature-controlled switch and automatically break said shunt when the foot is removed, said floor means comprising a sheet metal

elongated base, a normally open snap switch mounted on said base and electrically connected to shunt said temperature-controlled switch, a laterally elongated sheet metal pedal hinged to said base and connected for closing said switch by foot pressure, resilient means for raising said pedal and opening said switch when said foot pressure is removed, and means to cause the automatic opening of said switch to be materially delayed after said foot pressure is removed.

4. A current-controlling extension cord for electric irons comprising a connector on one end of said cord for electrical connection to an iron, a connector on the opposite end of said cord for connection to a power source, a pair of conductors in said cord between said connectors, a normally

open switch mounted on said iron connector and in series in one conductor, manual means to close said switch, thermostatic means to open said switch at a predetermined temperature, a conductor by-passing said connector switch, a normally open switch in said by-pass, a foot pedal, means operably connecting said foot pedal and said by-pass switch whereby said switch may be closed and retained closed by foot pressure; said switch being arranged to automatically open when the foot pressure is released, and means to cause the automatic opening of said switch to be materially delayed after said foot pressure is removed.

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