May 15, 1951 E. F. POHL 2,553,274

ELECTRIC HEATING UNIT FOR PRESSING IRONS

Filed May 6, 1949

Fig. 2.

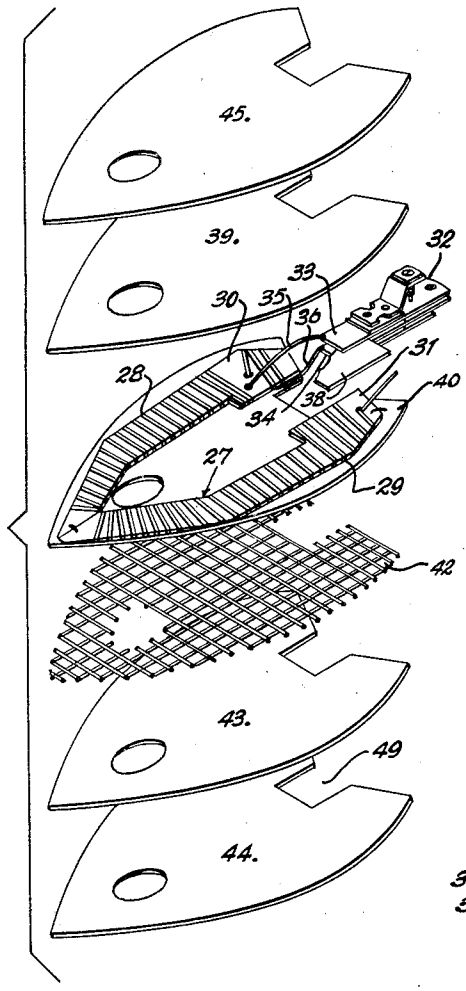


Fig. 1.

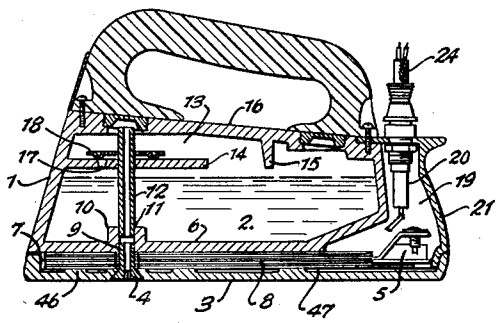


Fig. 3.

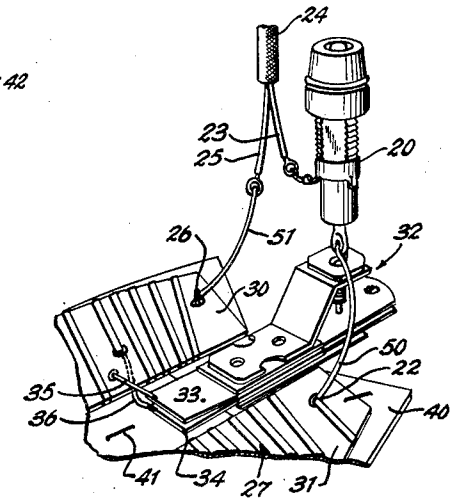


Fig. 4.

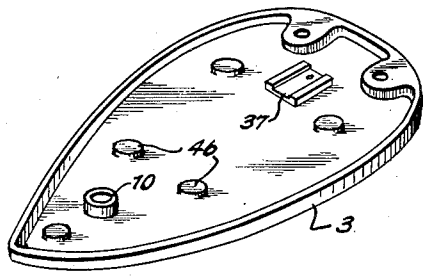
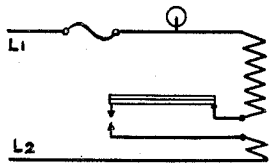


Fig. 5.



INVENTOR.
ERNEST F. POHL.
BY
Shoemaker & Mattare
ATTORNEYS

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ELECTRIC HEATING UNIT FOR PRESSING IRONS

Ernest F. Pohl, St. Louis, Mo.

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4 Claims. (Cl. 219—25)

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The invention relates to an electric heating unit for pressing irons.

An object of the present invention is to provide a simple, practical and efficient electric heating unit of sturdy and comparatively inexpensive construction designed for various types of pressing irons such as the safety steam electric pressing iron disclosed in my co-pending application, Serial No. 91,824 filed May 6, 1949 and the safety electric flat iron disclosed in my co-pending application, Serial No. 91,826 filed May 6, 1949, now abandoned, and to enable mica insulation to be employed for the resistance coil and to reinforce and protect the mica insulation so that there will be no liability of injuring the insulation in the ordinary use of an electric pressing iron.

A further object of the invention is to provide for electric pressing irons a heating unit of the character described having a flat resistance coil composed of spaced longitudinally disposed side portions arranged on mica core pieces and insulated by upper and lower sheets of mica and supported and reinforced by a bottom reinforcing member consisting of a metallic sheet of reticulated material and insulated and cushioned by upper and lower sheets of asbestos, whereby the heating unit is adapted to be supported at intervals by spaced protuberances extending upwardly from a sole plate without liability of the mica being injured in the use of the iron.

A further object of the invention is to provide a heating element provided with a flat resistance coil composed of longitudinally disposed side portions connected together at their front ends and spaced apart throughout the major portion of their length and adapted to receive between their rear portions, a thermostat electrically connected in one of the side portions of the resistance coil between the ends thereof, the terminals of the resistance coil being connected with the wires or leads of an electric cord or other current supply with a safety fuse interposed in one of the leads.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions, and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

Fig. 1 is a longitudinal sectional view of a safety steam electric pressing iron provided with a heating unit constructed in accordance with the present invention;

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Fig. 2 is an exploded view showing various parts of the heating unit;

Fig. 3 is an enlarged detail perspective view of a portion of the electric heating unit and illustrating the arrangement of the same with relation to the thermostat and safety fuse;

Fig. 4 is a detail perspective view of the sole plate of the iron;

Fig. 5 is a view of the wiring diagram.

In the accompanying drawings, the electric heating unit is shown applied to the safety steam electric pressing iron shown and described in the aforesaid application, Serial No. 91,824.

This electric steam pressing iron comprises in its construction, a hollow body or casing 1 having a conventional form of an iron body and preferably consisting of a single casting of aluminum or other suitable material and provided with an interior water compartment or reservoir 2 adapted to contain a quantity of water to be converted into steam.

The iron is provided at its bottom with a sole plate 3 which conforms to the configuration of the hollow body 1 and the latter fits snugly against the upper face of the sole plate at the marginal edges thereof and is secured to the same by front and rear fastening devices 4 and 5. Both the lower face of the bottom wall 6 of the body 1 and the upper face of the sole plate 3 are correspondingly recessed to provide an intervening chamber 7 for the reception of the electric heating unit 8 which is adapted to convert the water within the reservoir into steam and heat the sole plate 3.

The front screw 4, which passes through the front portion of the sole plate, extends from a point slightly above the lower face of the same, and passes through the sole plate into a socket 9 formed by an opening in the bottom wall 6 of the body and by an annular boss or flange 10 extending upwardly from the upper face of the bottom wall 6 and surrounding the socket-forming opening. The socket is interiorly threaded for engagement by said screw and also by the lower exteriorly threaded end 11 of an upwardly extending steam pipe 12. The screw 4 is provided with a longitudinal bore or opening which forms a passage for steam from the steam pipe.

The steam pipe 12 extends to a point adjacent the top wall of the reservoir and, at its upper portion, is arranged between a chamber 13 formed by a horizontal partition 14 and a vertical trans-

verse partition 15 formed integral with and depending from the top wall 16 of the body 1. The horizontal partition 14 is provided with a vent opening 17 to permit escape of pressure from the compartment 13. A shield 18 is located above the vent opening to prevent water from splashing through the same.

The rear end of the pressing iron is provided with a convection chamber 19 for the reception of an electrically and thermally disruptible fuse 20. The chamber 19 is formed by a recess in the rear end of the body 1 and a removable cover plate 21.

The safety electrically and thermally disruptible fuse 20, which is constructed and arranged, as fully explained in said application, Serial No. 91,826, is interposed between the terminal 22 of the heating element or resistance coil of the heating unit and the wire or lead 23 of an electric cord 24 which has its other wire or lead 25 connected to the other terminal 26 of the resistance coil of the heating unit.

The heating element consists of a flat resistance coil 27 composed of spaced side portions 28 and 29 extending longitudinally of the iron and having converging front portions which are connected at their front ends to form a continuous coil. The side portions 28 and 29 of the resistance coil are arranged on core pieces 30 and 31 of mica or other suitable insulating material which have enlarged rear end portions spaced apart to provide an intervening space for a bi-metallic thermostat 32.

The bi-metallic thermostat, which is connected with the side portion 28 of the resistance coil, has upper and lower plates 33 and 34 which are connected respectively with the sides 35 and 36 of a loop formed intermediate of the ends of the side portion 28 of the resistance coil 27.

The thermostat, which is suitably secured to a boss or enlargement 37 of the sole plate, is suitably insulated by one or more pieces 38 of mica or other suitable material and the resistance coil is insulated by upper and lower sheets 39 and 40 of mica which are secured together by one or more staples which pierce the upper and lower mica sheets 39 and 40 at points between the spaced side portions of the resistance coil.

The thermostat may be of any desired construction. If desired, it may be exteriorly controlled by any suitable means. The mica insulation of the resistance coil is reinforced and supported by a reinforcing and supporting member 42 consisting of a metallic sheet of reticulated material such as woven wire which is insulated from the sole plate by sheets 43 and 44 of asbestos or other suitable material. Also, an upper insulating sheet 45 of asbestos is arranged above the upper mica sheet 39. The sheets or layers of asbestos also serve to cushion the mica insulation and prevent injury to the same in the normal use of the pressing iron and enable the electric heating unit to be supported above the upper face of the sole plate by protuberances 46 to provide an intervening space 47 between the sole plate and the heating unit without liability of the mica insulation being fractured or otherwise injured by the use of the iron.

The intervening space 47 between the heating unit and the sole plate provides the convection space whereby the sole plate is heated solely by convection and variations in the temperature of the sole plate do not directly affect the temperature of the heating unit which is thereby enabled to operate at uniform maximum capacity at all times.

The various sheets or members of the electric heating unit are provided with registering openings 48 for the passage of the steam pipe and with rear recesses 49 to accommodate the thermostat. The fuse 20 and the lead or wire 25 of the electric cord are connected with the terminals 22 and 26 of the resistance coil by suitable conductors 50 and 51 which, in practice, will be provided with suitable insulation preferably of the tubular character so as to be readily slipped over the conductors.

The fuse 20 and the thermostat 32 are arranged in series with the resistance coil of the heating unit as diagrammatically illustrated in Fig. 5 of the drawing.

I claim:

1. For an electric pressing iron having a sole plate and provided above the same with a closed space, an electric heating unit designed to be arranged within said closed space above the sole plate and conforming to the configuration of the iron and comprising spaced longitudinally disposed core pieces, a flat resistance coil composed of spaced side pieces arranged on the core pieces and connected together at their front ends, sheets of insulating mica located above and below the resistance coil, a reinforcing member consisting of a metallic sheet of reticulated material conforming to the configuration of the iron and directly supporting the resistance coil and said sheets of mica and also extending across the space between the side portions of the core pieces, and upper and lower sheets of combined insulating and cushioning material covering the mica above the resistance coil and the reinforcing member below the resistance coil, and means for supporting the heating unit in spaced relation with the sole plate.

2. For an electric pressing iron having a sole plate and provided above the same with a closed space, an electric heating unit designed to be arranged within said closed space above the sole plate and conforming to the configuration of the iron and comprising spaced longitudinally disposed core pieces, a flat resistance coil composed of spaced side pieces arranged on the core pieces and connected together at their front ends, sheets of insulating mica located above and below the resistance coil, a reinforcing member consisting of a metallic sheet of reticulated material conforming to the configuration of the iron and directly supporting the resistance coil and said sheets of mica and also extending across the space between the side portions of the core pieces, and upper and lower sheets of combined insulating and cushioning material covering the mica above the resistance coil and the reinforcing member below the resistance coil, fastening means piercing the upper and lower mica sheets and the reinforcing member and extending between the side portions of the resistance coil, and means for supporting the heating unit in spaced relation with the sole plate.

3. For an electric pressing iron having a sole plate and provided above the same with a closed space, an electric heating unit designed to be arranged within said closed space above the sole plate and conforming to the configuration of the iron and comprising spaced longitudinally disposed core pieces, a flat resistance coil composed of spaced side pieces arranged on the core pieces

and connected together at their front ends, sheets of insulating mica located above and below the resistance coil, a reinforcing member consisting of a metallic sheet of reticulated material conforming to the configuration of the iron and directly supporting the resistance coil and said sheets of mica and also extending across the space between the side portions of the core pieces, and upper and lower sheets of asbestos insulation covering the upper sheet of mica and the reinforcing member and cushioning the former, and means for supporting the heating unit in spaced relation with the sole plate.

4. For an electric pressing iron having a sole plate and provided above the same with a closed space, an electric heating unit arranged within said closed space above the sole plate and conforming to the configuration of the iron and comprising spaced mica core pieces extending longitudinally of the iron, a flat resistance coil composed of spaced side portions arranged on the core pieces and extending longitudinally of the iron and connected together at their front ends, one of the side portions being provided intermediate its ends with a loop, upper and lower sheets of mica arranged above and below the resistance coil, a reinforcing and supporting member consisting of metallic reticulated material

located beneath the lower sheet of mica, upper and lower sheets of asbestos arranged below the reinforcing and supporting member and above the upper sheet of mica and cushioning the latter, a thermostat located between the rear portions of said side portions of the resistance coil and connected with said loop, means for supporting the heating unit in spaced relation with the sole plate, and an enlargement of the sole plate forming a boss and located between the side portions of the resistance coil and supporting the thermostat.

ERNEST F. POHL.

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