Oct. 25, 1949. F. BUSCH 2,485,955

CONTROL DIAL MOUNTING FOR ELECTRIC IRONS

Filed May 24, 1947

FIG. 1.

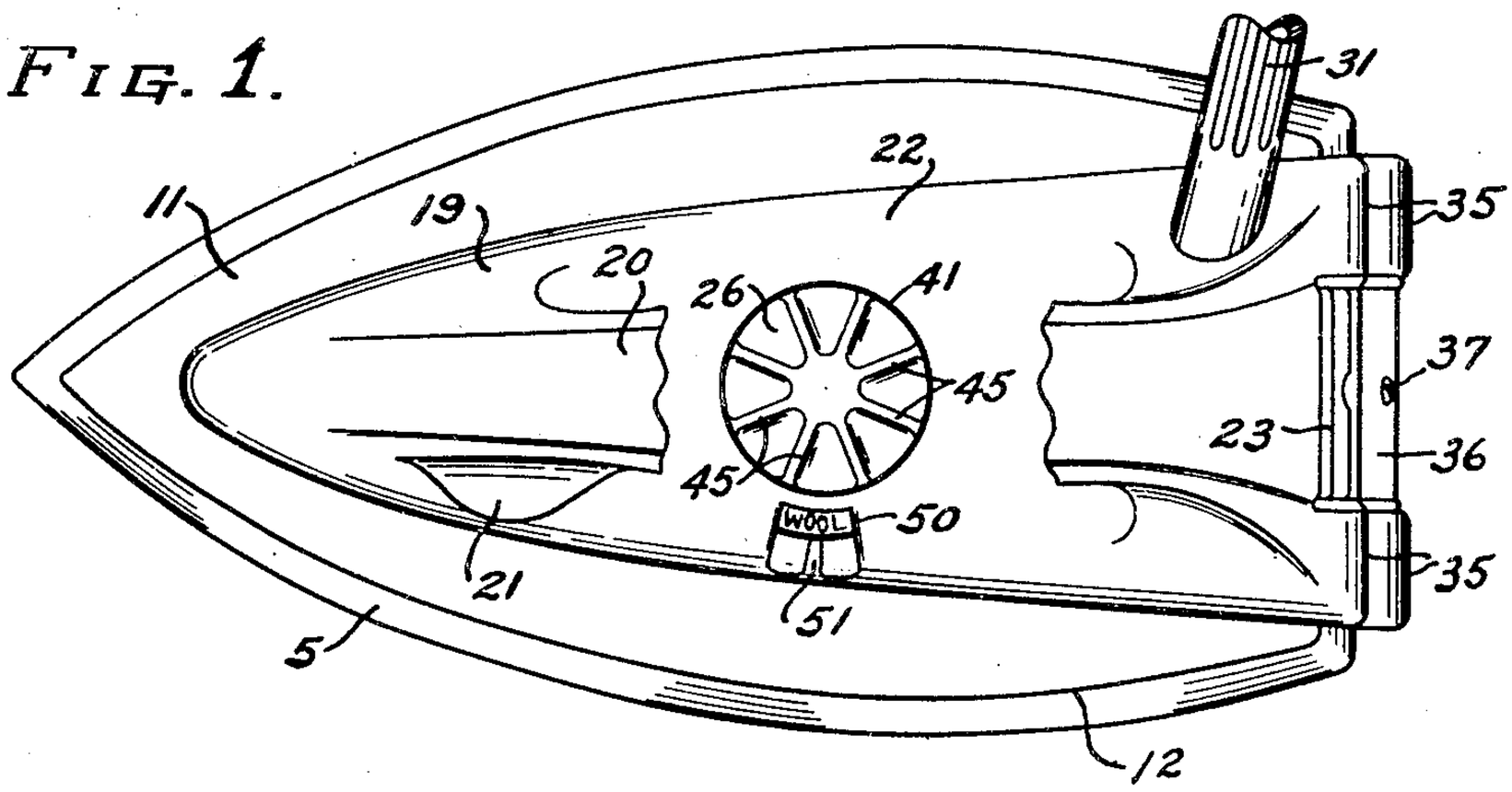
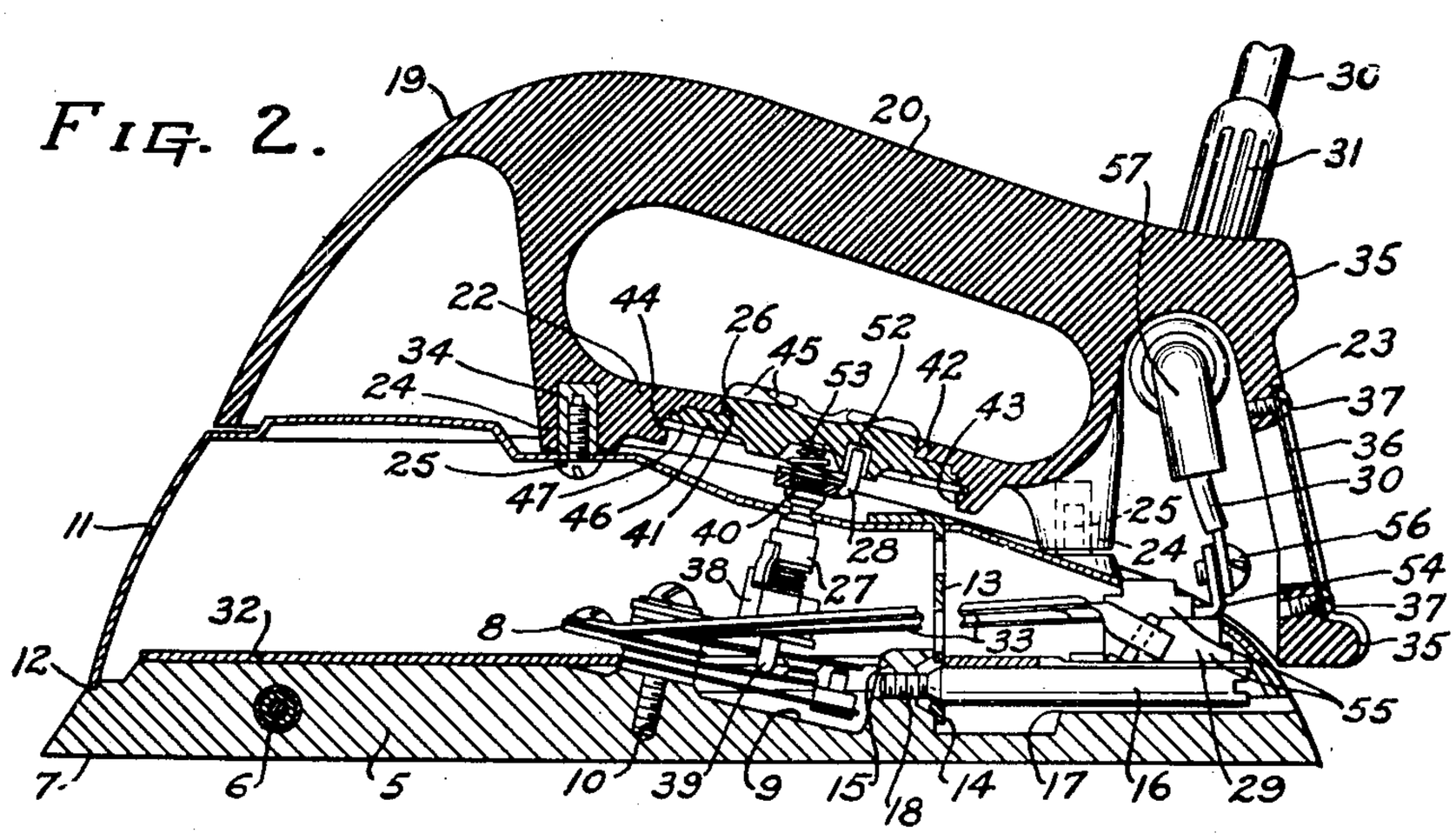


FIG. 2.



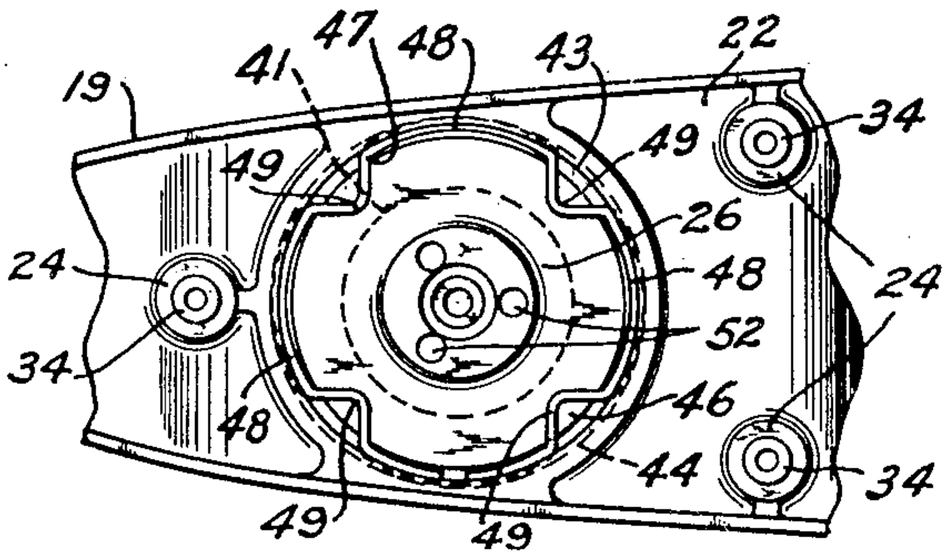


FIG. 3.

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Patented Oct. 25, 1949

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UNITED STATES PATENT OFFICE

2,485,955

CONTROL DIAL MOUNTING FOR ELECTRIC IRONS

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Application May 24, 1947, Serial No. 750,245

7 Claims. (Cl. 38—90)

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The present invention relates generally to improvements in the art of fabricating electrical appliances, and relates more particularly to improvements in the construction and operation of electrically heated irons having a heat control dial or the like.

A primary object of my invention is to provide an improved electric pressing iron and heat control unit therefor which is simple, durable and compact in construction, and which is moreover highly efficient in operation.

It is a more specific object of my present invention to provide improved means for mounting the heat control dial or wheel of electrically heated sadirons in a simple and inexpensive manner.

Another specific object of this invention is to provide improved heat control mechanism for electric irons which may be readily assembled and dismantled, and which comprises a minimum number of parts.

A further specific object of the invention is to provide an improved rigid and safe mounting for heat indicating and control dials for electric flat irons, which enables provision of a single ironing assemblage which may be manufactured and sold at moderate cost.

An additional specific object of the present invention is to provide an improved electric iron which may be readily adjusted for diverse conditions for operation and manipulation by a novice, and which is furthermore composed of relatively few sturdy parts which are normally rigidly united.

Still another specific object of the present invention is to provide improved means for mounting the heat control dial or wheel of an electric iron in the relatively wide base portion of the insulated handle section thereof, with a relatively large effective bearing surface for the rotatable dial being provided.

These and other specific objects and advantages of the invention will be apparent from the following detailed description, and certain subject-matter shown but not claimed herein forms the basis of United States Letters Patent No. 2,418,285, dated April 1, 1947, for Separable sadiron assemblage, and the copending application of Ernst Witzel, Serial No. 709,264, filed November 12, 1946.

A clear conception of the several features constituting my present improvement, and of the mode of constructing and utilizing electric irons built in accordance with the invention, may be had by referring to the drawing accompanying and forming a part of this specification wherein

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like reference characters designate the same or similar parts in the various views.

Fig. 1 is a top view of an electric flatiron embodying the invention, a portion of the manipulating handle having been broken away to reveal the heat control dial;

Fig. 2 is a central longitudinal vertical section through the electric iron; and

Fig. 3 is a bottom view of a fragment of the handle and control dial of the iron.

While the invention has been shown and described herein as being particularly applicable to a typical electrically heated household type of flatiron, it is not my desire or intent to unnecessarily restrict or limit the utility of the improved dial mounting by virtue of this specific disclosure, and it is also intended that specific terms used herein be given the broadest possible meaning and interpretation consistent with the prior art.

Referring to the drawing, the typical electric pressing iron shown therein comprises, in general, a sole plate 5 having a heating coil 6 embedded directly therein adjacent the lower work-engaging face 7 thereof; a thermostatically controlled heat regulating switch 8 firmly but detachably mounted at a slight angle within a recess 9 at the upper medial portion of the sole plate 5 by means of screws 10 or the like; a mound-shaped hollow sheet-metal body 11 having the lower rim 12 thereof coacting with the upper peripheral portion of the sole plate 5, the body 11 being provided with an inner central bracket or strap 13 having an integral tapered ferrule 14 at the lower central portion thereof adapted for coaction with a lug 15 formed in the sole plate 5 rearwardly of the recess 9; an elongated body and sole plate uniting screw rod 16 normally confined within a central recess 17 formed in the top of the sole plate 5 rearwardly of the lug 15, the rod 16 being provided with a reduced screw threaded end 18 formed for coaction with the ferrule 14 and lug 15; a heat-insulated manipulating handle 19 having an upper medial grip portion 20, a lateral thumb rest 21, an integral relatively wide base portion 22, and an integral downwardly projecting rear iron supporting wall 23 forming a housing for the electric contacts, the base portion 22 of the handle 19 being provided with lower bosses 24 adapted for attachment to the top of the body 11 with the aid of normally concealed screws 25 or the like; a heat control or adjusting dial or wheel 26 mounted for rotation within the wide base portion 22 of the handle 19 and medially thereof and being cooperable with the thermostat of the switch 8 through a stem

27 and a bifurcated or pronged element 28; and a terminal connecting assemblage 29 mounted upon the rear upper portion of the sole plate 5 within the rear of the handle 19 for cooperation with electrical conductors 30 penetrating the handle through a resilient laterally and upwardly extending bushing 31.

The sole plate 5 may be formed of cast metal wth the coil 6 embedded directly therein, and the periphery of the sole plate 5 may be tapered downwardly and outwardly to provide a smooth work engaging lower face 7 of maximum area with greatest width at its medial portion. In order to facilitate firm clamping of the body 11 to the sole plate 5 with the aid of a single clamping rod 16, the lower rim 12 of the body 11 may be caused to coact with local projections or the like on the sole plate 5; and a rigid top plate 32 formed of heat insulating material and spanning the rod confining recess 17 and the sole plate 5 but cut away at the switch 8 may be secured to the upper surface of the plate 5 in any suitable manner.

The body or casing 11 having the switch 8 and terminal assemblage 29 and supporting the handle 19 may be readily produced of relatively thin and light but durable sheet-metal with the aid of punches and dies, and the sheet-metal attaching strap 13 may be rigidly secured to the upper inner medial portion of the body 11 by welding or riveting or the like. The tapered ferrule 14 formed integral with the lower extremity of the strap 13 is adapted to snugly engage a similarly tapered socket in the sole plate lug 15, and electrical conductors 33 may be located on opposite sides of the relatively narrow strap 13 without danger of contacting this strap. As hereinabove set forth, the clamping rod 16 is snugly rotatably confined within the sole plate recess 17 beneath the plate 32, the front end 18 thereof being of reduced diameter and having screw thread coaction with the lug 15 and strap ferrule 14 so that the lower rim 12 of the casing body 11 may be readily clamped firmly against the local sole plate projections or ribs by merely applying a screw driver to the slotted outer end of the rod 16 and screwing the threaded end 18 thereof into the boss 15 through the ferrule 14. The switch 8 and other mechanism carried by the sole plate 5 may thereby be effectively confined within the body 11 which may be easily removed to permit access to the normally confined structure by merely removing the rod 16 in an obvious manner.

The manipulating handle 19 may be formed of suitable heat insulating material such as plastic or wood which will not readily conduct excessive heat to the grip and thumb portions 20, 21 respectively; and as hereinabove set forth, the handle 19 is provided with a relatively wide base 22 within which the heat control dial 26 is mounted for rotation as will be hereinafter more fully described. The integral rear wall 23 of the handle 19 forms the rear support for grip portion 20 and also provides a deep recess within which the electrical connections are normally confined. The attaching bosses 24 are also preferably formed integral with the handle 19, and each of these bosses is provided with a metallic screw-threaded socket 34 with which the handle attaching screws 25 coact. Obviously, the handle 19 may be firmly secured to the upper portion of the sheet metal body 11 with the aid of the screws 25 and sockets 34, but this may only be accomplished when the body 11 has been removed from the sole plate 5 since the heads of the screws 25 are normally confined within the body 11. The handle 19 is of streamlined design with the rear wall 23 thereof being provided with supporting legs 35 for supporting the iron assemblage on its heel during non-use, and the rear wall 23 is also provided with a rear opening normally closed by a plate 36 removably attached to the wall 23 by means of screws 37 or the like.

The combined thermostat and electric control switch 8 may be of any suitable and well known type with which the rotary adjusting stem 27 is cooperable to vary the current delivered to the heating coil 6 in accordance with the requirements for the particular type of fabric to be ironed or pressed, and this switch constitutes no specific part of my present invention. So that it will be most sensitive to changes in temperature of the sole plate 5 as created by the heating coil 6, the switch or thermostat 8 is mounted directly upon the sole plate 5 and at an angle corresponding to the angle at which the dial 26 is mounted in order that the stem 27 may be perpendicular to both the dial and switch. The lower end of the adjusting stem 27 is threaded and is cooperable with a fixed internally threaded member 38 and carries a pin 39 which cooperates with the switch 8 in a manner whereby rotation of the stem 27 will move the pin 39 either up or down, thereby producing the desired switch and thermostat adjustment. The upper extremity 40 of the stem 27 is serrated for coaction with internal serrations within the hub of the bifurcated or forked element 28, so that the element 28 may be applied to the stem end 40 in various angular positions, and it is apparent that the element 28 is applicable to the stem externally of the main casing body 11.

In accordance with my present invention, the wide base 22 of the handle 19 is provided with a medial aperture or through opening 41 surrounded by an upper inwardly extending flange 42 forming a lower annular recess 43 and this recess is provided with a peripheral annular groove 44. The control dial or adjusting wheel 26 is rotatably confined within the opening 41, projecting upwardly through the center of the flange 42, and is provided with a series of radial manipulating ribs 45 on the exposed face thereof, the ribs 45 projecting considerably above the handle base 22. The dial 26 is also provided with a lower outwardly directed annular flange 46 rotatably coactable with the upper integral flange 42 of the handle 19 to prevent upward displacement of the dial 26 from the handle and to provide extensive wearing and bearing surfaces. Downward displacement of the dial 26 with respect to the handle 19 is prevented by a metallic snap ring or spring 47 having arcuate circumferential portions 48 cooperable with the groove 44 of the handle recess 43 and also having intervening inwardly projecting angular portions 49 engageable with the lower face of the dial flange 46. This spring ring 47 is readily removable from the groove 44 of the handle recess 43 in an obvious manner so as to permit free downward removal of the dial 26 from within the handle opening 41, but such removal of the dial 26 may be effected only upon removal of the handle 19 from the casing 11 by means of the screws 25 since the spring ring 47 is normally concealed between the handle base 22 and the top of the casing 11.

The adjusting dial 26 is also provided with

indicia or calibration markings for the various types of fabrics on the upper surface of the integral flange 46, and these calibration markings are successively visible through a side sight opening 50 in the handle base 22 upon rotation of the dial 26 with the aid of the ribs 45, the sight opening being provided with an adjacent pointer 51, as clearly shown in Fig. 1. The dial 26, rotatably confined within the base 22 of the handle 19 as hereinabove described, is also provided with several eccentric holes 52 in the bottom thereof with which the prongs or tines of the bifurcated element 28 are loosely cooperable, see Fig. 2; and a cone-shaped helical spring 53 may be interposed between the dial 26 and the hub of the element 28 in order to maintain the latter upon the stem end 40 and to eliminate looseness of parts. It is accordingly apparent that the assemblage is such that when the dial 26 is rotated upon its bearing ring 47, in either direction, rotary motion will be transmitted through the connecting element 28 to the stem 27 and this stem will coact with the screw threads of the fixed member 38 so as to move the pins 39 up or down, thereby effecting the desired adjustment of the pre-set thermostatic switch 8.

The switch 8 is connected in series with the electric heating coil 6 by means of the conductors 33 and the terminal assembly 29 associated with the rear portion of the sole plate 5, and the terminal assembly 29 comprises a pair of terminal attaching plates 54 secured to insulating blocks 55 resting upon the sole plate 5. The opposite ends of the heating coil 6 are connected to the terminal plates 54 in series with the switch 8 in an obvious manner, and the current conductors or wires 30 are attachable to the plates 54 by means of screws 55. The attaching screws 56 are readily accessible through the opening in the rear wall 23 of the handle 19 upon removal of the closure plate 36 and screws 37, and the conductors 30 may be snugly confined within an elbow conduit 57 detachably secured to the inner end of the elongated flexible bushing 31 which is provided to aid in eliminating sharp kinks or curves in the conductor cord or wires 30.

The improved electric iron may be readily assembled in an obvious manner by first attaching the rigid insulating plate 32 and switch 8 to the sole plate, and the switch 8 should be initially set to operate properly for predetermined variations in temperature to which the thermostat may be subjected. The bushing 31 and wires 30 should also be initially applied to the handle 19; and the dial 26 may then be applied to the handle base 22 with the aid of the spring ring 47 as above described, the bifurcated element 28 and spring 53 being thereafter applied to the dial 26 with the prongs of the element 28 loosely but slidably engaging the holes 52. Thereafter, the casing 11 may be attached to the handle 19 by the screws 25 so as to hold the dial 26, element 28, and spring 53 in assembled condition. The thermostat of the switch 8 should then be placed in "off" position, and the dial 26 should likewise be held in "off" position, whereupon the serrated upper end 40 of the stem 27 which is mounted upon the sole plate 5 may be passed through the upper front opening in the casing 11 and slipped into the internally serrated hub of the element 28 to provide a positive driving connection between the dial 26 and the stem 27. Finally, the sole plate 5 may be secured to the body 11 with the aid of the clamping rod 16 to conceal the switch 8, and the bushing 31 and

conducting wires 30 having been previously applied to the handle 19, these wires 30 may be secured to the terminal plates 54 either before the casing 11 is clamped to the sole plate 5 or through the opening in the rear wall 23 of the handle 19 with the aid of the screws 56. Obviously, the iron may likewise be readily dismantled.

The iron may be manipulated during use by gripping the portion 20 of the handle 19, and the operator's thumb may be rested upon the thumb plate 21 during pressing operations. The wheel or dial 26 may obviously be conveniently adjusted in order to assure proper heating of the sole plate 5 in accordance with the type of work being performed, and this dial 26 may be turned to "off" position to entirely disconnect the current. During non-use of the iron, it may be turned to upright position to rest upon the rear legs 35 of the handle 19, thus suspending the sole plate 5 in mid-air and eliminating need for a special insulated support.

From the foregoing detailed description, it will be apparent that my present invention provides an improved electric pressing iron and heat control dial mounting therefor which is simple and durable in construction and highly efficient in actual use, and which may moreover be readily assembled and dismantled. The control dial 26 is conveniently located for quick and easy manipulation by the operator, and the indicia on this dial is clearly visible to the operator through the sight opening 50 in the base 22 of the handle 19 and proper setting is aided by the pointer 51. The dial 26 may be readily mounted for rotation within the wide handle base 22 in an extremely simple and effective manner by means of the spring ring 47, and the relatively wide annular peripheral flange 46 of the dial coacts with the flange 42 of the handle and with the inwardly projecting angular portions 49 of the retaining ring 47 to provide extensive upper and lower wearing and bearing surfaces for the dial without undue and excessive friction. The dial 26 and heat control unit may be readily assembled, and a minimum number of parts are required. Since the control dial is not in direct contact with the thermostat adjusting stem, excessive heating of the dial is eliminated. The improved dial mounting simplifies the iron assemblage considerably, thereby reducing the cost of manufacture while providing a compact and rigid structure; and irons manufactured in accordance with the invention have proven highly successful in actual commercial use and have met with widespread acceptance.

It should be understood that it is not desired or intended to limit this invention to the exact details of construction or to the precise mode of use, herein shown and described, for various modifications within the scope of the appended claims may occur to persons skilled in the art to which this invention pertains.

I claim:

1. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, and adjusting mechanism for said switch including a dial disposed coaxially of and journalled for rotation within the opening in said handle

base and having a portion projecting upwardly through the central opening bounded by said flange, said dial being provided with a lower outwardly directed flange coacting with said base flange and rotatable within said base recess, means cooperable with said handle base below said dial for preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and said switch for transmitting motion from said dial to said switch.

2. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, said base flange having a sight opening therein, and adjusting mechanism for said switch including a dial disposed coaxially of and journalled for rotation within the opening in said handle base and having a portion projecting upwardly through the center opening bounded by said flange, said dial being provided with a lower outwardly directed flange coacting with said base flange and rotatable within said base recess and having calibration markings thereon successively visible through said sight opening upon rotation of said dial, means cooperable with said handle base below said dial for preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and said switch for transmitting motion from said dial to said switch.

3. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, and adjusting mechanism for said switch including a dial journalled for rotation within the opening in said handle base and having a portion projecting upwardly through the central opening bounded by said flange, said dial being provided with a lower outwardly directed flange co-acting with said base flange and rotatable within said base recess, a spring ring cooperable directly with the wall of said base recess below said dial for preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and said switch for transmitting motion from said dial to said switch.

4. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, said recess being provided with a lower annular groove in its side wall, and adjusting mechanism for said switch including a dial journalled for rotation within the opening in said handle base and having a portion projecting upwardly through the central opening bounded by said flange, said dial being provided with a lower outwardly directed flange coacting with said base flange and rotatable within said base recess, means cooperable with the annular groove in said base recess wall and with said dial flange for preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and said switch for transmitting motion from said dial to said switch.

5. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, said recess being provided with a lower annular groove, and adjusting mechanism for said switch including a dial disposed coaxially of and journalled for rotation within the opening in said handle base and having a portion projecting upwardly through the central opening bounded by said flange, said dial being provided with a lower outwardly directed flange coacting with said base flange and rotatable within said base recess, a spring ring cooperable directly with the annular groove in said base recess and with said dial flange for preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and switch for transmitting motion from said dial to said switch.

6. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, said recess being provided with a lower annular groove, and adjusting mechanism for said switch including a dial journalled for rotation within the opening in said handle base and having a portion projecting upwardly through the central opening bounded by said flange, said dial being provided with a lower outwardly directed flange coacting with said base flange and rotatable within said base recess, a ring having arcuate circumferential portions cooperable with the annular groove in said base recess and having inward projections cooperable with said dial flange, said ring preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and said switch for transmitting motion from said dial to said switch.

7. A pressing iron comprising, a sole plate having an electric heater associated therewith, a thermostatic control switch for said heater carried by said sole plate, a hollow body normally concealing said switch, a manipulating handle secured to said body, said handle being provided with a relatively wide base portion having an opening therethrough surrounded by an upper inwardly extending flange forming a lower recess, said recess being provided with a lower annular groove, and adjusting mechanism for said switch including a dial journalled for rotation within the opening in said handle base and hav-

ing a portion projecting upwardly through the central opening bounded by said flange, said dial being provided with a lower outwardly directed flange coating with said base flange and rotatable within said base recess, a ring having arcuate circumferential portions cooperable directly with the annular groove in said base recess and having intervening inwardly projecting angular portions engageable with said dial flange, said ring preventing displacement of said dial from said base opening and forming a bearing for said dial, and means interposed between said dial and said switch for transmitting motion from said dial to said switch.

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