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CONTROL FOR ELECTRIC IRONS

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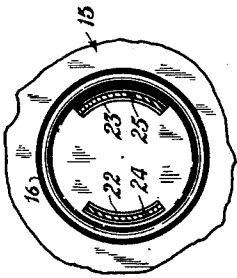


Fig. 2

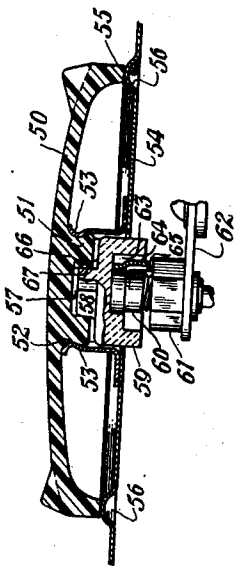


Fig. 3

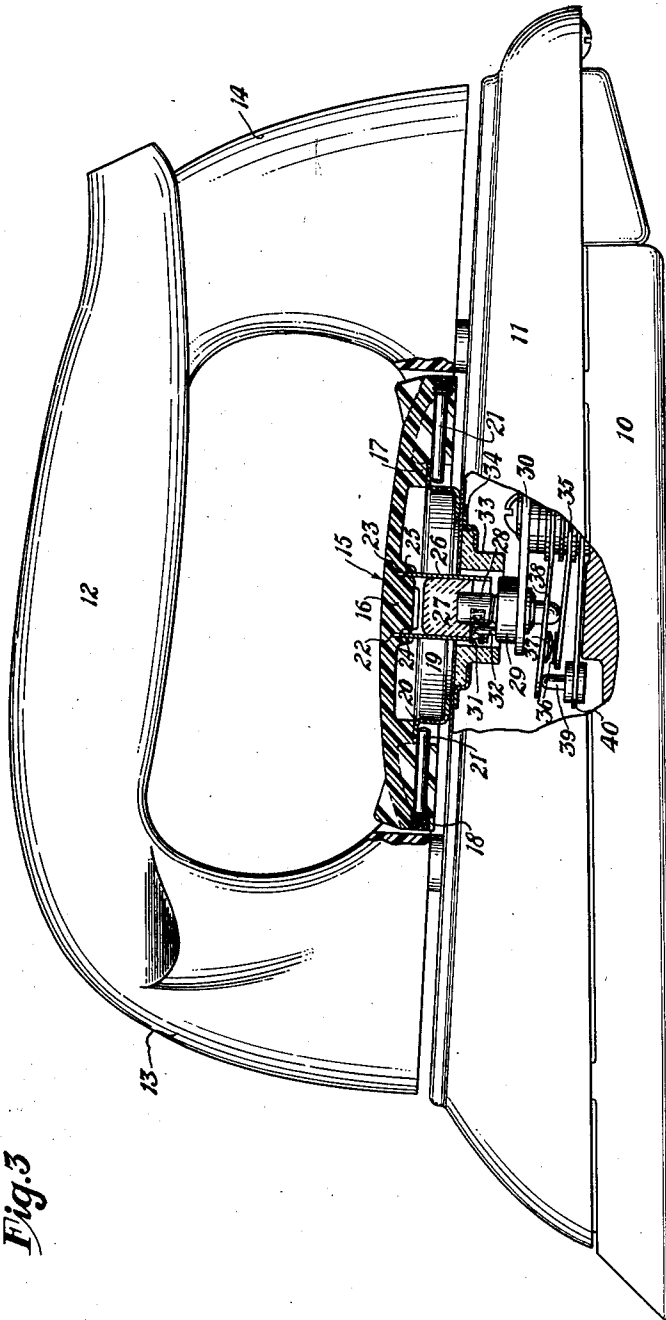


Fig. 1

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CONTROL FOR ELECTRIC IRONS

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1

This invention relates to electrically heated smoothing irons and more particularly to the manner of attaching the control dial thereto.

More particularly according to this invention a large easily manipulatable control dial or knob for adjusting the thermostat setting of an electrically heated iron is mounted between the handle legs. The control dial is mounted on the cover shell of the iron and extends over the entire exposed surface thereof which is not covered by the handle legs so as to form a heat break between the cover shell and the operator's hand when the iron is in use.

The dial is rigidly and rotatably attached to the cover shell so as to be freely rotatable in adjusting the thermostat but is rigidly held against tilting movement. The dial is loosely attached to the thermostat and adjusting shaft in such a manner that the shaft can move axially relative to the dial but will rotate therein when the dial is rotated without breaking the driving connection. The connection between the dial and shaft includes a heat block of heat resistant insulating material to prevent heat from being conducted to the dial. According to one modification a second heat block of heat resistant insulating material is positioned about the driving connection to prevent heat from being radiated to the connection from the sole plate so as to further reduce the conduction of heat to the dial.

The advantages of this invention will become more apparent as the description proceeds when taken in connection with the accompanying drawings in which:

Figure 1 is a side view of an electric iron incorporating this invention with certain parts broken away to better show the details;

Figure 2 is a bottom view of the hub of the dial of Fig. 1 showing how the dial is connected to the driving sleeve; and

Figure 3 shows a modified form of dial mounting.

Referring to the drawing the reference numeral 10 represents a sole plate having an electrical heating element (not shown) of any well known type. A cover shell 11 is secured to the sole plate 10 in any suitable manner. A handle 12 has its front and rear legs 13 and 14 secured to the front and rear ends of the cover shell 11 in any suitable manner.

Located between the legs 13 and 14 of the handle 12 and covering the area of the cover shell 11, not covered by the legs, is a control dial generally indicated by the reference numeral 15. The dial 15 has a downwardly extending hub 16, a downwardly extending annular rib 17 and a downturned rim portion 18. Spot-welded to the cover shell 11 is an annular dished member 19 of sheet metal with an annular flange 20 upon which the annular rib 17 of the dial 15 rests. The

2

annular rib 17 of the dial 15 is held against the annular flange 20 by a pair of pins 21 inserted through reinforced portions of the rim 18 and having their inner ends extending beneath the flange 20 of the member 19.

The hub 16 of the dial 15 has a pair of recesses 22 and 23 extending upwardly therein which cooperate with a pair of lugs 24 and 25 extending upwardly from the upper end of a driving sleeve 26. The top of the dial 15 is adapted to carry suitable indicia (not shown) to indicate the temperature setting of the control and the recesses 22 and lug 24 are of different size or shape than the recess 23 and lug 25 so as to assure that the dial 15 will be assembled with the indicia in the proper relationship to the control.

The driving sleeve 26 is drivingly connected to an adjustable shaft 28 screw threaded into a nut 29 supported from the sole plate 10 by a bracket 30. A ceramic cup 27 is positioned inside the sleeve 26 and insulates the shaft 28 therefrom. At its lower end the driving sleeve 26 extends below the ceramic cup 27 and has a screw 31 extending through a slot therein the screw being threaded into the shaft 28 to complete the driving connection. The screw 31 cooperates with a stop pin 32 extending upwardly from the nut 29 to limit the rotation of the adjusting shaft 28 to less than a complete revolution.

Extending about the joint between the shaft 28 and the driving sleeve 26 is a ceramic collar 33 secured to the under side of cover shell 11 by a flanged disc 34 spot-welded to the cover shell 11. The lower end of shaft 28 coacts with a spring arm 35 carrying an electrical contact 36 which cooperates with a second contact 37 carried by a spring arm 38 to control the energization of the heating element. The spring arm 38 is adapted to be moved upwardly and downwardly to open and close the contacts 36 and 37 by an insulating pin 39 carried by the free end of a bimetallic thermostat 40 which is responsive to the temperature of the sole plate 10, bowing upwardly as the sole plate heats up and downwardly as it cools off.

Rotation of the dial 15 rotates the drive sleeve 26 through the coaction of the lugs 24 and 25 with the recesses 22 and 23 which in turn rotates the adjusting shaft 28 to move the spring arm 35 upwardly or downwardly to raise and lower the upper temperature limit of the control. The recesses 22 and 23 are deeper than the lugs 24 and 25 when the shaft 28 is in its uppermost position so that the sleeve 26 can move axially relative to the hub 16 as the shaft 28 moves upwardly and downwardly. The ceramic cup 27 will decrease the conduction of heat from the shaft 28 to the sleeve 26 and the ceramic collar 33 will decrease the radiation of heat to the sleeve 26 from the sole plate 10. Thus, both of the ceramic elements serve to maintain the dial

sufficiently cool so that it may be manipulated by the operator.

The dial 15 is easily removed by removing the pins 21 and lifting the dial upwardly from the lugs 24 and 25 of the driving sleeve 26. The coaction of the annular rib 17 with the annular flange 20 rigidly supports the dial 15 against tilting movement regardless of the position in which the dial is rotated yet permits easy rotation of the dial.

Referring to Fig. 3 the hub 51 of dial 50 has a groove 52 in its outer surface which coacts with a pair of spring fingers 53 spot-welded to the cover shell 54 at their lower ends to hold the dial 50 to the cover shell 54 while permitting it to be freely rotated. The rim 55 of the dial 50 coacts with an annular protuberance 56 pressed upwardly from a cover shell 54 to hold the dial rigidly against tilting movement while permitting easy rotation thereof.

The hub 51 has a hexagonal or other shaped recess 57 extending upwardly therein which coacts with a protuberance 58 of the same shape extending upwardly from a ceramic driving block 59. The driving block 59 is drivingly connected with an adjustable shaft 60 threaded through the nut 61 supported from a sole plate by a bracket 62. The driving block 59 is slotted at 63 to receive a stop lug 64 welded to and extending downwardly from the head of the adjusting shaft 60. The stop lug 64 coacts with a second stop lug 65 secured to and extending upwardly from a nut 61 to limit the rotation of the adjusting shaft 60 to less than a complete revolution.

On one of the flats of the recess 57 is a protuberance 66 which enters a recess 67 in one of the flats of the protuberance 58 so that the dial 50 must be assembled with its indicia in the proper relationship to the control.

As in the modification of Fig. 1 the recess 57 is deeper than the length of the protuberance 58 when the shaft 60 is in its uppermost position so as to permit the protuberance to move upwardly and downwardly relative to the dial as the adjustment shaft is rotated.

The ceramic driving block 59 decreases the conduction of heat from the shaft 60 to the dial 50. In order to remove the dial 50 it is merely necessary to lift upwardly thereon whereby the spring fingers 53 will be removed from the annular recess 52. The dial may then be raised upwardly from the protuberance 58.

From the foregoing it can be seen that this invention provides a simple manner of securing the control dial to the adjusting shaft of the thermostatic control for an electric iron in which the dial is freely rotatable for the purpose of adjusting the control yet is rigidly held against tilting movement. The dial is rigidly supported by the cover shell so as to be immovable relative thereto except for its rotary movement yet the control shaft may move upwardly and downwardly relative to the cover shell as it is adjusted and the driving connection between the dial and the control shaft is maintained. The control dial is easily removed from the iron and provision is made whereby it must be replaced in the proper relationship to the control.

While I have shown but two modifications of my invention it is to be understood that these modifications are to be taken as illustrative only and not in a limiting sense. I do not wish to be limited to the particular structure shown and described but to include all equivalent varia-

tions thereof except as limited by the scope of the claims.

I claim:

1. An electrically heated smoothing iron comprising, a sole plate, a cover shell secured to said sole plate, a large diameter control dial, an annular dish shaped disc secured to said cover shell, said disc having an annular flange extending outwardly from its upper edge, said dial including means extending downwardly therefrom into contact with said flange to hold said dial against tilting movement while permitting rotative movement thereof and means on said dial for engaging beneath said flange to hold said downwardly extending means against the top of said flange.

2. A smoothing iron according to claim 1 including a rotative adjusting shaft for a thermostatic control, a driving connection between said dial and shaft, a hub extending downwardly from said dial, said driving connection including a driving sleeve having lugs entering recesses in said hub and a driving block of heat resistant heat insulating material drivingly connected between said shaft and sleeve, said sleeve extending below said driving block and surrounding said shaft, stop means coacting with means on the lower end of said sleeve for limiting the rotative movement of said shaft and a sleeve of heat resistant heat insulating material surrounding the lower end of said driving sleeve for reducing the radiation of heat from said sole plate to said driving sleeve.

3. An electrically heated smoothing iron comprising, a sole plate, a cover shell secured to said sole plate, a control, a screw threaded shaft for adjusting said control, screw means carried by said sole plate for mounting said shaft in operative relationship to said control, a control dial including a downwardly extending centrally located hub rotatably mounted on said cover shell over said shaft, said hub having a pair of spaced recesses therein, a driving sleeve having a pair of lugs extending into said recesses and slidable therein, a heat insulating block drivingly connected between said sleeve and shaft, said sleeve extending below said block and about said shaft, stop means carried by said screw means and means carried by the lower end of said sleeve and positioned to contact with said stop means for limiting rotation of said shaft to less than a complete revolution.

4. A smoothing iron according to claim 3 in which one of said spaced recesses and its cooperating lug is of different cross-sectional size than the other recess and its cooperating lug whereby said dial must be assembled in a definite angular relationship to said shaft.

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