

1

3,030,485

ELECTRIC PRESSING IRON

Ivar Jepson, Oak Park, and Joseph L. Vieceli, Cicero, Ill., assignors to Sunbeam Corporation, Chicago, Ill., a corporation of Illinois

Filed Nov. 14, 1957, Ser. No. 696,371

8 Claims. (Cl. 219—25)

This invention relates generally to pressing irons and more particularly to hand operated electric pressing irons having thermostatic controls for regulating the sole plate temperature.

Thermostatically controlled electric pressing irons have been in widespread commercial use for many years. The desirability of having an electric iron which may be set for different operating conditions is well recognized. Since various fabrics require different sole plate temperatures for most efficient ironing, accurate control of the sole plate temperature has simplified the task of ironing considerably.

Most of the design activity in the electric iron field has centered around the temperature control mechanism for maintaining the sole plate at the temperature best suited to the material being pressed. The temperature should be regulated accurately since the possibility of scorching and otherwise damaging the material being pressed is increased substantially if the temperature is above the optimum range. If the sole plate of the iron is regulated to temperatures below the optimum range, the effectiveness of the ironing will be decreased and the time required to perform a given ironing operation will be increased. Because of the desirability of accurate temperature regulation, calibration means are often provided so that the control thermostat may be adjusted to give the proper range of sole plate temperatures for which it is set. To be most effective, the calibration adjustment should be made when the iron is completely assembled so that further assembly of the iron will not disturb the calibration.

In providing a calibration means accessible on the assembled iron, structural complications arise which increase the cost of the iron considerably. Some of the prior art devices employ calibration means which may be operated in the later stages of the assembly of the iron but prior to its complete assembly. In addition to introducing errors in the calibration, this last mentioned type of calibration means presents problems in the subsequent recalibration of the iron if the thermostat does not continue to regulate to the proper temperature. It would be desirable, therefore, to provide calibration means which would be easily accessible when the iron is completely assembled. Among other desirable characteristics which should be common to the temperature control mechanism are accuracy of temperature control over a substantial range, simplicity of construction and long life expectancy.

Although the basic component parts of the electric iron have become fairly standardized and include a sole plate, a shell, a handle and a heel rest, the mode of assembling these components has been the subject of much study and experimentation through the years. The ease with which these parts of the iron may be assembled is a significant factor in determining the initial cost of the iron as well as the cost of repairs to be made during the useful life of the device. If the basic parts of the iron are structurally simple and easy to assemble, the iron may be sold at an advantageous price and may be kept in satisfactory working order at a reasonable cost.

Accordingly, it is an object of this invention to provide an improved thermostat for an electric iron.

It is a further object of this invention to provide a

2

thermostat having a simplified factory calibration mechanism associated therewith.

It is an additional object of this invention to provide an electric flat iron having a thermostat control linkage including a temperature calibration means which may be adjusted without disassembling the flat iron.

It is an additional object of this invention to provide a simplified control linkage for the thermostat of an electric flat iron.

It is a further object of this invention to provide an electric flat iron having a sole plate which includes a simplified means for assembling the other components of the iron thereto.

Further objects and advantages of the present invention will become apparent as the following description proceeds and the features of novelty which characterize the invention will be pointed out with particularity in the claims annexed to and forming a part of this specification.

For a better understanding of the present invention, reference may be had to the accompanying drawings, in which:

FIG. 1 is a perspective view of an electrically heated flat iron embodying the subject invention;

FIG. 2 is a sectional view taken along line 2—2 of FIG. 1;

FIG. 3 is a rear elevational view of the flat iron of FIG. 1 having a portion of the handle and shell cut away;

FIG. 4 is a sectional view taken along line 4—4 of FIG. 2 showing a plan view of the sole plate;

FIG. 5 is an enlarged side elevational view of a portion of the control linkage;

FIG. 6 is a sectional view taken along line 6—6 of FIG. 5;

FIG. 7 is a sectional view taken along line 7—7 of FIG. 2; and

FIG. 8 is a sectional view taken along line 8—8 of FIG. 2.

Referring to the drawings, this invention has been shown in one form as applied to an electrically heated flat iron comprising a sole plate 10 having at its bottom the usual pressing surface 11. The sole plate has the conventional shape provided with a point 12 at the forward end and curving sides 13 extending rearwardly from the point 12 to a flat heel edge 14. The curving sides 13 slope upwardly and inwardly as indicated at 13a so that the iron may be easily used among folds, pleats and the like which are being ironed. The sole plate 10 may be made of any suitable metal such as aluminum, stainless steel bonded to aluminum or other good heat conducting material.

The sole plate 10 is provided with a sheathed heating element 16 which is cast integrally with the aluminum sole plate in the conventional manner. As in the usual construction, the heating element 16 takes the form of a U-shaped sheathed heating element which is positioned in the sole plate with its ends 16a protruding rearwardly past the end of the cast aluminum sole plate. The heating element 16 may be of conventional form having a helical electrical resistance conductor 18 mounted within a tubular sheath 20. The resistance element 18 is held in spaced relation to the sheath by a compacted mass 22 of electrically insulating and heat conducting material such as granular magnesium oxide. The ends of the resistance element 18 are provided with terminals 18a which protrude rearwardly from the ends 16a of the sheathed heating element. As can be seen in FIGS. 2 and 4, the U-shaped heating element 16 is enclosed within an upwardly protruding U-shaped rib 24 formed integrally with the aluminum sole plate 10.

It can be seen that the sole plate 10 has additional ribs and bosses which are provided to support the shell

and the thermostat of the electric iron. The sole plate is covered by means of a shell 26 which is a substantially inverted cup-shaped member having downwardly extending sides which are supported on the sole plate 10. To reduce heat transfer between the sole plate 10 and the shell 26 the contacting area between the shell and the sole plate is reduced to a minimum. To accomplish this function and to fix the shell against lateral movement with respect to the sole plate, a number of upwardly extending notched protuberances 28 are provided to engage the shell at intervals along the edge of the downwardly extending walls. As can be seen in the sectional drawing of FIG. 2, the notched protuberances 28 position the shell 26 with respect to the sole plate 10 so that spaces 29 are left between the sole plate 10 and the shell 26.

In order to secure the shell 26 to the sole plate 10, a pair of vertically extending bolts 30 are provided which extend through holes in the upper portion of the shell 26 and are received in threaded openings in the sole plate 10.

The shell 26 serves as a support means for the handle 32 which may be made of any suitable electrical and heat insulating material such as a phenol condensation product. The handle 32 is formed with a horizontally extending gripping portion 34 by means of which the operator manipulates the iron. The gripping portion 34 is supported by a pair of vertically extending column portions 36 and 38 which extend downwardly from the front and rear portions respectively. The bottom ends of supporting columns 36 and 38 are joined by the horizontally extending plate portion 40 which serves as a heat insulating shield to protect the operator's hand from the heat radiating upwardly from the sole plate. The general construction of the handle 32 and the means of securing it to the shell 26 are disclosed in the United States patent to Bisley No. 2,277,034 issued March 24, 1942, to the same assignee as the subject application.

The subject Bisley patent discloses the use of downwardly extending hooks on the handle portion which engage the shell to retain the handle thereon. In the Bisley patent the handle assembly hooks were shown to be molded integrally with the plastic handle. In order to reduce the cost of the handle, the instant invention deals with a method of including the handle assembly hooks with another part of the mechanism so that they may be easily assembled to the handle without the additional expense of molding them integrally therewith.

In accordance with this object an upwardly extending control linkage guide bracket 42 is formed with a support portion 42a toward the rear thereof which includes at its outer edges a pair of downwardly extending assembly hooks 42b. The support portion 42a of the control linkage guide bracket 42 is assembled to the handle by means of a self-tapping bolt 44 which is received in a hole in the handle 32. To assemble the handle 32 to the shell 26, the assembly hooks 42b are inserted through slots in the upper portion of the shell 26 in the manner disclosed in the above cited Bisley patent. The handle is then slid forward so that the openings 42c formed by each of the hooks 42b engage the shell 26 to restrain the handle from vertical or lateral movement. In order to retain the handle in its forward position with the handle assembly hooks 42b in engagement with the shell 26, the rear portion of the shell is provided with several holes through which assembly bolts 46 pass to enter into threaded engagement with cooperating holes in the column 38 of the handle 32. Thus, in accordance with the teaching of the subject Bisley patent, the hooks 42b prevent vertical and lateral movement of the handle after assembly to the shell 26 and the bolts 46 prevent rearward movement of the handle 32 such as might cause disengagement of the hooks 42b. It should be noted that in the assembled position of handle 32 and shell 26 there remains a substantial spacing 48 between the

forward portion of the handle and the top of the shell. This spacing not only reduces heat transfer between the shell and the handle but also permits the easy calibration of the control thermostat without disassembling the iron as will be explained in greater detail below.

To set the control thermostat so as to obtain the desired sole plate temperature, there is provided in the forward portion of the handle 32 a temperature control lever 50 which may be selectively positioned in regard to indicia appearing on the handle. To provide means on the handle for mounting the temperature indicia thereon, an adhesive backed metal foil member 52 is secured to a conically shaped surface on the top of support column 36. The foil member 52 may be suitably marked with the temperatures for which the control thermostat should be set to regulate the sole plate temperature or it may bear notations as to the type of material for which each temperature setting is most suitable. In either event it provides an index means to aid in setting the temperature control lever 50 to the desired sole plate temperature.

The control lever 50 is provided on its outer end with a plastic knob 50a to enable easy manipulation of the lever 50 by the fingers of the operator. The forward support column of the handle 32 is molded to provide a hollow portion 36a within which the temperature control linkage may extend for operation by the temperature control lever 50. Communicating with the hollow portion 36a is a horizontal slot 36b which extends around half of the support column 36. The slot 36b provides clearance for the control lever 50 so that it may be selectively positioned relative to indicia bearing member 52. To mount the temperature control lever 50 for rotation about a vertical axis, a shoulder screw 54 is threadedly received in the handle 32. As can be seen in FIG. 2 the shoulder screw 54 is adapted to be received in a downwardly extending boss 36c. Also received on the shoulder portion of screw 54 is a temperature control cam 56 which is mounted to rotate in unison with the temperature control lever 50 about the axis of shoulder screw 54.

To provide selective control of the thermostat, the temperature control cam 56 is provided with a downwardly facing, sloping cam surface 56a as can be seen in FIGS. 2 and 7. The central portion 56b of the cam 56 is flat and serves as a bearing surface for the cam 56. In the center of the bearing surface 56b, there is formed a hole 56c to receive the shoulder portion of screw 54. The shoulder screw 54 retains the cam in bearing engagement with the downwardly extending boss 36c of the handle. To prevent relative rotation of the temperature control lever 50 and the temperature control cam 56, a pair of downwardly extending ears 56d are formed on the control cam 56. The ears 56d serve to prevent relative rotation between the temperature cam 56 and the control lever 50. Upon assembly of the shoulder screw 54 to the handle 32 to retain the lever 50 and the cam 56 in assembled relationship, a tension washer 58 is placed between the head of shoulder screw 54 and the control lever 50. The tension washer 58 assures a proper pressure between the handle boss 36c and the temperature cam 56 so that they may be rotated relative to each other but so that they will not turn too freely.

To relate the position of the temperature cam 56 to the control thermostat which is mounted on the sole plate 10 there is provided an axially movable cam follower 60. The cam follower 60 is supported for vertical movement by the bracket 42. The bracket 42 is provided with a pair of bearing apertures 42d and 42e through which the cam follower 60 extends. The upper bearing aperture 42d has a grommet 61 mounted therein to provide a suitable bearing for the cam follower. The lower bearing aperture 42e is actually little more than a clearance hole through which the cam follower 60 extends, the lower end of the cam follower being re-

5

strained from horizontal movement by its connection to the control thermostat. This method of support is particularly advantageous since it restrains the cam follower 60 from horizontal movement relative to the cam 56 while at the same time permitting limited movement of the bottom portion to eliminate any likelihood of jamming and to reduce friction.

As can be best seen in FIGS. 5 and 6, the cam follower 60 is made up of two portions so that its length may be adjusted to vary the calibration of the control thermostat. The cam follower 60 has an upper or adjustable portion 62 positioned in engagement with the sloping cam surface 56a. The lower end of the adjustable portion 62 is threaded at 62a for assembly to a lower connecting portion 64 of the cam follower 60. The middle of the adjustable portion 62 of the cam follower is flattened at 62b to enable it to be engaged by a suitably constructed wrench for rotation thereof for calibration of the control thermostat. The flattened portion 62b is positioned so that a portion of it is always located in the opening 48 between the handle 32 and the shell 26. The portion 62b is sufficiently elongated so that, within the range of axial movement permitted the cam follower 60, the flattened portion will always be located partially within space 48. Thus, regardless of the axial position of cam follower 60, the flattened portion 62b is readily accessible through space 48 to permit calibration of the thermostat. In FIG. 8 a suitable wrench 65 is shown in dotted lines in engagement with the flattened portion 62b of the adjustable section of the cam follower. The end of wrench 65 is formed with a slot in which the flattened portion 62b fits snugly as the wrench is inserted into the space 48 between the handle and the shell.

The connecting portion 64 of the cam follower 60 is formed at its upper end with a threaded portion 64a which is adapted to receive the threaded end 62a of the adjustable portion 62 of the cam follower. It can be readily understood that by rotation of the portion 62 of the cam follower 60 the overall length of the cam follower 60 is changed by the change in the amount of threaded engagement between the part 62a and 64a on the two-piece cam follower. Since the lower end of the cam follower is in operative engagement with the control thermostat the change in length of the cam follower provides a simple means of calibrating the control thermostat and the temperature control cam.

A thermostatic switch for the electric iron is designated generally by reference numeral 66 and is mounted in intimate heat exchange relationship with the central portion of the sole plate 10. The thermostatic switch 66 is of a single unit construction having all the parts assembled to an elongated frame member 68. The frame 68 comprises a pair of longitudinally extending side members 68a which are connected together by front and rear transversely extending plates 68b and 68c respectively. The front transverse plate 68b serves not only to connect the spaced frame members 68a but also serves as a mounting plate for the entire thermostatic switch 66. In accordance with this function the plate 68b is secured by screw 70 to an upwardly extending boss or rib 72 on the sole plate 10.

In order to have good response to the sole plate temperature, a primary temperature responsive bimetal 74 is mounted between the boss 72 and the mounting plate 68b. The mounting of the bimetal 74 between the frame plate 68b and the boss 72 assures good heat transfer between the sole plate and the bimetal 74. The outer or free end of the bimetal 74 is provided with a ceramic insulating button 76 which is adapted to actuate electrical contacts in a manner to be explained below. The high expansion side of bimetal 74 is lowermost so that it deflects upwardly when heated.

Supported on the plate 68c of the frame 68 are the switch arms carrying a pair of electrical contacts 78 and 79. The lowermost contact 78 is mounted on a rigid

6

switch arm 80 which extends upwardly and forwardly as well as rearwardly from the contact 78. The rearwardly extending portion 80a of the switch arm is joined to a resilient supporting arm 82. The supporting arm 82 is adapted to mount switch arm 80 so that the lower contact 78 may be moved relative to the thermostat frame member 68. Movement of the switch arm 80 is accomplished by means of force applied to a forwardly extending portion 80b of the switch arm 80. To permit the forward extension of portion 80b while not interfering with bimetal 74 or the upper switch arm, an intermediate connecting portion 80c is formed integrally with the switch arm 80. The connecting portion 80c extends upwardly from the portion of the switch arm adjacent the contact 78 and connects with the forwardly extending portion 80b at a position above the switch contacts.

The switch arm 80 and its associated contact 78 are supported by the resilient arm 82 so that they may be positioned in accordance with the setting of the control lever 50 and the temperature control cam 56 mounted in the handle portion. As was explained above, the cam follower 60 is mounted for vertical axial movement in accordance with the positioning of the cam 56. In order to transmit movement of the cam follower 60 to the switch arm 80, a switch lever 84 is pivotally mounted between the forward portions of the thermostat frame 68. The switch lever 84 consists of an elongated member having a pair of parallel spaced mounting plates 84a extending downwardly from opposite sides of the center portion of the lever 84. The mounting plates 84a are formed with aligned holes to receive a mounting pin 88 which pivotally mounts the switch lever with respect to the thermostat frame 68. Since the switch lever 84 is positioned above the assembly screws 70, the switch lever 84 and pivot pin 88 are not assembled to thermostat frame 68 until after the thermostat assembly 66 is screwed to the sole plate.

To accomplish the pivotal connection between the cam follower 60 and the switch lever 84, the connecting portion 64 of the cam follower is formed with a bifurcated end 64b. To provide a bearing on switch arm 84 for the bifurcated portion 64b of the cam follower, longitudinally extending cutout portions 84b are formed in the forwardmost end of switch lever 84. Separating the cutout portions 84b is a transversely extending bearing portion 84c which is received between the bifurcated ends of the connecting portion 64 of the cam follower.

The rearwardly extending end of the switch lever 84 has an insulating plate 89 secured thereto for bearing engagement with the cooperating end of switch arm 80b. The insulating plate 89 is formed of silicone impregnated Fiberglas, mica or other suitable insulating material. To retain the insulating plate 89 on the switch lever 84, a pair of ears 84d formed integrally with switch lever 84 are crimped over the insulating plate 89. The plate 89 serves to electrically insulate the control linkage from the contact member 78.

The upper electrical contact 79 is supported adjacent the lower contact 78 by means of an upper resilient switch arm 90. The switch arm 90 is joined to the thermostat frame 68 by means of rivet 92 which secures all the contact elements and connectors in stacked, insulated relationship in a well known manner. A series of ceramic washers 94 are employed between the conducting elements in the stack to insulate them from one another. To distribute the force of the rivet head against the ceramic washer 94 on the top of the stack, a metal washer 95 is assembled between the rivet head and the ceramic washer. The ceramic washers are provided with integral bosses which are received in holes in the conducting members for maintaining the conducting members spaced from the assembly rivet 92. The assembly of stacked conducting members utilizing such ceramic washers or spacers is well known in the thermostat art and is therefore not disclosed in detail.

The resilient support arms 82 and 90 are formed and positioned so that in their undeflected position, the contacts 78, 79 are spaced from each other. Upon assembly of the cam follower 60 and handle 32 including the cam 56 to the iron, the downward force exerted by the cam follower 60 on the switch lever 84 tends to flex or bias the resilient support arm 82 upwardly. The counteracting force exerted by arm 82 tends to maintain the cam follower 60 in engagement with cam 56. This relationship between the thermostatic switch 66 and the cam 56 and cam follower 60 creates an excellent fail safe where- by the contacts 78, 79 will open the heating circuit when the handle or control cam is removed or broken.

Extending forwardly from the upper switch arm 90 is a compensating bimetal 96. The bimetal 96 is secured to the switch arm 90 by any suitable means such as welding, riveting or the like. The high expansion side is positioned downwardly so that bimetal 96 curves upwardly as it is heated as does the primary bimetal 74. This upward deflection of bimetal 96 tends to compensate the thermostatic switch for the error which would otherwise result from the change in ambient temperature to which the primary bimetal 74 is subjected.

Even though the sole plate of an electric sadiron is constructed of heavy cast material and has the heating element cast integrally therewith, there is often some tendency for the sole plate to warp as it is heated. Because of this tendency, a fluttering of the electrical contacts is often noted when the temperature control linkage or the thermostat is supported at more than one point so as to be affected by such warping. This contact fluttering has been found to be present only when an increase in the hole plate warpage tends to open the contacts. The sole plate warpage in such instance operates against the desired control characteristics of the iron. Thus, when the thermostat senses the temperature is low and closes the contacts, the heat delivered to the sole plate tends to immediately open the contacts before the desired sole plate temperature rise has taken place. It would be desirable therefore to arrange the thermostat and the control linkage in such a way that any sole plate warpage would tend to close the contacts as the iron is heated rather than to open them.

As the iron is heated, the location of the heating element closer to the upper surface of the sole plate tends to deform the sole plate so that it becomes slightly concave downward. Because of the mounting of the control linkage relative to the mounting of the thermostatic switch 66, this distortion of the sole plate tends to lower the forward end of the switch lever 84 with respect to the thermostat switch 66. Because of the inverted arrangement of the contact arm 80, this lowering of the forward end of switch lever 84 tends to close the contacts 78, 79 eliminating the possibility of any contact fluttering and eliminating the associated contact wear. By having the temperature control linkage, the switch lever 84 and the bimetals 74 and 96 operating as shown to eliminate contact fluttering, longer switch life results.

The iron of the instant invention is provided with a conventional two conductor power cord 98 which enters through an opening in the rear handle column 38. A suitable cord guide and strain relief 102 is utilized to prevent wear at the point of entry in the iron and to reduce the possibility of disturbing the electrical connections to the iron by the application of force to the power cord 98. Two conductors 98a and 98b of the power cord 98 are joined to suitable bus connections 104 and 106 respectively. The bus connectors 104 and 106 are assembled to the thermostat switch 66 by means of the rivet 92 described above which retains the conducting members and ceramic washers 94 in stacked relation. The connector 104 is secured to the switch arm 90 by welding to assure good electrical conduction therebetween. The connector 106 is similarly assembled to the thermostatic switch 66 by inclusion in the riveted stack

by rivet 92. The bus connectors 104 and 106 are formed with upwardly extending legs 104a and 106a which have screws 105 and 107 threadedly received in their upper ends to secure the ends of conductors 98a and 98b thereto.

To effect the connection between the thermostat switch 66 and the heating element 16, a pair of wire connectors 108 and 109 are welded to the terminals 18a of the sheathed heating element. The other ends of the wire connectors are secured to thermostatic switch 66 by rigid conducting plates which are assembled to the thermostat frame 68 by means of the rivet 92. One of the conducting plates is made up of a portion of bus connector 106 which is formed with an outwardly projecting tab 106b to which the wire connector 108 is secured. The end of the wire connector 108 is bent in a circular form around assembly screw 110 which is threadedly received in tab 106b. When the screw 110 is tightened down against the connector 108, good electrical conduction is established between the end of heating element 16 and the conductor 98b through the bus connector 106.

The other wire connector 109 is joined to thermostat 66 through rigid conducting plate 111 which is assembled to the stack by rivet 92 as described above. The plate 111 is welded to the resilient support arm 82 to assure good electrical conduction between wire connector 109 and switch arm 80. The plate 111 has an integrally formed tab 111a which is drilled and tapped to receive assembly screw 113. The end of the wire connector 109 is bent in a circular form around assembly screw 113. Immediately below plate 111, there is provided a mica insulating plate 115 which is designed to space the plate from the thermostat frame 68. The mica member 115 also serves to prevent the resilient supporting arm 82 from contacting the thermostat frame 68 when contact 78 is biased downwardly. It can be readily understood that the above described construction of the thermostatic switch 66 and its associated electrical connecting members provides a simple and easily manufactured switch for controlling the temperature of an electric pressing iron.

As was explained above, the handle 32 is assembled to the shell by means of the hooks 42b which engage slots in the shell 26 and bolts 46 which secure the rear end of the handle to the shell. This provides an efficient and attractive arrangement whereby all the assembly means are hidden from view. In order to provide access to the handle assembly bolts 46 which extend from the inside of the shell into the handle, there is provided a removable heel plate 116 at the most rearward portion of the iron. The heel plate 116 is formed of sheet metal and assembled to the iron by means of a single screw 114. To support the heel plate in position, the sole plate 10 is formed with a rearwardly projecting assembly lug 112. The assembly lug 112 is cast integrally with the sole plate and extends rearwardly in a plane spaced above the pressing surface 11 of the sole plate 10. The upwardly extending bolt 114 is threadedly received in the assembly lug 112 to secure the heel plate 116 in position as can be best seen in FIG. 2. This arrangement provides a simple and inexpensive means for uniting the heel plate to the iron. Heretofore it was conventional to assemble the heel plate from above or to utilize separate brackets or elongated screws extending upwardly into the handle portion.

The thermostatic switch 66 and its associated control linkage embodies an important safety feature heretofore unknown in this field. The thermostatic switch 66 includes a fail-safe feature so that if the handle is broken or otherwise removed from the iron when it is connected to its power supply, no overheating will result since the contacts 78, 79 will be immediately opened. It can be seen that if the pressure exerted by cam 56 on the cam follower 60 is removed, the resilience of support arm 82 of thermostatic switch 66 will cause contact 78 to move downwardly and thereby open the power circuit. As is obvious from the detailed description appearing

above, the instant invention provides a simplified sadiron construction which may be easily assembled in manufacturing and may be readily calibrated at the completion of the assembly operation. In addition, the iron may be readily recalibrated any time during its life without disassembly. The thermostat construction is designed for ease of manufacture and to eliminate contact fluttering for longer iron life. The assembly means for the heel plate and the support means for the cam and cam follower linkage are so arranged to reduce the parts required and facilitate their assembly to the pressing iron.

While we have shown and described a particular embodiment of our invention, it will be obvious to those skilled in the art that various changes and modifications may be made without departing from our invention in its broader aspects and we therefore aim in the appended claims to cover all such changes and modifications as fall within the true spirit and scope of our invention.

What we claim as new and desire to secure by Letters Patent of the United States is:

1. An electric iron comprising a sole plate having electric heating means, a shell mounted thereon enclosing said heating means, a thermostatic switch within the shell for controlling the heating means in response to the sole plate temperature, a handle having a gripping portion and a support portion secured to said shell, said support portion of said handle being mounted in closely spaced relation to said shell, the space between said shell and said support portion providing a thermal barrier against heat transfer from said shell to said handle, manually operable temperature control means mounted on said handle for setting the temperature of the sole plate, a connecting linkage extending through said support portion between said control means and said thermostatic switch across the spaced portions of said handle and said shell, and said linkage including temperature calibration means accessible through and being positioned partially within the space between said handle and said shell for changing the relationship between said control means and said thermostatic switch when said iron is completely assembled.

2. An electric iron comprising a sole plate having electric heating means, a shell mounted on said sole plate enclosing said heating means, a handle having a gripping portion, front and rear supporting columns connected to said gripping portion and secured to said shell, a thermostatic switch for controlling the heating means in response to the sole plate temperature, a manually adjustable cam for controlling the setting of said thermostatic switch, said cam being mounted for rotation about a vertical axis in the front supporting column a cam follower extending through said front supporting column and said shell between said cam and said thermostatic switch, said cam follower being mounted for axial movement in response to adjustment of said cam, and a portion of said cam follower accessible between said shell and the bottom of said front supporting column when said iron is completely assembled for varying the length of said cam follower.

3. An electric iron comprising a sole plate having electric heating means, a shell mounted on said sole plate enclosing said heating means, a handle having a gripping portion, front and rear supporting columns on said handle connected to said gripping portion and secured to said shell, a thermostatic switch for controlling the heating means in response to the sole plate temperature, a manually adjustable cam positioned on said handle for controlling the setting of said thermostatic switch, said cam being mounted for rotation about a vertical axis in said front supporting column, a two-piece vertically extending cam follower extending through said front supporting column and said shell between said cam and said

thermostatic switch and mounted for axial movement in response to adjustment of said cam, the two parts of said cam follower being threadedly engaged so that rotation of one part relative to the other changes the over-all length of the cam follower, one of said parts being restrained against rotation by its engagement with said thermostatic switch, and the other of said cam follower parts being accessible between said shell and the bottom of said front supporting column when said iron is completely assembled.

4. An electric iron comprising a sole plate having electric heating means, a handle mounted on said sole plate for manipulation of said iron, a thermostatic switch for controlling the heating means in response to the sole plate temperature, a manually adjustable cam positioned on said handle for controlling the setting of said thermostatic switch, a two-piece vertically extending cam follower positioned between said cam and said thermostatic switch and mounted for vertical movement in response to adjustment of said cam, the two parts of said cam follower being threadedly engaged so that rotation of one part relative to the other changes the over-all length of the cam follower, one of said parts being restrained against rotation by its engagement with said thermostatic switch, a portion of said handle being mounted in spaced relation to the remainder of said iron, and said rotatable portion of said cam follower being positioned in part within said space.

5. An electric iron of the type described in claim 4 in which the rotatable cam follower portion positioned in said space has a flattened cross section so it may be readily rotated.

6. The electric iron of claim 1 wherein said temperature calibration means comprises an elongated two-piece member mounted for longitudinal movement, the two pieces of said member being threadedly engaged whereby said switch is calibrated by varying the amount of threaded engagement between said pieces.

7. The electric iron of claim 2 wherein said cam follower includes a connecting portion in threaded engagement with said first-mentioned portion, the length of said cam follower being varied by rotating said first-mentioned portion to change the amount of threaded engagement between said portions.

8. The electric iron of claim 7 wherein said connecting portion is restrained from rotation by its engagement with said thermostatic switch.

References Cited in the file of this patent

UNITED STATES PATENTS

1,143,572	Denhard	June 15, 1915
1,971,970	Walder	Aug. 28, 1934
2,012,490	Wright	Aug. 27, 1935
2,277,034	Bisley	Mar. 24, 1942
2,342,653	Edwards	Feb. 29, 1944
2,403,115	Olving	July 2, 1946
2,431,186	McCullough	Nov. 18, 1947
2,541,119	Sparklin	Feb. 13, 1951
2,602,873	Finlayson	July 8, 1952
2,613,460	Vance	Oct. 14, 1952
2,657,484	Sparklin et al.	Nov. 3, 1953
2,700,237	Ireland	Jan. 25, 1955
2,726,313	Gomersall et al.	Dec. 6, 1955
2,810,812	Swenson	Oct. 22, 1957
2,810,813	Finlayson	Oct. 22, 1957
2,887,800	Kistner	May 26, 1959
2,906,043	Jepson et al.	Sept. 29, 1959

FOREIGN PATENTS

489,708	Great Britain	Aug. 2, 1938
586,543	Great Britain	Mar. 21, 1947
1,153,583	France	Oct. 7, 1957