

April 8, 1958

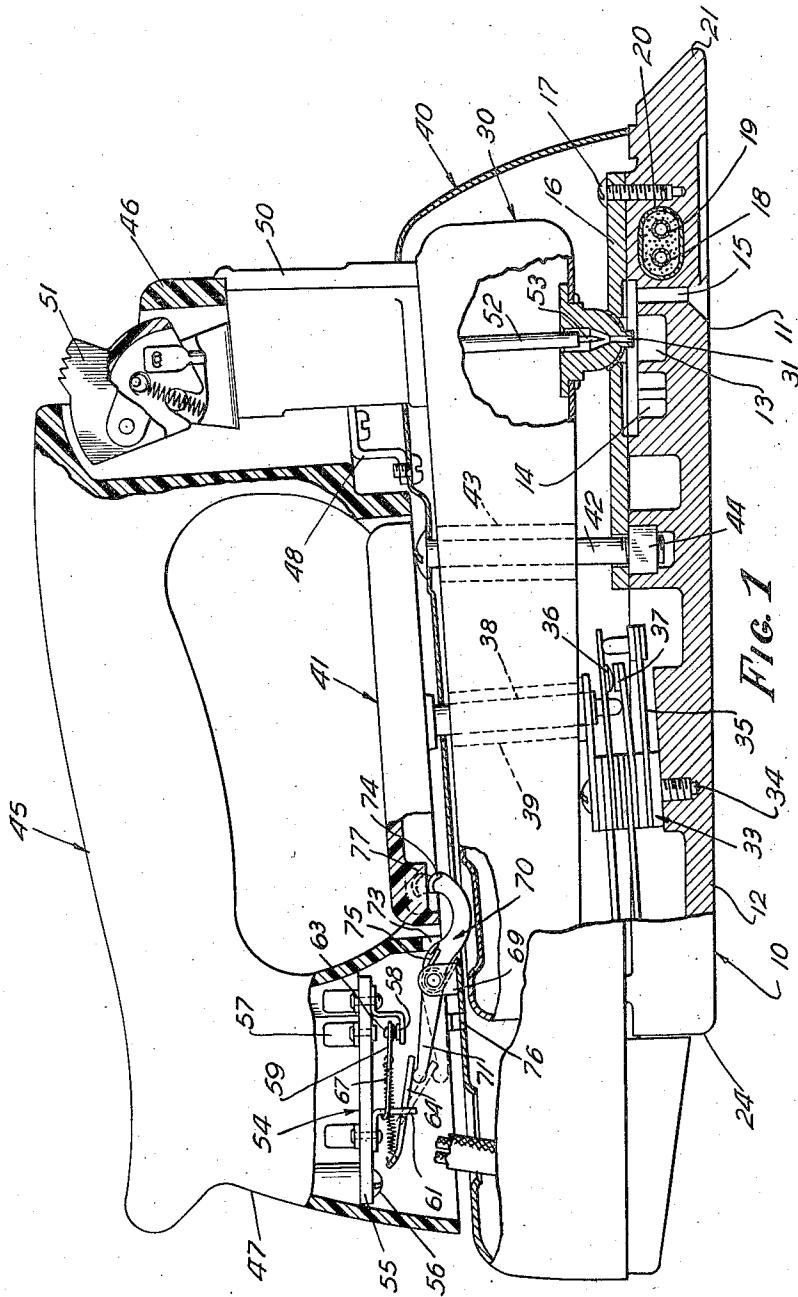
W. A. HUMPHREY

2,829,452

ELECTRIC IRON

Filed April 4, 1955

2 Sheets-Sheet 1



April 8, 1958

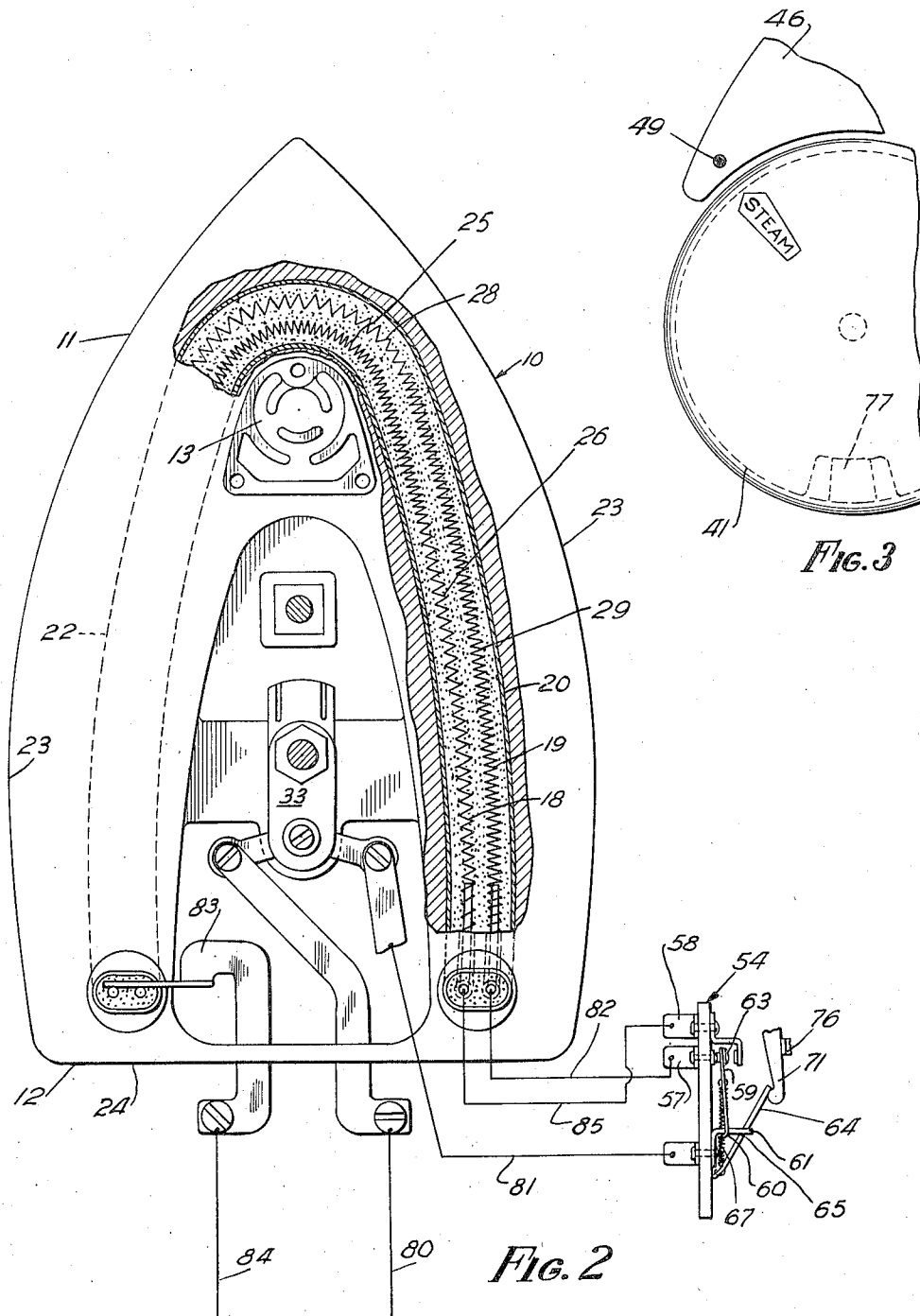
W. A. HUMPHREY

2,829,452

ELECTRIC IRON

Filed April 4, 1955

2 Sheets-Sheet 2



1

2,829,452

**ELECTRIC IRON**

Warren A. Humphrey, Canton, Ohio, assignor to The Hoover Company, North Canton, Ohio, a corporation of Ohio

Application April 4, 1955, Serial No. 498,961

5 Claims. (Cl. 38-77)

The present invention relates to electric irons and more particularly to a combined dry and steam iron.

An object of the invention is to provide an iron having separate heating elements for steam and dry ironing. Another object is to provide an iron having a heating element for a steam generator and sole plate in steam ironing, and a separate element for use in dry ironing. A further object is to provide an iron having a heating element to concentrate the heat at a steam generator and provide less heat to the remainder of the sole plate for steam ironing, and another heating element to distribute heat throughout the sole plate for dry ironing. Another object is to provide a thermostat dial which also controls two heating elements for steam or dry ironing. Other objects and advantages of the invention will become apparent from the following description and drawings wherein:

Figure 1 is a partial vertical section of the iron showing the dial and switch in steam ironing position,

Figure 2 is a partial horizontal section of the sole plate showing the switch in dry ironing position, and

Figure 3 is a partial top plan of the combined switch and thermostat control dial in steam ironing position.

The embodiment of the invention herein disclosed comprises a sole plate 10 having a pointed front end portion 11 and an enlarged rear end portion 12 and is provided with a steam generating chamber 13 in the forward portion 11 from which extends suitable steam passageways 14 connected to steam outlet ports 15 for distributing steam on the material being steam ironed. A cover plate 16 is attached by screws 17 to the sole plate and completes the steam generating chamber 13 and the steam passageways 14. Suitably supported on the cover plate 16 is a water reservoir or tank 30 having an outlet 31 for discharge of water to the steam generator 13. Arranged in the sole plate 10 are two heating elements 18 and 19 enclosed in a single casing 20 of substantially U-shape with the nexus disposed between the steam generating chamber 13 and the toe 21 of the sole plate, and the legs 22 of the element extend adjacent the sides 23-23 to the rear end 24 of the sole plate. The steam iron heating element 18 has a closely coiled portion 25 adjacent the steam generating chamber 13, and a loosely coiled portion 26 extends therefrom into the rear area 12 of the sole plate 10. The closely coiled portion 25 provides the high heat required at the steam generator 13 to convert water into steam, and the loosely coiled portion 26 applies less concentrated heat to the rear area 12 of the sole plate to heat the latter to the desired temperature for steam ironing all synthetic materials without harmful effects. The dry iron heating element 19 has a loosely coiled portion 28 which provides sufficient heat for the small front portion 11 of the sole plate, and the remainder of the element is closely coiled at 29 to supply higher heat to properly heat the enlarged area of the sole plate for the different materials to be dry ironed.

A thermostat 33 is mounted by a screw 34 to the sole

2

plate 10 and has bimetallic element 35 and contacts 36-37 the latter being controlled by a shaft 38 extending through a tube 39 in the reservoir and an opening in the cover shell 40 for connection with a control dial 41.

5 A bolt 42 projects through a tube 43 in the tank to secure the cover shell 40 to the sole plate 10 by a captive nut 44. The control dial 41 is removably attached to the thermostat shaft 38 to uncover the bolt 42 for detachably securing the cover shell to the sole plate. Provided on the upper surface of the dial 41 are suitable indicia representing different dry ironing temperatures for a variety of fabrics and a single steam ironing position.

10 A handle 45 has front and rear supporting legs 46-47 respectively removably attached to the cover shell 40 by brackets 48 only one of which is shown. The front handle leg 46 has a dot 49 on its base to indicate the different settings of the dial 41. Mounted in the front leg 46 is a fill opening 50 communicating with the tank 30 to fill the latter with water. An overcenter device 51 is mounted in the front leg 46 for operating a valve stem 52 having a valve 53 to control the outlet 31 to the steam generator 13.

15 The handle rear leg 47 is recessed adjacent the cover shell 40 for inserting a two pole switch 54 provided with an insulated mounting plate 55 attached by screws 56 to the handle leg. Dry and steam ironing contacts 57 and 58 respectively are riveted to the plate 55, and a switch lever 59 is pivoted at 60 in a bracket 61 and is provided at one end with a contact 63. A device is provided to move the switch lever 59 to its different operating positions and includes a trip lever 64 pivotally supported at 65 on the bracket 61 and has one end connected to a compression spring 67 and the latter is attached to the switch lever 59. The arrangement of the spring 67 with respect to the pivot 65 of the trip lever 64 is to at all times bias the latter and the lever 59 to the dry ironing position shown in Figure 2.

20 Mounted on the cover shell 40 at the entrance to the handle recess is a bracket 69 pivotally supporting a switch actuating lever 70 having the end of one lever arm 71 slidably engaging the trip lever 64 and the other lever arm projecting through a marginal slot 73 in the handle leg 47 so that its end 74 is beneath the control dial 41. A torsion spring 75 at all times urges the lever 70 to rotate in a counterclockwise direction to the dotted line dry ironing position indicated in Figure 1. A lug 76 on the cover shell 40 limits counterclockwise movement of the lever 70 to prevent the lever end 74 engaging the dial 41 unless the latter is in steam ironing position.

25 The dial 41 has a downwardly directed cam 77 adjacent its periphery for engagement with the lever end 74 when the control dial is in steam ironing position to rotate the lever 70 clockwise and cause the trip lever 64 to move to its full line position shown in Figure 1 to close the contacts 63-58 for steam ironing.

30 The electrical circuit includes a power lead 80 connected to the thermostat contact 37, and the other contact 36 is connected by a wire 81 to the bracket 61 joined with the switch lever 59. The switch contact 57 is connected by a wire 82 to the dry ironing heating element 19 which is joined to a conductor 83 connected to the other power lead 84. A wire 85 connects the other switch contact 58 to the steam ironing heating element 18 which is also connected to the conductor 83 and thus to the power lead 84.

35 When fabrics are to be dry ironed the dial 41 is rotated to register the desired indicia, representing the required temperature for the fabric, opposite the dot 49 to thereby adjust the thermostat contacts 36-37 to automatically make and break the dry ironing circuit. In all settings of the dial 41 for dry ironing the lever 70 is out of contact

with the dial 41 and thus the switch spring 67 maintains the switch lever 59 engaged with the contact 57 to energize the dry iron heating element 19. The loosely wound coil portion 28 of the element 19 provides less concentrated temperature at the front portion 11 of the sole plate where the ironing surface area of the sole plate is relatively small. The close coiled portion 29 of the element 19 supplies a greater concentrated heat to the rearward portion 12 of the sole plate, and since this area is large in comparison with the toe portion the temperature of the rear portion of the sole plate will be substantially the same as the front portion to thereby provide a uniformly heated sole plate for dry ironing.

If the material is to be steam ironed the dial 41 is rotated to arrange the indicia "steam" opposite the dot 49 on the handle leg 47 to adjust the thermostat contacts 36—37 to the temperature at which they make and break the circuit. Movement of the dial 41 to "steam" position causes the cam 77 to engage the end 74 of the actuating lever 70 to rotate the latter clockwise as viewed in Figure 1 whereby the trip lever 64 is rotated counterclockwise against the force of the spring 67 to engage the contacts 63—58 as shown in Figure 1 to thereby energize the steam iron heating element 18.

The valve actuator 51 is then operated to open the valve 53 to allow water to drip into the steam generator 13. The close coiled portion 25 of the element 18 supplies concentrated heat to the generator 13 to immediately convert the water into steam for passage through the outlets 15 onto the fabrics, and in addition also heats the toe portion 11 of the sole plate. The portion 12 of the sole plate rearwardly of the steam generator 13 is supplied with less concentrated heat by the loosely coiled portion 26 of the element 18 and is sufficient to heat that portion of the sole plate to substantially the temperature provided by the close coiled portion 25 at the toe of the iron.

In order to terminate steam ironing the dial 41 is shifted to "off" position to separate the thermostat contacts 36—37, or to a dry ironing setting whereby the cam 77 is shifted out of engagement with the end 74 of the lever 70 and the switch spring 67 moves the contact 63 into engagement with dry ironing contact 57. The lug 76 limits counterclockwise movement of the lever 70 to prevent the end 74 from engaging the dial 41.

While I have shown and described but one embodiment of my invention, it is to be understood that this embodiment is 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 variations except as limited by the scope of the claims.

I claim:

1. A dry and steam iron comprising a sole plate, a steam generating chamber at the forward end of said sole plate, valve means for controlling flow of water to said generating chamber, a steam ironing heating element arranged adjacent said steam generating chamber to heat the latter, a dry ironing heating element independent of said steam iron heating element and extending from said

steam generating chamber to heat the larger area of said soleplate, a thermostat for controlling the temperatures of both of said heating elements, switch means operable independently of said valve means for separately energizing said heating elements, and unitary control means for operating said switch means to separately energize said heating elements for dry and steam ironing.

2. A dry and steam iron as described in claim 1, and said control means including a control dial for said thermostat and having steam and dry ironing positions, and means on said dial controlling said switch means and operable depending upon said positions of said dial to separately energize said heating elements.

3. A dry and steam iron comprising a sole plate, a steam generating chamber at the forward end of said sole plate, valve means for controlling flow of water to said generating chamber, a steam ironing heating element extending from the rear of said sole plate and having a portion adjacent said steam generating chamber, said portion being closely wound to concentrate heat at said steam generating chamber, a dry iron heating element extending rearwardly from said steam generating chamber and having a portion closely wound to distribute heat to the larger rear area of said sole plate, a thermostat for controlling the temperatures of both of said heating elements, switch means operable independently of said valve means for separately energizing said heating elements, and unitary control means for operating said switch means to separately energize said heating elements for dry and steam ironing.

4. A dry and steam iron as described in claim 3, and said control means including a control dial for said thermostat and having steam and dry ironing positions, and means on said dial controlling said switch means and operable depending upon the positions of said dial to separately energize said heating elements.

5. An iron for dry and steam ironing comprising a sole plate, a steam ironing heating element in said sole plate, a dry ironing heating element in said sole plate and independent of said steam iron heating element, switch means connectible to said dry and steam heating elements, a control dial having steam and dry ironing positions, actuating means operatively connecting said control dial to said switch means to effect operation of the latter for dry and steam ironing, means on said control dial operable when the latter is in said dry ironing position to engage said actuating means and effect operation of said switch to energize said dry ironing heating element, and cam means on said control dial operable when the latter is in steam ironing position to engage said actuating means and thus operate said switch means to energize said steam ironing heating element.

References Cited in the file of this patent

UNITED STATES PATENTS

2,345,413	Morton	Mar. 28, 1944
2,582,773	Finlayson	Jan. 15, 1952
2,725,453	Haller	Nov. 29, 1955