

April 30, 1940.

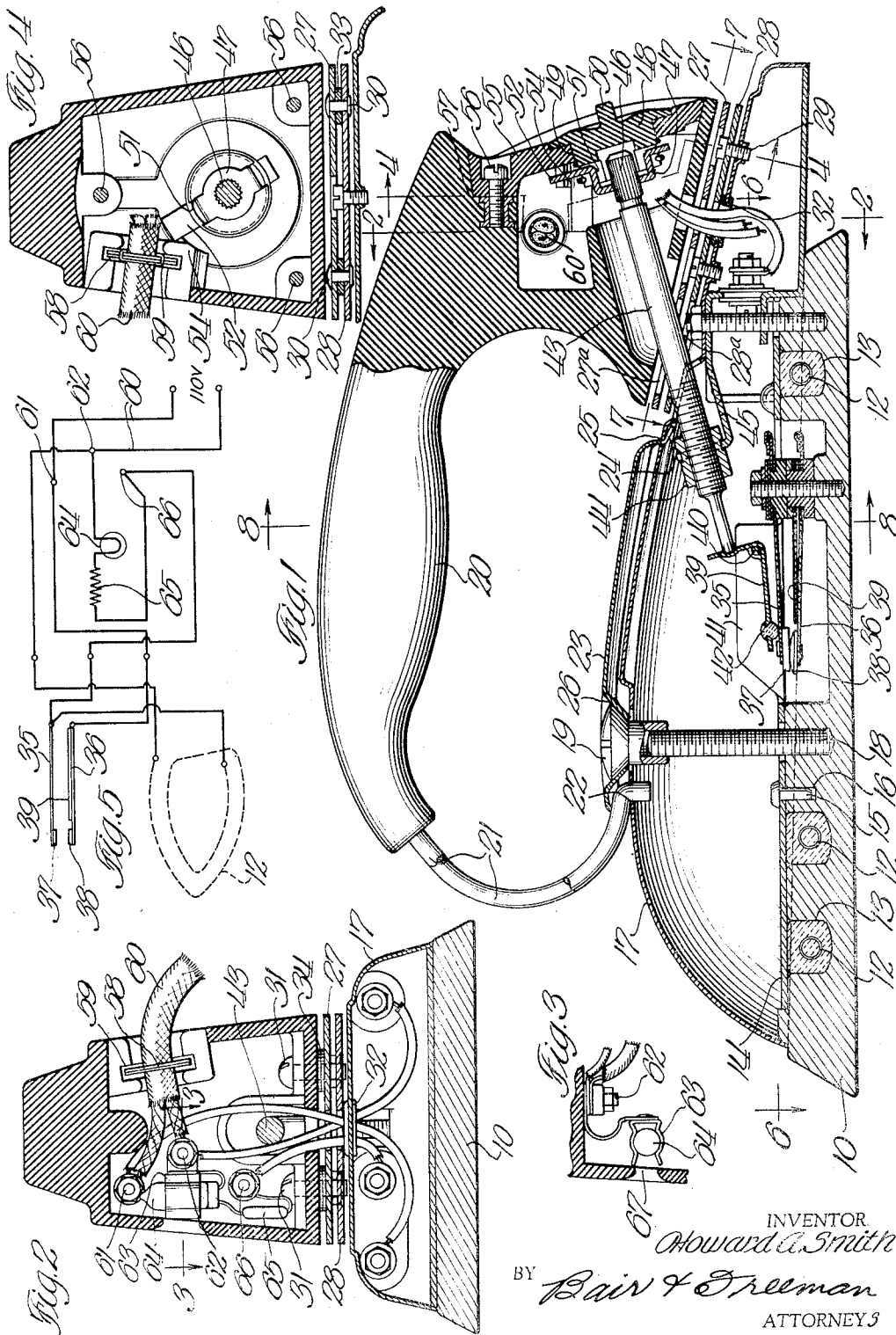
H. A. SMITH

2,198,924

AUTOMATIC TEMPERATURE CONTROL SADIRON

Filed Sept. 12, 1938

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6

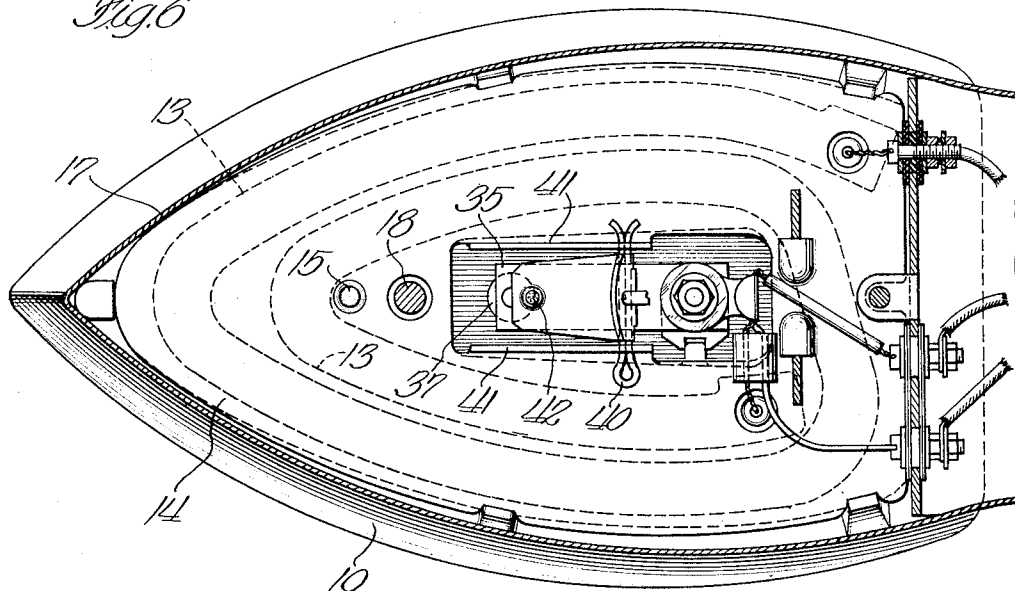


Fig. 8

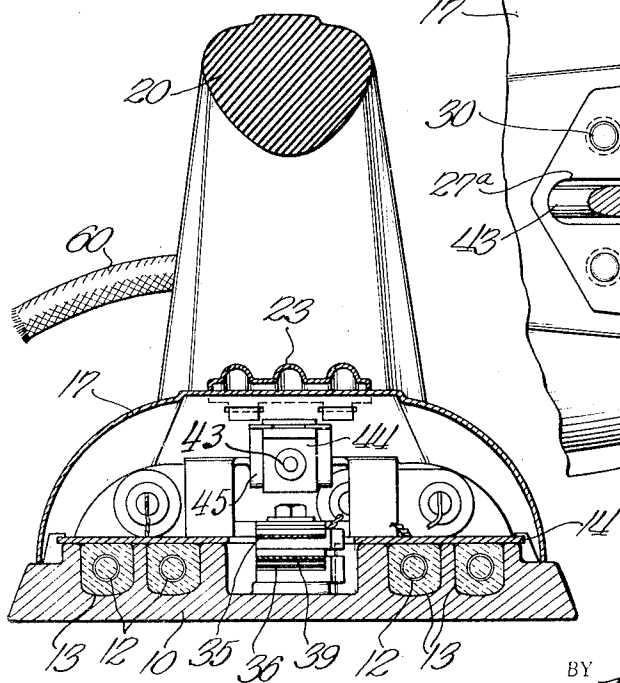
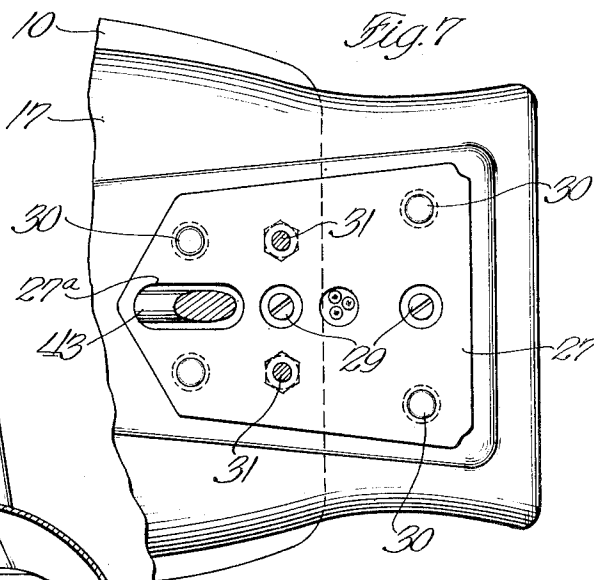


Fig. 7



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AUTOMATIC TEMPERATURE CONTROL
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Application September 12, 1938, Serial No. 229,562

8 Claims. (Cl. 219—25)

An object of my present invention is to provide an automatic temperature control sadiron wherein the thermostat is located in the usual manner adjacent the center of the sole plate, but the operating knob therefor is located at the rear of the handle for the iron whereby it is substantially spaced away from the heat of the sole plate and shell of the iron and therefore eliminates burning of the fingers of the user when adjusting the thermostat.

A further object is to provide a sadiron construction in which a handle has a base at the rear of the sadiron shell with an operating knob for the thermostat mounted in the base of the handle and a rod extending forwardly and downwardly therefrom, being operatively connected with the thermostat with a bell crank connection.

Another object is to provide the handle with an enlarged base so mounted on the shell of the sadiron that heat from the shell is effectively dissipated, instead of being transmitted to the handle, and the enlarged base provides for connection of an adjusting knob with a thermostat through the base of the handle.

Another object is to provide means in the handle base to support a signal light and to receive terminals with which the signal light and the supply cord for the sadiron are connected.

Still another object is to provide a series of spaced cooling plates for mounting the handle base on the sadiron shell and novel means for connecting the front end of the handle to the shell.

Still another object is to provide a signal means which indicates whether the heating element of the iron is energized or not, the signal being controlled by the thermostat simultaneously with the heating element controlled thereby.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawings. Although the invention is susceptible of a variety of embodiments, it is unnecessary to fully describe and illustrate more than one in order to give a full understanding of the invention both from its structural and functional standpoints. Accordingly, I have illustrated a preferred and desirable embodiment of the invention in the accompanying drawings, in which:

Figure 1 is a vertical central sectional view taken longitudinally through a sadiron embody-

ing my invention, most of the parts being shown in section with the exception of a portion of the handle;

Figure 2 is a vertical sectional view on the line 2—2 of Figure 1 showing terminal connections and a signal light in the base of the handle of the iron;

Figure 3 is a sectional view on the line 3—3 of Figure 2, showing the support of a signal light in the handle base;

Figure 4 is a vertical sectional view on the line 4—4 of Figure 1 showing a thermostat adjusting mechanism;

Figure 5 is an electrodiagrammatic view of the heating element, thermostat and signal light of the iron;

Figure 6 is a horizontal sectional view on the line 6—6 of Figure 1 showing a plan view of the sole plate;

Figure 7 is a sectional view on the line 7—7 of Figure 1 showing a plan view of the heat dissipating plates used for mounting the sadiron handle in position, and

Figure 8 is a vertical sectional view on the line 8—8 of Figure 1 showing the thermostat of the iron and mechanism for operating or adjusting it.

On the accompanying drawings, I have used the reference numeral 10 to indicate a sole plate. A heating element 12 is located in a groove 13 of the sole plate and is adapted when energized to heat the sole plate. A sheet metal cover plate 14 is provided for retaining the heating element 12 in position. A rivet 15 is driven into a socket 16 to in turn retain the plate 14 in position.

The sole plate 10 is covered by a shell 17 held in position by a threaded rod 18 and a socket nut 19. A handle 20 is mounted on the shell 17 and is preferably formed of insulating material. The forward end thereof is supported by a plurality of rods 21 entering perforations 22 of the shell. The lower ends of these rods are retained in position by a retainer strip 23. The retainer strip 23 has a pair of ears 24 extending through slots 25 of the shell 17 and has a cone-shaped perforation 26 receiving the nut 19. The nut, by retaining the element 23 in position, causes it to retain the lower ends of the rods 21 in position as shown in Figure 1.

The rear end of the handle 20 has an enlarged base supported spaced from a plate 27. A second plate 28 is spaced from the plate 27 and from the shell 17. The plates 27 and 28 and the handle 20 are held assembled by screws 29 (see Figure 1), rivets 30 (see Figure 4) and screws 31 (see Figure 2). The spacing between the

shell 17 and the plate 28 is maintained by an eyelet member 32 (see Figure 1) through which the current supply wires for the heating element 12 extend. The spacing between the plates 27 and 28 is maintained by washers 33 on the rivets 30 and between the plate 27 and the handle 20 by washers 34 on the screws 31. This spaced plate arrangement minimizes transmission of heat from the shell 17 to the base of the handle 20 and provides air space for dissipating the heat that is transmitted to plates 26 and 27.

I provide a thermostat comprising spring blades 35 and 36 carrying contacts 37 and 38 and a bimetal blade 39. The bimetal blade 39 warps toward the sole plate 10 upon an increased temperature for separating the contact 38 from the contact 37.

The contacts 37 and 38 are connected in series with the heating element 12 as shown diagrammatically in Figure 5. For adjusting the range of operation of the thermostat I provide a bell crank 39 pivoted on a cotter key 40. The cotter key 40 is supported by a pair of flanges 41 extending upwardly from the heating element cover plate 14.

One end of the bell crank 39 has an insulating button 42 engageable with the spring 35 to force it downwardly against its bias. For forcing it downwardly and thus increasing the temperature at which the thermostat will operate, I provide a rod 43. The rod 43 is screw-threaded in a nut 44. The nut 44 is held stationary by a bracket 45. The rod 43 has a serrated outer end 46 with which a clip 47 is slidably and non-rotatably connected.

An operating knob 48 for the rod 43 is provided. The knob 48 is rotatable in a bore 49 of a cover plate 55. The knob 49 has a wing 50 to be engaged by the user of the iron for rotating the knob. The knob of course can be suitably graduated to secure the temperature desired within the range of operation of the thermostat.

An operative connection is provided between the clip 47 and the knob 48 comprising the location of the clip in a slot 51 of the knob. The clip is limited to less than one revolution of rotation by an extended end 52 thereof engageable with a shoulder 54 of the handle 20, as shown in Figure 4. The nut 44 is pivoted or loosely supported by the bracket 45 and the clip 47 may slide in the slot 51 and thereby off-center relative to the knob 50 for the purpose of preventing any binding of the thermostat adjusting mechanism during operation thereof.

The cover plate 55 is secured in position by three screws 56 threaded into bushings 57 embedded in the handle 20. The cover plate 55 permits access to the interior of the base of the handle 20 which is hollowed out as shown in Figure 1, to receive the rod 43, the clip 47 and other parts, as will hereinafter appear.

The cover plate 55 retains a washer 58 in a groove 59 of the handle 20 (see Figure 2). The washer is secured adjacent the inner end of the supply cord 60. The supply cord connects with terminals 61 and 62 mounted in the hollow base of the handle 20 and covered by the cover plate 55. The terminal 62 carries a clip 63 in which is mounted a small signal light bulb 64. The bulb 64 is connected with a resistance 65 which, in turn, is connected to a terminal 66. The terminal 66 is connected with one end of the heating element 12 as shown in Figure 5 and the other end of the heating element is connected with the thermostat, which has a connection running back

to the terminal 62. The signal light 64 is likewise connected with the terminals 66 and 62, the resistance 65 being in series with the signal light so as to cut down the 110-volt current supply and make it suitable for operating the comparatively small bulb 64.

Due to the electrical connections just described the signal light shunts the heating element 12, whereby whenever the thermostat is open both the heating element and signal light are de-energized, and when the thermostat is closed they are both energized. Accordingly, the glow of the signal light indicates that the heating element is on, while the absence of such glow indicates that it is off. The glow of the light can be observed through a port 67 in the handle 20 (see Figures 2 and 3).

A sadiron constructed according to the foregoing specification can be adjusted for changing the range of temperature operation by rotating the wing 50 of the knob 48. Due to the position of this knob, it is effectively shielded from the heat of the shell 17 by the handle 20. Due to the arrangement of the connection of the handle to the shell including the plates 27 and 28, the transmission of heat from the sadiron to the handle is minimized, and likewise the transmission of heat to the knob 48 is minimized. Further, by the positioning of the knob a substantial distance from the thermostat, the transmission of heat from the thermostat to the knob is substantially reduced and by having the rod 43 extend through slots 27a and 28a in the plates 27 and 28, so that portions of it are exposed to the air circulating between the plates, much of the heat which would otherwise be conducted by the rod to the knob is dissipated.

The particular type of handle 20 illustrated is adaptable for a thermostatic control connection of the kind set forth, and also has the further advantage of providing for terminal connections and the signal bulb 64 to be mounted within the handle.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention. I therefore intend to cover any modified forms of structure or use of mechanical equivalents which may be reasonably included within the scope of my appended claims.

What I claim as my invention and desire to protect by Letters Patent of the United States Patent Office is:

1. In a sadiron of the character disclosed, a sole plate, a heating element therefor, a thermostat regulating the current supplied to said heating element, said thermostat being located adjacent said sole plate, a hollow shell covering said sole plate and thermostat, a handle mounted on said shell, said shell having a perforation adjacent said handle, an operating knob for adjusting the range of operation of said thermostat, said knob being mounted on the back of said handle and an operating rod extending forwardly and downwardly from said knob through said handle, through said perforation, into said shell and operatively connected to said thermostat.

2. In a sadiron, a sole plate, a heating element therefor, a thermostat in the circuit of said heating element and located adjacent said sole plate, a handle for said sadiron, a rotatable operating knob carried thereby and engageable from the rear thereof for adjusting the range

of operation of said thermostat, an adjusting rod slidably and non-rotatably connected with and extending forwardly from said knob, a stationary nut, said rod being threaded there-
 5 through and an operative connection between the forward end of said rod and said thermostat to effect adjustment of the thermostat upon longitudinal movement of the rod as a result of rotation thereof relative to said nut.

10 3. In a sadiron, a sole plate, a heating element therefor, a thermostat in the circuit of said heating element and located adjacent the center of said sole plate and substantially parallel thereto, a handle for said sadiron, an operating knob
 15 carried thereby and engageable from the rear thereof for adjusting the range of operation of said thermostat, an adjusting rod extending forwardly from said knob, a stationary nut, said rod being threaded therethrough, said knob
 20 being rotatable relative to said handle and having a slidable and non-rotatable connection with said rod and a bell crank operatively connected with the thermostat and engaged by the forward
 25 lower end of said rod to effect adjustment of the thermostat upon longitudinal movement of the rod as a result of rotation thereof relative to said nut.

4. In a sadiron, a sole plate, a heating element therefor, a thermostat in circuit with said heating element, a shell on said sole plate, a plural-
 30 ity of superposed plates on said shell, a handle having a base portion supported on said superposed plates, means for spacing said shell, said superposed plates and said handle base from
 35 each other to provide for air circulation therebetween, a thermostat adjusting element carried by said handle base and an operative connection between said adjusting element and said ther-
 40 mostat, said operative connection extending from said handle base through said superposed plates and into said shell and being exposed to the air circulating between said superposed plates, shell
 and handle base.

5. In a sadiron, a sole plate, a heating element therefor, a thermostat in circuit with said heating element, a shell on said sole plate, a plural-
 45 ity of superposed plates on said shell, said plates

each having a perforation, a handle having a hollow base portion supported on said superposed plates, means for spacing said shell, said superposed plates and said handle base from each other to provide for air circulation therebetween,
 5 a thermostat adjusting element carried by said handle and an operative connection between said adjusting element and said thermostat, said operative connection extending from said handle, through said perforations of said superposed
 10 plates and into said shell.

6. In a sadiron, a sole plate, a heating element therefor, a shell on said sole plate, a handle on said shell, a supply cord for said heating ele-
 15 ment extending into said handle, temperature control means for said sole plate having thermostatic mechanism within said shell, an adjusting rod extending therefrom and an adjusting knob located on said handle base, and a plural-
 20 ity of heat dissipating plates between said handle base and said shell, said plates being spaced from each other and from the shell and handle base to minimize transmission of heat from said shell to said supply cord in said handle and
 25 having perforations to permit passage of said rod from said sole plate to said handle base.

7. In a sadiron, a sole plate, a heating element therefor, a shell on said sadiron, a handle at-
 30 tached to said shell, said shell having a plurality of perforations therein and said handle having a plurality of rod elements entering said perforations, a retainer element engaging said rod elements to retain them in said perforations and means for securing said retainer element and
 35 shell of said sole plate comprising a single screw through the retainer element and shell and entering the sole plate.

8. In a sadiron, a sole plate, a heating element therefor, a shell on said sadiron, a handle at-
 40 tached to said shell, said shell having a plurality of perforations therein and said handle having a plurality of rod elements entering said perforations, a retainer element engaging said rod elements to retain them in said perforations and means for securing said retainer element to
 45 said shell.

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