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D. C. GERBER ET AL
ELECTRIC IRON

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2 Sheets-Sheet 1

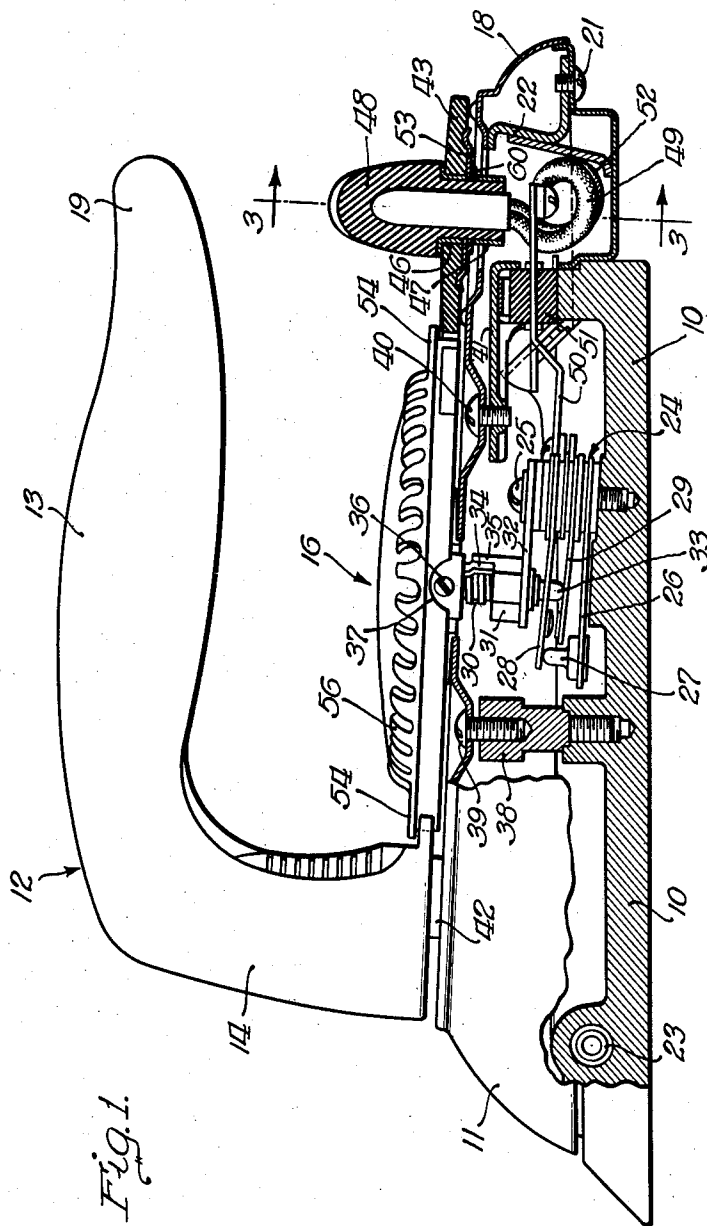


Fig. 1.

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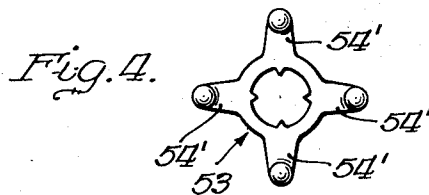
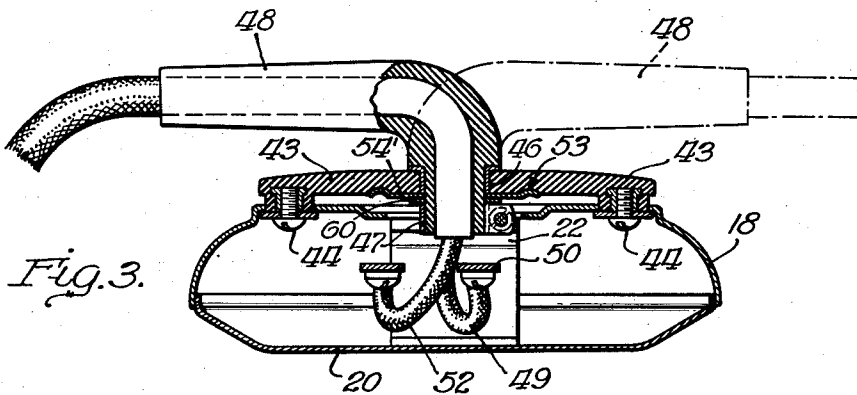
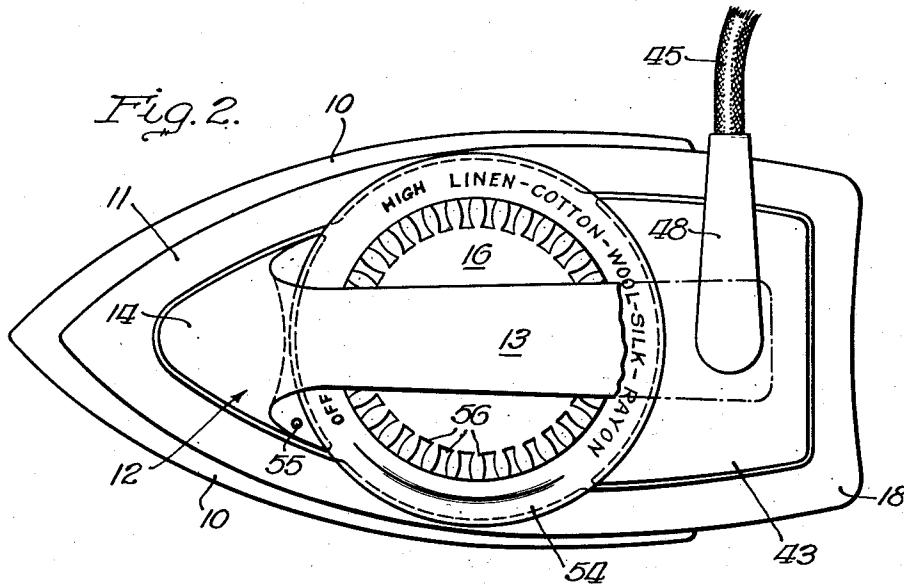
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UNITED STATES PATENT OFFICE

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ELECTRIC IRON

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12 Claims. (Cl. 219—25)

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This invention relates to electric irons and more particularly to a novel arrangement and construction of the operating handle, temperature control dial and service cord anchorage.

This application is a continuation-in-part of abandoned application for Letters Patent, Serial No. 695,394, filed September 7, 1946, for improvements in Electric Irons.

To be effective and to perform the ironing task speedily, an electric iron should operate at a high temperature range, it being understood that this range includes the relatively lower temperatures for certain fabrics such as rayon and silk and the relatively higher temperatures for linens and woollens. Of necessity, these operating temperatures are maintained in a zone very close to the operator's hand. Many attempts have been made to confine these high temperatures to the immediate vicinity of the sole plate and to maintain a cool zone thereabove for the comfort of the operator. Typical of the various expedients resorted to is the use of heat insulating material between the sole plate and the cover shell; spaced and air ventilated horizontal fins between the sole plate and the operating handle; and power driven fans to circulate cooling air in the area about the handle. While these expedients have met with some success, they are all subject to numerous disadvantages including complexity of construction, high cost, increased weight, service and maintenance difficulties.

Another deficiency of prior constructions is the hazard to the user from severe burns unavoidably inflicted while using the iron. Such burns are obtained in the majority of instances either when the operator grasps or removes her hand from the handle or attempts to adjust the temperature control and, in so doing, touches the hot cover shell.

Yet another deficiency of prior irons is the lack of simple, sturdy, and readily operable means for shifting the service cord mounting from one side to the other of the iron to convert it for use by either a right or left hand operator.

The principal object of the present invention is to provide a simple, inexpensive, rugged and novel electric iron which overcomes the aforementioned and other disadvantages of prior electric irons.

More specifically, it is an object to provide an iron having a cantilever type operating handle in combination with a temperature control dial and a supplemental cover plate which together perform their usual functions and additionally serve individually and jointly as a heat barrier between the sole plate and the handle grip.

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Another object is to provide a new and simple service cord anchorage which is readily movable to different operating positions to adapt the iron to use by either right or left hand operators.

A more specific object is to employ a cover plate overlying the rear portion of the cover shell as a heat barrier and as an anchorage for the service cord.

Numerous other objects and advantages of the invention will become apparent from the following specification and detailed drawings in which:

Figure 1 is a vertical sectional view through an iron incorporating the invention;

Figure 2 is a top plan view of the iron;

Figure 3 is a sectional view on line 3—3 of Figure 1; and

Figure 4 is a plan view of the spring keeper spider employed to hold the service cord in a selected operating position.

A preferred embodiment of the iron comprises the usual sole plate 10, a cover shell 11 and an operating handle 12. A cantilever type operating handle molded in one piece includes a grip 13 and a single supporting leg 14 having a base rigidly connected to the cover shell at its forward end. The large diameter temperature regulator dial 16 lies in closely spaced relation to the top of shell 11 and will be described in greater detail below. Cover shell 11 extends rearwardly beyond the heel of the sole plate as indicated at 18 and its rearmost end cooperates with the free end 19 of the handle grip to provide a broad rest for the iron when it is upended onto the rest. A closure plate 20 is removably secured by screw 21 to bracket 22 which, in turn, is rigidly attached to the underside of rear end 18 of the cover shell by spot welding. This closure plate provides convenient access to the service cord terminal leads and closes the space between the rear wall of the sole plate and the end of cover shell 11.

Referring to the internal construction of the iron proper, it will be seen that a U-shaped resistance heating element 23 is embedded in the sole plate so that its terminals project from the heel of the sole plate in a convenient position to be connected in circuit with the temperature regulator and the service cord.

A thermostatic temperature regulator device generally indicated at 24 is supported on the top surface of the sole plate by a mounting screw 25. The bimetallic thermal element 26 is located close to the top surface of the sole plate and supports an insulator button 27 which abuts the underside of upper leaf 28 of the control switch. The other leaf 29 of the switch underlies leaf 28 so that its position relative to leaf 28 can be adjusted from

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the control dial 16. This is accomplished by means of a threaded shaft 30 which passes through a nut 31 carried by stationary arm 32 of the regulator assembly. The lower end 33 of shaft 30 passes through an enlarged opening in switch leaf 28 and bears against the upper side of leaf 29. Lug 34 carried by shaft 30 and lug 35 carried by nut 31 serve to limit movement of shaft 30 between a position in which the switch is open regardless of the temperature of the iron and a limiting, high temperature position of the regulator. Dial 16 is removably secured to the upper end of shaft 30 by a set screw 36 which is accessible through a notch 37 in the rim of the dial.

The forward end of the cover shell 11 is secured to the sole plate by a threaded stud 38 and screw 39, while the rear end is likewise secured in place by a screw 40 mating with bracket member 41 rigidly secured to the heel of the sole plate in any suitable manner. As will be apparent from Figure 1, screws 39 and 40 are accessible for removal when dial 16 is removed.

Handle 12 is preferably made as a one piece molded plastic member of a material having very low heat conductive properties. The base of the sole supporting leg 14 is of a general V-shape having a concave rear face conforming to the contour of the rim of dial 16. Leg 14 is preferably reinforced by a metallic insert, not shown, which is threaded to receive a large diameter stud bolt accessible from the underside of the cover and carrying a spacing washer 42 positioned between the top side of the cover and the lower end of the handle leg.

A heat insulating plate 43 of the general contour illustrated in Figure 2 overlies the rear portion of the cover shell. This highly effective heat barrier is spaced slightly above the cover shell and is secured thereto by a pair of screws 44, as more clearly appears from Figure 3. The forward edge of heat barrier 43, as was the case with the rear face of leg 14, is concave and closely embraces the rim of regulator dial 16. It will therefore be evident that this plate, along with the dial and the base of leg 14, act individually and cooperatively to provide a substantially continuous heat barrier between the iron and the operating handle.

Plate 43 also serves as a mounting means for the service cord 45 and the usual strain relief therefor. Thus, a centrally disposed, vertical opening 46 in plate 43 rotatably receives a thimble 47 on the downturned end of strain relief 48 at the terminal end of service cord 45. One of the terminal wires is connected to a lead 50 passing through an insulator bushing 51 to upper leaf 28 of the regulator switch. The second terminal 52 is connected to one end of heater element 23 while the other end of the heater element is connected to leaf 29 of the switch by a connector not shown.

Strain relief 48 preferably pivots from a position at one side of the iron, as indicated in Figure 2, to a diametrically opposed position on the other side of the iron in order to adapt the iron for use by either a left or right hand operator. The position of the cord shown in Figure 2 is one which would customarily be employed by a right hand operator. A spring spider 53 having indentations at the ends of arms 54' is non-rotatably mounted on thimble 47 and is held in place as by a keeper spring 50. The indentations in arms 54' engage with indentations on the underside of plate 43 to resistingly lock the cord in a desired operating position. These may include not only the diametrically opposed positions described

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above but an intermediate rearwardly projecting position. As will be readily understood from the foregoing, the cord is quickly and readily adjustable to any one of several positions by grasping the strain relief and rotating it to the position desired.

The temperature regulator dial, as appears from Figure 2, has a diameter which extends from side to side of the iron and is substantially coextensive with the grip portion 13 of the operating handle. A horizontally projecting flange 54 extends radially beyond the circular row of finger grip projections 56 and serves as a support for the finger tips when adjusting the dial and as a safeguard against the finger tips coming in contact with the hot cover shell. Another function of flange 54 is to support the temperature control indicia, as clearly indicated in Figure 2. This indicia mates with the single stationary indicia 55 on the rearmost corner of the base of the handle leg. Thus, when the indicia "linen" carried on shelf 54 of the dial is brought in alignment with stationary indicia 55, the temperature regulator is set to operate at a suitable temperature for ironing linen fabrics. Movement of the dial to other positions adjusts the regulator to maintain the proper operating temperatures for ironing other types of fabrics in accordance with customary practice. The indicia "high" on the dial indicates the highest temperature setting for the iron while the indicia "off" opens the switch and deenergizes the iron regardless of its temperature condition.

While but one embodiment of the invention has been illustrated in the drawings it will be appreciated that various alternative constructions may be resorted to without departing from the scope of this invention. For example, various designs of the several parts including the dial may be employed. Preferably, the dial is provided with a radially extending flange which overlies the gaps between the dial and the base of the forward leg and the gap at the forward edge of plate 43 in order to prevent radiant heat reaching the operator's hand. Various other changes may also be resorted to. For example, the terminal end of the service cord may be connected to plate 43 in such a way as to pivot through a vertical plane rather than through a horizontal plane as presently illustrated.

From the foregoing detailed description it will be manifest that an unusually simple and rugged construction has been disclosed having many unique features and in which each of the several principal parts have multiple, mutually, cooperative functions.

While only a single embodiment of the invention has been disclosed, it is to be understood that numerous variations in the design and disposition of the parts is contemplated without departing from the spirit of the present invention.

We claim:

1. In combination, an electric sad iron having a sole plate, an electric heating element therefor, a cover shell for said sole plate and heating element, a thermostatic regulator connected in circuit with said element and housed within said shell having a shaft extending upwardly through said shell centrally thereof, of means for confining the greater portion of the heat of said iron to the zone below the top of said shell comprising a cantilever type operating handle of heat insulating material having a single supporting leg rigidly connecting the forward end of the handle grip to the forward end of said iron, a generally

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flat control dial of heat insulating material on said shaft closely spaced above said shell having a diameter extending substantially the width of said shell and underlying the lower side of said handle grip, a cover of insulating material overlying said cover shell rearwardly of said dial and having a forward edge closely embracing said dial, said cover and said dial cooperating to provide a substantially continuous heat barrier between said cover shell and said handle grip and serving as the dividing line between a relatively high temperature zone therebelow and a relatively cool temperature zone thereabove.

2. The combination defined in claim 1 in which said insulated cover plate is provided with an opening having a service cord and a strain relief therefor extending therethrough.

3. In combination, an electric sad iron having a sole plate, an electric heating element therefor, a cover shell for said sole plate and heating element, a cantilever type operating handle for said iron having a horizontally arranged grip portion and a supporting leg connecting the forward end thereof to the forward end of said iron, a relatively thin wide area heat insulating cover member mounted in closely spaced relation to the rear portion of said cover shell and underlying the rear end of said handle grip, said cover serving as a heat barrier between the underlying portion of said cover shell and said handle grip, an opening in said cover member, means for rotatably supporting a strain relief for a service cord in said opening whereby said service cord may be rotated to project laterally from either side of said iron as desired to facilitate use of the iron by either right or left hand operators.

4. A sad iron as defined in claim 3 including means for resistingly holding said rotatably mounted strain relief in any one of a plurality of positions.

5. A sad iron as defined in claim 3 including means for supporting said rotatably mounted strain relief directly on said cover member.

6. A sad iron as defined in claim 5 in which said cover member includes means for detachably mounting the same on said cover shell and in which said strain relief and its supporting means is removable with said cover member.

7. In combination, an electric sad iron having a sole plate, an electric heating element therefor, a cover shell for said sole plate and heating element, a cantilever type operating handle connected to said iron at the forward end thereof, a temperature regulator having a control dial of heat insulating material extending from side to side of said cover shell positioned rearward of said handle connection, a cover plate of insulating material overlying the portion of said cover shell rearward of said regulator control dial and cooperating therewith to form a heat barrier between said cover shell and the grip portion of said operating handle, and a service cord and strain relief therefor mounted in said cover plate.

8. In combination, an electric sad iron having a sole plate, an electric heating element therefor, a cover shell for said sole plate and heating element, a thermostatic regulator connected in circuit with said element and housed within said shell having a shaft extending upwardly there-through centrally thereof, of means for confining the greater portion of the heat of said iron to the zone below the top of said shell comprising an operating handle of heat insulating material

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having a single supporting leg connected to one end of said cover shell and including a generally horizontal grip overlying said regulator shaft, a control dial of heat insulating material on said shaft closely spaced above said shell having a diameter extending substantially the width of said shell, the side of said single handle support adjacent said dial being shaped to closely embrace the rim of the dial, a cover plate of heat insulating material overlying the remainder of the upper surface of said cover shell and having a concave peripheral portion embracing the rim of said control dial, and a service cord and strain relief therefor supported in said insulated cover plate, the lower end of said single handle supporting leg, said dial and said cover plate cooperating to form a substantially continuous heat barrier overlying the top of said cover shell to shield the grip portion of said operating handle from the heat of the sole plate and cover shell.

9. The combination defined in claim 8 including means for rotatably mounting said service cord and strain relief in said cover plate to permit said strain relief to be rotated through an arc sufficient to facilitate the use of said iron by either right or left hand operators.

10. The combination with an electric sad iron having a sole plate, a cover shell thereon and a temperature control device associated with said sole plate and located beneath said shell, of an operating handle for said iron having a grip and a single supporting leg connected to the forward end of said iron and supporting said grip, a control dial for said temperature control device immediately overlying said shell rearward of said supporting leg and sufficiently large in diameter to extend from side to side of said shell and having its rim nesting in the concave rear base of said supporting leg, said dial being of heat insulating material to act as a heat barrier between the top of said shell and the lower side of said handle grip, temperature control indicia near the rim of said dial, and cooperating stationary indicia on the rearmost corner of the base of said single handle supporting leg whereby said stationary indicia is readily visible to the operator from a vantage point above said handle without obstruction by said handle.

11. In combination, an electric sad iron having a sole plate, an electric heating element therefor, a cover shell for said sole plate and heating element, a thermostatic regulator in circuit with said heating element concealed by said shell and having a shaft extending upwardly therethrough generally centrally thereof, an operating handle secured to said iron above said shell by means of a single front supporting leg and including a hand grip portion extending rearwardly in spaced relation to said cover shell, plate-like means of heat insulating material overlying the major portion of said cover shell not covered by said front handle leg and forming a heat barrier between said cover shell and the hand grip of said operating handle, said plate-like means comprising a circular disk having a diameter approximating the top width of the underlying portion of the cover shell and supported on the shaft of said thermostatic regulator for adjusting the same, said plate-like heat barrier means also including a stationary portion closely embracing said disk rearwardly thereof and being mounted on the rear top side of said cover shell.

12. An electric sad iron as defined in claim 11, including a service cord connected in circuit

with said heating element and thermostatic regulator, and a strain relief means for said service cord extending through said plate-like heat barrier means and arranged for limited rotary movement about the axis of the opening through said heat barrier whereby said service cord may be adjusted to accommodate right and left hand operators.

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