Feb. 15, 1949. W. H. McLELLAND ET AL 2,461,562

ELECTRIC IRON ASSEMBLY

Filed May 17, 1944 2 Sheets-Sheet 1

Fig.-1

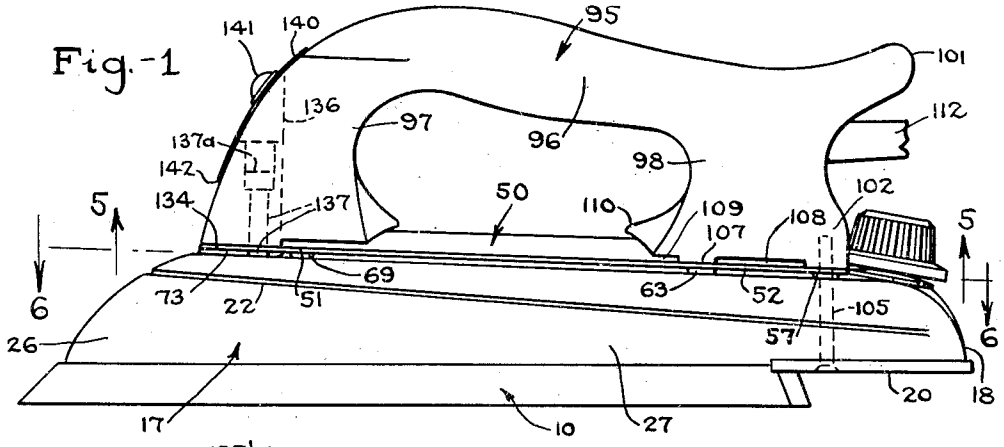


Fig.-2

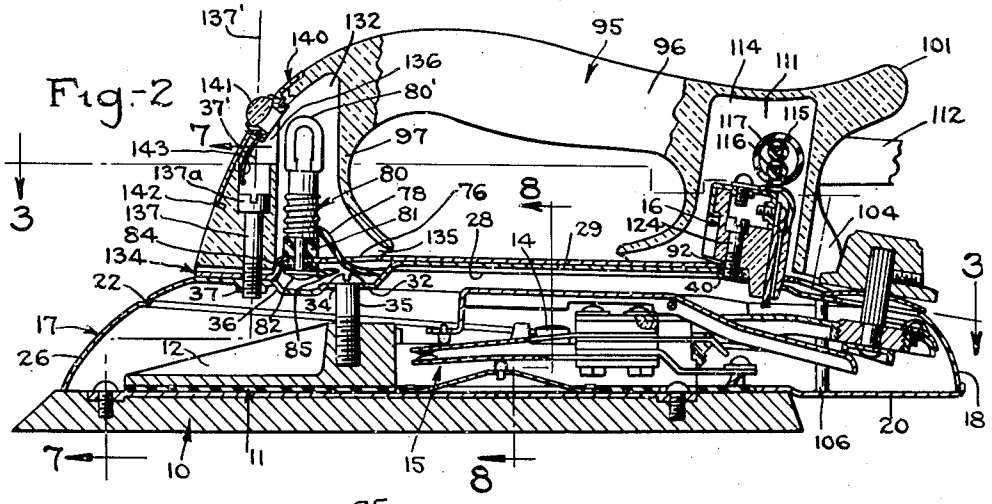


Fig.-3

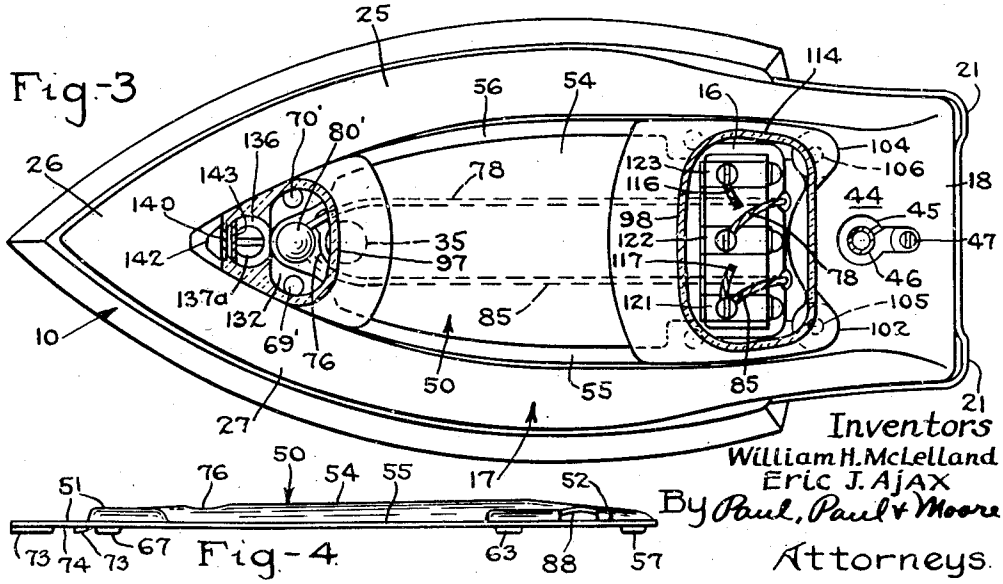


Fig.-4

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Fig. 5
(BOTTOM VIEW)

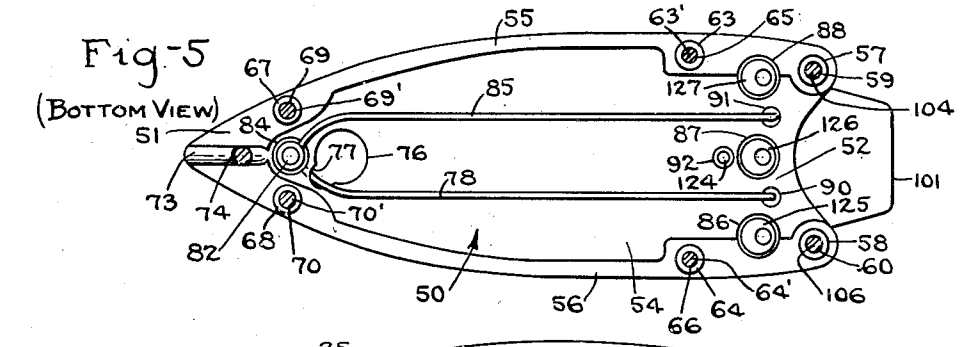


Fig. 6

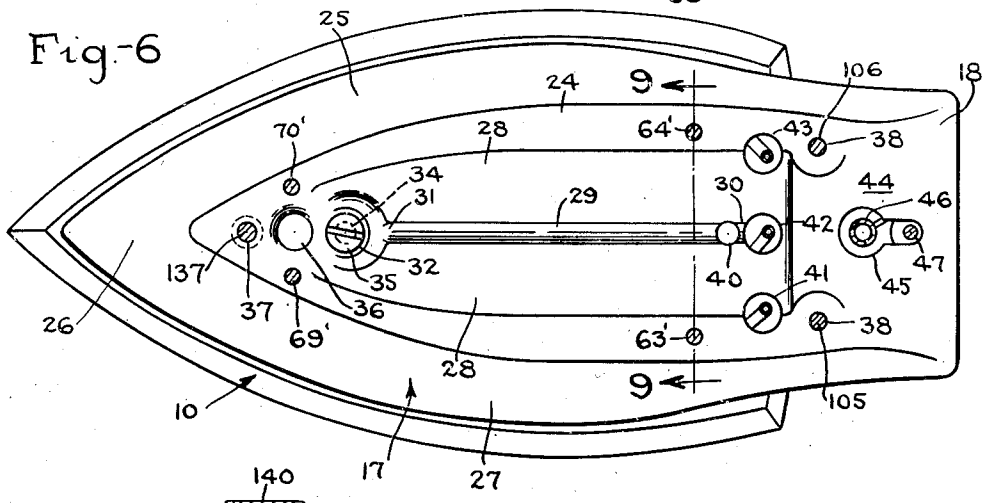


Fig. 7

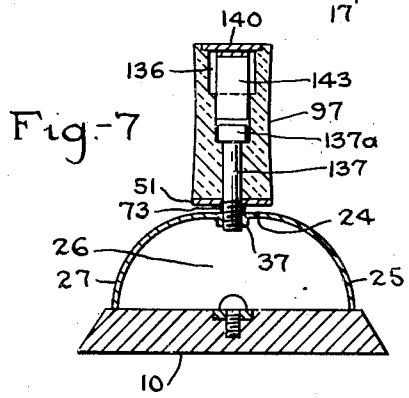
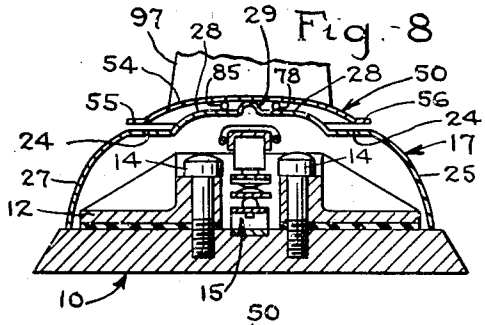


Fig. 8



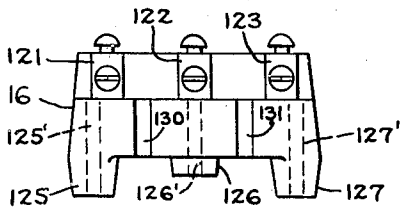


Fig. 10

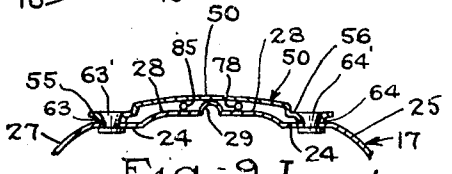


Fig. 9

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UNITED STATES PATENT OFFICE

2,461,562

ELECTRIC IRON ASSEMBLY

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Application May 17, 1944, Serial No. 535,920

8 Claims. (Cl. 219—25)

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This invention relates to sadirons and more particularly to sadirons of the electrically operated automatically controlled type. The invention is directed especially to construction of the sadiron shell and handle structure.

It is an object of the invention to provide an improved sadiron construction and more particularly to provide an improved construction wherein component parts of the apparatus may be assembled conveniently at low costs in a manner so as to leave no exposed fastening devices. It is a further object of the invention to provide improved sadiron sub-assemblies and constructions wherein component parts of the sadiron apparatus are housed within the handle thereof. It is also an object of the invention to provide improved structure and method of fastening the component parts together particularly for the fastening of the sadiron handle to the sadiron base assembly.

Other and further objects of the invention are those inherent in the apparatus herein illustrated, described and claimed.

The invention is described with reference to the drawings in which the same numerals designate corresponding parts and in which

Figure 1 is a side elevational view;

Figure 2 is a side elevational view partly in section indicating the interior construction of the apparatus shown in Figure 1;

Figure 3 is a plan view, partly in section taken along the line and in the direction of arrows 3—3 of Figure 2;

Figure 4 is a side elevational view of a cover plate element of the invention removed from the remaining parts;

Figure 5 is a bottom view of the cover plate and handle and various related parts taken along the line 5—5 and in the direction of arrows 5—5 of Figure 1;

Figure 6 is a plan view, partly in section, taken along the line and in the direction of arrows 6—6 of Figure 1;

Figure 7 is a cross sectional view taken along the line and in the direction of arrows 7—7 of Figure 2;

Figure 8 is a cross sectional view along the line and in the direction of arrows 8—8 of Figure 2;

Figure 9 is a fragmentary sectional view of the shell and cover plate taken along the line and in the direction of arrows 9—9 of Figure 6; and

Figure 10 is a detail view of the terminal block removed from the remaining apparatus.

Referring to the drawings Figure 1, there is provided a sole plate generally designated 10 of

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customary shape, as illustrated in Figures 3 and 6. The sole plate is arranged to be heated by an electric heater of the resistance type generally designated 11 which is held in place upon the sole plate by means of a pressure plate 12 which is screwed to the sole plate by a plurality of screws 14, Figure 8. The pressure plate serves as a mounting for a thermostatically operated control element generally designated 15 which per se forms no part of the present invention, the details thereof being claimed in our copending application entitled "Electric iron," Ser. No. 535,918, filed concurrently herewith. The construction of the sole plate, heater and pressure plate assembly is more fully described in our copending application entitled "Sadiron assembly" Ser. No. 535,919, filed of even date herewith. Reference is made to said copending applications for fuller description of the sole plate construction and the thermostatic control apparatus. The sole plate, heater, pressure plate and thermostatic control are enclosed in a shell generally designated 17 which is shaped to conform to the shape of the sole plate except for the rear portion 18 of the shell which overhangs the sole plate, as indicated in Figures 2, 3 and 6. Upon the sole plate there is mounted a skirt plate 20 which likewise extends at the rear of the sole plate and forms an extended base into which the rear portion 18 of the shell is adapted to fit neatly. The skirt plate 20 is provided with protuberances 21 at its rear edge which serve with the tip 101 of the handle to form a three-point rest for the iron when the iron is tipped backwardly. The shell 17 is provided with a strengthening rib 22 and the upper surface of the shell is shaped as indicated in Figures 2, 7, 8 and 9 so as to present flat areas 24, the flat areas being smoothly curved downwardly throughout the area 25, 26 and 27 to the lowermost edge of the shell. Between the flat areas 24 of the shell there is a raised portion 28 having a longitudinal upwardly extending rib 29 extending along the center line of the shell from the rear portion 30 to the forward end 31 where the rib blends into the flat area 32 having an opening 34 therein. The opening 34 is for the attachment of fastening screw 35 which extends from the upper surface of the shell and is threaded into a central boss 13 of the pressure plate 12. Forwardly of the opening 33 the shell is provided with a depression 36 for clearance purposes, as hereinafter described, and the shell is provided with a threaded hole 37 or, if desired, a nut may be loosely supported under the shell at this point for the attachment of the handle, to be

described. The rear end of the shell is provided with openings 38 through which handle attachment screws are inserted in a manner to be described. Near the back portion 30 of the rib there is provided an enlarged opening 40 (which receives a downwardly embossed threaded opening 92 of the plate 50, as hereinafter described) and also three openings 41, 42 and 43 for passage of wiring connections into the interior of the shell. The wiring connections extend to the electric heater element 11 and thermostatic control 15. The rear portion 44 of the shell is smoothly curved downwardly to the rear edge 18 and is provided with an opening 45 through which the control shaft 46 and the adjustment screw 47 of the thermostatic control are accessible.

Upon the upper portion of the shell there is mounted a cover plate generally designated 50. The middle portion of the cover plate 50 forms the exposed upper surface of the iron structure, as illustrated in Figure 1, but the forward and rear portions 51 and 52 of the cover plate extend under the handle, when the handle is in place on the iron. The cover plate is illustrated in Figures 4, 5, 8 and 9, Figure 5 being a bottom view of the cover plate with the handle attached. The cover plate includes a smoothly curved central area 54 terminating in marginal flat areas 55 and 56 at each side of the cover plate. At the rear end of the cover plate there are provided downwardly embossed areas 57 and 58 which are provided with holes 59 and 60, respectively, to match the holes 38—38 in the shell. The downwardly embossed areas 57 and 58 serve to space the rear portion of the cover plate from the corresponding area of the shell. Somewhat forwardly of the embossed areas 57 and 58 there are another pair of embossed areas 63 and 64 which are likewise apertured at 65 and 66. Near the front end of the cover plate there are an additional pair of downwardly embossed areas 67 and 68, likewise apertured as indicated at 69 and 70. The forward end of the cover plate is provided with a downwardly extending rib 73 extending along the center line of the cover plate, the rib being apertured as indicated at 74. The cover plate is provided with an enlarged aperture 76 having a side indentation 77. The aperture provides access to the attachment screw 35 which holds the shell 17 to the sole plate and the side indentation 77 provides for the passage of insulating wire connection 78 for a purpose to be described. Upon the forward end of the cover plate there is mounted a pilot lamp socket generally designated 80 mounted upon iusulator 81 and held in place by rivet 82 which passes through the cover plate and is insulated therefrom by the insulating washer 84. An insulated electric wire 85 extends from the rivet 82 rearwardly of the cover plate. At the rear end of the cover plate there are three spaced openings 86, 87 and 88, spaced and located so as to match the openings 41, 42 and 43 in the shell. In addition the cover plate is provided with two smaller openings 90 and 91 through which the electric wires 78 and 85 extend upwardly from the bottom side of the cover plate to the terminal block generally designated 16. The cover plate has a downwardly embossed threaded opening 92 for the attachment of the terminal block 16, to be described, the boss 92 being of a size such as to fit into the hole 40 in the shell when the cover plate is assembled on the shell, as indicated in Figure 2.

For manipulating the iron there is provided a handle generally designated 95 having a grip

portion 96 of suitable shape so as comfortably to fit the hand of the operator, and a front support portion 97 and rear support portion 98. The rear support portion is provided with a backwardly extending tip 101 which serves with the protuberance 21 as a rest for the iron when the iron is tipped backwardly. The rear handle support 98 has rearwardly extending portions 102 and 104, illustrated in Figures 1–3, which are threaded to receive a pair of attachment screws 105 and 106 which extend upwardly from the skirt 20 through the openings 38 of the shell and openings 59 and 60 of the cover plate and thence into threaded holes in the portions 102 and 104 of the handle. If desired, inserts may be mounted into these portions of the handle for better attachment of the screws, although this is not essential. The rear support 98 rests on the cover plate only in the small circular area at the base of portions 102 and 104 of the handle surrounding the attachment screws 105 and 106 and the small marginal area at each side of the rear portion 98 of the iron handle, one of these areas being indicated at 107 in Figure 1.

The remaining edge of the rear handle 98 is spaced a short distance from the upper surface of the cover plate 50, as indicated at 108 and 109. The rear handle support 98 is smoothly curved downwardly as indicated at 110 to blend into the contours of the combined shell and cover plate assembly.

The rear handle support is recessed at 111, the recess being open at the bottom for access thereto when the handle is removed from the iron subassembly. The electrical cord 112 leading to the iron is attached, preferably, to the right hand wall 114 and enters the iron through an aperture 115, as shown in Figure 2, the electrical connections being extended from that point through flexible wires 116 and 117 to the junction block 16. The junction block is of a size such that it nests into the recess 111 in the rear handle support and is made of insulating material. The junction block is provided with three terminal pieces 121, 122 and 123 that are fastened together in any suitable manner. The junction block itself of insulating material is fastened to the shell by means of screw 124 which extends through an opening in the junction block to a threaded aperture 92 of the cover plate. At the bottom of the junction block there are provided three downwardly extending apertured insulating tips 125, 126 and 127 which extend entirely through the apertures 86, 87 and 88 of the cover plate 50 and through the apertures 41, 42 and 43 of the shell into the interior of the shell, as indicated in Figure 2. Lead wire connections from terminals 121, 122 and 123 extend downwardly through apertures 125', 126' and 127' into the interior of the iron and there are connected in the manner shown in our copending application entitled "Electric iron," Ser. No. 535,918, filed concurrently herewith to which reference is here made, the three lead wires being connected to the thermostatic control element generally designated 15 and heater element generally designated 11. The terminal block 16 is also provided with two grooves 130 and 131 positioned so as to match apertures 91 and 90 respectively, of the cover plate 50 when the junction block 16 is in place thereon. The insulated electric wires 78 and 85, Figure 5, which extend backwardly along the bottom surface of the plate 50 are led upwardly through the openings 90 and 91, respectively, and grooves 130 and 131 and are connected to terminals 121 and 122,

as illustrated in Figure 3. When the cover plate 50 is assembled upon the shell 17 the rib 29 of the shell which is in uniform contact with the under surface of the cover plate 50 serves to separate the wires 78 and 85. In addition, the insulating cover upon the wires 78 and 85 is of such a dimension as to be squeezed slightly between the shell 17 and the cover plate 50 when assembled, as shown in Figures 8 and 9. The front support member 97 of the handle is likewise provided with an aperture 132 extending from the base of the front support upwardly into the handle. The front support is shaped so as to be in contact with the cover plate 50 throughout the front area, as indicated at 134. The aperture 132 is shaped so as to receive the upstanding pilot lamp 80' and a port 136 is provided from the front of the handle support 97 and into the recess 132 so that light from the pilot lamp 80' can emanate forwardly and be visible from in front of and above the iron. The port 136 also serves for access to the attachment screw 137 which extends downwardly through a suitable opening in the front handle support 97 and through the opening 74 in the cover plate into the threaded opening 37 in the shell. Thus, a screw driver or wrench may be inserted along the line 37'—137' and the screw 137 rotated so as to tightly fasten the front of the handle 95 to the iron structure. It will be noted that the head 137*a* of the screw is deeply recessed into the front handle support 97 and is therefore not visible from the exterior surface of the iron. In addition the aperture 136 is entirely covered by a decorative cover plate generally designated 140 having a lens 141 therein for the passage of light from the pilot lamp 80' therethrough. The lens may be of glass or molded plastic and may be of any color desired. The cover plate 140 is preferably made of decorative shape and is provided at its lower end with an inturned tip 142 which fits into a corresponding recess in the exterior surface of the front handle support 97. A leaf spring 143 is attached to the inner surface of the cover plate 140 and serves to retain the cover plate resiliently in engagement with the front of the handle. For attaching the cover plate, it is forced downwardly on the handle until the tip 142 snaps into the corresponding opening in the front handle support and it is thereafter maintained in place. It may be detached by springing the cover plate outwardly until the tip 142 is free from its corresponding opening, whereupon the cover plate may be withdrawn.

In assembling the iron the sole plate 19 is first fitted with the differentially expandible element 19 which forms a part of the thermostatic control, this being more fully described in our copending application entitled "Sadiron assembly," Ser. No. 535,919, filed concurrently herewith. The heater element 11, pressure plate 12 and thermostatic controls 115 are then mounted in place and the skirt plate 29 is attached to the sole plate. These units then form a sub-assembly which can very conveniently be handled in further operations.

The cover plate 50 is then fitted and assembled with the pilot lamp socket 86 and wires 78 and 85 are fitted and drawn through the openings 90 and 91, as shown in Figure 5, whereupon the cover plate is assembled on the shell 17 which has as yet not been affixed to the iron. The cover plate is then fastened firmly in place by means of rivets 63', 64', 69' and 70' and the shell-cover plate thus serves as a complete assembly which may conveniently be fitted upon the sole plate, heater-pressure plate assembly heretofore described. The shell-cover plate assembly is then mounted in place and is fastened down by the single screw 35 through which access may be had through the opening 76 in the cover plate. The terminal block 16 is then fastened in place on the top of the cover plate and is held in place by screw 124 and the various wiring connections are completed to the terminal block as indicated. The sole plate, shell and cover plate together with the pilot lamp socket 80 and terminal block 16 thus constitute a sturdy assembly which requires no further manipulation during manufacture.

The handle 95 is then fitted with the lead-in cord 112 with the flexible wires 116 and 117 extending into the recess 111 for attachment of the handle to the parts previously assembled. The wires 116 and 117 are connected to terminals 121 and 123 and the handle is then lowered in place and serves completely to cover the junction block 116 and the pilot lamp socket 86 and lamp 80'. The handle is then attached by insertion of screws 105 and 106 through the rearwardly extending skirt 29. This serves to attach the rear portion of the handle. The front portion of the handle is firmly attached by the single screw 137 to which access is had through aperture 136. The cover plate 140 is then snapped into place and the entire assembly is complete, it being noted that not any attachment devices are visible from the top of the iron.

Ventilation is provided into the interior of recess 111 of the rear handle support through the openings 108 and 109 and ventilation is likewise provided to the front aperture 132 through the opening 135. This serves to carry off considerable amounts of heat from the handle and also to maintain the pilot lamp and socket, the junction block 116 and lead-in cord 112 at satisfactorily low temperatures. Ventilation is likewise provided around the major portion of the peripheral space between the top of the shell 17 and the cover plate 50 but cross ventilation is inhibited due to the wires 78 and 85 that are slightly compressed between the shell 50 and cover 17 and due to the upwardly extending rib 29 of the shell and the downwardly extending rib 73 of the cover plate which serve to separate the wires 78 and 85 and also to provide firm support for the cover plate-shell assembly.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope thereof, it is to be understood that we do not limit ourselves to the specific embodiments herein except as defined by the appended claims.

What we claim is:

1. An electric iron comprising a sole plate, an electrical heating element therefor mounted on said sole plate, a shell mounted on said sole plate for enclosing said heater element, a plate shaped so as to cover the top portion of said shell mounted on it in superimposed relationship, a pilot lamp mounted on said plate at the forward end thereof in upstanding relationship, an electrical terminal junction block mounted in upstanding relationship on said plate at the rearward end thereof, a handle having a grip portion and front and rear support portions, the front and rear support portions being hollowed out at the bottoms thereof for receiving the pilot lamp in the hollow in one support portion and for receiving the junction block in the hollow in the other support portion, a light passage in the recess in the

front handle support, screw means extending upwardly through the shell into the rear handle support and screw means extending downwardly through the front handle support into the shell.

2. An electric iron comprising a sole plate, an electrical heating element therefor mounted on said sole plate, a shell mounted on said sole plate for enclosing said heater element, a plate shaped so as to cover the top portion of said shell mounted on it in superimposed relationship, a pilot lamp mounted on said plate at the forward end thereof, an electrical wiring junction block mounted on the rear end of said plate, wiring connections extending from the junction block to the electrical heater element within the shell and additional connections extending from the junction block and between the shell and plate to the pilot lamp, a handle having a grip portion and integral front and rear support portions, said support portions being spaced and recessed at the bottom for receiving and enclosing the pilot lamp in the front support and the junction block in the rear support when the handle is in place on the iron, and screw means for detachably securing the front and rear handle supports to the shell.

3. The apparatus of claim 2 further characterized in that the screw means for detachably securing the rear handle support extends through the shell upwardly into the walls of the rear handle support and the screw means for detachably securing the front handle support extends downwardly from a countersunk recess in the front handle support and into the shell, and a decorative externally removable cover plate is secured to the front handle support and over said countersunk recess.

4. An electric iron sub-assembly comprising a sole plate, an electric heater element mounted thereon, a covering shell mounted on the sole plate so as to enclose the upper part thereof and said heater element, a plate shaped so as to cover the top part of the shell mounted on the shell, a rib extending upwardly in the covering shell and extending forwardly thereon, said plate having a smooth portion in contact with said shell rib and said plate extending forward beyond the rib and said forward extended portion of the plate being formed with a downwardly extending center line rib of a size to rest in contact with the forward end of the covering shell, and fastening means between the plate and shell for maintaining them in engagement throughout the length of said rib.

5. An electric iron comprising a sole plate, an electric heater therefor mounted on the sole plate, a shell shaped so as to cover the sole plate and overhang the rear end thereof, mounted on the sole plate so as to enclose the heater element, a plate shaped so as to cover the upper part of the shell mounted on the shell and spaced therefrom throughout the major portion of the coextensive area of the shell and plate by a rib extending from one of said members into positive contact with the other of said members, a junction block of insulating material mounted in upstanding relationship on the rear part of the plate and a pilot lamp mounted in upstanding relationship on the forward end of said plate, a molded handle having a grip portion and integral front and back support portions, said supports being spaced apart and internally recessed at their bottoms to receive the pilot lamp in the front handle support recess and the junction block in the rear handle support recess when the handle is mounted thereon and screw means extending upwardly through the overhanging rear portion of the shell into the rear handle support and other screw means extending downward through the front handle support into the shell for detachably securing the handle to the shell.

6. The apparatus of claim 5 further characterized in that the front handle support is apertured to allow light from the pilot lamp to be visible, the screw means for fastening the front handle support being positioned so as to be accessible through said aperture.

7. The apparatus of claim 5 further characterized in that an electrical connection cord is attached to said rear handle support and is connected by flexible lead wires to the junction block fixedly mounted on the plate.

8. In a sadiron having a sole plate a shell on the sole plate and overhanging the rear thereof, a one-piece handle of relatively non-heat conductive molded plastic for manipulating said assembly, said handle including integral upright front and back supports smoothly blended along curved surfaces into a relatively horizontal grip portion, the rear support including portions resting on said shell and overhanging the rear edge of the sole plate, handle fastening screw means extending upwardly through the over-hanging part of the shell and into the overlying portion of the rear handle support, and a single fastening screw extending downwardly through the front handle support and into the shell at the center line of said handle, said screw being recessed into the handle at the front center line thereof and a metal plate overlying said recess and attached thereto, said front handle support being apertured adjacent the recess and said cover plate including a protuberance hooked into the aperture and a resilient member positioned to grip the edge of the recess.

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