

Feb. 9, 1954

J. E. VANCE
ELECTRIC IRON

2,668,378

Filed June 27, 1952

5 Sheets-Sheet 1

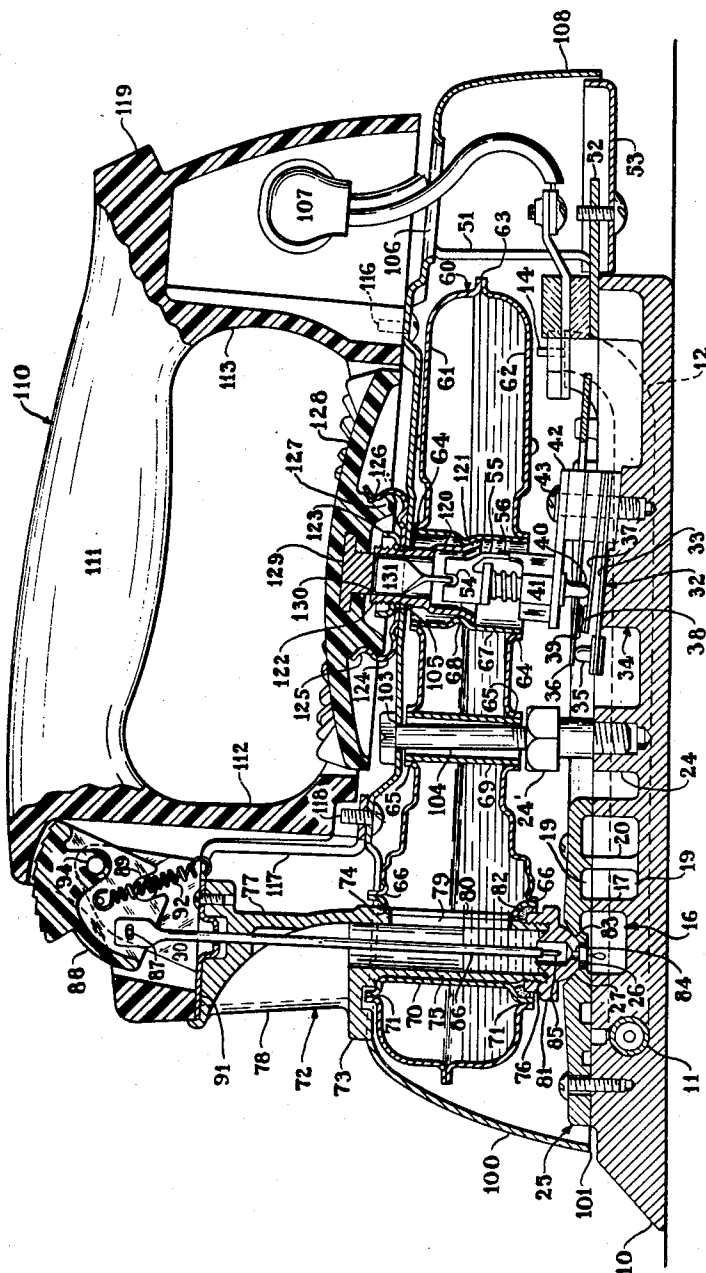


Fig. 1

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5 Sheets-Sheet 2

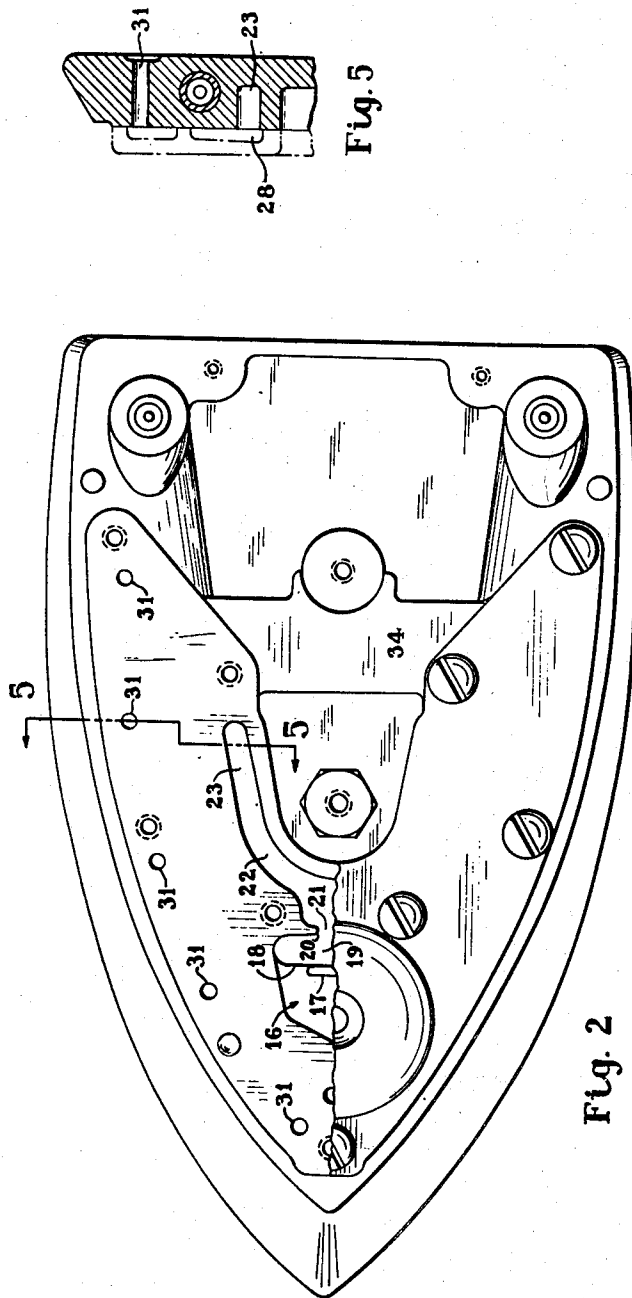


Fig. 2

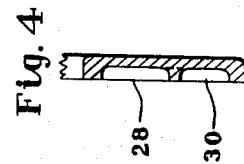


Fig. 4

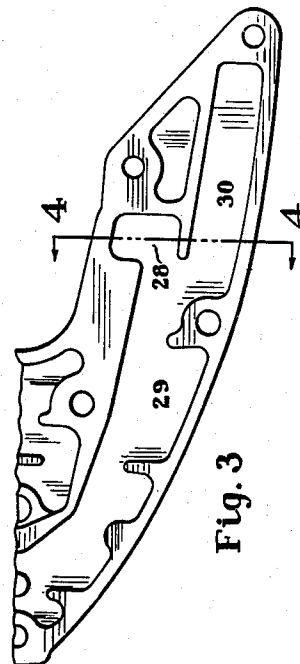
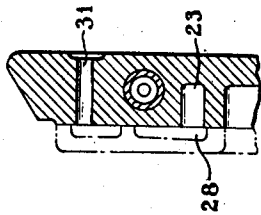


Fig. 3

Fig. 5



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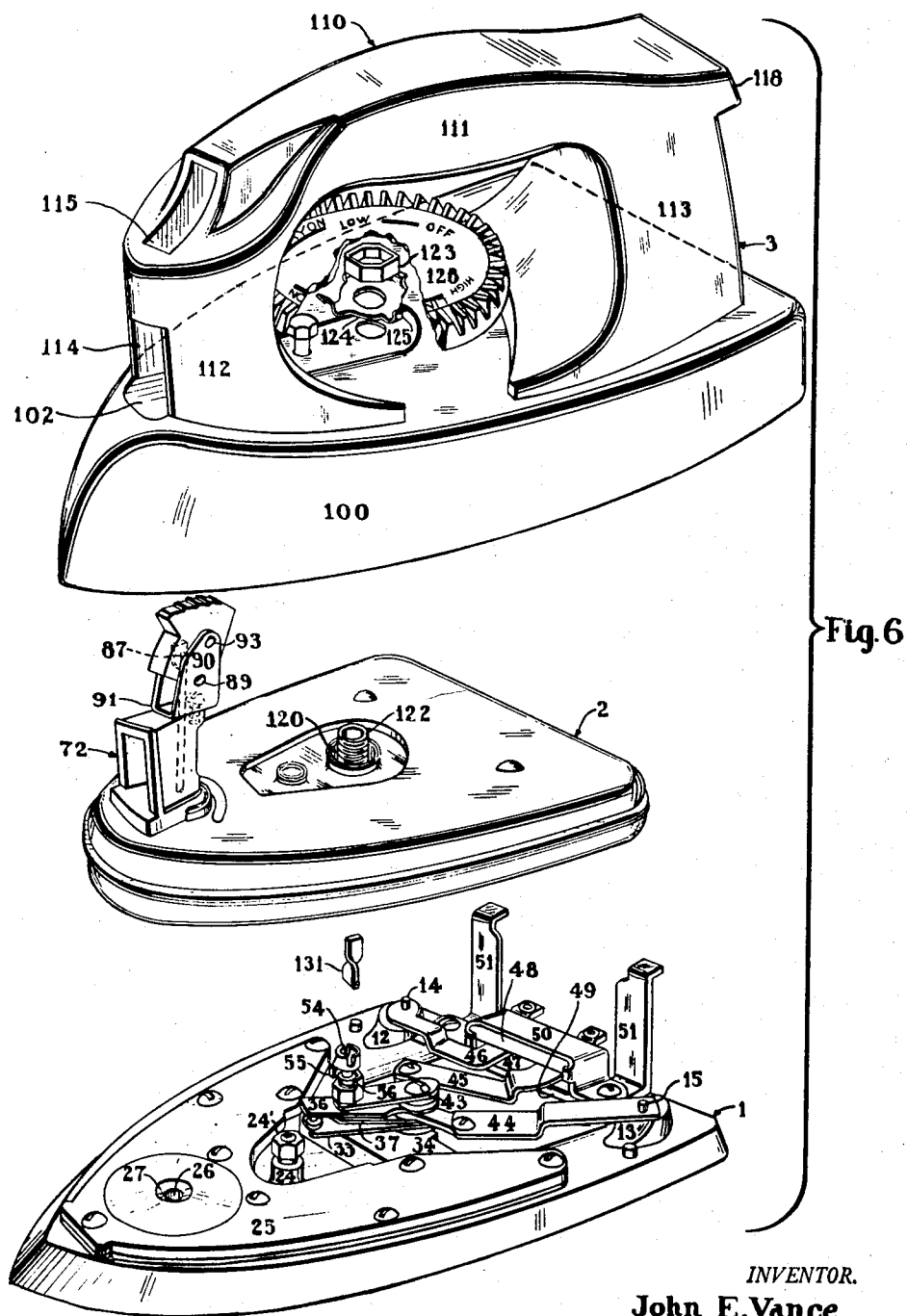
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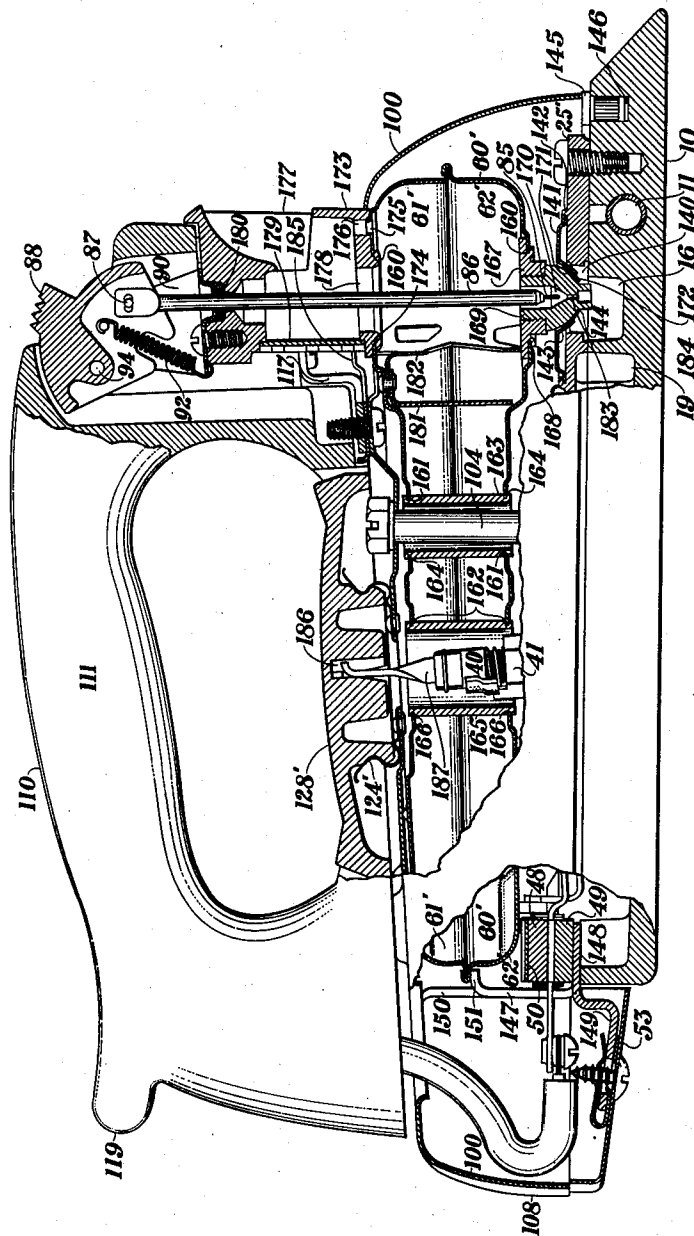


Fig. 7

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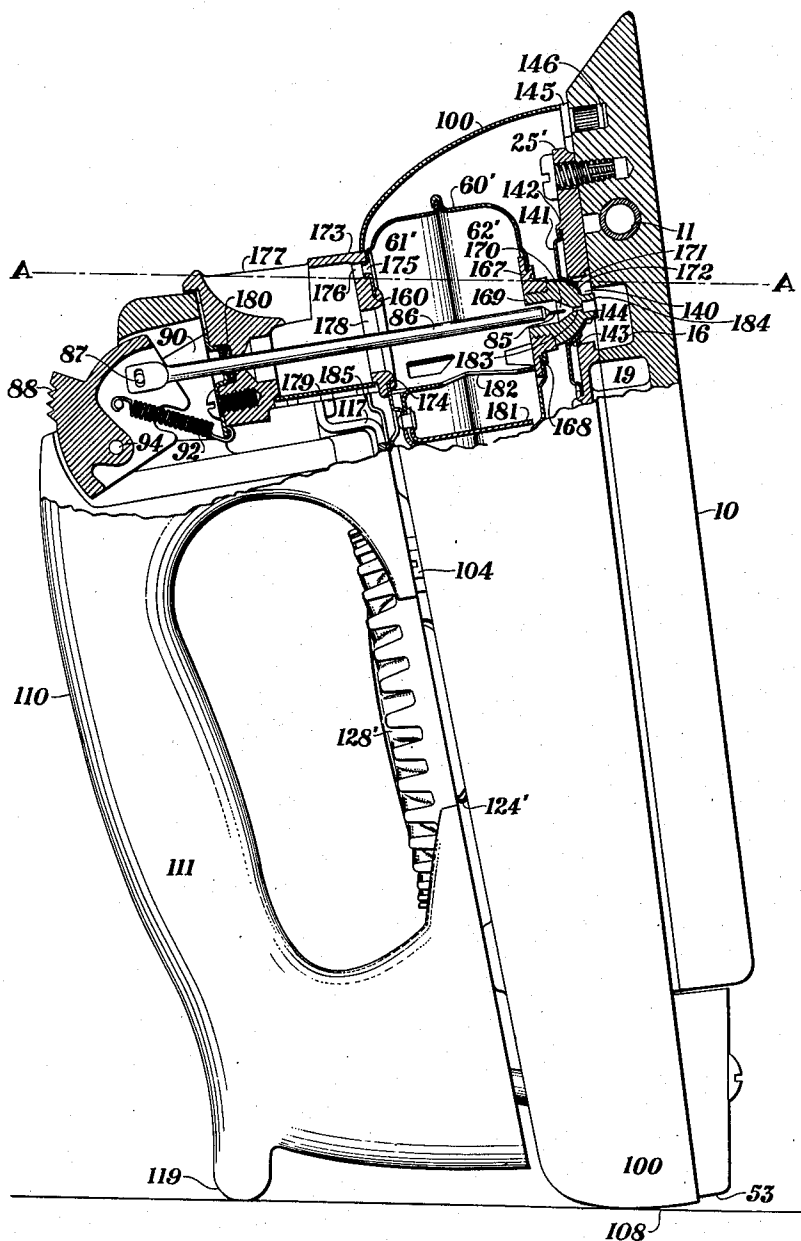
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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

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ELECTRIC IRON

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Application June 27, 1952, Serial No. 295,950

25 Claims. (Cl. 38—77)

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The present invention relates to electrically heated irons which are readily convertible for use as a dry iron or as a steam iron.

This application is a continuation-in-part of my copending application, Serial No. 218,046, filed March 28, 1951, now abandoned.

The iron of the present invention is made up of three main sub-assemblies which are separately assembled and assembled to each other as units.

One of the sub-assemblies is the sole plate assembly in the form of a sole plate proper with an electric heating element embedded therein and having connecting boiler and steam superheating recesses formed in its upper surface and steam emitting passages extending therethrough to the ironing surface thereof. A cover plate is attached to the top of the sole plate and overlies the boiler and superheating passages. The cover plate is formed with an inlet opening overlying the boiler recess and with steam passages in its undersurface to connect the superheating recess of the sole plate to the steam emitting openings extending therethrough. The sole plate assembly includes a thermostatic switch mounted on the sole plate and having an adjusting shaft extending upwardly, together with terminal conductors connecting the switch, in series circuit with the heating element and with the terminals extending rearwardly from the sole plate for ready connection to a conductor cord which forms a part of the handle cover shell assembly. According to one modification of the invention a pair of cover shell supports extend upwardly from the rear of the sole plate. In a second modification of the invention the cover shell support also forms the rear support for the reservoir. In both modifications an anchoring stud extends upwardly therefrom between the cover shell support and the inlet opening through the cover plate.

Another of the sub-assemblies is the reservoir-valve assembly. This comprises the reservoir proper made from duplicate dished stampings with their dished sides facing each other and being secured together at their mating edges. According to one modification, three vertical tubes extend through the reservoir and are sealed to the top and bottom walls thereof. In the first modification the rear tube is positioned to receive the control shaft extending upwardly from the sole plate, the central tube is positioned above the anchoring stud of the sole plate to receive an anchoring bolt and the front tube is positioned above the inlet opening in the cover plate and receives a fill tube which also serves as a valve

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seat and a valve seat housing. According to the second modification only the two rear vertical tubes are provided. At the front end according to the second modification a fill tube is secured to the upper wall of the reservoir and a separate and distinct valve body is secured to the lower wall of the reservoir and has its lower end formed to mate with the inlet opening in the cover plate. In the first modification the lower end of the fill tube which forms the valve seat has its lower end formed to mate with the inlet opening in the cover plate. In each modification the fill tube extends upwardly above the reservoir and has an extension with a forwardly facing fill opening formed in its front wall which communicates through the fill tube with the interior of the reservoir. In each modification the fill tube also forms a housing for a valve stem having a valve formed on its lower end which cooperates with a valve seat interiorly of the lower end of the fill tube in the first modification and with a valve seat in the valve body of the second modification. In each modification the valve stem extends upwardly through the top wall of the fill tube and the valve is moved to open and closed position by a valve actuator mounted on top of the fill tube. In the second modification a vent opening is formed in the upper wall of the reservoir forwardly of the fill tube.

The third of the sub-assemblies is the handle-cover shell assembly. It comprises a handle having front and rear legs. The front leg receives the upper end of the fill tube and valve actuator, openings being formed in its forward and top walls to receive the extension of the fill tube and the valve actuator. The rear leg has a conducting cord extending through one of its side walls to its interior for connection to the terminals extending rearwardly from the sole plate. The cover shell is shaped to house the reservoir and is attached to the handle independently of any of the other parts. The top of the cover shell is provided with four openings from front to rear for receiving the fill tube, the anchor bolt, the control shaft and the conductor cord. The cover shell is of substantially the same contour as the top of the sole plate and has its rear end overhanging the sole plate. A lug extends rearwardly from the handle to cooperate with the overhanging end of the sole plate to support the iron on its rear end. The three sub-assemblies above described are assembled to form a completed iron.

Accordingly to the first modification the reservoir-valve assembly is placed inside the cover

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shell. A threaded extension of the control receiving tube extends through an opening in the cover shell and a nut is threaded thereon, a spring finger dial support being placed beneath the nut. During the above assembly the fill tube will extend upwardly into the front leg of the handle with the extension of the fill tube extending through the front opening in the front handle leg and the valve actuator extending through the opening in the top of the handle front leg.

According to the first modification the assembly formed as described above is placed on top of the sole plate with the rear of the cover shell resting on top of the supports extending upwardly from the sole plate and with the lower end of the fill tube mating with the inlet opening in the cover plate. An anchor bolt is then threaded into the anchor stud on the sole plate after having been passed downwardly through the central reservoir tube and the complemental opening in the cover shell. In this position the control shaft will extend upwardly into the rear one of the tubes which extend upwardly through the reservoir.

According to the second modification the reservoir-valve assembly is placed on the sole plate with the lower edge of the valve body mating with the inlet leading to the flash boiler and with the rear of the reservoir supported by the rear support. The handle-cover shell assembly is then placed over the reservoir valve assembly with the fill tube extending upwardly into the hollow front leg of the handle, the extension thereof extending through the front opening in the handle front leg and the valve actuator extending upwardly through the top opening in the handle front leg. An anchor bolt is then passed downwardly through the central reservoir tube and the complemental opening in the cover shell and threaded into the anchor stud extending upwardly from the sole plate. A spring is provided for reacting between the cover shell and the top of the reservoir valve assembly for insuring a tight seal between the lower end of the valve body and the complemental opening leading to the boiler. The spring also serves to compensate for variations in manufacturing tolerances.

According to the present invention the reservoir is filled through the front fill opening while the iron is resting on its heel end. The arrangement is such that it is only necessary to pour water into the reservoir until the front fill opening overflows. The arrangement is such that a pocket is formed in the forward or upper end of the reservoir during the filling operation so that when the iron is returned to its horizontal position the excess water in the fill tube will flow downwardly into the reservoir.

Other objects and advantages of the present invention will become apparent as the description proceeds when taken in connection with the accompanying drawings in which:

Figure 1 is a longitudinal cross sectional view of one modification of the iron of the present invention showing the arrangement of the parts in assembled relationship;

Figure 2 is a top plan view of the sole plate with a portion of the cover plate therefor broken away to show the arrangement of the flash boiler and steam superheating passages;

Figure 3 is a bottom view of one side of the cover plate for the sole plate showing how the steam passages are formed therein;

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Figure 4 is a cross sectional view taken on line 4—4 of Fig. 3;

Figure 5 is a cross sectional view taken on the line 5—5 of Fig. 2;

Figure 6 is an exploded view of the component parts of the invention of the first modification showing the parts prior to their assembly;

Figure 7 is a vertical cross sectional view of a second modification of the invention showing the parts in their assembled relationship; and

Figure 8 shows the iron of Fig. 7 resting on its rear end during the filling operation.

The three main sub-assemblies of the first modification are shown in Fig. 6. The reference numeral 1 represents the sole plate sub-assembly, the reference numeral 2 the reservoir-valve sub-assembly and the reference numeral 3 the handle-cover shell sub-assembly.

Sole plate sub-assembly

Referring to Figs. 1 to 6 of the drawings which show the first modification, the sole plate 10 is preferably made of cast aluminum and has a heating element 11 of a well known, metal encased type, cast therein. The heating element 11 is of a generally U-shape with the bight or nexus thereof positioned adjacent the toe of the sole plate 10 having its legs extending backwardly adjacent the sides thereof. At their rear ends the legs of the heating element 11 are turned upwardly at right angles, as at 12 and 13, with the terminals 14 and 15 thereof extending upwardly perpendicularly to the sole plate 10.

At its forward end, adjacent the bight or nexus of the heating element 11 and in good heat exchange relationship therewith, the sole plate 10 is formed with a recess or depression 16 which forms the boiler of the iron. A baffle 17 extends upwardly, immediately to the rear of the recess 16, forming an opening 18 (Fig. 2) at each end thereof leading to a deeper superheating chamber 19. A baffle 20 extends inwardly from each side of and to the rear of the chamber 19. The opening 21, between the baffles 20, communicates with the bight or nexus of a wishbone shaped passage 22, of substantially the same depth as the chamber 19, the legs 23 of which extend backwardly on each side of a stud receiving land 24, having an exteriorly threaded anchoring stud 24' threaded therein.

A cover plate, generally indicated by the reference numeral 25, overlies the chambers and passages just described. At its forward end, immediately above the flash boiler recess 16, the cover plate 25 is provided with an inlet opening 26 which is countersunk at 27 on the upper side of plate 25 for a purpose which will presently appear.

At their rear ends the legs 23 of passage 22 abruptly end and communicate at the upper surface of the sole plate with passages 28 formed in the undersurface of the cover plate 25. The passages 28 form two passages 29 and 30 the former extending forwardly toward the toe of the sole plate and the latter toward the rear thereof. The passages 29 and 30 lie directly over the heating element 11 so as to be in good heat exchange relationship therewith. The passages 29 and 30 communicate with steam emitting openings 31 extending through the sole plate 10. The cover plate 25 is preferably secured to the sole plate 10 by screws, as shown, or it may be welded, brazed or staked thereto.

While in Figs. 2 and 3 only the one side of the iron has been shown with the various chambers, passages, etc., it is to be understood that the op-

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posite side is a duplicate except that it is reversed in shape. The cover plate 25 has been shown in Fig. 1 with recesses complementary to the reservoir 16, 19 and 21, in the sole plate, but it is to be understood that the complementary recesses in the cover plate may be omitted if desired.

The temperature of the sole plate 10 is controlled by a thermostatic switch generally indicated by the reference numeral 32. The switch 32 per se is of known construction and comprises a bimetallic element 33 mounted in heat exchange relationship with a land 34, extending upwardly from the sole plate 10 well to the rear of the steam passages 23. The bimetallic element 33 has an insulating button 35 on its outer end which cooperates with the upper of a pair of spring arms 36 and 37 to open and close contacts 38 and 39 carried by the spring arms as the temperature of the sole plate varies. Contact 38 is adjusted toward and away from the contact 39 by a shaft 40 screw threaded into a nut 41, supported by a plate 42, which is anchored to the land 34 by the same stud 43 which anchors the remaining parts of the switch to the sole plate. As shown, suitable insulators are provided between the various parts to electrically insulate them each from the other.

The shaft 40 is adapted to be adjusted by a kerf 54 in its head which cooperates with the manual control mechanism as will later appear. The head of shaft 40 has a lug 55 which engages a lug 56 on nut 41 to limit rotation of the shaft to less than 360°.

The leaf spring 37 is connected by terminal connections 44 to the terminal 15 of the heating element 11. The leaf spring 36 is connected by terminal connection 45 to one conductor of the conductor cord, the other conductor of which is connected to the terminal 14 of the heating element 11 by a terminal conductor 46. The conductors 44 and 46 are preferably brazed to the terminals 14 and 15.

The terminal conductors 45 and 46 extend rearwardly from the sole plate and are clamped thereto by a pair of insulating blocks 47 and 48, resting on a plate 49. The blocks 47 and 48 are clamped to the plate 49 by an inverted channel shaped strap 50, anchored to the sole plate by screws passing through the ends of the strap 50 and the plate 49. The plate 49 is provided with a pair of upwardly extending cover shell supporting legs 51 and with a rearwardly extending lug 52 by which the closure plate 53 may be attached after the remainder of the iron is assembled.

The sole plate sub-assembly of Figs. 7 and 8 is very similar to that of the modification of Figs. 1 to 6, inclusive, and where the parts are the same, the same reference numerals have been applied.

As shown in Fig. 7 a modified inlet opening is formed to the boiler 16 of the sole plate 10. A comparatively large opening 140 is formed in the cover plate 25' above the boiler 16. This opening is closed by a circular disc 141, of poor heat conducting material such as stainless steel, staked to the cover plate 25' at 142. The disc 141 is formed centrally with a semi-spherical depression 143 having a central opening 144 formed in its bottom.

A cover shell locating plug 145 is pressed into a drilled hole 146 in the sole plate 10 forwardly of the cover plate 25'. At the rear end of the sole plate 10 the cover shell support of the first modification is replaced by a bracket 147 which

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performs a triple function. The bracket 147 is provided with a forwardly extending anchoring lug 148, clamped to the sole plate 10 beneath the lower insulating block 49, with a rearwardly extending lug 149, to which the closure plate 53 is secured, with a pair of upwardly and rearwardly extending cover shell supporting lugs 150, similar to the legs 51 of the first modification and with forwardly extending reservoir supporting lugs 151.

Reservoir-valve sub-assembly

The reservoir-valve sub-assembly of the first modification is shown in Figs. 1 to 6. The reservoir 60 comprises dished duplicate upper and lower stampings 61 and 62, longitudinally secured together by a joint 63 which may be welded, brazed or of the lock seam type. Each stamping has outwardly extending rings 64, 65 and 66 stamped therein. A control shaft receiving tube 67 is secured on the interior of rings 64, both above and below, as by welding or brazing. The tube 67 is provided with an inwardly rolled rib 68, forming an interior substantially spherical shaped annulus, for a purpose which will later appear. A bolt receiving tube 69 is secured interiorly of the rings 65, both above and below, as by brazing or welding. A filling spout receiving tube 70 has expanded ends 71 welded or brazed to the interior of rings 66, both above and below.

Extending through the tube 70 is a fill tube 72 having a forwardly extending flange 73, grooved to fit the ring 66 and the upper end 71 of tube 70, a shoulder 74 received within the expanded end 71 of tube 70 and a tubular portion 75 extending through the tube 70 and having a threaded lower end 76. The fill tube 72 is extended upwardly at 77 and has a forward extension 78 formed with a forwardly facing fill opening communicating with the bore of tube 75 which in turn communicates with the interior of the reservoir 60, by way of slits 79 and 80 in the rear walls of the tubes 75 and 70 respectively. The filling tube 72 is secured to the reservoir 60 by a nut 81 threaded to the lower end 76 of the tube 75 which, in cooperation with the heat resisting gasket 82, resting in the expanded lower end 71 of tube 70, draws the shoulder 74 tightly into the upper expanded end 71 of the tube 70.

The nut 81 has a spherical lower end 83, which cooperates with the countersink 27 of cover plate 25 and an internal valve seat 84 which cooperates with a valve 85 on the lower end of a valve stem 86. Thus, the nut 81 forms a fastener for the filling tube 72, forms one part of a joint for cooperation with the inlet opening 26 to the flash boiler and forms a valve seat for the water flow control valve. The valve stem 86 extends upwardly through the filling tube 72 and through an aperture in the top of extension 77 thereof and is pivotally connected at its upper end at 87 to a manually actuated valve actuator 88. The actuator is pivoted at 89 between the ears 90 of a bracket 91 secured to the top of the extension 77 as by screws as shown. The valve actuator 88 is slotted, as shown, to receive the pivot pin 89 to provide for easy assembly. A tension spring 92 is connected between the bracket 91 and the actuator 88, and passes substantially through the pivot pin 89 of the actuator 88, when the valve is in open position, as shown in Fig. 1. Detents 93 (Fig. 6) are pressed inwardly in legs 90 of the bracket 91 and cooperate with a detent opening 94 (Fig. 1), in the actuator 88, to hold it in the position shown

in Fig. 1, against the bias of spring 92, with the valve 85 in open position, as shown in Fig. 1. When the actuator 88 is moved counterclockwise away from the detents 93 the spring 92 snaps the valve 85 downwardly into the seat 84 to close it and its pointed end will scrape off any lime deposits which may be formed in the valve opening.

The reservoir-valve assembly of the modification of Figs. 7 and 8 is similar to that of the first modification and where the parts are the same, the same reference numerals have been applied.

In the modification of Figs. 7 and 8 the upper and lower halves 61' and 62' of the reservoir 60' are formed, from front to rear, with duplicate pairs of upper end lower openings 160, 161 and 162. A tube 163 for receiving the stud bolt 104, extends through the openings 161, and is staked at 164 to the upper and lower walls of the reservoir. A tube 165 for receiving the control shaft 40 extends through the openings 162 and is staked at 166 to the upper and lower walls of the reservoir.

An internally threaded member 167 extends through the lower opening 160 and is staked at 168 to the lower wall of the reservoir. An externally threaded valve body 169 is threaded into the threaded opening of member 167 as shown. The valve body 169 has a valve seat 170 which cooperates with the valve 85 on the lower end of valve stem 86, and with a spherical lower end 171, which mates with the spherical depression 143 of disc 141, an asbestos gasket 172 being placed between the mating surfaces. An outlet opening 183 is formed in the body 169 which leads to an enlarged bore in an extension 184 extending downwardly into the opening 140.

A fill tube 173 has its reduced lower end extending through the upper opening 160 and is staked at 174 to the upper wall of the reservoir. The upper wall 61' of the reservoir and the fill tube 173 have cooperating vent openings 175 and 176 formed therein for a purpose which will later appear. The fill tube 173 has a forward extension 177 formed with a forwardly facing fill opening which communicates with the interior of the reservoir through an opening 178 in the bottom of the fill tube 173. A core opening is formed in the rear wall of the fill tube 173, which is closed by a closure 179 staked thereto as shown. The valve stem 86, valve actuator 88, etc., are mounted on the top of fill tube 173 in substantially the same manner as in the first modification except that a felt washer 180 is provided to form a guide for the valve stem 86. A pair of baffles 181 and 182 are riveted to the top half 61' of the reservoir, it being noted that the baffle 182 abuts against the bottom wall of the lower half 62' to form a reenforcement between the top and bottom walls of the reservoir.

Handle-cover shell sub-assembly

The handle-cover shell sub-assembly of the first modification is shown in Figs. 1 to 6. The cover shell 100 has a lower edge 101 conforming closely to the shape of the periphery of the sole plate 10, and in assembled position, as in Fig. 1, the edge 101 is spaced slightly above the peripheral edge of the sole plate. The top of the shell 100 is provided with an opening 102 for receiving the filling tube 72 and its flange 73, an opening 103 for receiving an anchor bolt 104, an opening 105 above the control shaft and an opening 106 for the passage of the strands of the conductor cord 107. The cover shell 100 is extending rearwardly of the sole plate 10, at 108,

and forms a housing for the electrical connection between the strands of the cord 107 and the terminal conductors 45 and 46. It also forms in cooperation with the handle a rear support for the iron.

The handle 110 has a hand grip portion 111, a hollow front leg 112, for receiving the filler spout 72 and the valve actuator 88 and a hollow rear leg 113 for housing the conductor cord 107 which is provided with a cord protector extending through the side wall of the rear leg 113. The front wall of the front leg 112 is provided with an opening 114 for receiving the extension 78 of filler spout 72. The top wall of the front leg 112 is provided with an opening 115 through which the valve actuator 88 is accessible for manual manipulation.

The rear leg 113 is secured to the cover shell 100 by screws 116, while the front leg 112 is secured thereto by a stainless steel bracket 117 secured to the cover shell 100 by screws 118. The bracket 117 extends upwardly into the hollow post 112 and has a forwardly extending forked end (not shown), suitably secured to the wall of the front leg 112 at the top and to the sides of the opening 114. The handle 110 has a rearward extension 119 which cooperates with the rearward extension 109 of the cover shell 100 to support the iron on its heel when not in use or while being filled.

In the modification of Figs. 7 and 8 the dial retaining spring 124' is riveted directly to the top of the cover shell 100 above the shaft 40 and a forked spring 185 is clamped between the cover shell 100 and the bracket 117 by which the front leg of the handle is supported. The spring 185 has a pair of legs which straddle the body of fill tube 173 and when in assembled relation presses downwardly against shoulders on the side of the fill tube as will be more fully explained hereinafter.

Manual control assembly

In the modification of Figs. 1 to 6, a tubular bolt 120 has an outwardly flared spherical lower end 121 which abuts against the lower surface of the inwardly extending rib 62 of tube 67 and has a threaded upper end 122, on which a threaded nut 123 is threaded, to clamp a cup-shaped dial support 124 to the cover shell 100. The dial support 124 has upwardly extending spring fingers 125 which engage in the annular groove 126 in the hub 127 extending downwardly from the control dial 128 to mount it for rotation. The dial 128 is of large diameter and covers the top of the shell 100 between the handle legs 112 and 113. As shown in Fig. 6 the control dial 128 has indicia thereon to indicate the proper temperature setting.

An insert 129 in the lower side of dial 128, within the hub 127, has a kerf 130 in its extended lower end to receive the upper end of a twisted metal drive member 131, the lower end of which is received in the kerf 54 of shaft 40.

In the modification of Figs. 7 and 8 a groove 186 is cut in the hub of the dial 128' to receive the upper end of a member 187, the lower end of which is drivingly secured to the shaft 40.

Assembly

In the first modification, the cover plate 25, thermostat 32, stud 24', terminal connections 44, 45 and 46 and support 51 are assembled to the sole plate 10 as shown in Fig. 6 to form the sole plate sub-assembly.

The two halves 61 and 62 of the reservoir 60

are secured together and the tubes 67, 69 and 70 brazed into the interior of the flange rings 64, 65 and 66, both above and below. The fill tube 72 is assembled by passing the tube 75 downwardly through the tube 70 and screwing the nut 81 to the lower threaded end of the tube 75 against the gasket 82. The bracket 91 may then be secured to the top of the extension 77 by screws as shown. The upper end of the valve stem 86 is attached to the actuator 88 by pin 87 and its lower end passed through the opening in the top of the extension 77 to bring the slot of the legs of the actuator 88 across the pin 89. The spring 92 is unassembled to hold the valve stem and actuator in place to complete the reservoir-valve assembly of the first modification.

In the modification of Figs. 7 and 8 the baffles 181 and 182, the fill tube 173 and the fitting 161 are secured in place before the two halves 61' and 62' of the reservoir 60 are assembled. The reduced ends of the tubes 163 and 165 are then positioned through the openings 161 and 162 respectively and staked in position as previously described. The two halves 61' and 62' may then be secured together at their edges by a lock seam type joint as shown.

The bracket 117 is secured to the cover shell 100 by screws 118 and the shell 100 attached to the bottom of the handle 110 by screws 116 and by screws (not shown) passing through the forwardly extending forked end of bracket 117 and into the handle on opposite sides of the opening 114. The cord 101 may be assembled to the handle 110, either before or after the cover shell 100 is attached thereto. The handle-cover shell assembly of the first modification is thus formed.

In addition to the above, in the modification of Figs. 7 and 8 the spring 133 is assembled between the cover shell 100 and the bracket 117 and the dial support 124' riveted to the cover shell as shown in Fig. 7.

In the modification of Figs. 1 to 6, inclusive, the reservoir-valve assembly is secured to the handle-cover shell assembly as a separate operation. The tube 120 is passed upwardly through the tube 67 with its spherical annulus 121 engaging the lower side of rib 68. The reservoir-valve assembly is inserted into the underside of the cover shell 100 with the extension 77 extending upwardly, into the hollow front leg 112 of handle 110 with the valve actuator 88 passing through the opening 115 and the extension 78 passing through opening 114. The dial support 124 is placed over the upper end of the tube 120 and the nut 123 applied to the threaded upper end 122 of the tube 120 to tightly clamp the reservoir valve sub-assembly to the handle-cover shell sub-assembly. The spherical mating surfaces 121 and 68 on tubes 120 and 67 will compensate for any misalignment, it being noted that dimples are formed on the reservoir to come into contact with the underside of the cover shell 100 and thus space the main body of the reservoir slightly below the cover shell.

The assembled reservoir-valve, handle-cover shell sub-assemblies are then placed on the sole plate sub-assembly with the spherical lower end 85 of nut 81 mating with the countersunk port 27 of cover plate 25 and the rear end of cover shell 100 resting on the tops of the supports 51. The bolt 104 is then passed downwardly through the opening 103 and tube 69 and threaded into the stud 24' to clamp the sub-assemblies together.

The ends of the strands of the cord 101 may

then be attached to the projecting ends of terminal conductors 45 and 46 in the usual manner and the closure plate 53 attached.

The drive member 131 may then be placed in the tube 120 with its lower end resting in the kerf 54 of shaft 40 after which the control dial 128 may be depressed downwardly so that the spring fingers 125 will engage in the grooves 126 and the kerf 130 of the insert 129 will straddle the upper end of the drive member 131, care being taken that the dial 128 is positioned with the proper indicia at the proper setting. For the initial setting the drive member 131 may be twisted one way or the other to bring the indicia into the proper position.

It is to be noted from Fig. 1 that no stress is placed upon the reservoir 60 by the bolt 104 since the stress is applied successively through the cover shell 100, bracket 117, extension 77, tube 70 and nut 81 to the spherical opening 27 leading to the boiler 16.

In the modification of Figs. 7 and 8 the reservoir-valve sub-assembly is not assembled to the cover-shell handle sub-assembly prior to their assembly with the sole plate sub-assembly. The gasket 172 is placed in the spherical depression 143 of disc 141 and the reservoir-valve sub-assembly placed on top of the sole plate sub-assembly with the spherical surface 171 of the valve body 169 resting upon the gasket 172 and with the rear of the reservoir 60' resting upon the lugs 151 of the bracket 147. The cover-shell handle assembly is then placed over the reservoir, care being taken that the filler tube, extension 177 extends through the opening in the front handle leg and that the valve actuator extends through the opening in the top of the front handle leg. The forward end of the cover shell will then rest upon the spacer pin 145 and its rear end will rest upon the upper ends of supports 150. The bolt 104 may then be inserted through the proper opening in the cover shell, through the tube 163 and threaded into the stud bolt on the sole plate assembly as in the first modification. As the bolt 104 is screwed down the spring 185 will press downwardly upon the shoulders of the filler tube 173 and press the spherical surface of the valve body into good sealing engagement with the asbestos washer 172. The cord connections may be made as in the first modification and the dial 128' snapped downwardly upon the dial support 124' with the upper end of drive member 137 entering the slot 186 in the dial 128' completing the assembly.

As shown in the drawings, the cover plate 25 is attached to the sole plate 10 by screws. If very hard water is used the interior of the sole plate recesses and passages may be encrusted or clogged with lime deposits to such an extent as to need cleansing or replacement. By the method of assembly of the present invention it is only necessary to remove the control dial 128 or 128' and the bolt 104 to gain complete access to the sole plate 10 as well as to the thermostat 32 should it get out of order. The various parts of the reservoir-valve handle-cover sub-assemblies need not be disturbed.

In the modification of Figs. 1 to 6 the tube 129 which houses the control shaft forms the sole securing means for securing the reservoir-valve sub-assembly to the handle-cover shell sub-assembly and, if something should go wrong with either of those assemblies, it is only necessary to remove the control dial 128, the bolt 124 and nut 123 to disassemble the parts. The control

dial 128 acts to hide the securing means between the reservoir-valve sub-assembly and the handle-cover shell sub-assembly as well as the securing means between the sole plate sub-assembly and the reservoir-valve handle-cover shell sub-assemblies.

Operation

In each modification, if the iron is to be used as a dry iron, the valve actuator 88 is moved from the position shown in Figs. 1 and 7, until the opening 94 moves away from the detents 93 whereby the spring 92 will snap the valve stem 86 downwardly and seat its lower end 85 in the valve seat and close off communication between the interior of the reservoir and the inlet opening to the flash boiler 16. The control dial may then be moved to the proper setting and the iron used in the usual manner of using a dry iron.

In the modification of Figs. 1 to 6, if the reservoir 60 is empty and it is desired to use the iron as a steam iron, the iron is turned backwardly so as to rest on the extension 119 of the handle and the rear end 108 of the cover shell. Water is then poured into the opening in the extension 78 of the fill tube whereby it will pass through the tube 75 and slits 79 and 80 into the interior of the reservoir 60. When the level of water in the reservoir 60 reaches the level of slits 79 and 80 no more water can enter the reservoir proper. An air pocket is formed in the upper end of the reservoir 60 and any water which may be in the extension 77 of the fill tube will flow by gravity into the reservoir when the iron is returned to horizontal position.

It has been found that for steam ironing the control dial should be set at the same position regardless of the fabric which is being ironed and that the setting should be toward the upper end of the temperature range.

In the modification of Figs. 1 to 6 the control dial 128 is moved to the proper position, the valve actuator 88 moved to the position shown in Fig. 1 to open the valve 85 and the iron returned to its ironing position. Water will drop into the recess 16 of the sole plate 19, which is in direct heat exchange relationship with the heating element 11, and be vaporized into steam. The steam and any unevaporated water will flow backwardly through the openings 18 into the superheating recess 19 where the unevaporated water will be trapped by the baffles 20. The steam will flow backwardly through the passage 22 to the ends of the legs 23 where the steam will flow upwardly into the passage 28 in the cover plate 25. No water except that entrained in the steam can pass the ends 23, and thus all the water must be evaporated in the sole plate proper. The steam from the passages 28 will flow into passages 29 and 30 which are directly over the heating element 11, where it is superheated. It will then pass through the sole plate to the fabric being ironed by way of the steam emitting openings 31.

The reservoir 60 is shielded from the heat of the heating element 11 by the cover plate 25 since the temperature of that plate cannot rise materially above that of the steam passing beneath it. The only direct heat conducting path between the sole plate 10 and the reservoir 60 is by way of the nut 81 which may be made of any suitable non-heat conducting material such as stainless steel.

When the iron is used as a dry iron the cover shell 100 is protected from the heat of the sole plate by the entire air space in the reservoir 60

if it is empty and by the water therein if it contains water.

When it is desired to fill the reservoir of the modification of Figs. 7 and 8, the iron is upended to rest on the projection 119 of the handle and the rear end 108 of the cover shell with the opening of extension 177 facing upwardly as shown in Fig. 8. Water is poured into the opening 177 and flows through the opening 178 into the interior of the reservoir 60' until the water reaches a level indicated by the dot-dash line A—A of Fig. 8. After the water reaches the level of the upper edge of the opening 178 the air in the upper end of the reservoir 60' will be vented through openings 175 and 176 and permit the water to rise to the level of the line A—A.

It is to be noted from Fig. 8 that the level A—A is above the opening 183 in the valve body 169 and the better practice is to close the valve 85 during the filling operation. However, it has been found that very little water will flow through the opening 183 even though the valve is left open. The static pressure head of water over the opening 183 is very small. As a consequence, the capillary attraction of the walls of the opening 183 and the walls of the opening in the extension 184 will prevent the water from flowing into the boiler 16 unless the iron is shaken.

After the reservoir 60' is filled, as above described, the valve 84 is opened and the iron returned to its horizontal position. The water in the fill tube 173 will flow by gravity into the reservoir 60' because of the space left above the level A—A when the reservoir is filled. The iron is then used as a steam iron in the same manner as in the first modification.

From the foregoing it can be seen that this invention provides an electrically heated iron which is readily convertible for use as a steam iron or as a dry iron, having few moving parts, and which can be preassembled into three main sub-assemblies which may be assembled and disassembled individually without disturbing the other sub-assemblies.

While I have shown and described but two modifications of my invention it is to be understood that those modifications are 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 thereof except as limited by the scope of the claims.

I claim:

1. In an electrically heated steam iron having a sole plate sub-assembly, a reservoir-valve sub-assembly and a handle-cover shell sub-assembly; said sole plate sub-assembly comprising, a sole plate proper, a heating element thereon, said sole plate being formed with a boiler recess near its toe and with ducts for conducting steam to its bottom surface, a cover plate for said recess, an inlet opening in said cover plate above said recess, an anchor stud extending upwardly, from said sole plate to the rear of said recess, a thermostatic switch mounted on said sole plate to the rear of said stud and having a control shaft extending upwardly therefrom and a cover shell support extending upwardly from the rear of said sole plate; said reservoir-valve sub-assembly comprising, a horizontally elongated reservoir, a tube extending upwardly therethrough for receiving said control shaft, a second tube extending upwardly through said reservoir above said anchor stud, a valve body secured to said reservoir above the inlet opening of said cover plate with its

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lower face formed to mate with said inlet opening, a fill tube secured to and extending upwardly from said reservoir above said valve body and having a forward extension formed with a forwardly facing fill opening, a valve stem extending upwardly from said valve body through said fill opening and a valve actuator mounted on top of said fill tube and operatively connected to the upper end of said valve stem; said handle-cover shell sub-assembly comprising, a cover shell enclosing said reservoir, said cover shell having an opening in its top above said control shaft and a second opening above said anchor stud and a front opening for receiving said fill tube, and a handle secured to said cover shell, said handle having spaced front and rear legs, said front leg being hollow to receive said fill tube and having a front opening for receiving said forward extension and a top opening through which said valve actuator extends; means extending upwardly from said control shaft through said control shaft receiving tube and through the aligned opening in said cover shell for adjusting said thermostatic switch and means extending through the second opening in said cover shell and the second tube of said reservoir and engaging said anchor stud to clamp said handle-cover shell sub-assembly and said reservoir-valve sub-assembly to said sole plate sub-assembly with the lower end of said valve body engaging said inlet opening and the rear of said cover shell resting on said cover shell support.

2. In an electrically heated steam iron having a sole plate sub-assembly, a reservoir-valve sub-assembly and a handle-cover shell sub-assembly; said sole plate sub-assembly comprising, a sole plate proper, a heater therefor, said sole plate being formed with a boiler recess in its upper face near the toe thereof, a cover plate for said recess having an inlet opening leading to said recess, said sole plate and cover plate being formed with steam passages extending from said recess to openings extending through the bottom face of said sole plate, a thermostatic switch secured to the said sole plate having an adjusting shaft extending upwardly therefrom, anchoring means on said sole plate between said shaft and inlet opening and a cover shell support fixed to and extending upwardly from said sole plate to the rear of said switch; said reservoir-valve sub-assembly comprising, a horizontally elongated reservoir, a tube extending upwardly there-through for receiving said shaft, a second tube extending upwardly through said reservoir above said anchoring means, a valve body secured to the bottom wall of said reservoir above the inlet opening of the cover plate and affording communication between the interior of said reservoir and said opening, the bottom face of said valve body being formed to mate with said inlet opening so as to form a pressure joint, a valve seat formed in said body, a fill tube secured to the upper wall of said reservoir above said valve body and communicating with the interior of said reservoir, said fill tube having a forward extension formed with a forwardly facing fill opening, a valve stem extending upwardly from said valve body through an opening in the top of said fill tube and a valve actuator mounted on top of said fill tube and operatively connected to said valve stem, said actuator being selectively operable to open and close the opening in said valve body; said handle-cover sub-assembly comprising, a cover shell enclosing said reservoir and formed

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to react downwardly against said reservoir when the iron is assembled, said cover shell being formed with openings above said shaft and anchoring means and with an opening for said fill tube and a handle secured to said cover shell, said handle having spaced front and rear legs, said front leg being hollow to receive said fill tube, having its front wall cut away to receive said forward extension and having a top opening through which said valve actuator extends; means extending upwardly from said control shaft through the aligned opening in said cover shell for adjusting the temperature setting on said switch and means extending through the second opening in said cover shell and the second tube of said reservoir and engaging said anchoring means to clamp said handle-cover shell sub-assembly and said reservoir-valve sub-assembly to said sole plate sub-assembly with the lower face of said valve body engaging the opening in said cover plate and the rear of said cover shell resting on said cover shell support.

3. A reservoir-valve sub-assembly for a steam iron comprising; a horizontally elongated reservoir; said reservoir being formed of upper and lower duplicate dished stampings with their dished sides facing each other and being secured together at their peripheral edges with the bottoms of said stampings forming the top and bottom walls of said reservoir; three longitudinally spaced openings formed in the top and bottom walls of said reservoir; rear and middle open ended tubes extending through said reservoir and through the openings in the top and bottom walls thereof and being sealed to said stampings about the periphery of said openings; said rear tube forming a housing for a control shaft; and said middle tube forming a passageway for an anchoring bolt; a valve body secured in the front opening of the lower half of said reservoir; a fill tube secured in the front opening of the upper half of said reservoir directly above said valve body; said fill tube extending upwardly from said reservoir and having a forward extension formed with a forwardly facing fill opening; said valve body extending below said reservoir and having its lower end shaped to form a pressure joint with a water inlet opening in a sole plate and being formed interiorly with a valve seat; a valve stem extending downwardly through an opening in the top wall of said fill tube and having a valve on its lower end coacting with said valve seat and a valve actuator mounted on the top of said fill tube; said valve actuator being selectively operable to move said valve to its open or closed position.

4. In an electrically heated steam iron having a sole plate assembly, a reservoir-valve assembly and a handle-cover shell assembly; said sole plate assembly comprising, a sole plate proper, a heating element thereon, said sole plate being formed with a boiler recess near its toe and with ducts for conducting steam to its bottom surface, a cover plate for said recess, an inlet opening in said cover plate above said recess, an anchor stud extending upwardly from said sole plate to the rear of said recess, a thermostatic switch mounted on said sole plate to the rear of said stud and having a control shaft extending upwardly therefrom and a cover shell support extending upwardly from the rear of said sole plate; said reservoir-valve assembly comprising, a horizontally elongated reservoir, a tube extending upwardly therethrough for receiving said control shaft, a second tube extending upwardly through

said reservoir above said anchor stud, a fill tube-valve assembly extending upwardly through said reservoir above the inlet opening of said cover plate and having its lower end formed to mate with said inlet opening, said fill tube-valve assembly extending above said reservoir and being formed with a forward extension having a fill opening and a valve actuator mounted on top of said fill tube-valve assembly; said handle-cover shell assembly comprising, a cover shell enclosing said reservoir, said cover shell having an opening in its top above said control shaft and a second opening above said anchor stud and a front opening for receiving said fill tube-valve assembly and a handle secured to said cover shell, said handle having spaced front and rear legs, said front leg being hollow to receive said fill tube-valve assembly and having a front opening receiving said extension and a top opening through which said valve actuator extends; means extending upwardly from said control shaft receiving tube and through the opening in said cover shell for securing said handle-cover shell assembly to said reservoir-valve assembly and means extending through the second opening in said cover shell and the second tube of said reservoir and engaging said anchor stud to clamp said handle-cover shell assembly and said reservoir-valve assembly to said sole plate assembly with the lower end of said fill tube engaging said inlet opening and the rear of said cover shell resting on said cover shell support.

5. In a steam iron according to claim 4 including a control dial rotatably mounted on said cover shell between the legs of said handle and drive means extending downwardly from said control dial into said control shaft receiving tube and drivingly connected to said control shaft.

6. In a steam iron according to claim 5 in which said control dial overlies the securing means for securing said handle-cover shell assembly to said reservoir-valve assembly and also the securing means for securing both of those assemblies to the sole plate assembly.

7. In a steam iron according to claim 4 in which said sole plate assembly includes terminal connections extending rearwardly from said sole plate into an extension of said cover shell overhanging said sole plate, the rear leg of said handle being hollow to receive a conductor cord, said cover shell being formed with an opening beneath the hollow rear leg of said handle and a conductor cord extending through an opening in the wall of said rear leg, through the opening in said cover shell and having its wires connected to the terminal connections extending rearwardly from said sole plate.

8. In a steam iron, a pointed sole plate, a heater on said sole plate, a boiler formed in said sole plate near the toe thereof in heat exchange relationship with said heater, an inlet opening in said sole plate above said boiler, cover shell supports extending upwardly from the rear of said sole plate, an anchor stud on said sole plate between said inlet opening and said cover shell supports, a water reservoir above said sole plate, a conduit in communication with said reservoir and extending downwardly therefrom above said inlet opening, the lower end of said conduit and inlet opening being shaped to form a pressure contact joint between them, a cover shell enclosing said reservoir and overlying said reservoir so as to exert a downward pressure thereon and a bolt extending downwardly through said cover shell and reservoir and being threaded into said anchor

stud and forming the sole means for clamping said reservoir and cover shell to said sole plate with the rear of said cover shell resting on said supports and with the lower end of said conduit in pressure contact with said inlet opening.

9. In a steam iron, a pointed sole plate, a heater on said sole plate, a boiler formed in said sole plate near the toe thereof in heat exchange relationship with said heater, an inlet opening in said sole plate above said boiler, a cover shell support extending upwardly from the rear of said sole plate, an anchor stud on said sole plate between said inlet and said cover shell support, a cover shell locating pin at the toe of said sole plate forwardly of said inlet opening, a water reservoir above said sole plate, a conduit in communication with said reservoir and extending downwardly therefrom above said inlet opening, the lower end of said conduit in said inlet opening being shaped to form a pressure contact joint between them, means on said cover shell support for supporting the rear end of said reservoir, a cover shell enclosing said reservoir, the rear end of said cover shell resting on said cover shell support and the forward end thereof resting on said locating pin, a bolt extending downwardly through said cover shell and reservoir and being threaded into said anchor stud and forming the sole means for clamping said cover shell and reservoir to said sole plate and means reacting between the forward ends of said cover shell and reservoir for holding the lower end of said conduit in pressure contact with said inlet opening.

10. In a steam iron according to claim 9 in which said inlet opening is formed in a thin disc of poor heat conducting material secured to said sole plate above said boiler.

11. In a steam iron, a sole plate, a heater on said sole plate, a boiler formed in said sole plate, a thermostatic switch mounted on said sole plate and having a control shaft extending upwardly therefrom, a water reservoir above said sole plate, a conduit leading from said reservoir to said boiler, an open ended tube extending through said reservoir above said control shaft and being sealed to the top and bottom walls of said reservoir, a cover shell enclosing said reservoir, the upper end of said tube extending through an opening in said cover shell, means coacting with the upper end of said tube for securing said cover shell to said reservoir, a control dial rotatably mounted on said cover shell above said tube, a driving connection between said dial and said control shaft and extending through said tube, and means for securing said reservoir and cover shell to said sole plate.

12. In a steam iron according to claim 11 in which said control dial is rotatably mounted on the upper end of said tube.

13. A handle-cover shell, reservoir-valve assembly for a steam iron comprising; a horizontally elongated reservoir having top and bottom walls; an open ended control shaft receiving tube extending upwardly through said reservoir and being sealed to the top and bottom walls thereof; a cover shell overlying said reservoir and forming a housing therefor; said tube having an upper threaded end extending upwardly through an opening in the top of said cover shell; a nut threaded to the threaded upper end of said tube above the top wall of said cover shell for clamping said cover shell to said reservoir and a handle having front and rear legs secured to said cover shell with said tube positioned between said legs.

14. An assembly according to claim 13 includ-

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ing a spring disc surrounding said tube and clamped beneath said nut, a plurality of spring fingers upwardly and inwardly from the edges of said disc and a control dial rotatably mounted on said spring fingers and having drive means extending downwardly into said tube.

15. An assembly according to claim 14 in which a second open ended vertically extending tube is sealed to the top and bottom walls of said reservoir forwardly of said first tube for receiving a bolt for clamping said assembly to a sole plate, said control dial overlying said second tube.

16. An assembly according to claim 13 including an open ended tube extending upwardly through said reservoir adjacent its front end and sealed to the top and bottom walls thereof, a fill tube-valve assembly having a tubular portion extending through said upwardly extending tube and communicating with the interior of said reservoir, said tubular portion having a threaded lower end extending below the bottom wall of said reservoir, an interiorly threaded member threaded to the lower end of said tubular portion for clamping said fill tube-valve assembly to said reservoir, the lower end of said member being shaped to form one part of a joint complementary to an inlet opening in a sole plate and a valve seat formed interiorly of said member.

17. A fill tube-valve assembly for a steam iron comprising, a tubular portion for extending vertically through a water reservoir and having a slit extending through its rear wall for communication with the interior of the reservoir, a flange at the upper end of said tubular portion for engagement with the top wall of the reservoir, the lower end of said tubular portion being exteriorly threaded, an interiorly threaded valve member threaded to the threaded end of said tubular portion and engageable with the bottom wall of the reservoir and cooperating with said flange to clamp said assembly to the reservoir, the lower end of said valve member being shaped to form one part of a joint complementary to an inlet opening in a sole plate and a valve seat formed interiorly of said valve member.

18. An assembly according to claim 17 including an extension extending upwardly from said flange, said extension having a top wall and being formed with a front fill opening, a valve element extending downwardly through an opening in said top wall and having its lower end shaped to seat on said valve seat and a valve actuator supported on said top wall and operatively connected to said valve element to move it to its open or closed position.

19. In an electrically heated steam iron having a sole plate assembly, a reservoir-valve assembly and a handle-cover shell assembly; said sole plate assembly comprising, a sole plate proper having a heating element embedded therein, said sole plate being formed with a boiler recess and steam superheating recesses in its upper surface in heat exchange relationship with said heating element and with steam emitting openings extending therethrough to its bottom surface, a cover plate secured to the top of said sole plate and overlying said recesses and openings, the under surface of said cover plate being recessed to form steam conducting passages in communication with the superheating recesses and steam emitting openings of said sole plate, said cover plate being formed with an inlet opening extending therethrough above the boiler recess of said sole plate, a thermostatic switch

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mounted on said sole plate in heat exchange relationship thereto and having a control shaft extending upwardly therefrom, terminal conductors mounted on said sole plate connecting said heating element and said switch in series circuit with terminals extending rearwardly from said sole plate, cover shell supporting means extending upwardly from the rear of said sole plate and an anchor stud having a threaded opening extending upwardly from said sole plate between said inlet opening and said supporting means; said reservoir-valve assembly comprising, a horizontally elongated reservoir formed of duplicate stampings secured together on a longitudinally extending peripheral seam so as to form top and bottom walls, three longitudinally spaced vertically extending open ended tubes sealed to the top and bottom walls of said reservoir, the rearmost of said tubes being positioned to receive the control shaft of said switch, the central of said tubes being positioned to lie above the anchor stud on said sole plate, the foremost of said tubes being positioned to lie above the inlet opening in said cover plate, a fill tube extending through the foremost of said tubes and clamped to said reservoir, said fill tube having an extension extending above said reservoir with a forwardly facing fill opening therein, a valve stem extending downwardly through an opening in the top of said extension, through said fill tube and terminating at its lower end in a valve proper, a valve seat formed interiorly in the bottom of said fill tube in line with said valve, a valve actuator mounted on top of said extension and connected to the upper end of said valve stem, the bottom of said fill tube being formed with a fitting complementary to the inlet opening in said cover plate, said foremost tube and said fill tube being formed with openings in their rear walls communicating with the interior of said reservoir; said handle-cover shell assembly comprising, a handle having front and rear hollow legs, the walls of said front leg being formed with a front opening complementary to the fill opening of said fill tube and with a top opening to receive said valve actuator, a conductor cord extending through the side wall of said rear leg into the interior thereof, a cover shell having a contour following that of the top of said sole plate and having an extension extending beyond the rear thereof, said cover shell being shaped to house said reservoir and having openings therethrough to coincide with the three vertical tubes of said reservoir and with said hollow rear leg and means for securing said cover shell to said handle; attaching means extending upwardly from the rearmost of said vertical tubes for securing said reservoir-valve assembly to said handle-cover shell assembly with the extension of said fill tube and said valve actuator extending upwardly into said hollow front leg with the fill opening coinciding with the front opening thereof and said actuator extending through the top opening thereof and with said reservoir enclosed within said cover shell; a bolt extending through the central of said vertical tubes and through the complementary opening in said cover shell and being threaded into the attaching stud of said sole plate to secure said handle-cover shell, reservoir-valve assembly to said sole plate with the rear of said cover shell resting on the support extending upwardly from said sole plate and the fitting on the lower end of said fill tube mating with the inlet opening of said cover plate; and means coacting with said attaching means

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for rotatably securing a control dial to said cover shell between said front and rear legs and means extending downwardly into the rearmost of said vertical tubes and drivingly connecting said control dial to the control shaft of said switch; said cord extending downwardly through the rear opening in said cover shell into its extension and being electrically connected to the terminals extending rearwardly from the sole plate.

20. A reservoir-valve assembly for a steam iron comprising; a horizontally elongated reservoir; said reservoir being formed of upper and lower duplicate dished stampings with their dished sides facing each other and being secured together at their peripheral edges with the bottoms of said stampings forming the top and bottom walls of said reservoir; three longitudinally spaced openings formed in the top and bottom walls of said reservoir; rear, middle and front open ended tubes extending through said reservoir and through the openings in the top and bottom walls thereof and being sealed to said stampings about the periphery of said openings; said rear tube forming a housing for a control shaft; and said middle tube forming a passageway for an anchoring bolt; a fill tube-valve assembly having a casing extending through said front tube; said casing having a threaded end extending below said bottom wall; an interiorly threaded member threaded to the threaded lower end of said casing and clamping said fill tube-valve assembly to said reservoir; the lower end of said threaded member being shaped to interfit with a water inlet opening in a sole plate; and the bore of said member being provided with a valve seat; said fill tube-valve assembly having an extension extending above said reservoir; the front wall of said extension being formed with a forwardly facing fill opening; a valve stem extending downwardly through an opening in the top wall of said extension having a valve on its lower end cooperating with said valve seat and a valve actuator mounted on the top of said extension; said valve actuator being selectively operable to move said valve to its open or closed position.

21. A reservoir-valve sub-assembly for a steam iron comprising; a horizontally elongated reservoir; said reservoir being formed of upper and lower duplicate dished stampings with their dished sides facing each other and being secured together at their peripheral edges with the bottoms of said stampings forming the top and bottom walls of said reservoir; three pairs of longitudinally spaced openings formed in the top and bottom walls of said reservoir; open ended tubes extending vertically through said reservoir and through the rear and middle pairs of said openings and being sealed to the top and bottom walls of said reservoir about said pairs of openings; a valve body secured to the bottom wall of said reservoir in the front bottom opening; a fill tube secured to the top wall of said reservoir in the front top opening and having an opening in its lower end communicating with the interior of said reservoir; said fill tube extending upwardly from said reservoir and having a forwardly facing fill opening formed therein in communication with the opening in the lower end thereof; the lower end of said valve body extending below said reservoir and being shaped to form a pressure joint with a water inlet opening in the top of a sole plate; a vertically extending bore formed in said valve body, communicating at its upper end with the interior of said reservoir and extending through the lower end of said body; a valve seat formed in said bore below its upper

end; a valve stem extending downwardly through an opening in the top of said fill tube and having a valve on its lower end cooperating with said valve seat; a valve actuator mounted on the top of said fill tube, being connected to the upper end of said valve stem and being selectively operable to move said valve to its open or closed positions and baffle means extending downwardly from the top wall of said reservoir to the rear of the opening in the lower end of said fill tube.

22. A sole plate sub-assembly for a steam iron comprising, a sole plate proper, a U-shaped heating element embedded in said sole plate having its bight adjacent the toe of said sole plate and its legs extending backwardly along the sides thereof, a boiler recess formed in the upper surface of said sole plate, steam emitting openings formed in said sole plate and extending through the undersurface thereof, a cover plate removably secured to said sole plate and covering said boiler recess, passages formed in said sole plate and said cover plate and forming a steam flow path between said boiler recess and said steam emitting openings, a water inlet opening formed in said cover plate above said boiler recess, an anchor stud extending upwardly from said sole plate to the rear of said boiler recess, a thermostatic switch secured to the top of said sole plate to the rear of said anchor stud and passages, terminal conductors connecting said heating element and switch in series circuit, a bracket secured to the rear edge of said sole plate, insulating blocks positioned above and below said terminal conductors, means for clamping said insulating blocks to said bracket, laterally spaced cover shell supports extending upwardly and rearwardly from said bracket and an integral lug extending rearwardly from said bracket and forming means for supporting a closure plate.

23. In a sole plate sub-assembly according to claim 22 including lugs extending forwardly from said bracket and forming a support for the rear end of a water reservoir.

24. In a sole plate sub-assembly according to claim 22 including a cover shell locating pin in the forward end of said sole plate forwardly of said cover plate.

25. In a steam iron, a sole plate, a heater on said sole plate, a boiler formed in said sole plate adjacent the front end thereof in heat exchange relationship with said heater, an inlet opening in said sole plate above said boiler, cover shell supporting means on said sole plate adjacent the rear end thereof, anchor means on said sole plate between said inlet opening and said cover shell supporting means, a water reservoir above said sole plate, a conduit in communication with said reservoir and extending downwardly therefrom above said inlet opening, the lower end of said conduit and said inlet opening being shaped to form a pressure contact joint between them, a cover shell enclosing and overlying said reservoir so as to exert a downward pressure thereon and means extending downwardly through said cover shell and reservoir and being anchored to said anchor means and forming the sole means for clamping said reservoir and cover shell to said sole plate with the rear of said cover shell resting on said supporting means and with the lower end of said conduit in pressure contact with said inlet opening.

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No references cited.