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2 SHEETS—SHEET 1



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STEAM IRON

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2 SHEETS—SHEET 2

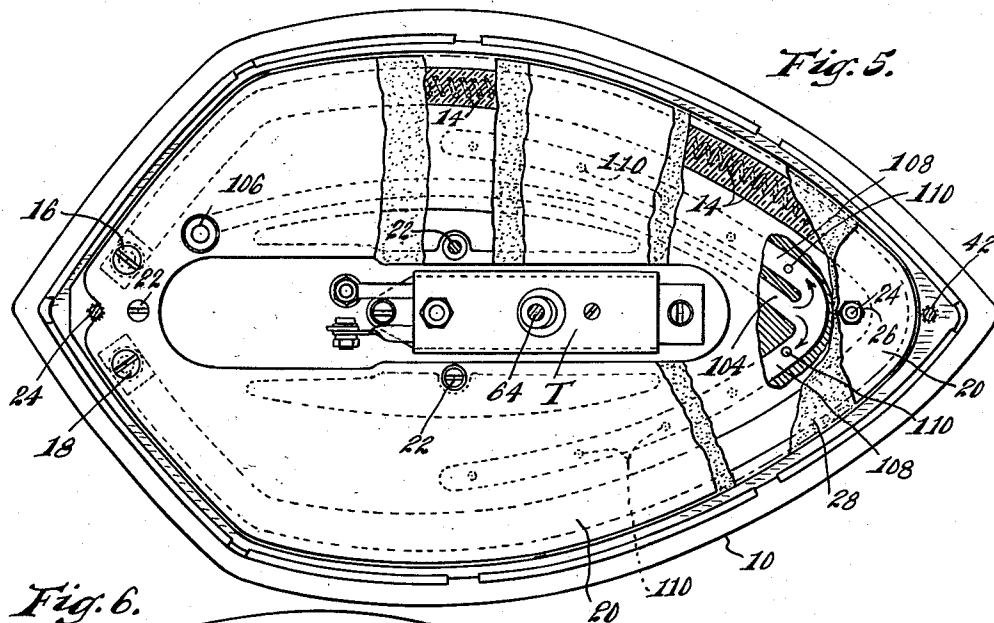


Fig. 6.

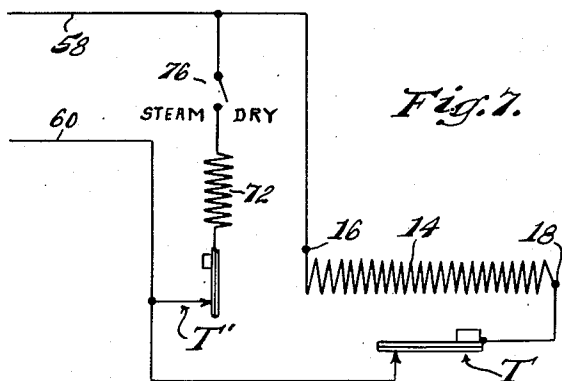
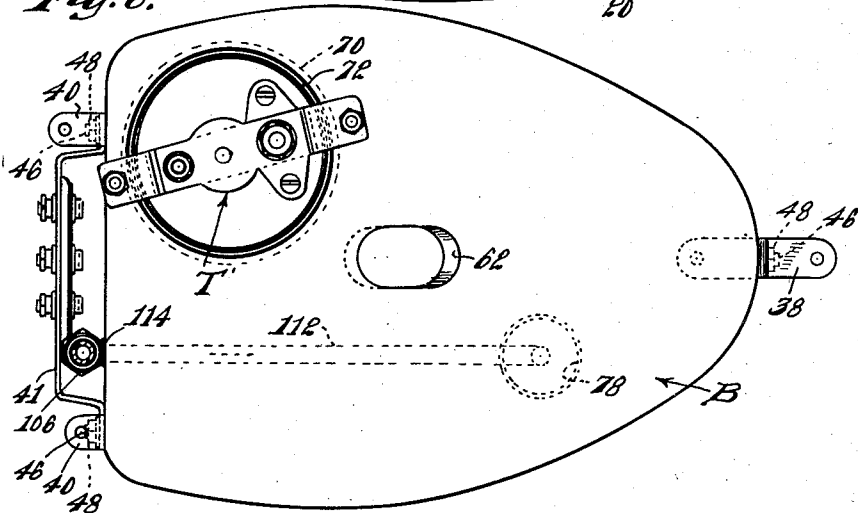


Fig. 7.

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UNITED STATES PATENT OFFICE

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STEAM IRON

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2 Claims. (Cl. 38—77)

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Our present invention relates to a steam iron wherein steam is generated by a heating element and conveyed to the sole plate of the iron where it is discharged on to the fabric being ironed.

One object of the invention is to provide a steam iron having selective control means for operating the iron either as a steam iron or as a dry iron.

Another object is to provide a steam iron having one heating element for the sole plate and another for a steam generating boiler, the second heating element being manually controllable as to energization or deenergization so as to provide steam or not as desired.

Another object is to provide a thermostatic means for the sole plate heating element and a second thermostatic means for the boiler heating element to limit their respective temperatures independent of each other.

Still another object is to provide a means for operating the sole plate thermostat, which means extends through a tube in the boiler to the top of the casing for the boiler and sole plate.

A further object is to provide a heat baffle chamber between the sole plate and the boiler so that the heat of the sole plate does not appreciably affect the temperature of the boiler.

Still a further object is to provide a combined blow-off valve and closure plug for the boiler which can be locked and unlocked relative to the boiler casing.

With these and other objects in view, our invention consists in the construction, arrangement and combination of the various parts of our device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims and illustrated in the accompanying drawings, wherein:

Figure 1 is a plan view of a steam iron embodying our invention, portions of the boiler casing being broken away and portions of the handle also being broken away to show details of internal construction.

Figure 2 is a vertical sectional view partially on the line 2—2 of Figure 1.

Figure 3 is a plan view of a portion of the boiler casing with a combined pressure relief valve and cover cap removed and the handle removed, with two screws that enter the front end thereof shown in section.

Figure 4 is a vertical sectional view on the line 4—4 of Figure 1 showing a combined relief valve and cover cap.

Figure 5 is a sectional view on the line 5—5 of Figure 2.

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Figure 6 is a sectional view on the line 6—6 of Figure 2, and

Figure 7 is an electro-diagrammatic view showing the circuits in our steam iron.

On the accompanying drawings we have used the reference numeral 10 to indicate a sole plate, which sole plate has a heating element groove 12 formed therein. A heating element 14 is located in the groove 12 and has terminals 16 and 18.

A metal cover plate 20 is provided for the heating element 14 and is retained in position on the top of the sole plate 10 by screws 22 and 24. The screws 24 are provided with nuts 26 for this purpose. A sheet 28 of insulating material such as asbestos is interposed between the cover plate 20 and the sole plate 10.

A heat baffle plate 30 is mounted on the sole plate 10 and has a depending flange 32 around its peripheral edge for spacing the plate 30 from the sole plate to provide a heat baffle chamber 34. The plate 30 is held in position by nuts 36 on the bolts 24.

A front bracket 38 and a pair of rear brackets 40 are provided for supporting a boiler B. The brackets 38 and 40 are held in position by screws 42 and 44 respectively, and the boiler B is provided with a threaded stud 46 for each bracket, the studs being retained in relation to the brackets by nuts 48. A cross bracket 41 connects the upper ends of the brackets 40 together. A casing C for the boiler B is mounted on the upper ends of the brackets 38 and 41 by means of screws 50 and 52.

A handle H is mounted on the casing C by means of a pair of screws 54 at its forward end for entering keyhole slots 56 of the casing. The rear end of the handle has a cover plate 57 secured in position over electrical connections from a supply cord 60 and the plate 57 in turn is secured by a screw 61 to a threaded bracket 63 of the casing C. Thus the single connection at 61 cooperates with the screws 54 in the keyhole slots 56 to retain the handle in position.

A thermostat T is provided for the sole plate 10. This is of conventional type and connected in series with the heating element 14 as shown in Figure 7, the supply wires being indicated at 58 and 60. The boiler B has a vertical tube 62 extended therethrough to permit passage of a thermostat adjusting shaft 64 from the thermostat T to a control knob 66 located above the casing C. The casing itself has an opening 68 through which the shaft 64 extends.

The boiler B has a downwardly opening depression 70 wherein is located a second heating ele-

ment 72. The heating element 72 is under the control of a thermostat T', the actuating element of which is made of bimetal and is indicated at 74. The thermostat T' is in series with the heating element 72 and also in this same circuit is a control switch 76 which may be turned on or off and is labelled appropriately such as "Steam" and "Dry." Thus the heating element 72 may be energized or not, depending on whether steam is desired or whether it is desired to use the iron as a dry iron. The switch 76 constitutes a convenient selective control to effect the provision of steam during ironing operations and the omission of steam during the finishing operations on the garment.

The boiler B has a filler neck 78 adapted to be closed by a cap-shaped disc 80 and a packing washer 82 of neoprene or the like. The cap 80 is constrained to engage the neck 78 under the action of a spring 84 and is carried by a cap member 86 pivoted at 88. The cap member 86 has a stud 90 rotatable therein carrying a bayonet pin 92 on its lower end and a knob 94 on its upper end.

The stud 90 is adapted to enter an opening 96 in the top of the casing C having a pair of opposite notches 98 to receive the pin 92 whereupon the pin may be rotated a quarter turn as to the dotted position in Figure 3 for locking the caps 86 and 88 in the closed position of Figure 4. When it is desirable to open the cap 86 for filling the boiler the knob 94 may be swung sidewise as to the dotted position of Figure 1 for aligning the pin 92 with the notches 98 to unlock the cap.

After the cap is reclosed it serves as a relief valve due to the construction of the parts 80, 82 and 84, the spring 84 determining the relief pressure. The cap 80, it will be noted, is provided with a rivet 100 to support it slidably in relation to the cap member 86 and the knob 94 has a socket 102 to provide for clearance of the head of the rivet.

The sole plate 10 is provided with a steam transfer passageway 104 (see Figure 5) leading from a fitting 106 of the kind designed to receive and contract around a copper tube. The transfer passageway 104 connects centrally with a V-shaped passageway 108 to deliver equally distributed steam therethrough to discharge openings 110 in the bottom of the sole plate. Besides providing for equal steam distribution the walls of the transfer passageway 104, since they are part of the sole plate, superheat the steam that flows through the transfer passageway.

A steam delivery tube 112 extends from a position in the neck 78 which acts as a steam dome as shown in Figure 4 through the rear wall of the boiler B to which it is soldered as indicated at 114 in Figure 1. The tube depends from the soldered connection to the fitting 106 so that a disconnectible connection is had at this point between the boiler and the sole plate. This is for convenience in manufacture and repair of the iron.

We have provided a steam iron structure wherein the heating element of the sole plate is controlled automatically and independently of the heating element for the boiler. The iron may be used as a steam iron or as a dry iron by effecting the desired circuit connections under the control of the switch 76. The thermostat T' then

automatically prevents overheating of the boiler heating element 72.

Some changes may be made in the construction and arrangement of the parts of our device without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim as our invention:

1. In a steam iron structure, a sole plate, heating means therefor, a transfer passageway extending through said sole plate, a discharge passageway for the discharge of steam from said sole plate, said transfer passageway being connected with said discharge passageway and receiving heat through its walls for superheating the steam from said heating means as the steam passes through said transfer passageway, discharge openings from said discharge passageway to the lower surface of said sole plate, a boiler for generating steam, said boiler having a steam dome adjacent the front end thereof, and a steam connection from said boiler to said transfer passageway comprising a tube passing through and secured to and thereby supported by the rear wall of said boiler with its front end internally of said boiler and entering said steam dome, the rear end of said tube being externally located relative to said boiler and depending from the point where it is secured thereto to said sole plate and said transfer passageway therein, and having a disconnectible connection therewith.

2. In a steam iron of the character disclosed, a sole plate, heating means therefor, a discharge passageway in said sole plate, a boiler for generating steam, means for supporting said boiler comprising brackets extending upwardly from said sole plate, the walls of said boiler being connected therewith, said brackets having portions extending above the top of said boiler, a shell supported on the upper ends of said brackets and covering said boiler, and a steam connection between said boiler and said discharge passageway comprising a transfer passageway formed in said sole plate between said discharge passageway and said boiler, said heating means, through the walls of said transfer passageway, heating the steam as it passes therethrough.

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