Jan. 23, 1940. F. A. MILLER 2,188,011

STEAMING PRESSING IRON

Filed July 22, 1937 2 Sheets-Sheet 1

Fig. 1.

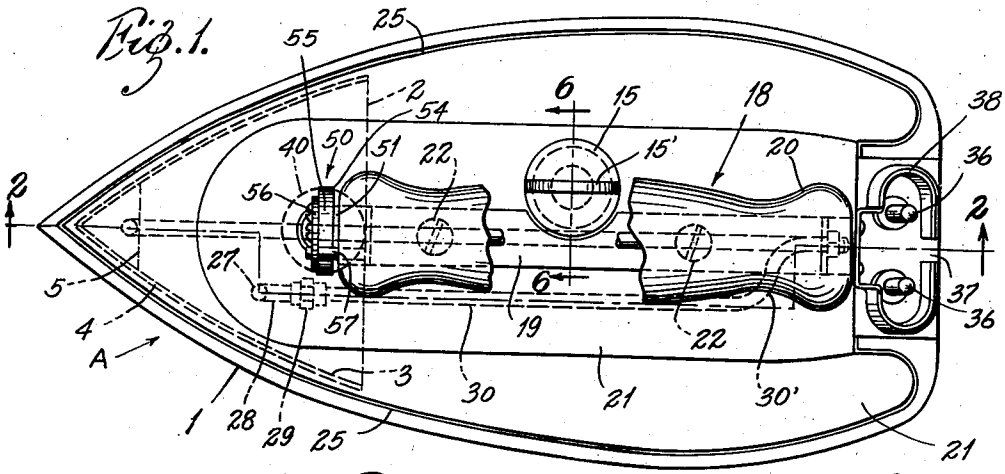


Fig. 2.

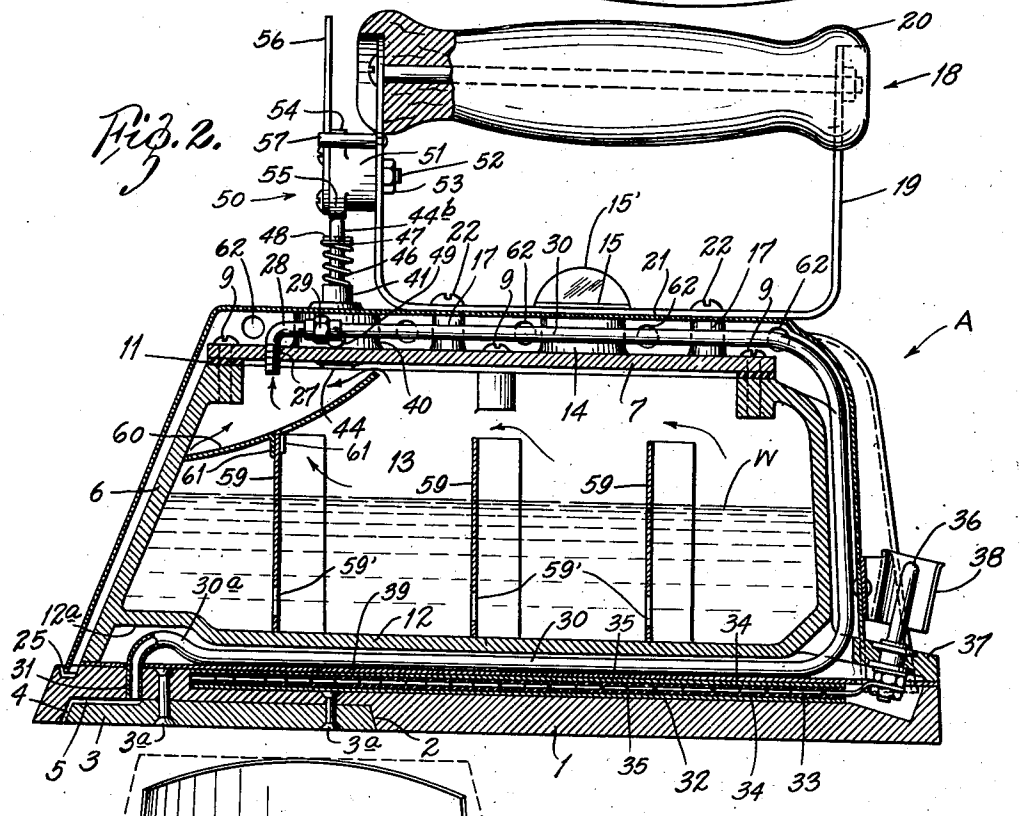
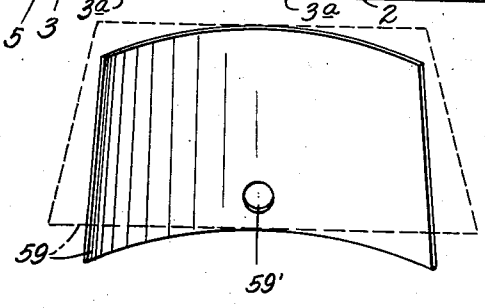


Fig. 9.



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Filed July 22, 1937 2 Sheets-Sheet 2

Fig. 3.

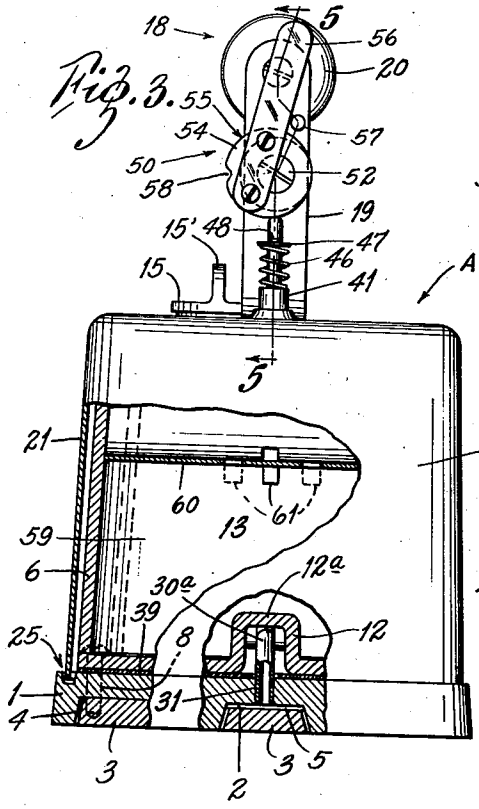


Fig. 4.

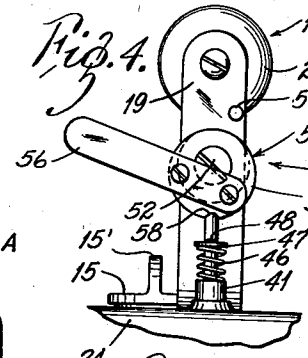


Fig. 5.

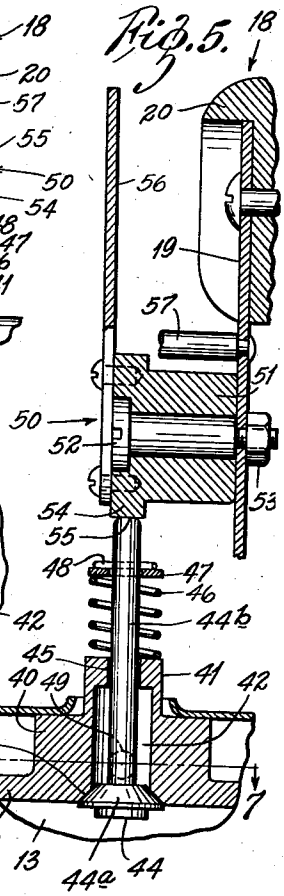


Fig. 7.

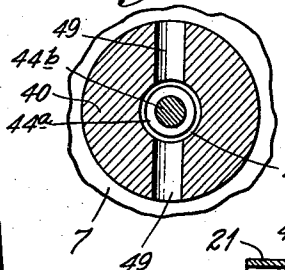


Fig. 8.

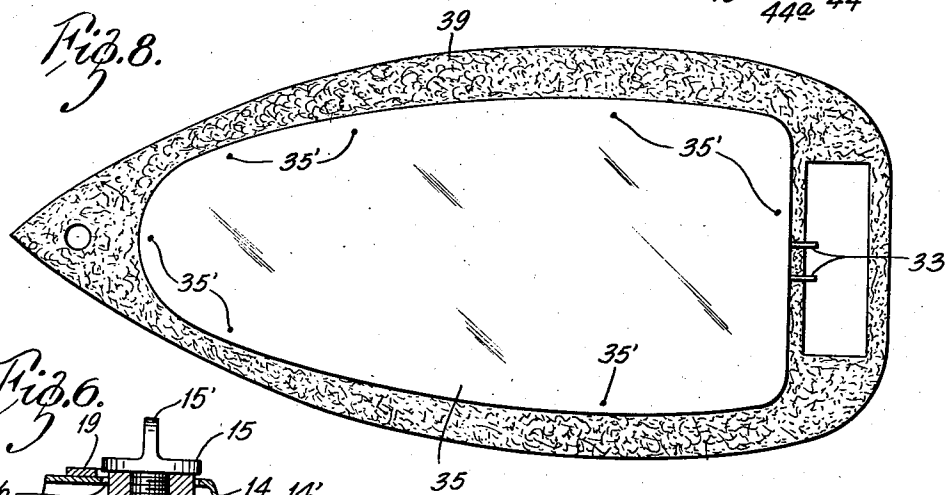
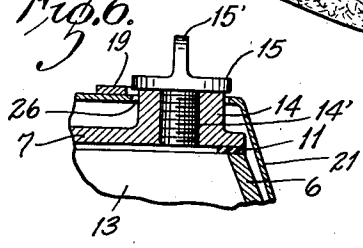


Fig. 6.



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Patented Jan. 23, 1940 2,188,011

UNITED STATES PATENT OFFICE

2,188,011

STEAMING PRESSING IRON

Fred A. Miller, St. Johns, Mo., assignor to Roland M. Klemme, St. Louis, Mo.

Application July 22, 1937, Serial No. 154,948

2 Claims. (Cl. 38—77)

This invention relates generally to pressing irons, and more specifically to an improved pressing iron of the type adapted to discharge steam at or adjacent to the pressing face of the iron, for the purpose of dampening articles being pressed, the predominant object of the invention being to provide an iron of the general construction and arrangement of the pressing iron disclosed in an application for United States Letters Patent filed in my name on May 14, 1937, Serial No. 142,532, which includes improved means for controlling the discharge of steam at the pressing face of the iron.

The improved pressing iron disclosed in my previous application for patent includes a valve located within the iron which serves, through manual manipulation thereof, to regulate and control the discharge of steam at the pressing face of the iron. This valve is disposed in the steam line that leads from the water reservoir, wherein the steam is produced, to a discharge orifice at the pressing face of the iron, and discharge of steam at the discharge face of the iron is regulated in this earlier iron by controlling passage of steam as it passes through the steam-line. The pressing iron disclosed in my earlier application for patent functions perfectly, but to reduce the manufacturing cost of the iron I have developed the pressing iron disclosed herein, which follows very closely the construction and arrangement of the pressing iron of my previous application, but does not include a valve for controlling the steam as it passes through the steam line.

Instead of providing the improved iron disclosed herein with the steam-controlling valve arrangement of my earlier application for patent, I provide the present improvement with an extremely simple valve structure which is operable to by-pass steam from the water reservoir of the iron directly to the exterior of the iron when no discharge of steam is desired at the pressing face of the iron. By so by-passing the steam it has been discovered that no steam will pass through the relatively long steam line to the pressing face of the iron, but instead the released steam will follow the shorter, more direct route to the exterior of the iron. The result of this is that discharge of steam at the pressing face of the iron is interrupted whenever the steam by-passing valve is opened, and discharge of steam at the pressing face of the iron is resumed and continues when the steam by-passing valve is closed.

Fig. 1 is a plan view of the improved pressing iron, a portion of the handle of the iron being broken away to reveal parts of the structure of the iron which otherwise would be hidden.

Fig. 2 is a vertical section through the iron taken on the staggered line 2—2 of Fig. 1.

Fig. 3 is a front elevation of the iron witrh a portion broken away to show parts of the iron in section.

Fig. 4 is a fragmentary front elevation showing the steam by-passing valve mechanism in a changed position from that shown in Fig. 3.

Fig. 5 is an enlarged, fragmentary, vertical section illustrating the steam by-passing valve mechanism taken on the staggered line 5—5 of Fig. 3.

Fig. 6 is a fragmentary section on line 6—6 of Fig. 1.

Fig. 7 is a horizontal section on line 7—7 of Fig. 5.

Fig. 8 is an inverted plan view of the electrical heating element of the improved iron.

Fig. 9 is an elevation of one of the water splashers of the improved iron.

In the drawings, where is shown for the purpose of illustration, merely, one embodiment of the invention, A designates the improved iron generally. The iron A includes a base portion which is in the form of a plate 1, said plate being of the conventional shape, as shown in Fig. 1, and being of substantial thickness, as shown in Figs. 2 and 3. The base plate 1, adjacent to the forward end thereof, is provided with a substantially triangular-shaped recess 2, the divergent sides of said recess being slightly curved in conformity with the shape of the base plate, and the walls of said recess at the divergent sides and at the rear end thereof being preferably inclined slightly from the true vertical, as shown in Figs. 1, 2, and 3.

Disposed in the recess 2 of the base plate is a plate 3 which is of less width and length than the recess, so that a substantially V-shaped space 4 is provided between the corresponding divergent walls of the recess 2 and plate 3, the divergent walls of the plate 3 being disposed in parallelism with respect to the corresponding divergent walls of the recess. The rear wall of the plate 3 contacts with the rear wall of the recess, as shrown to the best advantage in Fig. 2, and said plate 3 is secured to the base plate 1 and in position in the recess 2 by rivets 3a or other suitable fastening devices. The plate 3 is cut away at the forward portion of its upper face so as to provide a triangular-shaped space 5 between the top of the forward portion of said plate and the forward portion of the top wall of the recess, which tri-

angular-shaped space communicates with the V-shaped space 4.

Mounted on the base plate 1 of the iron A is the body portion of the iron, which is made up of a hollow intermediate member 6 and a top member 7 (Fig. 2). The intermediate member 6 is secured to the base plate 1 by a plurality of suitable fastening devices 8, one of which is shown in Fig. 3, and the top member 7 is secured to the upper portion of the intermediate member by fastening devices 9. Also, to provide a fluid-tight joint between the lower face of the top member 7 and the upper face of the intermediate member 6, a suitable gasket 11 is interposed between these faces. Formed centrally and extended longitudinally in the lower wall of the intermediate member 6 is a narrow channel 12 (Figs. 2 and 3), which is open at the bottom face of said lower wall of the intermediate member, said channel at the forward end of the intermediate portion being of increased height, as indicated at 12^a in Fig. 2. At the rear of the intermediate member a channel 12^b is formed in the rear wall thereof which is arranged in angular extension with respect to the channel 12 at the bottom of said intermediate member. The hollow interior of the intermediate member 6 provides the water reservoir and steam-generating chamber 13 of the improved iron, the top member 7 serving as a closure element for the reservoir at the top thereof.

The top member 7 includes an upwardly extended element 14 (Fig. 6) which provides a water inlet through which water is introduced into the water reservoir 13, said element 14 having a water passageway 14' formed therethrough which is screw-threaded so as to receive the screw-threaded portion of a cap 15. The cap 15 is provided with an upwardly extended fin 15' to facilitate rotating the cap.

The top member 7 is provided also with a plurality of upwardly projected extensions 17 which aid in securing a handle 18 to the body portion of the iron. The handle 18 includes a substantially U-shaped supporting portion 19, which supports a grip 20 formed of wood or other material possessing low heat-conductivity. Interposed between the lower, horizontal portion of the U-shaped supporting portion of the handle 18 and the top faces of the extensions 17 are portions of the top wall of a shell 21. The top wall of said shell is provided with openings which register with screw-threaded openings formed in the extensions 17, and screws 22 which secure the handle 18 to the body portion of the iron extend through the openings of the top wall of the shell and into the screw-threaded openings of the extension, said screws passing also through openings formed through the lower horizontal portion of the U-shaped supporting portion of the handle 18.

The body portion of the shell 21 corresponds in shape with the body portion of the iron, and said shell embraces said body portion of the iron. Also, the lower edge portion of the shell is extended loosely in a channel 25 formed in the top face of the base plate of the iron. Due to this floating arrangement of the lower portion of the shell, no difficulties arise because of contraction and expansion of the base plate and shell in response to varying temperatures, as would be the case if the lower portion of the shell were securely anchored to the base plate. Additionally, the upper portion of the shell 21 is provided with an opening 26 through which the water inlet element 14 extends.

Formed in the forward portion of the top member 7 is a screw-threaded opening 27 which receives the screw-threaded portion of an angular fitting 28. The lower end portion extends into the water reservoir 13, as shown in Fig. 2, so that the passageway formed through the fitting communicates with said water reservoir, and at the opposite end of the fitting a suitable coupling 29 is provided which couples a tube 30 to the fitting. The fitting 28, as shown to best advantage in Fig. 1, is offset transversely with respect to the transverse center of the iron, and the tube 30 extends rearwardly of the iron from said fitting in interposed relation with respect to the top wall of the shell 21 and the top member 7, as shown in Fig. 2. Adjacent to the rear of the iron the tube 30 is provided with a bend 30', which brings the rear portion of the tube to the transverse center of the iron, and said tube extends downwardly through the channel 12^b at the rear of the iron and forwardly through the channel 12 at the bottom of the iron. At its forward end the tube is curved upwardly, as indicated at 30^a in Fig. 2, and extends downwardly in on opening 31 formed in the base plate 1. This arrangement results in the forward end of the tube 30 communicating with the triangular space 5 and the V-shaped space 4 at the forward end of the base plate of the iron.

Arranged in a recess 32 formed in the base plate of the iron at the upper face thereof is an electrical heating element which includes a resistance wire 33 suitably arranged and interposed between layers of mica 34. The layers of mica with the resistance wire therebetween are interposed between a pair of sheets of metal 35, and these sheets of metal are spot welded or otherwise secured together at points designated by the reference character 35' in Fig. 8 to secure said sheets of metal together and produce a unitary heating element, the layers of mica and the resistance wire being relieved at the welding points. The resistance wire of the heating element is secured to suitable terminals 36, which are attached to an extension 37 forming a part of the intermediate member 6 of the iron, as shown in Fig. 2, and these terminals have associated therewith a suitable guard 38 that is attached to the shell 21. In addition to serving as means for maintaining the heating element in its assembled condition, the sheets of metal 35 act as heat distributors. Also, if desired, a layer of asbestos 39 or, if preferred, a plurality of such layers of asbestos, may be interposed between the base plate of the iron and the bottom of the intermediate member 6, so as to regulate transmission of heat from the heating element to the body portion of the iron. As shown in Fig. 2, the marginal edge portion of the layer of asbestos 39 is interposed between the top face of the base plate of the iron and the bottom marginal edge of the intermediate member 6.

Formed on the top member 7 and extended upwardly therefrom is a boss 40 having an upwardly projected extension 41. The boss 40 is provided with a steam passageway 42 which is open at the bottom, and the boss is provided with a valve seat 43 at the lower end of the steam passageway 42, as shown to the best advantage in Fig. 5. Associated with the boss 40 is a valve 44, which includes a valve head 44^a and a stem 44^b, said stem being mounted for vertical movement in an opening 45 formed in

the top wall of the extension 41 of the boss, and said valve head being movable into and out of contact with the valve seat 43. Associated with the valve 44 is a coil spring 46 which encircles the stem 44b and is interposed between the top face of the extension 41 of the boss and a disk 47 associated with the valve stem, said disk being forced by said coil spring into contact with a cotter pin 48 that is extended through an aperture formed through the valve stem. The coil spring 46 tends to urge the valve stem 44b upwardly so that the valve head 44a will be seated against the valve seat 43. The boss 40 has formed therein a pair of alined openings 49, which are open at their outer ends at the outer face of the boss and communicate at their inner ends with the steam passageway 42 within the boss.

Mounted on the forward, upright portion of the handle support 19 is a valve-operating means 50, which includes a member 51 mounted for rotary movement on a headed pin 52 which projects outwardly from said forward, upright portion of the handle support 19, said pin being secured to the handle support by a nut 53 associated with a reduced, screw-threaded end portion of the pin. The member 51 is provided with an arcuate flange 54 having a face 55 which is eccentrically arranged with respect to the axis of the pin 52, and the upper face of the valve stem 44b is forced into contact with said eccentric face by the coil spring 46. Also, the member 51 has fixed thereto an operating arm 56 through manipulation of which the member 51 may be rotated about the pin 52. In order to limit movement of the member 51 in one direction, a stop pin 57 is provided which extends outwardly from the handle support 19, the arm 56 being adapted to move into engagement with the stop pin when the limit of movement of the member 51 in one direction is reached. Also, in order to designate the limit of movement of the member 51 in the opposite direction, the flange 54 of said member is provided with a notch 58 into which the upper end portion of the valve stem 44b moves when the member 51 has reached the limit of its movement in said opposite direction.

In order to prevent undue splashing of water within the water reservoir 13 of the iron, I arrange in said water reservoir a plurality of substantially vertical partitions 59 which divide the water reservoir into a plurality of compartments. These partitions stop short of the top of the reservoir so that steam generated within the reservoir may move freely through the entire upper portion of the reservoir. Also, the partitions are provided with openings 59' so that water may pass from one compartment to another. The partitions are held in place by spring pressure, the partitions being introduced into the reservoir in a bent condition, as shown by full lines in Fig. 9, and thereafter being permitted to straighten out to the position shown by dotted lines in Fig. 9 where their opposite side edges will frictionally engage the opposite walls of the reservoir and thereby anchor the partitions in place. To prevent water from splashing into the open lower end of the fitting 28, a curved sheet 60 is provided, as shown in Fig. 2. The opposite side edges of the sheet 60 contact with the opposite walls of the reservoir, and the forward edge of said sheet contacts with the forward wall of said reservoir. The sheet 60 is supported by the forwardmost partition 59, said sheet 60 being provided with tongues 61 which are struck from said sheet and are bent downwardly into gripping engagement with the upper portion of said forwardmost partition.

In the use of the improved pressing iron disclosed herein, a body of water W is introduced into the water reservoir 13 of the iron through the water inlet element 14, and the electrical heating element is connected to a source of electrical energy by a suitable extension cord (not shown). With the iron so connected to a source of electrical energy, the heating element will heat the water in the reservoir and produce steam therein, and said steam will pass upwardly into the lower, open end of the fitting 28 and will move through the tube 30 and be discharged from the iron through the V-shaped space at the pressing face of the iron.

If, in the use of the improved pressing iron, steam is being discharged from the iron at the pressing face thereof and it is desired to temporarily cut off such steam discharge, the valve-operating arm 56, which is located convenient to the handle 18, is moved to the right from the position in which said arm is shown in Fig. 3 to the position in which it is shown in Fig. 4. By so moving the valve-operating arm 56 the element 51 is rotated and the eccentric face 55 thereof, moving against the top face of the stem 44b of the valve 44, will move said valve downwardly so as to displace the valve head 44a from contact with the valve seat 43. With the valve head so displaced from contact with the valve seat, steam within the reservoir 13 will not move through the rather long path through the tube 30 to the pressing face of the iron, but instead said steam will by-pass into the steam passageway 42 and will move through the transverse openings 49 and be discharged from the outer ends of said openings into the space between the top member 7 and the top wall of the shell 21. The steam so discharged from the openings 49 escapes from the space between the top member 7 and the top wall of the shell 21 through apertures 62 formed through a side wall of the shell 21 at a point adjacent to the top of the shell, said apertures being located at the side of the iron which is located away from an operator of the iron. Instead of entirely cutting off the discharge of steam at the pressing face of the iron, it may be desired to merely diminish such steam discharge, and this may be accomplished by opening the valve 44 to the proper degree, when some steam will be discharged from the openings 49 and the desired amount of steam will be discharged at the pressing face of the iron.

An important feature of the improved iron disclosed herein, as well as of the iron disclosed in my previous application, is that the lower horizontal section 30' of the tube 30 is disposed immediately above and in close proximity to the electrical heating element of the iron. As a result of this arrangement, this section of the tube is maintained in a very hot condition and therefore steam passing therethrough is superheated. Thus the steam discharged from the pressing face of the iron is dry, liquid-free steam. Also, the curved portion 30a of the tube 30 serves to trap any liquid which should find its way to the forward steam discharge end of the tube 30.

It is obvious, of course, that the electrical heating element of the iron, in addition to serving as the means for producing steam from water in the reservoir, acts also to heat the base of the iron in

the manner common to electrically heated pressing irons. Also, it is plain that the space between the top wall of the shell 21 and the upper portion of the body portion of the iron serves to insulate the handle of the iron from the heat given off by said body portion of the iron, the heat which moves into this space being discharged through the apertures 62 so as to deflect said heat from the handle.

I claim:

1. A steaming and pressing iron including a base having a steam-discharging aperture, a hollow body portion providing a reservoir adapted to receive a body of water, a shell embracing a portion of said body portion in such manner that a space is provided between the top of said body portion and the top wall of said shell, heating means for producing steam from said body of water within said reservoir, a steam-conducting pipe for conducting steam from said reservoir to the steam-discharging aperture of said base, a portion of said steam-conducting pipe being disposed in the space between the top of said body portion and the top wall of said shell, and the remainder of said steam-conducting pipe being enclosed within other portions of the iron structure, a steam by-pass leading from said reservoir to said space between the top of the body portion and the top wall of said shell, and valve means for controlling passage of steam through said steam by-pass.

2. A steaming and pressing iron including a base having a steam-discharging aperture, a hollow body portion providing a reservoir adapted to receive a body of water, a shell embracing a portion of said body portion in spaced relation with respect thereto, heating means for producing steam from said body of water within said reservoir, a steam-conducting pipe for conducting steam from said reservoir to the steam-discharging aperture of said base, said steam-conducting pipe being in communication with said reservoir and being interposed throughout a portion of its length between said body portion and said shell, a steam by-pass leading from said reservoir to the space between the top of said body portion and the top wall of said shell, and valve means for controlling passage of steam through said steam by-pass, said shell being apertured to provide for escape of steam from the space between the top of said body portion and the top wall of said shell.

FRED A. MILLER.