Oct. 15, 1940. L. V. ECKSTEIN 2,218,323

ELECTRIC STEAMING IRON

Filed Aug. 9, 1939

Fig. 1.

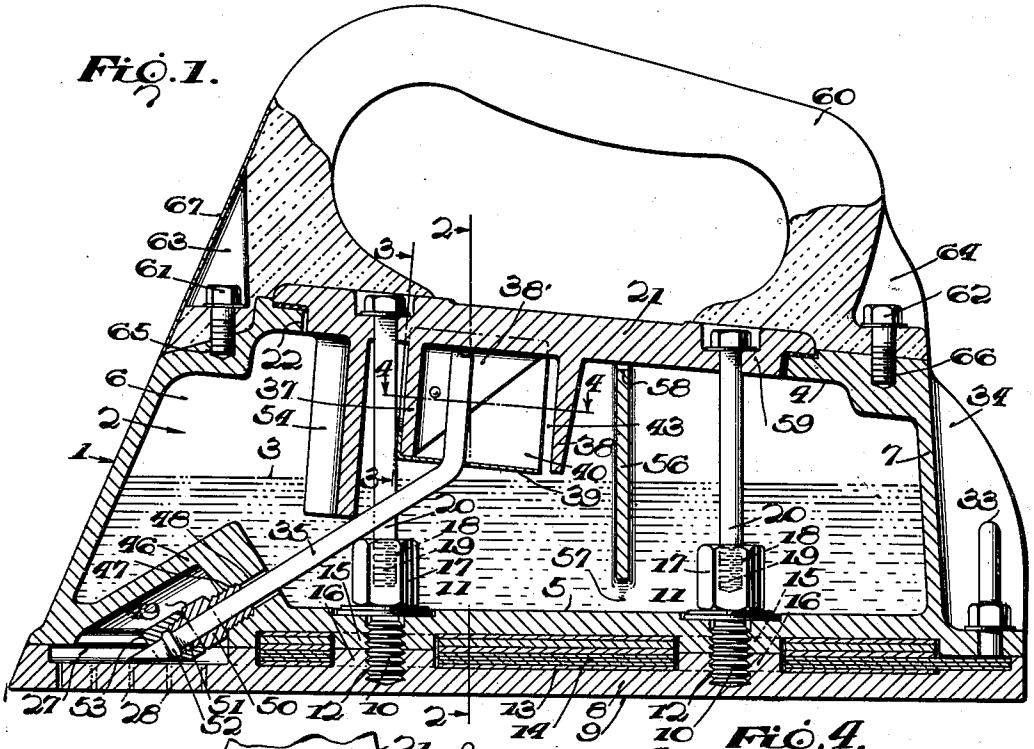


Fig. 2.

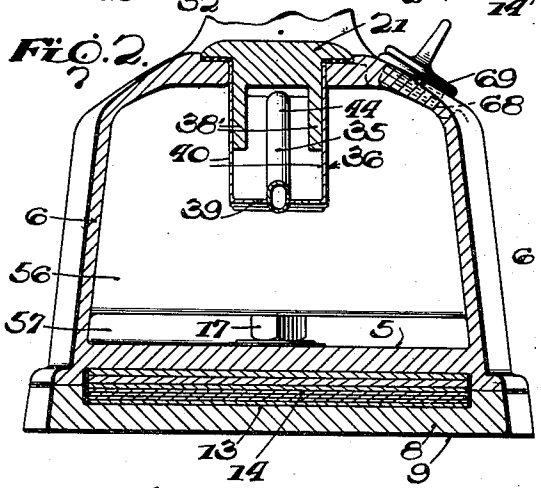


Fig. 3.

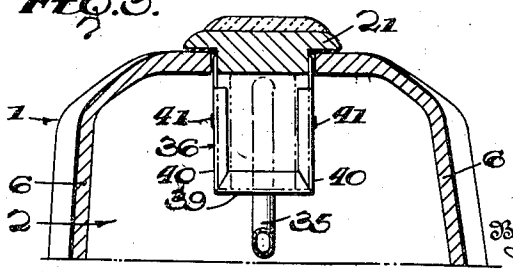


Fig. 4.

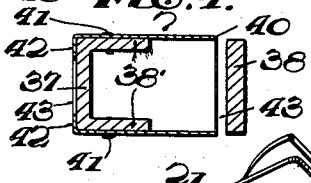


Fig. 5.

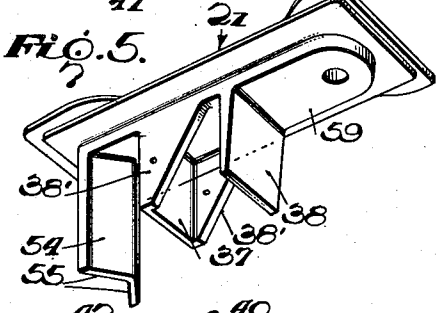
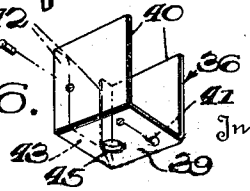


Fig. 6.



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2,218,323

UNITED STATES PATENT OFFICE

2,218,323

ELECTRIC STEAMING IRON

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Application August 9, 1939, Serial No. 289,251

8 Claims. (Cl. 38—77)

This invention relates to electric steaming irons and the present application is a continuation in part of an application filed by me on or about June 5, 1939, Serial No. 277,510.

An object of the present invention is to improve and simplify the construction of electric steaming irons and materially reduce the cost of manufacture thereof, and at the same time increase the strength, durability and length of life of such irons without impairing the efficiency thereof.

A further object of the invention is to reduce the amount of mateiral used in the manufacture of electric steaming irons and the amount of labor required in such manufacture and thereby materially reduce the manufacturing cost of such irons.

Another object of the invention is to provide an electric steaming iron which will be simple and efficient and practically foolproof in operation and which will not burn out or be otherwise rendered inoperative should the iron be left unattended with the current on and no water in the reservoir, whereby the necessity of rebuilding irons rendered inoperative by reason of such neglect and improper operation thereof will be avoided.

Other objects of the invention are to shield effectively the inlet end of the pipe which conducts steam from the water reservoir in the iron to the pressing surface thereof, and to locate such steam pipe wholly within the main body of the iron in contradistinction to the extension of a portion of such pipe into a steam dome or chamber projecting exteriorly on the main body as has been done heretofore; and to enable steam to be taken directly from the water reservoir and yet prevent water from entering the steam pipe even should the iron be moved rapidly back and forth in a longitudinal direction or even sidewise with a straight or circular motion, as may be desirable or necessary when ironing certain garments or fabrics.

A further object of the invention is to insure a uniform flow of properly conditioned steam free of drops of water directly to the garment or other fabrics being ironed to avoid undue wetting of a garment or other article, and to enable such articles to be ironed as rapidly as desired without requiring any pre-dampening of the articles to condition the same for ironing.

Another object of the invention is to shield the inlet end of the steam pipe by means of a casing located interiorly of the hollow body and having walls arranged to receive said inlet end of the steam pipe and having walls arranged to prevent water from splashing into the inlet end of the steam pipe.

Another object of the invention is to enable the aforesaid objects to be accomplished without employing the anti-splash rebound baffle of the aforesaid application by housing the inlet end of the steam pipe within a box-like casing depending from the detachable cover plate of the aforesaid application, and adapted to be readily introduced into the body of the iron in proper association with the inlet end of the steam pipe when the detachable cover plate is placed in position to cover the opening in the top wall of the hollow body, said box-like casing being also readily removable without disturbing the steam pipe when the detachable cover plate is removed.

It is still further desired to provide an electric steaming iron including a hollow body constituting a water reservoir in which a hollow casing is disposed at the upper portion of the reservoir below the top of the latter and having its bottom wall disposed above the normal water level of the reservoir and constituting a steam chamber and having side and rear walls spaced from the side and rear walls of the reservoir to provide for steam spaces between the side walls and the rear wall of the steam chamber casing and the side walls and rear wall of the reservoir, the steam chamber being provided with an inlet to receive steam from the steam space of the reservoir, and a steam pipe arranged within the front portion of the reservoir and having its inlet end extending upwardly through the bottom wall of the said steam chamber and terminating adjacent the top of the latter with the opposite end of the steam pipe connecting with the steam outlet of the pressing surface.

With the above and other objects in view, the invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawing and pointed out in the claims hereto appended, it being understood that various changes in the form, proportions and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

Figure 1 is a central longitudinal sectional view of an electric steaming iron constructed in accordance with this invention.

Fig. 2 is a transverse sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a detail sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a detail horizontal sectional view taken on the line 4—4 of Fig. 1, the pipe being removed.

Fig. 5 is a detail perspective view of the detachable cover plate with the portion of the box-like casing removed.

Fig. 6 is a detail perspective view of the stamped portion of the box-like casing.

In the accompanying drawing in which is illustrated the preferred embodiment of the invention, the electric steaming iron comprises in its construction a hollow body or casing 1 having the conventional form of an iron body and consisting in the present instance of a single casting of aluminum or other suitable material, and providing an interior water compartment or reservoir 2 which is designed to contain a quantity of water to be converted into steam, the preferred level of the water being indicated at 3 in Fig. 1 of the drawing.

The top and bottom walls 4 and 5 and the side and rear walls 6 and 7 of the hollow body are formed integral with one another, thereby eliminating the packing and the fastening means which are necessary when the bottom of the body is constructed separate from the walls thereof and is detachably secured to the latter. Also by forming the body as a single casting, the iron is rendered practically foolproof and will not burn out or become inoperative should it be left with the current on and unattended and without any water in the reservoir. This will practically eliminate the necessity of rebuilding electric steaming irons which, due to the aforesaid neglect, become leaky or otherwise inoperative.

The steaming iron is provided at the bottom with a shoe or sole plate 8 consisting of a gray iron casting coated, plated or otherwise rendered rustproof, but any other suitable heat retaining material, such as cast steel, may be employed in the construction of the shoe, which affords the lower or pressing surface 9 of the iron.

The shoe conforms to the configuration of the hollow body which fits snugly against the upper face of the shoe at the marginal edges thereof and is secured to the same by bolts 10 extending through openings 11 in the bottom of the hollow body 1 and engaging threaded openings 12 in the shoe. The openings 12 of the shoe extend downwardly from the upper surface of the shoe and terminate short of the pressing surface thereof. Both the lower face of the bottom wall 5 of the body 1 and the upper face of the shoe 8 are correspondingly recessed to provide an intervening chamber 13 for the reception of an electric heating element 14 which is adapted to convert the water within the reservoir into steam and to heat the shoe or sole plate 8.

The lower face of the bottom wall 5 and the upper face of the shoe 8 are provided with annular bosses 15 and 16 which have ground contacting surfaces to form a water-tight fitting surrounding the bolts 10. The bolts 10 are provided with enlarged heads 17 having threaded sockets 18 for the reception of the lower threaded ends 19 of screws or bolts 20 which pierce a cover plate 21 and secure the same over an opening 22 in the top wall 4 of the hollow body of the iron.

Washers 23 are interposed between the heads 17 of the bolts 10 and the upper face of the bottom wall 5 of the hollow body, and when the bolts 10 are screwed tightly home, a water-tight joint or connection is provided so that there is no liability of leakage of any water from the reservoir into the compartment 13 which contains the heating element 14.

The bolts or screws 20 are provided at their upper ends with heads 24 and washers 25 are interposed between the heads 24 of the screws or bolts 20 and the upper face of the cover plate 21 to form a water-tight connection or joint. Also a packing 26 of suitable material is interposed between the marginal portions of the cover plate 21 and the top wall 4 of the body of the iron to prevent leakage of water or steam from the reservoir or water compartment.

The electric heating element or unit 14 which may be of any preferred construction, is preferably constructed as shown and described in the aforesaid application and it conforms generally to the configuration of the base 8. The heating unit receiving compartment 5 formed by recessing the base of the lower face of the hollow body 1 terminates short of the front end of the iron.

The lower face of the bottom wall 5 and the upper face of the shoe 8 are recessed at the front end of the iron to provide a tapering steam receiving chamber 27 of approximately triangular form provided in its bottom wall with perforations 28 leading to the pressing surface of the shoe of the iron for the discharge of steam at the pressing surface for dampening clothes and other fabrics being ironed.

Fixed terminals 33 of the electric heating unit extend through the rear portion of the bottom of the hollow body 1 beyond the water reservoir or compartment and are located in a recess 34 formed in the exterior of the rear end of the body 1, as clearly illustrated in Fig. 1 of the drawing.

Steam is conducted directly from the upper portion of the reservoir or water compartment by means of an inclined steam pipe 35 which extends upwardly and rearwardly from the front portion of the bottom wall of the hollow body or casing to within a short distance, approximately one-sixteenth of an inch, of the detachable cover plate 21, which is provided with a depending box-like casing which houses the upper inlet end of the steam pipe.

The box-like casing, which prevents water from being splashed into the open inlet end of the steam pipe, may be conveniently constructed by applying a sheet metal member 36 to the depending shield shown and described in the aforesaid application, and composed of front and rear baffles or walls 37 and 38 formed integral with and depending from the detachable cover plate 21. The front depending wall 37 which is provided with substantially triangular side portions 38, provides convenient means for securing the sheet metal member 36 in position.

The sheet metal member 36 is stamped or otherwise formed from a single piece of sheet metal or other suitable material and it is composed of a horizontal bottom wall 39 and vertical side walls 40 secured to the triangular side portions of the front wall 37 by "Parker Kalon" screws or other suitable fastening devices 41. The side and bottom walls are provided at the front of the member 36 with inwardly extending marginal flanges 42 and 43 which fit snugly against the front face of the depending wall or portion 37 of the casing which provides a chamber to receive the upper end of the steam pipe and which shields the same from the water within the reservoir and prevents such water from splashing into the inlet end of the steam pipe. Instead of applying the sheet metal member 36 to the baffle structure of the aforesaid applica-

tion, any other form of casing may be employed for protecting or shielding the inlet end of the steam pipe.

The cover plate forms a top wall of the hollow casing which is substantially box-shaped and which protects the inlet end of the steam pipe at all sides thereof.

The edges of the side and bottom walls of the sheet metal member 36 are spaced from the rear wall or portion 40 to provide a narrow opening 43 which extends down the sides of the casing and across the bottom thereof to permit any water entering the steam pipe protecting casing to drain quickly therefrom.

The upper portion 44 of the steam pipe is arranged vertically and extends through an opening 45 in the bottom wall of the hollow steam pipe protecting casing. The steam pipe protecting casing which is carried as a unit by the detachable cover plate 21 is of a size to pass readily through the opening in the top wall of the body of the iron and the vertical upper portion of the steam pipe is arranged in proper position so that when the detachable cover plate is placed on the body of the iron the upper end of the steam pipe will pass through the opening in the bottom of the hollow casing and will when the parts are assembled, be located closely adjacent the lower face of the cover plate, sufficient clearance being provided to permit steam to pass directly from the water reservoir into the steam pipe and through the same to the pressing surface of the iron.

By shielding the upper inlet end of the steam pipe within the depending hollow casing, steam may be taken direct from the water reservoir and conducted to the pressing surface of the iron without any liability of drops of water being contained within the steam discharged upon a garment or other fabric being ironed and any steam having an excess of moisture will be properly conditioned before it is discharged through the perforations 28 at the lower pressing surface of the iron.

The bottom wall of the hollow body or casing is provided at the steam receiving chamber 27 with a boss or enlargement 46 having a substantially cylindrical bore or opening 47 which is arranged at an inclination. The upper portion of the bore or opening 47 is tapered and threaded to receive a tapered threaded portion 48 of a tubular coupling member 49 having an intermediate polygonal wrench receiving portion 50 and a lower cylindrical exteriorly threaded portion 51.

The lower portion of the steam pipe 35 extends through the tubular member 49 and projects downwardly beyond the lower end thereof and is provided on its exterior with a rounded sleeve 52 which is placed on the lower end of the steam pipe after the same has been passed through the tubular coupling member.

The sleeve 52 fits against the lower end of the tubular coupling member and is engaged by an interiorly threaded clamping member 53.

The interiorly threaded clamping member 53 is screwed on the lower cylindrical exteriorly threaded portion of the coupling member 49 and when the parts are assembled and screwed tightly together the coupling forms a steam and water-tight joint between the steam pipe and the bottom wall of the water reservoir so that there will be no liability of any water leaking through the coupling into the steam receiving chamber 27. The form of the coupling and the construction and arrangement of the steam pipe affords greater ease in assembling these parts and eliminates all danger of leakage.

In order to further protect the upper end of the steam pipe and prevent the water from splashing into the narrow opening of the hollow casing which shields the upper end of the steam pipe, the iron is equipped with a relatively narrow front depending baffle 54 cast integral with and extending downwardly from the front end of the detachable cover plate 21. The front depending baffle 54 is approximately V-shaped in cross section and is provided with forwardly diverging side portions 55 forming a transversely rearwardly tapered pocket or cavity to receive, divide and break down the splash at the front end of the iron.

While the front depending baffle 54 is preferably a part of the aluminum casting constituting the cover plate 21, it may be fixedly mounted within the iron in any other desired manner.

When the iron is in use it is moved forwardly and the water within the reservoir follows the contour of the iron and moves upwardly at the front end thereof and in returning from the front end of the reservoir is caused to come in contact with the front baffle 54. The baffle 54, in dividing the rearwardly flowing water and in breaking down the splash, causes the water to flow downwardly towards the base of the iron and the water is not splashed directly from the front end of the iron against the hollow casing which protects the upper end of the steam pipe.

The relatively long transversely tapered front surface of the front baffle 54 checks and blocks the water as the same starts to flow rearwardly from the front end of the iron and thereby materially lessens turbulence of the water. The splashing of the water within the hollow body due to moving the iron backward and forward is reduced by means of a transverse baffle 56 that, in this instance, is formed integral with the side walls of the hollow body although it could be carried by the cover plate as are the front baffle and the hollow casing.

In any event, the baffle 56 is spaced from the bottom wall to provide a relatively large opening or passageway 57 between the lower edge of the baffle 57 and the bottom wall 5 to provide a passageway for water, and in this instance, it is also spaced from the top wall of the hollow body 1 to provide a relatively small passageway or opening 58 for the passage of steam.

The transverse baffle 56 is located intermediate of the ends of the body 1 slightly in rear of the hollow casing which shields the inlet end of the steam pipe, and the top space or opening 58 will permit free passage of steam from the space in rear of the transverse baffle 56 to the space in front of said baffle 56 and the relatively large opening 57 will permit water to pass freely into the space in rear of the transverse baffle 56 should the iron be set down upon its heel or rear end. This will prevent any accidental flooding of the hollow casing which protects the inlet end of the steam pipe as the space in rear of the hollow casing will be ample to take care of the water within the body 1 when the same is supplied with the proper amount of water indicated by the water level 3 in Fig. 1 of the drawing.

The cover plate 21 is provided at its lower face with an enlargement or boss 59 which snugly fits the opening 22 in the top wall 4 of the hollow body and is provided with a firm structure adapted to prevent any lateral or longitudinal movement of the cover plate on the top wall 4.

The iron is provided with a handle 60 of conventional form and of Bakelite or other suitable material secured to the top wall 4 of the body 1 by a front bolt 61 and by a rear bolt 62 arranged in recesses 63 and 64 of the front and rear portions of the handle and engaging threaded sockets 65 and 66 in the top wall which is preferably thickened at the said sockets. The front recess 63 is preferably covered by a name plate 67 suitably secured to the front portion of the handle.

The hollow body is provided with a filling orifice 68 which is normally closed by a screw plug 69 or other suitable closure. The water chamber or reservoir is partially filled with water preferably to approximately the level indicated at 3 in Fig. 1 of the drawing.

The steam generated by the heating of the water is taken directly from the upper portion of the water reservoir and passes through the upper inlet end of the steam pipe and downwardly through the steam pipe into the steam chamber 27 and is discharged at the pressing surface of the iron through the perforations 28.

The steam thus taken directly from the water reservoir is properly conditioned for ironing garments and other fabrics and the hollow depending casing which shields the inlet end of the steam pipe prevents any water from splashing into the open upper inlet end of the steam pipe and getting in advance of steam and being discharged through the perforations 28 of the shield.

What is claimed is

1. An electric steaming iron including a hollow body constituting a water reservoir and having a pressing surface and provided in its top with an opening, a cover plate for closing said opening, a hollow casing constituting a steam chamber depending from the cover plate through said opening into the reservoir and including side walls and a bottom wall arranged above the normal level of the water in the reservoir, and a steam pipe located within the reservoir and at its upper end extending through the bottom wall of said casing to a point adjacent the top thereof, said steam chamber casing having means remote from the inlet end of the steam pipe to permit the passage of steam from the reservoir into the steam chamber to the inlet end of the steam pipe and for permitting water to drain from the interior of the steam chamber casing, the lower end of the steam pipe leading to the pressing surface of the iron.

2. An electric steaming iron including a hollow body constituting a water reservoir and provided with a lower pressing surface and having an opening in its top, a cover plate for closing said opening, a hollow casing constituting a steam chamber of a size to pass through said opening and depending from the cover plate and including side walls and an inclined bottom wall arranged above the normal level of the water in the reservoir, and a steam pipe located within the reservoir and at its upper end extending through the bottom wall of said casing, said casing having means to permit passage of steam from the reservoir into the steam chamber casing to the inlet end of the steam pipe, the inclined bottom of the steam casing permitting water to drain from the interior of the steam chamber casing back into the reservoir, the lower end of the steam pipe leading to the pressing surface of the iron.

3. An iron of the character described including a hollow body provided with a lower pressing surface and forming a water reservoir, said body being also provided in its top with an opening, a cover plate closing said opening, a steam pipe located within the reservoir for conducting steam directly therefrom to the pressing surface, said steam pipe having its inlet end located above the normal level of the water within the reservoir, and a hollow casing of substantially box-like form depending from and carried by the cover plate and being of a size to pass through the top opening in the hollow body and located wholly above the normal level of the water in the reservoir, said hollow casing having a bottom wall provided with an opening through which the steam pipe passes and provided at a point remote from the inlet end of the steam pipe with means for permitting steam to pass from the reservoir to the steam pipe and for permitting water to drain from the interior of the casing.

4. An iron of the character described including a hollow body provided with a lower pressing surface and having a water reservoir and provided in its top with an opening, a cover plate closing said opening, a steam pipe located within the reservoir for conducting steam directly therefrom to the pressing surface, said steam pipe having its inlet end located above the normal water level in the reservoir and a hollow casing depending from the cover plate and receiving the inlet end of the steam pipe and comprising front and rear walls formed integral with and depending from the cover plate, and a member having bottom and side walls and rigidly connected with said front wall and substantially closing the space between the front and rear walls at the bottom and sides of the casing.

5. An iron of the character described including a hollow body provided with a lower pressing surface and having a water reservoir and provided in its top with an opening, a cover plate closing said opening, a steam pipe located within the reservoir for conducting steam directly therefrom to the pressing surface, said steam pipe having its inlet end located above the normal water level in the reservoir and a hollow casing depending from the cover plate and receiving the inlet end of the steam pipe and comprising front and rear walls formed integral with and depending from the cover plate, and a member having bottom and side walls and rigidly connected with said front wall and substantially closing the space between the front and rear walls at the bottom and sides of the casing, said member being slightly spaced from said rear wall to provide a narrow opening at the bottom and sides of the casing at a point remote from the inlet end of the steam pipe.

6. An electric steaming iron including a hollow body constituting a water reservoir and having a pressing surface provided with a steam outlet at the forward end of the iron, a hollow casing including side walls and a bottom wall constituting a steam chamber arranged at the upper portion of the reservoir below the top of the latter and having its bottom wall disposed above the normal water level of the reservoir and having the rear and side walls thereof spaced from the rear and side walls of the reservoir, leaving steam spaces between the side and rear walls of the steam chamber casing and the side and rear walls of the reservoir, the steam chamber casing having a steam inlet therein, means for heating the water in the reservoir to generate steam therein, and a steam pipe confined wholly within the front portion of the reservoir and having its inlet end extending upwardly through the bottom wall of the steam chamber casing and terminating adjacent the top of the latter and having its op-

posite end connecting with said steam outlet of the pressing surface.

7. An electric steaming iron including a hollow body constituting a water reservoir, a shoe plate secured to the bottom of said hollow body, a relatively small steam chamber formed between the body and the shoe plate at the forward end of the iron and having an outlet leading to the pressing surface of the shoe plate, a second steam chamber including side walls and a bottom wall arranged at the upper portion of the reservoir and confined therein below the top of the latter and above the normal water level of the reservoir and having the rear and side walls thereof spaced from the rear and side walls of the reservoir, leaving steam spaces between the side and rear walls of the steam chamber and the side and rear walls of the reservoir, said second mentioned steam chamber having a steam inlet therein, means for heating the water in the reservoir to generate steam therein, and a steam pipe confined within the reservoir at the front end thereof and at its upper end extending upwardly through the bottom wall of the second mentioned steam chamber with its upper steam inlet end disposed above the bottom of the latter and having its lower end communicating with the first mentioned steam chamber.

8. An electric steaming iron including a hollow body constituting a water reservoir and having a pressing surface and provided in its top with an opening, a cover plate for closing said opening, a hollow casing constituting a steam chamber depending from the cover plate and insertable through said opening into the reservoir and including side walls and a bottom wall arranged above the normal level of the water in the reservoir, a steam pipe located within the reservoir and at its upper end extending through the bottom wall of the casing and having its upper inlet end located within said hollow casing, said hollow casing having means remote from the inlet end of the steam pipe to permit the passage of steam from the reservoir into the steam chamber to the inlet end of the steam pipe, the lower end of the steam pipe leading to the pressing surface of the iron, and a front baffle depending from the cover plate and located in advance of the hollow casing and arranged to protect the same from the front splash of water due to movements of the iron in use.

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