Feb. 25, 1941. L. V. ECKSTEIN 2,233,048

ELECTRIC STEAMING IRON

Filed June 30, 1939

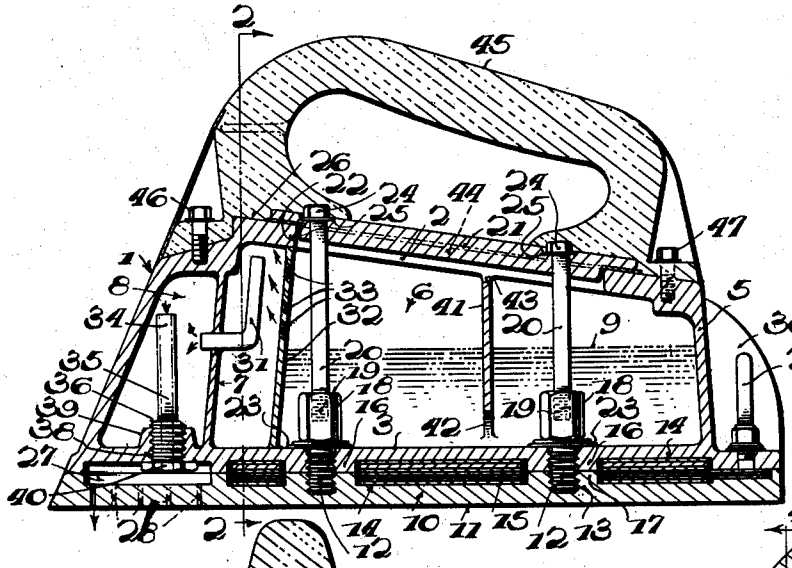


Fig. 1.

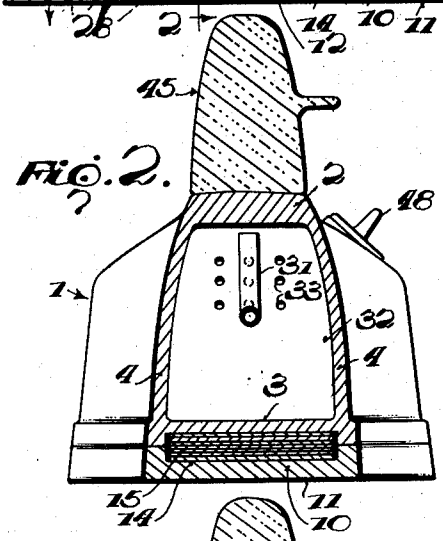


Fig. 2.

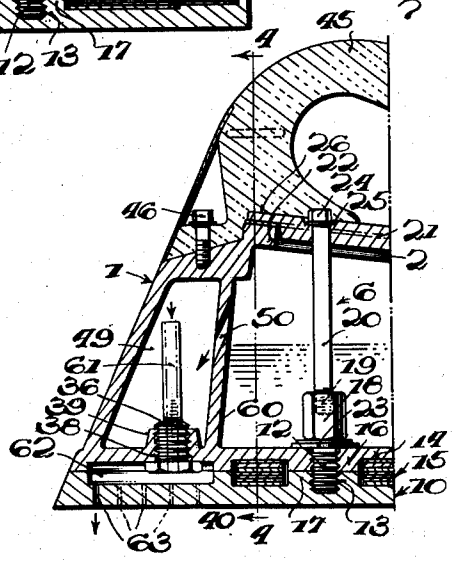


Fig. 3.

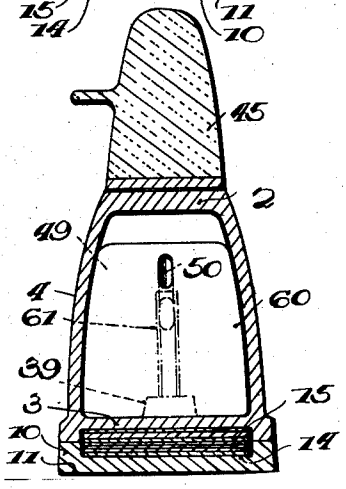


Fig. 4.

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2,233,048

ELECTRIC STEAMING IRON

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Application June 30, 1939, Serial No. 282,290

2 Claims. (Cl. 38—77)

The invention relates to a pressing iron.

An object of the present invention is to simplify and improve the construction of electric steaming irons, more especially the means for conducting steam from the water reservoir to the pressing surface of the iron and to materially reduce the cost of manufacture of the pressing iron and at the same time provide an electric steaming iron of great strength, durability, and increased length of life and efficiency.

A further object of the invention is to enable electric steaming irons to be constructed with a minimum amount of material and with few parts, whereby the amount of labor required in the manufacture of the irons and the cost of producing the same will be materially reduced.

Another object of the invention is to provide an electric steaming iron including a water reservoir and means for heating water within the same and provided at the front with a combined water trap and heat conditioning chamber adapted to enable steam to be taken substantially directly from the water reservoir without the employment of a steam dome and capable of conditioning such steam and of enabling the same to be delivered to the pressing surface of the iron devoid of water, so that only steam having the desired moisture content will be discharged from the iron.

A further object of the invention is to provide a foolproof electric steaming iron which may be set up on its heel end without liability of flooding the means for conducting steam from the water reservoir to the pressing surface of the iron and which will be adapted to afford a steady, uniform flow of properly conditioned steam directly to the garment or other fabric being ironed and capable of being operated as rapidly as desired without affecting the operation of the water trapping and steam conditioning means, so that there will be no liability of unduly wetting garments and other fabrics and which will entirely obviate the necessity of predampening fabrics to condition the same for ironing.

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 longitudinal sectional view of an electric steaming iron constructed in accordance with this invention.

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

Figure 3 is a detail longitudinal sectional view of the front portion of the electric steaming iron illustrating another form of the invention in which steam is conducted directly from the water reservoir through the partition which separates the water reservoir from the water trapping and steam conditioning chamber.

Figure 4 is a transverse sectional view taken on the line 4—4 of Figure 3.

In the accompanying drawing in which is illustrated the preferred embodiments of the invention, the electric steaming iron comprises in its construction a hollow body or casing 1 of approximately the form shown and described in application Serial No. 258,104, filed by me on or about February 23, 1939.

The hollow body consists of a single casting of aluminum or other suitable material and comprises top and bottom walls 2 and 3 and side and rear walls 4 and 5 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 constructing the body of the pressing iron of a single casting, the iron is rendered practically foolproof and will not burn out or become inoperative should it be left with the current turned on and unattended and without any water in the water reservoir 6. This will also practically eliminate the necessity of rebuilding pressing irons of this character which, due to the aforesaid neglect, have become leaky or otherwise inoperative.

The hollow body 1 is provided adjacent its front end with a transverse partition 7 dividing the interior of the hollow body into the water reservoir 6 and a front water trapping and steam conditioning chamber 8. The water compartment or reservoir is designed to receive a quantity of water to be converted into steam, the level of the water being indicated at 9 in Figure 1 of the drawing. With the exception of the means for dividing the interior of the hollow body into the water trapping and steam conditioning chamber 8 and the water reservoir or compartment 9 and the means for conducting steam from the water reservoir to the chamber 8 and to the pressing surface of the iron, the pressing iron

is constructed substantially the same as that shown and described in the aforesaid application.

The hollow body of the pressing iron is provided at the bottom with a shoe 10 preferably consisting of a gray iron casting coated or plated to render it rustproof, but any other suitable heat retaining metal, such as cast steel, may be employed in the construction of the shoe, which is provided with a lower pressing surface 11. The shoe conforms to the configuration of the body of the pressing iron which fits snugly against the upper face of the shoe at the marginal edges thereof, and is secured to the same by bolts 12 extending through the bottom of the hollow body 1 and engaging threaded recesses 13 in the shoe. Both the lower face of the bottom wall 3 of the body 1 and the upper face of the shoe are correspondingly recessed to provide an intervening chamber 14 for the reception of an electric heating element 15 which is adapted to convert the water within the reservoir into steam. The heating element 15, which is preferably constructed as shown and described in the aforesaid application, may be of any desired construction. The lower face of the bottom wall 3 of the hollow body and the upper face of the shoe 10 are provided with annular bosses 16 and 17 which have ground contacting surfaces to form a water tight fitting around the bolts 12.

The bolts 12 are provided with enlarged heads 18 having threaded sockets 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 2 of the hollow body of the pressing iron. Washers 23 are interposed between the heads 18 of the bolts 12 and the upper face of the bottom wall 3 of the hollow body, and, when the bolts are screwed tightly home, a water-tight joint or connection is provided, so that there is no liability of any leakage of water from the reservoir into the compartment 14 which contains the heating unit 15.

The bolts 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 2 of the body of the pressing iron to prevent leakage of water from the reservoir. The electric heating unit 15 as shown and described in the aforesaid application conforms generally to the configuration of the base 10 and the heating unit receiving compartment 14 terminates short of the front end of the pressing iron and the lower face of the bottom wall 3 and the upper face of the shoe 10 are recessed at the front end of the pressing iron to provide a tapering steam receiving chamber 27 provided in its bottom wall with perforations 28 leading to the pressing surface of the shoe of the pressing iron for the discharge of steam at the pressing surface for dampening clothes and other fabrics being ironed.

The fixed terminals 29 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 within a recess 30 formed at the exterior of the rear end of the body 1, as clearly illustrated in Figure 1 of the drawing.

Steam is conducted substantially directly from the upper portion of the reservoir to the water trapping and steam conditioning chamber 8 by an approximately L-shaped pipe 31 extending horizontally through the partition 7 and vertically in rear of the partition and terminating adjacent the top wall of the hollow body, as clearly illustrated in Figures 1 and 2 of the drawing. The pipe 31 permits steam from the water reservoir to pass through it into the water trapping and steam conditioning chamber, and, should any water be carried by the steam into the said chamber 8, it will drop by gravity into the lower portion thereof and be converted by the heat of the hollow body into steam properly conditioned for discharge from the pressing surface of the shoe of the pressing iron.

In order to prevent water from splashing against the pipe 31, the hollow body is provided with a transverse baffle 32 extending entirely across the hollow body and from the top to the bottom thereof and provided in its upper portion above the water level with a plurality of holes 33 for the passage of steam. The baffle will shield the pipe 31 and prevent water from splashing into the same and comparatively little water, if any, will enter the pipe and pass into the water trapping and steam conditioning chamber and such water will be converted into properly conditioned steam in the chamber 8. Any water splashing through the holes 33 in the baffle 32 and not entering the upper end of pipe 31 will be trapped between the partition 7 and the baffle 32 below the holes 33 in the baffle 32 and be converted into steam for passage through the pipe 31 to the steam and conditioning chamber 8. The baffle 32, which is constructed separate from the hollow body 1, may be secured within the same in any suitable manner, such as brazing, soldering, pressure fitting, and the like.

Steam is conducted directly from the upper portion of the water trapping and steam conditioning chamber 8 to the steam chamber 27 by means of a steam pipe 34 having a relatively small bore and extending upwardly from the front portion of the bottom wall of the hollow body and connected at its lower end 35 by a suitable coupling 36 with a threaded opening 38 in the top wall of the steam chamber 27. The top wall of the steam chamber 27 is enlarged around the threaded opening 38 by a boss 39. The coupling 36 consists of an exteriorly threaded sleeve sweated on the lower end 35 of the steam pipe 34, but it may be secured to the steam pipe in any other desired manner. The coupling sleeve 36 is provided at its lower end with a polygonal wrench receiving flange 40 which fits tightly against the lower face of the top wall of the steam chamber 27. The steam pipe 34 may be readily inserted through the opening 38 in the bottom of the steam conditioning chamber 8.

The splashing of water within the hollow body due to the moving of the pressing iron backward and forward is reduced by means of a transverse baffle 41 formed integral with the side walls of the hollow body and spaced from the bottom to provide a relatively large opening or passageway 42 between the lower edge of the baffle 41 and the bottom wall 3 to permit water to pass freely below the partition 41. Also the top wall of the partition is spaced from the top wall 2 of the body to provide a relatively small passageway or opening 43 for the passage of steam.

The transverse baffle 41, which is located intermediate of the ends of the reservoir 6, will permit free passage of steam from the space in

rear of the transverse baffle 41 to the space in front of said baffle 41, and the relatively large opening 42 at the bottom of the baffle 41 will permit water to pass freely beneath the baffle. Should the pressing iron be set upon its heel or rear end, the water will pass freely into the space in rear of the transverse baffle 41, and, as the means for conducting steam from the water reservoir to the pressing surface of the iron is located at the front end of the pressing iron, there will be no liability of such means being flooded when the iron is set upon its heel or rear end. When the iron is moved forwardly in the operation of ironing garments or other fabrics, the water within it will splash rearwardly against the front of the baffle 41 and, when the pressing iron is moved in the opposite direction, the baffle 41 will reduce the splash and the baffle 41 will shield the pipe 31 from the splash. Also the pressing iron may be moved rapidly sidewise and any splashing of the water within it due to such sidewise movement will be prevented from entering the pipe 31 and steam may be taken substantially directly from the water reservoir without providing the usual steam dome for preventing water from entering the pipe for conducting steam to the pressing surface of the iron.

Also the particular arrangement of the steam pipes 31 and 34 and the protecting partition 7 and the baffles 32 and 41 reduce to a minimum the amount of material necessary for or employed in the manufacture of electric steaming irons and the amount of work required in the manufacture of the irons is materially reduced, thereby greatly lessening the cost of manufacturing the pressing iron.

The cover plate 21 is provided at its lower face with an enlargement 44 which fits substantially snugly within the opening 22 in the top wall 2 of the hollow body 1, thereby providing a firm structure adapted to prevent any lateral or longitudinal movement of the cover plate on the top wall 2.

The pressing iron is provided with a handle 45 of conventional form and of "Bakelite" or other suitable material secured to the top wall 2 of the body 1 by front and rear bolts 46 and 47 arranged as shown and described in the aforesaid application. The hollow body is provided with a filling orifice which is normally closed by a screw plug 48 or other suitable closure.

The water reservoir is partially filled with water preferably to approximately the level indicated at 9 in Figure 1 of the drawing. The steam generated by the heating of the water is taken from the upper portion of the water reservoir and passes through the pipe 31 into the water trapping and steam conditioning chamber 8 where any water is vaporized and converted into steam of the proper condition for discharge from the pressing surface of the iron. The conditioned steam passes through the steam pipe 34 into the steam chamber 27 and is discharged at the pressing surface of the iron through the perforations 28.

In Figures 3 and 4 is illustrated another and simpler form of the invention in which steam is taken directly from the upper portion of the water reservoir and is passed into the water trapping and steam conditioning chamber 49 through an inclined steam passage 50 extending downwardly and forwardly from the upper portion of the partition 60, so that any water carried by the steam into the chamber 49 will fall by gravity into the lower portion thereof and be vaporized before passing through the steam pipe 61 into the steam chamber 62 for discharge from the perforations 63 leading to the pressing surface of the pressing iron.

With the exception of the steam passage 50 and the omission of a baffle 32 illustrated in Figures 1 and 2 of the drawings, the pressing iron illustrated in the modified form of the invention shown in Figures 3 and 4 of the drawing is of the same construction as that heretofore described, and further description and illustration thereof are deemed unnecessary. Any number of the inclined steam passages 50 may be provided in the partition 60 and the downward and forward inclination of the steam passage 50 will prevent water from splashing directly through the partition into the chamber 49.

What is claimed is:

1. A self-contained electric steaming iron including a hollow body consisting of a shell having top, bottom and side walls formed integral with one another, a pressing shoe secured to the bottom of said body and having a pressing surface, the body being provided at the extreme front end with an interior transverse partition extending entirely across the shell from top to bottom thereof and forming with the front and side walls of the body a vertically disposed narrow water trapping and steam conditioning chamber extending transversely entirely across the front end of the iron and located in advance of the water reservoir and below the top wall of the shell and having means located below the top wall of the body and adjacent said top wall and providing communication with the steam space of the reservoir above the normal water line of the same, a second steam chamber formed between the bottom of said body and said shoe and confined immediately below said water trapping and steam conditioning chamber and having outlets thereat leading through the pressing surface of the shoe, the pressing surface of the shoe throughout its area being imperforate save for said outlets leading from said second steam chamber, a steam conducting pipe confined within the front water trapping and steam conditioning chamber and extending downwardly from the upper portion of the same and communicating with said steam chamber, and an electric heater disposed between the hollow body and the shoe for generating steam in the water reservoir.

2. A self-contained steaming iron including a hollow body consisting of a shell forming a water reservoir and having top, bottom and side walls formed integral with one another, a pressing shoe having a pressing surface and secured to the bottom of said body, the latter being provided at the extreme front end thereof with an interior transverse partition extending entirely across the iron from the bottom to the top of the shell and forming with the front and side walls of the body a vertically disposed narrow water trapping steam conditioning chamber extending entirely across the front end of the iron and located in advance of the water reservoir and below the top wall of the shell, a transverse baffle located within the hollow body and extending entirely across the same and from the top to the bottom of said body and spaced rearwardly from the transverse partition to form an interspace between it and said partition and provided in its upper portion with apertures establishing communication between said interspace and the

steam space of the reservoir above the normal water line in the reservoir, said baffle being imperforate from said normal water line to the bottom of the hollow body, a relatively short steam conducting pipe located wholly within the upper portion of said interspace and extending through said partition and communicating with the water trapping and steam conditioning chamber, said pipe extending upwardly from said point of communication with said chamber and terminating in an open upper end located below and adjacent the top wall of the shell, and a steam pipe confined wholly within the water trapping and steam conditioning chamber and extending upwardly from the bottom of the said chamber and communicating at its lower end with the pressing surface of the shoe and having an open upper end located above the lower end of the relatively short pipe.

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