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ELECTRIC STEAM IRON

Filed April 3, 1939

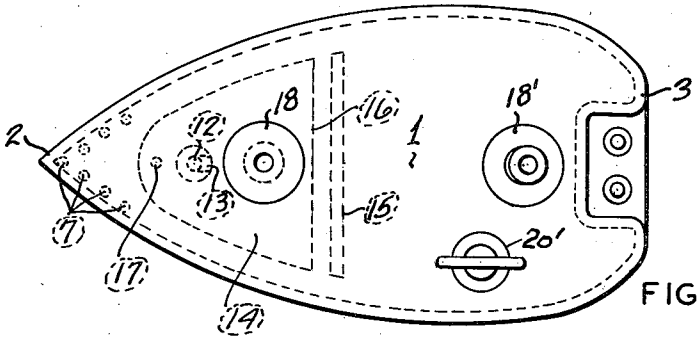


FIG. 1.

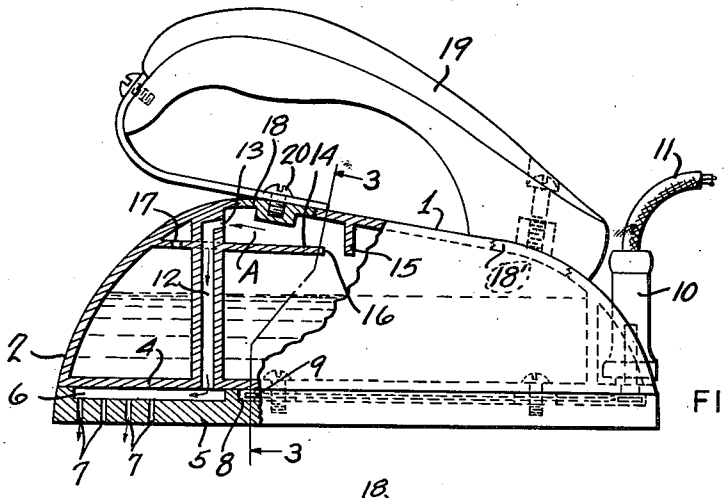


FIG. 2.

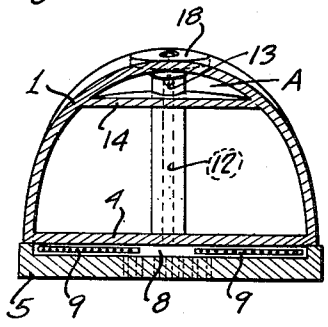


FIG. 3.

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ELECTRIC STEAM IRON

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7 Claims. (Cl. 38—77)

This invention relates to certain new and useful improvements in electric steaming irons, the peculiarities of which are hereinafter fully described and claimed.

More specifically my invention relates to means for supplying steam to the outlets in the sole or pressing plate of an electric steaming iron from water contained therein and converted into steam by a self-contained electric heating element without a surplus of water being delivered with the steam upon the cloth being ironed.

The main objects of my invention are to provide means first, for obstructing the passage of water into the mouth of a passage communicating with the steam outlets in the sole plate; second, for breaking the tendency of the steam entering said mouth to suck into said passage any water that is temporarily adjacent the mouth; third, to guard against splashing the water being heated into undesired proximity to said mouth of the communicating passage during the normal operating movement of the electric steaming iron; fourth, for obtaining absolutely tight walls in said communicating passage from its mouth to the steam chamber feeding said steam outlets; fifth, for obtaining the above objects by means that are wholly contained within the shell of the electric steaming iron; and sixth, for cheapening the cost of production of such a device over those of the prior art.

In the accompanying drawing in which like reference numerals indicate corresponding parts:

Fig. 1 represents a plan view of the iron exemplifying my invention having the handle removed for clearness;

Fig. 2, a side elevation of my iron having part of the shell broken away showing a sectional elevation on the vertical longitudinal plane; and

Fig. 3, a transverse sectional elevation on the line 3—3 of Fig. 2 without the handle.

Referring to the drawing, the numeral 1 represents the curved top and side walls of a shell having a pointed front end 2 and a square rear end 3 having a base plate 4 to which is fitted a sole plate 5 forming a smoothing-iron of the usual triangular or other suitable shape. The front end of the sole plate has a recess forming a steam discharge chamber 6 for receiving steam from the water contained in the shell above the base plate 4, and provided with perforations 7 arranged near the point of the sole plate as indicated in Figs. 1 and 2.

A rearward recess 8 in the sole plate below the base 4, is provided with a suitable electric heating element 9 connected to a source of electricity by the usual plug 10 and lead wires 11, Fig. 2. The water contained in the shell above the base plate 4 is thus heated and converted into steam which is delivered to the steam discharge chamber 6 and finds exit through the outlets 7. It is desirable that no surplus water be delivered with the steam upon the cloth being ironed, and due to the agitation of the water in the usual forward and backward movements of the iron in operation. Neither should such water find its way to the steam outlets when the iron is temporarily stood up on its square end 3 while the cloth is being adjusted. The means by which I overcome such objections will now be described.

The steam discharge chamber 6 in the front pointed end of the iron, is fed with steam through a vertically disposed tubular passage 12, the upper end in which the mouth 13 is located being disposed adjacent the top of the shell and preferably directed towards the rear as shown in Figs. 2 and 3. To prevent water being splashed into the mouth 13 of the tubular passage or steam conducting means 12, I provide a shelf 14 forming with the walls of the shell and a baffle or wall 15 a steam feed chamber A. The baffle or wall 15 extends entirely across the reservoir at the upper portion thereof and is shown as spaced slightly from the rear end of the shelf 14 which likewise extends entirely across the upper portion of the reservoir and this spacing relation between the baffle or wall 15 and the shelf 14 is one manner or means of providing for an inlet of steam into the steam feed chamber from the steam space of the water reservoir. The shelf 14 is preferably inclined downward and rearward to drain off any water that may splash into said chamber by the usual backward and forward movement of the iron. As additional protection to said chamber, I provide the aforesaid vertically disposed baffle or wall 15, depending from the top of the shell and having its lower edge substantially in the same plane as the lower surface of the shelf 14, so that a splash of water from either direction, will be deflected from the space between said baffle or wall 15 and the rear edge 16 of said shelf.

The steam passes into said steam feed chamber continuously during the conversion of the contained water into steam and is delivered through the said passage 12 to the outlets in the sole plate before mentioned, and during such movement of the steam it has a tendency to suck into the mouth 13 any adjacently splashed water within said chamber, due apparently to a partial vacuum in said chamber. I have discovered by many experiments that such tendency of the wa-

ter to enter with the steam in said passage 12 is obviated by providing a hole 17 through the shelf in the portion between the tubular passage and the extreme front end of said shelf. In my experiments I have used such a hole of various sizes, but have discovered that its efficiency is greatest when this hole 17 is one-eighth of an inch diameter in the proportions illustrating a shelf approximately 3" long and of triangular shape as shown. Without such a hole the chamber above as just described, is not efficient in keeping from the mouth of the tubular passage the water that is frequently splashed into the chamber in the usual operation of the iron. Furthermore, the location of this hole 17 in front of the inlet to the tubular passage substantially as shown in the drawing, is important for the successful operation of guarding the splash water from entering the passage with the steam.

As shown in Fig. 2, the tubular passage 12 has its inlet 13 directed towards the rear, meeting the incoming currents of steam to said chamber. It is also preferred to locate said entrance 13 above the shelf and close to the top of the shell with which it has an integral connection in the preferred construction. The bottom end of the stem forming such passage is likewise integral with the base 4 and thus a tight joint is formed and leakage is prevented; the integral construction at the top and bottom of the tube also makes an integral connection with the shelf 14 when the tubular stem, the shelf 14 and the shell 1, are cast all in one piece as is my preferred construction and practice in making my device.

The sole plate 5 is connected to the base 4 and makes steam tight joint therewith and is maintained in position by screws through the base and into the sole plate as indicated in Fig. 2.

A handle 19 suitably curved and inclined as shown in Fig. 2, is preferably fastened at its ends to screw plugs 18—18' by screws 20. These plugs can be readily unscrewed from the top of the shell by loosening the handle fastening screws and rotating the plugs for removal from the top when so desired.

In casting the stem integrally as above described, it is preferred to cast the stem solid and drill the passage therein from below before the sole plate is secured in position, and to drill the lateral inlet 13 forming the mouth of the passage by inserting the operating drill through the adjacent opening above described.

I do not confine myself to the exact construction herein shown except by the appended claims.

It is evident that the means I have described for obstructing the passage of surplus water to the steam chamber 6, are wholly contained within the shell and have no projecting attachments for such purpose that are outside of the chamber and thus liable to fracture or dislocation as in the prior art.

I have found by such integral casting construction as above described and illustrated in the drawing, that the manufacture of this type of device is considerably reduced in expense as well as improved in operation over the irons of the prior art.

An opening in the shell provided with a screw plug 20' is used for filling the iron to the proper water level as indicated in the drawing.

Having thus fully described my invention what I claim as new and desire to protect by Letters Patent, is:

1. An iron of the character described including a hollow body having a lower pressing surface and forming a water reservoir and provided with a chamber located wholly within the reservoir at the upper portion thereof and closed at the front and having top and side walls formed by the top and sides of the body, a bottom wall connecting the side walls and spaced from the top wall of the body and a transverse rear wall extending downwardly from the top of the body at a point intermediate of the ends thereof to a point adjacent to the rear end of said bottom wall and spaced therefrom to form a rear steam inlet opening, means for heating water in the reservoir to generate steam therein, and means for conducting steam from said chamber to the pressing surface of the iron.

2. An iron of the character described including a hollow body having a lower pressing surface and forming a water reservoir and provided with a chamber located wholly within the reservoir at the upper portion thereof and closed at the front and having top and side walls formed by the top and sides of the body, a bottom wall connecting the side walls and spaced from the top wall of the body and a transverse rear wall extending downwardly from the top of the body at a point intermediate of the ends thereof to a point adjacent to the rear end of said bottom wall and spaced therefrom to form a rear steam inlet opening, means for heating water in the reservoir to generate steam therein, and means for conducting steam from said chamber to the pressing surface of the iron, the bottom wall of said chamber being provided in advance of the steam conducting means with an opening providing communication between the reservoir and the interior of said chamber and cooperating with the rear steam inlet opening to balance the pressure in the chamber with the pressure in the reservoir to prevent water from being siphoned through the steam conducting means to the pressing surface of the iron.

3. An iron of the class described including a hollow body consisting of a single piece and having a lower pressing surface operatively associated therewith and forming a water reservoir and provided in its upper portion with a chamber located wholly within the body and closed at the front and having top and side walls formed by the top and sides of the body, a bottom wall formed integral with the body and extending entirely across the body and rearwardly from the front end of the same and a transverse rear wall depending from the top of the body at a point intermediate the ends thereof and extending entirely across the body and formed integral with the top and sides of the body and terminating at its lower edge, at a point adjacent the rear end of the bottom wall and spaced therefrom to provide a rear steam inlet opening, means for heating water in the reservoir to generate steam therein, a tubular stem formed integral with the body and extending from the bottom thereof through the bottom wall of said chamber to the top of the body and having a passage opening rearwardly at its upper end within said chamber and communicating at the lower end with the pressing surface for conducting steam thereto.

4. An iron of the class described including a hollow body consisting of a single piece and having a lower pressing surface operatively associated therewith and forming a water reservoir and provided in its upper portion with a chamber located wholly within the body and closed at the front and having top and side walls formed by the top and sides of the body, a bottom wall

formed integral with the body and extending entirely across the body and rearwardly from the front end of the same and a transverse rear wall depending from the top of the body at a point intermediate the ends thereof and extending entirely across the body and formed integral with the top and sides of the body and terminating at its lower edge, at a point adjacent the rear end of the bottom wall and spaced therefrom to provide a rear steam inlet opening, means for heating water in the reservoir to generate steam therein, a tubular stem formed integral with the body and extending from the bottom thereof through the bottom wall of said chamber to the top of the body and having a passage opening rearwardly at its upper end within said chamber and communicating at the lower end with the pressing surface for conducting steam thereto, the bottom wall of said chamber being slightly inclined downwardly and rearwardly to shed water and being provided in advance of said stem with an opening providing communication between the reservoir and the interior of said chamber and cooperating with the rear steam inlet opening to balance the pressure in the reservoir to prevent water from being siphoned through the hollow stem to the pressing surface of the iron.

5. An electric steaming iron including a shell forming a water reservoir and having a base plate, a sole plate secured to said base plate, a steam discharge chamber arranged between said plates at the forward end of the iron and having a steam discharge outlet through the sole plate to the pressing surface thereof, a steam feed chamber of a length less than the length of the water reservoir and located at the top of the latter in the upper portion of the steam space thereof and at the front end of the reservoir and including a bottom wall and a rear wall, both of said walls extending entirely across the reservoir, said steam feed chamber having a steam feed inlet, the bottom wall of the steam chamber being disposed above the normal water level of the reservoir and the rear wall of the chamber being disposed between the ends of the reservoir and thereby spaced from the rear wall of the reservoir forming a shoulder between the ends of the reservoir and cooperating with the side and rear walls of the reservoir to provide a steam storage space at the rear upper portion of the reservoir behind the steam feed chamber and which has unobstructed, free, downwardly opening communication with the lower portion of the steam space of the reservoir, means for heating water in the reservoir to generate steam therein, and a pipe confined within the front portion of the reservoir and extending through the bottom of the steam feed chamber and having its inlet end disposed in said steam feed chamber near the front end of the latter and spaced longitudinally of the iron from said steam inlet of the steam feed chamber and having its outlet end communicating with the steam discharge chamber above the bottom of the latter to conduct steam from the steam feed chamber to the steam discharge chamber for discharge of steam through the outlet of the latter.

6. An electric steaming iron including a shell forming a water reservoir and having a base plate and side and rear walls, a sole plate secured to the base plate, said plates having a steam discharge chamber therebetween at the forward end of the iron, said chamber having a steam discharge outlet through the sole plate to the pressing surface thereof, a steam feed chamber arranged at the top of the reservoir in the forward regions of the iron including a bottom wall and a rear wall defining therebetween an opening leading from the feed chamber to the reservoir above the normal water level of the latter, said bottom wall terminating adjacent the medial transverse plane of the iron, said rear wall being located adjacent said plane and cooperating with the rear and side walls of the reservoir to provide a steam storage space having heat exchange relationship by direct conduction with the steam feed chamber through the rear wall of the latter, said steam storage space having an unobstructed, free, downwardly opening communication with the steam storage space above the water level of the reservoir, means for heating water in the reservoir to generate steam therein, and a pipe having one end thereof projecting through the bottom wall of the steam feed chamber adjacent the forward region thereof and having its other end connected with and communicating with the steam discharge chamber, said pipe extending through the reservoir from top to bottom.

7. An electric steaming iron including a water reservoir, heating means, a pressing surface having a steam outlet, a steam feed chamber located within the water reservoir below the top of the latter and at the upper portion of the reservoir including a bottom wall formed integral with the front and side walls of the reservoir and extending entirely across the upper portion of the reservoir and a rear wall extending entirely across the reservoir, the bottom and rear walls of the steam feed chamber terminating short of the rear wall of the reservoir, providing a steam storage space in the upper portion of the reservoir behind the steam feed chamber, said steam feed chamber having a steam inlet therein, means leading from said steam outlet in the pressing surface upwardly through the reservoir and through the bottom wall of the steam feed chamber to the upper portion of the latter to conduct steam from the steam feed chamber to said steam outlet, the bottom of the steam feed chamber having an opening therein in the forward end thereof in advance of said steam conducting means, providing communication between the reservoir and the steam feed chamber and cooperating with said steam inlet to the steam feed chamber, to balance the pressure in the steam feed chamber with the pressure in the reservoir, so as to prevent water being siphoned through the steam conducting means to the pressing surface of the iron.

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