July 3, 1928.

1,676,098

R. LEPRESTRE

STEAMING IRON

Filed March 15, 1928

3 Sheets-Sheet 1

Fig. 1.

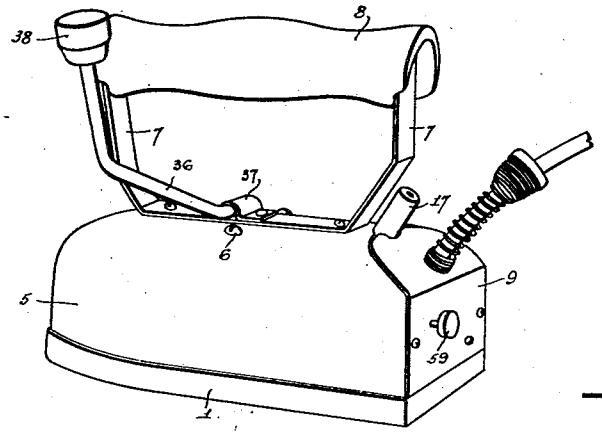


Fig. 12.

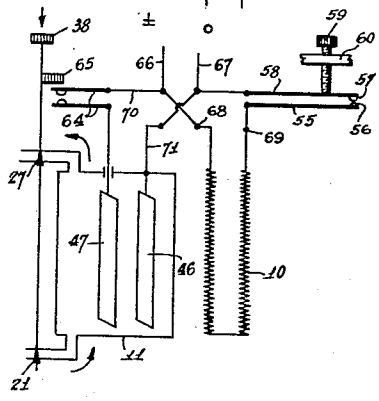


Fig. 2.

WITNESSES

Frank L. Ferguson

A. W. Fooks

INVENTOR

René Leprestre.

BY

Munn & Co.

ATTORNEY

July 3, 1928.

1,676,098

R. LEPRESTRE

STEAMING IRON

Filed March 15, 1928

3 Sheets-Sheet 2

FIG. 3.

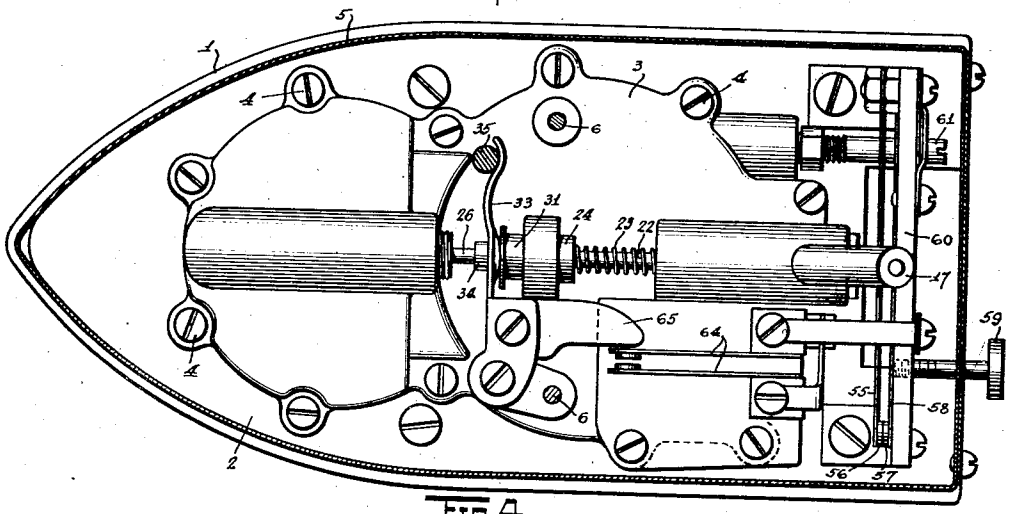


FIG. 4.

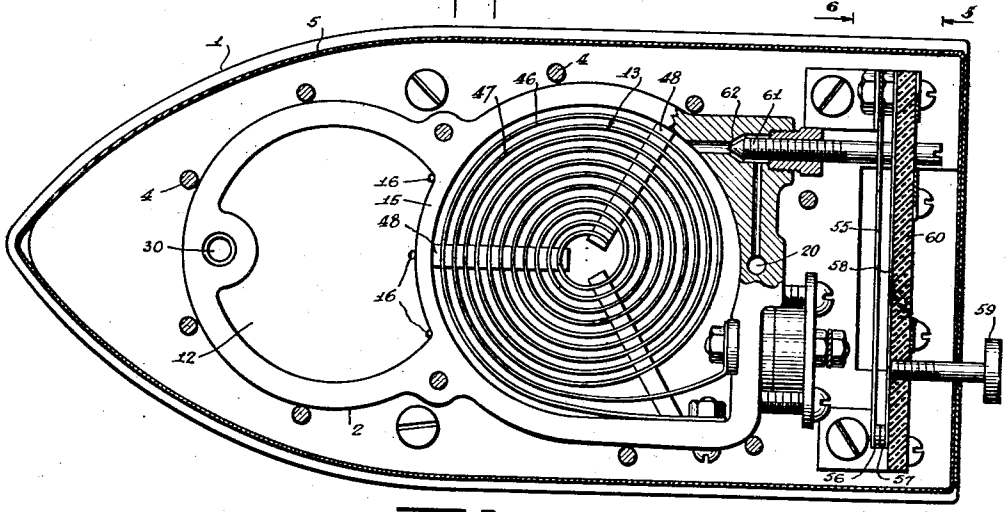
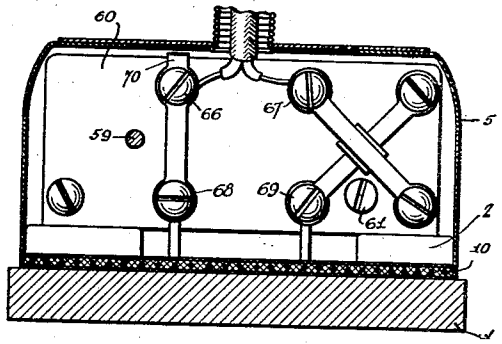


FIG. 5.



WITNESSES

Frank L. Sayers

L. W. Baker

INVENTOR

René Lepreste.

BY

Munn & Co.

ATTORNEY

July 3, 1928.

1,676,098

R. LEPRESTRE

STEAMING IRON

Filed March 15, 1928

3 Sheets-Sheet 3

Fig. 6.

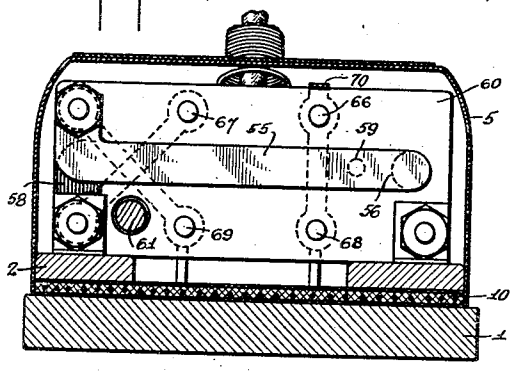


Fig. 7.

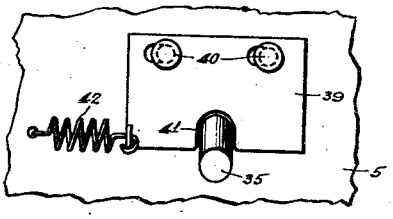


Fig. 8.

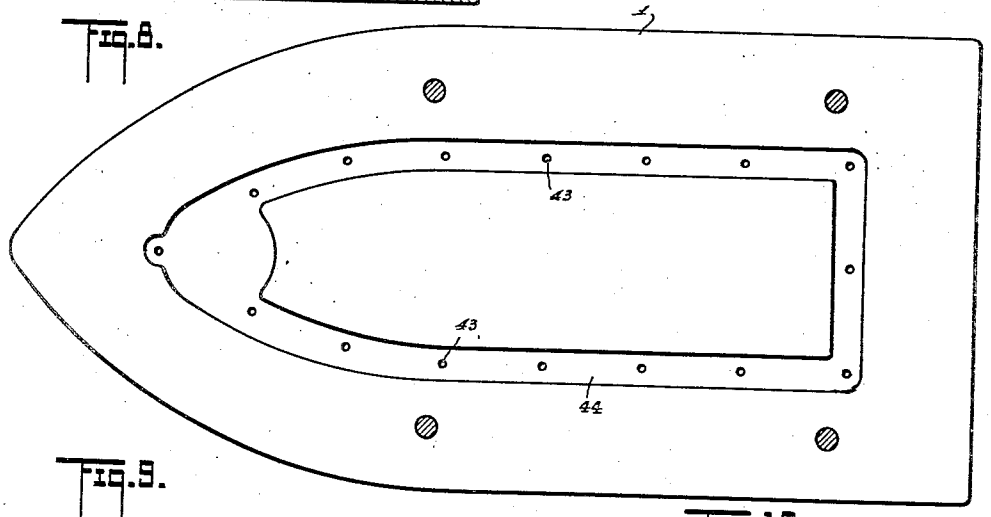


Fig. 9.

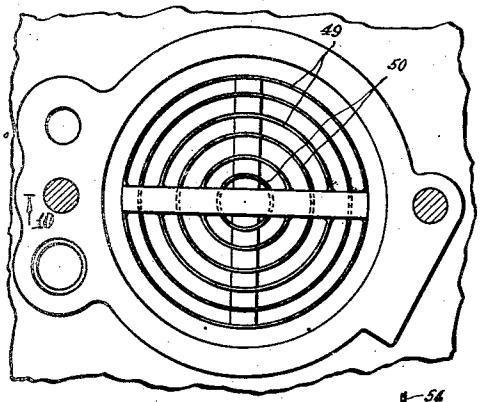


Fig. 10.

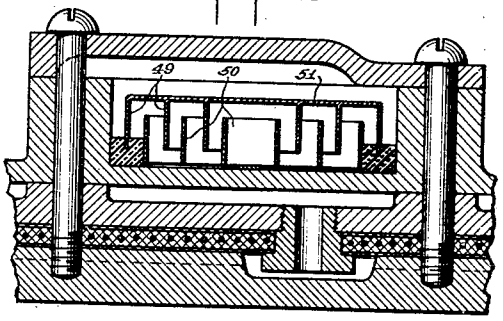
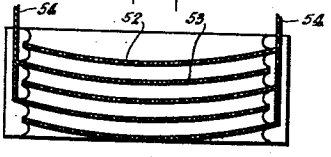


Fig. 11.



WITNESSES

Frank J. Baggaley

S. W. Foster

INVENTOR

René Leprestre

BY

Munn & Co.

ATTORNEY

Patented July 3, 1928. 1,676,098

UNITED STATES PATENT OFFICE.

RENÉ LEPRESTRE, OF NEW YORK, N. Y.

STEAMING IRON.

Application filed March 15, 1928. Serial No. 261,870.

This invention relates to steaming irons.

An object of the invention is to provide an iron of this character which can be made of any size and weight desired and which includes a sole plate having a heating element therefor and a steam generator having an independent electric heating element, in combination with a single operating device which controls the inlet of water to the steam chamber, the outlet of steam from the steam chamber through the sole plate, and also controls the opening and closing of the circuit to the electric heating element in the steam chamber.

A further object is to provide an iron of this character employing as a heating element in the steam chamber spaced electrodes in circuit with the alternating current whereby one electrode is active and the other neutral and grounded to the wall of the chamber. The current passing through the water from one electrode to the other makes the water flash into steam, so that water supplied to the steam chamber is vaporized as fast as it flows and there is no accumulation of water in the steam chamber.

A further object is to provide, in an iron of this character in connection with the steam chamber above described, a steam outlet chamber or dome which receives the steam from the steam chamber and which returns to the steam chamber any water which may splash thereover or which may be condensed so that only steam can pass through the sole plate.

My invention therefore includes a novel construction of iron as a whole, and, more specifically, an improved electric heating element, improved means for preventing escape of water, an arrangement of valves controlling the inlet of water and the outlet of steam, a separate heating element for the sole plate of the iron, means for directing an alternating current to the heating element, a thermostat controlling the operation of the sole plate heating element in accordance with the temperature of the sole plate, and a single lever or other device, preferably operated by the thumb or finger of the user of the iron, to perform simultaneously separate or distinct functions or operations, namely, to close the circuit to the heating element in the steam chamber and to open the valves admitting water to the steam chamber and permitting escape of steam through the sole plate of the iron.

With an iron of this character the sole plate may be continuously heated and the iron used for dry ironing but whenever steam is desired water may be supplied and steam generated and supplied through the sole plate of the iron by the operation of a single member preferably located adjacent to the handle of the iron.

An iron of this character has many features of construction and advantage, all of which are illustrated in the drawing and will be more fully hereinafter set forth in the specification and claims.

In the accompanying drawings—

Figure 1 is a perspective view of my improved steaming iron;

Figure 2 is a view, mainly in longitudinal section through the iron, with the handle or other portions of the iron shown in elevation;

Figure 3 is a view in longitudinal section on the line 3—3 of Figure 2;

Figure 4 is a view in longitudinal section on the line 4—4 of Figure 2;

Figure 5 is a view in transverse section on the line 5—5 of Figure 4;

Figure 6 is a view in transverse section on the line 6—6 of Figure 4;

Figure 7 is a fragmentary inverted plan view, the view being in section on the line 7—7 of Figure 2;

Figure 8 is a view in longitudinal section on the line 8—8 of Figure 2;

Figure 9 is a fragmentary plan view showing a steam chamber with a modified form of heating element therein;

Figure 10 is a view in longitudinal section showing the same heating element as in Figure 9, the view being taken in section on the line 10—10 of Figure 9;

Figure 11 is a fragmentary sectional plan view showing another modified form of heating iron;

Figure 12 illustrates a simple form of electric diagram showing how the parts of the iron are controlled.

My improved steaming iron includes a sole plate 1, a body or casting 2 above the sole plate, a separate cover 3 for the body

2, said sole plate, body and cover being separably secured together.

I of course do not limit myself to the particular manner of securing these members together, but it is desirable that the connecting means be such as to permit the parts to be separated and assembled without difficulty, and I have shown as securing means screws 4 which project through registering openings in the several members and have screw-threaded engagement with one or more of the members so as to effectually connect the parts.

The sole plate 1 is larger than the body 2 and a casing 5 encloses the body 2 and cover 3 and is removably secured to the sole plate 1. I have shown, as securing means for the casing, screws 6 for the purpose, these screws being projected through openings in the casing and screwed into the cover.

A bracket 7 is secured to the casing 5 and supports a handle 8, and the rear end of the casing 5 constitutes a separate removable plate 9 for convenience of access to the rear end of the iron.

I shall first describe the details of construction of the iron, then the construction and operation of my improved electric heater or heating element in the steam chamber, and then explain a simple form of electric circuit, such as indicated in the diagram in Figure 12, which may be employed in connection with the iron.

Between the sole plate 1 and the body 2 an electric heating element 10 is located and is adapted to heat the sole plate. The body 2 is formed in its upper face with a relatively large recess 11, constituting a steam chamber, and a smaller recess 12, constituting a steam dome or chamber.

In the steam chamber 11 my improved electric heater or heating element 13 is located and the cover 3, above referred to, forms the top closure of both of said chambers 11 and 12 and has a recess 14 therein extending over the wall 15 between said chambers, so that said recess 14 constitutes a passage for the steam over the wall 15 into chamber 12.

I would call particular attention to the fact that the bottom of the steam chamber 12 is in a higher plane than the bottom of the steam chamber 11, and that the bottom of the steam chamber 12 is inclined to a return port 16 in wall 15 to return any water from the chamber 12 to the chamber 11. To state this in another way, the bottom of chamber 12 is in a plane at least as high or higher than there will be any water level in the steam chamber, so that however violently the water may be boiled or agitated no water can remain in the steam chamber 12 but can return to chamber 11 even though it boils over the wall 15.

The cover 3 has a water inlet nipple 17 extending through the casing 5, and may be connected by a flexible hose (not shown) with any source of water supply. This nipple 17 directs the water into a chamber 18 in the rear end of cover 3, said chamber being closed at the rear end of the cover by means of a screw plug 19.

The chamber 18 is connected by a passage 20 jointly in the cover and in the body 2 so as to direct water into the steam chamber 11, and the flow of water through this passage is controlled by a valve 21 having a stem 22 with a spring 23 operatively engaging the collar 24 on the stem, normally holding the valve in closed position.

The passage 20 above referred to has a right angle bend adjacent the chamber 18 and the stem 22 is formed with longitudinal grooves 25 therein so that when the valve is partially opened the water can pass through these grooves from one part of the passage to the other, as will be readily understood.

The cover 3 forwardly thereof and in line with the stem 22 supports the stem 26 of a steam outlet valve 27, said valve 27 maintained normally closed by a coiled spring 28 engaging the same. This valve 27 has a grooved cylindrical projection 29 which seats in a cylindrical port, the latter communicating with a vertical passage 30 in the cover 3 and body 2, so that when the valve is partially opened the steam can flow through the grooved projection.

This arrangement of grooved valve stem and grooved valve projection enables the valve stems to be maintained at all times in alinement and I provide a guide sleeve 31 for the adjacent ends of the valve stems.

The sleeve 31 has longitudinal movement in a lug 32 integral with the cover 3 so that it will engage the collar 24 when moved to the rear. An arm 33 has a collar 34 pinned to the stem 26. This collar bears against the sleeve 31 so that when the collar is moved to the rear or to the right of Figure 2 it will cause both valves 21 and 27 to be opened simultaneously.

The arm 33 is engaged by a crank pin 35 on one end of a lever 36, said lever having pivotal mounting in a bracket 37 on casing 5, and at the free end of this handle a button or knob 38 is provided against the forward end of the iron handle 8 so that it is in a convenient position to be depressed by the thumb or finger to open the valve.

To the under face of the casing 5 I connect a sliding plate 39, shown in detail in Figure 7. This sliding plate 39 has slot and pin connection with the casing, as shown at 40, and has a recess 41 receiving the crank pin 35. A coiled spring 42 connects one end of the plate 39 with the casing so as to exert a pull on the plate and to assist in returning the crank pin and lever to normal position with the valves closed. Of course each valve

has its own spring, as above explained, to close the same, but the spring 42 aids these springs in maintaining the lever 36 in normal position and returning it to such position.

The steam escaping through the passage 30 above referred to escapes through perforations 43 in the sole plate 1, and these perforations may be arranged in any desired manner and may be connected by grooves or passages 44 and, in fact, it is to be distinctly understood that the invention is not limited to the particular manner in which the steam finds its outlet through the sole plate. I have shown a threaded coupling nipple 45 positioned through the heating element 10 and screwed into the passage 30 to hold the parts in coupled relation, but it is to be understood that such details are capable of variation.

Referring now to the particular electric heater or heating element 13 which I employ in the steam chamber 11, attention is particularly directed to Figures 2 and 4 of the drawings. This electric heater comprises a pair of electrodes 46 and 47, spaced apart and held in spaced relationship by grooved bars 48 of insulation of non-conducting material.

In connection with these electrodes 46 and 47 it is to be distinctly understood that I employ an alternating current so that the electrodes alternately are positive and negative and the electric current will pass from one electrode to the other in one direction and then reverse, so that water coming in the steam chamber will be quickly generated into steam.

The particular electrodes illustrated are coiled one within the other. The invention in its broadest aspect covers various shapes and forms of electrode which will accomplish the purpose. For example, in Figures 9 and 10, I illustrate a modification of heater in which circular electrodes 49 and 50 are supported and operatively connected by bars 51, respectively, but it is of course to be noted that these electrodes are spaced apart and maintained in spaced relation and are alternately positive and negative so as to accomplish the results above explained.

In Figure 11 I illustrated another modification of electric heater in which the electrodes 52 and 53 are slightly curved and perforated and arranged parallel to each other and connected at their ends by conductors or terminals 54.

I do not wish to be limited to the particular form of electrode but desire to cover broadly the idea of spaced electrodes in an iron of this type included in an alternating current circuit; and it is desirable that the electrodes be of the same metal or material so that there will be an absence of electrolysis in the operation.

In the electric circuit to the sole heating element 10 I employ a thermostat 55 in the form of a bar influenced by the temperature and carrying a contact 56 movable toward and away from a stationary contact 57.

The contact 57 may be on a bendable member 58 operated by a screw 59 projecting through the casing so that a manual adjustment may be had to cause the thermostat to open and close at the desired temperatures. This thermostat 55 and its co-operating parts are supported by a plate 60 of insulation which also supports electric conducting elements to maintain them insulated from each other.

As the iron may be used in connection with supplies of various pressures it is desirable that a valve be employed to regulate the size of the passage to the steam chamber. With this idea in view I provide a screw-threaded needle valve 61 which is in the water passage 20 above referred to and which may be moved toward and away from a seat 62 to control the flow.

It is to be understood that this valve 61, when once set in accordance with the pressure of the water, will not be disturbed, and the flow of water will be controlled entirely by the opening and closing of the valve 21.

In the electric circuit to the heater 13, I employ a pair of normally spaced electric contacts 64 which are in the form of spring tongues supported on the cover 3, and a pivoted finger 65 operated by the arm 33 is adapted to force these contacts together and close the circuit to the electric heater whenever the lever 36 is operated to open the valve.

I do not of course wish to be limited to any particular electric circuit in connection with my improved iron, but in order that the operation may be clearly understood, I illustrate in Figure 12 an electric circuit which will answer the purpose. In this figure the reference character 11 indicates more specifically the steam chamber but also indicates the metal constituting the body of the iron, and the electrodes 66 and 67 represent the lead wires included in the alternating current circuit.

The lead wire 66 is connected to one terminal 68 of the sole heating element 10, the other terminal 69 of said heating element 13 being connected to the thermostat 55. The strip or tongue 58 co-operating with the thermostat 55 is connected directly with the other lead wire 67. The lead wire 66 is connected by a wire 70 with the electrode 47, and between the ends of this wire 70 the electric switch contact members 64 are located. The electrode 46 is connected directly with the lead wire 67 by a conductor 71, and this electrode 46 is grounded on the iron body, as indicated.

The diagram (Figure 12) also indicates

diagrammatically the positions of the steam and water inlet valves 27 and 21, respectively, and the means for moving the same and closing the switch contacts 64.

The operation of the iron is as follows:

The sole plate heating element 10 is continuously in circuit when the iron is in use so that the sole plate is heated and maintained at the temperature desired entirely independent of the steam generating features of the iron. Whenever steam is desired, the operator moves the lever 36 and this operation of the lever 36 causes both the water valve 21 and the steam valve 27 to open and also functions to close the circuit to the electric heater 13 in the steam chamber 11. As the water flows into the steam chamber 11 it is instantly vaporized or steam generated therefrom, and the steam passes into the chamber or dome 12 and from thence through the sole plate of the iron. This steam dome 12 communicates with the space back of the valve 27 through the medium of a small port or passage 72 but, as above explained, I do not wish to be limited to the particular details of the castings, their arrangements and ports, etc., nor to the positions and arrangements of the valves as these are capable of various changes within the scope of the invention.

There are, however, certain features of the invention which are essential to its functioning to the maximum degree of perfection but these essentials may be enumerated as follows:

The heating element must quickly change the water into vapor or steam, and must be proof against burning out and must not function when dry.

The heating element must be operated by an alternating current in order to properly function, and, furthermore, it is extremely desirable, if not essential, that a single member shall control the opening of both water and steam valves and the closing of the circuit to the heating element in the steam chamber.

Another more or less essential of the iron is the provision of a steam dome or chamber which drains back into the steam chamber and which prevents any possibility of water passing through the iron but insures that only steam can escape.

While I have illustrated what I believe to be preferred embodiments of my invention it is obvious various changes and alterations might be made in the general form of the parts described without departing from my invention and hence I do not limit myself to the precise details set forth but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim:

1. A steaming iron having a chamber therein to which water is admitted, and an electric heater in said chamber comprising a pair of electrodes spaced apart and through which an alternating current is passed.

2. A steaming iron having a chamber therein through which water is admitted, and an electric heater in said chamber comprising a pair of electrodes spaced apart and through which an alternating current is passed, said electrodes being of the same material.

3. A steaming iron having a chamber therein to which water is admitted, and an electric heater in said chamber comprising a pair of electrodes spaced apart and through which an alternating current is passed, said electrodes comprising coils located one within the other.

4. A steaming iron, including a steam chamber, an alternating current electric heating element in the chamber subjected to direct contact with water and functioning to pass an electric current alternately from one electrode to another to heat the water.

5. A steaming iron, including a sole plate, a body on the sole plate, an electric element heating the sole plate, a steam chamber in the body, an electric heating element in the steam chamber, said steam chamber connected with perforations in the sole plate for the passage of steam through the sole plate, valves controlling the supply of water to the steam chamber and steam from the steam chamber, and a single member controlling the operation of both of said valves.

6. A steaming iron, including a sole plate, a body on the sole plate, an electric element heating the sole plate, a steam chamber in the body, an electric heating element in the steam chamber, said steam chamber connected with perforations in the sole plate for the passage of steam through the sole plate, valves controlling the supply of water to the steam chamber and steam from the steam chamber, an electric switch in circuit with the last mentioned heating element, and a lever operatively connected to said valves and to said switch whereby the movement of the lever functions to simultaneously open both of the valves and close the switch.

7. A steaming iron, including a sole plate, a body on the sole plate having a steam chamber therein, a steam dome in the body communicating with the steam chamber and draining into the steam chamber, valves controlling the flow of water to the steam chamber and the escape of the steam from the dome, and a member controlling the simultaneous operation of said valves.

8. A steaming iron, including a sole plate, a body on the sole plate having a steam chamber therein, a steam dome in the body communicating with the steam chamber and draining into the steam chamber, valves con-

trolling the flow of water to the steam chamber and the escape of steam from the dome, a member controlling the simultaneous operation of said valves, an electric heating element in said steam chamber, and means operated by said member to close the circuit to said heating element when the valves are open.

9. A steaming iron, including a sole plate, a body on the sole plate having electric steam generating means therein, and a single member controlling the flow of water to the steam generating means, the escape of steam from said chamber and the opening and closing of the circuit to the electric heater.

10. A steaming iron, including a sole plate, a body on the sole plate having electric steam generating means therein, a single member controlling the flow of water to the steam generating means, the escape of steam from said chamber and the opening and closing of the circuit to the electric heater, said member comprising a lever pivotally connected to the iron, and a knob or button on the free end of the lever in proximity to the handle of the iron.

Signed at New York in the county of New York and State of New York this 14th day of March, A. D. 1928.

RENÉ LEPRESTRE.