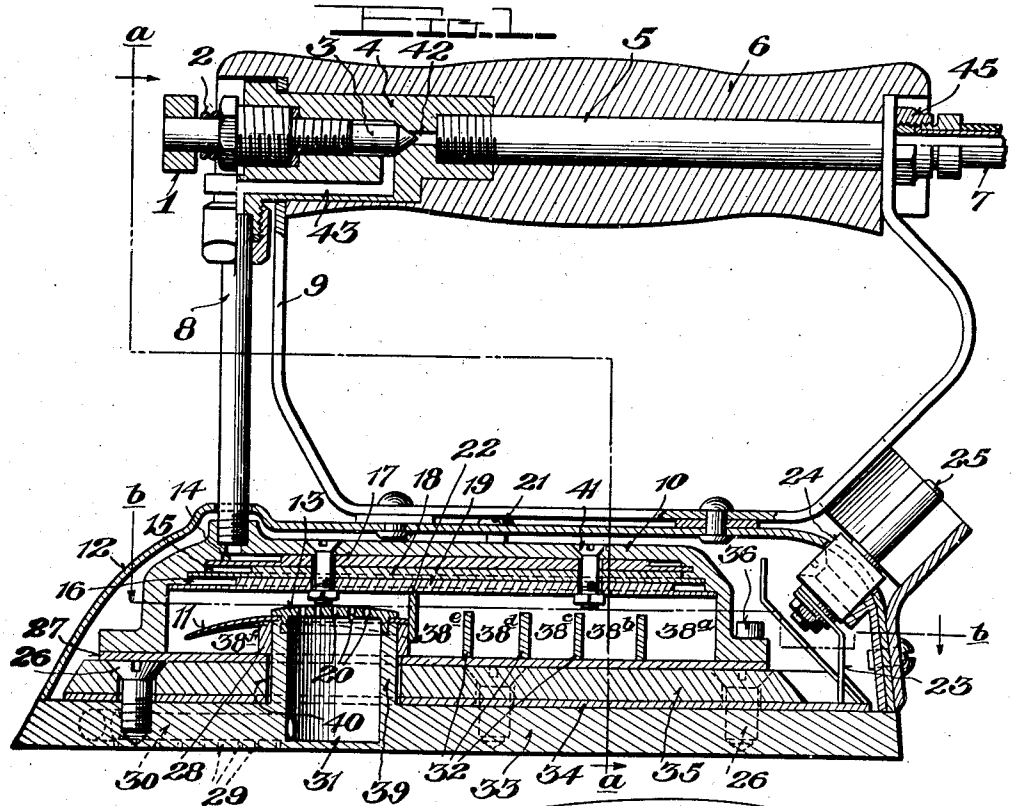
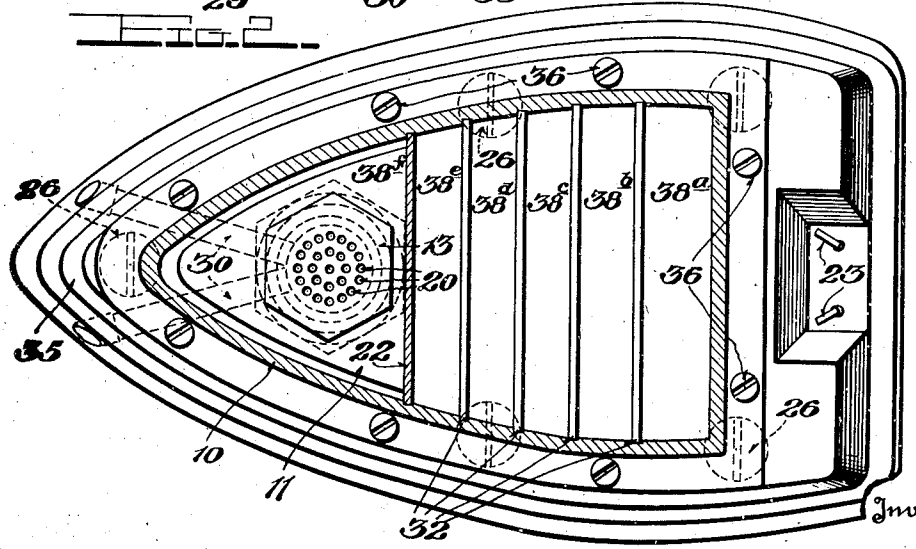
March 4, 1930. R. LEPRESTRE 1,749,639

STEAMING IRON

Filed Nov. 18, 1929 2 Sheets-Sheet 1





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STEAMING IRON

Filed Nov. 18, 1929 2 Sheets-Sheet 2

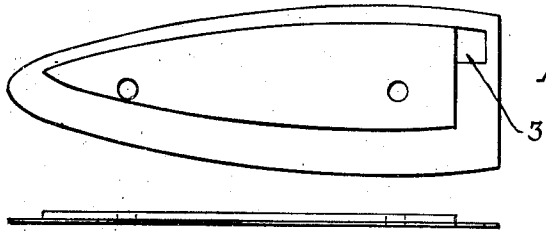


Fig. 3.

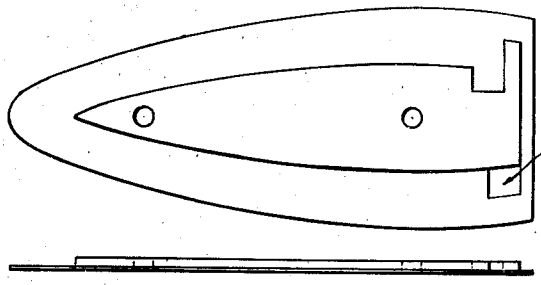


Fig. 4.

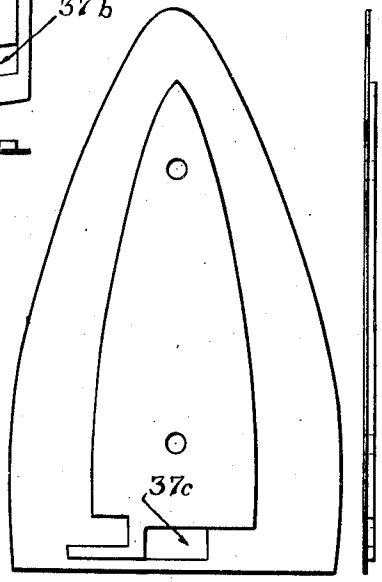


Fig. 5.

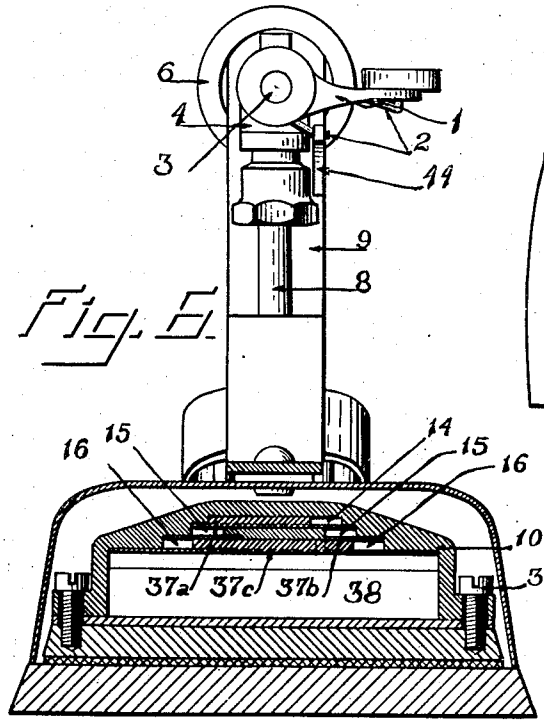


Fig. 6.

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UNITED STATES PATENT OFFICE

RENE LEPRESTRE, OF NEW YORK, N. Y.

STEAMING IRON

Application filed November 18, 1929. Serial No. 408,126.

This invention relates to steaming irons of the electrically heated type, and has for its general object to embody in an iron of this type a combination of desirable features intended to render the iron exceptionally satisfactory and efficient in use.

A primary object of the invention is to provide an iron of the type set forth whose basic principle is to utilize the otherwise wasted heat energy in all flat irons generally in use. That is to say, the present invention preheats the water to be utilized for steaming purposes, thereby insuring three important objects, viz:—a continuity of even and appropriate heat in the sole plate for proper ironing; having utilized the otherwise wasted radiated heat it insures distinctly cool upper parts; and, on account of the continuous abundant stream of steam, a complete absence of any scorching is assured.

Another object of the invention is to provide a novel arrangement of parts whereby the water supplied to the iron is effectively preheated before it enters the evaporation chamber therein, thereby to minimize the amount of heat energy required to generate steady and sufficient steam without decreasing the heat of the sole plate. Also in this connection, it is an object of the invention to provide an arrangement of parts, serving in addition to the foregoing purposes and objects of utilizing the water supply to the iron to shield the upper or handle portions of the iron from the heat in the lower or bottom portion of the iron, thereby rendering the iron always comfortable to use.

With the additional particular purpose of providing a steaming iron of extremely simple, durable construction and of low production cost, the invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the drawings wherein like characters of reference denote corresponding parts of the different views.

Figure 1 is a longitudinal section through a steaming iron constructed in accordance with the present invention.

Figure 2 is a horizontal section taken on the line *b*—*b* of Figure 1 showing the base portion of the iron with the cover removed and parts broken away to more clearly disclose the underlying structure.

Figure 3 includes a plan view and an edge view of the first preheating compartment plate, part of the preheating system showing the water channel provided with an outlet 37*a*, directing the water into the second chamber.

Figures 4 and 5 each include plan and edge views of the second and third preheating compartment plates respectively.

Figure 6 is a transverse section taken on the line *a*—*a* of Figure 1.

According to one practical embodiment of the present invention, as illustrated in the accompanying drawings, a relatively thick and heavy base is provided, the same including a so-called sole plate 33 and a pressure plate 35 connected by fastenings 26 and having therebetween an electrical heating unit 34. The said sole plate 33 is of conventional flat iron shape and has an upstanding projection or annular tube portion 39 near its forward end, leading to the final steam compartment 38*f* of a dome 11, and establishing communication between said compartment and the apertures 29 which are a series of small steam outlets in the forward part of the sole plate.

The electrical heating unit 34 may be of any suitable construction, the same preferably being relatively thin and corresponding in shape to the general shape of the sole plate 33, and consisting, for example, of a suitable resistance element embodied in insulation material, such, for example, as mica.

The pressure plate or block 35 which is superimposed on the heating element is provided with an aperture 40 for permitting the upstanding projection or annular tube 39 to pass through the same and extend into the steam chamber 38*f*. The fastenings, such as the screws 26, extend loosely through openings in the pressure plate 35 and also in the heating element 34 and are threaded into

the sole plate 33 whereby the pressure and sole plates are securely clamped together at opposite sides of the heating element. In that connection, the annular tube 39 and the circular aperture 40 constitute interengageable means between the sole and pressure plates to facilitate positioning of these elements in the assembly of the iron.

Upon the top of the pressure plate 35 is placed a flash plate or a sheet 27 of a suitable metal covering the pressure plate 35 forming the bottom of the steam chamber 38*f*. This plate 27 is firmly secured to the pressure plate and the base by means of an hexagonal threaded flange 28, which is fastened to the end of the annular tube 39.

Surmounted on the top of the plate 27 is a dome or casing 10 of a special design and of suitable metal containing the preheating channelled compartments 14, 15 and 16 and also the steam generating chamber 38, and is constructed in such a manner that after placing the preheating compartment plates 17, 18 and 19 in their respective places, they form passages or channels 14, 15 and 16, thereby causing the incoming water to get in active touch with the hot body of the shell, with the result of more economically utilizing the heat energy that under ordinary conditions would be wasted through radiation. Suitable fasteners such as screws indicated at 41 are provided to hold the preheating compartment plates 17, 18 and 19, solidly in their respective seats, insuring a rigid, durable and water tight construction. The lower section of the above said dome or casing 10 forms the steam generating chamber 38, which is specifically divided into a series of six cross sectional compartments 38*a*–*f* inclusive, as shown in Figure 1 and Figure 2. These cross sectional compartments 38*a*–*f* are formed by specifically located barriers or cross walls 32 and 22, made of suitable metal.

By reason of the foregoing construction a specifically narrow passage or channel extending substantially from end to end, as shown on Figure 1 No. 14 and also on Fig. 6 is provided between the upper part of the dome or casing 10 and the uppermost plate 17. Another passage 15 is provided between the uppermost plate 17 and the intermediate plate 18 and a third passage 16, similar to the second, is provided between the intermediate plate 18 and the lowermost plate 19. Formed through the uppermost plate 17 adjacent to the rear end of the channelled compartment 14 there is one opening as shown in 37*a* Fig. 3 and Fig. 6 affording a guiding communication between the passages 14 and 15 while formed through the intermediate plate 18 adjacent to the rear end of the second channelled compartment 15 there is one opening as shown 37*b* Fig. 4 and Fig. 6 a guiding communication between the passage 15 and the passage 16, and to provide communication between the latter mentioned passage and the steam generating chamber 38, the plate 19 is provided with one opening as shown in 37*c* Fig. 5 and Fig. 6 adjacent to the rear end of the steam generating chamber.

The passages 14, 15 and 16 are designed to conduct water from a suitable source of supply to the steam generating chamber 38 and as will be noted from the arrangement of the apertures in the plates 17, 18 and 19, water in its flow from the forward end of the passage 14 must of necessity travel first rearwardly through the passage 14 then forwardly and rearwardly through the passage 15 and finally forwardly and then rearwardly through the passage 16 in order to reach the steam generating chamber. In this way the heat in the steam generating chamber is also utilized to preheat the water being supplied to said chamber, and because of the absorption of heat by the thin films of water in the passages 14, 15 and 16, the parts of the iron disposed above the shell or casing 10 obviously are shielded from the heat of the base portion of the iron, thus insuring a comparatively cool upper surface.

Thus finally when the preheated boiling water reaches through the opening 37*c* into the rearmost compartment 38*a* of the steam generating chamber 38, it is transformed immediately into nascent steam. The nascent steam generated in the rearmost cross sectional compartment 38*a* by expansion is forced to travel above the upstanding transversely disposed walls 32, increasing its velocity when it strikes the depending wall 22, which is located inversely to the walls 32, thus causing the steam to go down, touching the surface of the bottom plate 27 of the foremost part of the steam generating chamber 38. To safeguard against any accidental water drops carried by the velocity of the steam in its travel, is a specially designed shield 11 as shown in Figure 1 and Figure 2, causing these above said accidental drops of water striking the shield 11, drops down again on plate 27 insuring complete evaporation. The design of this shield 11 is such that it increases the pressure of the outgoing steam, safeguarding against any back pressure, while the iron is in operation.

In order to secure the above said shield 11 in its proper location, a fastening metal cover 13 is provided with series of circularly located apertures leading into the steam outlet chamber 31, formed by the annular tube 39 extending from the base 33. This chamber 31 is provided with means to direct the steam to escape from the bottom of the base through small apertures 29.

In order to insure abundant steam, we deliver a sufficient continuous stream of properly preheated water into the rearmost cross sectional flash compartment 38*a*, which on ac-

count of its specific size, being unable to evaporate all the preheated delivered water, forces the water to boil and evaporate and cross the rearmost barrier 32 into the next compartment 38*b*, letting the nascent steam to escape above the walls 32 touching in its passage inevitably the ceiling of the steam generating chamber formed by the lowermost preheating compartment plate 19 and continuing its travel as above described. The boiling water carried by the steam from the rearmost compartment 38*a* is gradually decreased by being generated into steam in compartments 38*b*—*c*—*d* until it reaches 38*e* and *f* and finally escaping as above described.

The pressure plate 35, the shell or casing 10 and its associate plate 27 aforementioned are enclosed by a hood 12 and riveted or otherwise suitably secured to this hood is a substantially U-shaped bail 9 between the arms of which is mounted a handle 6. Within the rear end portion of said handle is mounted a suitable flexible connection 45 adapted to be connected with a source of water supply. Within the forward end of the handle 6 is suitably mounted a valve body 4 having a passage 42 coaxial with the handle and connected by a conduit 5 with the water supply line 7. A rotatable valve 3 cooperating with a seat in the valve body 4 is provided to control the flow of water from the passage 42 to a second passage 43 in said valve body, this second passage being connected by a tube 8 with the forward end of the passage 14 aforementioned.

A lever 1 is provided for manipulating the valve 3, this lever 1 being inclusive of a finger engaging portion disposed on the left hand side to the forward end portion of the handle 6 and the bail having suitably mounted thereon stopper 44 with which the valve opening is limited.

In order to prevent waste of energy and prevent unnecessary generating of steam while the iron is not in use, the lever 1 is provided with a spring 2, which automatically shuts off the water supply when the iron is placed on the stand.

At the rear of the hood 12 is mounted a block 24 of suitable insulating material carrying contacts 25 connected with the terminals of the heating unit 34 and adapted to have engaged therewith an electrical socket of conventional design whereby electrical current is adapted to be supplied to the heating element.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will, of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. In a steaming iron, a perforated base, a dome forming an evaporation chamber above said base, heating means in the base, and a plurality of plates in the inner top portion of the dome and cooperating with the dome and with one another to provide a plurality of superimposed narrow passages at the top of the evaporation chamber extending from side to side and substantially the full length of said chamber, means for supplying water to one end of the uppermost passage, means providing communication between the other end of the uppermost passage and the adjacent end of the next lower passage, means providing communication between the other end of the second passage and the adjacent end of the next lowermost passage, means providing communication between the other end of the last mentioned passage and the evaporation chamber, and means providing for the escape of steam from said chamber to and through the bottom of said base.

2. A steaming iron including a sole plate having steam outlet means therein, electrical heating means on the sole plate, a pressure plate overlying the electrical heating means and secured to the sole plate, a dome surmounting the pressure plate and providing a steam chamber in communication with the steam outlet means of the sole plate, water preheating means carried by the inner upper side of the dome and communicating with the steam chamber of the dome, and means for supplying water to said water preheating means.

3. A steaming iron, including in combination, a base having electrical heating means therein and steam outlet passages, a dome mounted on the base and providing a steam chamber communicating with the steam outlet passages of the base, a hood mounted on the base and covering the dome, and means in the dome forming a series of superimposed communicating water preheating passages communicating with the steam chamber of the dome.

4. A steaming iron including in combination a base having steam outlet means, electrical heating means in the base, a dome carried by the base and forming a vaporization chamber communicating with the base, a plurality of separate members nested in the top of the dome and having means forming a water passage communicating at one end with the vaporization chamber, and means for supplying water to said water passage.

5. A steaming iron, including in combination, a base comprising a sole plate and a pressure plate having electrical heating means therebetween, said sole plate having steam outlet passages, a hollow projection on the sole plate, a dome surmounting the base, a plurality of water passage forming

elements nested in the top of the dome, water supply means communicating at one end with said water passage, a vaporization chamber formed by the dome and communicating with the discharge end of said water passage, a plurality of spaced wall members in the vaporization chamber, a shield fitted around the mouth of said hollow projection in the steam chamber, and a perforated member fitted to the top of the projection and holding the shield in place.

6. A steaming iron including in combination, a base having heating means therein, a dome providing a vaporization chamber above said base, means forming a steam outlet passage in the base and communicating with the vaporization chamber, and water preheating means carried in the top of the dome, said means comprising a plurality of superimposed plates having openings therein and also having portions cooperating with the dome to provide a continuous water preheating passage in the top of the dome discharging into the vaporization chamber, and water supply means communicating with the inlet end of said passage formed by said plates.

7. A steaming iron including in combination, an iron base having steam outlet means, heating means in the base, water supply means, means arranged above and spaced from the heating means in the base for preheating the water in successive stages as it flows from said water supply means toward the heating means, a dome surmounting the base and carrying the water supply means and the preheating means and also forming a vaporization chamber, and means in the vaporization chamber including a plurality of compartments arranged between the discharge end of the water preheating means and the steam outlet means of the base for steaming the water in successive stages.

8. In a steaming iron, water supply means, a base, heating means in the base, a dome cooperating with the base to provide a vaporization chamber, steam outlet means in the base communicating with the said vaporization chamber, a plurality of stepped shoulders in the dome, a plurality of superimposed members engaging said shoulders and having means forming a continuous water circuit communicating with the water supply means and discharging into said vaporization chamber.

9. In a steaming iron, a base including a sole plate, a projection on the upper side of the sole plate and a steam outlet chamber formed within said projection, passages in the sole plate communicating with said steam outlet chamber and having openings leading to the surface thereof, a pressure plate overlying the sole plate and surrounding said projection, heating means between the sole plate and the pressure plate, a flash plate overlying the pressure plate, a dome mounted on the flash plate and having a water passageway communicating with a steam chamber, said steam chamber communicating with the steam outlet chamber formed in said projection, means for supplying water to the passageway in the dome.

10. A steaming iron, comprising in combination, a dome having a steam chamber, water supply means connected to the dome, a base including steam outlet means communicating with the steam chamber of the dome, heating means in the base, and means forming passages in the top of the dome for conveying water at progressively lower levels toward the steam chamber and releasing the same therein.

11. A steaming iron, comprising in combination, water supply means, a base including steam outlet means, heating means in the base, a dome on the base having a vaporization chamber communicating with the said steam outlet means of the base, means in said chamber providing a flash compartment, and means in the top of the dome for progressively conveying and preheating the water fed from said water supply means until it is precipitated into the flash compartment.

12. A steaming iron, comprising in combination, water supply means, a base having steam outlet means, heating means in the base, a dome having a vaporization chamber communicating with the steam outlet means and also having a flash compartment, means in the dome communicating with the water supply means for preheating the water in successive stages prior to delivery to the flash compartment, and means for further vaporizing steam from the flash compartment in successive stages prior to discharging the same through the steam outlet means.

13. A steaming iron, comprising in combination, water supply means, a base including steam outlet means, heating means in the base, a flash plate overlying the base, a dome surmounting the flash plate and forming a steam chamber including a flash compartment, said steam chamber communicating with the steam outlet means in the base, and means in the top of the dome forming a series of superimposed communicating water passages connected with the said water supply means and discharging onto the portion of the flash plate lying within the flash compartment.

14. A steaming iron, comprising in combination, a base including a perforated sole plate and a pressure plate, a dome surmounting the pressure plate, heating means in the base, means for supplying water to the top of the dome, means within the dome for preheating the water in successive stages by conducting said water from the top of the dome

toward the heating element in successive levels, means within the dome for causing steaming in successive stages, and means for conducting steam from the dome to the perforated sole plate.

15. A steaming iron, comprising in combination, a base including a perforated sole plate and a pressure plate, a heating unit between the sole plate and pressure plate, a dome surmounting the base and having a steam chamber, water supply means communicating with the top of the dome, a water preheater within the dome having channels for compelling the water to flow at predetermined progressively lower horizontal levels, thereby causing uniform preheating in successive stages, and means for conducting steam from the steam chamber of the dome to the perforated sole plate.

16. A steaming iron, comprising in combination, water supply means, a base including a sole plate having steam outlet means and a pressure plate, electrical heating means arranged between said plates, a dome surmounting the pressure plate and having a vaporization chamber communicating with said steam outlet means in the sole plate, a hood carried by the iron base and covering said dome, and water preheating means communicating with the vaporization chamber and arranged within the dome between the said vaporization chamber thereof and said hood, said water preheating means communicating with the water supply means.

17. A steaming iron, including in combination, water supply means, a base having electrical heating means therein and also having steam outlet means, a dome surmounting the base and having a steam chamber communicating with said steam outlet means, a hood carried by the base, and means associated with the dome and communicating with the water supply means and the steam chamber, said means being arranged between the steam chamber thereof and said hood to preheat the water as it is conducted from the water supply means to the steam chamber and to heat insulate the hood.

18. A steaming iron including a hollow body, a heating element within the bottom part of the body, a flash plate heated thereby, a water preheating unit arranged within the upper part of the body and discharging onto the flash plate for converting the water into steam, water supplying means, and means for conducting said steam to the ironing surface.

19. A steaming iron including water supply means, a base having steam outlet means, heating means in the base, a dome having a steam chamber communicating with the said steam outlet means, and water circulating means carried by the dome, said water circulating means communicating with the water supply means and conducting water in a descending stream toward and into said steam chamber.

In testimony whereof I hereunto affix my signature.

RENE LEPRESTRE.