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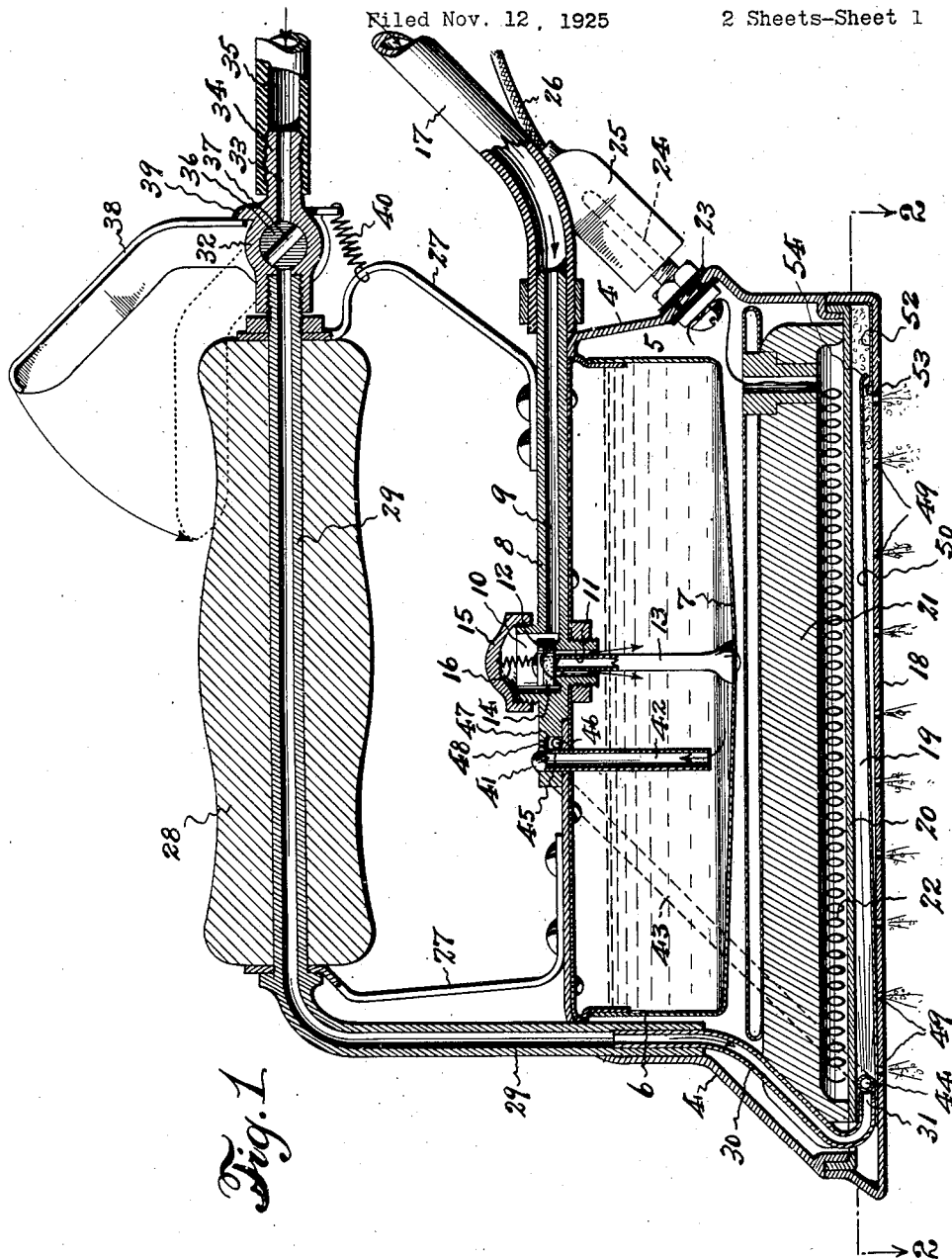
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ELECTRIC SADIROON

Filed Nov. 12, 1925

2 Sheets-Sheet 1



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Fig. 2.

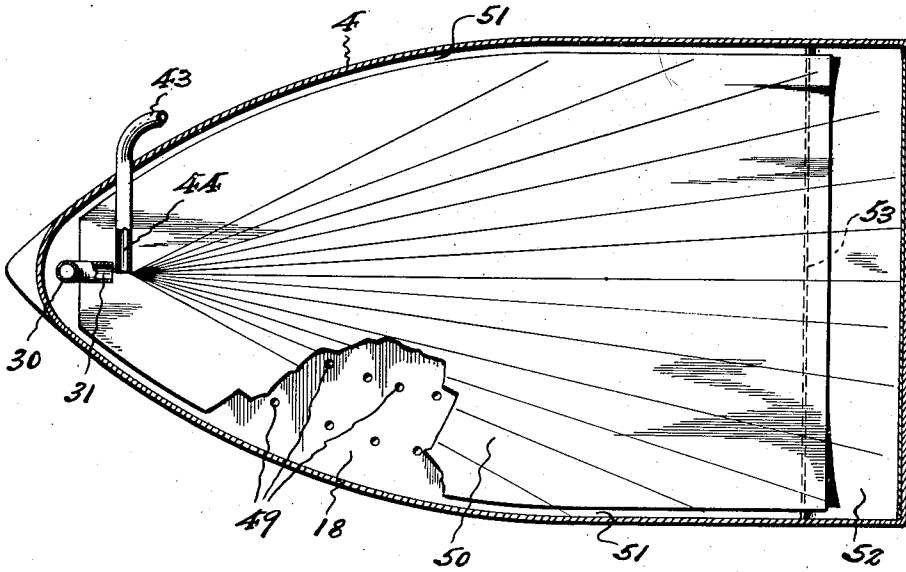
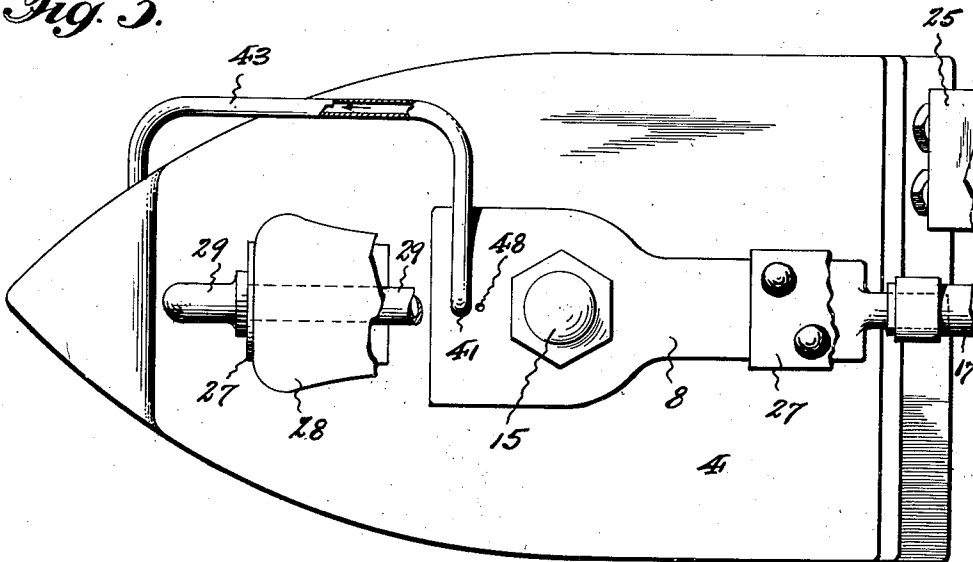


Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SADIRON.

Application filed November 12, 1925. Serial No. 68,561.

This invention relates, generally, to improvements in electric sad irons provided with means to extravasate steam from its pressing face to dampen the goods undergoing pressing operations.

This invention has for its principal object to provide a novel construction of iron provided with a steam generating chamber intermediate its pressing face portion and an electrical heating element, in combination with controllable means for delivering water from a source of supply, as needed, into said steam generating chamber for conversion into steam, which thereupon may be extravasated through the vents of the pressing face portion of the iron upon the goods undergoing pressing operations.

The invention has for a further object to provide an automatic means for maintaining a supply of water within the iron body, subject to controlled delivery into said steam generating chamber.

Other objects of this invention not at this time more particularly enumerated, will be clearly understood from the following detailed description of the same.

The invention is clearly illustrated in the accompanying drawings, in which:—

Figure 1 is a longitudinal vertical section of an electric steam sad iron showing an embodiment of the novel features and construction according to this invention; Figure 2 is a horizontal section, taken on line 2—2 in said Figure 1; and Figure 3 is a top or plan view of the iron, with parts broken away to show underlying structure.

In the embodiment of my invention, as illustrated in the accompanying drawings, the reference character 4 indicates the body portion of the iron, which is suitably formed to provide a hollow interior 5. Secured within the upper portion of said hollow interior 5 of the iron body is a water reservoir 6, preferably in the form of a relatively thin metallic shell, the bottom 7 of which is more or less resilient and yieldable to downward pressure. Fixed upon the top of said iron body is a water delivery member 8 provided with an intake duct or passage 9, which terminates at its inner end in an intake valve housing 10, from the lower side of which extends a valve passage 11 into communication with the interior of said water reservoir 6. Surrounding the upper end of said valve pas-

sage 11 is a valve seat 12. Secured to the resilient bottom 7 of said water reservoir is an upwardly extending valve stem 13, to the upper free end of which is attached a valve member 14 for cooperation with said valve seat 12. The upper end of the valve housing 10 may be provided with a detachable cap 15, and, if desired, a pull spring 16 may be connected between said cap 15 and valve member 14 to assist the opening movement of the latter. Suitably coupled with the outer end of said water delivery member 8, in communication with the duct or passage 9, is a flexible water feed conduit or pipe 17 leading from a main water supply.

The body portion 4 of the iron is closed by a pressing face member or bottom 18. Secured within the hollow interior 5 of said body portion 4, and spaced above said pressing face member or bottom 18, so as to provide a steam generation chamber 19 contiguous to said pressing face member or bottom 18, is a partition member or plate 20. Both said pressing face member or bottom 18 and said partition member or plate 20 may be secured in connected relation to the iron body 4 in any manner and by any means found convenient and suitable. Disposed within the hollow interior 5 of said iron body 4, above and preferably in contact with said partition member or plate 20, is the housing 21 of an electrical heat generating element in the bottom of which are arranged electrical heating coils 22, or any other suitable form of electrical heat generating means. Said heat generating coils 22 are so placed as to readily transfer the heat produced thereby, when in operation, to the partition or plate 20, which is thus brought to a relatively high temperature when the iron is in use. Connected with the heel of said iron body 4, but suitably insulated by insulation 23, are contact terminals or pins 24, with which the poles of the heat generating coils 22 are electrically connected in circuit in the customary manner. These contact terminals or pins 24 serve to receive the coupling connection 25 of the flexible electric conductor 26 for supplying electric current to the coils 22, also in the common manner familiar to those skilled in the electric iron art.

Suitably attached to the upper side of said iron body 4 by the bail members 27, "

is a hand grip member 28 by means of which the iron may be grasped and manipulated.

The reference character 29 indicates an air pipe which is provided with a suitable control valve. The forward end of said air pipe is entered into the interior of the iron body, preferably adjacent to the forward end of the latter, and connected therewith is an air jet member 30 which extends downwardly into said steam generation chamber 19 near the forward end thereof, the free end of said air jet member 30 being formed to provide a rearwardly directed nozzle 31. The exterior portion of said air pipe 29 may be supported in connection with the iron structure in any manner and by any means found convenient and desirable, but preferably is mounted in connection with and supported by said hand grip member 28 by extending the same rearwardly and longitudinally therethrough, as shown in the accompanying drawings. Connected with the rear end of said air pipe, by being threaded thereto or in any other convenient manner, is a cut-off valve casing 32, having an intake port 33 which extends through the neck or rearward extension 34 thereof. Suitably coupled in connection with said neck or rearward extension 34 is a flexible air hose 35 leading from any suitable source of air under pressure. Rotatably mounted in said valve casing 32 is a valve member 36 having a valve port 37 normally in interrupted alinement intermediate the intake port 33 and the bore of the air pipe 29. Secured to an external end of said valve member 36 is an actuating lever 38 normally positioned in upwardly swung relation to the hand grip member 28 as determined by a stop projection 39 on the valve casing in which position the valve member is turned to air cut-off or closed position. A spring means, as 40 (see Figure 1) may be utilized in connection with said actuating lever to hold the latter in normal valve closing position.

The reference character 41 indicates a water delivery siphon, the rising leg 42 of which is entered in the water reservoir 6, and the descending leg 43 of which is carried downwardly so that its free or discharge end 44 may extend into the steam generation chamber 19 and so as to terminate in front of said air discharge nozzle 31, with its extremity exposed in the path of the air discharged from the latter, as shown in Figures 1 and 2. A means for breaking the siphon to discontinue the flow of water therethrough is provided. This breaking means comprises an air port 45 formed in the wall of the rising leg 42 adjacent to the elbow of the siphon, through which, when open, air may enter the siphon passage to interrupt and prevent the rise of

water through said rising leg. A ball valve 46 cooperates with said air port 45, the same being disposed in a housing chamber 47 formed in said water delivery member 8, the latter being also provided with an air intake port 48 leading into said housing chamber 47.

The said pressing face member or bottom 18 of the iron is provided with a plurality of suitably disposed steam vents 49, through which the steam generated within the steam generation chamber 19 may be extravasated to the goods over which the iron is moved when carrying on pressing operations. Arranged within said steam generation chamber 19, so as to extend above, and so as to be appreciably spaced upwardly from the interior side of said pressing face member or bottom 18, is a baffle-plate 50. This baffle-plate 50, while of the general outline shape corresponding to the shape of the chamber 19, is of somewhat smaller dimension in area, so as to provide intermediate its periphery and the side walls of said chamber 19 a passage space 51 (see Figure 2) adapted to permit the steam generated in the chamber 19 above said baffle-plate 50 to enter beneath the latter so as to pass across the perforate pressing face member or bottom 18 for extravasation through the vents 49 thereof. This baffle-plate 50 tends to prevent condensed moisture, particularly when use of the iron is discontinued, from accumulating on the inner side of the pressing face member or bottom 18, and thereupon leaking out through the vents 49 of the latter. Mounted in the rear end of the steam generation chamber 19 is a secondary baffle plate 52, the forward end of which extends under the rear end of said main baffle-plate 50. Said forward end of said secondary baffle plate 52 is provided with an upturned lip 53, and the overlapping rear end of said main baffle-plate 50 is provided with a downturned lip 54, thus providing a trap against the entrance of unvaporized liquid particles or the moisture of condensation from entering beneath the baffle-plate 50 and upon the perforate pressing face member or bottom 18.

The operation of the iron is as follows: Water is supplied through the feed conduit or pipe 17. If the reservoir 6 is empty, the bottom 7 thereof will be disposed in normal initial raised position, and consequently the stem 13 of the valve 14 will be moved upward to unseat the said valve 14, and thus open the valve passage 11 to the passage of water from said feed conduit or pipe 17 into the interior of the reservoir 6. As the reservoir fills, the weight of the water upon the resilient bottom 7 thereof, will tend to depress the latter, thus drawing downward the stem 13 until the valve member 14 seats itself and closes the valve passage

11 against further entrance of water. As the water is drawn out of the reservoir, when using the iron, and the initial weight of water thereby reduced, the bottom 7 will
 5 tend to resume normal initial position, thus unseating the valve 14 for renewed entrance of water into the reservoir to compensate for the losses of use. As will be evident the action of the water admission valve 14 is
 10 thus automatic, and intermittent opening and closing of the same will automatically maintain an adequate supply of water within the reservoir 6 ready for use.

The water reservoir being filled, in the
 15 manner above described, electric current is supplied to the heating element, and the iron is thereupon in condition for use. When it is desired to generate steam and deliver the same upon the goods undergoing
 20 the pressing operations, the operator moves the air control valve by a proper manipulation of the actuating lever 38, so that air, from suitable source of supply under pressure, is caused to pass through the air pipe
 25 29, and jet member 30 so as to be discharged into the steam generation chamber 19 from the nozzle 31. The blast of air thus produced sweeps past the discharge end 44
 30 of the water delivery siphon 41, thus creating a suction within the latter, which is effective both to move the ball valve 46 into closed relation to the air port 45
 35 of said siphon and to thereupon cause water from the reservoir 6 to ascend the rising siphon leg 42 and thence through the descending siphon leg 43 for emission from the discharge end 44 of the siphon. The
 40 small stream of water thus delivered from the discharge end 44 of the siphon 41 is shattered or atomized by the blast of air discharged from the nozzle 31, and is thus formed into a mist or wet mixture. This
 45 mist or wet mixture is distributed through the steam generation chamber 19, and is subjected to the effects of heat produced by the electrical heating element, whereby the
 50 moisture constituent thereof is converted into steam. The steam thus generated will pass around the baffle-plate 50 for circulation in the space underlying the latter
 55 above the pressing face member or bottom 18, and will thereupon be extravasated through the vents 49 of the latter upon the goods over which the iron is caused to move, thus at once moistening and pressing the
 60 goods.

It will be quite apparent that the heating element will also heat the iron body and its pressing face member or bottom, and consequently when the generation of steam is discontinued, the iron operates as an ordinary dry iron.

When it is desired to discontinue the generation and extravasation of steam, the operator simply releases the actuating lever

38 of the air control valve thus shutting off the discharge of air from the jet nozzle 31. The discharge of air being thus discontinued, the ball valve 46 falls away from
 70 and thus opens the air port 45 of the siphon, whereby the entrance of air into the rising leg 42 thereof breaks the siphon action, and discontinues the delivery of water to the steam generation chamber 19. The supply
 75 of water to the chamber being discontinued, it follows that the formation of steam ceases, and the iron will thereupon operate as a dry iron, until by renewed flow of air the flow of water to the steam generation chamber 19 is likewise renewed. It will be ap-
 80 parent that selective use of the iron as a steam iron or as a dry iron is possible at all times, or at any stage of pressing operations, at the will of the operator.

From the above description it will be
 85 clear that my novel iron construction provides a steam generation means somewhat similar in action to a flash type steam boiler. Such arrangement is one that is very easily
 90 controlled, so that all the advantages of either a steam or dry iron may be quickly obtained.

I am aware that some changes may be made in the general arrangements and combinations of the various devices and parts, as well as in the details of the construction of the same, without departing from the scope of this invention as above described, and as defined in the appended claims. Hence, I do not limit my invention to the
 100 exact arrangements and combinations of the devices and parts as set forth in the foregoing specification, nor do I confine myself to the exact details of the construction of said parts as illustrated in the accompanying
 105 drawings.

I claim:—

1. A sad iron comprising a hollow body having a perforate pressing face portion and a steam generating chamber above said
 110 pressing face, a heating means contiguous to said steam generating chamber, and means for discharging an atomized mixture of air and water into said steam generating
 115 chamber.

2. A sad iron comprising a hollow body having a perforate pressing face portion and a steam generating chamber above said pressing face, a heating means contiguous to said
 120 steam generating chamber, means for discharging an atomized mixture of air and water into said steam generating chamber, and a baffle plate means within said steam generating chamber to extend over the perforations of said pressing face portion.
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3. A sad iron comprising a hollow body having a perforate pressing face and a steam generating chamber above said pressing face, a heating means contiguous to said steam
 130 generating chamber, a water delivery means

having its discharge means entered in said steam generating chamber, and a valve controlled compressed air delivery means having a discharge jet also entered in said steam
5 generating chamber and positioned to discharge an air stream across the extremity of said water discharge means.

4. A sad iron comprising a hollow body having a perforate pressing face portion, a
10 partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a
15 water delivery siphon leading from said reservoir with its discharge end entered in said steam generating chamber, and a valve controlled compressed air delivery conduit having a discharge jet also entered in said steam
20 generating chamber and positioned to discharge an air stream across the discharge end of said siphon.

5. A sad iron comprising a hollow body having a perforate pressing face portion, a
25 partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a
30 water delivery siphon leading from said reservoir with its discharge end entered in said steam generating chamber, a valve controlled compressed air delivery conduit having a discharge jet also entered in said steam
35 generating chamber and positioned to discharge an air stream across the discharge end of said siphon, and a baffle plate means within said steam generating chamber to extend over the perforations of said pressing face
40 portion.

6. A sad iron comprising a hollow body having a perforate pressing face portion, a
45 partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a water supply pipe leading to said reservoir, automatic means for controlling the flow of
50 water from said supply pipe into said reservoir, a water delivery siphon leading from said reservoir with its discharge end entered in said steam generating chamber, and a valve controlled compressed air delivery conduit having a discharge jet also entered in
55 said steam generating chamber and positioned to discharge an air stream across the discharge end of said siphon.

7. A sad iron comprising a hollow body having a perforate pressing face portion, a
60 partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a water

supply pipe leading to said reservoir, automatic means for controlling the flow of water from said supply pipe into said reservoir, a water delivery siphon leading from
70 said reservoir with its discharge end entered in said steam generating chamber, a valve controlled compressed air delivery conduit having a discharge jet also entered in said steam generating chamber and positioned to
75 discharge an air stream across the discharge end of said siphon, and a baffle plate means within said steam generating chamber to extend over the perforations of said pressing face portion.

8. A sad iron comprising a hollow body
80 having a perforate pressing face portion, a partition within said body spaced above said pressing face portion to provide a steam generating chamber, an electrical heating element contiguous to said steam
85 generating chamber, a water reservoir connected with said body, a water delivery means leading from said reservoir into said steam generating chamber, a valve controlled compressed air delivery means also
90 leading into said steam generating chamber, and the discharge ends of said water and air delivery means being cooperatively associated to discharge an atomized mixture of air and water into said steam generating
95 chamber.

9. A sad iron comprising a hollow body having a perforate pressing face portion, a
100 partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a water delivery siphon leading from
105 said reservoir into said steam generating chamber, a normally open automatic air valve cooperative with the ascending leg of said siphon, a valve controlled compressed air delivery means leading into said steam
110 generating chamber, and the discharge ends of said siphon and air delivery means being cooperatively associated to discharge an atomized mixture of air and water into said steam generating chamber.

10. A sad iron comprising a hollow body
115 having a perforate pressing face portion, a partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a
120 water reservoir connected with said body, a water delivery siphon leading from said reservoir into said steam generating chamber, a normally open automatic air valve cooperative with the ascending leg of said
125 siphon, a valve controlled compressed air delivery means leading into said steam generating chamber, the discharge ends of said siphon and air delivery means being cooperatively associated to discharge an at-
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omized mixture of air and water into said steam generating chamber, and a baffle plate means within said steam generating chamber to extend over the perforations of said pressing face portion.

11. A sad iron comprising a hollow body having a perforate pressing face portion, a partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a water supply pipe leading to said reservoir, automatic means for controlling the flow of water from said supply pipe into said reservoir, a water delivery siphon leading from said reservoir into said steam generating chamber, a normally open automatic air valve cooperative with the ascending leg of said siphon, a valve controlled compressed air delivery means leading into said steam generating chamber, and the discharge ends of said siphon and air delivery means being cooperatively associated to discharge an atomized mixture of air and water into said steam generating chamber.

12. A sad iron comprising a hollow body

having a perforate pressing face portion, a partition within said body spaced above said pressing face portion to provide a steam generating chamber, a heating means contiguous to said steam generating chamber, a water reservoir connected with said body, a water supply pipe leading to said reservoir, automatic means for controlling the flow of water from said supply pipe into said reservoir, a water delivery siphon leading from said reservoir into said steam generating chamber, a normally open automatic air valve cooperative with the ascending leg of said siphon, a valve controlled compressed air delivery means leading into said steam generating chamber, the discharge ends of said siphon and air delivery means being cooperatively associated to discharge an atomized mixture of air and water into said steam generating chamber, and a baffle plate means within said steam generating chamber to extend over the perforations of said pressing face portion.

In testimony, that I claim the invention set forth above I have hereunto set my hand this 4th day of November 1925.

CHARLES A. BREWER.