April 7, 1942. E. P. SCHREYER 2,279,179

ELECTRIC IRON AND DAMPENER

Original Filed Oct. 3, 1938 2 Sheets-Sheet 1

Fig. 1.

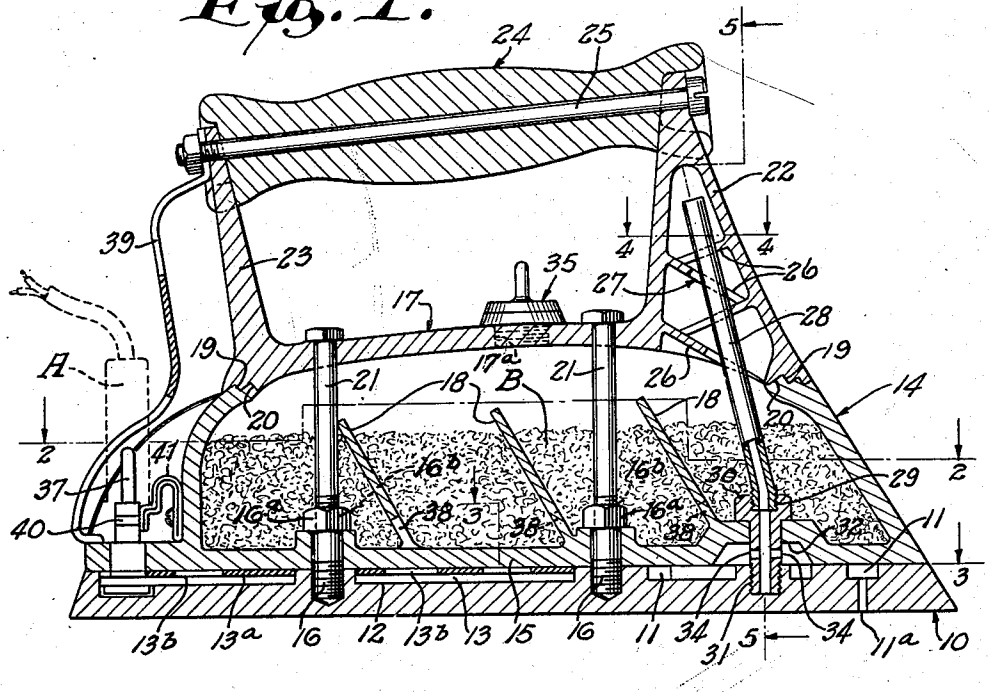


Fig. 2.

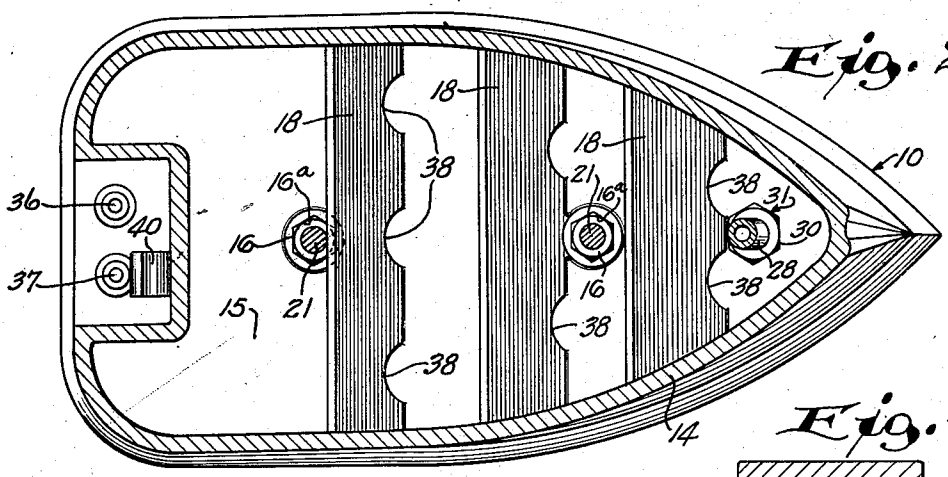


Fig. 4.

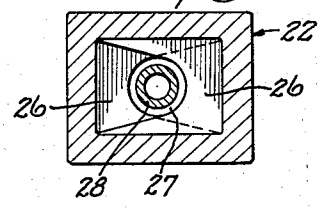
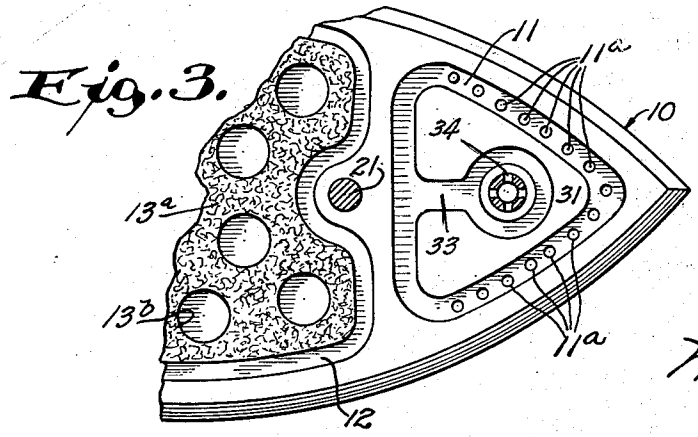


Fig. 3.



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Fig. 5.

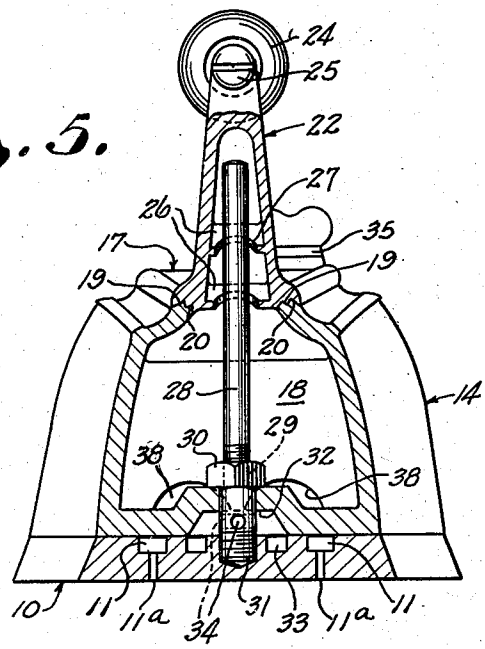


Fig. 6.

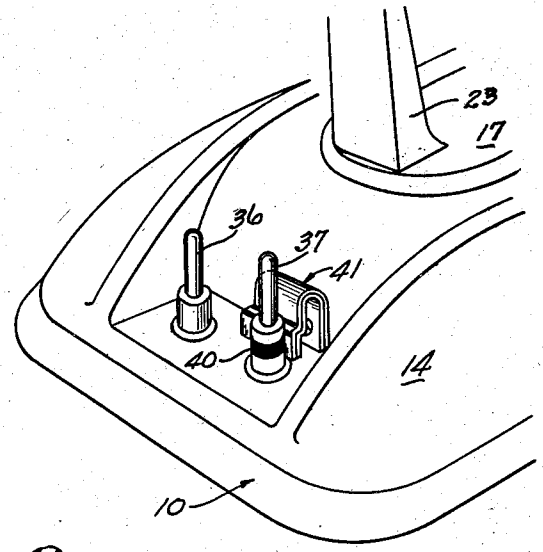


Fig. 7.

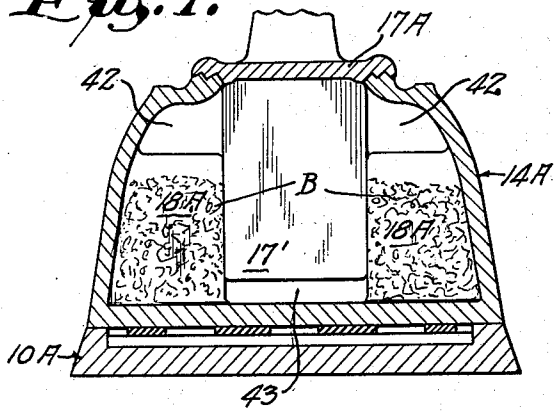
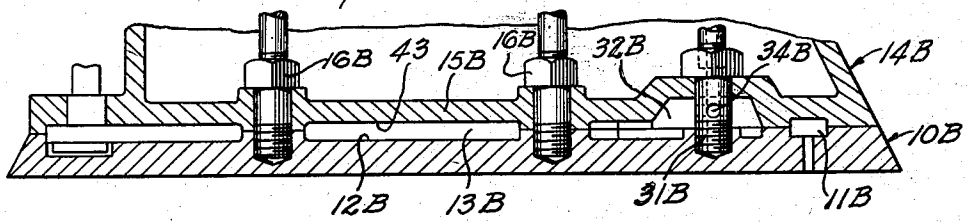


Fig. 8.



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2,279,179

ELECTRIC IRON AND DAMPENER

Edward P. Schreyer, Milwaukee, Wis.

Original application October 3, 1938, Serial No. 232,931. Divided and this application August 30, 1939, Serial No. 292,544

6 Claims. (Cl. 38—77)

The present invention relates to electric irons, and is more particularly directed to a combination electric iron and dampener. The present application is a division of application Serial No. 232,931 filed October 3, 1938, now Patent No. 2,178,512.

The chief objects of the present invention are the provision of an iron and dampener of the character described having a water container secured to the shoe thereof, and which container overlies the entire surface of the shoe; the provision of a plurality of baffles in the container to prevent the surging action of water therein; the provision of a cover sealed to the container and having a steam chamber or dome at the forward end thereof and provided with baffles therein; the provision of a continuous channel in the shoe of the iron into which the steam is discharged from the chamber or dome for an even distribution of steam to outlet openings arranged in the shoe and communicating with the channel; the provision of a support or rest for setting the iron on its heel; and, the provision of thermo-responsive means for cutting off the current to the heating element at a predetermined degree of heat.

Referring to the drawings:

Figure 1 is a longitudinal medial sectional view of the iron.

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

Figure 3 is a partial detail sectional view taken substantially on the line 3—3 of Figure 1.

Figure 4 is an enlarged detail cross-sectional view taken on the line 4—4 of Figure 1.

Figure 5 is a vertical sectional view taken substantially on the line 5—5 of Figure 1.

Figure 6 is a detail perspective view of the rear portion of the iron illustrating the thermoresponsive means coacting therewith.

Figure 7 is a cross-sectional view illustrating a modified form of baffle within the container; and

Figure 8 is a detail longitudinal sectional view of a modified form of bottom wall on the container.

The reference numeral 10 designates the base plate or shoe of the iron which may be of any suitable material, but is preferably of aluminum and which may be treated with an "anodyzing process." This shoe 10 is provided on its top surface with a continuous channel 11 at the forward end thereof and a relatively large depression 12 extending from a point adjacent the channel to near the heel of the shoe. The channel 11 has a plurality of perforations or openings 11a therein, providing discharge outlets to the under surface of the shoe 10, and the depressed portion 12 is adapted to receive an electrical heating element 13 therein. A filler pad 13a which is preferably of asbestos or other suitable material, is placed over the heating element and is provided with a plurality of perforations 13b. A container 14 is secured to the shoe and is provided with a bottom wall 15 which forms an enclosure or top wall for the continuous channel 11 and engages the filler pad 13a to compress the same to retain the heating element 13 in position. The container is preferably constructed of an aluminum casting and is secured to the shoe 10 by means of cap screws 16 which draw the bottom wall 15 of the container into contact with the filler pad 13a to retain the element in position and to cause the bottom wall 15 to engage the shoe to form an enclosure for the heating element and channel. The cap screws 16 extend through the bottom wall 15 of the container and their head portions 16a are provided with internal threads 16b for securing a cover 17 to the container, as will be later described.

When the container is in fixed position on the shoe 10, it engages the periphery of the shoe to form a perfect closure for the heating element 13 and channel 11 and its contact with the base serves to conduct the heat through the container. The container 14 is also provided with a plurality of baffles 18 which extend from the bottom wall 15 and are disposed angularly with their top edge portions directed toward the rear of the container.

The cover 17 of the container 14 is provided with serrations 19 along its lower edge which coact with corresponding serrations 20 provided on the top edge of the container and when the cover is directly fitted in position or with a relatively thin gasket between the serrations 19—20, it will perfectly seal the container. A pair of bolts 21 extend through the cover 17 and into the threads 16b provided in the head portions 16a of the cap screws 16, and these bolts 21 serve to exert a pressure to retain the cover in sealed position with the container.

The cover 17 is preferably a casting and has cast integrally therewith a steam chamber or dome 22 and an upwardly extending lug 23, between the extreme upper ends of which a handle grip 24 is secured by means of a bolt 25. This handle serves as a means to grip and manipulate the iron during ironing movements.

The steam chamber or dome 22 is preferably provided with a plurality of angularly directed

oppositely positioned baffles 26, (Fig. 4), which are arranged to provide a central opening 27 through which the upper end of a pipe 28 is directed, and which pipe has its lower end secured at 29 in the threaded head 30 of a hollow cap screw 31 which extends through the bottom wall 15 of the container 14 and is threaded into the shoe 10. The hollow cap screw 31 serves to securely retain the forward end of the container 14 in position on the shoe 10 and it also serves as a means through which the steam that has been admitted into the pipe 28 is exhausted into the continuous channel 11 of the shoe. An annular recess 32 is provided in the bottom wall 15 and provides an opening above a depressed portion 33 that communicates with the continuous channel in the shoe 10. The hollow cap screw 31 is provided with a plurality of transverse openings 34 that communicate with the annular recess 32 of the container for directing the steam from the lead pipe 28 into the continuous channel 11.

The cover 17 is provided with a threaded opening 17*a* to receive a threaded filler cap 35, which, when removed, provides an opening for filling the container with water to the proper level and after which time, the cap is replaced to seal the container.

The heating element 13 is provided with terminals 36 and 37 for receiving a plug A which is connected to a source of power to supply current to the element.

As thus far described, it will be noted that with an iron and dampener constructed in the manner above pointed out, it is only necessary to remove the filler cap 35 and fill the container 14 with water to approximately the height of the baffles 18 and to then thread the filler cap 35 in position to securely thread the same and seal the container. The current may then be applied to terminals 36—37 to heat the element 13 which heats the shoe 10 and the heat also passes through the perforations 13*b* of the filler pad 13*a* and around said pad to heat the container and water therein. After the water is heated to boiling point, the steam will rise into the steam chamber or dome 22 around the baffles 26 thereof, and when under sufficient pressure, will be forced through the lead pipe 28 to the hollow cap screw 31 and outwardly of the transverse openings 34 thereof into the continuous channel 11 and perforations 11*a*. When the steam is admitted into the continuous channel 11, it circulates therearound and provides for an even distribution of steam through the series of perforations 11*a* to the under side of shoe 10.

During the ironing movements of the iron, the water contained within the container 14 is withheld against surging action by means of the baffles 18 or a metal wool B may be placed between the baffles. In order to admit of the passage of water from one compartment to another, formed by the baffles, a plurality of openings 38 is provided in these baffles adjacent the bottom wall 15 of the container.

As the steam chamber or dome 22 is positioned at the forward end of the iron, it will be noted that an iron constructed in this manner may be set up on its heel while heating the same and also for steaming purposes, and in order to support the iron on its heel, a bracket 39 is provided. This bracket extends from the top of lug 23 to the lower edge of the container 14 and is secured in position and retained by the bolt 25 of the handle grip 24. While using the iron, the person operating the same may not be aware that the water therein is exhausted and should be replenished, as the metal parts will become relatively hotter with the same degree of heat applied thereto when empty as when there is water in the container. To avoid the possibility of the iron attaining a greater degree of heat than that which it attains while filled with water, a thermoresponsive means is provided and operates in the following manner:

The terminal 37 is provided with an insulated portion 40 in such manner so that when the plug A (shown in dotted lines), is attached thereto, the circuit to the heating element 13 will not be completed. In order to complete the circuit, a thermoresponsive means 41 of suitable material, such as of bi-metal construction, is arranged to engage the terminal 37 above and below the insulated portion 39 to complete the circuit to the heating element 13.

As above described, when the water within the container is exhausted and the container and shoe are heated beyond a predetermined degree of heat (which is boiling point of water for creating steam), the thermoresponsive means 40 will yield and break the contact between the upper and lower portions of terminal 37 to open the circuit and when the iron is cooled to the proper degree, this thermoresponsive means 40 will then again close the circuit to heat the iron.

It will be noted that with a thermoresponsive means operable to make and break the current to the heating element, no excessive amount of heat will be produced in the iron and no ill effects will result.

In Figure 7 is shown a modified form of baffle in which the main sections 18A thereof are cast as an integral part of the container 14A and the upper edges of these sections terminate in spaced relation with the upper portion of the container providing openings 42—42. The cover 17A attached to the container, carries a plurality of depending tongues 17' that coact with the baffle sections 18A and are aligned therewith when the cover 17A is in sealed position on the container 14A. These depending tongues 17' are of a length which is less than the depth of the container and when in position provide openings 43 to permit the water to pass from one compartment to the other formed by the sections 18A and 17'. These depending tongues or baffles 17' extend below the top of the metal wool "B", and the latter extends preferably throughout the length of the iron, as shown in Fig. 1, and to a substantial depth, as shown in Figs. 1 and 7. The wool serves to prevent surging action of the water, while the depending tongues 17' prevent splashing of water over the top of the metal wool in the middle portion in the width of the iron to cooperate with the wool in insuring the exclusion of water from the steam dome 22.

Referring now to the modified form illustrated in Figure 8, the base plate or shoe 10B is provided with depressions 11B and 12B, one of which provides a continuous channel and the other in which the heating element 13B is positioned in the same manner as shown in the preferred form. In this modified form, the bottom wall 15B of the container 14B is provided with recesses in the surface thereof corresponding to the depressions in the base plate or shoe 10B. These recesses are arranged in the following manner: the recess 32B overlying the continuous channel 11B in the manner shown in the preferred form, while the recess 43 coacts with the depression

12B to enclose the heating element 13B and the usual cap screws 16B—16B are employed for retaining the container 14B secured to the shoe, while the hollow cap screw 31B having transverse openings 34B serves also as fastening means and to distribute steam to the continuous channel 11B.

I claim:

1. An iron comprising a shoe formed with steam perforations, a container forming a reservoir for water above the shoe having walls and having a top opening, the walls of said container forming the main body of the iron, an exteriorly accessible removable cover for said opening, means for heating water in said container to produce steam, a pipe for conducting steam from the upper portion of said water container to the steam perforations in the shoe, means forming a steam space carried by said exteriorly accessible cover into which the upper end of the steam pipe extends, and a baffling member carried by the lower side of said cover and spaced longitudinally from said steam space forming means, said baffling member being of less width than the water container and depending into said container a substantial distance to extend below the normal water level, said baffling member acting to divert water moving longitudinally in the iron to the sides of the water container.

2. An iron comprising a shoe formed with steam perforations, a container forming a reservoir for water above the shoe having a top opening of less width than the container, a removable cover for said opening, means for heating water in said container to produce steam, a pipe for conducting steam from the upper portion of said water container to the steam perforations in the shoe, and a baffling member carried by the lower side of said cover and of less width than the water container and depending into said container below the maximum water level and substantially to the bottom of said water container, said baffling member acting to divert water moving longitudinally in the iron to the sides of the container to furnish a shield for the upper portion of the container from which steam is conducted.

3. An iron comprising a shoe formed with steam perforations, a container forming a reservoir for water above the shoe having a top opening, a cover for said opening, means for heating water in said container to produce steam, a pipe for conducting steam from the upper portion of said water container to the steam perforations in the shoe, a baffling member carried by the lower side of the cover and of less width than the water container and depending into said container, and transversely alined spaced apart baffling members supported within the container between which the cover baffling member fits when the cover is in place.

4. An iron comprising a shoe formed with steam perforations, a container for water above the shoe, there being a steam dome projecting upwardly from the container at one end thereof, the upper end of said steam dome being shaped to provide a handle support, a second handle support extending upwardly at the other end of the container, a handle having one end recessed inwardly from said end and upwardly from the bottom adjacent said end, the entire upper end of the steam dome being of diminished size so that said entire upper end is received in and shielded by said handle recess with said end of the handle projecting outwardly beyond the steam dome to protect the hand from contact with said upper end of the steam dome, means for connecting said handle directly to said shielded upper end of the steam dome and to the handle support, a heating element for heating the base plate and container, and means for conducting steam from the steam dome to the perforations of the base plate.

5. An iron comprising a shoe formed with steam perforations, a container for water above the shoe, there being a steam dome projecting upwardly from the container at one end thereof, the upper end of said steam dome being shaped to provide a handle support, a second handle support extending upwardly at the other end of the container, a handle having one end recessed inwardly from said end and upwardly from the bottom adjacent said end, the entire upper end of the steam dome being of diminished size so that said entire upper end is received in and shielded by said handle recess with said end of the handle extending laterally on the sides of said upper end of the steam dome to protect the hand from contact with said upper end of the steam dome, means for connecting said handle directly to said shielded upper end of the steam dome and to the handle support, means for heating the base plate and container, and means for conducting steam from the steam dome to the perforations of the base plate.

6. An iron comprising a shoe formed with steam perforations, a container forming a reservoir for water above the shoe having walls and having a top opening, the walls of said container forming the main body of the iron, an exteriorly accessible removable cover for said opening, means for heating water in said container to produce steam, a pipe for conducting steam from the upper portion of said water container to the steam perforations in the shoe, means forming a steam space carried by said exteriorly accessible cover into which the upper end of the steam pipe extends, a body of metal wool resting on the bottom of the water container, and a baffling member carried by the lower side of the cover and spaced longitudinally from said steam space forming means, said baffling member being of a length to at least meet the top of the body of metal wool.

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