Oct. 31, 1939. E. P. SCHREYER 2,178,512

ELECTRIC IRON AND DAMPENER

Filed Oct. 3, 1938 2 Sheets-Sheet 1

Fig. 1.

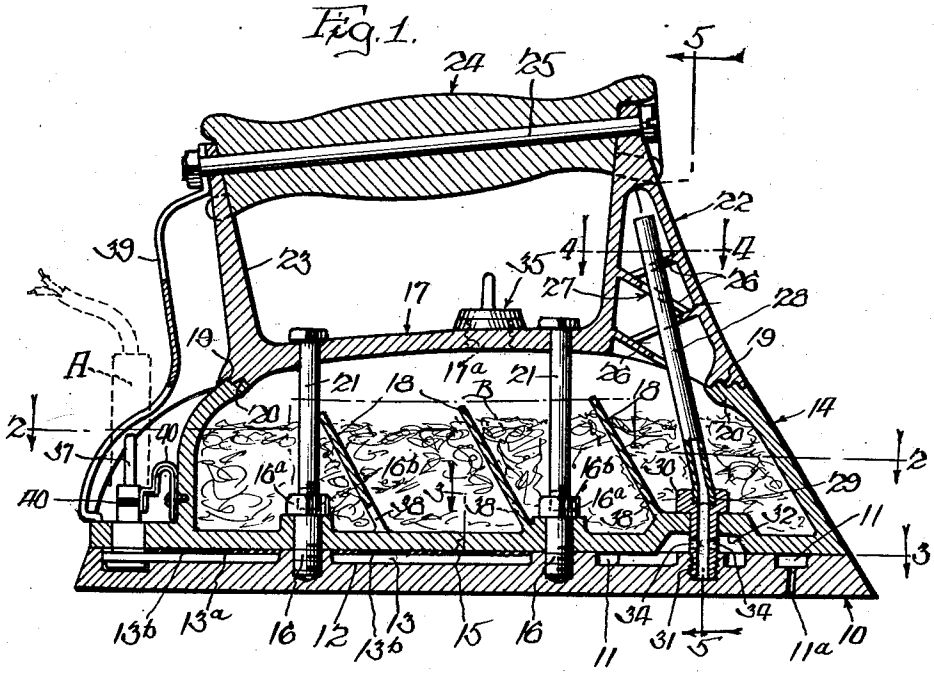


Fig. 2.

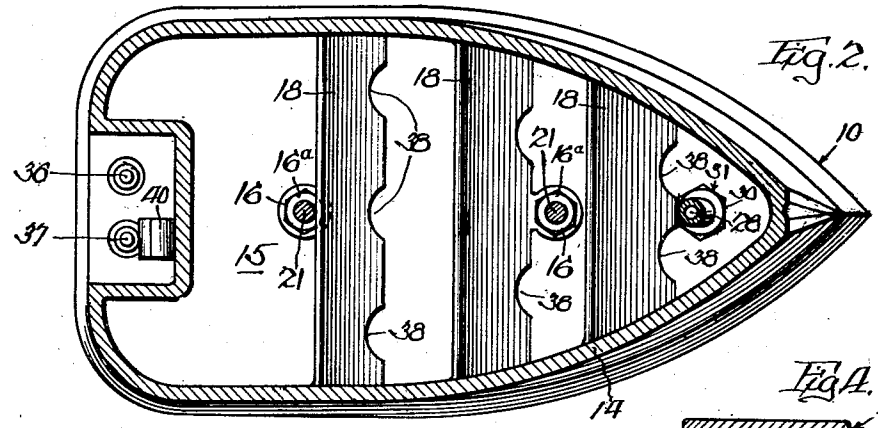


Fig. 4.

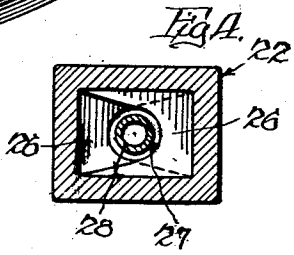
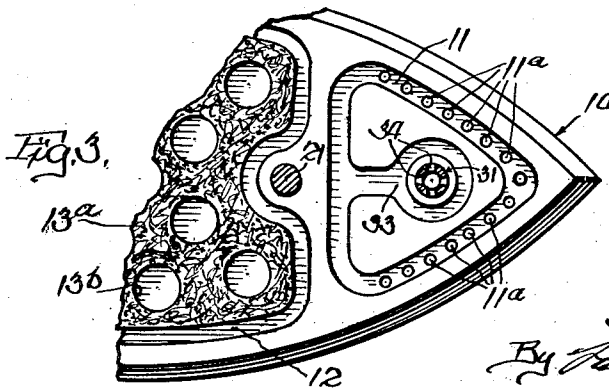


Fig. 3.



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Oct. 31, 1939. E. P. SCHREYER 2,178,512

ELECTRIC IRON AND DAMPENER

Filed Oct. 3, 1938 2 Sheets-Sheet 2

Fig. 5.

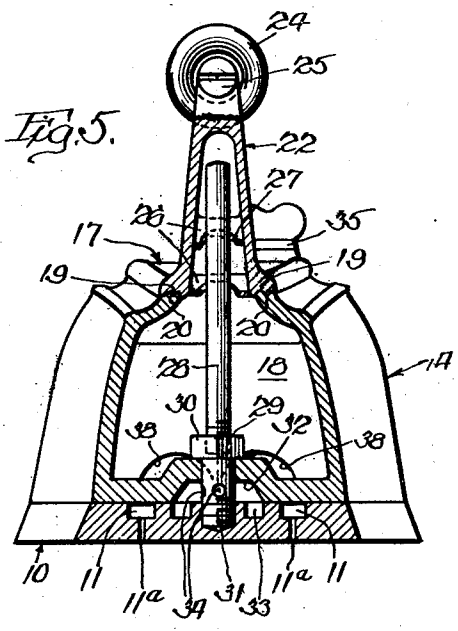


Fig. 6.

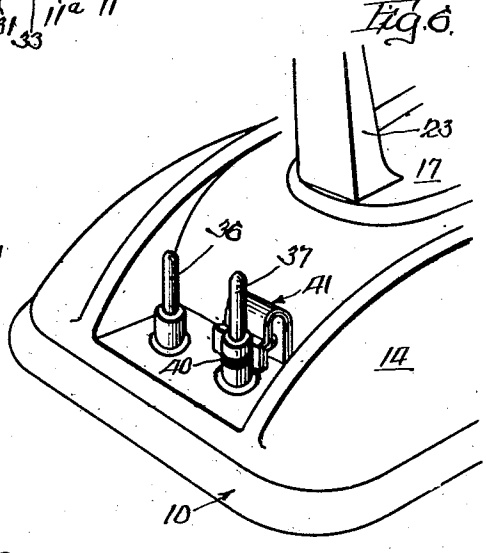


Fig. 7.

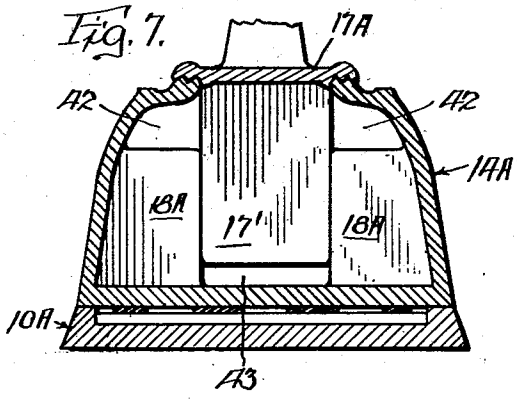
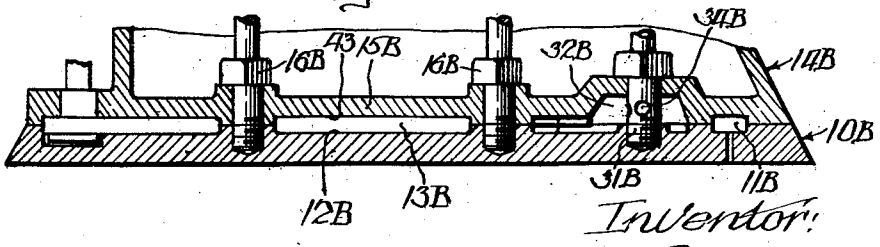


Fig. 8.



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UNITED STATES PATENT OFFICE

2,178,512

ELECTRIC IRON AND DAMPENER

Edward P. Schreyer, Brooklyn, N. Y.

Application October 3, 1938, Serial No. 232,931

4 Claims. (Cl. 38—77)

The present invention relates to electric irons, and is more particularly directed to a combination electric iron and dampener.

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 thermoresponsive 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, and at the extreme upper ends of which a handle grip 24 is secured therebetween by means of a bolt 25, and 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 1 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′. The construction shown in Fig. 7 forms the subject matter of a divisional application, Serial No. 292,544, filed August 30, 1939.

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 base plate having openings therein providing steam outlets, a container for water above the base plate, the walls of which form the main body of the iron, said

container extending throughout the major portion of the length of the base plate, there being a steam space in the upper portion of said container within which steam is generated, a duct leading from the steam space to the outlet openings of the base, means for heating water in said container to produce steam, and means at the rear of the iron for holding the iron in spaced relation from a support when the iron is in operation to provide for standing of the iron on its rear end, said steam space being at a forward portion of the water container with the inlet end of the duct therein above the normal water level when the iron is standing on its rear end whereby rising steam free from water will be discharged through said duct while the iron is standing on its rear end.

2. An iron comprising a base plate having openings therein providing steam outlets, a container for water above the base plate, the walls of which form the main body of the iron, said container extending longitudinally of the base plate, there being a steam space in an upper portion of said container, a duct leading from the upper portion of said steam space to the outlet openings of the base plate, means for heating the water in said container to produce steam, means at the rear of the iron for holding the iron in spaced relation from a support providing for standing of the iron on its rear end, said steam space being at the forward portion of the water container and the inlet opening of the duct therein being above the normal water level when the iron is standing on its rear end whereby rising steam free from water will be discharged through said duct while the iron is standing on its rear end, and a transverse baffle rearwardly of the steam space terminating short of the top of said container, said baffle being inclined rearwardly to cause quick drainage of water to the rear part of the water container when the iron is standing on its rear end.

3. An iron adapted for either horizontal or vertical use comprising a shoe formed with steam perforations, a container for water above the shoe and substantially coextensive therewith, there being a steam space in an upper portion of the container, a duct leading from the steam space to the steam perforations of the shoe, a layer of metal wool in said container of sufficient thickness and so positioned as to prevent surging of water into the steam duct during normal use, said wool being non-absorbent to permit the water to flow from one part of the container to another when the iron is changed from one position of use to another, and means for heating the water in the container to produce steam.

4. An iron comprising a relatively thin shoe formed with steam perforations extending therethrough and with a steam recess in its upper face communicating with said perforations, a container for water above the shoe, the bottom of the container having a recess in its lower surface communicating with the steam recess of the shoe, there being a screw receiving portion of the shoe having a thickness approximately equal to the maximum thickness of the shoe located below the recess which is in the bottom of the water container and overlapped by said recess which is in the bottom of the water container, a cap screw extending through the container bottom and through said recess in the container bottom and threaded into said screw receiving portion of the shoe, said cap screw having a duct therein communicating with the recess in the bottom of the container, means for conducting steam from the upper portion of the water container to the cap screw duct, and means for heating water in the container to produce steam therein.

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