E. H. RICHARDSON.

ELECTRIC LAUNDRY IRON.

APPLICATION FILED JUNE 11, 1909.

956,174. **Patented Apr. 26, 1910.**

Fig. 1.

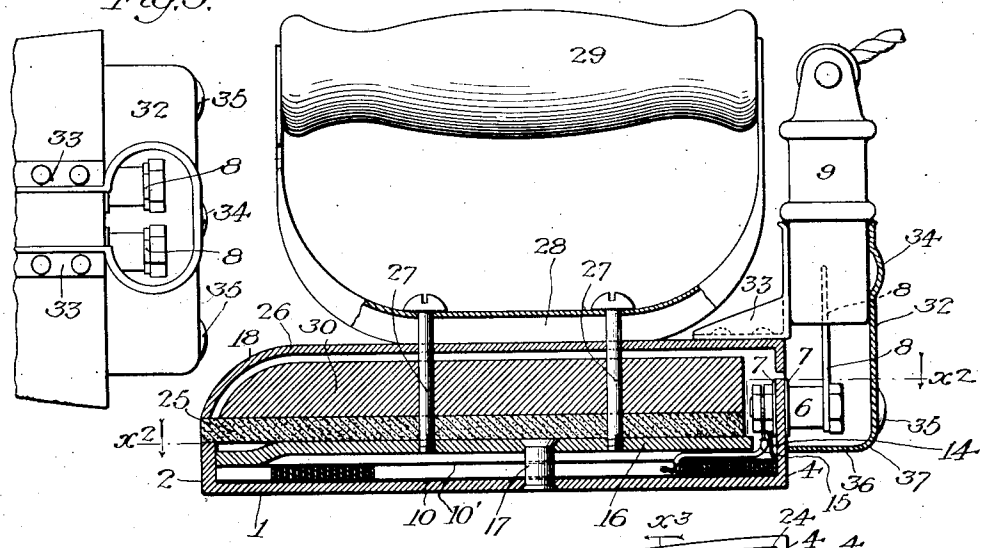


Fig. 5.

Fig. 2.

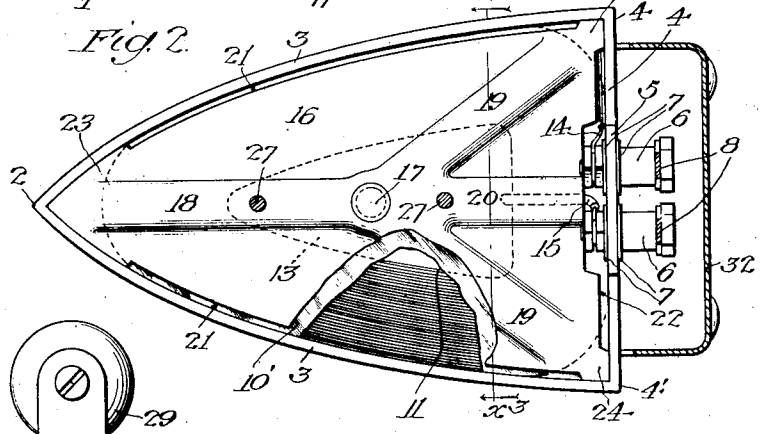


Fig. 4.

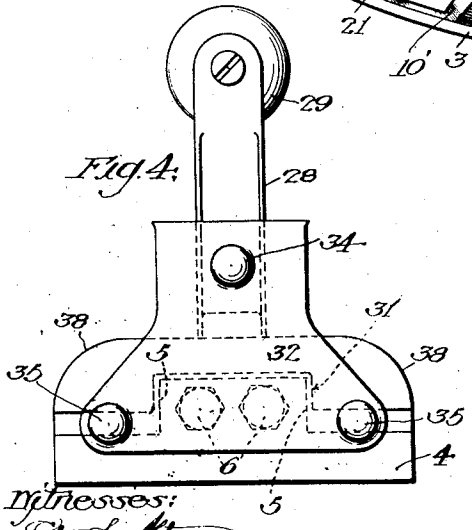
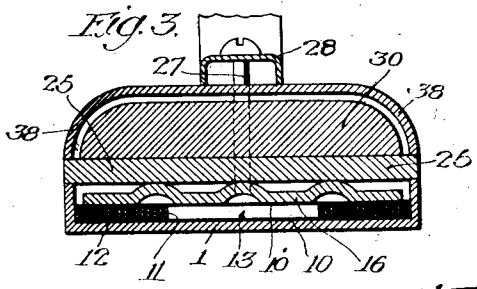


Fig. 3.



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UNITED STATES PATENT OFFICE.

EARL H. RICHARDSON, OF ONTARIO, CALIFORNIA, ASSIGNOR TO PACIFIC ELECTRIC HEATING COMPANY, OF ONTARIO, CALIFORNIA, A CORPORATION OF CALIFORNIA.

ELECTRIC LAUNDRY-IRON.

956,174. Specification of Letters Patent. Patented Apr. 26, 1910.

Application filed June 11, 1909. Serial No. 501,658.

To all whom it may concern:

Be it known that I, EARL H. RICHARDSON, a citizen of the United States, residing at Ontario, in the county of San Bernardino and State of California, have invented a new and useful Electric Laundry-Iron, of which the following is a specification.

This invention relates to electric laundry irons and the main objects of the invention are to provide a laundry iron which may be economically constructed and to secure in such economical construction an iron having an efficiency equal to those of more expensive construction.

A further object is to provide a novel construction for imparting a relatively greater heat to the toe portion and heel of the iron than to the central part of the iron. In a previous patent of mine, No. 809,529, January 9, 1906, I secured this specific distribution of heat above mentioned by means of a pair of wire-wound cores, the front ends of which were located in the toe of the iron, the cores diverging toward the rear of the iron. But in the present invention I dispense with the wire-wound cores and employ a different form of heating element and at the same time provide a special construction whereby the heat produced by the heating unit is distributed in a definite manner and conducted to precisely determined locations in the iron, diverting the heat from other portions, thereby imparting relatively greater heat to those specific portions of the iron which require the greatest heat, namely, the toe portion and corners of the heel.

A further object of the invention is to enable practically all the parts of the iron to be constructed of sheet metal, thus securing economy and facility in construction and assemblage of parts, and attaining the necessary rigidity and stiffness combined with great strength and durability.

A further object is to so construct the iron that the heating element and lower part of the body are combined as one piece which may be detached from the remainder of the iron and thus shipped to any locality to replace a similar unit, the heating element of which may have burned out, thereby avoiding the detachment or replacement of the heating element alone which is an operation requiring skill, while any person can readily detach or attach the unit as herein formed. A further advantage of this is that express charges are minimized. Further, the heating element being permanently confined in the unit, is not visible or accessible even when the unit is detached, thereby preventing any tampering therewith.

Referring to the drawings: Figure 1 is a vertical longitudinal section through the iron. Fig. 2 is a section on line x^2—x^2 Fig. 1. Fig. 3 is a section on line x^3—x^3 Fig. 2. Fig. 4 is a rear elevation of the iron. Fig. 5 is a plan view of the rear portion.

The body portion of the iron is formed of sheet metal, for example, drawn steel, producing a hollow triangular shell 1 having a pointed toe 2, curved side walls 3, and a rear wall 4 with heel corners 4′, the walls 3 and 4 being of even height except where the rear wall 4 is formed with an upper extension 5, in which terminals 6 are rigidly secured and insulated therefrom by washers of insulating material 7. Terminal blades 8 are supported by the terminals 6 and are adapted to receive a connection plug 9.

Upon the bottom of the body 1 is a sheet of insulating material 10, preferably thin mica, and lying upon the mica 10 is a coil of resistance 11 formed of ribbon wire, the lower edges resting upon the mica 10 and a ribbon of mica 12 being wound between the coils of ribbon wire 11. The winding is so wound that it closely fits the side walls 3 and rear wall 4 and forms a triangular space 13 in the center of the iron. One end 14 of the ribbon wire 11 is connected, as shown in Fig. 2, with one of the terminals 6, while the other end 15 of the ribbon wire extends from the inner coil and is carried up over the coil and connected with the other terminal 6, the end 15 being insulated as shown in Fig. 1. This heating element consisting of the coil of wire 11 is pressed firmly against the bottom of the iron by a distributing plate 16, which latter is secured to the bottom of the body 1 by a post 17 which extends through the pressure plate and through the bottom, as clearly shown in Fig. 1, and is riveted and welded to both the bottom of the body and to the distributing plate, thereby permanently combining the body portion, heating element, and distributing plate into virtually one piece or unit. A thin sheet of mica 10′ is arranged between the distributing plate and coil 11. The distributing plate 16 is embossed with a longitudinal rib 18 which extends from the front

end of the pressure plate to the post 17 where it merges with two diverging ribs 19 which extend to the corners. Extending rearwardly from the crotch of the diverging ribs 19 is a center rear rib 20. These ribs 18, 19, and 20 stiffen the distributing plate 16, while the rib 20 also acts as a channel to permit the end 15 of the ribbon wire 11 to pass over the rear part of the coil to connect with its terminal 6. The distributing plate 16 is so constructed that it has no contact with the body of the iron, except at the parts of the body to which a relatively greater heat is to be imparted, the pressure plate having a cut-away portion 21 in each side, and a cut-away portion 22 in the rear, forming a toe portion 23 which contacts with the toe portion of the body 1, and rear contact portions 24 which contact with the rear corners of the body 1. The plate 16 performs various functions; first, as a means for holding the coil 11 in close contact with the bottom of the body 1 and preventing its displacement; second, as an element for conducting or transmitting heat which it receives from the coil 11 and conveying such heat to the toe portion of the iron and the rear corners of the iron, the amount of heat so imparted depending upon the pressure between the plate 16 and the coil, and also upon the size of the corner portions 23 and 24 which are in contact with the body 1; third, the distributing plate acts as a medium for securing the superposed parts of the iron, as will be described; and fourth, the distributing plate acts to brace and stiffen the bottom and body of the iron, which being of sheet metal, would otherwise warp out of shape on account of the heat. Without stiffening means of some kind the sheet metal bottom would not be practicable. The corner portions 23 and 24 of the pressure plate which contact with the body 1 are welded to the body, thereby further bracing and stiffening the body. This maintains pressure of the distributing plate against the heating element, but is designed more especially for delivering the heat from the distributing plate into the corners of the iron. The intimacy of contact between the corners 23 and 24 with the shell of the iron, mainly determines the amount of heat delivered into the corners of the shell and when these corners are welded, the contact is most effectual.

Heat from the bottom of the coil 11 passes directly through the mica 10 to the bottom of the iron and heats the sides, front, and back hotter than the center portion on account of the recess 13 in the center of the coil. Heat from the top of the coil 11 passes through the mica 10′ directly into the distributing plate 16 and the distributing plate conducts the heat to its toe portion 23 and heel portions 24 which in turn deliver the heat to the toe corner 2 and heel corners 4′, thereby imparting relatively greater heat to the toe and heel corners than to the center of the iron.

25 is a sheet of asbestos arranged above the pressure plate 16, and a sheet metal cover 26 formed of drawn steel rests upon the top of the asbestos 25. The cover 26 is secured in position by two screw bolts 27 which pass through the asbestos 25 and are screwed into the distributing plate 16 and also serve to secure a bail 28 which is provided with a handle 29. In order to secure the requisite weight, a cast-iron piece 30 is provided within the cover 26 and lies upon the asbestos 25, the screw bolts 27 also passing through the cast-iron weight 30. The cover 26 at its rear end is recessed at 31 to receive the extension 5, as indicated in Fig. 4.

32 designates a pressed steel plug receptacle which is formed with two wings or brackets 33 which project over the top of the rear portion of the cover 26 and are riveted thereto, thus securing the plug receptacle 32 to the cover. The plug receptacle 32 also serves as a stand for the iron, its rear wall being embossed near the top with a button 34 and near the bottom being embossed with two buttons 35, so that when the iron is tipped on end the buttons 34 and 35 will act as feet and prevent marring the support on which the iron is resting and also keep any heat from the support. This plug receptacle 32 has a closed bottom 36 which completely houses the terminals 6 and blades 8 and together with the rounded corners 37 prevents the goods which are being ironed from catching against the plug receptacle and stand. As clearly shown in Figs. 1, 3 and 4, the sides of the corners of the cover 26 are rounded as at 38, thus producing a stiff rigid shell and presenting an attractive appearance, sharp edges which are undesirable being thus eliminated.

By loosening screws 27, the bottom portion of the iron which consists of a single unit composed of the body portion 1, heating unit 11, and distributing plate 16, may be removed easily by anyone, and the unit thus removed may be sent by express at minimum expense to the factory or other place of supply and a similar unit sent in return which may be as easily attached by screwing in the screws 27. Thus, if a heating element burns out or otherwise becomes inoperative or inefficient, it is not necessary to detach the heating unit itself as heretofore has been required, and, moreover, as the heating unit is permanently confined with and completely housed by the body 1 and distributing plate which is riveted and welded thereto, the heating element is not only invisible but inaccessible, and thus prevents any tampering therewith. It will be noted that when the two screws 27 are re-

moved the iron comes apart as much as it is intended. Thus, the present construction is one which prevents tampering with the heating element and enables the replacement thereof more convenient and less expensive than heretofore.

What I claim is:

1. A laundry iron comprising a hollow body, an electric heating element in the body, a distributing plate bearing against the heating element, said distributing plate making contact with said body at the corner portions only.

2. A laundry iron comprising a hollow body, an electric heating element in the body, a distributing plate bearing against the heating element, and having a projecting corner portion in close contact with the body.

3. A laundry iron comprising a hollow body, an electric heating element in the body, a distributing plate bearing against the heating element and having a projecting portion in each corner in close contact with the body.

4. A laundry iron comprising a hollow body, an electric heating element in the body, and a distributing plate bearing against the heating element and having corner portions welded to the body.

5. A laundry iron comprising a hollow body, an electric heating element in the body, a distributing plate formed with a center rib, and ribs diverging from the center rib, said plate bearing against the heating element, and means securing the distributing plate to the body.

6. A laundry iron comprising a hollow body, an electric heating element in the body, a distributing plate bearing against the heating element and with its corners only in intimate contact with the body, and a post with its upper end riveted in the plate and its lower end riveted in the bottom of the body.

7. A laundry iron comprising a hollow body, an electric heating element in the body, and means above the heating element and bearing against the same for conducting heat from the heating element to corner portions only of the body.

8. In a laundry iron, a hollow body, a heating element in the body, and a distributing plate covering the heating element and permanently attached at its corners only to the body.

9. In a laundry iron, a top portion, a bail and handle, and a unit detachably connected therewith said unit consisting of three elements permanently secured together and comprising a body portion, a distributing plate, and a heating element between the plate and body, said heating element being housed by the plate and body.

10. In a laundry iron, a top portion, a bail and handle, and a unit comprising a distributing plate, a body portion, and a heating element between the plate and body, said plate, body portion, and heating element being permanently secured together, and screws passing through the bail and top portion and into the distributing plate for securing said unit to the top portion.

11. In a laundry iron, a hollow top portion, a hollow body portion, a heating element on the bottom of the body portion, a distributing plate over the heating element and secured to the body, and a weight within the top portion.

12. As a new article of manufacture, a body portion for an electric laundry iron comprising a triangular shell formed of drawn steel and having a raised extension on its back wall.

13. As a new article of manufacture, a top portion for an electric laundry iron comprising a triangular shell of drawn steel, the side walls and toe being rounded forming dished walls.

14. As a new article of manufacture, a top portion for an electric laundry iron comprising a triangular shell of drawn steel, the side walls and toe being rounded forming dished walls, the rear wall having a recess in its bottom edge.

15. As a new article of manufacture, a distributing plate comprising a substantially triangular piece of sheet metal formed with a projecting portion in each corner.

16. As a new article of manufacture, a distributing plate comprising a substantially triangular piece of sheet metal formed with a projecting portion in each corner, and having a longitudinal rib and ribs diverging from the longitudinal rib.

17. In a laundry iron, a hollow body, a flat coil of resistance wire on the bottom of the body, a distributing plate bearing against the coil and having a rib forming a channel in its bottom face, terminals on the body, a wire from the inner end of the coil extending through said channel and connected to one terminal, the outer end of the coil being connected to the other terminal.

In testimony whereof, I have hereunto set my hand at Ontario California this 1st day of June 1909.

EARL H. RICHARDSON.

In presence of—
C. V. SMITH,
EDWIN CRAMER.