No. 831,186. PATENTED SEPT. 18, 1906.

E. H. RICHARDSON.

ELECTRIC HEATING UNIT.

APPLICATION FILED DEC. 19, 1905.

Fig. 1

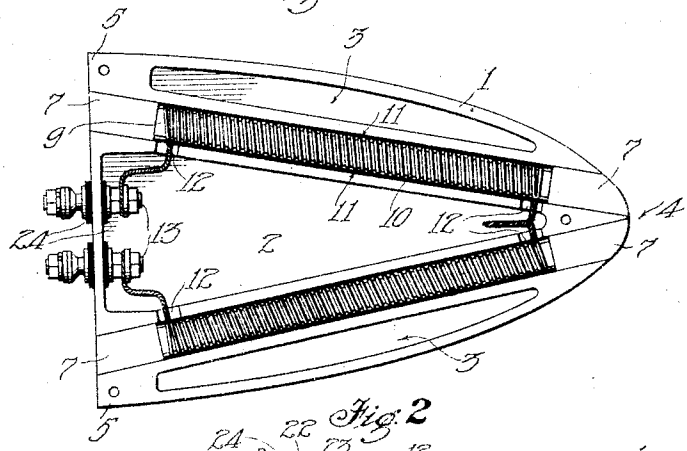


Fig. 2

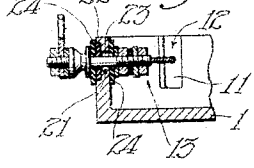


Fig. 3

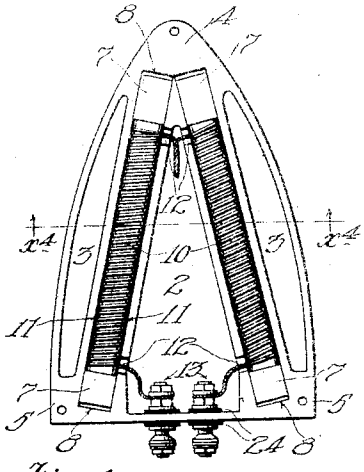


Fig. 5

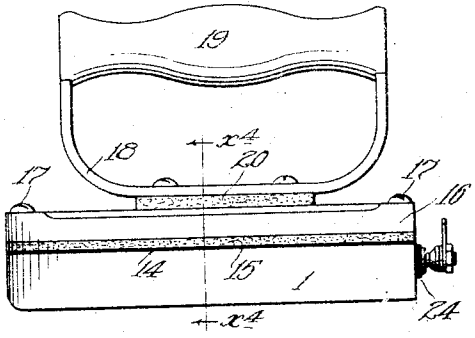


Fig. 4

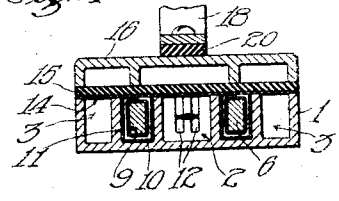
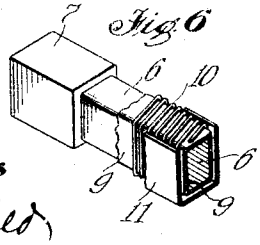


Fig. 6



Witnesses

J. Mansfield

Frank L. A. Graham

Inventor

Earl H. Richardson

by Townsend Sperr Hadley & Knight

His attys

UNITED STATES PATENT OFFICE.

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

ELECTRIC HEATING UNIT.

No. 831,186. Specification of Letters Patent. Patented Sept. 18, 1906.

Application filed December 19, 1905. Serial No. 292,409.

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 Heating Unit, of which the following is a specification.

This invention relates to an electric heating unit which is adapted for use in electric laundry-irons, electric stoves, or other electrically-heated implements or devices; and the main object of the invention is to simplify and cheapen the construction and still secure a better heating efficiency than heretofore.

The present invention I consider as an improvement over the specific construction shown in a former application of mine on electric laundry-irons, filed April 25, 1905, Serial No. 257,386, and while in the present case I have shown and described the heating unit as applied to an electric laundry-iron I do not limit myself solely to such employment, for the unit is of equal value in electric stoves, other heating implements, or devices.

Another object is to provide a simpler method of constructing the support for the terminals.

The accompanying drawings illustrate the invention.

Referring to the drawings, Figure 1 is a plan view of an electric laundry-iron constructed in accordance with my invention, the top plate and handle of the laundry-iron being removed. Fig. 2 is a vertical section of the laundry-iron, taken through one of the terminals, and illustrates an unproved construction for supporting the terminal. Fig. 3 is a view similar to Fig. 1, on a slightly-reduced scale, showing slightly-modified form of construction. Fig. 4 is a section on line x^4 x^4, Fig. 3. Fig. 5 is a side elevation of the laundry-iron. Fig. 6 is a perspective view showing the construction of the core and its winding, a portion of the insulating material being broken away, with some of the wire removed.

The body of the iron 1 is substantially hollow, having a triangular central cored-out portion 2 with side cored portions 3, leaving a solid-metal portion in the toe 4 and solid-metal portions 5 in each corner of the heel. In the form shown in Fig. 3 the body of the iron is provided with two channels which are preferably machined out to give even smooth surfaces on their inner walls, which channels terminate in the solid-heel corner portions 5, the channels converging toward the toe, with their front ends very close together and terminating in the toe portion 4. Arranged within each channel is a heating unit which comprises a core 6, which is rectangular in cross-section. The respective ends of the core lie within the corner portions 5 of the body and the toe portion 4 of the body, and each end 7 is of a width which snugly fits in the channel, so that as perfect a contact as possible is formed between the solid metal of the body and the ends of the core. In order to allow for the expansion of the cores when heated, as it is preferred to construct the body of iron and the cores of copper, the cores are made slightly shorter than the length of the channels, as clearly shown in Fig. 3, leaving spaces 8 at each end of the core. The intermediate portion of each core for a distance extending from a solid portion 5 to the toe portion 4 is made smaller in cross-section than the ends 7, as clearly shown in Figs. 3, 4, and 6.

In assembling the heating unit in the iron the small elongated intermediate portion of each core is wrapped with a sheet of mica 9 to insulate its four faces. Wire 10 is then wound over the mica, with the coils spaced slightly apart, as shown in Fig. 6, to prevent short-circuiting between the core of the wire. The wire is then covered on three sides of the core—*i. e.*, the bottom and side faces—with another sheet of mica 11, and when the outer sheet 11 is in place, owing to the slight curvature of the coils of the wire, it is bulged slightly wider than the width of the end portions 7. The core thus prepared is slipped into its channel, which flattens the coils of wire, so that the mica sheet 11 can lie flush with the faces of the end portions 7, thus forming a snug fit, giving a flat contact between the mica 11 at all points with the walls of the channel. It should be understood that no great pressure is thus secured between the walls of the channel and the mica sheet 11, but merely a close even contact, amply sufficient to conduct all of the heat desired to the side walls of the channel and to the sole of the iron which forms the bottom of the channel.

The walls of the channel are provided near

each end with slots 12, which open into the central cored-out portion 2, and the forward ends of the wires are carried from the cores out through the slots 12 and connected together, as shown. The rear ends of the wires are likewise brought through the rear slots 12 and connected to respective terminals 13. After the cores are in place a broad sheet of mica 14 is placed over the entire lower portion of the iron, as shown in Fig. 4, which covers the top of the core. Above the mica 14 a thick sheet of asbestos 15 is laid, and upon the sheet of asbestos 15 rests the cover 16, which is fastened to the body of the iron by two screws 17 at each corner of the heel and by a screw at the toe. The bail 18 of the handle 19 is screwed to the cover 16, there being an intervening strip of asbestos 20 to prevent the cover from heating the handle.

In the form shown in Fig. 1 the construction is similar to the foregoing except that the channels which receive the cores extend completely through the body of the iron, thus having open ends which enables the ends of the cores to be extended clear to the outer side faces of the body of the iron, so that a greater area of contact is secured between the ends of the cores and the body. The front ends of the cores are finished off to conform to the curve of the toe of the iron, while the rear ends of the cores are finished obliquely to lie flush with the heel of the iron.

Fig. 2 shows the preferred construction of the method of attaching the terminal, the heel of the iron having a central hole 21 and is counterbored on its outer face to receive a mica washer 22. The mica washer is drilled concentrically with the hole 21 in the heel of the iron and has a smaller hole than the perforation 21, through which terminal bolt 23 passes, the mica washer 22 serving to hold the bolt 23 concentric with the perforation 21 to prevent lateral displacement of the bolt and short-circuiting with the body of the iron. On the inner and outer sides of the heel mica washers 24 are also provided, which are squeezed up tight when the terminal is secured in place by its nuts.

What I claim is—

1. An electric heating unit comprising a body with a channel having a substantially uniform width, a core in said channel with a contracted intermediate portion, wire wound on the intermediate portion, means for preventing short-circuiting of the wire, the wire-wound core thus formed having a substantially uniform width and filling the channel laterally.

2. An electric heating unit embracing a wire-wound core with protruding unwound ends and having a substantially uniform width throughout its length.

3. An electric heating unit embracing a wire-wound core with unwound ends and having a substantially uniform thickness throughout its length.

4. An electric heating unit embracing a wire-wound core with unwound ends and having a substantially uniform width and thickness throughout its length.

5. An electric heating unit comprising a body with a hollow central portion and formed with channels on both sides of the hollow portion, and wire-wound cores in the channels, each wire-wound core making contact substantially throughout its length with the walls of the channel whereby the said channel-walls conduct heat to the extremities of the body.

6. An electric heating unit comprising a body with a hollow central portion and formed with channels on both sides of the hollow portion, and having hollow portions on each outer side of the channels, and wire-wound cores in the channels, each wire-wound core making contact substantially throughout its length with the walls of the channel whereby the said channel-walls conduct heat to the extremities of the body.

7. An electric heating unit comprising a body with a hollow central portion and formed with channels on both sides of the hollow portion, and wire-wound cores in the channels, each wire-wound core making contact substantially throughout its length with the walls of the channel whereby the said channel-walls conduct heat to the extremities of the body, suitable terminals on the body, the said channel-walls having slots through which the wires pass to the terminals.

8. An electric heating unit comprising a body with a channel, and a wire-wound core in the channel making contact substantially throughout its length with the walls of the channel whereby the said channel-walls conduct heat to the extremities of the body.

9. An electric heating unit comprising a body with a channel which extends completely through the body, and a wire-wound core in the channel and extending the entire length of the channel.

10. An electric heating unit comprising a body with a channel which extends completely through the body, and a wire-wound core in the channel and extending the entire length of the channel, the ends of the core being substantially flush with the ends of the body.

In testimony whereof I have hereunto set my hand, at Los Angeles, California, this 5th day of December, 1905.

EARL H. RICHARDSON.

In presence of—
GEORGE T. HACKLEY,
VERNA A. TALBERT.