

Oct. 24, 1939.

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2,177,476

ELECTRIC HEATING ELEMENT

Filed Dec. 19, 1936

2 Sheets-Sheet 1

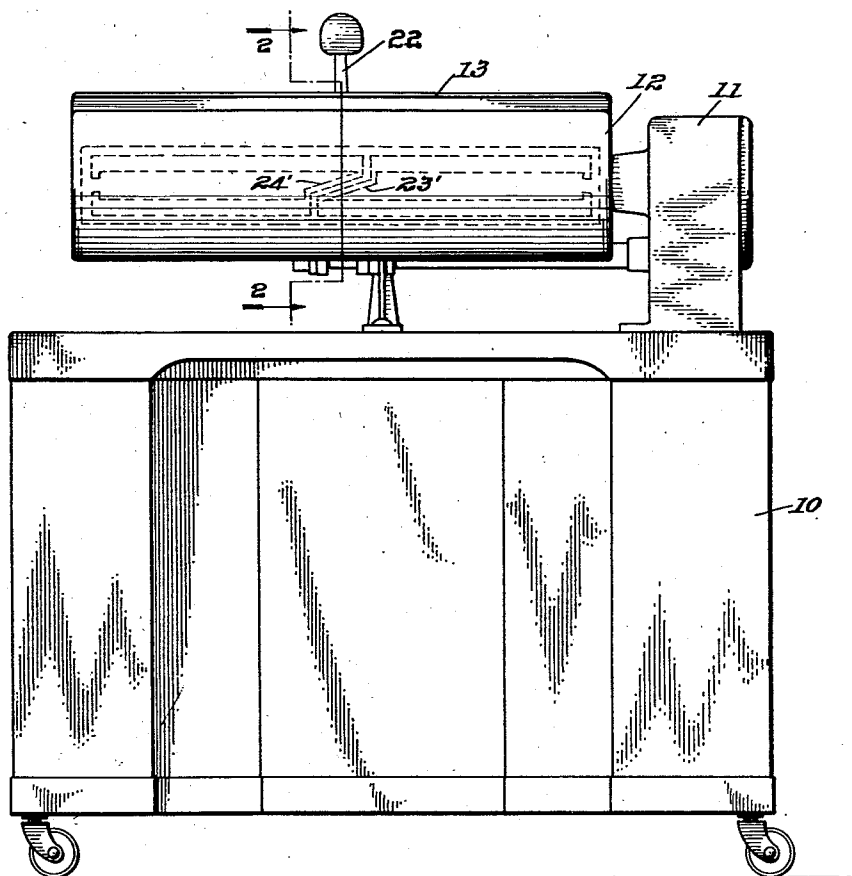


FIG. 1.

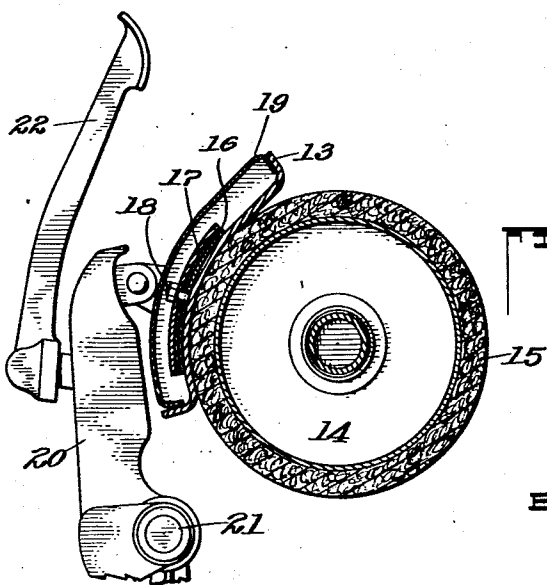


FIG. 2.

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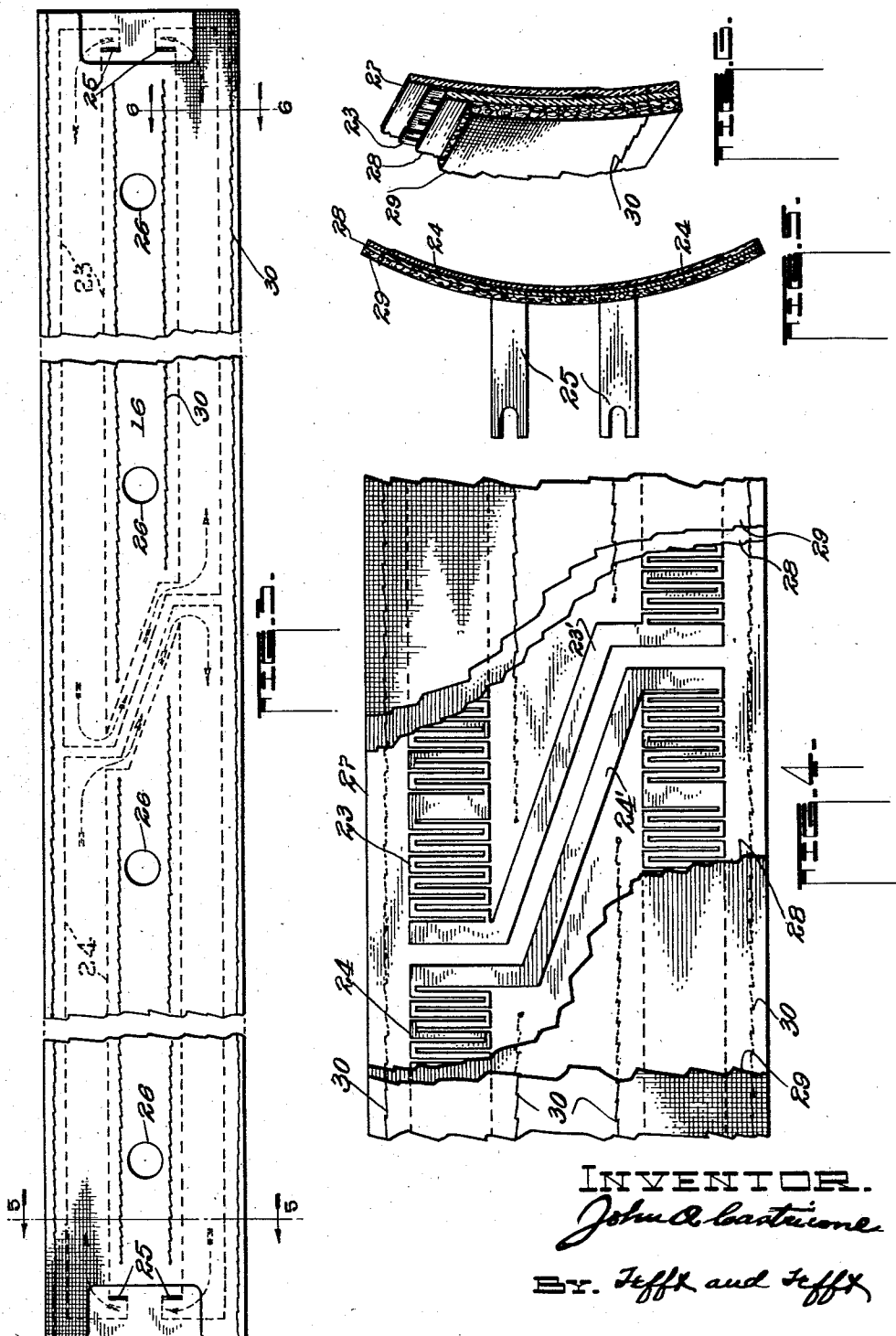
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ELECTRIC HEATING ELEMENT

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Application December 19, 1936, Serial No. 116,755

4 Claims. (Cl. 219—19)

This invention relates to domestic ironing machines and particularly to the shoe or the means of heating the shoe for such machines.

The particular object of the invention is to provide a heating element containing two separate circuits, one for each end of the shoe arranged in such a manner as to permit effective heating of either end of the shoe as selected and further and most important, to provide for effective, uniform heating of the entire shoe when both circuits of the heating element are in use.

A further object of the invention is to provide means for heating domestic ironing machine shoes including multiple resistance units arranged in such a manner as to permit effective heating of any portion of the shoe as selected and further to provide for effective uniform heating of the entire shoe when desired.

Referring now to the drawings,

Fig. 1 is a front elevation view of a roll type ironer utilizing my dual circuit heating element shown in dotted outline in its position relative to the roll.

Fig. 2 is an enlarged cross section elevation view on the section lines 2—2, Fig. 1 showing the relation between the shoe, heating element and the roll.

Fig. 3 is an enlarged plan view of my dual circuit heating element showing the dual circuits in dotted outline with arrows indicating the current flow, through the elements.

Fig. 4 is an enlarged fragmental plan view of the center section of my heating element showing the mica and asbestos covering broken away over the central section of the resistance units and disclosing staggered abutment of the resistance ribbons.

Fig. 5 is a sectional view in elevation taken on line 5—5 of Fig. 3 showing first the terminal connectors of the resistance ribbons, and

Fig. 6 is an enlarged fragmental section of the lower portion of the heating element in perspective taken on line 6—6 of Fig. 3, showing the resistance ribbon between sheets of mica covered by a sheet of asbestos, the mica and asbestos being stitched together around the resistance ribbon.

Referring now to Figs. 11 and 2, the numeral 10 indicates the cabinet support of the ironer proper. The numeral 11 indicates gear head mechanism which drives the padded roll 12.

The numeral 13 indicates the shoe shown in relationship with the roll.

The roll 14 is a hollow cylindrical tube mem-

ber about which is applied the absorbent padding 15.

The heating element 16 is clamped securely to the back of the shoe 13 by means of the clamp plate 17 and a series of clamp stud bolts 18 and the back of the shoe is finished by the shoe cover 19 which completely envelopes the heating element, clamp plates and stud bolts.

The pressure arm 20 is attached to the pressure shaft 21 whereby when the shaft 21 is rotated, the pressure arm 20 actuates the shoe 13 into or out of ironing relationship with the padded roll 15. The lever 22 is a safety device to release the shoe from the roll should such necessity arise.

Now referring to Figs. 3, 4, 5 and 6, the numerals 23 and 24 show ribbon type resistance units which are made of a special chrome alloy steel for this particular purpose.

Fig. 4 clearly illustrates and shows how these resistance units abut each other in a staggered or biased manner, the straight sections of the ribbons being connected by biased connectors 23' and 24'. The other ends of the resistor units have terminals 25 to which the lead wires of the electrical circuit are attached.

The flow of the current through the resistor units is clearly illustrated by the dotted arrows in Fig. 3. Circular openings 26 are provided in the element to provide openings for the clamp studs 18.

Referring to Fig. 6, the resistor units 23 and 24 are shown between sheets of mica 27 and 28 with a sheet of asbestos 29 over the top sheet of mica. This entire assembly is held together by stitching 30 whereby the entire heating element composed of dual resistor units is securely held together as a unit.

Having thus described the parts in their relation to each other, I will now describe their functions:

Referring to Figs. 1 and 2, the complete roll 12 is rotated by the mechanism in the head 11. The shoe 13 is forced into and out of pressure relationship with the beading 15 by rotation of the pressure shaft 21 and the pressure arm 20.

Attention is directed to the cross sectional area and the volume of the beading 15 in relation to the cross section and area of the shoe 13.

Obviously a large volume of padding is necessary to absorb the moisture driven out of the damp clothing by the shoe 13 as the roll revolves.

This is quite necessary because ironing actually is the process of removing moisture from cloth as the cloth is held in the desired position.

Now after observing the large volume of pad-

ding and large moisture absorption capacity, carefully compare the volume of metal in the shoe 13 and consider its heat storage capacity. It will readily be appreciated that the heat storage capacity of the shoe is relatively small as compared to the heat absorption and dissipation capacity of the clothing and the roll.

Therefore, to maintain constant uniform heat in the shoe, the heating element must continually and uniformly supply this heat.

It will be appreciated that the rotation of the roll against the shoe wipes the shoe across the short cross section as shown in Fig. 2. Naturally this action removes heat from the shoe in a similar manner, that is, across the short cross section of the shoe.

Therefore, if the dual circuits were formed square on their ends and abutted squarely necessarily leaving an opening between the circuits, that section of a shoe unheated by the gap would become cooled under heavy ironing and a cold spot on the shoe would develop. By means of the staggered arrangement of the elements, this objection is eliminated and more uniform heating of the shoe is accomplished.

I have shown a preferred embodiment of my invention. Obviously other arrangements utilizing the same idea are possible. I do not desire to be limited to the structure shown except as shown by my claims.

I now claim as new:

1. In a shoe for a domestic roll ironer, the combination of a formed metal smoothing iron, a multiple circuit heating unit clamped to the back of said smoothing iron, said unit including resistance elements disposed end to end adjacent to one another in line along the length of the shoe, the ends of adjacent elements being staggered to overlap heating areas in the direction

of the length of the shoe whereby the smoothing iron may be heated either in halves or in a continuous manner throughout its length, and a shoe cover enclosing said heating elements.

2. In a shoe for a domestic roll ironer, the combination of a formed metal smoothing iron, a multiple circuit heating unit secured to the back of said smoothing iron, said unit having at least two adjacent and substantially end to end abutting resistance elements, each element substantially abutting the other element diagonally of the shoe whereby the smoothing iron may be heated either in halves or in a substantially continuous manner throughout the length of the smoothing iron, and a shoe cover enclosing said heating elements.

3. In a shoe for a domestic roll ironer, the combination of a formed metal smoothing iron, a multiple circuit heating unit secured to the back of said smoothing iron, said unit having at least two adjacent and substantially end to end abutting resistance elements, each element substantially abutting the other element diagonally of the shoe whereby the smoothing iron may be heated either in halves or in a substantially continuous manner throughout the length of the smoothing iron.

4. In a shoe for a domestic roll ironer, a formed metal smoothing iron extending the full length of the roll, dual circuit heating elements each adapted to heat one-half lengthwise of the shoe, each element abutting the other element diagonally of the center of the shoe so as to provide practically continuous equal distribution of heat crosswise of the shoe, and means to clamp said dual elements securely to the back of the shoe.

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