

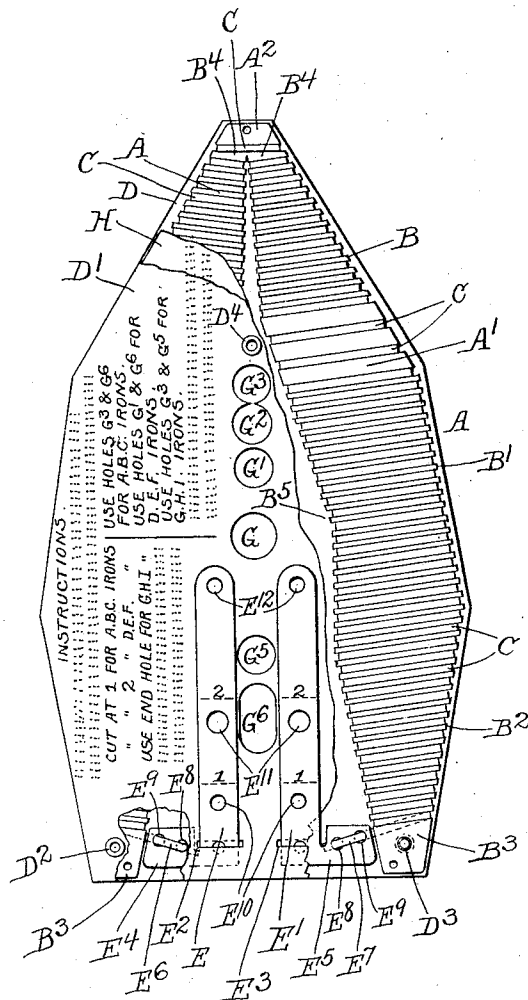
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W. A. RANKIN

HEATING ELEMENT FOR ELECTRIC IRONS

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Inventor.
 William A. Rankin
 by Parker & Carter
 Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM A. RANKIN, OF ROCHESTER, NEW YORK.

HEATING ELEMENT FOR ELECTRIC IRONS.

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My invention relates to a new and improved type of resistance element for electric irons which is usable with a large number of different types and makes of flat irons. It has for particular object to provide a unit which can be easily and quickly adapted for use with a large variety of irons, which can be easily applied, is efficient, and durable. Another object is to provide a resistance element with directions for use and for application to various forms of iron, attached thereto. Another object is to provide a resistance element adapted, upon even slight use, to be modified in appearance in order to prevent attempted return of used elements as defectives. Other objects will appear from time to time in the course of the specification and claims.

I illustrate my invention more or less diagrammatically in the accompanying drawing which shows my resistance element in plan view with parts broken away.

Like parts are illustrated by like characters throughout the drawing and specification.

A is a heating element which comprises two converging, flat strips A^1 of a heat resisting material, the strips converging, and if desired, joining at the forward end, A^2 of the heating element. These strips may be made of any suitable shape to conform to the general shape of the flat irons with which the element is to be used. I illustrate, however, a shape which is particularly convenient and adaptable for use with a maximum number of the irons now on the market.

Each strip is bounded on its outer edge by three inclined lines of approximately equal length, B, B^1 and B^2 . The strips are tapered at each end as at B^3 and B^4 and the intermediate, thicker portion of each strip is recessed as at B^5 to give space for the central apertures later to be described. The strips are wound about with a resistance element herein illustrated as a flat strip C which starts, for example, at the rear end B^3 of one of the strips, continues to the tip of that strip, crosses to the top of the other strip and thus continues to the rear of the second strip. The wound strips are contained between two layers D, D^1 of any suitable heat resisting material, for example, sheet mica, the sheets being preferably cut to conform substantially to the outer edges of the strips. The strips are secured to the sheets and spaced in relation to each other,

for example, by the rivets D^2 , D^3 at the rear end of the two strips. The sheets may also be joined by the rivet D^4 adjacent the opposite end of the element and lying between but not penetrating the two wound strips. The perforations in the flat strips A^1 , through which the rivets D^2 , D^3 pass, are substantially larger in diameter than the heads of the rivets.

Lying above the two mica sheets and adjacent the rear end of each strip are flexible, flat, metallic contact strips E, E^1 which pass through the slots E^2 , E^3 in the upper mica layer and are provided with the enlargements or lateral extensions E^4 , E^5 which are contained between the mica layers and abut or over-lie the ends of the wound strips. Under some circumstances they may be held in position by the rivets D^2 , D^3 . Under most circumstances the size of the lateral extensions and their relation to the strip hold the strips in position. The ends E^6 , E^7 of the strip C are secured to these lateral extensions in any suitable manner, being soldered, for example, or laced through the apertures E^8 , E^9 . The flat contact strips are perforated at a plurality of points along their length as, for example, at E^{10} , E^{11} and E^{12} in order to permit their use with irons requiring different lengths of leads.

The mica sheets are perforated along the longitudinal axis of the resistance element at a plurality of points. I illustrate, for example, a substantially central aperture G in front of which are three substantially tangential circular apertures G^1 , G^2 , G^3 and behind which are the circular aperture G^5 and the slot G^6 .

In order to enable the user to properly adjust or insert the resistance element, I provide instructions written on material which is adapted, by some change in its appearance or condition, to indicate whether or not the element has been used. I may use thin or easily destroyed paper or other material of such nature and thickness that use of the resistance element will entirely destroy it. I may, however, use material which merely changes color or otherwise reacts in a perceptible manner to the action of heat. This label H I insert between the layers of the mica, preferably separated from the resistance element by one or more layers of this material. The mica being transparent, the instructions may be read through the upper surface of the resistance element. The label

lies along the row of apertures and carries an indicating number for each aperture in the resistance element. Printed on the label are the key numbers for the apertures to be used with each make of iron. The resistance element is packed with the flat lead strips forwardly bent and lying along the top of the resistance element and label. The label may, if desired, similarly indicate the apertures and lengths of these strips proper for use with various makes.

It will be realized that while I have shown an operative device, which is actually in use, I do not wish to be limited to the specific details therein shown, and many changes might be made in the size, shape, proportion and relation of parts and in the materials used without departing from the spirit of my invention.

The use and operation of my invention are as follows:

I provide a resistance element for use as a replacement with the various types of electric irons on the market. Each electric iron is provided with a resistance element which eventually will burn out. The element represents but a small portion of the value of the iron and it is generally replaced. All electric irons comprise in general a sole plate of polished metal, a heavy, generally metallic pressure plate, the insulated electric resistance element contained between the two plates, and appropriate means for clamping the plates together and for securing to them a cover plate and a handle. Electric terminals project into the cover and make a connection with the resistance element. The general size and shape of the various makes of electric irons have been more or less standardized, but there are fairly wide variations in interior conformation, in the placing of the securing means which pass through the resistance element, and connect the sole plate and the cover plate, and in the details of the electric connection. Since these details form no part of the present invention, I illustrate only the resistance element itself and it will be understood that the parts of the iron above and below it are joined by at least two screws. To allow for variations in the placing of these screws, I provide in the form herein illustrated six apertures, although a greater or a lesser number might possibly be used. In one make of iron, for example, the first and the sixth apertures are used; in another, the first and the fourth, in a third, the first and the fifth, and in still another, the second and the sixth. The adaptability of the element is further increased by the fact that since there is a certain elasticity or give to the mica, and since the apertures are closely spaced together, the resistance element can be forced into place without damage, even if the aper-

tures are slightly out of line with the screws or elements passing through them. The flat contact strips or terminal leads are cut off just above the aperture necessary to make the contact with the make of iron to which the resistance element is to be applied, and the connection is completed in accordance with the requirements of the particular make in question.

In order to make the application of the resistance element to the various makes perfectly understandable to the ordinary user, I provide a label which may cover the entire surface of the resistance element and is preferably, but not necessarily inserted between the mica layers. It has indicating marks indicating by numbers, for example, the various apertures and the proper apertures to use with a given make of iron. When the resistance element is packed, the flat contact strips or leads preferably overlie the top of the resistance element and it may carry indicating marks for the apertures in these leads and directions for severing them at the proper length for the given makes.

This label is preferably made of material which shows the action of heat, so that when a resistance element has once been used, it cannot be turned in for a new element. I might use a very light paper which would be entirely destroyed or merely some material which changes color, but any material is satisfactory which changes its appearance or disappears upon the heating up of the element.

The strips A^1 being penetrated by apertures larger than the rivets D^2 , D^3 when the rivets or eyelets are set, they draw the insulating mica together and the relative thickness of the rivets or eyelets and of the strips A^1 is such that they do not project beyond the plane of the heater. This feature is of great importance, since in many types of iron there is no depression in the casting to accommodate projecting rivets or eyelets and the presence of a projecting eyelet may prevent the upper casting and the base plate from being clamped sufficiently close together to prevent overheating of the heating element and its early failure.

I claim:

1. A heating element for electric irons comprising a plurality of flat, resistance coils, and converging supporting elements therefor, a plurality of heat resistant, insulating plates inclosing said coils, contact elements for said coils, said plates being penetrated along the central axis of the heating element by a plurality of circular, substantially tangential apertures.

2. A heating element for electric irons comprising a plurality of flat, resistance coils, and converging supporting elements

therefor, a plurality of heat resistant, insulating plates inclosing said coils, contact elements for said coils, said plates being penetrated along the central axis of the heating element by a plurality of circular apertures.

3. A heating element for electric irons comprising a plurality of flat, resistance coils, and converging supporting elements therefor, a plurality of heat resistant insulating plates inclosing said coils, contact elements for said coils, said plates being penetrated along the central axis of the heating element by a plurality of apertures, including a series of substantially tangential circular apertures, and a slot.

4. A heating element for electric irons comprising a plurality of flat, resistance coils, and converging supporting elements therefor, a plurality of heat resistant, insulating plates inclosing said coils, contact elements for said coils, said plates being penetrated along the central axis of the heating element by a series of substantially tangential, circular apertures, and by additional apertures spaced along said axis.

5. A heating element for electric irons comprising a pair of flat, resistance coils and converging supporting elements therefor, a plurality of heat resistant insulating plates inclosing said coils, flexible contact strips adapted to penetrate between said plates between the ends of said supporting elements and lateral extensions therefrom, positioned between said plates, terminating adjacent the ends of said supports, the end of each of said coils being secured to said lateral projection.

6. A heating element for electric irons comprising a pair of flat resistance coils and converging flat supporting elements therefor, contact strips secured to the ends of said supporting elements, said supporting elements being perforated at their divergent ends, flexible, insulating sheets over and under-lying said coils and supporting elements, metallic securing means adapted to secure said sheets together about said coils and supporting elements, and positioned to pass through said apertures, the relative size of said apertures and said securing means being such as to permit said securing means to be seated within said apertures, and to be contained between the normal planes of the upper and lower insulating sheets.

7. A heating element for electric irons comprising a pair of flat resistance coils and converging flat supporting elements therefor, contact strips secured to the ends of said supporting elements, said supporting elements being perforated at their divergent ends, flexible, insulating sheets over and under-lying said coils and supporting elements, eyelets adapted to secure said sheets together about said coils and supporting elements, and positioned to pass through said apertures, the relative size of said apertures and said eyelets being such as to permit said eyelets to be seated within said apertures, and to be contained between the normal planes of the upper and lower insulating sheets.

Signed at Rochester, county of Monroe and State of New York, this 28 day of April, 1923.

WILLIAM A. RANKIN.