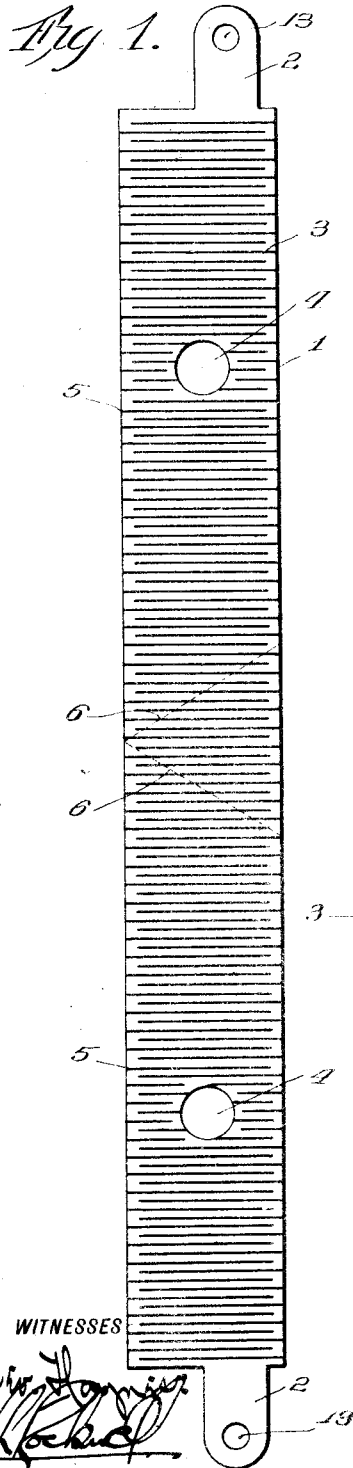
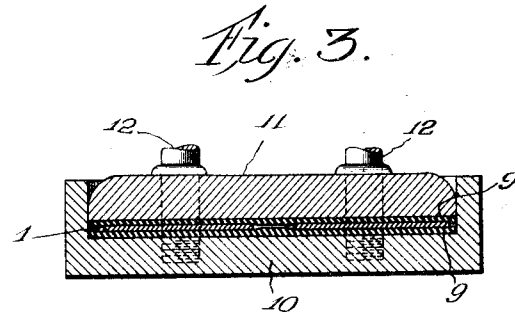
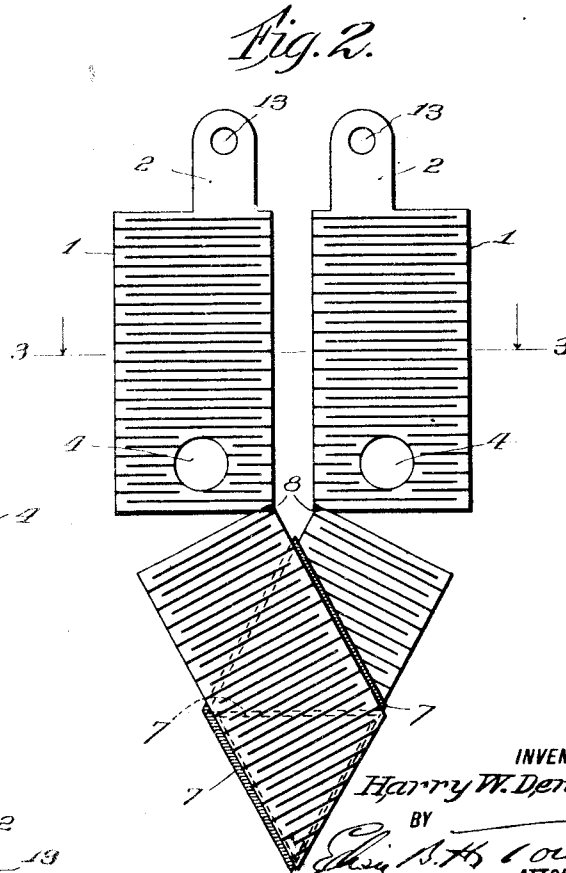


H. W. DENHARD.
ELECTRIC RESISTANCE ELEMENT.
APPLICATION FILED OCT. 31, 1911.

1,143,575.

Patented June 15, 1915.



UNITED STATES PATENT OFFICE.

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ELECTRIC RESISTANCE ELEMENT.

1,143,575.

Specification of Letters Patent.

Patented June 15, 1915.

Application filed October 31, 1911. Serial No. 657,803.

To all whom it may concern:

Be it known that I, HARRY W. DENHARD, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Electric Resistance Elements, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to electric resistance elements.

It is especially adapted to use in connection with electric heating devices, such as electric laundry irons, and it is in this connection that I shall describe the same in this application. My invention is not however limited to this use, but may be used in other relations.

My invention has among its object to provide an improved electric resistance element which may be very cheaply manufactured and assembled in a compact form.

A further object of my invention is to provide an improved electric resistance element adapted for use in connection with an electric iron, which is formed of a single strip of resistance material bent into such a shape as to conform to the shape of the iron and distribute the heat to the different parts of the iron in proper proportion.

Other objects and advantages of my improvement will hereinafter appear.

In the accompanying drawings I have illustrated one form which my invention may assume in practice. My invention is not, however, limited to this specific form, but may assume other forms.

In view of these drawings:—Figure 1 shows a plan view of a blank from which my improved unit is formed. Fig. 2 shows a plan view of a completed unit. Fig. 3 shows a partial sectional view of an iron with this form of my improved unit in position in the same.

In these drawings I have illustrated a blank from which the unit is formed. The blank is in the form of a strip 1, of slotted metallic resistance ribbon of a well known type. In a preferred form the strip 1, is provided with unslotted terminals 2, which are stamped out when the strip is formed. The body of the strip between the terminals 2, is slotted throughout its length as at 3.

In order to permit the clamping bolts of an iron to pass through the unit, the strip 1 is preferably provided with perforations 4, near its ends. In order to permit the strip to be formed into the shape shown in Fig. 2, the strip is cut as at 5, at points adjacent to the perforations 4.

When it is desired to make up the strip 1, into the shape shown in Fig. 2, the two ends of the strip are bent over upon each other along the dotted lines 6 shown in Fig. 1, so that a substantially triangular tip is formed in which there are three thicknesses of the resistance material. In order to suitably insulate these thicknesses from each other, suitable sheets of insulation 7 are placed between the sheets. In a preferred form I may employ mica as this insulation and may make the sheets of mica of triangular and rectangular form. After the ends of the strip 1 have been bent over upon each other along the dotted lines, the ends of the strip which carry the terminals are brought in together until they are parallel as shown in Fig. 2, the resistance material parting along the cuts 5, so that a unit, the shape of that shown in Fig. 2, is formed. When the ends are brought together as shown in this figure, the metal of the resistance material is slightly crimped upon itself at the inner ends of the cuts 5, as shown at 8, in Fig. 2. Thus it is seen that a very compact unit is formed which may be made up in very thin form and placed in position in an iron so that it may be brought into intimate contact with the surface to be heated.

In Fig. 3 I have, for purposes of illustration, shown one manner in which the unit may be placed in position in the iron, the section of the unit being shown along line 3—3 of Fig. 2. As shown in this figure, the shanks or side pieces of the resistance unit, extend parallel to each other. The whole unit is placed between sheets of insulating material 9. If desired I may use mica as this insulating material. After being placed between these sheets of insulating material the unit is then placed in the body of the iron 10, in which it is preferably tightly clamped by a compression or heat storage plate 11. This plate may be secured to the bottom of the iron by any suitable means such as the bolts 12 ordinarily used in such constructions, these bolts passing through the perforations 4, in the heating unit. If

desired, the terminal connections for the unit may be riveted to the terminals 2, or pass through suitable perforations 13, in these terminals.

5 By my improved construction I have been able to produce an efficient electric heating element which is capable of being made up
10 into very thin form, and which will distribute the heat as desired, over the surface of the iron. By the provision of the folded-over type of the unit I am able to increase the amount of heat generated at the tip and thus maintain a more constant temperature. By my improved construction the unit may
15 be very readily and cheaply stamped from a single sheet of resistance material, and readily folded into the desired shape. Such a unit may be very cheaply manufactured. Further, by the use of my improved thin
20 unit, the resistance material may be brought into immediate contact with the surface to be heated so that the heat generated by the resistance unit is directly conducted to that surface.

25 While I have, in this application, described one specific form which my invention may assume in practice, my invention is not limited to this specific form, but may assume other forms.

30 What I claim as new and desire to secure by Letters Patent is as follows:—

35 1. An electric resistance unit formed of a single length of resistance ribbon folded substantially at its middle to form a substantially triangular shaped tip of a plural-

ity of thicknesses of said ribbon and having its remaining portions arranged adjacent to and substantially parallel to each other.

2. A resistance unit for electric irons comprising a resistance ribbon folded intermediate of its ends on lines intersecting at one edge of said ribbon to form a point of three overlapping layers of said ribbon, and means for insulating said overlapping layers of ribbon from one another. 40 45

3. An electric resistance unit formed of a single length of resistance ribbon having terminal lugs at its ends and cuts near its ends, said unit being bent along intersecting lines near its middle to form a tip of high heat developing capacity and the portions of its sides beyond said cuts being brought together until substantially parallel. 50

4. An electric resistance unit formed of a single length of slotted resistance ribbon having terminal lugs on its ends and cuts near its ends, said resistance ribbon being bent along intersecting lines near its middle to form a tip of a plurality of thicknesses of said ribbon and the portions of its ends beyond said cuts being brought together until substantially parallel. 60

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

HARRY W. DENHARD.

Witnesses:

H. C. ROCKWELL,
GEO. B. JONES.