

T. VAN ALLER.
ELECTRIC HEATING UNIT.
APPLICATION FILED MAY 11, 1908.

1,024,234.

Patented Apr. 23, 1912.

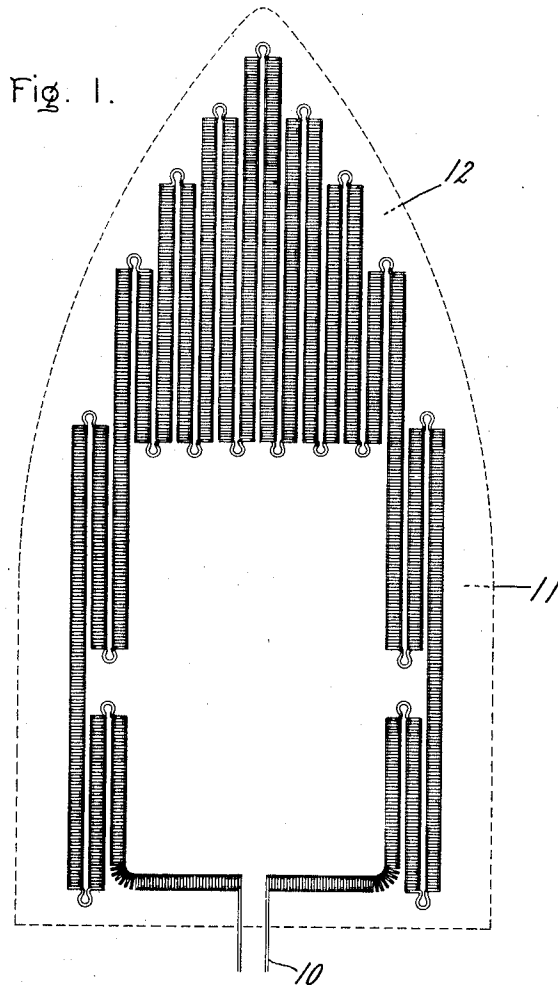


Fig. 2.

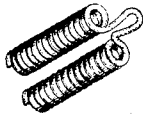
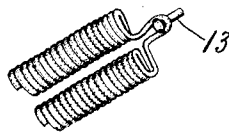


Fig. 3.



Witnesses:

George H. Tilden
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Att'y.

UNITED STATES PATENT OFFICE.

TYCHO VAN ALLER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

ELECTRIC HEATING UNIT.

1,024,234.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed May 11, 1908. Serial No. 432,023.

To all whom it may concern:

Be it known that I, TYCHO VAN ALLER, a subject of the King of Denmark, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Electric Heating Units, of which the following is a specification.

This invention relates to electric heating devices and has for its object the provision of an electric heating unit in which the heat is uniformly and evenly distributed in a simple and efficient manner.

One of the objects of my invention is to provide a unit which may be readily adapted for heating various shaped surfaces, which may be easily modified so as to adapt it for distributing the heat over an irregular area, and which at the same time can be applied to the part to be heated with a maximum of efficiency and simplicity.

In carrying out my invention I first wind the resistance conductor into the form of a helix. I prefer to have this helix closed on itself so as to obtain a maximum heating surface. In order that the turns of the helix shall not come in electrical contact with each other, it is necessary that the resistance conductor be insulated. For this purpose I prefer to use a wire having an insulating oxid so that when the wire is heated up to a definite point a layer or coating of oxid is formed thereon which has insulating properties. The helix is then bent back and forth on itself so as to cover the desired area. When the unit has acquired the desired form it is flattened on itself by being rolled or pressed until the opposite sides of the helix are in contact. In this way the effect of a flat strip is obtained without meeting the difficulties which are found in bending a flat strip edgewise upon itself.

In the accompanying drawing I have shown my invention embodied in concrete form, Figure 1 showing the unit adapted for use on a flatiron, while Figs. 2 and 3 show a fragment of the coil before and after the flattening process respectively.

Referring to the drawing, the resistance wire 10 is first wound into a closed helix as shown, although the turns of the helix may be spaced apart if desired. The particular wire used in this helix forms no part of my invention although I prefer to use a wire

which when heated will become coated with an insulating oxid. Such a wire is disclosed in the patent to John T. H. Dempster, No. 901,428, and contains nickel, chromium, manganese and iron. The wire may be heated to form the oxid by passing a current through it, it being desirable to first separate the turns by drawing out the helix so that the current will pass from end to end of the wire. It is obvious that the wire may be coated with the insulating oxid either before or after it is formed into a helix. When the helix is finally made it is laid upon the surface to be heated, as for instance the face of the flatiron 11, and bent back and forth so as to cover the desired area. In the case of a flatiron it was found that the greatest amount of heat is required in the toe portion 12 whereas the central portion is sufficiently heated from the surrounding portions and requires no direct heat. One convenient way of forming the unit in shape is to place pins 13 at the desired points around which the conductor can be bent. When the desired shape is obtained, it is flattened by passing it through rollers, or by putting it in a press or in any desired manner. By this means, substantially the same result is obtained as if the resistance conductor were in the form of a strip bent back and forth, that is, an excellent heat-conducting joint is produced. With the strip, however, it would be extremely difficult to make the necessary bends, whereas with the helix the bending is accomplished in a simple manner.

While I have described my invention in connection with specific steps of a process of manufacture and arranged in a definite way, it should be understood that I do not wish to limit my invention thereto except in so far as it is limited by the scope of the claims annexed hereto.

What I claim as new and desire to secure by Letters Patent of the United States, is,—

1. A resistance unit comprising an insulated helical resistance conductor flattened on itself and bent back and forth to cover a desired area.

2. A resistance unit comprising a flattened helical resistance conductor bent back and forth in parallel lines to cover a desired area.

3. A resistance unit comprising a flattened helical resistance conductor bent back and

forth in parallel lines of unequal length to cover a desired area.

4. A resistance unit comprising an insulated resistance conductor formed into a closed flattened helix and bent back and forth to cover a desired area.

5. A resistance unit comprising a coil having a surface insulation of the oxid of its

own metal, the opposite sides of each turn of the coil being in contact with each other. 10

In witness whereof, I have hereunto set my hand this 9th day of May, 1908.

TYCHO VAN ALLER.

Witnesses:

BENJAMIN B. HULL,
HELEN ORFORD.