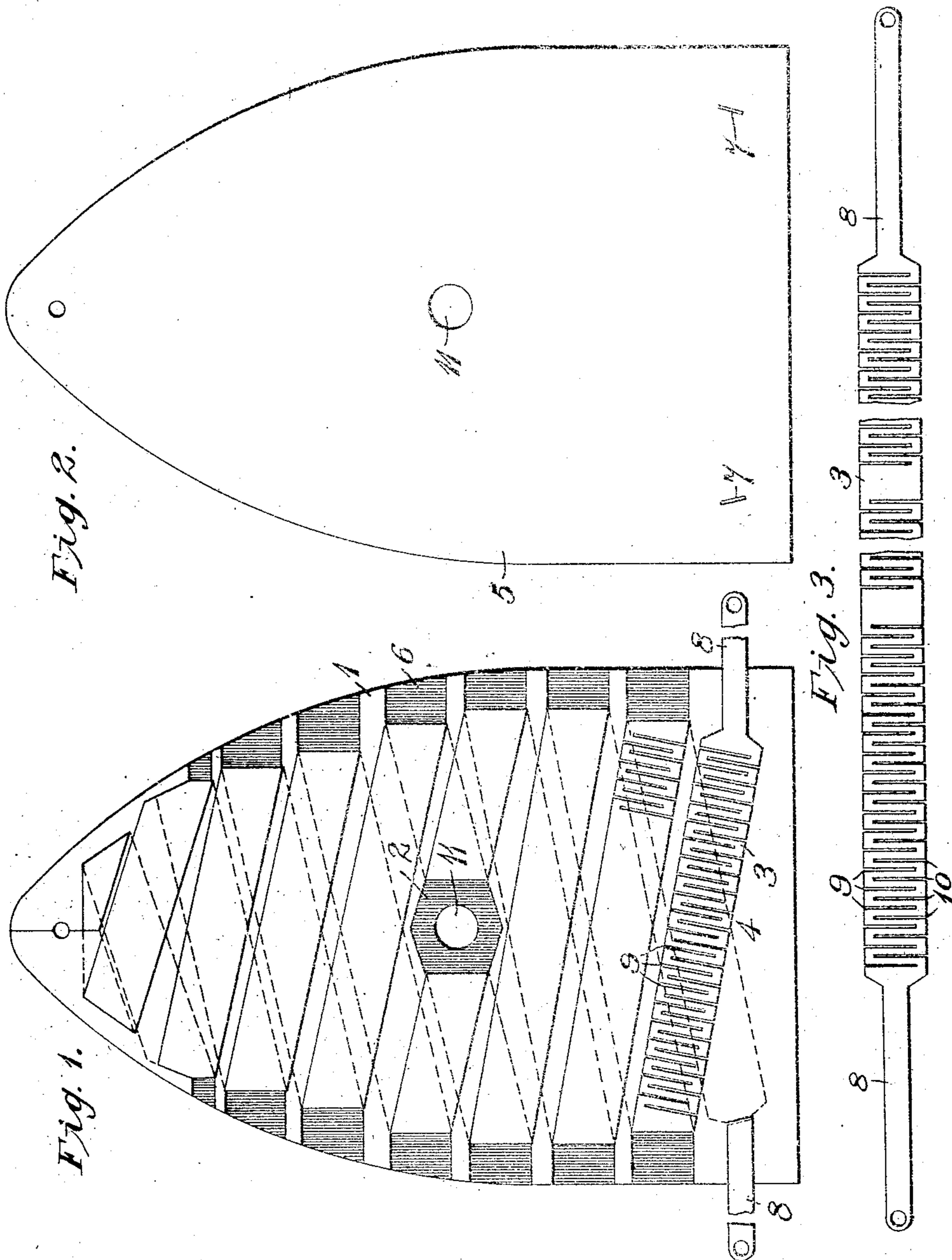


W. S. HADAWAY, JR.
ELECTRIC HEATING DEVICE.
APPLICATION FILED JULY 24, 1908.

996,758.

Patented July 4, 1911.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIAM S. HADAWAY, JR., OF EAST ORANGE, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC HEATING DEVICE.

996,758.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed July 24, 1908. Serial No. 445,199.

To all whom it may concern:

Be it known that I, WILLIAM S. HADAWAY, Jr., a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented a new and useful Improvement in Electric Heating Devices, of which the following is a specification.

My invention relates to resistance units, and to devices in which it is desirable to maintain a substantially constant heat by the application of electric current.

The object of my invention is to provide an improved resistance unit that shall be simple and durable in construction, adapted for use with flat irons and other devices of the class above indicated, and effective in the transformation of electric energy into heat. In Patent No. 890,856, granted to my assignee The Hadaway Electric Heating and Engineering Company, June 16, 1908, I have illustrated and described an electrically heated sad iron having a resistance unit which constitutes, when assembled, a resistance ribbon and a plurality of flat insulating plates interposed between the two portions of a divided sad iron body.

According to my present invention, I have provided a resistance unit which is adapted for similar purposes but which is not restricted to any specific use and may be employed with various forms of heating devices.

My improved resistance unit is particularly advantageous by reason of the fact that it is a commercial article of manufacture in itself, apart from any heating device, and by reason of the convenient disposition of its terminal members.

Figure 1 of the accompanying drawings is a plan view of the resistance unit before it is completely assembled. Fig. 2 is a plan or face view of one of the insulating plates of which the unit is comprised, and Fig. 3 is a detail view of the resistance element shown in Fig. 1.

Referring to the drawings, the resistance unit illustrated comprises a notched insulating plate 1 having a recess 2 in the center, and around which a resistance ribbon 3 is wound in the form of a flattened double helix 4, and insulating plates 5 and 6 upon the respective sides of the helix. The plate

5 is provided with slots 7 through which the extremities of the resistance ribbon 3 project to form terminal leads 8 of the unit.

By winding the resistance ribbon in the form of a double helix, as above indicated, it is possible to bring out both terminal leads at the same end of the unit, thereby avoiding the usual inequality in the length of the two leads and the necessity for crossing over the various turns of the helix in order that both may be brought out at the same end.

In assembling the unit, the insulating plates are disposed as already pointed out, and shellac or other suitable insulating binder is applied to the adjacent surfaces. Sufficient heat and a very heavy pressure are then applied, to unite the insulating plates, which are preferably built up of sheet mica, in a well known manner, thereby forming a resistance unit which is compact, durable and ready for service in a flat iron or other similar heating device.

The resistance ribbon is provided with a plurality of lateral slots 9 and 10 which are alternately opened at opposite edges of the ribbon to produce a zigzag path for the current, whereby a considerable length of conductor is obtained in a relatively short length of ribbon. The slots are omitted from the ends of the ribbons and in the portions which are bent in the formation of the flattened helix, the maximum conductivity being thus provided at the bends and at the terminals which would otherwise be most likely to fuse in the operation of the unit as a heating coil.

The recess 2 is located opposite holes 11 in the plates 5 and 6 so as to enable a clamping bolt or screw to be passed through the center without interfering with the resistance element. This construction is, of course, not essential and may be omitted within the scope of my invention.

The double helix is so arranged that any two adjacent turns on each side of the plate 1 on which it is assembled, are respectively parts of the two helical members constituting what I have termed a double helix.

The leads are bent at right angles to the plate and are parallel to each other, the leads 8 being passed through the slots 7 in the plate 5.

It is conceivable that modifications in the

size and arrangement of details may be effected without departing from the spirit of my invention, and I desire that only such limitations shall be imposed as are indicated
5 in the appended claims.

I claim as my invention:

1. A resistance unit comprising an insulating plate having edge notches, a conducting ribbon disposed upon the faces of said
10 plate and in said notches as a flattened double helix and a pair of thin insulating plates fitted to the respective sides of the helix and cemented to the faces of the notched insulating plate.

15 2. A resistance unit comprising an insulating plate having edge notches and a central opening, a conducting ribbon disposed as a double helix upon the faces of said plate

and engaging the bases of said notches and the side walls of said opening. 20

3. A resistance unit comprising an insulating plate having edge notches and a central opening, a conducting ribbon disposed upon said plate as a flattened double helix and seated in said notches, one convolution
25 of each member of the helix being disposed in the central opening and the adjacent edge notch and around the intervening portion of the plate.

In testimony whereof, I have hereunto
30 subscribed my name this 21st day of July, 1908.

WILLIAM S. HADAWAY, JR.

Witnesses:

R. J. DEARBORN,
BIRNEY HINES.