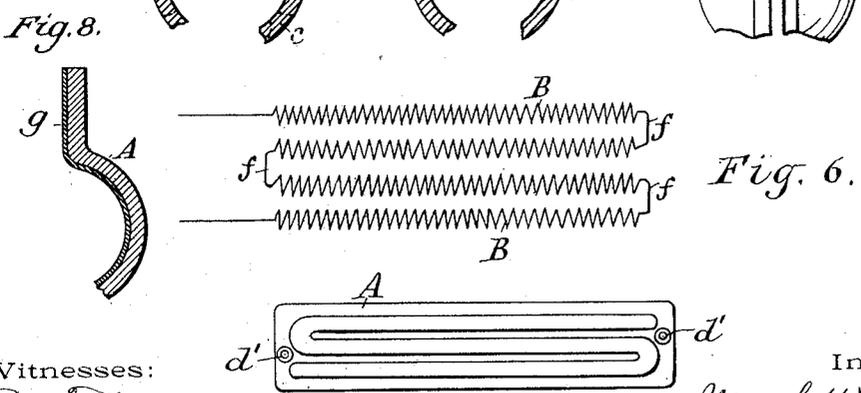
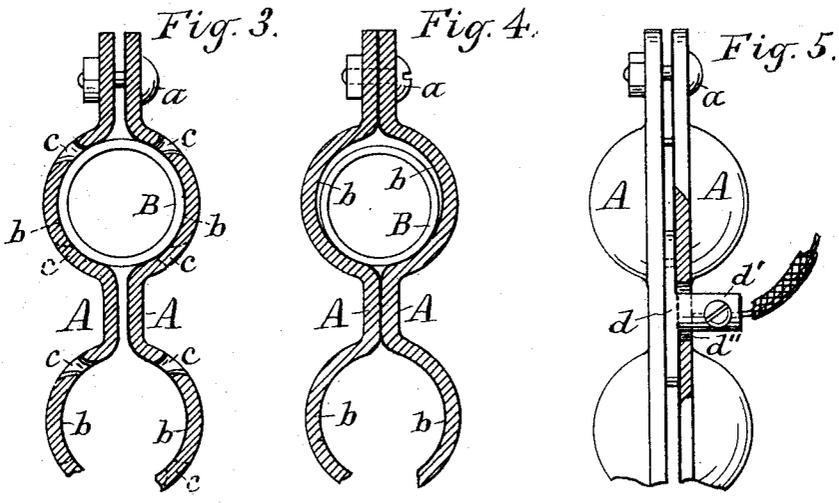
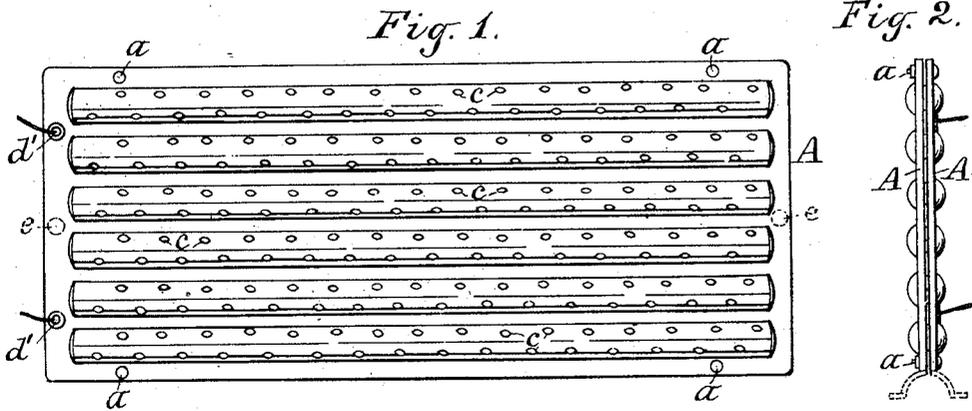


M. W. DEWEY.  
ELECTRIC HEATER.

(Application filed Apr. 24, 1895. Renewed Oct. 11, 1897.)

(No Model.)



Witnesses:  
*R. S. Dwyer*  
*H. M. Seaman*

Fig. 7.

Inventor:  
*Mark W. Dewey*  
 by *C. H. Duell*  
 his Attorney.

# UNITED STATES PATENT OFFICE.

MARK W. DEWEY, OF SYRACUSE, NEW YORK.

## ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 629,153, dated July 18, 1899.

Application filed April 24, 1895. Renewed October 11, 1897. Serial No. 654,879. (No model.)

*To all whom it may concern:*

Be it known that I, MARK W. DEWEY, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Electric Heaters, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to apparatus for heating by electricity, and the principal object is to provide an improved electric radiator for heating large air-spaces, said device, however, being applicable to other heating purposes.

My invention consists in the combination, with a spiral of wire forming a resistance-conductor, of a pair of plates provided with grooves in their inner sides to support said spiral and a refractory insulating substance between the spiral and the plates.

My invention consists in certain other combinations of parts hereinafter described, and specifically set forth in the claims.

In the accompanying drawings, Figure 1 is a side elevation of my improved heater. Fig. 2 is an end elevation of the same. Fig. 3 is an enlarged vertical sectional view of a portion of the heater. Fig. 4 is a similar view of a modification. Fig. 5 is an enlarged end elevation of a portion of the heater, showing one of the terminals. Fig. 6 shows the coils of a four-coil heater removed from the case. Fig. 7 shows a form of heater embodying my invention having a single sinuous or serpentine groove in a plate; and Fig. 8 is a fragment of a heater-plate, showing the enamel thereon exaggerated.

Referring specifically to the drawings, A A represent the grooved plates, between which and in the grooves thereof are supported the spirals or coils of wire B, which form the resistance conductor or conductors. The plates A A may be stamped out of sheet metal, but are preferably formed of cast-iron and are alike in shape or design. Said plates are preferably made of an equal thickness throughout, the grooves *bb* being side by side and running horizontally or lengthwise of the heater and perforated; as shown at *cc*, &c., in Figs. 1 and 3 of the drawings, so that the air can freely circulate therethrough.

Instead of a series of grooves, as shown in Fig. 1, a single groove only may be provided, and, if desired, this groove may be given a sinuous or serpentine form, as shown in Fig. 7 of the drawings. The spirals or coils B are preferably made of a sufficient size to hold the plates apart, as shown in several of the figures, so that the air may circulate more freely through the spirals to carry out the heat and so that the spirals will be clamped by the plates and held firmly in place, so that they cannot shift or vibrate. The plates are held together by short bolts *aa*, &c., passing through them near their edges. The insulation *g* on the inner sides of the plates to insulate the spirals therefrom may be of asbestos, mica, or paint, but is preferably an enamel or film of glass or porcelain baked upon or made integral with the plates.

If desired, the plates may be brought in contact with each other by making the spirals smaller in diameter, and the perforations *cc*, &c., may be dispensed with, as shown in Fig. 4. Such a heater may be made waterproof by sealing the edges between the plates with cement or other suitable material.

The terminals of the resistance-conductor may be soldered or otherwise secured to small plates *dd* of metal, which are clamped between the plates A A and are provided with binding-posts *d'*, which protrude through holes *d''* in one of the plates, as shown clearly in Fig. 5 of the drawings. The heater may be secured in an upright position to a wall by means of a pair of screws or bolts, as indicated at *ee* in Fig. 1, or said heater may be provided with feet on its lower edge, as indicated by dotted lines in Fig. 2.

The spiral or coil B of wire is drawn out so that the convolutions are separated sufficiently to prevent short-circuiting before it is laid in the grooves, and if the groove is not continuous, as shown in Figs. 1 and 2, short sections *ff* of the spiral are straightened at the ends of the grooves where the wire passes between the grooves. If the groove is continuous, as shown in Fig. 7, this of course is not necessary.

I do not limit myself to the material of which the wire is formed nor to the shape of the spiral.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

- 5 1. In an electric heater, the combination of the resistance-spiral and two insulated plates, said plates arranged one on each side of the spiral and adapted to clamp the same between them, said plates being spaced apart for the circulation of air therebetween, as set forth.
- 10 2. In an electric heater, the combination of the resistance-spirals and two insulating-plates, each plate provided with a plurality of grooves and arranged one on each side of the spirals, said spirals being held in the grooves.
- 15 3. In an electric heater, the combination of the resistance-spiral and two insulated grooved plates, said plates arranged one on each side of the spiral and adapted to clamp the same between them, said plates being spaced apart for the circulation of air therebetween.
- 20 4. In an electric heater, the combination of two or more spirals and plates arranged one on each side of the two or more spirals, said plates being depressed on their inner sides to receive the two or more spirals, and raised correspondingly on their outer sides, and insulating material between the plates and the two or more spirals, as set forth.

5. In an electric heater, a plurality of coils of wire forming a resistance-conductor, a pair of metallic plates each provided with a plurality of grooves on its inner side, said grooves being opposite each other and adapted to clamp said coils, a film of refractory insulating material on the inner sides of and integral with said plates, means to hold said plates together, said plates having perforations therein, as and for the purpose described.

6. In an electric heater, the combination of two insulated grooved plates and a resistance-spiral arranged in the grooves, said plates being spaced apart for the circulation of air.

7. In an electric heater, the combination of one or more resistance-spirals, plates arranged one on each side of the said one or more spirals, said plates being depressed on their inner sides to receive the one or more spirals and raised correspondingly on their outer sides and spaced apart for the circulation of air, and insulating material between the plates and the said one or more spirals, as set forth.

In testimony whereof I have hereunto signed my name.

MARK W. DEWEY. [L. S.]

Witnesses:

H. M. SEAMANS,  
R. S. DEWEY.