No. 671,725. Patented Apr. 9, 1901.

F. M. GODDARD.

HEATER FOR ELECTRIC GLOWER LAMPS.

(Application filed July 20, 1899.)

(No Model.)

Fig. 1

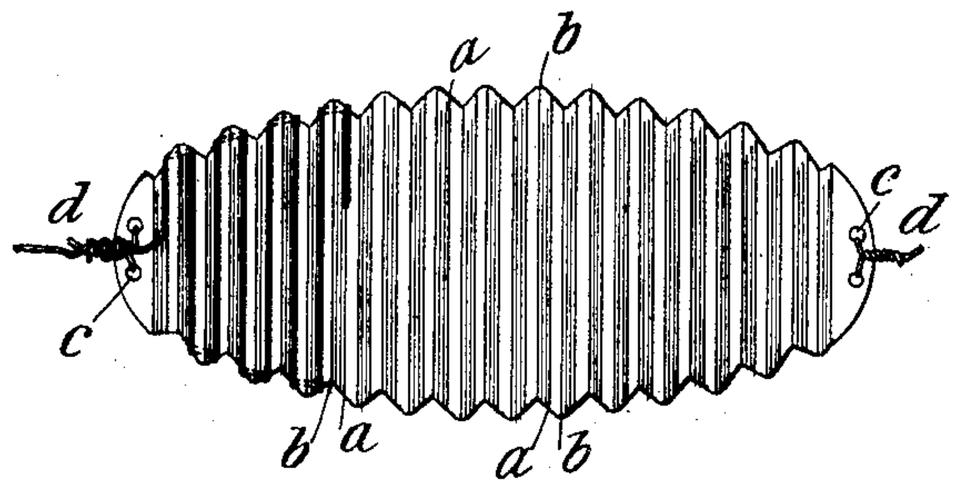
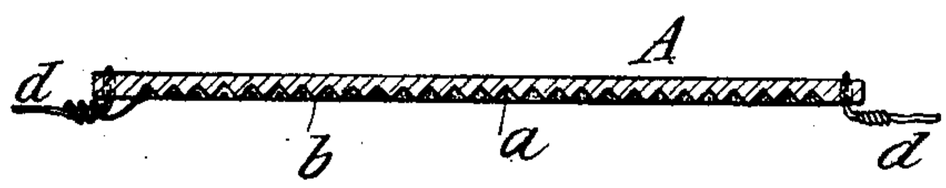


Fig. 2



Witnesses:
Raphael Netter
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UNITED STATES PATENT OFFICE.

FREDERICK M. GODDARD, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO GEORGE WESTINGHOUSE, OF SAME PLACE.

HEATER FOR ELECTRIC GLOWER-LAMPS.

SPECIFICATION forming part of Letters Patent No. 671,725, dated April 9, 1901.

Application filed July 20, 1899. Serial No. 724,451. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK M. GODDARD, a citizen of the United States of America, residing in Pittsburg, Pennsylvania, have invented certain new and useful Improvements in Heaters for Electric Glower-Lamps, of which the following is a specification.

The present invention relates to electric heaters for electric glower-lamps; and its object is to provide a heater which shall be light in weight, simple in construction, and wherein the heating-conductor is advantageously disposed with relation to the glower which it is intended to heat. In saying that the heating-conductor is thus advantageously disposed I refer not only to the fact that the said conductor in my heater is arranged at such an angle with relation to the glower as to produce the best effect thereon, but also to the circumstance that I arrange the heating-conductor wholly on the said side of the heater-supporting body which is next to the glower. I believe it to be a fact that in all of the so-called "movable" heaters hitherto made the heating-conductor has been disposed, partly at least, on the remote side of the heater-body. By arranging practically all of the heating-conductor on a flat surface adjacent to the glower I secure the best possible results and at the same time am able to retain the desirable quality of lightness and a sufficient degree of strength.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of an electric heater constructed in accordance with my invention, and Fig. 2 is a central longitudinal section of the heater-body.

In the drawings, A is a body of talcite, porcelain, or other good insulating and heat-resisting material, and *a a* are grooves in the upper surface thereof. Between the grooves are ridges *b b*, and each alternate ridge is cut off at one end to form a notch in the edge of the heater-body, the next ridge being cut off at the opposite end to form similar notches. In this way stepped or staggered projections appear on opposite sides of the body A, as shown.

Near the ends of the body A, I make two openings *c c*, and at each end I thread through the said openings short wires *d d*, and afterward twist the ends of the said wires together to form convenient terminal connections for the heater. I now take the heating-conductor *e* and attach it to one of the terminals *d*, and then wind it through successive grooves in the upper surface of the body A, looping it successively under the described projections at the edges of the said body. When the farther end of the body A is reached, I sever the heating-conductor and then twist the end of the said conductor around the remaining terminal *d*. After the winding has been completed I spread over the grooved surface of the heater, and over the heating-conductor as well, a coating *f*, of paste of material similar to that of the heater-body itself, and heat the same to hardness. If the heater is then connected up in circuit by means of the terminal connections, the heating-conductor will be thrown into circuit and the heater will be ready for operation.

If desired, the heater may be inclosed in a case suitably designed to concentrate the heat upon the glower and also to protect the heater from mechanical injury.

I claim as my invention—

1. An electric heater for electric lamp-glowers, consisting of a thin, flat body of insulating, heat-resisting material having grooves in one face thereof, and integral projections alternating with the said grooves on opposite edges and a heating-conductor lying in the said grooves and looped under the said projections.

2. A blank for an electric heater for electric lamp-glowers, consisting of a thin, flat body of insulating, heat-resisting material, such as porcelain, having grooves in one of its faces and integral projections on opposite edges alternating with the said grooves.

Signed by me at New York city, New York, this 26th day of June, 1899.

FREDERICK M. GODDARD.

Witnesses:

J. H. JONES,

L. C. CARUANA.