

W. S. HADAWAY, JR.
ELECTRIC HEATER AND PROCESS OF CONSTRUCTING THE SAME.
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1,007,441.

Patented Oct. 31, 1911.

Fig. 1.

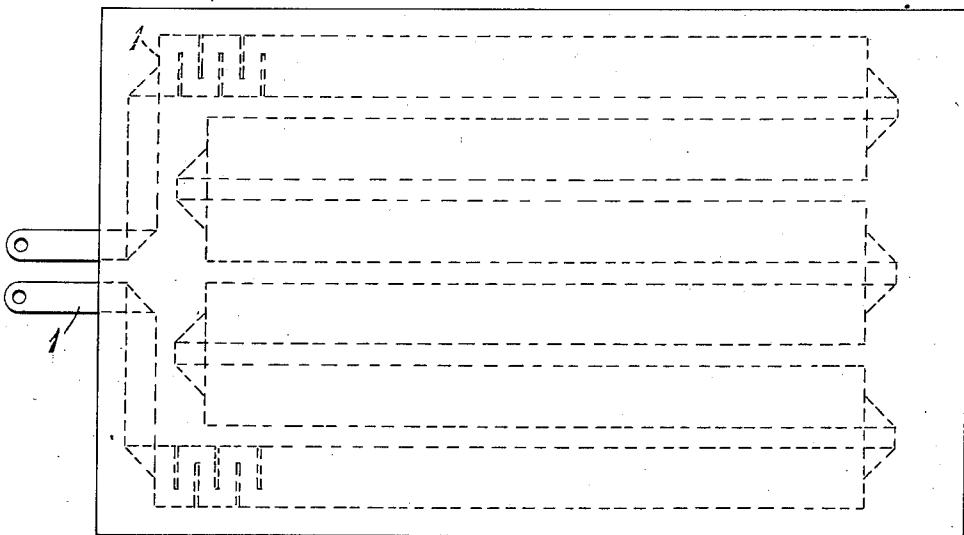


Fig. 2.

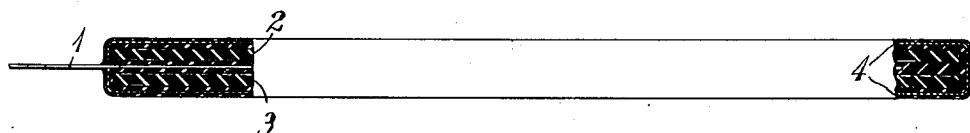


Fig. 3.



WITNESSES:

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

ELECTRIC HEATER AND PROCESS OF CONSTRUCTING THE SAME.

1,007,441.

Specification of Letters Patent. Patented Oct. 31, 1911.

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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 5 Essex and State of New Jersey, have invented a new and useful Improvement in Electric Heaters and Processes of Constructing the Same, of which the following is a specification.

10 My invention relates to electric resistances or heating devices and it has for its object to provide a simple and effective device of this character and a process of constructing the same.

15 According to one form of my present invention, I provide a sheet of asbestos or similar absorbent material, which is first soaked in insulating liquid and baked, as a foundation upon which a resistance strip or ribbon 20 may be assembled in a zig-zag form. According to another form, I employ one or more sheet metal plates which are coated with insulating liquid and baked, in lieu of the asbestos plate just referred to. In either 25 case, the resistance element is finally embedded in a coating of insulating material which, at the same time, forms the external finish of the resistance or heating device and holds the several parts thereof together.

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

Figure 1 is a plan view of a heater constructed in accordance with my invention and Fig. 2 is a partially sectional side or 35 edge view of the device shown in Fig. 1 with the thickness of the parts shown on an exaggerated scale in order to distinguish between them. Fig. 3 is a view, similar to Fig. 2, of a modified structure in which a 40 metal plate is employed in lieu of the asbestos plates of Fig. 2.

Referring to Figs. 1 and 2 of the drawings, a resistance element 1 is disposed in a preferably zig-zag form between two sheets 45 2 and 3 of asbestos, or other suitable absorbent material, which are first treated as hereinafter explained, and an outer covering 4 of sheet metal which completely envelops the resistance element and the asbestos plates 50 and is held in position by japan or a like substance which serves as the insulation for the resistance and as the finish for the assembled device. The asbestos plates 2 and 3 are first thoroughly dried and are then

soaked in japan or other suitable liquid insulation and baked. When again thoroughly dried, another coat of japan is applied to each sheet and the resistance element is placed between the sheets while the second coat of japan is still wet. A covering of 60 very thin sheet iron, which is first coated with japan on its inner surface, is wrapped around the asbestos sheets before the japan on their outer surfaces is dried. The heater casing, the insulation and the resistance element are then firmly pressed together and the whole baked under pressure, to harden the japan. Finally, the casing is japanned 65 all over, so that it is completely covered and hermetically sealed. When two sheet metal 70 plates are employed in lieu of the asbestos sheets 2 and 3, they are first japanned all over and baked. Another coating of japan is then applied to one side of each, the resistance element is placed in position on the 75 wet japan between the plates and the structure is baked or thoroughly dried, under pressure, to hold the parts together. Two coats of japan are then successively applied 80 and separately baked to completely cover the metal sheet and the resistance element, and to provide a finish for the heater. If a single metal plate 6, (see Fig. 3), is used, its surfaces are first japanned and after this 85 coating has hardened, a second coating is applied to one or both sides, the resistance element being placed in position on the wet surface and permanently held by the japan as soon as it has been baked. One or more 90 coatings of japan separately baked complete the device and give it a serviceable and durable finish.

It will be understood that my invention is not limited in its scope to the structure illustrated or to the exact process described, 95 and I desire that only such limitations shall be imposed as are indicated in the appended claims.

I claim as my invention:

1. The process of constructing an electric 100 heater which consists in soaking sheets of absorbent material with liquid insulation, baking said sheets, recoating the sheets with like material and assembling a resistance element between the sheets before the liquid 105 is dried.

2. The process of constructing an electric 110 heater which consists in soaking sheets of

absorbent material with liquid insulation, baking said sheets, recoating the sheets with like material, assembling a resistance element between the sheets before the liquid is dried, applying a covering of sheet metal, the inner surface of which is first coated with the insulating liquid, pressing all the parts together, baking under pressure and, finally, coating the whole with like insulating liquid.

3. The process of constructing an electric heater which consists in soaking asbestos sheets with japan, baking said sheets, recoating the sheets with japan and assembling the resistance element between them before the japan has dried.

4. The process of constructing an electric heater which consists in soaking asbestos sheets with japan, baking said sheets, recoating the sheets with japan, assembling a resistance element between the sheets before the japan is dried, applying a covering of sheet metal, the inner surface of which is first coated with japan, pressing all the parts together, baking under pressure and, finally, coating the whole with japan.

5. A resistance or heater unit comprising a plate having a coating of insulation which completely incloses it, a resistance element embedded in the coating, and an outer coat-

ing constituting a finish for all surfaces of the unit as well as insulation for the resistance element.

6. A resistance or heater unit comprising a base having a coating of insulation, a resistance element embedded in the coating and a wrapping or sheath surrounding said base and said resistance element and held in position by the adhesion of the coating.

7. A resistance or heater unit comprising a base having a coating of insulation, a resistance element embedded in the coating and a sheet metal sheath surrounding said base and said resistance element and held in position by the adhesion of the coating.

8. A resistance or heater unit comprising a base having a coating of insulating japan, a resistance element embedded therein, a sheet metal sheath surrounding said base and said element and held in position by the adhesion of the coating, and an outer coating of japan serving as a finish for the sheath and as a seal for the unit.

In testimony whereof, I have hereunto subscribed my name this 8th day of Feb., 1909.

WILLIAM S. HADAWAY, JR.

Witnesses:

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B. B. HINES.