Jan. 15, 1924. 1,481,113

L. S. WELLS

ELECTRIC HEATER

Filed April 10, 1922

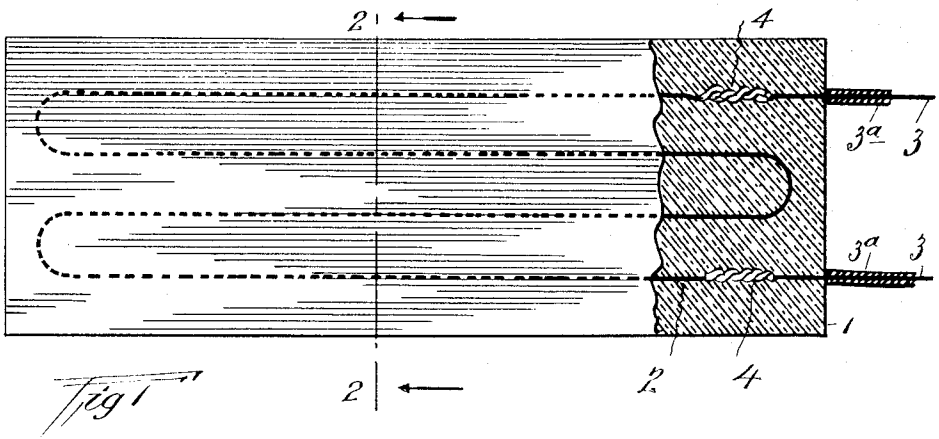


Fig 1

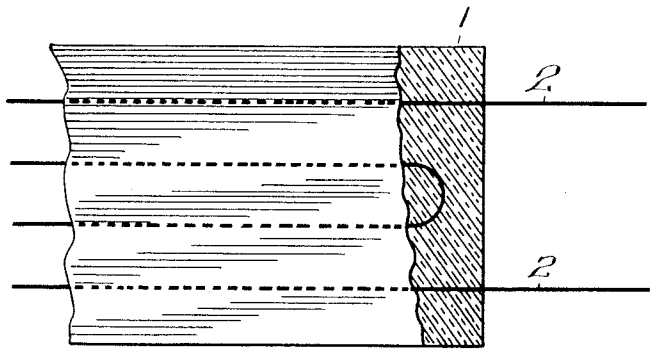


Fig 4



Fig 3.

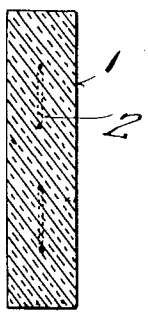


Fig 2

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Patented Jan. 15, 1924. 1,481,113

UNITED STATES PATENT OFFICE.

LOREN S. WELLS, OF NEW YORK, N. Y.

ELECTRIC HEATER.

Application filed April 10, 1922. Serial No. 550,996.

To all whom it may concern:

Be it known that I, LOREN S. WELLS, a citizen of the United States, and resident of New York city, borough of Manhattan, in the county of New York and State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

The object of my invention is to provide a heater to be heated by electricity, which shall be strong and durable, capable of being heated to a desired temperature without injury, which will not be injured by water, moisture, snow and ice, and which will withstand climatic changes and weather conditions without injury to itself.

In carrying out my invention I provide an electrical-insulating heat-conducting body containing an electric resistance conductor embedded therein, with means to connect said conductor with service lines.

My invention also comprises novel details of improvement that will be more fully hereinafter set forth and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming part hereof, wherein—

Figure 1 is a partly broken side view of an electric heater embodying my invention;

Fig. 2 is a cross section on line 2, 2, in Fig. 1;

Fig. 3 is an enlarged detail of an electrical connector shown in Fig. 1, and

Fig. 4 is a detail of a modification.

Similar numerals of reference indicate corresponding parts in the several views.

The body 1 may be of any suitable shape, being illustrated in elongated rectangular form, and said body contains an electrical resistance conductor, 2, which is embedded within the body. The body 1 comprises electrical insulating material of heat conductor charactertistics. Said body may comprise asbestos, or an asbestos compound containing a suitable binder which will not be affected by water or by the heat from the resistance conductor 2, in which material said conductor will be embedded and thereafter said material will be subjected in a mold to relatively high compression pressure, such as 1000 lbs., or more, to the square inch, according to the uses to which the heater is to be applied. The asbestos or asbestos compound referred to when compressed around the resistance conductor, as stated, will provide a relatively hard, rigid body not subject to injury nor to deterioration by reason of water, moisture, ice and snow, or other climatic conditions or temperatures. According to the capacity of the heater, the conductor 2 may be arranged therein, being shown extending longitudinally back and forth within body 1 and having its terminal ends adjacent to one end of the body for convenience in making connection to service line conductors. In the example illustrated in Fig. 1 the resistance conductor 2 is bare and its ends are within body 1 being electrically connected to terminal conductors 3 within said body before the material of said body is finally enclosed around the conductors. In the example illustrated in Figs. 1 and 3 the ends of the resistance conductor 2 are connected to the conductors 3 by means of the double-barrel connector 4 which receives the respective ends of said conductors and is twisted to retain said conductors in electrical and mechanical connection, said connectors in connection with said conductors being embedded in the material of body 1. The conductors 3 are shown provided with insulation at 3^a as usual, and may be connected to service line conductors in any desired way. In the form shown in Fig. 4 the terminal ends of the resistance conductor 2 extend beyond body 1, where they may be connected to the line conductors in any usual way.

The body 1 may comprise cement or concrete which may be poured into a suitable mold containing the resistance conductor 2 to embed the latter in such material, which material, when set and hardened, will serve as an electrical insulator having heat conductor characteristics, not liable to be injured by the heat of the resistance conductor therein. Body 1, may, if preferred, be made of clay, which may be molded around the resistance conductor 2 in any desired way and thereafter baked to a suitable extent.

The construction described provides a body 1 of nonfriable, solid, hard, rigid, material not liable to crack from the heat of the resistance conductor or from its expansion due to such heat, and said material will closely adhere to said resistance conductor to prevent the entrance of moisture into the body along the conductor, so that the heater may be used in exposed positions.

My improved electric heater is particularly adapted for use in exposed locations, such as along railroad tracks beneath the rails and switches or frogs, adjacent to the cross ties, for heating the rails, switches and frogs to prevent the accumulation of snow, sleet and ice thereon, the construction described being such that the body, when heated, will not be liable to injury from the elements and will retain heat for a considerable period when the electric current has been cut off from the resistance conductor 2. While I have illustrated my improved electric heater body as un-enclosed, it will be understood that the same may be encased within any suitable exterior casing, which may be found advantageous in various relations, such as where the heater is used indoors, as for heating railroad cars, and in other relations.

Having now described my invention, what I claim is:—

1. An electric heater comprising a body having a resistance conductor embedded therein, said body being an electrical non-conductor and a heat conductor not liable to injury from contact of water, moisture, snow, and ice, the ends of said resistance conductor being within the body, and insulated conductors having bare ends embedded within said body, said bare ends being connected with the corresponding ends of the resistance conductor within the body and the junctions embedded therein.

2. An electric heater comprising a body having a resistance conductor embedded therein, said body being an electrical non-conductor and a heat conductor not liable to injury from contact of water, moisture, snow and ice, the ends of said resistance conductor being within the body, insulated conductors having bare ends embedded within said body, and connectors connecting the ends of said conductors within and buried in said body.

3. An electric heater comprising a body of asbestos and a resistance conductor therein, said asbestos being compressed around said conductor into a solid hard rigid condition adapted to withstand heat from the conductor and moisture, water, snow and ice.

4. An electric heater comprising a body of asbestos and a resistance conductor therein, said asbestos being compressed around said conductor into a solid hard rigid condition adapted to withstand heat from the conductor and moisture, water, snow and ice, said conductor having terminal ends extending beyond the body.

Signed at New York city, in the county of New York, and State of New York, this 7th day of April, A. D. 1922.

LOREN S. WELLS.