

April 24, 1928.

1,667,257

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ELECTRIC HEATER

Filed Nov. 27. 1926

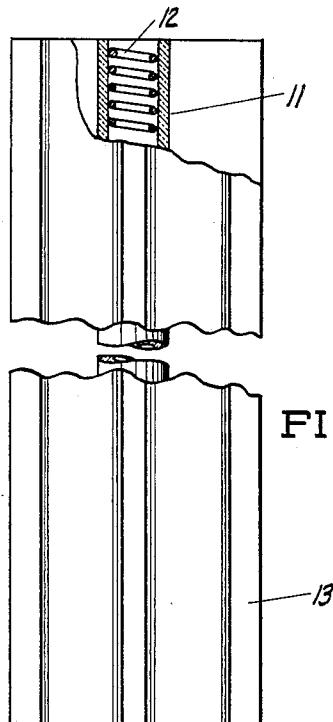


FIG. 1.

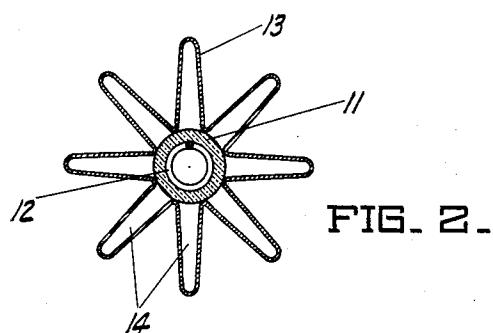


FIG. 2.

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ELECTRIC HEATER.

Application filed November 27, 1926. Serial No. 151,205.

This invention relates to electric heaters, and more particularly to such heaters that are adapted to provide a large area of contact between it and the medium to be heated.

5 It has been proposed to utilize an elongated container made from good heat conducting material such as metal or clay, in which a heating unit is located, and to provide radiating fins externally of the container for providing a path for the rapid exchange of heat. The mechanical construction of such units as these has been found to be expensive, necessitating as it does, such operations as welding or swaging fins upon 10 the tubes.

It is accordingly one of the objects of our invention to provide a radiating heating unit of this general character that is inexpensive to manufacture and simple to assemble.

It is another object of our invention to provide an improved form of radiating electrical heating unit.

Our invention possesses many other advantages, and has other objects which may be made more easily apparent from a consideration of one embodiment of our invention. For this purpose we have shown a form in the drawings accompanying and 30 forming part of the present specification. We shall now proceed to describe this form in detail, which illustrates the general principles of our invention; but it is to be understood that this detailed description is not to 35 be taken in a limiting sense, since the scope of our invention is best defined by the appended claims.

Referring to the drawings:

Figure 1 is an elevation of a heating unit 40 partly broken away, embodying our invention; and

Fig. 2 is a horizontal sectional view of the unit.

In the present instance we show a tube 45 11 of refractory material, such as clay or porcelain, which serves to house a heating element. This element 12 is shown as a helical coil of bare resistance wire, which is closely encompassed by the tube 11. Upon 50 current being sent through element 12, it becomes heated and transfers its heat to the walls of tube 11, which in turn also becomes highly heated and serves as a source of heat. Since tube 11 is made from insulating material, it is entirely practicable to

cause the coil 12 to touch the tube, whereby an efficient heat transfer is provided. There is sufficient frictional engagement to retain the coil 12 snugly in the tube 11.

In order to increase the radiation surface 60 of the unit, and also to provide convection flues, we provide a corrugated metal sheathing 13 that slips over the tube 12 and is retained firmly thereon by friction. The corrugations are very deep, and form in fact 65 deep longitudinal ribs or vanes that are hollow. Thus convection flues 14 are formed between the sides of the corrugations and the exterior surface of tube 11. It is further evident that, due to the seamed or corrugated structure, there is sufficient resilience in the sheathing to permit spreading it for introducing the tube 11. Then by releasing the sheathing, the tube will be 70 strongly gripped by frictional force. 75

The sheathing 13 can be made from sheet copper or steel, and welded or brazed into the circular form shown.

The element described can be used as an air heater effectively by positioning it vertically, thereby providing for the passage of convection currents in and around the corrugations. Any appropriate form of support can be provided, and it is considered unnecessary to detail these. Of course the 80 heater can effectively be used in other positions, the deep corrugations acting in any 85 position to provide an extensive radiating surface.

We claim:

1. In an electric heater, a tube, a heating wire in the tube and in direct thermal conducting relation therewith, and a sheathing disposed over the tube and forming with the external surface of the tube a series of longitudinal spaces.

2. In an electric heater, a tube, a heating wire in the tube, and a sheathing of corrugated metal disposed over the tube and contacting therewith, the corrugations forming 100 radiating fins as well as a series of spaces angularly spaced next the tube.

3. In an electric heater, an insulating tube capable of transmitting heat, a convoluted electrical heating wire inside the tube and in contact therewith, and a metallic sheathing having deep corrugations disposed on the tube, the inner portions of the corrugations resiliently engaging the tube, whereby a plurality of spaces are formed by the outer sur- 105 110

face of the tube and the inner surfaces of the corrugations.

4. In an electric heater, a tube of refractory material, a coil of bare heating wire within said tube and frictionally contacting therewith, and a sheet metal sheathing engaging the tube, said sheathing having deep

corrugations forming spaces between them and the exterior surface of the tube, as well as longitudinal fins.

In testimony whereof we have hereunto set our hands.

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