Aug. 4, 1925. 1,548,305

W. H. DALTON

ELECTRICAL HEATER AND HEATING UNIT THEREFOR

Filed March 24, 1923

Fig. 1.

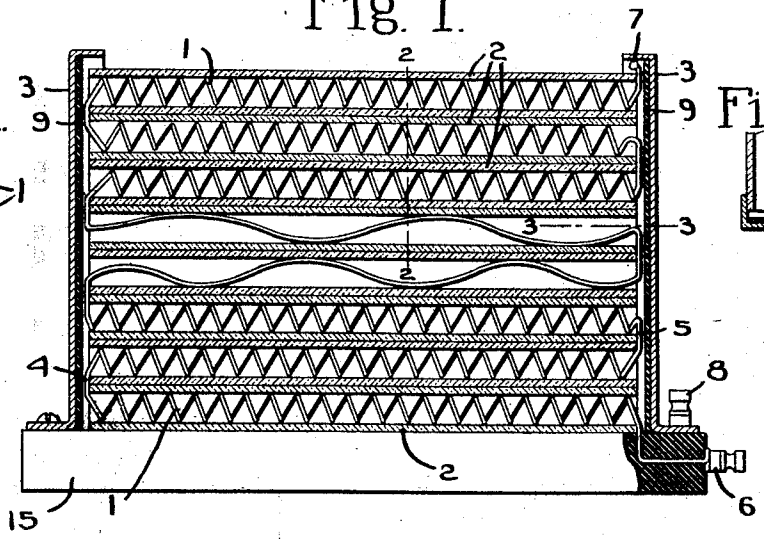


Fig. 2.

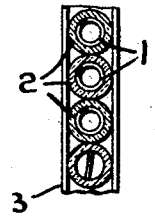


Fig. 3.

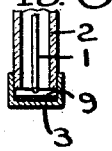
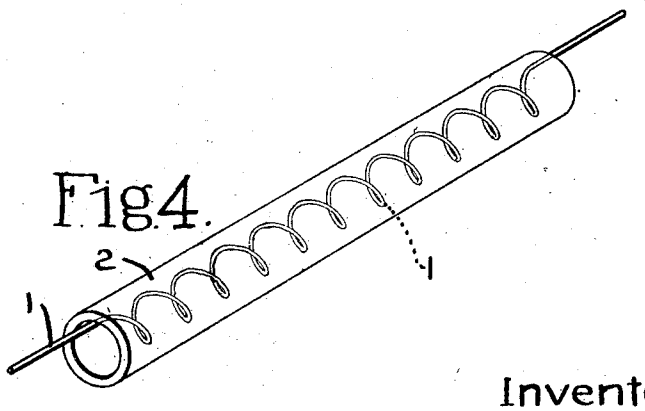


Fig4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. DALTON, OF SALEM, MASSACHUSETTS, ASSIGNOR TO DALTON ELECTRIC HEATING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ELECTRICAL HEATER AND HEATING UNIT THEREFOR.

Application filed March 24, 1923. Serial No. 627,483.

To all whom it may concern:

Be it known that I, WILLIAM H. DALTON, a citizen of the United States, and resident of Salem, county of Essex, State of Massachusetts, have invented an Improvement in Electrical Heaters and Heating Units Therefor, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to electrical heaters and heating units therefor and has for one of its objects to provide a novel heating unit in which the resistance wire is enclosed in a glass tube and for another object to provide an electrical heating device made up of a plurality of such units.

The glass material which is used in the tube is of such a nature that it will not be injured by the heat given off from the resistance wire when the heater is in operation. The glass tube constitutes means for protecting the resistance wire, and as the resistance wire is loosely retained in the glass tube said wire can be readily removed and a new wire inserted if it is necessary for any reason to change the resistance wire of the heating unit.

The invention is herein illustrated as it might be incorporated in an electric toaster.

In order to give an understanding of my invention I have illustrated in the drawings a selected embodiment thereof which will now be described after which the novel features will be pointed out in the appended claim.

Fig. 1 is a vertical sectional view through a heater of the type in which the resistance wire is exposed to view and embodying my invention;

Fig. 2 is a section on the line 2—2, Fig. 1;

Fig. 3 is a section on the line 3—3, Fig. 1;

Fig. 4 is a perspective view of the glass tube with a resistance wire therein.

As stated above my invention relates to a heater in which the resistance wire is housed in a glass tubing. In Fig. 4 I have shown a resistance wire in the form of a coil 1, although so far as the invention is concerned this wire might be in the form of a strand, and at 2 I have indicated a protecting tube which encloses the resistance wire. This protecting tube is preferably transparent and is made of some material which will not be injured by the heat developed in the resistance wire when the heater is in operation.

There is now on the market a kind of glass which is specially made so that it will not be injured by heat and a glass of this nature is suitable for the purposes of this invention. The manner in which this resistance wire and its glass protecting tube is embodied in the heater will depend upon the nature of the heater.

In Figs. 1 and 2 I have shown a type of heater which heats by radiation and in which the resistance wires are exposed to view. The heater herein shown is one having a plurality of resistance wires extending substantially parallel to each other and each is enclosed in a glass tube 2. These glass tubes 2 are placed one above the other so as to form a vertical row, and the tubes are retained in position by two channel-shaped holders 3 which receive the ends of the tubes. These holders are shown as supported on a suitable base 15.

The resistance wire 1 in the tubes 2 may be connected either in series or in parallel depending upon the results to be attained. In the construction shown they are arranged in series, the resistance wire 1 in the lower tube 2 being connected to the resistance wire in the next tube above at one end of the tube as shown at 4 and the resistance wire in said last-named tube being connected to the resistance wire in the third tube, at the other end as shown at 5 and so on. The resistance wire in the lower tube 2 is connected to a suitable binding post 6 and the resistance wire in the top tube is shown as grounded on the frame at 7, the latter having a binding post 8 for the connection of one of the circuit wires.

A strip of insulation 9 is situated inside of each channel member 3, said strips serving to insulate the wires from the frame at the points where they pass around the ends of the tubes 2. When a heater of this sort is used the glowing resistance wire is visible through the glass tube as plainly as if the wire were not exposed.

Prior heaters of this type in which the resistance wire is exposed to view heats by radiation only as it is important that the resistance wire should be kept out of contact with the article to be heated. A heater such as shown in Fig. 1 will heat equally

well by radiation as the glass tube does not interfere with the distribution of the radiant heat. This form of heater may also heat by contact with the article to be heated because the contact of said article with the glass tube will not short circuit or otherwise interfere with the operation of the resistance wire. Therefore, with a construction shown in Fig. 1 it is possible to heat the article both by the effect of radiation and by contact of the article with the tubes thus securing a more rapid heating than would be possible with radiation alone.

While I have illustrated herein a selected embodiment of my invention I do not wish to be limited to the construction shown.

I claim:

An electric heater comprising two vertical channel-shaped supports, of a plurality of glass tubes arranged in a tier with their ends occupying the channels of said supports, and a resistance wire loosely sustained in each tube.

In testimony whereof, I have signed my name to this specification.

WILLIAM H. DALTON.