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1,628,875

K. EHROGOTT

HEATING UNIT

Filed April 2, 1924

Fig. 1.

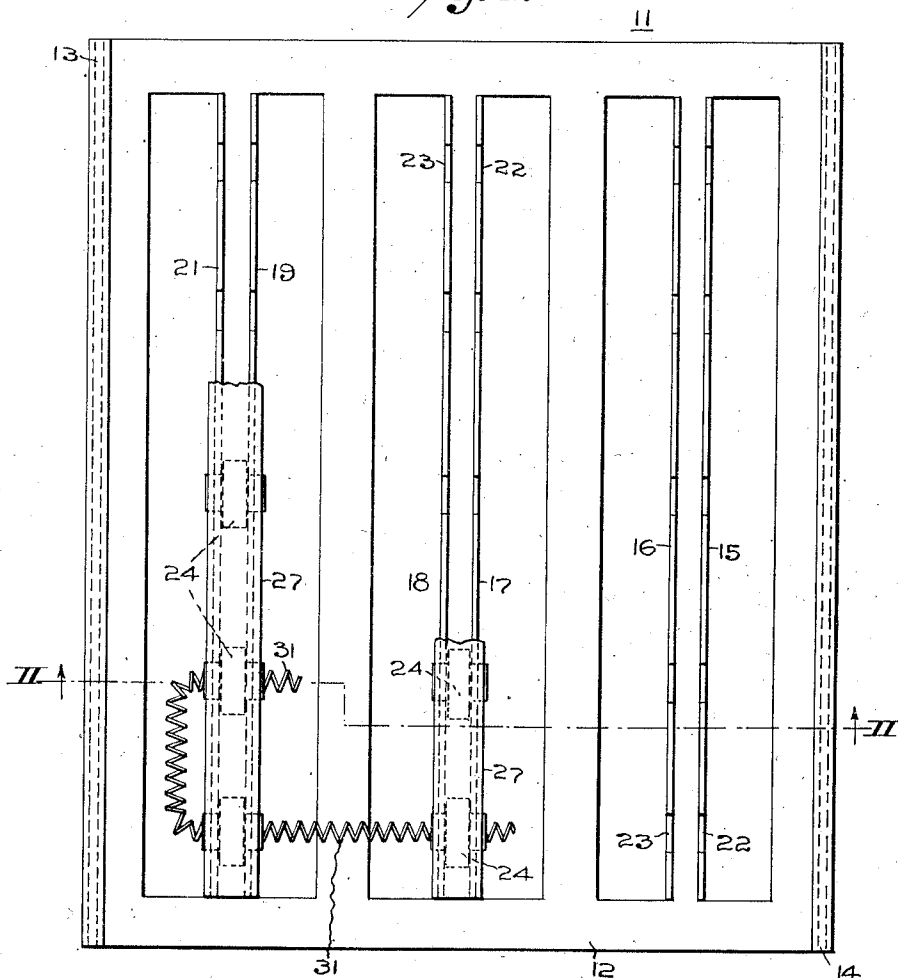


Fig. 2.

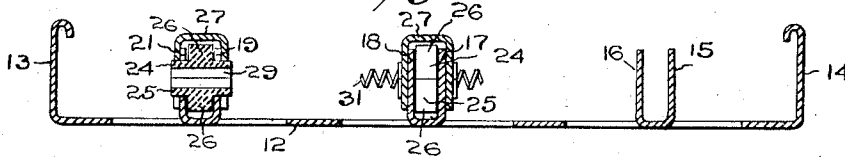
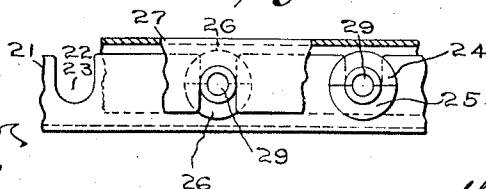


Fig. 3.



WITNESSES:

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KARL EHRGOTT, OF EAST PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

HEATING UNIT.

Application filed April 2, 1924. Serial No. 703,676.

My invention relates to electric heating and particularly to light-weight electric heating units.

The object of my invention is to provide a relatively simple and light-weight heating unit that shall be capable of being easily and quickly assembled and disassembled.

In practicing my invention, I provide a plate of relatively thin sheet metal having integral, punched out, and laterally-extending pairs of flanged portions. Each pair of flanged portions has a plurality of spaced notches therein for receiving insulating thimbles of refractory material. Resilient retaining members, of relatively thin sheet metal bent to substantially U-shape and having notches in the side portions, interfit with the pairs of flanged portions to hold the thimbles in proper operative positions.

In the single sheet of drawings,

Figure 1 is a top plan view of a heating unit embodying my invention,

Fig. 2 is a vertical, lateral section there-through taken on the line II—II of Fig. 1 and

Fig. 3 is a fragmentary view, partially in side elevation and partially in section, of a device embodying my invention.

A heating unit 11, comprises a plate 12 of relatively thin sheet metal that is of any suitable or desired dimensions, both longitudinally and laterally thereof, and that is provided with integral and upturned flanged portions 13 and 14, respectively, located at the two sides thereof in order to strengthen the supporting plate.

A plurality of pairs of integral flanged portions 15 and 16, 17 and 18, 19 and 21 are punched out of the body portion of the sheet-metal plate 12 and are bent to extend at substantially right angles to the face of the plate 12. The two flanged portions comprising each pair are separated a small distance, as is shown in the drawings.

Each of the flanged portions of each pair are provided with a plurality of openings 22 and 23 therein, any desired number of these openings being provided in accordance with the number of turns of a resistor member, to be hereinafter described, that is desired to be employed. As all of the openings provided in the respective flange portions hereinbefore enumerated are substantially the same, it is not thought necessary

to designate these by separate numerals or to describe them further.

While the openings in the co-operating pairs of flanged portions are alined laterally of the plate 12, it is not necessary that the respective openings in the different pairs of flanged portions be alined, although this alinement has been illustrated in Fig. 1 of the drawing. Split thimbles, of refractory electric-insulating material, comprising two co-operating and complementary halves 24 and 25 are located in each pair of openings 22 and 23. Each thimble is provided with an intermediate and enlarged flange portion 26 which is of such width that it will fit between the respective pairs of flange portions hereinbefore enumerated while the reduced end portions thereof fit into the openings.

Each pair of co-operating flange portions, such as those numbered 19 and 21, respectively, are covered by a resilient and inter-fitting member 27 that is of substantially U-shape in lateral section. The distance between the inner adjacent surfaces of the flange portions of the member 27 is such as to cause it to fit tightly over and against the outer surfaces of the integral flange portions 19 and 21, respectively.

The member 27 is provided, also, with a plurality of co-operating openings 28 (see Fig. 3), in the flange portions thereof in order that the member 27 may occupy the position hereinbefore described, and illustrated more particularly in Fig. 2 of the drawings, wherein the flange portions extend beyond the reduced end portions of the thimble comprising the parts 24 and 25.

Each of the thimbles is provided with a central opening 29 extending axially there-through, and a helically wound resistor member 31 extends through the respective thimbles in any suitable or desired sequence, a part only of which is illustrated in Fig. 1 of the drawing.

The thimbles are made in two co-operating and complementary halves in order that the removal of a damaged thimble and its replacement by a new portion may be easily and quickly effected. In order to do this, it is only necessary to remove the member 27 by moving it laterally away from the surface of the plate 12, after which either one or both halves of a thimble may be easily

removed from their proper operative positions in the notches hereinbefore described and from around the helically wound resistor member by an initial turning movement thereof. A new thimble or a new portion thereof may be easily and quickly placed in proper operative position within the notches and around the helically wound resistor member by a turning movement thereof relatively to the resistor, after which the thimble-retaining member 27 may again be placed in its proper operative position.

While only one member of U-shape has been described, all of the pairs of upstanding integral, punched-out, flanged portions with which the plates 12 are provided, are provided with such a resilient retaining member. The device embodying my invention provides a heating-unit-supporting plate that is relatively stiff but of relatively light weight.

The punched-out flange portions provide an open construction of the plate that is of use in permitting free ventilation of the heating unit, should this be desirable or necessary.

The device embodying my invention further provides a plurality of thimbles of refractory electric-insulating material that are supported in notched flanged portions and held in their proper operative positions therein by resilient members of U-shape, that are easily and quickly mounted in their proper operative positions or removed therefrom.

Various modifications and changes may be made without departing from the spirit and scope of the invention, and I desire, therefore that only such limitations shall be placed thereon as are imposed by the prior art.

I claim as my invention:

1. In a heating unit, in combination, a sheet-metal plate, a plurality of pairs of integral flange portions each having a plurality of spaced openings therein, thimbles of electric-insulating material located in said openings, resilient members operatively engaging said pairs of flange portions for holding said thimbles in said openings, and a resistor member extending through said thimbles.

2. In a heating unit, in combination, a sheet-metal plate, a pair of spaced, integral, parallel-and-laterally-extending flange portions, each having a plurality of spaced openings therein, thimbles of electric-insulating material, each having a portion located between said spaced flange portions and other portions fitting into said openings, a resilient member interfitting with said pair of flange portions and serving to retain the thimbles therein, and a resistor member extending through said thimbles.

3. In a heating unit, in combination, a sheet-metal plate, a plurality of spaced pairs of punched-out flange portions, each having a plurality of openings therein, thimbles of refractory-insulating material, each having an enlarged portion fitting between said flange portions and having also end portions fitting into said openings, resilient metal members having a plurality of spaced openings therein fitting over each pair of flange portions to hold the thimbles in their proper operative positions therein, and a resistor member extending through said thimbles and supported clear of said plate.

4. In a heating unit, in combination, a sheet-metal plate having a notched pair of integral, lateral, flange portions, insulating thimbles in said notches, a notched sheet-metal member of substantially U-shape in lateral section interfitting with said pair of flange portions, and a resistor member extending through said thimbles.

5. In a heating unit, in combination, a sheet-metal plate, spaced pairs of integral laterally-extending flange portions, aligned notches in each pair of flange portions, insulating thimbles located in said notches, elongated sheet-metal members of substantially U-shape in lateral section and having notches in their side portions interfitting with said pairs of flanged portions and holding said thimbles in proper operative positions, and a resistor member extending through said thimbles and therebetween and distributed substantially uniformly over the plate.

In testimony whereof, I have hereunto subscribed my name this 24th day of March, 1924.

KARL EHRGOTT.