

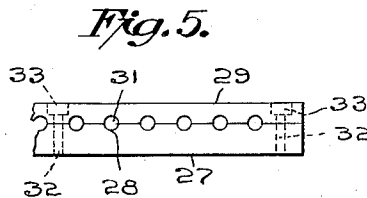
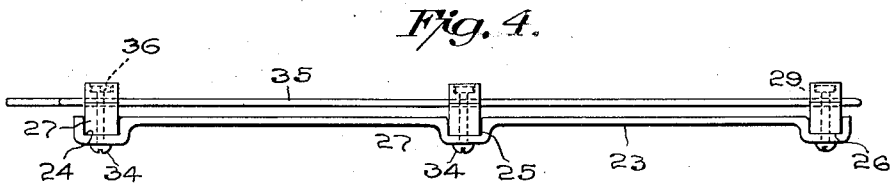
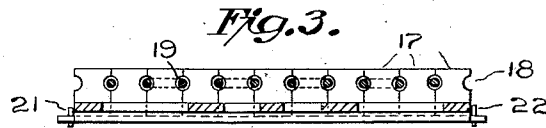
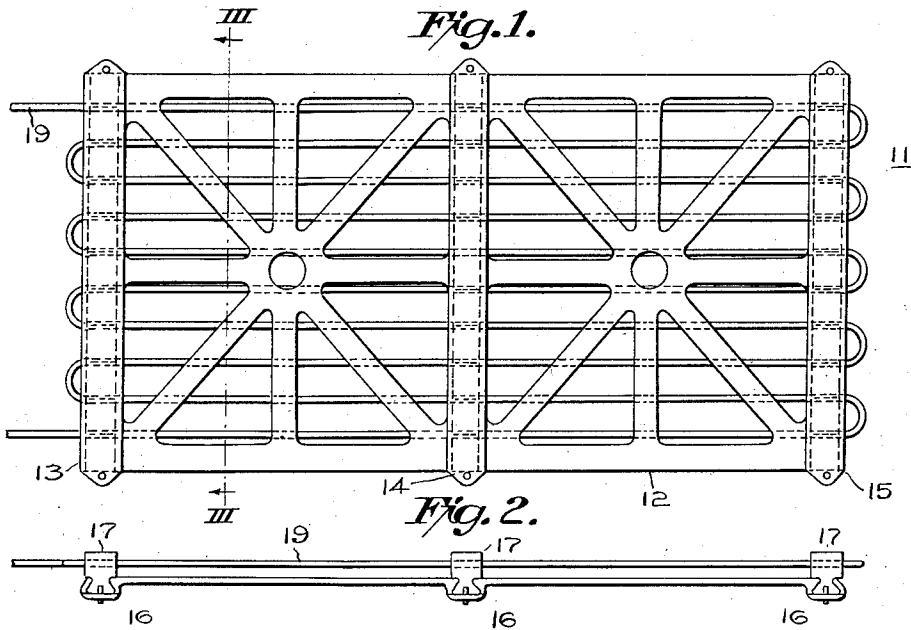
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1,677,313

J. C. WOODSON

ELECTRIC HEATING UNIT

Filed June 23, 1925



WITNESSES:

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ELECTRIC HEATING UNIT

Application filed June 23, 1925. Serial No. 38,979

My invention relates to electric heating and particularly to electric heating units.

An object of my invention is to provide a substantially open heating unit comprising a minimum number of parts that shall be easily and quickly assembled and disassembled.

In practicing my invention, I provide a skeleton metal frame of substantially non-oxidizable material, having a plurality of parallel-extending grooves therein. A plurality of resistor-supporting members, of electric insulating material, are located within the respective grooves and are provided with means for receiving a relatively heavy preformed resistor member extending therethrough and therebeyond, and distributed substantially uniformly over the surface of the skeleton metal frame.

In the single sheet of drawings,

Figure 1 is a bottom plan view of a heating unit embodying my invention.

Fig. 2 is a view in side elevation thereof,

Fig. 3 is a view in vertical lateral section taken on the line III—III of Fig. 1,

Fig. 4 is a view in side elevation of a modified form of heating unit embodying my invention, and

Fig. 5 is a view, in side elevation, of a portion thereof.

An electric heating unit, designated generally by the numeral 11, comprises a skeleton metal frame that is preferably cast to the desired form and is made in suitable or desired contour and of any desired dimensions. As shown particularly in Fig. 1 of the drawings, it comprises a plurality of laterally-extending portions 13, 14 and 15 located respectively at the ends and at the intermediate portion thereof. These members are connected by a plurality of more or less radially-extending arms, although the particular form of the connecting arms is not of particular moment except in so far as it is desirable to provide a relatively stiff meal structure located in substantially one plane that will have a minimum heat-storage capacity and weight.

The members 13 and 14 and 15 are provided, at the upper surface, with over-hung portions to provide a groove of over-hung channel section, which groove is designated by the numeral 16. A plurality of

relatively small refractory members 17, of electric-insulating material, having lower end portions that are shaped to fit closely within the over-hung channel 16, and which are provided with semi-cylindrical grooves 18 extending laterally therethrough, the grooves 18 being located closely adjacent to the upper end of the respective members 17.

A resistor member 19, made of relatively heavy wire or rod, is preformed to comprise a plurality of return-bent straight portions all lying in one plane. The straight portions extend through the cooperating pairs of grooves 18 in the members 17, as illustrated more particularly in Fig. 3 of the drawing, and extend therebetween, the resistor member being distributed substantially uniformly over the entire surface of the skeleton metal frame 12. Pins 21 and 22 are provided at each end of the members 13, 14 and 15 in order to prevent movement of the members 17 longitudinally of the groove 16, the pins 21 and 22 serving to maintain the members 17 in their proper operative positions, as illustrated in Fig. 3 of the drawing, whereby the resistor member 19 is properly supported above the surface of the frame 12.

Referring more particularly to the modification illustrated in Figs. 4 and 5, a skeleton metal frame 23 may be of substantially the same construction, as hereinbefore described and as shown in Fig. 1, with the exception that grooves 24, 25 and 26 are provided at the two ends of the skeleton metal frame and at the intermediate portion thereof, which are substantially open, as shown more particularly in Fig. 4 of the drawing.

A bottom resistor supporting members 27, or a plurality of shorter members, are located within the respective grooves 24, 25 and 26 and each of these members is provided with a plurality of substantially semi-cylindrical grooves 28, in the upper surface, which grooves extend laterally thereacross. A top member 29, also of refractory electric-insulating material is located above the member 27 and is provided with a plurality of cooperating semi-cylindrical grooves 31 having the same spacing as, and cooperating with, the grooves 28. As hereinbefore stated, the length of the members 27 and 29 may be equal to the length of the respective

grooves 24, 25 and 26 or a plurality of these pairs of cooperating members may be employed as may be found desirable, particularly with reference to molding the members 27 and 29. Suitable openings 32 and 33 extend laterally through the members 27 and 29 and securing means 34 extend through the metal of the frame 23 at the grooves 24, 25 and 26 and through the refractory supporting members in order to securely clamp the two refractory members together and to hold a resistor member 35 therebetween. The resistor member 35 is substantially the same as was hereinbefore described for the resistor member 19. Nuts 36 have screw-threaded engagement with the respective bolts 34 to maintain the clamping action.

The device embodying my invention thus provides a heating unit that may be adapted to a large variety of uses wherein it is desired to employ a resistor member that is substantially entirely bare, but that is, nevertheless, provided with a supporting means that will permit of easily and quickly mounting it in place or of removing it therefrom. It is, of course, obvious that the skeleton metal frame may be provided with extended lugs in order to permit of securing it in its proper operative position relative to the device with which it is to be associated.

While the form illustrated more particularly in Figs. 1 to 3, inclusive, provides resistor-supporting means that are independent of any individual securing means, it may not always be desirable to employ this construction by reason of the fact that a damaged refractory member cannot be easily and quickly removed laterally of the face of the skeleton metal frame. The modified form illustrated in Figs. 4 and 5 permits of especially easy and quick assembly and disassembly while still providing a resistor member substantially the entire length of which is uncovered and which may, therefore radiate heat directly to the heat-receiving means with which it is operatively associated.

Various modifications may be made in the

device embodying my invention without departing from the spirit and scope thereof and I desire that all such modifications shall be included in the appended claims which are to be limited only by the prior art.

I claim as my invention:

1. An electric heating unit comprising a skeleton metal frame having a plurality of parallel-extending grooves therein located below the surface of the frame, refractory resistor-supporting members in said grooves and projecting above the surface of said frame and having laterally-extending grooves therein, and a relatively heavy preformed resistor member extending through the grooves in said refractory supporting members, and therebetween to support said resistor in a single plane above said frame.

2. An electric heating unit comprising a skeleton metal frame having a plurality of spaced parallel open grooves therein, cooperating pairs of refractory members, of electric-insulating material, located in said grooves and having laterally-extending grooves therein, and a preformed resistor member located in the grooves in the refractory members and extending therebetween and distributed substantially uniformly over the surface of said skeleton frame.

3. An electric heating unit comprising a skeleton metal frame having a plurality of spaced open grooves therein, bars of refractory electric-insulating material, having spaced, laterally-extending grooves in one face, located in said grooves, cooperating bars of refractory electric-insulating material having laterally-extending grooves in one face located on said first bars with the grooves thereon in alined positions, a resistor member extending through said bars and therebetween, and means for clamping said cooperating bars together.

In testimony whereof I have hereunto subscribed my name this 11th day of June, 1925.

JAMES C. WOODSON.