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A. D. KEENE

1,763,239

ELECTRIC FURNACE

Filed April 29, 1924

Fig. 1.

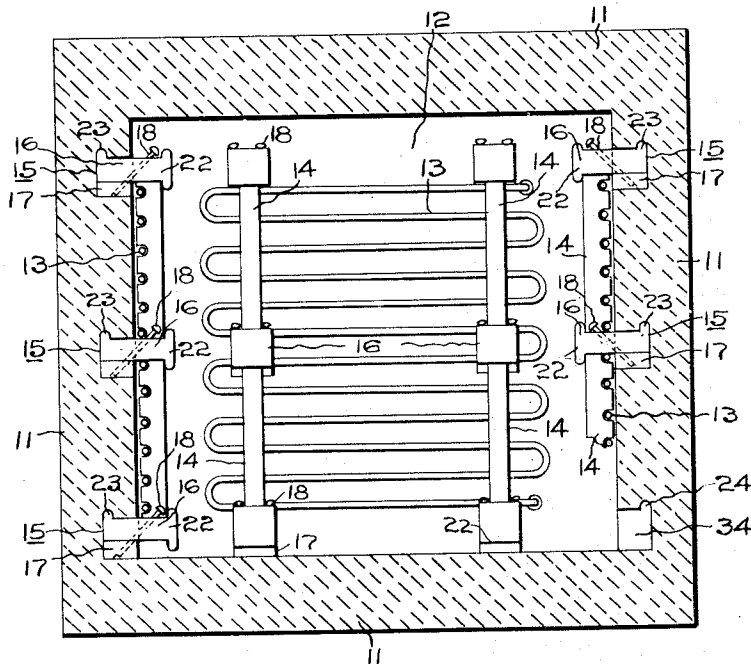


Fig. 2.

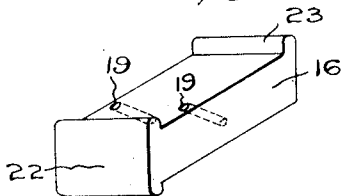


Fig. 3.



Fig. 4.

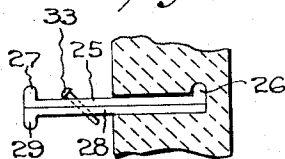


Fig. 5.

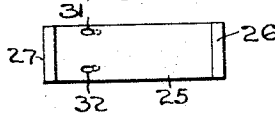
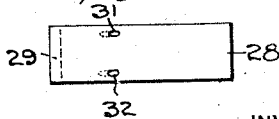


Fig. 6.



WITNESSES:

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ELECTRIC FURNACE

Application filed April 29, 1924. Serial No. 709,721.

My invention relates to electric furnaces and particularly to means for supporting electric resistor elements in electric furnaces.

One object of my invention is to provide a relatively simple means for supporting electric resistor elements in electric furnaces.

Another object of my invention is to provide means for supporting a resistor unit in an electric furnace that is locked to the walls of the furnace chamber and permits of ready removal therefrom.

In a co-pending application, Serial No. 703,670, filed April 2, 1924, and assigned to the Westinghouse Electric and Manufacturing Company, I have shown and described means for supporting an electric resistor unit that comprises a plurality of refractory supporting members gravitationally locked to the furnace walls.

The present invention relates to means for supporting an electric resistor unit in an electric furnace, said means being mechanically locked to the walls of the furnace and removable therefrom.

In practicing my invention, I provide a resistor unit of any well known construction that is supported by a plurality of refractory members. The refractory members are supported by the walls of a furnace and extend therefrom into the furnace chamber that is enclosed by said walls. The resistor unit supporting members comprise a cleated locking member that is so shaped as to interfittingly cooperate with the furnace wall when maintained in its operative position by a wedging member that is mechanically locked to said locking member. Means are provided to prevent lateral movement of the refractory resistance supporting member of the resistor unit relatively to the resistor supporting member.

In the single sheet of drawings,

Figure 1 is a view, partially in section and partially in elevation, of a furnace structure embodying my invention;

Fig. 2 is a perspective view of a cleated locking member employed in my invention;

Fig. 3 is a perspective view of a wedging member;

Fig. 4 is a side elevational view of another

embodiment of a resistor unit supporting member;

Fig. 5 is a top plan view of the member shown in Fig. 4; and

Fig. 6 is a bottom plan view of the member shown in Fig. 5.

A plurality of furnace walls 11 enclose a furnace chamber 12 and support therein, in a manner hereinafter more fully described, a refractory resistor unit comprising an electric resistance element 13 supported by a plurality of grooved refractory insulating members 14. The electric resistance element 13 may be of any usual structure and I have shown an element composed of a plurality of return-bent convolutions maintained in spaced relation by the grooved refractory insulating members 14.

The resistor unit is supported in operative position by a plurality of resistor-unit-supporting means 15. The members 15 severally comprise a perforated cleated locking member 16 and a perforated wedging member 17, that are locked together in operative position by pin locking members 18. The pin members 18 are inserted into perforations 19 and 21 in the members 16 and 17 and extend from the upper surface of the former to the lower surface of the latter.

I have shown the cleated locking member 16 as comprising an outer portion 22, of substantially T-shape, extending into the furnace chamber. The inner end of the member 16 has an integral laterally extended cleat portion 23 thereon that interfittingly conforms to a recessed portion 24 of the walls 11.

It is obvious that other forms of resistor unit supporting members may be employed and I have shown another embodiment thereof in Figures 4, 5 and 6. A metallic refractory cleated locking member 25 has an integral cleated portion 26 at its inner end, and its outer end 27 extends into the furnace chamber and is of substantially L shape. A wedging member 28, of substantially the same length as the cleated member 25, has an outer portion 29 of substantially L shape that extends into the furnace chamber.

The cleated member 25 and wedging member 28 are perforated at 31 and 32 and refrac-

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tory pin locking members 33 extend there-through and lock said members in operative position. The cleated and wedging members cooperate to form an inwardly extending member of substantially T shape. The cleated portion 26, as hereinbefore described, conforms to the recessed portion of the walls 11 to lock the resistor unit supporting member to said wall in its operative position.

10 In assembling the device embodying my invention, the cleated member 16 is placed in operative position with the projection 23 manually held in engagement with recess 24. The wedging member 17 is then inserted be-
15 neath the cleated member and maintains the cleated member in its operative position. The resistor unit including the grooved members 14 are, by a lateral movement, mounted in operative position, and supported by the
20 members 15. The pin members 18 are inserted in the perforations 19 and 21 to lock the cleated member 16 and wedging member 17 together. An end portion of the pin-locking members 18 extends above the upper surface
25 of cleated member 16 adjacent the lateral surfaces of the resistance supporting members 14, to prevent a lateral movement thereof relatively to the resistor unit supporting member 15.

30 To remove the resistor unit, the pin members 18 are removed from the perforations 19 and 21, thereby permitting lateral movement of the resistor unit. By moving the resistor unit laterally it may be disengaged from the
35 resistor unit supporting members to permit its removal from the furnace chamber. The wedging member 17 may be withdrawn from the chambered portion 34 of the wall 11, thereby permitting the projection 23 to be
40 disengaged from the recess 24 and the withdrawal of the cleated member 16 from the chambered portion 34.

It is obvious that the structure illustrated, provides a relatively simple means for sup-
45 porting an electric resistor element in an electric furnace that is mechanically locked to the walls of the furnace and is readily removable therefrom. The structure permits of easy assembling and a practical means of renewing
50 damaged or destroyed resistance elements.

Various modifications may be made in the device embodying my invention and I desire that only such limitations shall be placed thereon as are imposed by the prior art or are
55 specifically set forth in the appended claims.

I claim as my invention:

1. In an electric furnace, the combination with a refractory wall for a furnace chamber and a resistor unit disposed therein, of a
60 cleated member and a wedging member for holding the cleated member supported by the wall, for supporting the resistor unit.

2. In an electric furnace, the combination with a refractory wall for a furnace chamber
65 and a resistor unit disposed therein, of a cleat-

ed member, a wedging member and a member for locking said cleated member to said wedging member to support the resistor unit on the wall.

3. In an electric furnace, the combination with a plurality of refractory walls enclosing a furnace chamber and a resistor unit having an electric resistance element supported by a plurality of refractory members and disposed within said chamber, of a plurality of
70 cleated members and wedging members, and a plurality of members for locking said cleated members to said wedging members and for preventing lateral movement of said resistance-element-supporting-members relatively to said cleated members. 75

4. In an electric furnace, the combination with a refractory wall for a furnace chamber, and a resistor unit having an electric resistor element supported by a plurality of refractory members and disposed within said chamber, of a resistor-unit-supporting member having a cleated portion, a wedging member, and means for preventing lateral movement of said refractory members relatively to said resistor unit supporting members. 80

5. In an electric furnace, the combination with a plurality of refractory walls enclosing a furnace chamber and a resistor unit disposed therein, of a cleated member and a
90 wedging member supported by and locked to said walls for supporting the resistor unit. 95

6. In an electric furnace, the combination with a wall having an opening therein, of substantially L-shape, in longitudinal section, of a supporting member having a cleated end portion fitting into said opening of L-shape, and a second member located in said opening and engaging said cleated end portion to lock the supporting member in said wall. 100

7. In an electric furnace, the combination with a wall having an opening therein, of a supporting member extending into the opening and interlocked therein with the wall, a second member, operatively engaging the supporting member, extending into the opening to maintain said supporting member in its interlocked position, and means interfitting with both members for holding them in proper operative positions relatively to each other. 105

8. In an electric furnace, the combination with a wall having an opening therein, of a supporting member interfitting with said wall and movable into said opening by a longitudinal movement, and a wedging member fitting into said opening for holding said supporting member in said interfitting relation. 110

9. In an electric furnace, the combination with a wall having an opening therein, of substantially L-shape, in longitudinal section, of a supporting member having a cleated end portion movable into its proper operative position in said opening by a longitudinal and then a lateral movement, and a wedging mem- 115

ber located in said opening and engaging said supporting member to hold the same in the opening.

In testimony whereof, I have hereunto subscribed my name this 25th day of April, 1924.

ALVIN D. KEENE.

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