Oct. 2, 1928. 1,686,010

A. D. KEENE

ELECTRIC FURNACE

Filed Jan. 14, 1927

Fig. 1.

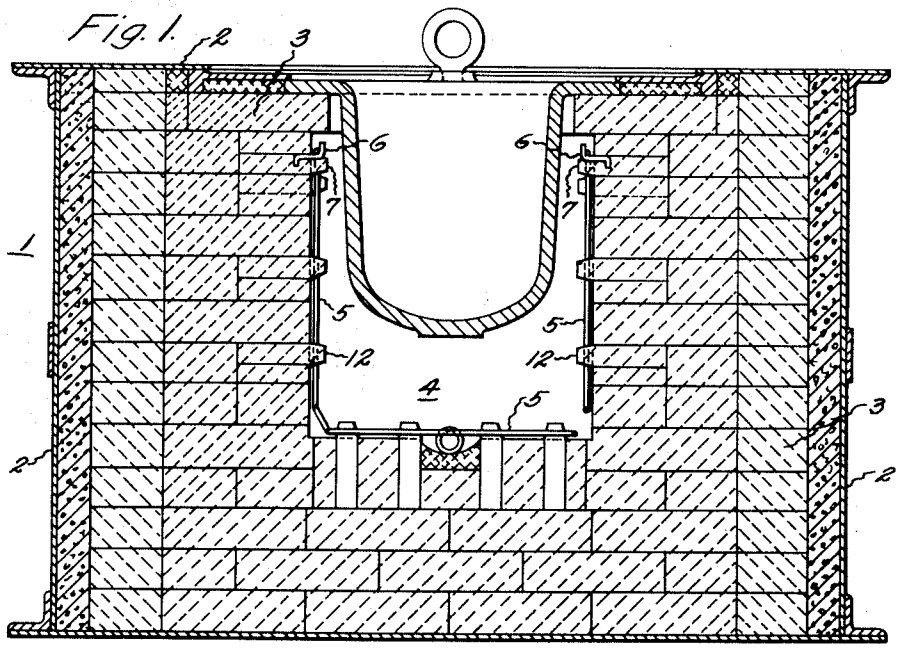


Fig. 2.

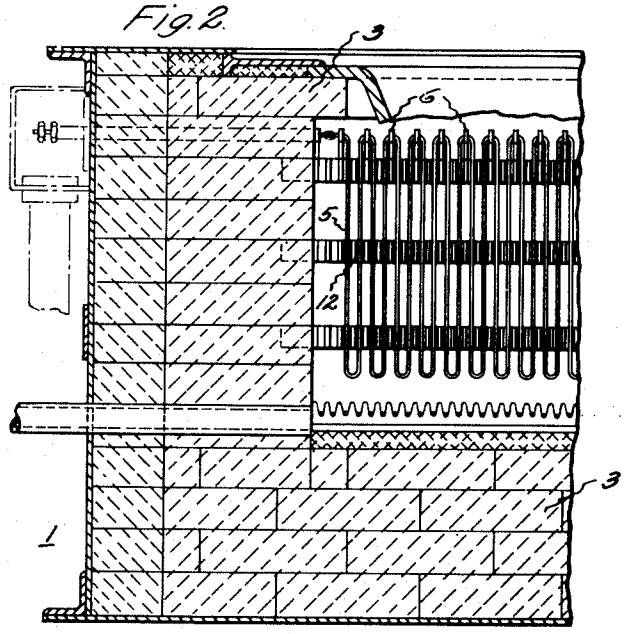


Fig. 3.

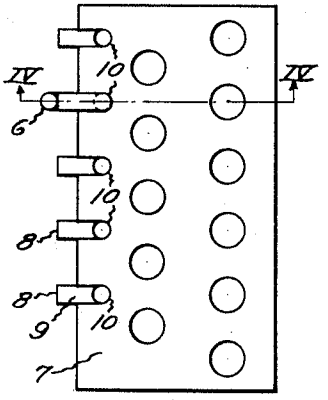
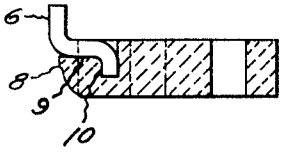


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRIC FURNACE.

Application filed January 14, 1927. Serial No. 161,064.

My invention relates to electric furnaces and more particularly to resistor supporting means wherein a resistor is supported upon the walls of the furnace chamber.

An object of my invention is to provide a resistor support including a metallic member of such design that the usual disadvantages inherent in a resistor support made wholly of ceramic material are obviated.

In practicing my invention, I provide a resistor support comprising a block of refractory material adapted to form a portion of the furnace wall, and metallic resistor-engaging hooks carried by said block in such a manner that portions of the block abut and support the hooks to prevent sagging of the latter when heated.

In the drawings,

Fig. 1 is a view, in lateral section, of an electric furnace embodying my invention;

Fig. 2 is a view, in longitudinal section, of the furnace shown in Fig. 1;

Fig. 3 is a plan view of one of the resisitor supporting units; and

Fig. 4 is a vertical section thereof on the line IV—IV of Fig. 3.

Referring to the drawing, 1 indicates an electric furnace of the resistance type comprising a casing 2 and layers of refractory blocks 3, so located and arranged as to form a chamber 4, upon the walls of which is mounted a resistor 5. The resistor 5 comprises a preformed plurality of parallel convolutions of either ribbon or rod supported by means of metallic hooks 6 of substantially S-shape, carried by blocks 7 which are of refractory material and constitute a part of the furnace wall. The metallic hooks are formed preferably from round stock, the ends of which are bent at right angles to the central portion and in opposite directions. As shown in Figs. 3 and 4, the blocks are formed to embody a plurality of spaced projecting portions 8 extending beyond the plane of the furnace wall, said projecting parts being substantially flat on their upper surfaces 9 with the flat portions extending into the block proper and terminating in holes 10, the axes of which are angularly disposed with respect to said surfaces 9.

Referring more particularly to Fig. 4, it will be noted that one of the ends of the metallic hook 6 is inserted in hole 10 of the supporting block so that the central portion of the member 6 is supported upon the surface 9 of projection 8 of the block, and is substantially flush with the upper surface of the block. The other end of member 4 is then in position to retain the resistor ribbon or rod upon the supporting central portion of the hook 6. There are also provided spacing members 12 projecting from the furnace wall for spacing the convolutions of resistor 3 along the furnace walls, to prevent engagement therebetween during the operation of the furnace.

In practice, the hooks 6 are inserted in the blocks 7 as shown in Figs. 3 and 4, and the blocks then fitted into the furnace wall as shown in Fig. 1, during the building of the furnace. The upper loops of the preformed resistor ribbon are then positioned upon the metallic hooks 6 and extend between the spacers 12 so that each convolution is supported by a metallic support 6 and retained in that position by the upturned portion thereof.

It will be noted that the metallic supports are in effect embedded in the furnace wall and interlocked therewith and, because of their angular shape, may not be removed therefrom or turned therein. Also any tendency of the metallic supports to sag when heated is counteracted by the projecting portions 8 of the supporting block.

Various modifications embodying my invention may be made without departing from the spirit and scope thereof, and only such limitations should be placed thereon as are set forth in the appended claims.

I claim as my invention:

1. In an electric furnace, a furnace wall, a resistor support carried by said wall and comprising a block forming a part of the lining of said wall, said block having portions projecting from the face of said wall, and elongated metallic members fitting in said block and extending out over said projecting portions.

2. A block supported to form a portion of the lining of an electric resistance furnace, metallic members fitting in said block and projecting from the face thereof, and projecting portions on said block extending beneath and in supporting relation with said metallic members.

3. A block supported to form a portion of the lining of an electric resistance furnace

and support a resistor, projecting portions formed on said block, metallic members, the ends of which are bent at right angles in opposite directions, one end of said members being embedded in said block, the central portion of said members resting upon the projecting portions of said blocks, and the opposite ends of said members adapted to retain convolutions of said resistor in position upon said central portion.

4. In an electric furnace, a refractory furnace wall, a resistor support carried by said wall and comprising a refractory block of substantially the same material as the lining of said wall, said block having a portion projecting from the face of the wall, and an elongated metal member having an end portion fitting in said block and having other portions thereof extending out over said projecting portion of the support.

5. In an electric furnace, a refractory furnace wall, a resistor support carried by said wall and comprising a refractory block of substantially the same material as the lining of said wall, said block having a portion extending forwardly from the face of the wall and a recess in the upper face thereof, and a metal member fitting into the recess in said block and extending out over said projecting portion, the metal member being held in said recess by a superposed part of the wall.

In testimony whereof, I have hereunto subscribed my name this 3rd day of January, 1927.

ALVIN D. KEENE.