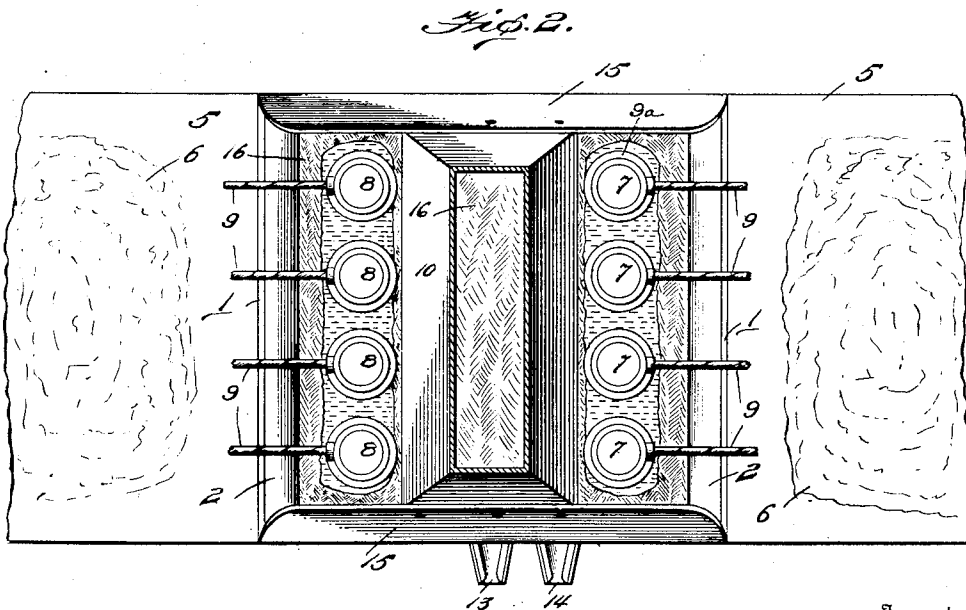
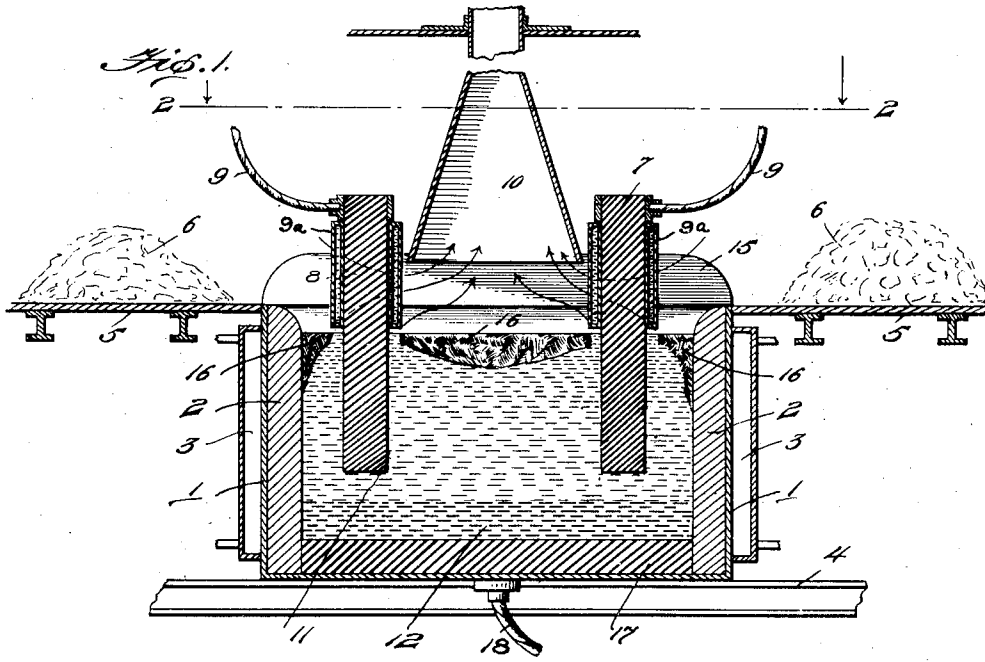


E. F. PRICE.
ELECTRIC FURNACE.
APPLICATION FILED JAN. 27, 1908.

942,350.

Patented Dec. 7, 1909.



Inventor

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Witnesses

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UNITED STATES PATENT OFFICE.

EDGAR F. PRICE, OF NIAGARA FALLS, NEW YORK, ASSIGNOR TO ELECTRO METALLURGICAL COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF WEST VIRGINIA.

ELECTRIC FURNACE.

942,350.

Specification of Letters Patent.

Patented Dec. 7, 1909.

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To all whom it may concern:

Be it known that I, EDGAR F. PRICE, a citizen of the United States, residing at Niagara Falls, in the county of Niagara and State of New York, have invented certain new and useful Improvements in Electric Furnaces, of which the following is a specification.

The object of the invention is to provide a simple electric furnace from which the gases and dust arising from the operation are continuously withdrawn without interference with the operation of charging the furnace or with the accessibility of the electrodes for adjustment or renewal.

The furnace is more particularly intended for the production of ferro-alloys, and such production may be rendered continuous by its use.

For a full understanding of the invention reference is made to the accompanying drawings, wherein—

Figure 1 is a central vertical section through one form of furnace embodying the invention, and Fig. 2 is a horizontal section of the same on line 2—2 of Fig. 1.

Referring to the drawings 1 represents a metallic containing vessel, lined as indicated at 2 with magnesite or other refractory material adapted to the character of the operation to be carried out.

3 is a water-jacket which may be applied to the metallic casing of the furnace, but is not indispensable in practice.

4 represents the supporting girders for the furnace, and 5, 5 the working floors, which may be of metal and disposed at about the level of the top of the furnace, portions of the charge mixture being indicated thereon at 6.

The furnace is shown as provided with eight vertical electrodes 7, 8, having suitable leads 9 for circuit connection, and protective water-jackets 9^a for their exposed portions, the electrodes 7 being of like polarity and either of opposite polarity with respect to the electrodes 8 or of the same polarity as these.

It will be understood that the number of electrodes may be varied as desired. Intermediate these electrodes and in more or less close proximity to them, and somewhat

above the level of the bath is a stack or flue 10, extending substantially the entire width of the furnace.

11 indicates the slag or molten charge, and 12 the metallic or other product.

13, 14 are the metal and slag taps respectively.

17 represents the hearth of a furnace which may be of carbon. In case the electrodes 7 and 8 are of like polarity the hearth 17 is electrically connected with the opposite pole of the source of electricity as by a lead 18.

In operating the furnace as above constructed it is found that the vertical electrodes 7, 8 when properly disposed with relation to the bottom of the stack 10 constitute a partial continuation of the same with the result that a transverse movement of air and furnace gases occurs between the electrodes and toward the stack from either side of the furnace, substantially as indicated by the arrows in Fig. 1, this movement being sufficient to convey such dust or solid particles as may arise from the furnace as well as the furnace gases or vapors, thus rendering the operation practically dustless. At the same time the position of the electrodes is such that they are readily accessible for adjustment, repair or renewal, and their terminals or supports are cooled by the induced air current. The arrangement further provides ready access to the top of the bath between and around the electrodes for the supply and stoking of the charge. The lateral air movement described may be accentuated by the provision of shields 15 extending between the ends of the furnace and the lower portion of the stack.

Under appropriate temperature conditions a crust of solidified slag may be formed extending partially or completely across the bath with the exception of areas adjacent the electrodes, as indicated at 16 in Fig. 1, the result of this formation being to increase the economy of the operation by retaining the heat of the bath.

While I have illustrated a stack between the electrodes, it will be understood that any other device for withdrawing the gases at this point and inducing an inward movement of air across the bath may be substituted therefor.

I claim:

1. An electric furnace comprising an open vessel, oppositely disposed series of electrodes depending into the same, and a stack
5 disposed above the bath and between the electrodes, whereby the air-current flowing to the stack passes in proximity to the electrodes.
2. An electric furnace comprising an open
10 vessel, opposite series of vertically disposed, spaced electrodes depending into the same,

and a stack disposed above the bath and between the electrodes, whereby the air-current flowing to the stack passes around and between the electrodes.

In testimony whereof, I affix my signature in presence of two witnesses.

. EDGAR F. PRICE.

Witnesses:

H. L. NOYES,
F. E. LAWTON.