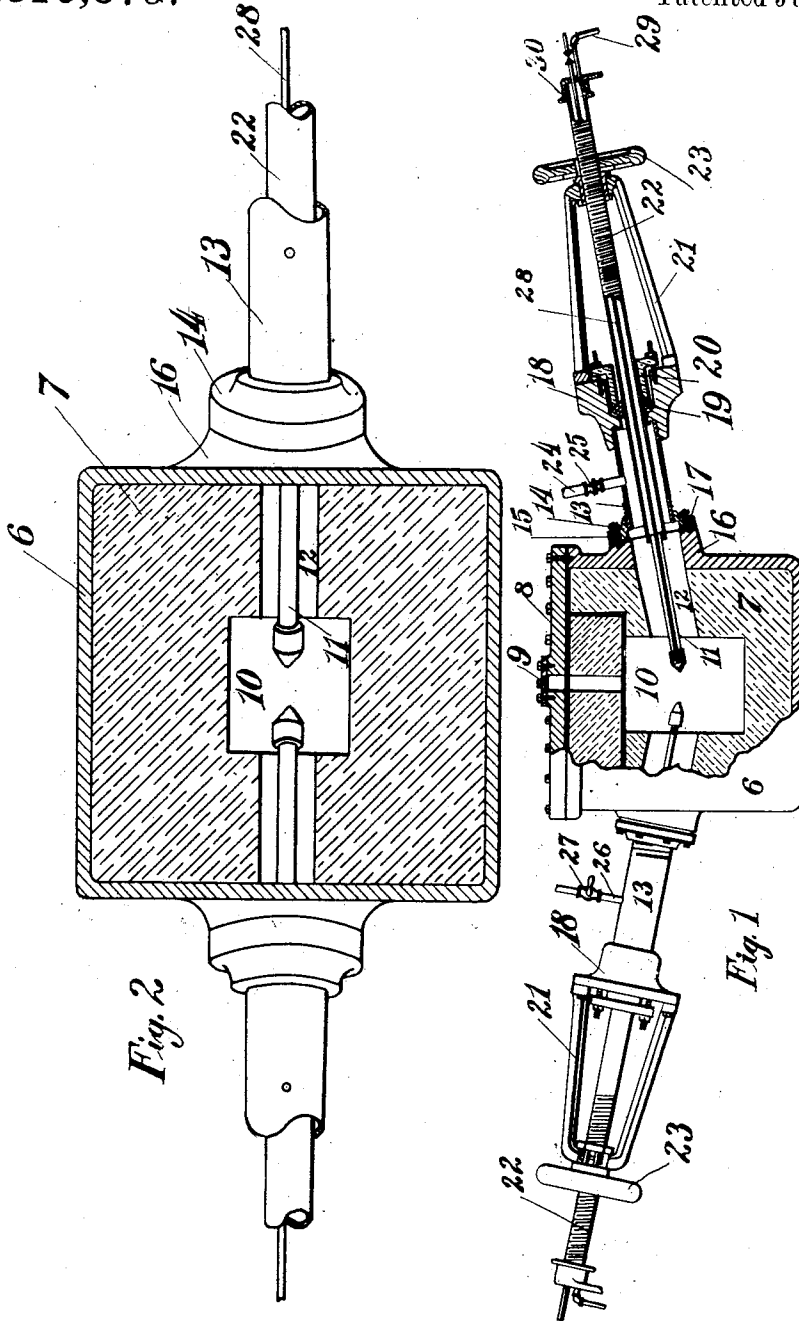


I. HECHENBLEIKNER.
ELECTRIC FURNACE.
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1,310,079.

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ELECTRIC FURNACE.

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To all whom it may concern:

Be it known that I, INGENUIN HECHENBLEIKNER, a citizen of the United States, residing at Charlotte, in the county of Mecklenburg and State of North Carolina, have invented certain new and useful Improvements in Electric Furnaces, of which the following is a specification.

This invention relates to electric furnaces for the reduction of ores and other materials in vacuum or in the presence of some gas, the furnace including water cooled electrodes. I am aware that it is old in the art to operate an electric furnace with a vacuum, and also water cooled electrodes, and hence the present invention relates to, or embodies, an improved structure characterized by advantages with respect to the means for supporting and cooling the electrodes and for adjusting the same to the desired position in the furnace, and with respect to the means for creating a vacuum in the furnace, and introducing a gas therein if desired.

The invention is illustrated in the accompanying drawings, in which Figure 1 is a side elevation, partly in section, of the furnace. Fig. 2 is a horizontal section partly broken away.

The casing of the furnace is indicated at 6, lined with refractory material 7, and having a removable cover 8, with a sight hole 9 covered with transparent material, and with a reducing chamber 10 in the body of the refractory material, as usual.

The two electrodes are indicated at 11, and they project into the chamber through passages 12, provided for that purpose. Each of these passages extends through a wall of the chamber and communicates with a sleeve or tube 13 which is connected by a ring 14 and bolts 15 to annular bosses 16 on the wall of the casing, insulation 17 being inserted at the joint and around the bolts. The outer end of the sleeve 13 is screwed into a gland ring 18, containing packing 19, compressed by the adjustable gland member 20. A yoke or bracket 21 is secured to the ring member 18 and forms a supporting guide for the outer end of the electrode, which is threaded as shown at 22 to receive a hand nut 23 by which the electrode may be adjusted in or out.

One of the sleeves 13 is tapped by a pipe 24 which may be connected to a vacuum

pump, and has a valve 25. The other sleeve 13 is tapped by a valved inlet pipe 26 for gas, the valve being shown at 27. The pipe will be connected to any suitable source of gas supply.

The electrodes are hollow, or consist of tubes, and cooling water is supplied to the tip of each through an inlet pipe 28, and flows out through an outlet pipe 29, these pipes extending through a cap 30 at the outer end of the electrode, to which cap the circuit terminal may be connected. The outlet pipe 28 extends to the inner end of the electrode, so that the cooling water is supplied directly to the hottest part and flows thence outwardly to the waste.

The arc is drawn between the tips of the electrodes in the reducing chamber to which the ore or other material is supplied, as usual, for the reducing operation. If it is desired to operate *in vacuo*, the air must first be exhausted from the reducing chamber and the communicating sleeves through the pipe 24. If the operation is to be conducted in the presence of oxygen or other gas the air is exhausted in the same manner and gas is supplied through the pipe 26 at the opposite side, filling the chamber with the gas as the air is drawn out, the valve 27 being open. If vacuum is desired the valve is kept closed.

To regulate the distance between the tips of the electrodes, the hand nuts 23 are operated, the electrodes moving in or out through the packing glands, without disturbing either the water or the gas connections. By means of the glands and the brackets or yokes the electrodes are fully supported in the proper or adjusted position.

The invention is not limited to the particular structure shown, and various modifications may be made within the scope thereof.

I claim:

1. An electric furnace comprising a casing having a chamber therein, a bracket supported on the casing, an electrode extending through the casing wall and into the chamber and having an outer threaded part, and an adjusting nut on the threaded part of the electrode, bearing against the bracket, to adjust the electrode in or out.

2. An electric furnace comprising a cup shaped casing lined with refractory material and having a removable cover at the top, opposite side walls of said casing and ma-

terial having openings therein, sleeves fixed to the outside of the casing in alinement with said openings, brackets supported on the outer ends of the sleeves, and adjustable
5 water-cooled electrodes supported at their outer ends by said brackets and intermediate their ends by packing glands at the outer ends of the sleeves, and projecting at their

inner ends through said openings and into the interior of the furnace.

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

INGENUIN HECHENBLEIKNER.

Witnesses:

A. M. WEBB,
GEO. L. SIBLEY.