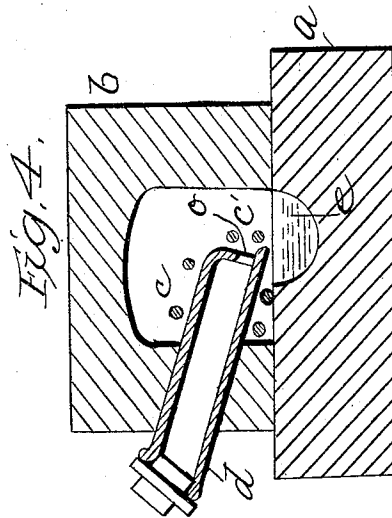
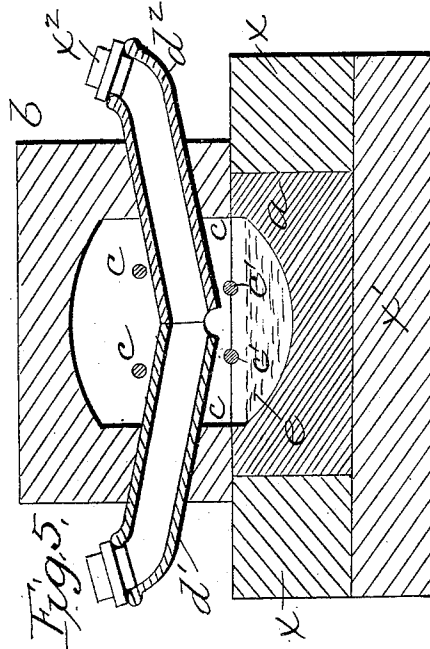
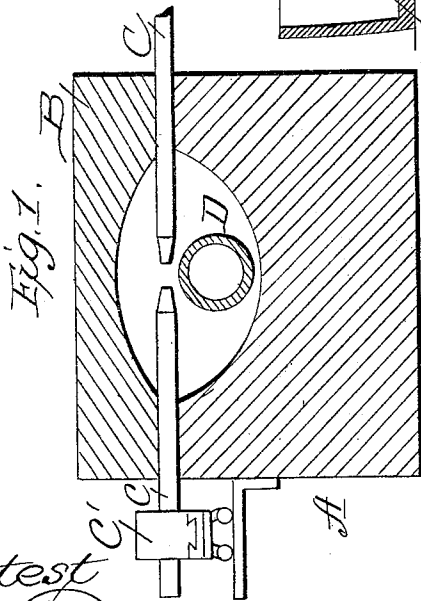
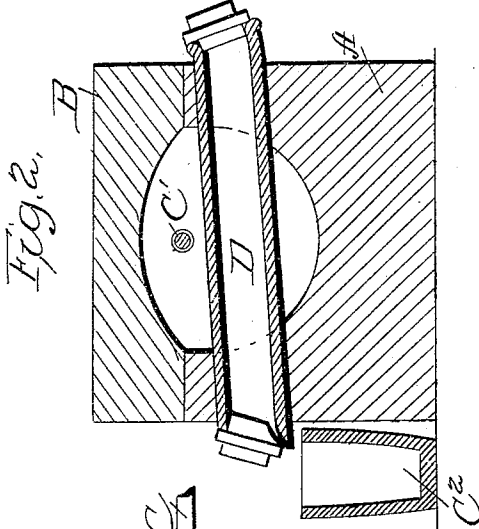
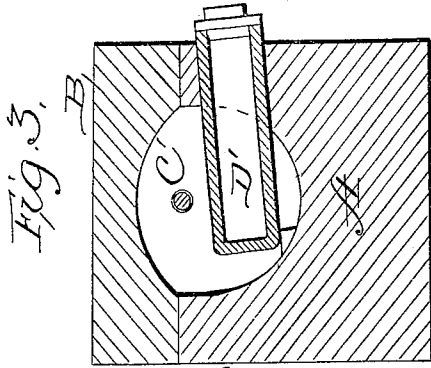


(No Model.)

F. CHAPLET.
ELECTRIC FURNACE.

No. 550,866.

Patented Dec. 3, 1895.



Attest
My hand and seal
J. L. Mordant

Inventor
Frédéric Chaplet
by Richards & Co
Attys.

UNITED STATES PATENT OFFICE.

FRÉDÉRIC CHAPLET, OF LAVAL, FRANCE.

ELECTRIC FURNACE.

SPECIFICATION forming part of Letters Patent No. 550,866, dated December 3, 1895.

Application filed May 29, 1894. Serial No. 512,925. (No model.) Patented in France August 1, 1893, No. 231,902.

To all whom it may concern:

Be it known that I, FRÉDÉRIC CHAPLET, residing at Laval, in the Republic of France, have invented certain new and useful Improvements in Electric Furnaces, (for which a patent was granted in France August 1, 1893, No. 231,902,) of which the following is a specification.

In the accompanying drawings, Figures 1 and 2 show two vertical sections, a quarter-turn, the one in relation to the other, of a furnace consisting of two principal parts A B, of a fireproof material and luted together. Figs. 3, 4, and 5 are views of modifications.

Movable electrodes C C, each supported by a small rolling carriage C', extend into the furnace-chamber, through which passes a retort-tube D, of some fireproof material, generally carbon, properly inclined according to the nature of the body to be melted, which is introduced into the same through its upper opening, which is widened, said material, when melted, running out through its lower opening into a crucible C², Fig. 2.

The interiors of the two parts of the furnace are concaved or deepened, so that those two parts react, the one upon the other, in producing the heating effect, forming a perfect reverberating furnace.

Fig. 3 shows a furnace which also consists of two parts A B, traversed by movable electrodes C' and by a retort-tube D'; but in this case the retort-tube is closed at its lower extremity located in the chamber of the furnace so as to form a muffle, inside of which can be placed small receptacles or crucibles containing the matter to be melted.

It would be possible to have more than one retort-tube D or D' in the same furnace. By this arrangement the matters to be melted, instead of being thrown in bulk or loose upon the floor of the furnace, are, on the contrary, arranged as in a channel in the retort-tubes D or D' and are free from the action of the gases inside of the furnace. At the same time they are heated intensely through the fireproof-wall of the tubes by the electric arcs, in whatsoever number, flashing between the movable electrodes. There are cases, however—for instance, if the melted masses

are hard to convert from their viscous state—where, while keeping them free as possible from contact with the interior gases of the furnace, the masses must run into the interior of the furnace-chamber when melted and must be free from contact with the outside air. These arrangements are then as shown in Figs. 4 or 5. Here the two parts *a b* are put and luted the one on top of the other and can be free, the one in relation to the other, by sliding or rolling in a horizontal plane. The part *b* carries the movable electrodes *c c c' c'* and the properly-inclined retort-tube, which can be single and perforated with an opening *o* at its lower extremity, the molten matter running out through that opening—as, for instance, the tube *d*, Fig. 4—or said retort can be double, shaped as a V, with an opening *o'* at the point, also intended for the discharge of the molten material—as, for instance, the tube *d' d''*—which can work with a double effect.

The lower part of the tube is fully heated by the arcs of the various electrodes *c c*, as in the case shown in Fig. 3; but besides that, near the opening intended for the discharge of the molten material, an arc is located, which is especially intended for heating the already viscous matter, at the very point where it leaves the tube in order to run into the receiving vessel or cap, hollowed out of a part or out of the whole of the bottom of the furnace.

As will be seen, it is the lower part *a* which is hollowed in the shape of a cap or basin *e* in order to receive the molten mass, while the latter is free from all contact with the exterior air and remains at a high degree of temperature. The part *a*, as has been described, can easily be removed and replaced by a similar part for assuring the continuity of the process.

In Fig. 5 the upper part rests on top of the lower part *a* and also on top of the side pieces *x x*, which in turn rest on the base-piece *x'*. The part *a*, with the basin, fits between the side pieces *x x* and base *x'* and may be removed therefrom, the top piece *b* being then supported by the sides *x x*.

The electrodes may be made of carbon and

the parts A B of any well-known refractory material.

The drawings show that the ends of the retort in the several forms thereof lying outside the furnace are closed by stoppers x^2 .

I claim—

1. In an electric furnace, the heating chamber, the hollow retort extending into the same to contain the material to be heated, and the carbon pencils arranged to form an arc adjacent to the retort, said retort having its inlet end outside the walls of the furnace and closed by a suitable stopper, substantially as described.

2. In an electric furnace, the heating chamber, formed in two parts, the hollow retort extending into the furnace to contain the material to be heated, and the electric carbons arranged to form an arc adjacent to the re-

tort, said retort having its inlet end outside the walls of the furnace and closed by a suitable stopper, substantially as described.

3. In combination, the furnace, the electrodes therein and the hollow retort extending from the outside of the furnace through the chamber laterally and in inclined position past the electrodes, substantially as described.

4. In combination, the furnace, the electrodes therein and the hollow retort extending through the furnace past the electrodes and having its inlet and outlet end outside of the furnace, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

FRÉDÉRIC CHAPLET.

Witnesses:

C. CHARLES MERRILL,
CLYDE SHROPSHIRE.