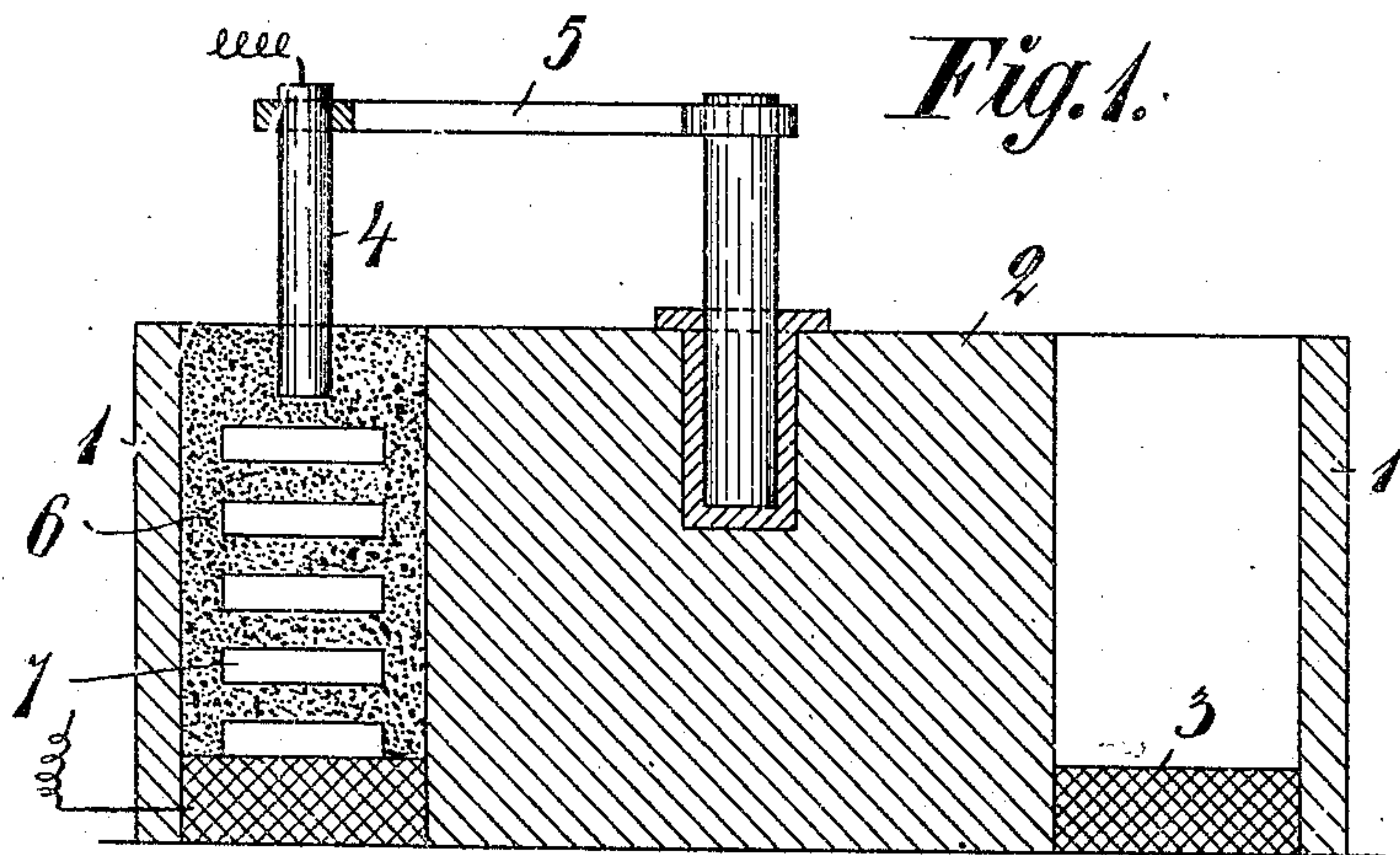


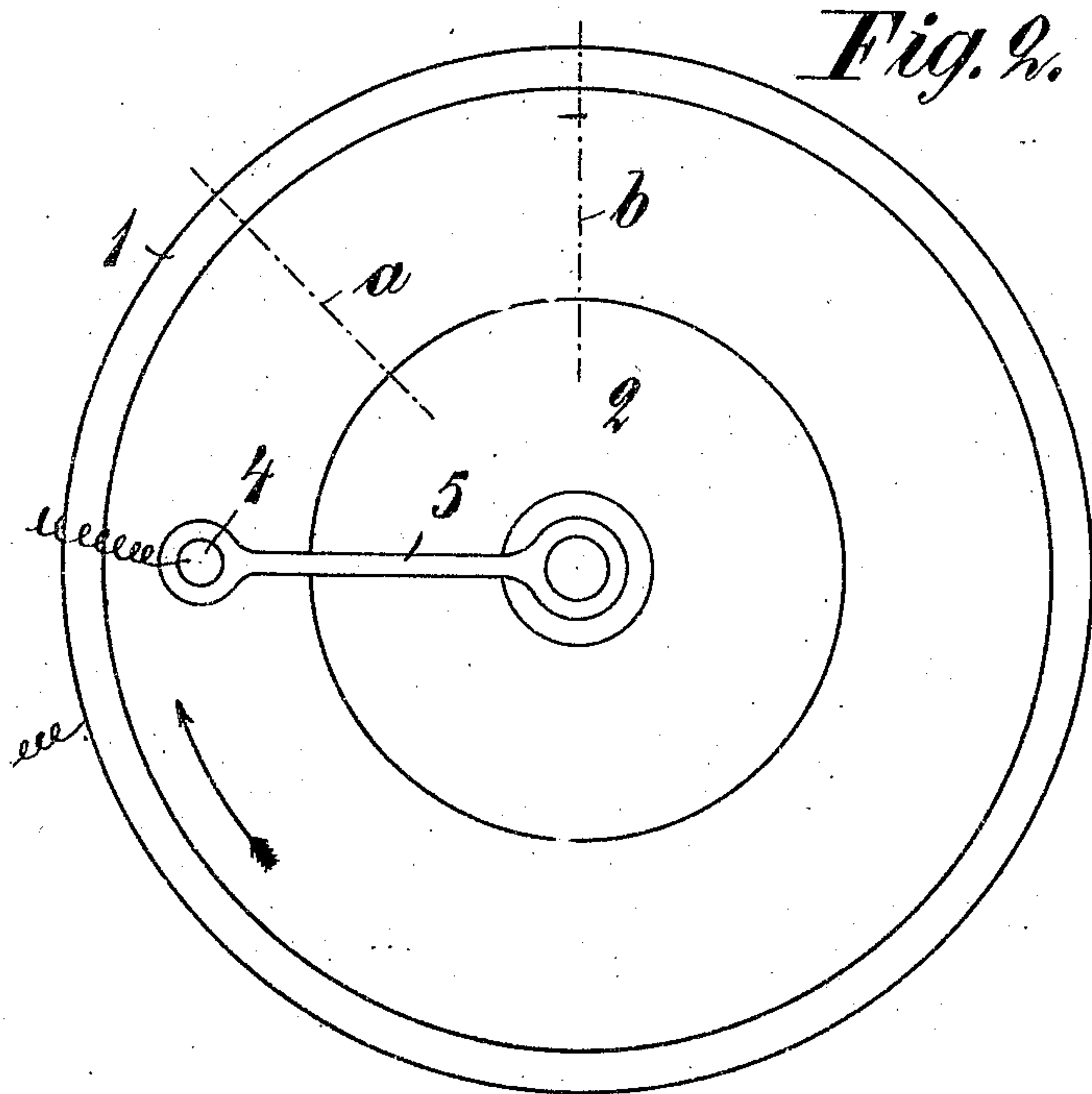
E. CORNELIUS.  
ELECTRIC FURNACE.  
APPLICATION FILED JULY 9, 1908.

900,486.

Patented Oct. 6, 1908.



*Fig. 1.*



*Fig. 2.*

Witnesses:

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# UNITED STATES PATENT OFFICE.

ERIK CORNELIUS, OF TROLHÄTTAN, SWEDEN.

## ELECTRIC FURNACE.

No. 900,486.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed July 9, 1908. Serial No. 442,755.

*To all whom it may concern:*

Be it known that I, ERIK CORNELIUS, a subject of the King of Sweden, and resident of Trolhättan, in the Kingdom of Sweden, have invented certain new and useful Improvements in Electric Furnaces, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an electric furnace for heating solid substances, for different purposes. The said furnace is specially suitable for the manufacturing of graphite and for the introducing of graphite into objects.

The characteristic feature of the furnace, which is horizontal or substantially horizontal, consists in its operating chamber being ring-shaped, so that charging, heating and discharging of the substance can be effected simultaneously and continuously and the heating place can be changed successively along the operating chamber. For the said changing one of the electrodes is movable, so that it can easily be moved along the operating chamber.

Figure 1 of the accompanying drawing is a vertical section of the furnace. Fig. 2 is a plan view of the same.

The furnace is ring-shaped, as shown in Fig. 2, and its outer wall as well as its center part is of fire-proof material. The bottom part 3 is of carbon and forms one of the electrodes. The other electrode 4 is mounted from above in the operating chamber of the furnace and has a vertical position. The said electrode 4 is fixed in a turnable arm 5 or the like, extending from a suitable, central support. The substance to be treated is charged in the furnace for example at *b* and the product resulting from the operation is discharged at *a*, the material being charged into one portion of the furnace, while a previous charge is being treated in another portion of the furnace. In Fig. 1, for instance, the left hand portion of the furnace is in operation while the right hand portion is ready to receive a fresh charge. As the places for the charging and discharging operations are changed along the operating chamber in the direction indicated by the arrow, the electrode 4 and the arm 5 are turned in the same direction.

6, Fig. 1, designates carbon-powder and 7

are objects, embedded in the powder in order to be changed into graphite.

The electric current between the electrodes is kept constant by turning the electrode 4 in the direction of the arrow, Fig. 2, when necessary, so that it is mounted into less conducting carbon powder *i. e.* carbon powder of a lower temperature, provided that the furnace is in full action, in which case the temperature between both the electrodes is 3000° to 4000° Cent.

The operation made possible by the described arrangements can be carried on continuously, as already stated, and in this manner the disadvantage of ordinary electric furnaces hitherto used is removed, viz. that the current can not be closed in the furnace, without further ado, but both the electrodes must be connected previously by a core of a conducting material, owing to the incapacity of the cold carbon powder of conducting the current. Further the usual disadvantage of varying power consumption is removed by the described arrangements which is of great economical importance.

The furnace may, evidently, be polygonal or have any other shape more or less differing from the ring shape.

While the drawings show only one movable electrode, it will be understood that several may be used and that they may be so connected as to permit the use of a current of any desired character.

As further examples of using the furnace may be stated the cementing of iron and steel, the manufacturing of carborundum, the reducing of metallic oxides by means of carbon and so on.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An electric furnace for the purpose set forth, comprising an annular chamber, a fixed electrode in and coextensive with the bottom of said chamber, and a movable electrode arranged to travel along the top of the chamber.

2. An electric furnace for the purpose set forth, comprising an annular chamber, an annular electrode therein, and an electrode point in the chamber, one of said electrodes being movable relative to the other electrode.

3. An electric furnace provided with a ring-shaped operating chamber and with an

electrode movable along the said chamber, a  
radial arm carrying the movable electrode,  
and a rotary support for said arm mounted  
centrally in the furnace whereby the oper-  
5 ations of charging, heating and discharging  
may be effected simultaneously, substantially  
as described and for the purpose set forth.

In witness whereof, I have hereunto signed  
my name in the presence of two subscribing  
witnesses.

ERIK CORNELIUS.

Witnesses:

JOHN ERVING,  
B. CASBOSEN.