

(No Model.)

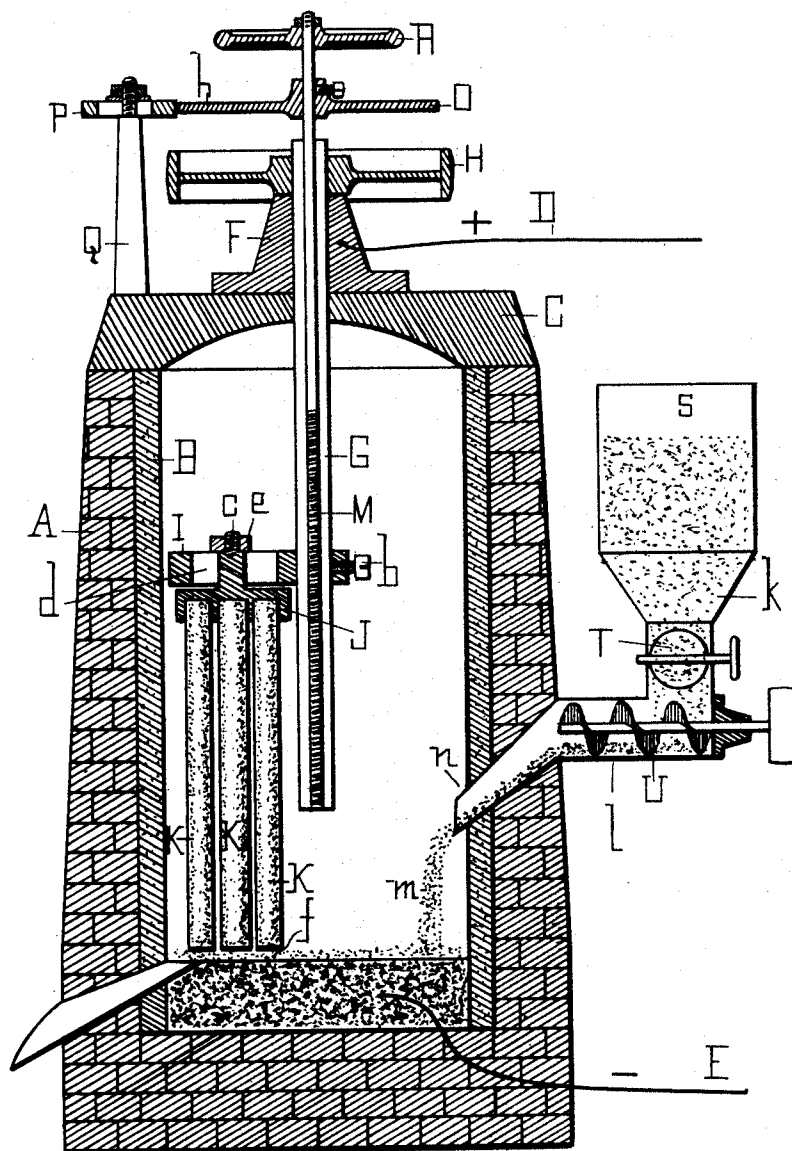
2 Sheets—Sheet 1.

R. F. S. HEATH.
ELECTRIC FURNACE.

No. 586,687.

Patented July 20, 1897.

FIG 1



WITNESSES

James F. Gannon
W. F. Rice

INVENTOR

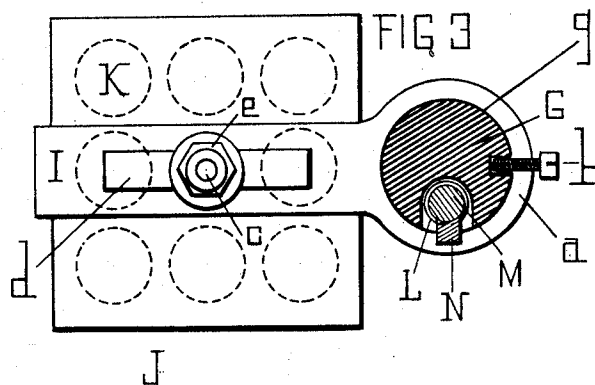
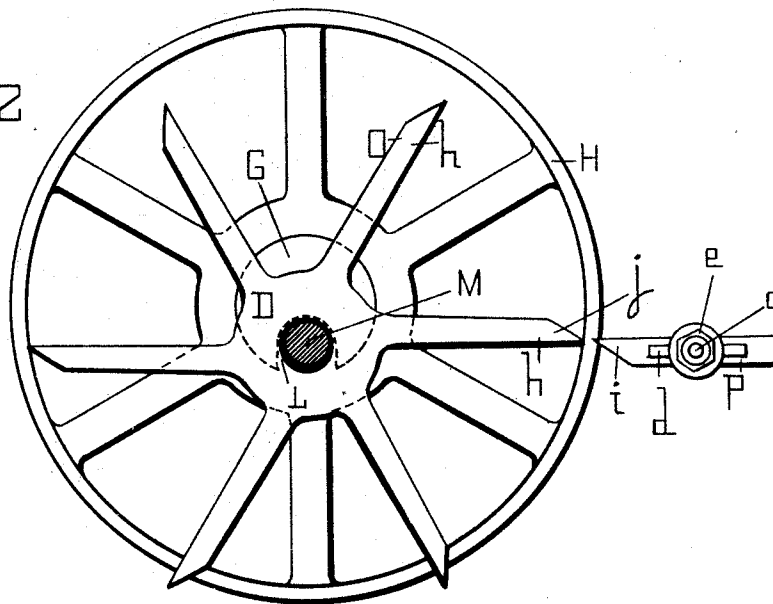
Robert F. S. Heath
by *Francis D. Pastorius*
Solicitor

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FIG 2



WITNESSES

James F. Gannon
W. F. Rice

INVENTOR

Robert F. S. Heath
by Francis S. Pastorius
Solicitor

UNITED STATES PATENT OFFICE.

ROBERT F. S. HEATH, OF CAMDEN, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, OF FORTY-NINE ONE-HUNDREDTHS TO HENRY D. HUGHES, OF STRAFFORD, PENNSYLVANIA.

ELECTRIC FURNACE.

SPECIFICATION forming part of Letters Patent No. 586,687, dated July 20, 1897.

Application filed February 21, 1896. Renewed April 1, 1897. Serial No. 630,324. (No model.)

To all whom it may concern:

Be it known that I, ROBERT F. S. HEATH, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Electric Furnaces for the Production of the Carbide of Calcium, of which the following is a specification.

My invention relates to an improvement of an electric furnace.

It consists in rotating the carbons around the interior of an electric furnace, whereby the electric arc is caused to rotate around said furnace and be brought in contact successively with the material to be melted and converted into the carbide of calcium.

On reference to the accompanying sheets of drawings, making part of this specification, Figure 1 is a vertical and diametrical section of an electric furnace embodying my invention. Fig. 2 is an enlarged plan view of the carbon-holder and rotating carriers by which they traverse the interior of the electric furnace. Fig. 3 is a plan view of the mechanism by which an automatic feed can be imparted to the carbons.

Similar letters refer to similar parts in the several views.

A is the wall of an electric furnace, B a non-conducting lining, and C a cap or cover.

D is the positive pole, and E the negative pole, of broken carbon. To complete the control, a voltmeter is connected with the two terminals and a dynamo put in the circuit.

A bearing or guide F of conductive material on the cap C of the furnace receives and guides a vertical or carbon shaft G, which extends within and without the furnace and has a driving-pulley H fixed on its top end.

I is a slotted arm or carbon-carrier, the hub *a* of which embraces the shaft G and is held adjustably thereon by means of a set-screw *b*.

J is a carbon-holder, to which are fixed the depending carbons K. It is adjustable to and from the shaft G by its screw-stud *c*, extending through the slot *d*, and a nut *e*, bearing on the top of said arm. There is shown but one radial slotted arm I, having eight depending carbons K, though more than one arm I and carbon-holder J, each having any pre-

ferred number of carbons K, can be used. The arc *f* is formed between the bottoms of carbons K and the negative pole E for the melting of the material to be converted into the carbide of calcium.

A longitudinal and eccentric opening L is formed in the periphery of the vertical shaft G, in which is placed a screw-rod M in engagement with a half or open nut N, secured within the opening *g* of the hub *a* of the slotted arm I and turning with it. The upper end of said screw-rod M has a spider-wheel O fixed to it. A slotted stop P on a post Q of the furnace-cap C is capable of adjustment to and from the arms *h* for engaging there- with.

The vertical motion of the carbons K is effected by adjusting the stop P for contacting with an arm *h* of the spider-wheel O in its eccentric movement around with the shaft G. When an arm contacts with the stop P, the spider-wheel O and the screw-rod M are held stationary and the nut N continues its movement around the screw-rod M with its slotted arm I, the result being that the nut N and slotted arm I have a vertical movement on the screw-rod M. The continuance of the contact of the stop P and the arm I depends upon the degree of the inward adjustment of the stop, and as soon as the contact ceases by the slipping apart of the inclined ends *i, j*, caused by the eccentric movement of the spider-wheel in connection with the shaft G, the arm I, nut *e*, and screw-rod M turn, together with the shaft G, and the downward-feeding motion of the carbons ceases until one of the arms *h* and the stop P again contact for a renewed feeding of the carbons to compensate for the destruction of their ends. If the automatic feeding of the carbons K is wanted, a hand-wheel R of the screw M serves to operate it for a carbon downfeed.

The material-feeding mechanism of the electric furnace consists in a hopper S, having a cut-off valve T in its waist *k* and a conveying-screw U in its horizontal extension *l*, which is operated by a driving-pulley V for conducting the material *m* into the spout *n*, thence into the interior of the furnace.

The operation is as follows: The rotary mo-

tion of the pulley H is applied to the shaft G and communicated to its arm I, which carries the carbons K around the interior of the furnace, their ends sweeping and leveling the material admitted through the spout *n*. Said rotary motion of the carbons around the interior of the furnace rotates and shifts the electric arc and brings it in contact successively with the material to be converted into the carbid of calcium.

I claim—

In an electric furnace, the combination of a rotary carbon-carrying shaft, means for rotating said carbon-carrying shaft, a slotted

arm or carbon-carrier adjustably fixed on the carbon-carrying shaft, a carbon-holder adjustably fixed in the slot of the carbon-carrier, and carbons depending from the carbon-holder, for rotating said carbons around the interior of said electric furnace, in the manufacture of the carbid of calcium.

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

ROBERT F. S. HEATH.

Witnesses:

FRANCIS D. PASTORIUS,
HENRY TROTH.