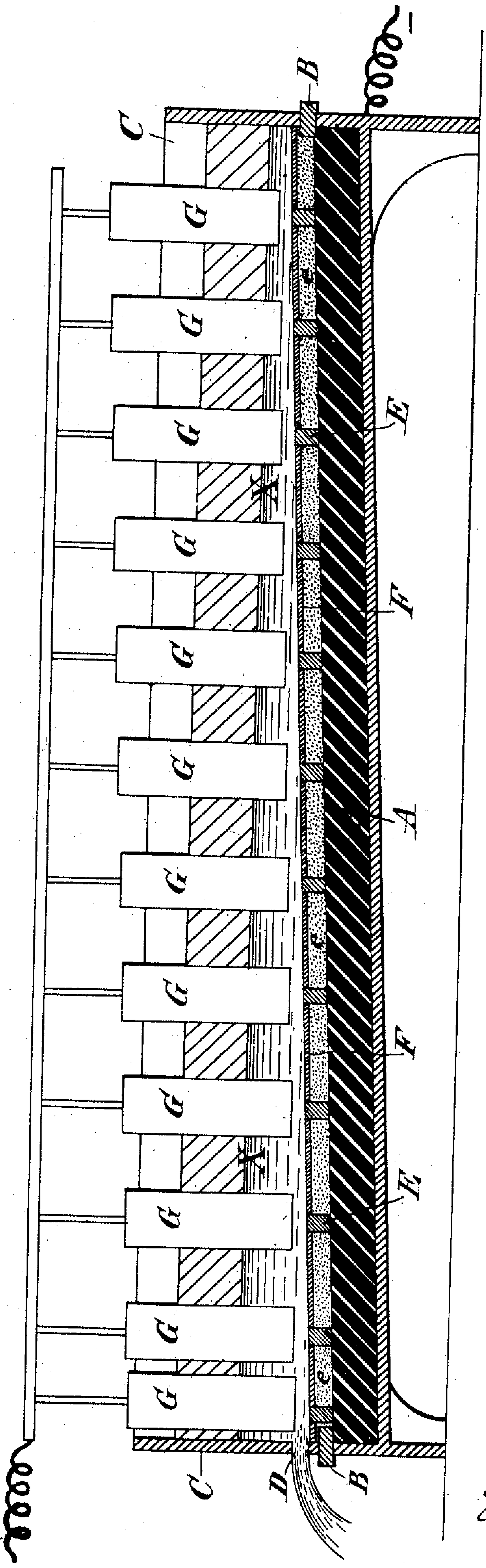
No. 618,391. Patented Jan. 31, 1899.

H. BOVY.

ELECTRIC FURNACE.

(Application filed Apr. 14, 1898.)

(No Model.)



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HUGUES BOVY, OF GENEVA, SWITZERLAND, ASSIGNOR TO LA "VOLTA" SOCIÉTÉ ANONYME SUISSE DE L'INDUSTRIE ELECTRO-CHIMIQUE, OF SAME PLACE.

ELECTRIC FURNACE.

SPECIFICATION forming part of Letters Patent No. 618,391, dated January 31, 1899.

Application filed April 14, 1898. Serial No. 677,548. (No model.)

To all whom it may concern:

Be it known that I, HUGUES BOVY, engineer, a citizen of the Republic of Switzerland, residing at Geneva, Switzerland, have invented certain new and useful Improvements in Electric Furnaces, of which the following is a specification.

The invention consists of certain new and useful improvements in the construction of electrical furnaces, especially of such furnaces which are intended to treat large quantities of materials—for instance, for manufacturing of calcium carbid.

In the well-known electrical furnaces a large amount of those materials which are to be treated is lost by way of volatilization, and the arrangement of the electrodes is made in such a manner as to have their resistance altered during the proceeding, so that the said well-known furnaces cannot work continuously.

My improved electrical furnace is constructed in such a manner as that the spot where the heat is greatest is so located as to permit the vapors produced by the volatilization of the materials treated to escape only through the materials which have been already melted. Thereby those vapors cause the melted material to be suitably stirred, so that the chemical proceeding is improved by means of a good distribution of the heat within the materials treated.

My furnace may be used either with a continuous electric current or with a monophase alternate current. It may also be used with polyphase alternate currents, but not with so good a result.

The accompanying drawing shows, by way of example, a longitudinal section of one construction of my improved electric furnace, which I will now proceed to describe with reference to the said drawing.

A is a casing filled with a conglomeration of small particles of carbon and forming the body of the furnace, electrically connected with one pole of the circuit. The said body A bears all around it a border of bricks B, which insulate the same from an iron frame C, provided with a melting-hole D. The body A bears a series of carbon blocks E, suitably arranged upon its surface and separated from one another by means of a layer of carbon powder *e*, maintained in its place by means of carbon plates F. Above each of the carbon blocks E there is adjustably suspended an electrode G, of carbon, connected to the other pole of the electrical circuit. One carbon block E and its corresponding carbon electrode G are arranged in immediate proximity to the melting-hole D, in view of always maintaining the same clear for the constant flowing out of the melted material.

The material to be treated (marked X) is filled up within the frame C and between the electrodes G, as shown in the drawing, and it will be readily understood that when the electrodes G are brought into contact with the electrodes E the latter will be heated to incandescence, and when the said electrodes G are lifted and the material X, composing the charge, comes in contact with such incandescent block electrodes the same will be converted into carbid by reason of the heat radiated from the upper ends of said electrodes. The great electrical resistance of the carbon powder *e* will not allow the current to pass from the body A to the electrodes G otherwise than through the block electrodes E, so that the latter become incandescent throughout, and as they only have their upper exposed ends in contact with the material composing the charge they will not be altered in any way as to their electrical resistance, and the whole furnace is enabled to work continuously. Furthermore, the vapors produced by the melting process at the spot where the heat is maximal will be obliged to traverse the whole melted material on their way out of the apparatus. Thereby they will stir up the melted material and greatly improve the chemical proceeding by suitably distributing the heat within the materials treated.

If, on the one hand, the material to be treated is regularly fed into the frame C and, on the other hand, the electric current is continuously sent into the apparatus, the proceeding will be continuous, the melted material flowing out of the hole D. The intensity of the action of the electric current may be regulated at will by means of controlling the distance of the electrodes G from the electrodes E.

An electric furnace of the described system

may be constructed without difficulty for using currents of one hundred and fifty thousand amperes and sixty volts—that is to say, for nine thousand kilowatts.

Having thus fully described my invention, I claim—

In an electric furnace, a furnace-body of conducting material, carbon blocks supported in upright position on said body, each of said blocks forming a lower electrode, a filling of carbon powder between the said blocks, carbon plates arranged between the upper ends of said blocks and resting upon said filling, and additional electrodes arranged and supported above said lower electrodes, said lower electrodes being of such size as to be rendered incandescent by the passage of the electric current, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HUGUES BOVY. [L. S.]

Witnesses:
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