

**No. 685,965.**

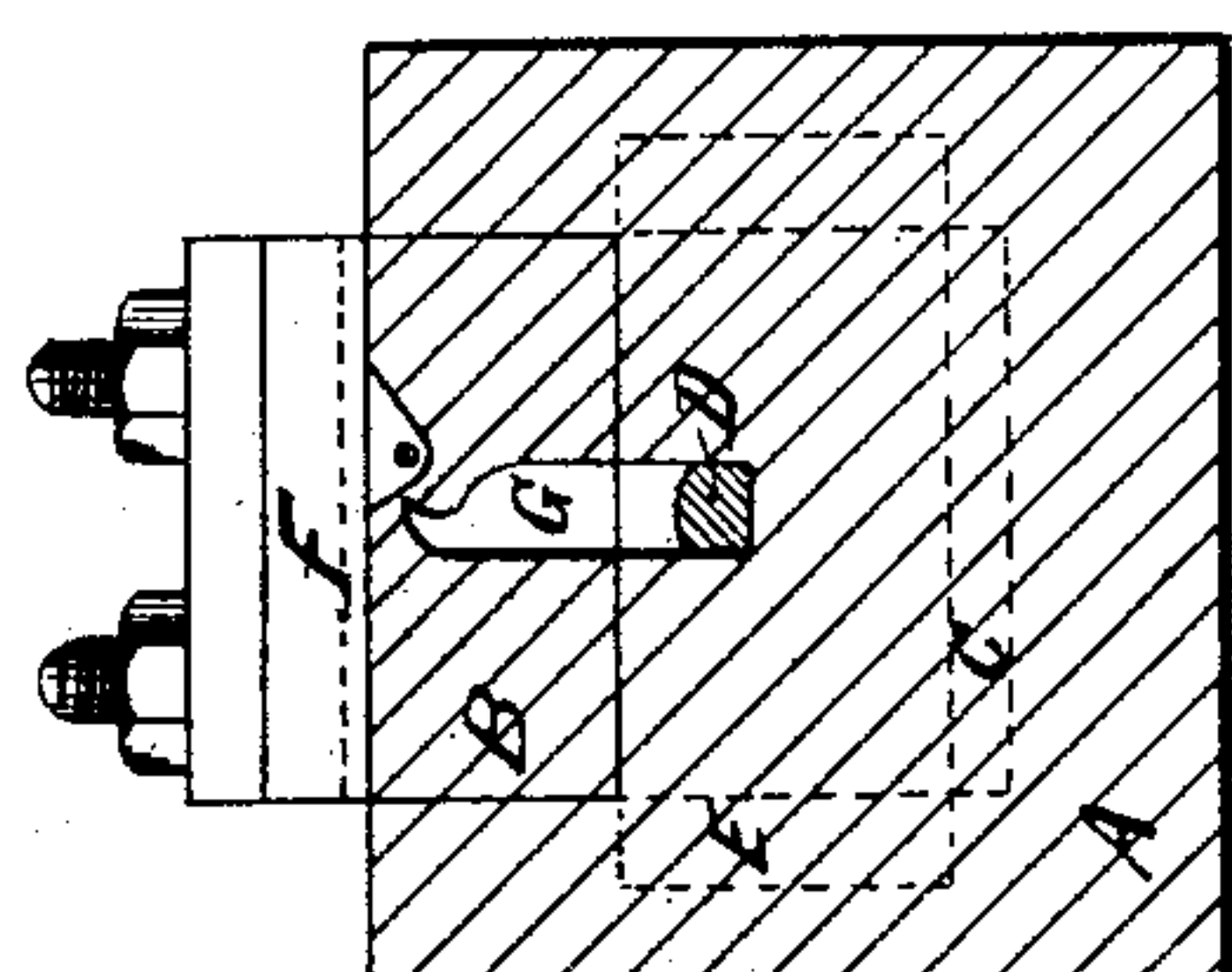
Patented Nov. 5, 1901.

**C. P. BARY.**  
**ELECTRIC FURNACE.**

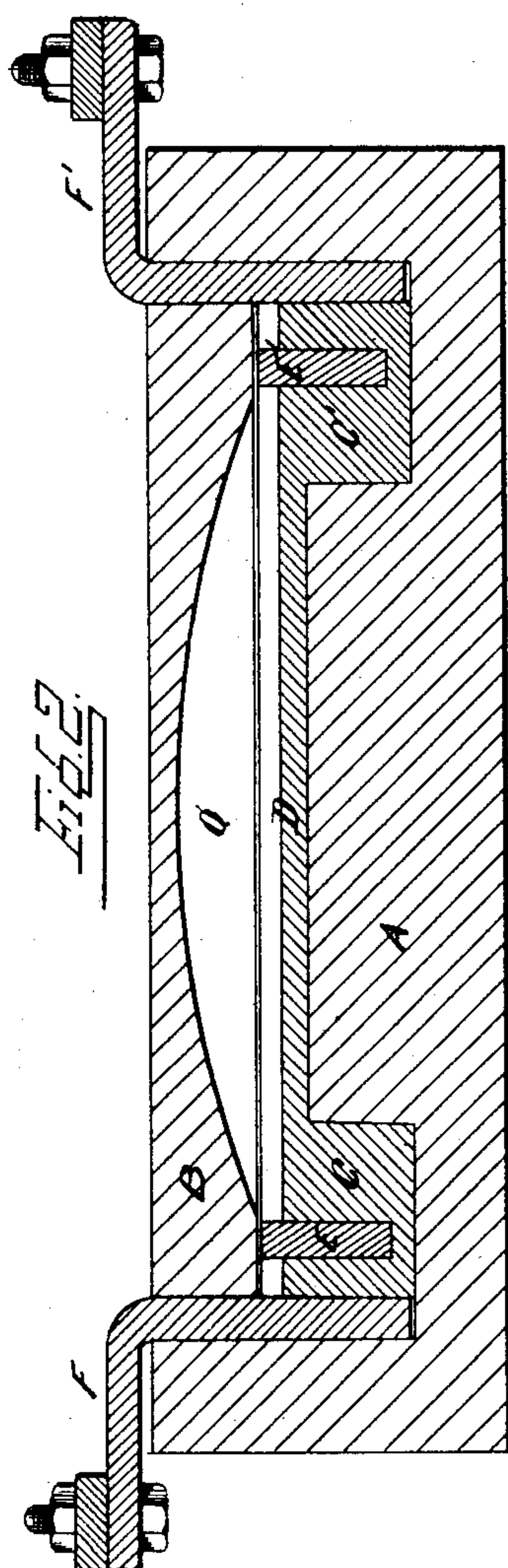
(Application filed Oct. 18, 1900.)

(No Model.)

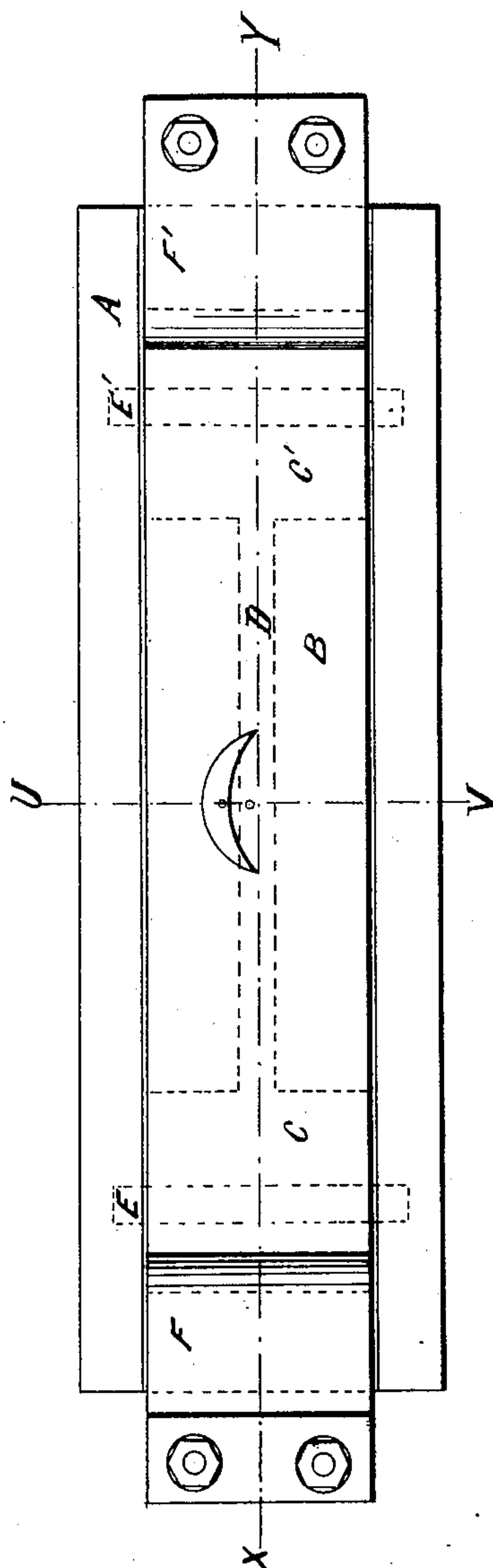
**3 Sheets—Sheet 1.**



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No. 685,965.

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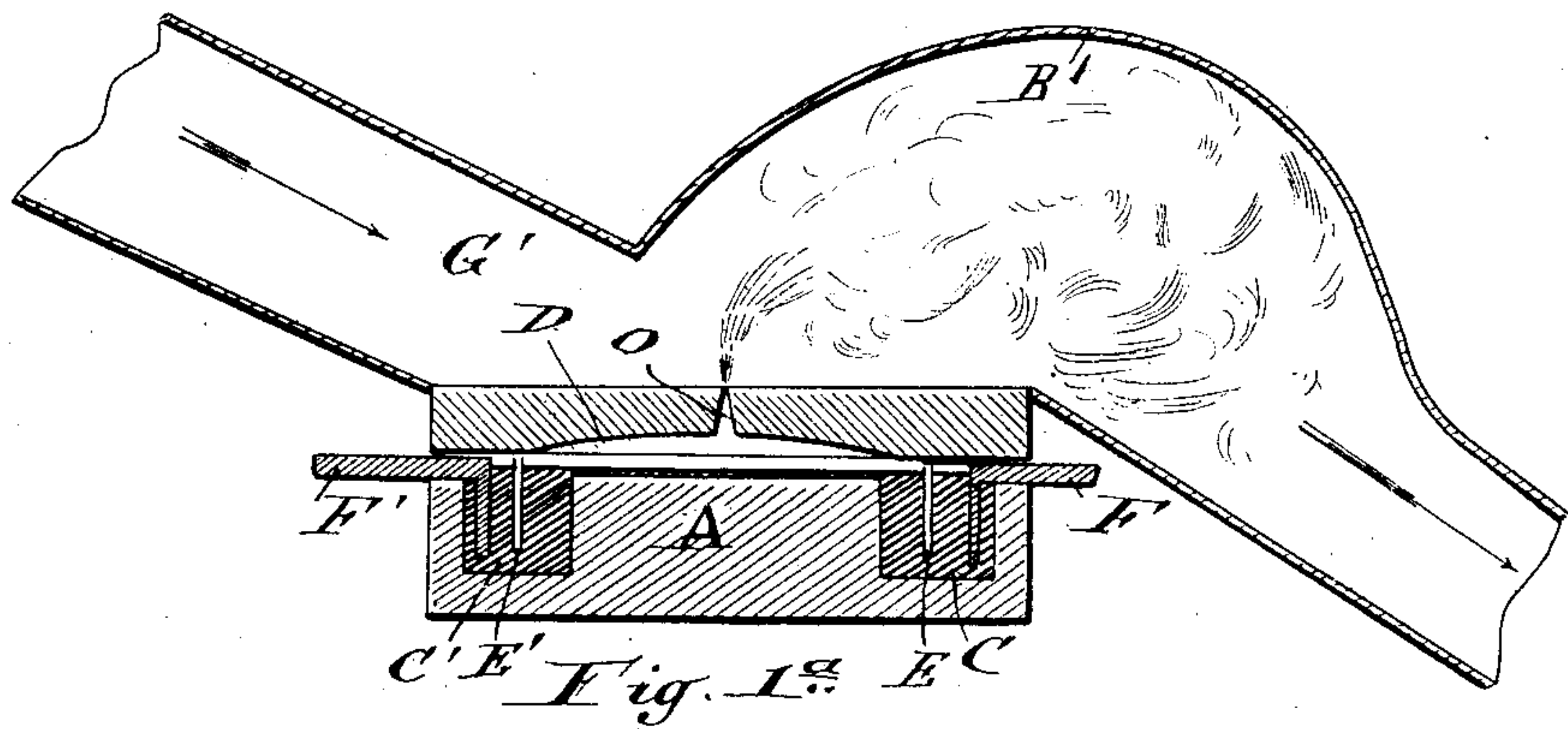
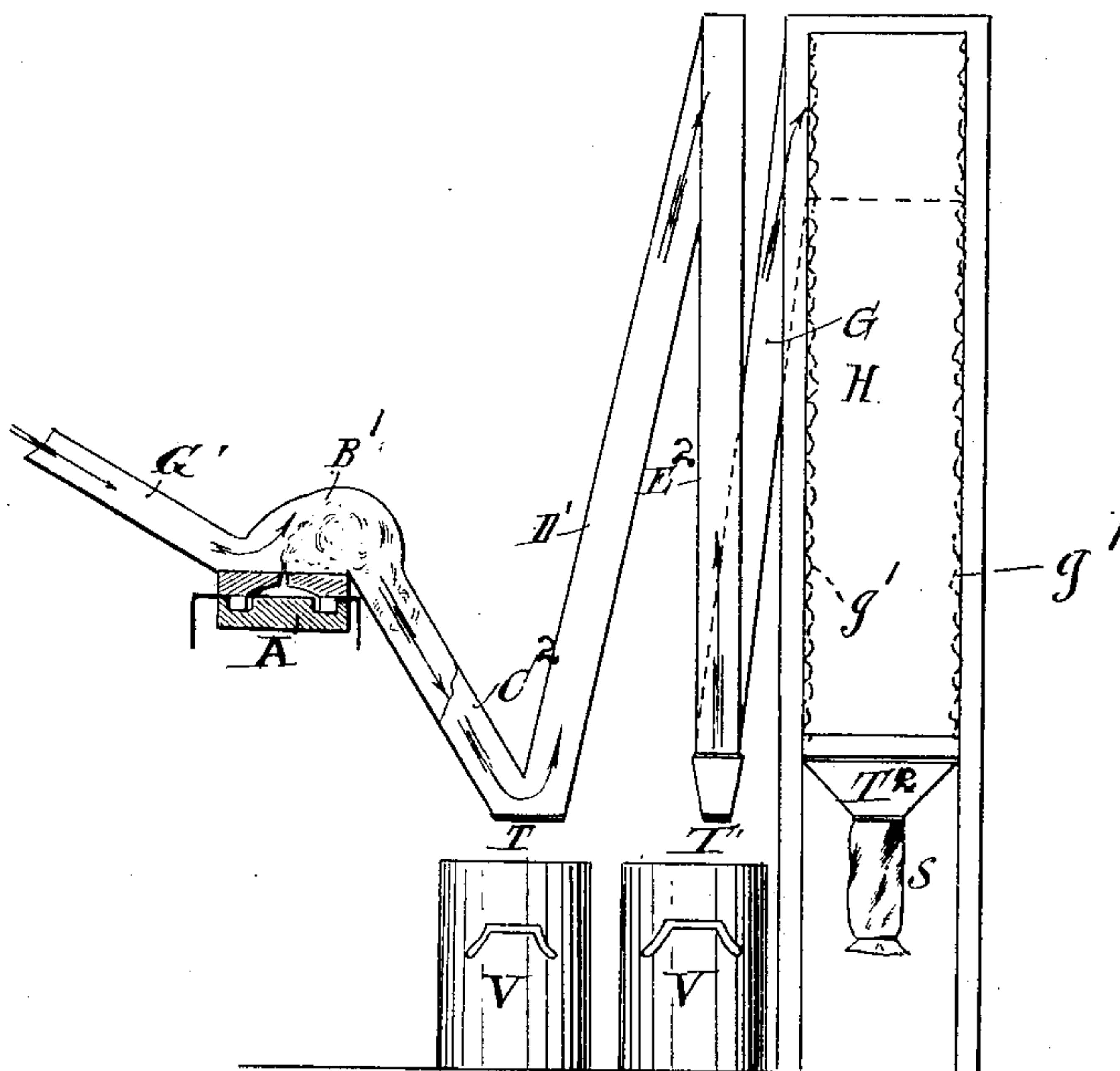
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(Application filed Oct. 18, 1900.)

(No Model.)

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*Fig. 3<sup>a</sup>*



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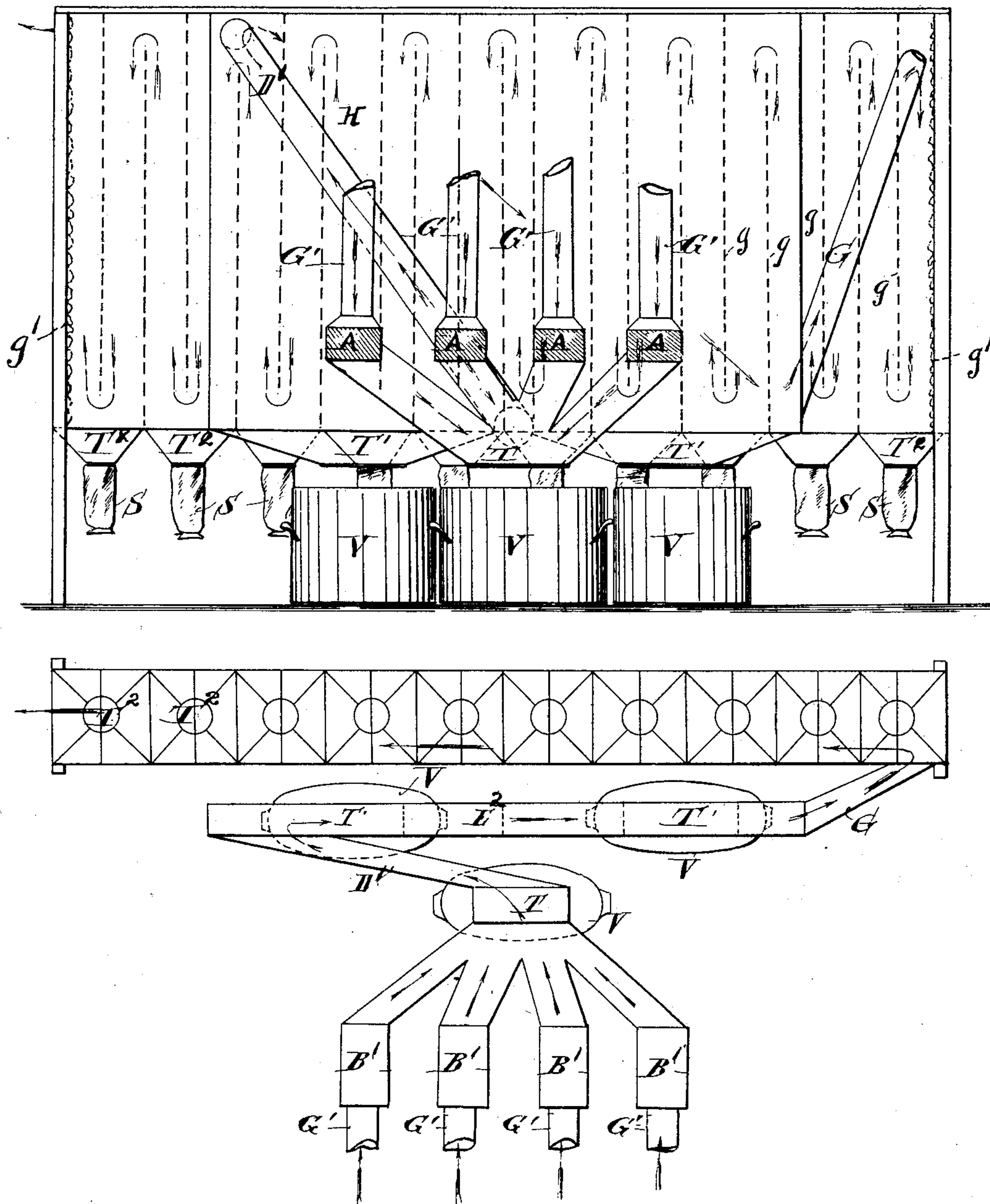
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3 Sheets—Sheet 3.

Fig. 2. a



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# UNITED STATES PATENT OFFICE.

CHARLES PAUL BARY, OF PARIS, FRANCE.

## ELECTRIC FURNACE.

SPECIFICATION forming part of Letters Patent No. 685,965, dated November 5, 1901.

Application filed October 18, 1900. Serial No. 33,480. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES PAUL BARY, a citizen of the Republic of France, and a resident of Paris, France, have invented certain new and useful Improvements in Electric Furnaces for Manufacturing Stannic Acid, of which the following is a specification.

My present invention relates to electric furnaces for manufacturing stannic acid; and it consists in the construction and novel combination of parts fully described and claimed hereinafter.

In the accompanying drawings, Figure 1 is a top plan view of the improved furnace. Fig. 2 is a longitudinal section on line X Y of Fig. 1. Fig. 1<sup>a</sup> represents a section of the furnace with an overhead combustion-chamber for the combustion of the tin-vapors and with an air-blast conduit to carry away the stannic-acid vapors arising from such combustion. Fig. 2<sup>a</sup> represents front and plan views of apparatus which may be employed to collect said stannic vapors and dust; Fig. 3<sup>a</sup>, a side elevation of said apparatus. Fig. 3 is a transverse section on line V V of Fig. 1.

Like letters refer to like parts throughout all the views.

A represents the furnace proper or base, and B is the dome-shaped cover thereof, both made of conglomerated magnesia or equivalent fireproof material. A narrow discharge-aperture O for the vapors is pierced through the apex of the dome. The base A is provided with two rectangular recesses C C', connected to each other by means of a longitudinal groove D of small width and depth. Each recess C or C' is divided into two parts by means of a partition-wall E or E', made of fireproof material and extending near to the bottom thereof. F F' represent metal or carbon electrodes serving to lead the current to the furnace.

In practice the furnace is charged with tin until the groove D is uniformly filled up. The electric current is forced to pass through the mass of tin contained in the narrow groove D in order to pass from one electrode to the other, whereby the temperature of said mass of tin is raised to boiling heat. The partition-walls E E' prevent the most heated parts of the metal from coming into direct contact with the electrodes. The tin-vapor

thus formed passes into the dome-like cover and through the opening O, where it is constantly ignited in contact with atmospheric air to produce stannic acid.

Suitable apparatus for burning the tin-vapors and collecting and cooling the stannic-acid vapors, as well as collecting the dust, is represented in Figs. 1<sup>a</sup>, 2<sup>a</sup>, and 3<sup>a</sup>; but to this apparatus I make no claim. The collecting device is given only by way of example. Any device usually employed for the collection of fine dusts—oxid of zinc, for example—may also be utilized for the same purpose. In this, which corresponds with an instalment of four furnaces, the vapors of tin as they escape from the furnace enter a combustion-chamber B', in which they ignite and form stannic acid, which is driven by an air-blast entering through pipe G' and, following the direction indicated by the arrows, into pipe C<sup>2</sup>, and thence through pipe D' into a cooling-chamber E<sup>2</sup>, from which the heaviest portions fall into the funnels T T', where they may be collected and at a proper time emptied into the removable receptacles V and carried away. The cold air, loaded with dust, then enters the condensing-chamber H through the conduit G. This chamber is divided by a series of vertical partitions g, arranged as staggering plates. The surface of the walls is covered with wrinkled cloth g' to collect the fine dust, while the driplets which may have been drawn in fall into funnels T<sup>2</sup> and thence into bags S, capable of being opened at their bottoms to discharge their contents. The arrows upon the drawings show the course of the dust-laden air.

It will be seen that my invention avoids the considerable loss of tin which occurs in the usual process of causing a strong air-current to pass over the molten tin upon the base of a furnace, said air-current carrying always small particles of tin away, which particles are not completely burned.

In the present construction there is no contact of the air-blast with the molten tin, since the domed cover B acts as a shield between the path of said blast and the layer of tin in the furnace. Furthermore, the product I obtain by burning tin-vapors is of finer grain, and therefore more appropriate to the manufacture of enamel.



Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an electric furnace for producing stannic acid, the combination with the base of a plurality of comparatively deep recesses in said base, and a narrow flat groove connecting said recesses to each other, said recesses and groove adapted to be filled with tin, of a dome-like cover above said base and having a narrow discharge-opening, means for causing an electric current to pass through the tin contained in the groove and means exterior to said furnace for burning the tin-vapors produced in the furnace substantially as set forth.

2. In an electric furnace for producing stannic acid, the combination with the base of a plurality of comparatively deep recesses in said base, and a narrow flat groove connecting said recesses to each other, said recesses and groove adapted to be filled with tin, of a dome-like cover above said base, means for causing an electric current to pass through the tin contained in the groove, a suitable opening in the cover for the passage of tin-

vapors produced in the furnace, a combustion-chamber above said opening, and means for passing an igniting air-blast through said chamber, substantially as set forth.

3. In an electric furnace for producing stannic acid, the combination with the base of a plurality of comparatively deep recesses in said base, and a narrow flat groove connecting said recesses to each other, said recesses and groove adapted to be filled with tin, of a dome-like cover above said base, metal electrodes extending into said recesses, suitable walls protecting said electrodes from direct contact with the tin contained in the narrow groove, and a suitable opening in the cover for the passage of tin-vapors produced in the furnace, said opening communicating with a combustion-chamber and means for passing an igniting air-current through said chamber, substantially as set forth.

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

CHARLES PAUL BARY.

Witnesses:

ADOLPHE STURM,  
EDWARD P. MACLEAN.