

(No Model.)

2 Sheets—Sheet 1.

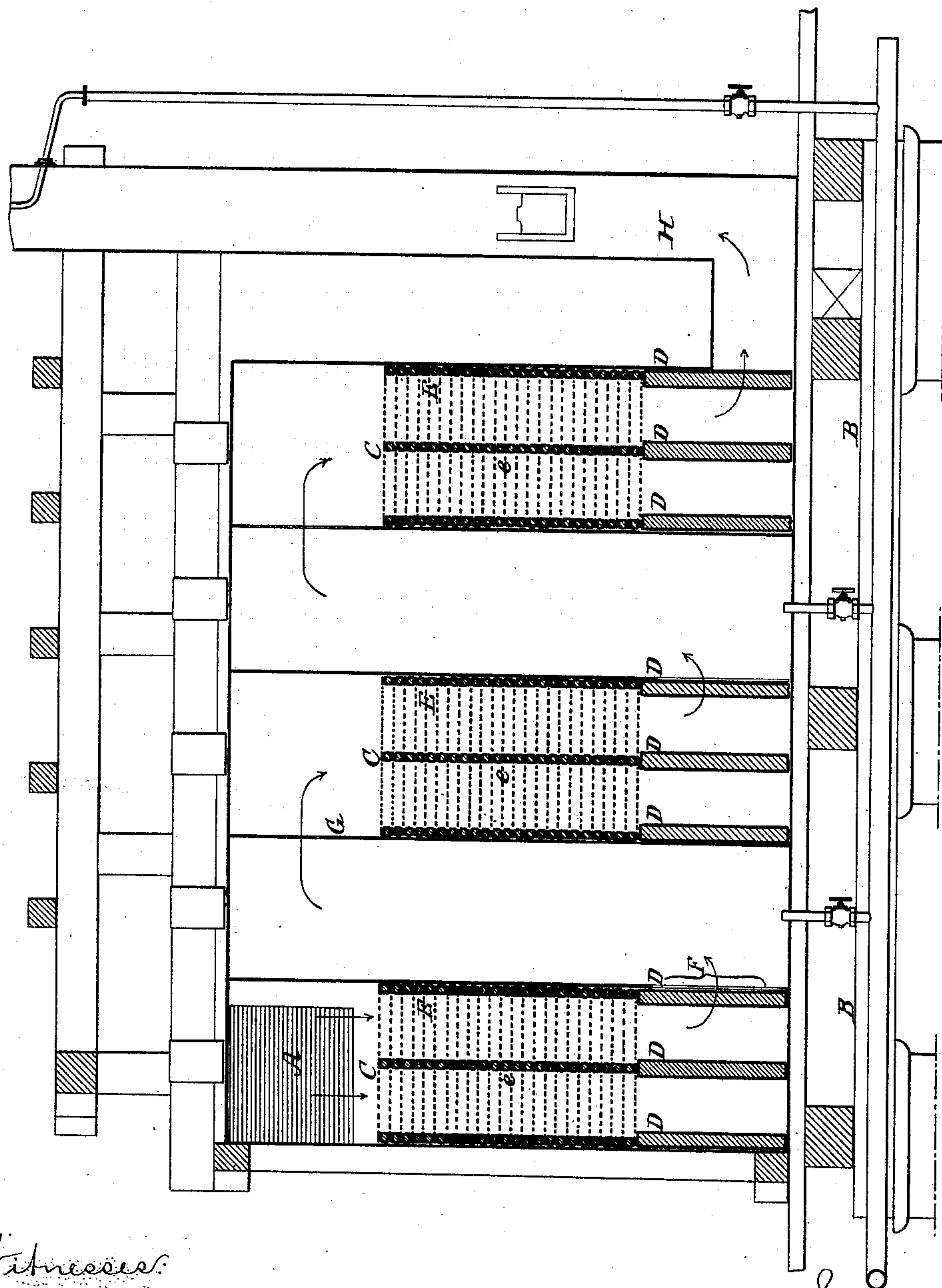
J. J. THYSS.

APPARATUS FOR MAKING SULPHURIC ACID.

No. 349,241.

Patented Sept. 14, 1886.

FIG. 1.



Witnesses:
John M. Clayton.
Harry Drury

Inventor,
Jean J. Thyss
by his Attorneys
Howson & Sons

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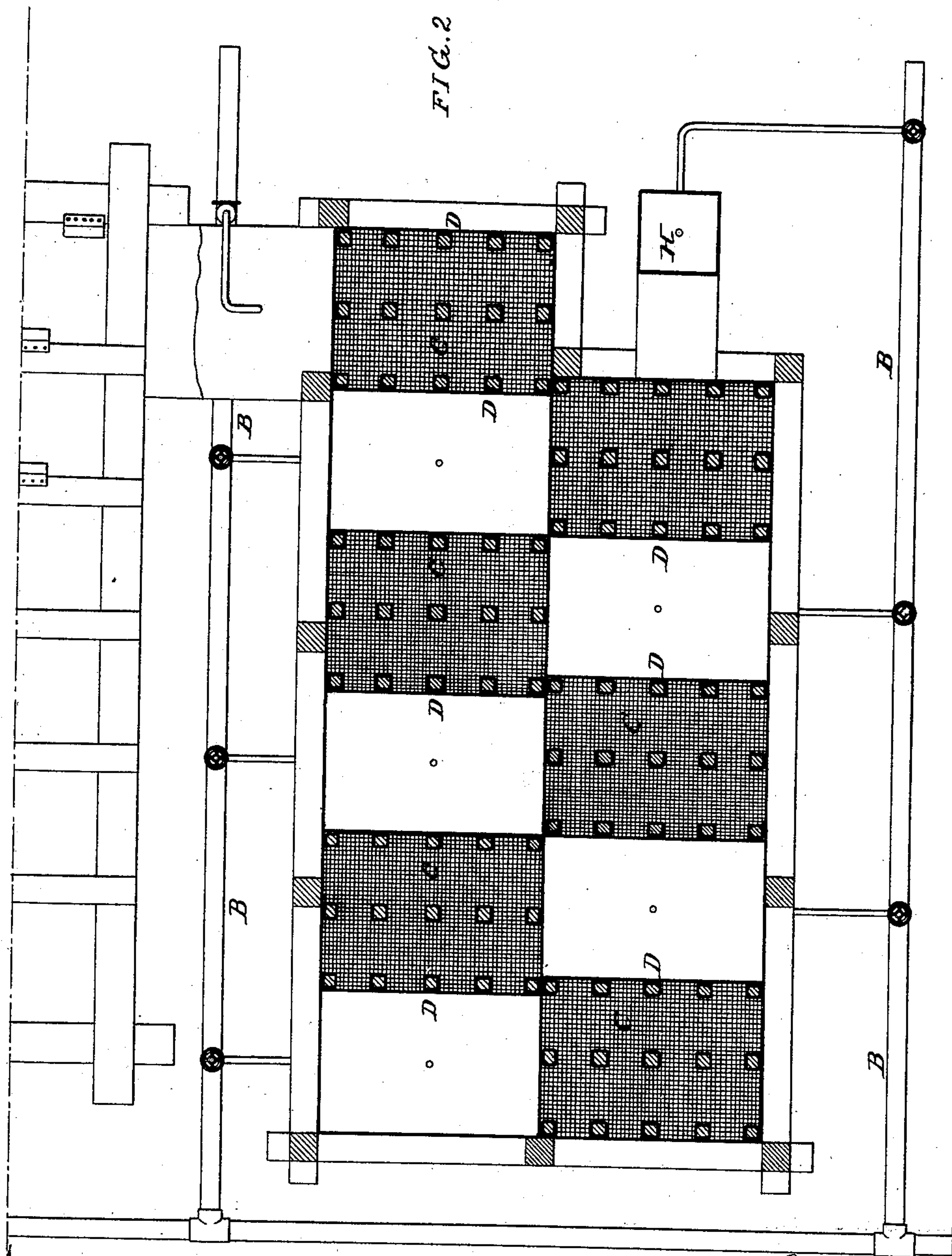
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

JEAN JACQUES THYSS, OF BAKON, CAUCASUS, RUSSIA.

APPARATUS FOR MAKING SULPHURIC ACID.

SPECIFICATION forming part of Letters Patent No. 349,241, dated September 14, 1886.

Application filed October 13, 1884. Serial No. 145,371. (No model.) Patented in Austria-Hungary April 7, 1884, No. 2,034; in Belgium June 19, 1884, No. 65,531; in England June 23, 1884, No. 9,317; in Germany June 26, 1884, No. 30,211; in France October 8, 1884, No. 162,828, and in Spain April 25, 1885, No. 4,707.

To all whom it may concern:

Be it known that I, JEAN JACQUES THYSS, manufacturer of chemicals, a citizen of the Republic of France, and residing in Bakon, Caucasus, Russia, have invented Improvements in Apparatus for the Production of Sulphuric Acid, of which the following is a specification.

The apparatus which forms the subject of the present application for a patent is intended to increase the production of sulphuric acid in chambers of lead of any suitable kind; and it consists in a column of lead, or several columns, adapted to the said chambers. The system hereinafter described only gives, by way of example, a specimen of apparatus of particular dimensions suitable for a given amount of production; but the invention is not limited to such scale of production, nor to any particular dimensions of apparatus.

Figure 1 of the accompanying drawings is a vertical section of the apparatus, and Fig. 2 is a plan.

In the base of the column of lead are fitted fifteen posts of wood lined or covered with lead. These posts are firmly fixed at the bottom, so as to secure them from moving. A frame of lead twenty-two millimeters in thickness and forty-eight millimeters in height is placed in position. On this frame is placed a sheet of lead of the width and length of the frame. This sheet is two millimeters in thickness, and is perforated with seventeen hundred and fifty holes of one centimeter in diameter, with one centimeter of metal left between each hole. The second frame is made to rest on the first by placing three small supports of wood lined or covered with lead of equal distances apart between or among the plates, in order to sustain the weight of the sheet of perforated lead. This successive overlaying is continued until there are twenty-four frames and twenty-four sheets of lead. The sulphuric-acid gases and steam pass through the holes of the plate and impinge on the parts not perforated, whereby they are forced to seek other outlets; and it is by this multiplied contact that the oxidation is effected, and that the sulphurous acid is converted into sulphuric acid by introducing, it is to be observed, a

jet of steam into each column. The gases, with the steam, pass from top to bottom through the perforated plates, drawing the small drops of sulphuric acid which are collected at the bottom of the column. The column is put in communication with the last compartment of the chamber by means of a leaden pipe, of fifty centimeters square in section, into which is introduced a jet of steam, in order to quicken the formation of the sulphuric acid and protect the lead from azotic acid. The gases and steam enter by an opening at the bottom part of the column (without frames) and pass into a second column furnished with twenty-four frames and perforated plates. In this column the uncondensed gases meet a jet of steam. The distribution is thus continued onward to the last column. The uncondensable gases are conducted in a leaden pipe of thirty-five centimeters in diameter, in which a strong draft is produced by a jet of steam, in order to draw the gases into the air and produce the required draft in the sulphur-furnace. Each column furnishes in twenty-four hours seven hundred and thirty-six kilograms of sulphuric acid, reckoned at sixty-six Beaumé, (specific gravity 1.842.) The number of columns can be increased at will, according to the scale of operations in the manufacture of sulphuric acid.

The accompanying drawings give a correct view of the system. A is the pipe, of lead, or channel, which conducts from the drum or compartment of lead the sulphurous gases and vapors into the column. B is the steam-pipe, furnished with cocks. C is the column, of lead, and D the supports, of wood lined or covered with lead, the frames of lead and sheets of lead being perforated with holes. E represents twenty-four frames of lead with twenty-four sheets of perforated lead placed one on the other. *e e e* are the supports, of wood lined or covered with lead, which support the sheets of perforated lead. F is the aperture through which pass the sulphurous gases into the empty column, and G is the aperture through which pass the uncondensed gases into a column, in which are placed the same number of frames as in the first column, and so on in succession even to the leaden pipe H, which conducts the

incondensable gases out of the building. In this pipe there is a steam-pipe for regulating the draft of the furnace for generating sulphurous acid, as well as the renewing of atmospheric
5 air in the chambers and columns. The gases and vapors are conducted from top to bottom through the perforated plates of the columns, in order to facilitate the flowing of the sulphuric acid as it is formed.

10 I claim as my invention—

1. The herein-described condenser for sulphuric-acid gas, said condenser consisting of a series of adjoining vertical leaden flues communicating with each other at the top and bottom
15 alternately, and each alternate flue containing a column of perforated leaden sheets separated from each other, substantially as set forth.

2. The herein-described condenser for sulphuric-acid gas, said condenser consisting of a series of leaden flues, each alternate flue containing a column of separated perforated leaden sheets and steam-pipes opening into one or more of the flues, as and for the purpose described.

In testimony whereof I have signed my name
25 to this specification in the presence of two subscribing witnesses.

JEAN JACQUES THYSS.

Witnesses:

ALFRED COLNY.

EDWARD P. MACLEAN.