

(No Model.)

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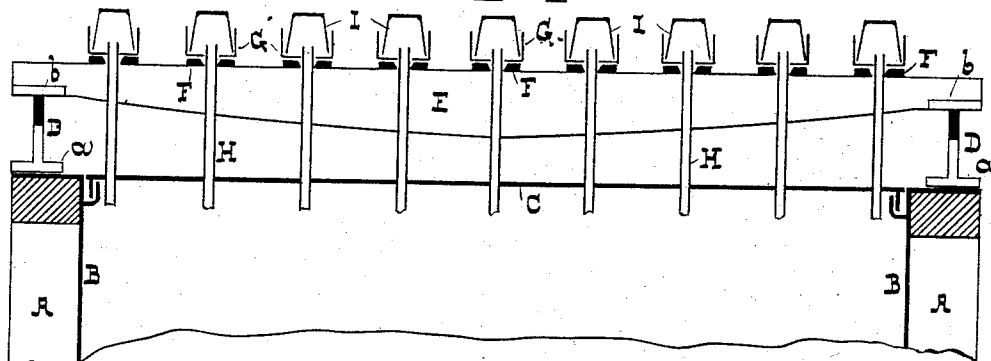
F. W. CHAPPELL.

APPARATUS FOR FEEDING ACID TO GLOVER TOWERS, &c.

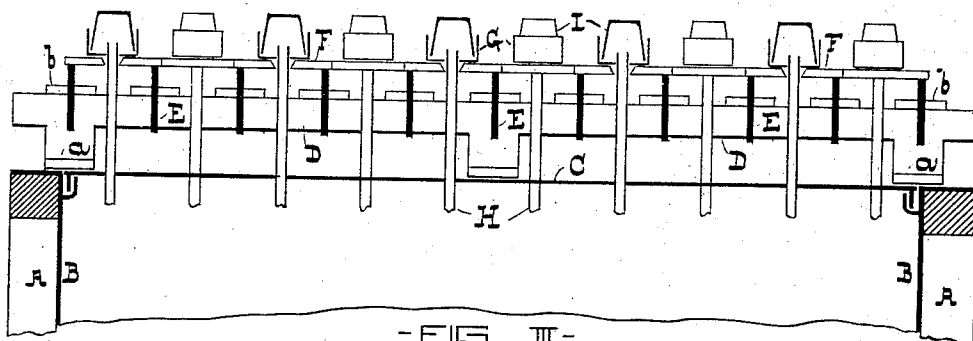
No. 375,121.

Patented Dec. 20, 1887.

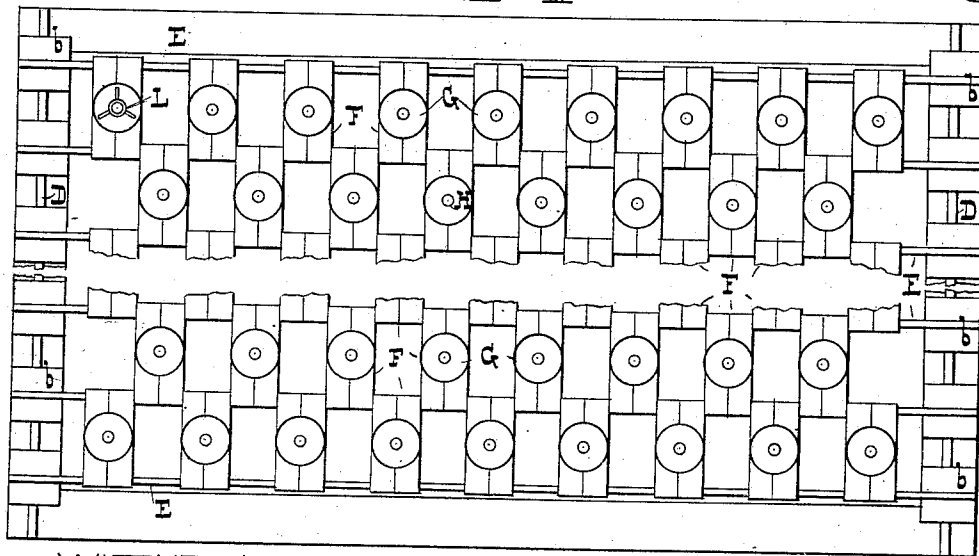
-FIG I-



-FIG II-



-FIG III-



-WITNESSES-

-INVENTOR-

Dan'l Fisher

Frank Hodges

Francis W. Chappell,

by G. H. W. Howard,

Atty.-

(No Model.)

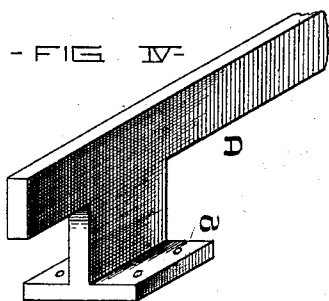
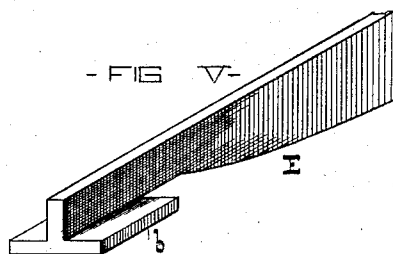
2 Sheets—Sheet 2.

F. W. CHAPPELL.

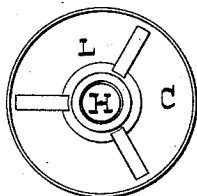
APPARATUS FOR FEEDING ACID TO GLOVER TOWERS, &c.

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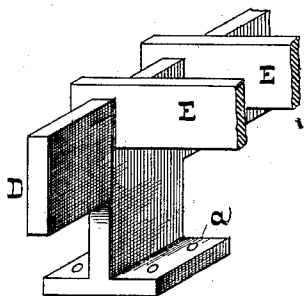
Patented Dec. 20, 1887.



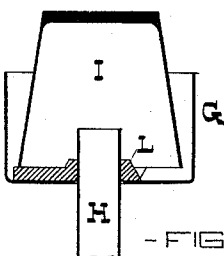
- FIG VI-



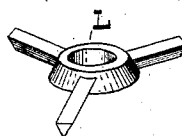
- FIG IX-



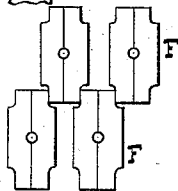
- FIG VII-



- FIG VIII-



- FIG X-



-WITNESSES-

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att'y.

UNITED STATES PATENT OFFICE.

FRANCIS W. CHAPPELL, OF BALTIMORE, MARYLAND.

APPARATUS FOR FEEDING ACID TO GLOVER TOWERS, &c.

SPECIFICATION forming part of Letters Patent No. 375,121, dated December 20, 1887.

Application filed February 8, 1887. Serial No. 226,919. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS W. CHAPPELL, of the city of Baltimore and State of Maryland, have invented certain Improvements in Apparatus to be Used in the Manufacture of Sulphuric Acid, of which the following is a specification.

This invention relates to certain improvements in the construction of what are known as the "Glover and Gay-Lussac towers," which are used in connection with sulphuric-acid chambers; and its objects are to obtain a better distribution of the acid introduced to the tower, and to support the sheet-lead top of the same, as will hereinafter fully appear.

In the further description of the said invention which follows reference is made to the accompanying drawings, forming a part hereof, and in which—

Figures I and II are sectional elevations of the top of the tower, as seen from different points of view, or sections taken, respectively, on the dotted lines *x x* and *y y*, Fig. III, which is a top or plan view of the invention. Figs. IV, V, VI, VII, and VIII are details of the invention, as hereinafter fully described; Figs. IX and X illustrate modifications in the construction of certain parts of the apparatus, as will hereinafter appear.

Similar letters of reference indicate similar parts of the invention in all the figures.

In the said drawings, A represents the vertical frame-work of the tower, a portion only of which is shown, and B the sheet-lead lining of the same.

C is the sheet-lead top of the tower removably connected to the vertical lining B in the usual manner.

D D are iron bars having feet *a*, which rest on the top of the frame-work A, as shown in Figs. I and II. These bars will be designated as "supports" throughout the specification.

E E are iron bars having feet *b b* at their ends, placed transversely of the supports, as shown particularly in Fig. I. These bars I term "carriers."

Figs. IV and V are perspective views of one end of the supports and carriers.

F F are plates supported on the upper edge of the carriers E. (See Fig. III.) These plates are in sections—that is to say, they are

each composed of two half-plates having a semicircular opening therein, which are placed together, so that in each plate there is a central hole to receive a pipe, hereinafter described. The plates F are staggered—that is to say, the plates in each longitudinal line or row are separated by the ends of the plates of the adjoining rows at either end, as shown in Fig. III.

By forming the plates F in halves, as shown, they can be placed in position or removed without disturbing the pipes and cups, which when in place they serve to sustain.

G G are sheet-lead cups, one of which is placed on each of the plates F, and each cup is provided with a pipe, H, which is secured to and passes through its bottom and attached to the top C. These pipes form the means of entrance for the acid to the tower, and in order that a body of acid may be retained in the cups, to form, in connection with the inverted tumblers I, seals, the upper ends of the pipe H project somewhat above the bottom of the cups.

The tumblers I do not come in direct contact with the bottom of the cups, but rest on spiders L, with legs of preferably triangular cross-section, which are either loose or secured to the bottoms of the cups. By this means there are spaces left underneath the edges of the tumblers, through which the acid passes to their interiors and to the pipes H. One of these spiders is shown in perspective in Fig. VIII. The said pipes also project below the top C, in order that the acid may be either dropped to the tower or conducted to receivers, when receivers are used.

It will be understood that with the construction described the top is supported by the cups G, resting on the plates F, and the plates are in turn sustained by the carriers and supports, respectively, denoted by E and D, from the upper face of the frame-work A of the tower. The top is thus supported from many points as there are means of ingress for the acid, and requires no other means for keeping it in place, while the supports are utilized to effect a thorough distribution of the entering acid throughout the whole area of the tower.

It will be seen that the top C, with the supports, carriers, plates, and cups, and their

connection, can be lifted collectively from the tower by means of bars which are inserted under the supports, the legs thereof elevating the said supports sufficiently for that purpose.

5 In Fig. IX the carriers are shown as devoid of feet and resting in notches or slots in the supports.

In Fig. X the plates F are shown as of an irregular shape, which admits of their ready
10 adjustment.

I have not shown any apparatus for conveying the acid to the cups, as such apparatus will be described and claimed in a separate application.

15 I claim as my invention—

1. In a sulphuric-acid apparatus, a series of acid-cups supported from the frame-work of the tower and attached to the sheet-lead top of the tower by means of the pipes which form
20 the means of communication between the cups and the tower, substantially as and for the purpose specified.

2. In a sulphuric-acid apparatus, the combination of the frame-work of the tower, the
25 supports and carriers described, a series of plates in sections sustained by the said supports and carriers, lead acid-cups resting on the said plates, and pipes which serve to unite

the said cups with the top of the tower, substantially as and for the purpose specified. 30

3. In a sulphuric-acid apparatus, a series of cups situated above the top of the tower and connected to the said top by means of suspensory pipes, substantially as and for the purpose specified. 35

4. In a sulphuric-acid apparatus, a series of acid-cups situated above the top of the tower to receive the acid, to be distributed or collected in the said tower, having therein spiders upon which the tumblers rest, substantially as
40 and for the purpose specified.

5. In a sulphuric-acid apparatus, the top of the tower suspended by means of a series of pipes which serve as the means of communication with the said tower, substantially as
45 and for the purpose specified.

6. In a sulphuric-acid apparatus, a series of cups connected to the top of the said tower by means of pipes, the said cups being staggered, substantially as and for the purpose
50 specified.

FRANCIS W. CHAPPELL.

Witnesses:

WM. T. HOWARD,
FRANK HODGES.