

WILLIAM T. CLOUGH.

Improvement in Evaporating and Concentrating Sulphuric
and other Acids.

No. 127,957.

Patented June 18, 1872.

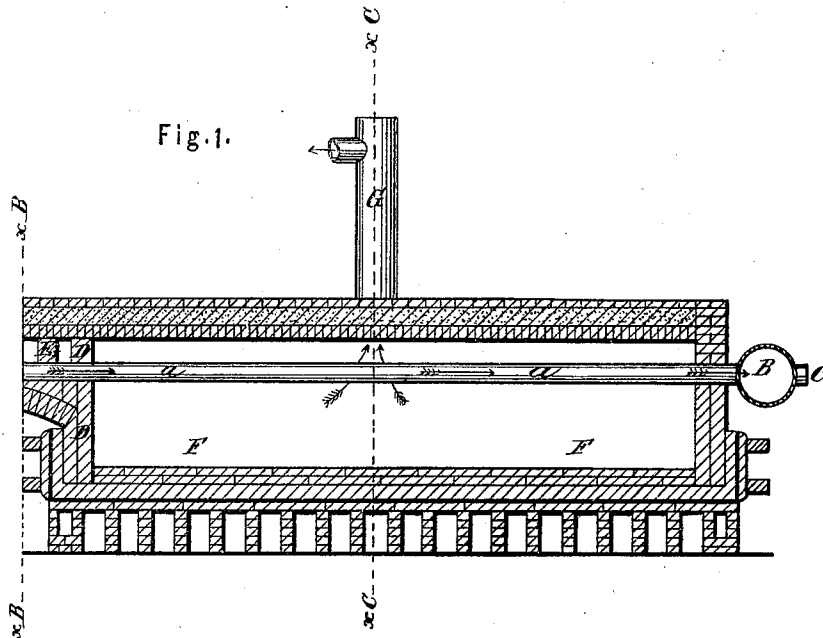


Fig. 2.

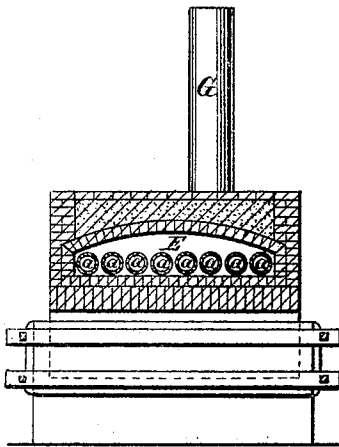
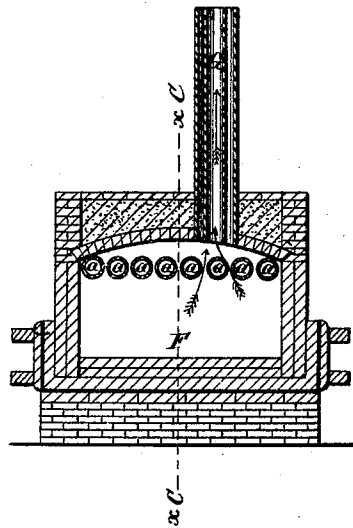


Fig. 3.



Witnesses
George W. Hubbell
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UNITED STATES PATENT OFFICE.

WILLIAM T. CLOUGH, OF NEWARK, NEW JERSEY, ASSIGNOR TO DANIEL DODD, OF SAME PLACE.

IMPROVEMENT IN EVAPORATING AND CONCENTRATING SULPHURIC AND OTHER ACIDS.

Specification forming part of Letters Patent No. 127,957, dated June 18, 1872.

SPECIFICATION.

To all to whom it may concern:

Be it known that I, WILLIAM T. CLOUGH, of Newark, Essex county, New Jersey, have invented a new and Improved Method of Evaporating and Concentrating Sulphuric and other Acids; also salt, sulphur, and other substances capable of evaporation; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing and to the letters of reference marked therein making a part of this specification.

The nature of my invention consists in providing the upper part of a furnace constructed in any of the known forms, with a layer of pipes placed over the bed of the furnace. The flame from the fire directly in front of the furnace is drawn through the pipes (in the manner hereinafter described) producing great heat in said pipes, which heat radiating from the said pipes upon the sulphuric acid or other material placed in the bed of the said furnace causes rapid evaporation to take place and consequent concentration.

To describe my invention more particularly, and to enable others skilled in the art to make and use my invention, I will refer to the accompanying drawing forming a part of this schedule, the same letters of reference wherever they occur referring to the same parts, and will then proceed to describe its construction and operation.

Figure 1 is a longitudinal sectional view of the furnace. Fig. 2 is a vertical cut section of the furnace through the line *x b* on Fig. 1. Fig. 3 is a vertical cut section of the furnace on the line *x c* on Fig. 1.

Letter A indicates the pipes, as shown on Figs. 1, 2, and 3. Letter B indicates the drum-pipe, connecting with the pipes indicated by letter A, as shown on Fig. 1. Letter C indicates hand-holes attached to the said drum B, as shown on Fig. 1. Letter E indicates the main wall of the furnace, shown on Fig. 1; letter D, a fire-wall, shown on Fig. 1. Letter F, as shown on Figs. 1 and 3, indicates the material to be evaporated in the bed of the furnace. Letter G indicates the pipe through

which the vapor arising from the bed of the furnace is carried off. I construct my furnace in any of the known forms, and place over the bed of the furnace a layer of pipes of any size or number, as indicated as aforesaid by letter A on the accompanying diagram. The pipes are to be made of fire-clay or metal, or any other substance adapted to the use to which the furnace is to be put. The layer of pipes I connect with the drum-pipe marked B, as aforesaid, on the back of the furnace, which is connected with a flue or stack so as to cause the flame from the fire-place in front of the furnace to pass through the pipes in that direction. On the drum opposite each pipe, as indicated by letter A, I construct a hand-hole, marked C, as aforesaid, of the same capacity as the pipe, for the purpose of removing dust or other obstruction from the pipes.

In order to prevent the expansion and contraction of the pipes A from injuring the wall that separates the fire-place from the chamber of the furnace—which wall is marked letter E—I build a second wall of fire-brick, marked letter D. A space is thus left between the main wall, marked E, as aforesaid, and the second wall, marked letter D, as aforesaid, which I fill with sand or any other substance that is fire-proof, and that will give way for the expansion and contraction of the pipes. These walls—the main wall and the fire wall, indicated as aforesaid—must be made with a series of openings that fit the pipes used in the furnace. I do not, however, claim these walls, marked as aforesaid, as a part of this invention.

When the fire is built in front of the furnace the flame therefrom is drawn directly, by means of the drum-pipe B attached to the flue or stack as aforesaid, through the pipes A. The heat created thereby in said pipes radiates from said pipes upon the sulphuric acid or other material in the bed of the furnace, and causes rapid evaporation and concentration. The vapor arising from the bed of the furnace is carried off through the pipe G.

What I claim as my invention, and desire to secure by Letters Patent, is—

The application to furnaces of the layer of

pipes A, placed over the bed of the furnace, as aforesaid, and extending from the front of the furnace to the drum-pipe B, through which pipes a flame being drawn, as aforesaid, will create great heat, as aforesaid, and this heat, radiating from said pipes directly on the material in the bed of the furnace, will evaporate and concentrate said material in the bed of the

furnace more rapidly and with less consumption of fuel than any other process now in use.

W. T. CLOUGH.

Witnesses:

HENRY YOUNG,
R. S. GOULD.