

W. T. CLOUGH.
Evaporating Pan.

No. 15,598.

Patented Aug. 26, 1856.

Fig. 2.

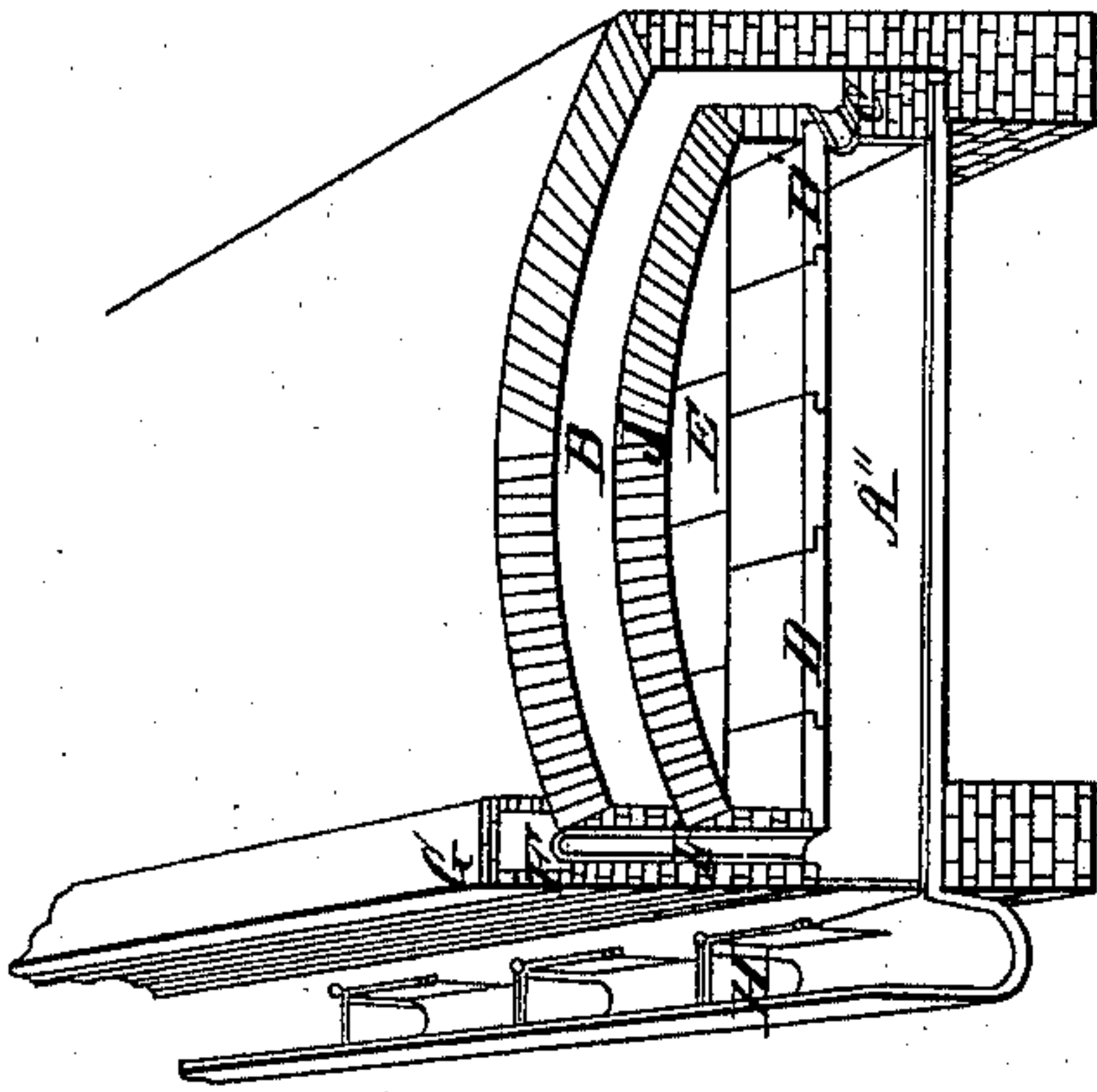
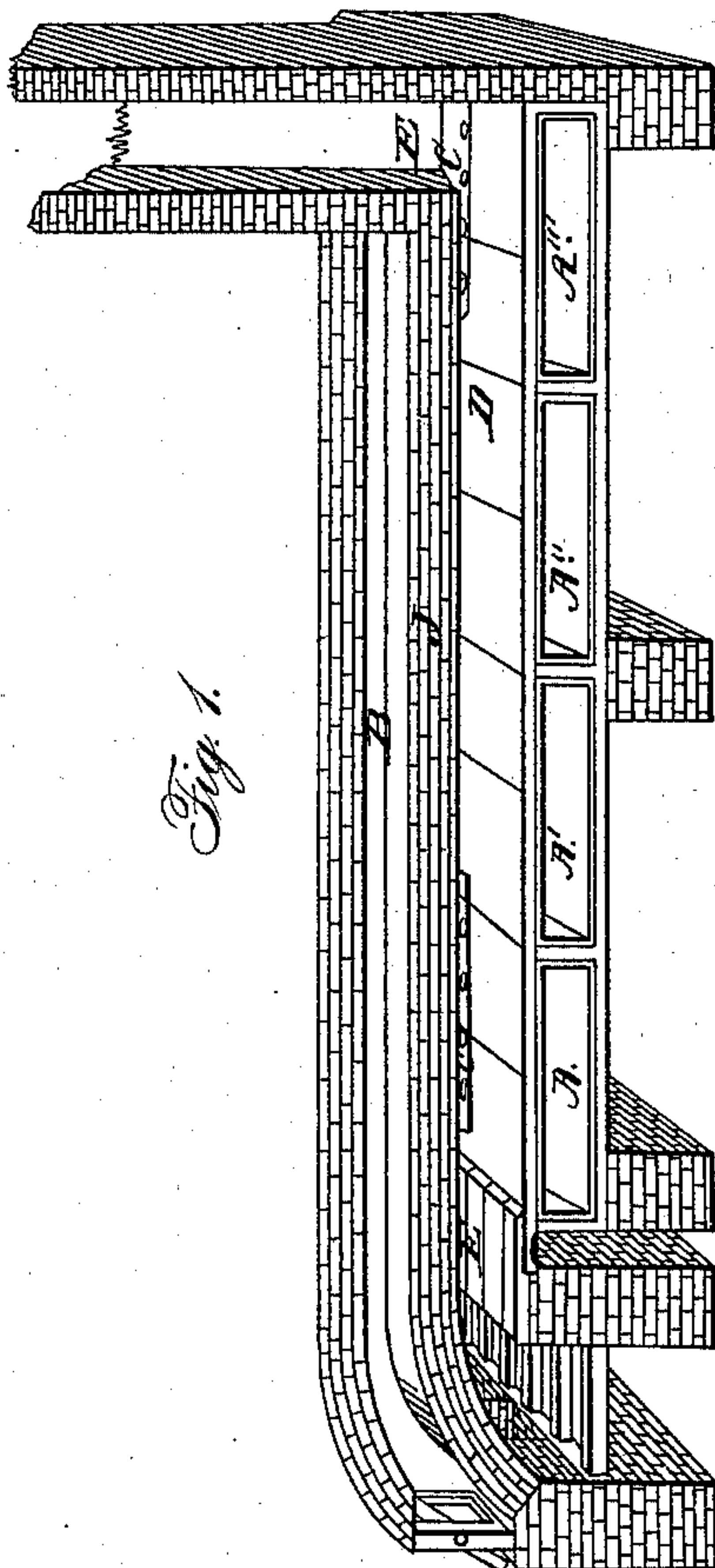


Fig. 1.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM T. CLOUGH, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN APPARATUS FOR EVAPORATING SALT.

Specification forming part of Letters Patent No. 15,598, dated August 26, 1856.

To all whom it may concern:

Be it known that I, WILLIAM T. CLOUGH, of the city of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Mode of Evaporation of Salt or other Liquids; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, which are lettered to correspond with and constitute a part of this specification.

Before describing my invention, I would simply state that it is analogous to my furnace for concentrating sulphuric acid, inasmuch as I evaporate by means of radiated heat from a hot surface being placed above the liquor; hence I shall confine myself to the new arrangement, which is as follows:

Figure 1 is a horizontal sectional view of the furnace having the front side taken off for the purpose of showing the pans A A' A'' A''' and the hot-air chamber B, and flues C C', for the admission of the hot air from the chamber B into the evaporating-pans. These flues are regulated by ordinary dampers in the back side of the furnace. The liquid is also admitted into the pans through one or more of these holes by means of pipes through the back wall of the furnace, or otherwise. Fig. 2 is a transverse section of the furnace, showing one pan, A'', with a metallic covering, (or fire-tiles) D D', and the fire-flue E; also showing the hot-air chamber or flue B, and its communication, with the evaporating-pans A A'', through the transverse flues C C' at the back of the pans.

Letters F F' are small flues or pipes running from the pans into the horizontal flue G, along the top near the front of the furnace, and connecting with the smoke-stack.

H is the pocket or apron to receive the salt.

From the rapid destruction of the metallic pans or kettles (employed in the evaporation of common salt or other liquids) by the application of heat to the under side or bottom of the pans, which causes an incrustation of the salt (upon the bottom of the pans) during the process of evaporation, which is productive of much loss to the manufacturer, not only the loss of the salt and the destruction of the kettles, but it requires a much greater amount of

fuel to effect a perfect evaporation, as a great portion of caloric is absorbed by the incrustation previous to heating the brine. In the meantime the bottom of the pan is heated to a red heat, fracture or a rapid burning away of the pan is the consequence. By my process I am enabled to prevent the incrustation of the salt upon the pans, and to make the production of salt a continuous process, thus saving time, labor, and the destruction of pans. The heat being applied upon the upper surface of the brine, the crystals of salt are formed by the abstraction of the water of solution, they fall to the bottom of the pan, which is cool, and from time to time are raked into the pocket H of the pans in front of the furnace; from thence are placed on drainers to dry.

By my process of evaporation I am enabled to produce a better quality of salt than by the old method of applying the heat to the bottom of the pans. The sun-evaporated salt is always the purest, to which process mine is very analogous.

I have arranged a series of cast or wrought iron pans, A A'', side by side, and covered them with iron plates or arches, D D', of fire-tiles. Immediately over these plates is the fire-flue E E', direct from the fire-grate to the smoke-stack I. Next to the fire-arch J is the hot-air chamber or flue B, that connects with the transverse hot-air flues C C', at the back of the pans A A'', as shown at C C', Figs. 1 and 2. By this arrangement I expedite the evaporation. The steam and hot air from the pans are conveyed into a flue communicating with the smoke-stack I, the draft of which has a tendency to draw the hot air from the (hot-air) chamber B, along with the steam evaporated from the saline mixture, through the flue G to the stack.

Immediately in front and attached to the pans I have formed an apron or pocket, as shown at H, Fig. 2, into which the salt is raked through an opening in the front of each pan. This opening is kept closed while the furnace is in operation, excepting for raking out the salt, by means of an ordinary sheet-iron slide or hinged door, (or hung on a rod and made to drop four or five inches into the liquor in the pocket,) thus preventing the cold external

air from going into the furnace. When the brine becomes saturated with bittern, a siphon set in the pocket will empty any one of the pans without stopping the working of the others.

Therefore I do not claim the individual parts of the above-described apparatus; but

What I claim, and wish to secure by Letters Patent of the United States, is—

The apron H, chamber B, and escape-flues

F F', arranged and combined with the pans A A' A'', in the manner and for the purpose specified.

In testimony whereof I hereunto subscribe my name in the presence of two witnesses.

W. T. CLOUGH.

Witnesses:

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ANNE S. McLEAN.