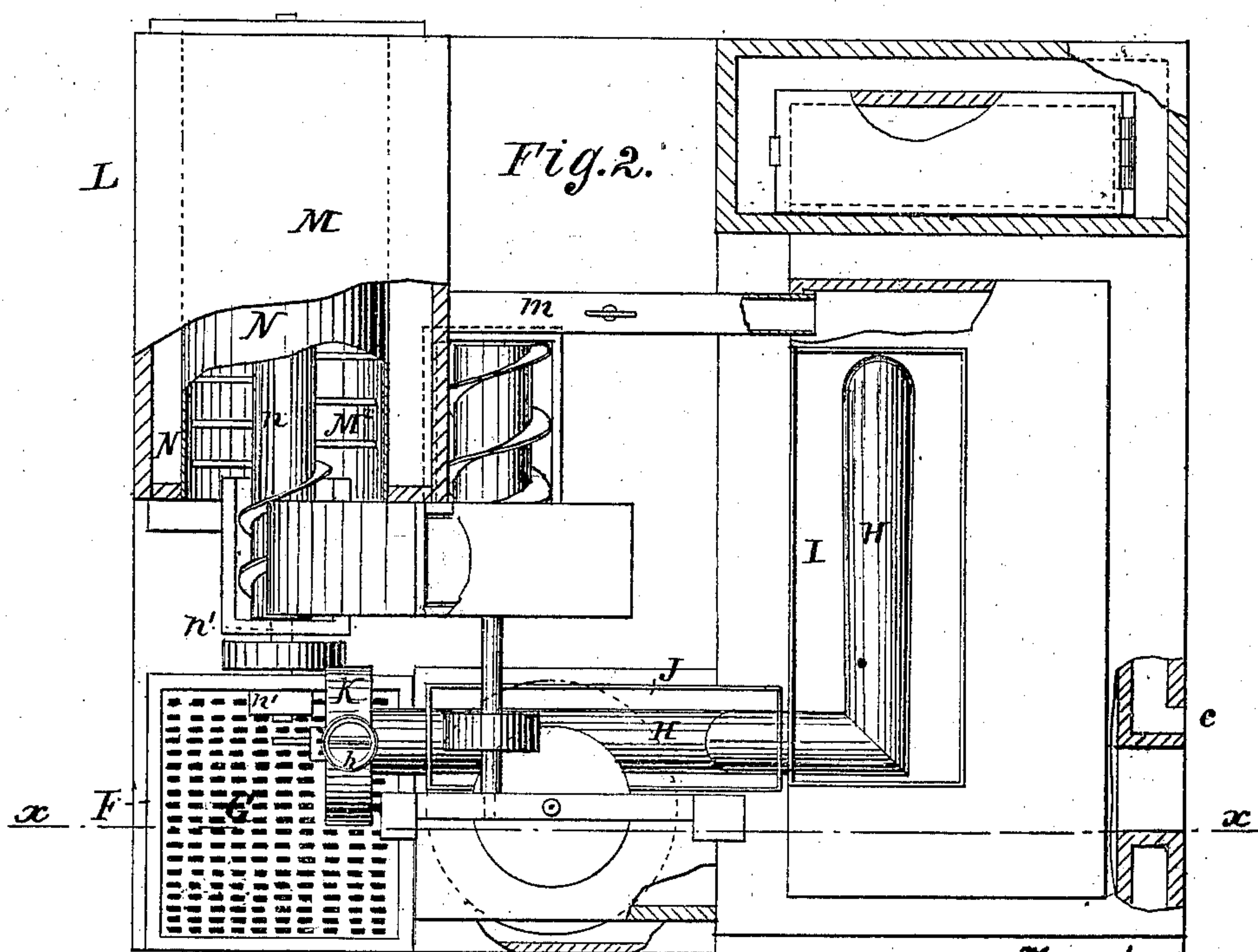
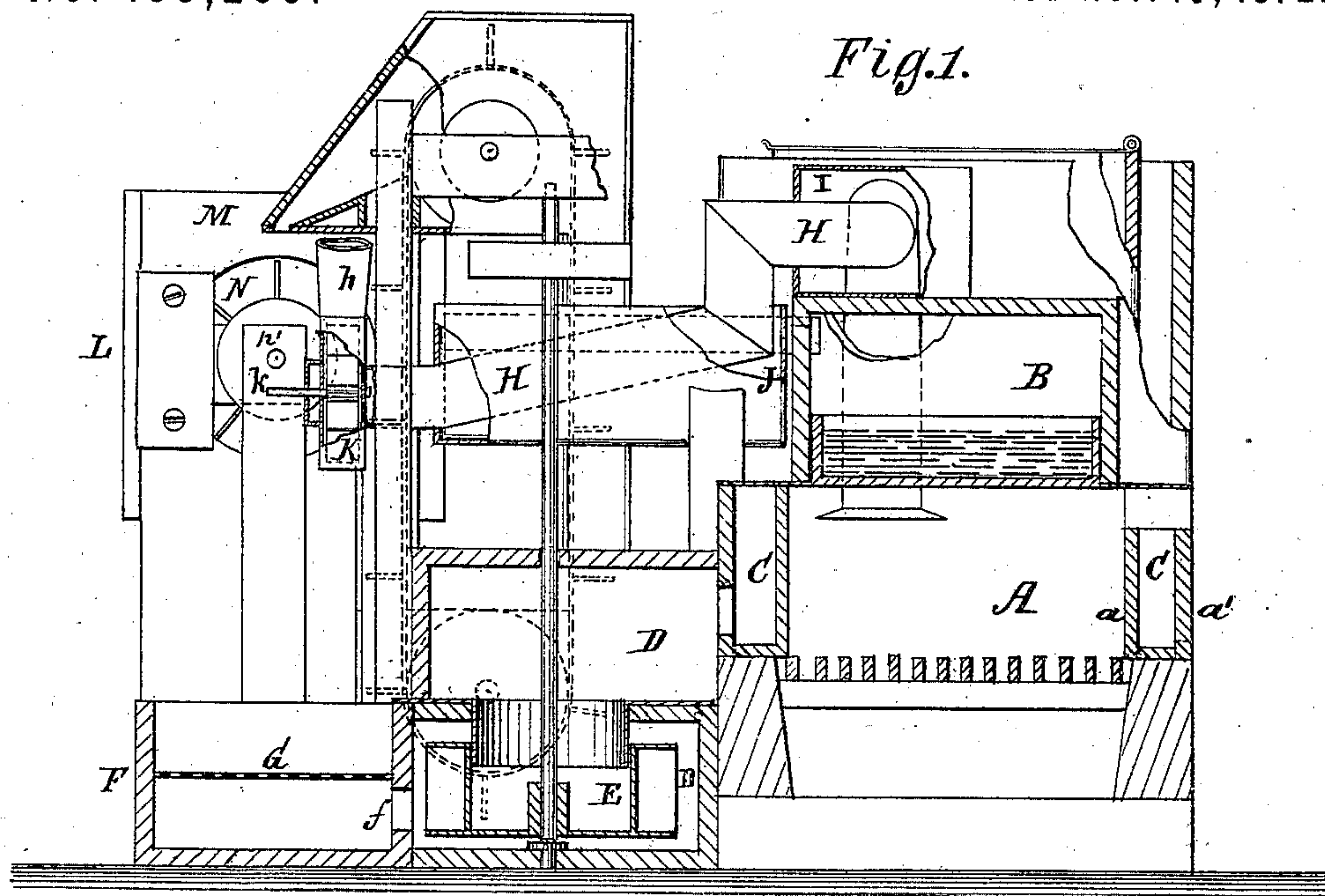


J. McGREW.
Improvement in Apparatus for Evaporating Brine.
No. 133,239.

Patented Nov. 19, 1872.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN MCGREW, OF RAVENSWOOD, WEST VIRGINIA.

IMPROVEMENT IN APPARATUS FOR EVAPORATING BRINE.

Specification forming part of Letters Patent No. 133,239, dated November 19, 1872.

To all whom it may concern:

Be it known that I, JOHN MCGREW, of Ravenswood, in the county of Jackson and State of West Virginia, have invented a Salt-Making Apparatus, of which the following is a specification:

The invention consists in providing the inside of a furnace with an air-jacket and discharging the heated air into the bottom of a vessel of brine or salt-water. The invention also consists in passing the unconsumed products of combustion through vessels of brine or salt-water, thereby abstracting the heat and utilizing it for the general purpose of the apparatus. The invention also consists in a drying apparatus of such construction and so connected with the furnace that the salt is conveniently as well as effectually dried before it leaves the apparatus.

In the drawing, Figure 1 is a vertical section through line *xx* of Fig. 2; and Fig. 2 is a top view with parts broken out.

A represents an ordinary salt-furnace, and B the usual boiler superposed thereon. C is a hollow air-chamber placed between the outer and inner casings *a a'* of furnace and provided with air-inlet *c* and air-outlet. The latter allows the air to pass into chamber D, wherein is placed an ordinary suction-fan, E. F is a vessel for the reception of brine or salt-water, which is divided by a reticulated diaphragm, G, and has opening *f* that connects with fan-chamber D.

The operation of this device is as follows: The air, being admitted into the chamber C around the furnace, is quickly heated to a very high temperature, passed through chamber D into the bottom of brine-tub F, and up through the salt-water. In this process the rapidity of the current of hot air is regulated by the suction-fan E, while the perforated diaphragm retards the ascending currents of hot liquid, divides the air-currents, and renders absorption of the heat from the hot air more uniform and complete.

H is the smoke-pipe, connecting with rear of furnace, passing through the salt-water chambers I J into the fan-chamber K, and having the outlet *h*. *k* is the shaft of fan, and projects out to a suitable distance to enable it to be easily operated by power

mechanism. By this arrangement of smoke-pipe, salt-water vessels, and suction-fan almost the entire heat remaining in the unconsumed products of combustion will be eliminated and brought to bear upon the general purpose of the salt-making apparatus. L represents the drying apparatus, which consists of the shell M, into which the steam is introduced by pipe *m* from boiler, and the internal cylinder N, into which the wet salt is poured or emptied by any preferred means. The cylinder N is placed in an oblique direction, or one end higher than the other, so as to cause the salt to tend toward the lower end. It also has a shaft, *n*, hung in bearings *n'* and provided with radial arms or stirrers *M²* spirally arranged about it. These arms keep the salt in constant motion while passing through cylinder N and discharge it in a satisfactorily dry condition.

Thus I have endeavored to utilize as nearly as possible all the heat products of the fuel by arresting and applying them in the process of making salt. By practical experiment I find that my apparatus, with the ordinary supply of fuel, will afford fifty per cent. more dry salt than any other which has been observed by me in my long experience as a salt-maker, while the salt made by forcing the highly-heated air through the salt brine is of the finest kind and the most superior character.

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

1. A salt-furnace, provided with hot-air chamber C, in combination with a fan-chamber, D, and brine vessel F, arranged as and for the purpose described.

2. The smoke-pipe H, salt-water vessels I J, and suction-fan, arranged in connection with the furnace of a salt-making apparatus, as and for the purpose described.

3. The drier L, consisting of shell M connected with steam-boiler and obliquely-placed cylinder N having stirrers *n²*, when arranged in connection with a salt-water apparatus, as and for the purpose described.

JOHN MCGREW.

Witnesses:

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