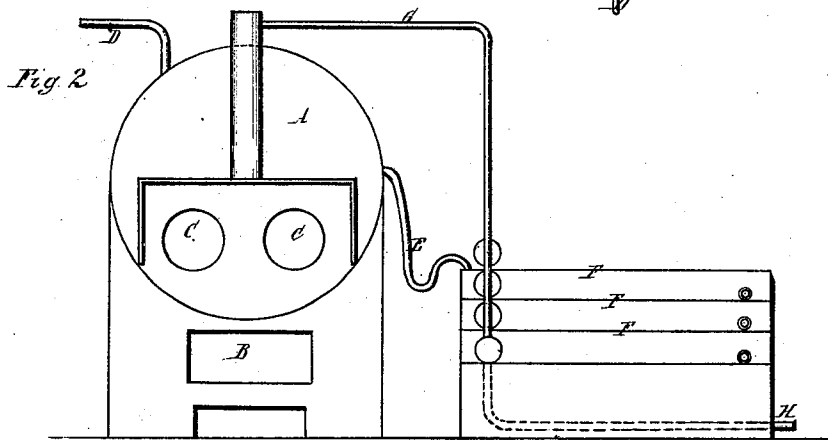
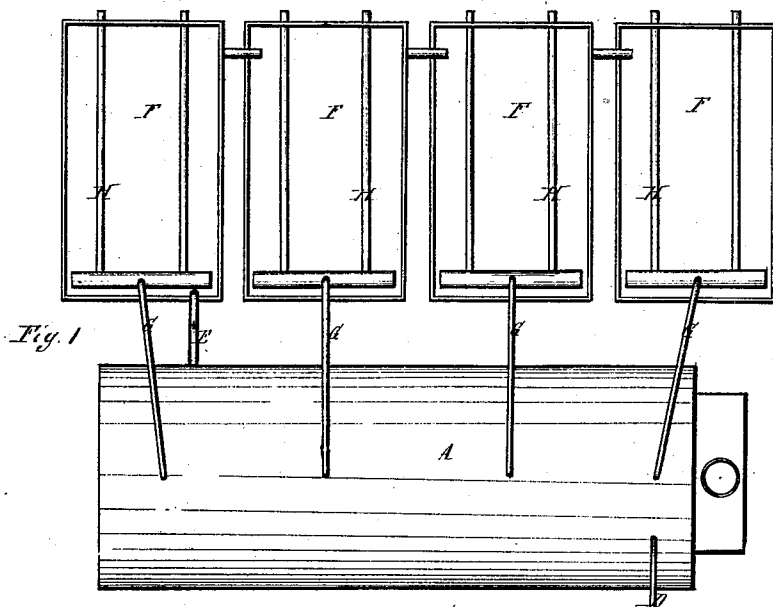


C. A. Shepard,

Evaporator.

No. 109555.

Patented Nov. 22, 1870.



Witnesses:

H. J. Streetz
E. A. Petrus

Inventor:

Calvin A. Shepard.

Attorneys.

United States Patent Office.

CALVIN A. SHEPARD, OF POMEROY, ASSIGNOR TO HIMSELF AND ROMAN MENAGER, OF GALLIPOLIS, OHIO.

Letters Patent No. 109,555, dated November 22, 1870.

IMPROVEMENT IN EVAPORATING SALT-BRINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, CALVIN A. SHEPARD, of Pomero-y, in the county of Meigs and State of Ohio, have invented a new and useful Improvement in Apparatus for Evaporating Salt-Water; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a plan view, and

Figure 2 is an end elevation.

This invention consists in the combination of a return-flue boiler for receiving the water of salt-wells, with setting pans for holding such water, after it has been heated for the purpose of producing evaporation—

Referring to the drawing—

A is the boiler, constructed of copper or wrought-iron, and

B, the furnace, located beneath the boiler, in the usual manner.

C C are return-flues, running lengthwise of the boiler from end to end, and serving to conduct heat and the products of combustion from the back of the furnace through to the chimney at the front of the boiler.

D is the pipe through which the salt-water is passed in the state in which it comes from the well into the boiler, at the front end of the same; and

E is the pipe through which the water, after having been heated, flows into the setting-pans F, by its own gravity, no pumps or valves being used, the pipe E discharging the same quantity of water that the pipe D admits, less the amount converted into steam.

G are the pipes through which the steam escapes

from the top of the boiler, said pipes being connected with tubes H, that lie lengthwise of the pans F.

In all the foregoing arrangements there is nothing new.

Heretofore, in evaporating saline fluids, cast-iron pans have been used to hold the water and receive the heat of the furnace, and wooden boxes have been placed above the pans for the purpose of receiving the steam arising from the heated water.

This is a very expensive arrangement, as the pans have to be cast an inch and a half thick to enable them to withstand the destructive action of fire. When copper or wrought-iron boilers are used for the same purpose, the sheets need not be more than a quarter of an inch in thickness, as their durability is much superior to that of cast-iron.

Furthermore, inasmuch as a quarter of an inch of metal can be heated through much sooner than an inch and a half of metal, I effect a great reduction in the amount of fuel required for imparting the proper degree of warmth to the salt-water.

Having thus described my invention,

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

The combination of the return-flue boiler A with setting-pans F, substantially as specified.

To the above specification of my invention I have signed my hand this 12th day of October, 1870.

C. A. SHEPARD.

Witnesses:

SOLOMON C. KEMON,

THOS. D. D. OURAND.