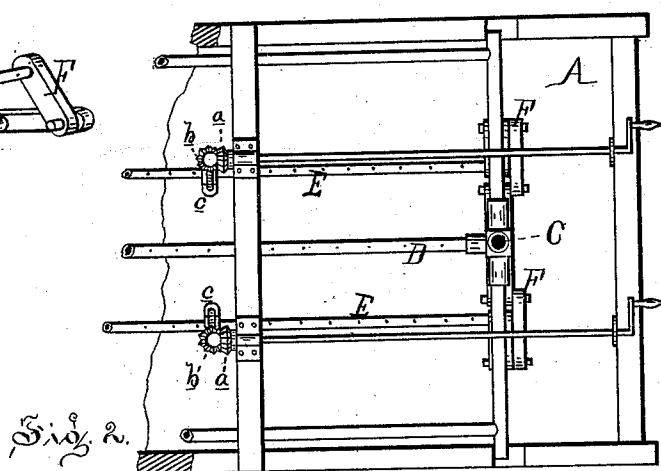
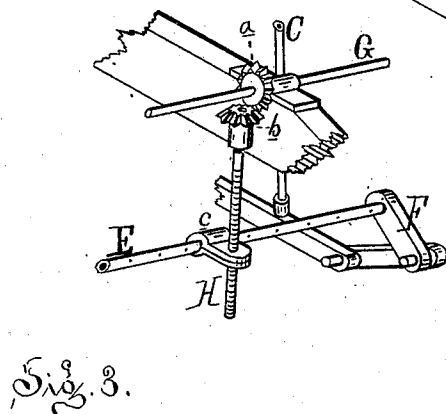
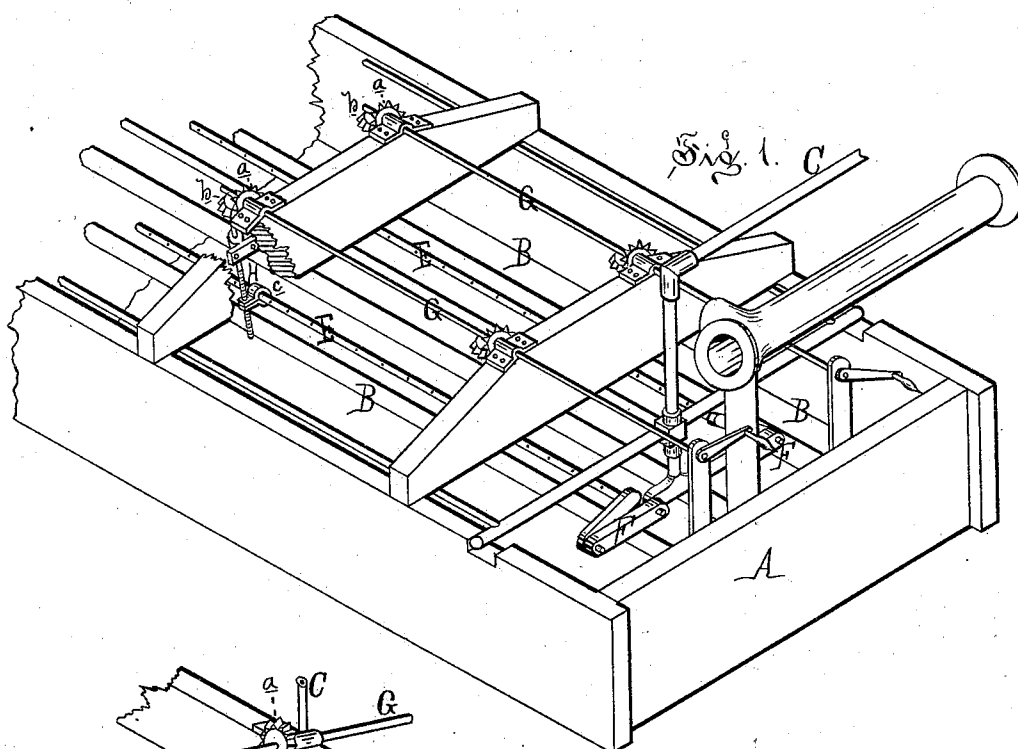


W. W. ELMER.
 Apparatus for the Manufacture of Salt.
 No. 201,762. Patented March 26, 1878.



Attest:
 H. L. Aulls
 J. H. Spalding

Inventor:
 W. W. Elmer
 By Atty
 Jno. S. Sprague

UNITED STATES PATENT OFFICE.

WILLIAM W. ELMER, OF BAY CITY, MICHIGAN.

IMPROVEMENT IN APPARATUS FOR THE MANUFACTURE OF SALT.

Specification forming part of Letters Patent No. **201,762**, dated March 26, 1878; application filed August 27, 1877.

To all whom it may concern:

Be it known that I, WILLIAM W. ELMER, of Bay City, in the county of Bay and State of Michigan, have invented an Improved Apparatus for the Manufacture of Salt from Liquid Brine, of which the following is a specification:

The nature of my invention relates to that class of apparatus for evaporating brine which use steam-pipes for giving the desired heat to the liquid; and consists in providing such a pan with a system of perforated air-pipes, and with peculiar mechanism for raising and lowering the said air-pipes, whereby such pipes can be lowered to any desired depth in, or raised entirely out of, the brine.

The drier the air used with my apparatus, the better will be the result, and a cheap and simple way to dry such air is by passing it over a lime-chamber before admitting to the brine under treatment; or it may be heated or superheated by any known process, so that it may be employed at the temperature of the surrounding media, depending on the temperature of the brine and air of the chamber where the process of crystallization is being carried on.

Figure 1 is a perspective view of a grainer, such as is in ordinary use for evaporating by confined steam. Fig. 2 is a plan view of an arrangement of air-pipes perforated to discharge air for the purpose of agitating the brine. Fig. 3 is an enlarged perspective view of my arrangement for elevating or lowering the air-pipes at pleasure.

Like letters indicate like parts in each figure.

In the drawings, A represents a grainer or

evaporator of the ordinary construction, where confined steam is employed in the series of pipes B in the bottom, and which are connected with any convenient source of steam-supply. C is an air-pipe, its front end being connected to a force-pump or fan, (not shown,) and D are perforated pipes connecting with said pipe C, through which air is forced to agitate the brine. E are other perforated pipes, attached by hollow cranks F to the bottom of the air-pipe C, and these pipes E are designed to be lowered into the brine and elevated out of it, as may be desired, to prevent brine entering the pipes through the perforations when the air-pressure is relieved.

To accomplish this a crank-rod, G, is provided with a bevel-pinion, *a*, which engages with a similar pinion, *b*, on the upright shaft H, which is threaded, and engages with a fixed nut, *c*, secured to the pipe E. Perforated branches may be run laterally from these pipes, if desired.

The mechanism I have shown and described may be employed, or other suitable devices may be used without departing from the spirit of my invention.

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

The combination, with the supply-pipe C and branch pipes E, connected by hollow cranks F, of the shafts G, vertical screw-shafts H, nuts *c*, and gear *a b*, constructed, arranged, and operating substantially as described and shown.

WILLIAM W. ELMER.

Witnesses:

H. S. SPRAGUE,
H. L. AULLS.