

JAMES L. HUMPHREY.

Improvement in Evaporating Salt Water.

119,031.

Patented Sep. 19, 1871.

Fig. 1.

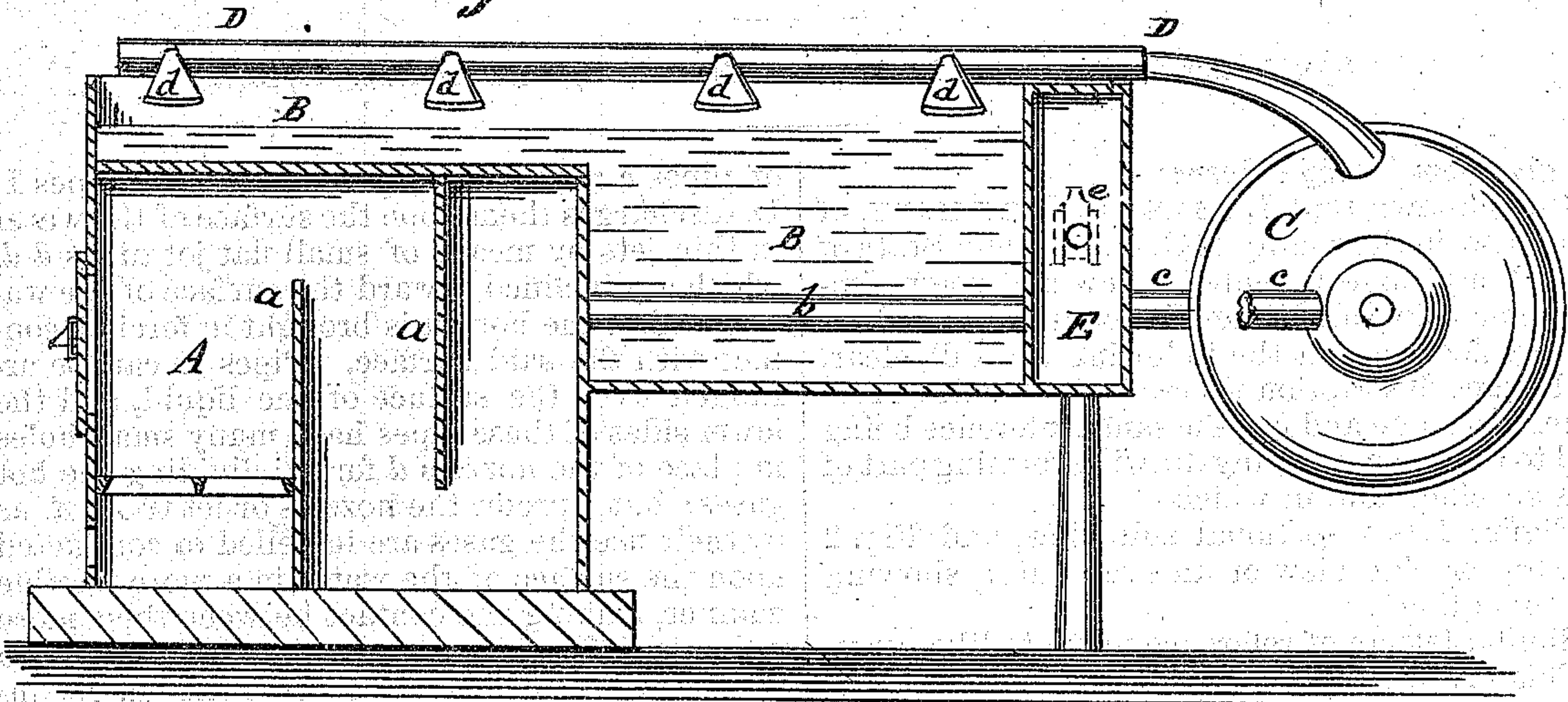
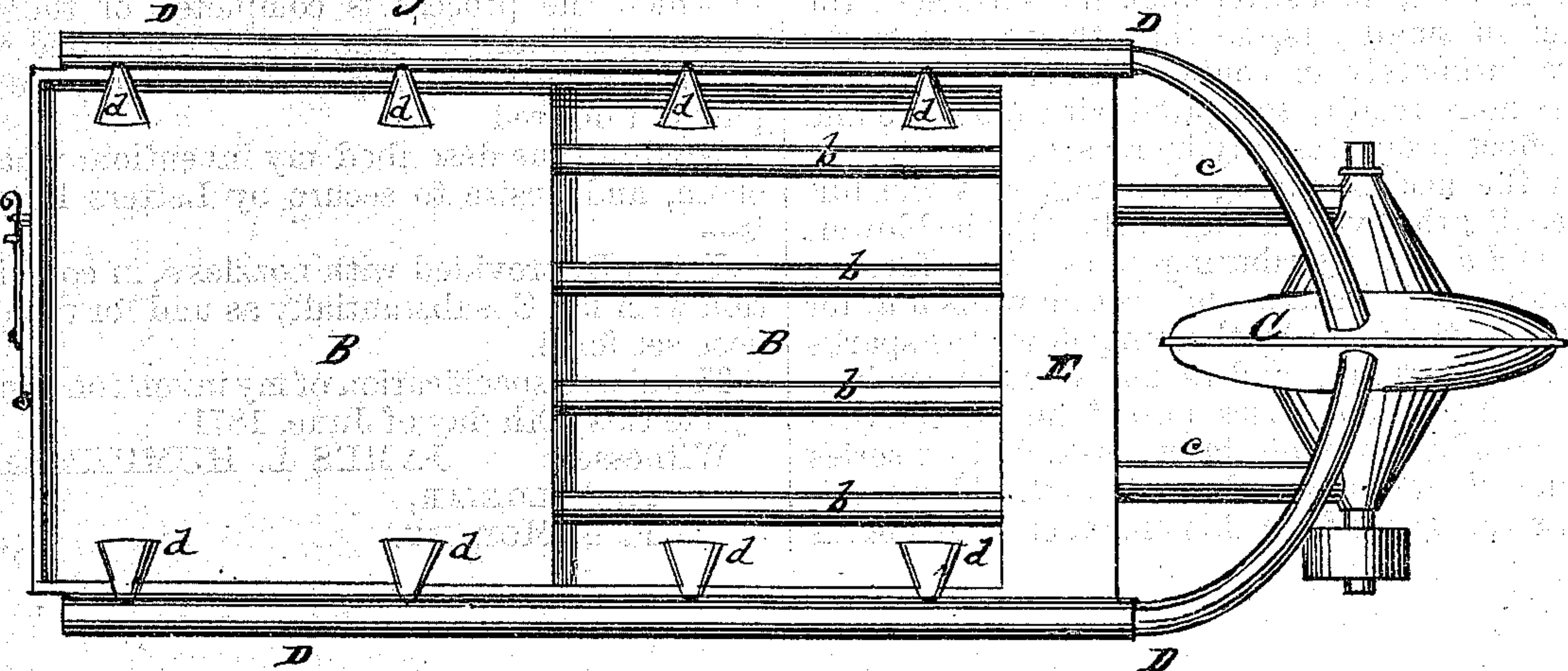


Fig. 2.



Witnesses.

A. Algier  
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# UNITED STATES PATENT OFFICE.

JAMES L. HUMPHREY, OF SYRACUSE, NEW YORK.

## IMPROVEMENT IN EVAPORATING SALT WATER.

Specification forming part of Letters Patent No. 119,031, dated September 19, 1871.

*To all whom it may concern:*

Be it known that I, JAMES L. HUMPHREY, of Syracuse, in the county of Onondaga and State of New York, have invented a new and useful Improvement in Salt-Water Evaporators; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a sectional side view, and Fig. 2 is a top or plan view of an evaporator, showing my invention.

Similar letters of reference indicate like parts.

This invention relates to that class of evaporators in which all the heat or the gaseous products of combustion are blown upon or over the surface of the liquid to increase evaporation; and the invention consists in discharging the said products of combustion upon the surface of the water in small jets, so that they are brought more intimately in contact therewith and the gases more readily saturated with moisture and the effect proportionally increased.

In the accompanying drawing, A is the furnace. B is the evaporating-tank. C is the blower, and D *d d* the distributing-pipes. The furnace is made with bridge and curtain-walls *a a*, for purifying the flame by throwing down the sparks and solid particles, and to improve the combustion. The heated gases pass from the combustion-chamber through the water-tank, by a series of flues, *b*, into a chamber, E; and a blower, C, draws the gases from this chamber E by means

of pipes *c c*, and, forcing them into the pipes D, discharges them upon the surface of the water in thin jets by means of small flat jet-tubes *d d*, which are inclined toward the surface of the water, so that the hot air is brought in forcible contact with the said surface. Pipes D can be arranged over the surface of the liquid, and the lower sides of these pipes have many small holes in place of the nozzles *d* for subdividing the hot gases; but I prefer the nozzles or jet-tubes *d*, as by their use the gases are impelled or conducted upon the surface of the water in a more forcible manner, making the contact between them more intimate. The jets can also be discharged into the series of large kettles commonly in use instead of using the tank B; however, in connection with the kettles, the tank B can be used to advantage for heating the water and bringing it nearer to saturation before it enters the kettles, in which the process is completed or the salt made as ordinarily. The box E is provided with a valve, *e*, for admitting air to mix with the hot gases, if desired.

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

Tubes D, provided with nozzles *d*, in combination with fan C, substantially as and for the purpose set forth.

The above specification of my invention signed by me this 20th day of June, 1871.

Witnesses: JAMES L. HUMPHREY.

A. ALLGEIER,  
F. A. MORLEY.

(95.)