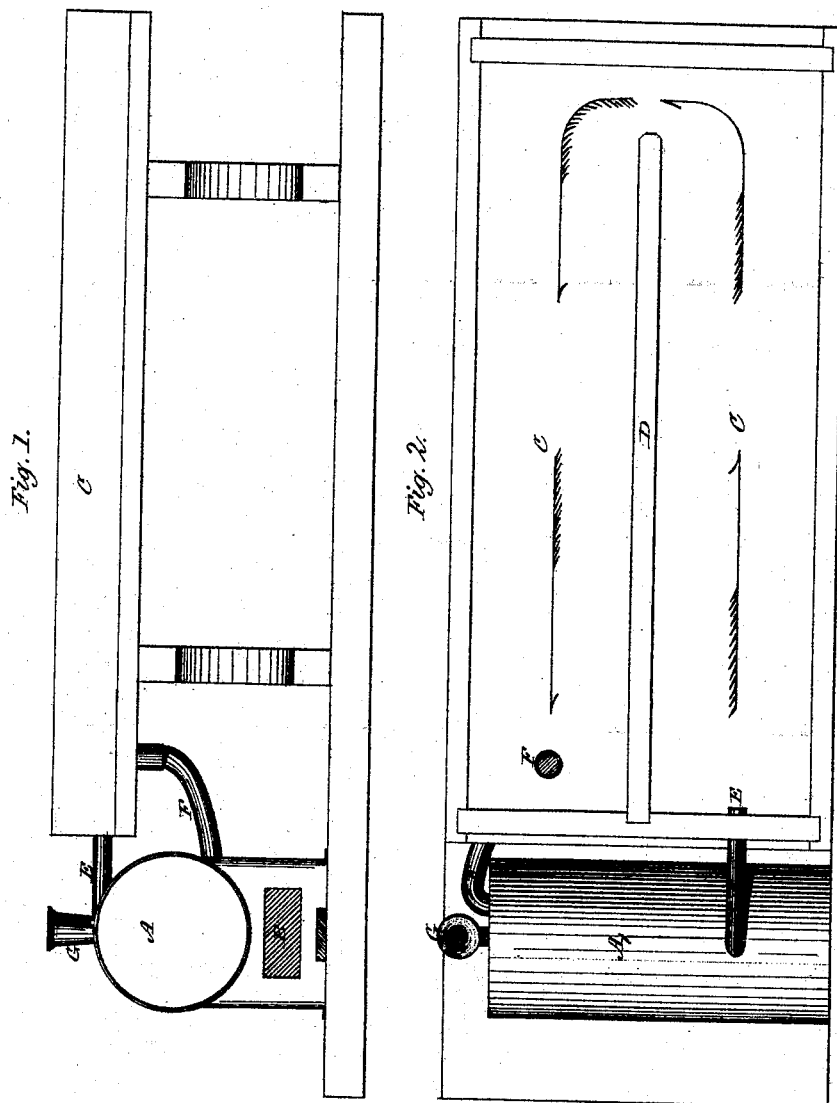


F. A. Lord,
Evaporating Fan.
No 47,966. *Patented May 30, 1865.*



Witnesses.
J. R. Patten *F. A. Lord*
J. W. Hickman *By atty. A. B. Thompson*

UNITED STATES PATENT OFFICE.

F. A. LORD, OF AURORA, NEW YORK.

IMPROVED EVAPORATOR.

Specification forming part of Letters Patent No. **47,966**, dated May 30, 1865.

To all whom it may concern:

Be it known that I, F. A. LORD, of Aurora, in the county of Cayuga and State of New York, have invented certain new and useful improvements in the manner of evaporating saline, saccharine, or any other fluids; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents an end view of the boiler and a side view of the open vat or vats, the two connected by the outflow and inflow pipes, so as to make the two self-acting. Fig. 2 represents a top plan of the same.

Similar letters of reference, where they occur in the separate figures, denote like parts of the apparatus in both of the drawings.

I am aware that open boiling or heating pans and open vats have been used for evaporating fluids; but these involve an artificial flowing or forcing of the fluids from one to the other, and require much time and attention in the process.

My invention consists in combining with a close or open boiler, in which circulation can be obtained, with an open vat or vats, so that a continuous circulation or flow of the liquid or fluid will be maintained automatically, so long as the heat is kept up, through suitably-disposed connecting-pipes, and thus very much expedite the process of evaporation.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A is a boiler of any usual form, size, or content, in which circulation can be made and kept up by means of a fire in a furnace, B, underneath it. Adjacent to this tight or open boiler is arranged an open vat, C, with any suitable number of partitions or divisions, D, in it, so that the fluid will be required to circulate through the vat. From the top or upper portion of the boiler A a pipe, E, extends, leading into one side of the open vat C, and from an opposite side or end of said vat another pipe, F, leads back into or near to the bottom

of the boiler, the top of which boiler should be lower, if closed, or, if an open boiler be used, on a level with the bottom of the vat. A pipe, G, may also be connected with the boiler, through which the fluid to be evaporated may be passed into the boiler, and this pipe may be furnished with a stop-cock, so as to close it when the process of evaporation is going on, to prevent any outflow through it. Cocks may also be placed in the pipes E F, to regulate the out and in flow from the boiler to and through the vat or vats, as occasion may require, or to stop one or both.

The operation is as follows: The boiler A being supplied with the fluid to be evaporated, and the fire started, the circulation in the boiler, after the fluid becomes sufficiently heated and expanded, will cause the fluid to pass through the pipe E into the vat, and thence, as shown by the arrows, through the vat to the pipe F, and through said pipe back to the boiler, thus subjecting the fluid first to a degree of heat and expansion, and then exposing it to the external atmosphere in a shallow or thin strata, where the vapor may freely escape, and thence back to the boiler to be reheated and re-expanded for another similar atmospheric exposure. During the first or any portion of this process, the fluid may be allowed to pass through the pipe G, in suitable quantities, into the boiler, and need only be stopped when granulation or crystallization takes place, or when the fluid is evaporated to the required consistency or specific gravity.

Having thus fully described the nature, object, and purpose of my invention, what I claim in evaporating liquids or fluids of any kind is—

The combined use of a tight or open boiler and an open circulating vat or vats, the two connected by pipes, so that the fluid may continuously flow or circulate through the boiler and through the vat or vats, substantially as and for the purpose herein described and represented.

F. A. LORD.

Witnesses:

SENECA BOYCE,
MARY ABBIE LORD.