

N. R. Martin,

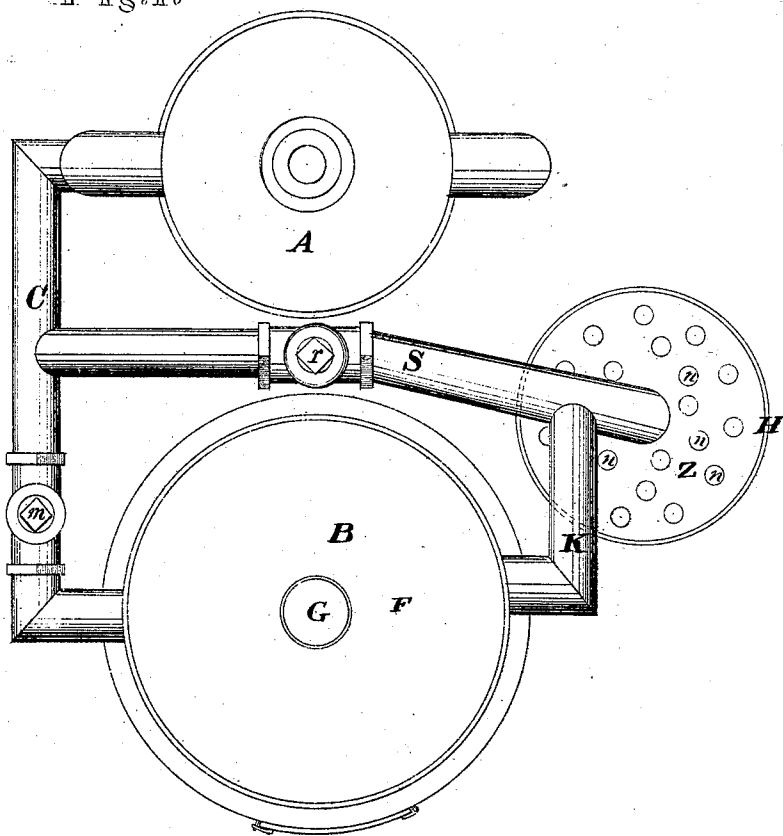
3. Sheets. Sheet. 1.

Evaporator.

No. 106,270.

Patented Aug. 9. 1870.

Fig. 1.



Witnesses,
A. D. Kane,

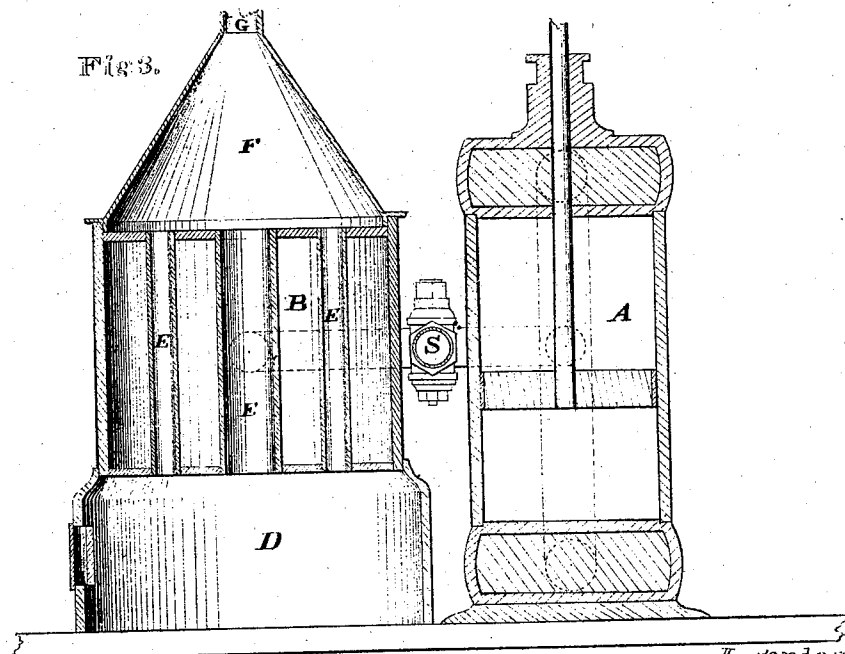
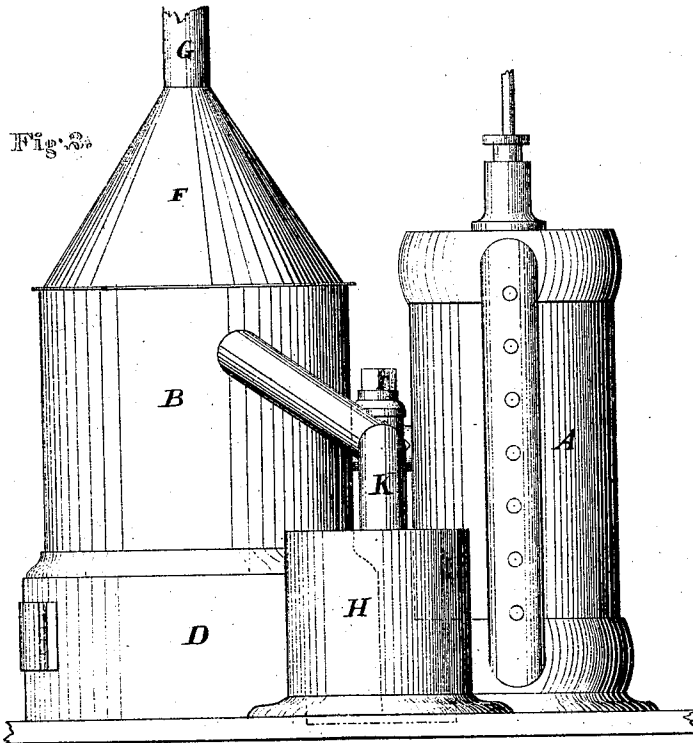
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Evaporator.

No. 106270.

Patented Aug. 9. 1870.



Witnesses.

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3. Sheets. Sheet 3
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Fig. 4.

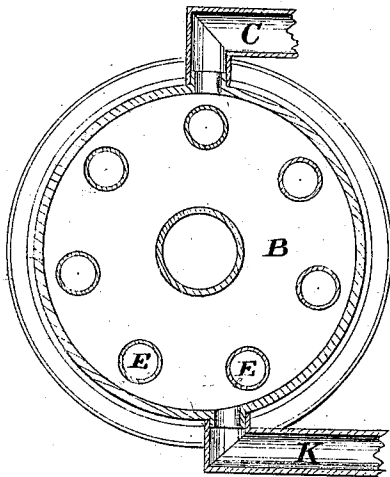


Fig. 5.

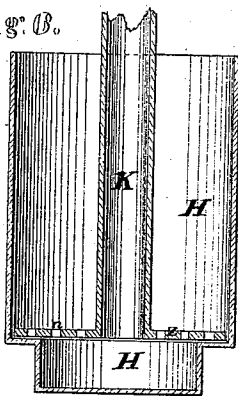
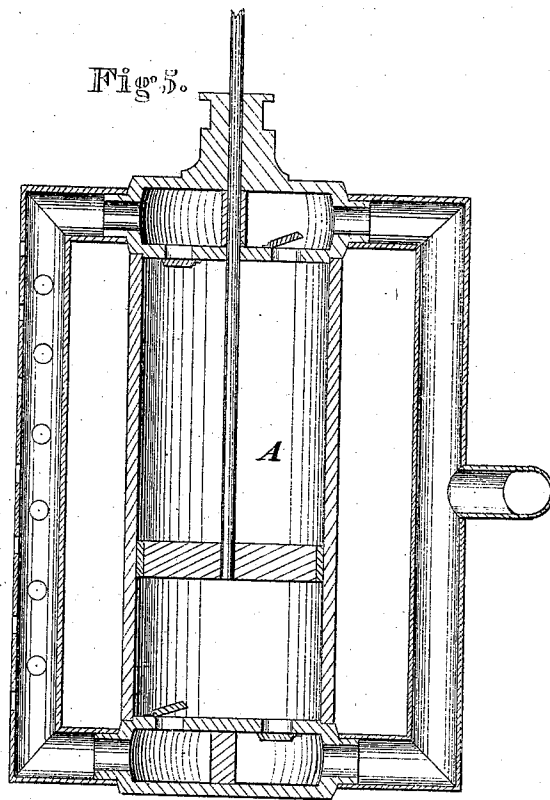


Fig. 6.



Witnesses.

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United States Patent Office.

NORMAN R. MARTIN, OF CANANDAIGUA, NEW YORK.

Letters Patent No. 106,270, dated August 9, 1870.

IMPROVEMENT IN APPARATUS FOR EVAPORATING.

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, NORMAN R. MARTIN, of Canandaigua, in the county of Ontario and State of New York, have invented a new and valuable Improvement in Evaporating Apparatus; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a top view of my apparatus.

Figure 2 is a side view.

Figure 3 is a vertical section.

Figures 4, 5, and 6 are details.

My invention has relation to means for evaporating the water from fruits, berries, milk, juices, and solutions, and consists in the construction and novel arrangement of an apparatus, whereby tempered or cool air is forced in jets upward through the liquid or mass from which the water is to be extracted, and thereby to prevent injury to the same from undue heat.

The letter A of the drawing designates the air-pump, by means of which a supply of air is forced into the heating-cylinder B through the pipe C.

D represents the furnace, placed immediately under the heating-cylinder.

Flues, E E, pass upward from the furnace through the chamber B, conveying the heated products of combustion into the conical top F, whence they pass out through the pipe G.

H designates the evaporating-vessel or receiver, in which the solution or mass from which the water is to be evaporated is placed.

The heated air from the chamber B is conveyed to the bottom of the evaporator H by the pipe K, to the end of which is attached a broad disk or flanch, Z, extending outward horizontally from the pipe, and provided with a number of perforations, *n n*, through which the heated air passes upward in jets through the mass or liquid in the receiver.

A stop-cock, *m*, is placed in the pipe C, and serves

to regulate the amount of air forced into the chamber B.

Between the stop-cock *m* and the air-pump a second pipe, S, is joined to the pipe C, connecting it with the pipe K, which leads to the bottom of the evaporator.

A stop-cock, *r*, is placed in the pipe S, and serves to regulate the amount of cold air passed through the pipe into the evaporator.

It will be observed that, by means of the stop-cocks, the temperature of the air passing down into the evaporator through the pipe K can be regulated and tempered according to the degree of heat required.

My invention is especially designed to prevent the destruction of the crystalline properties of sugar during evaporation. In this process, a high degree of heat is at first employed, and, as the crystallization progresses, the temperature is lowered. This is accomplished by means of the cold jet from the pipe S.

My apparatus is also serviceable for desiccating fruit and other perishable articles. Milk may be condensed by it, the temperature being easily regulated to prevent decomposition or deterioration. Hay may be made, if necessary, in the evaporator.

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

1. The arrangement herein described of the air-pump A, furnace D, air-chamber B, receiver H, with false perforated bottom Z, and tubes C, K, and S, as and for the purpose specified.

2. In the evaporating apparatus herein described, the air-heater, consisting of the furnace D, flues E E, passing through air-chamber B, together with dome F, when the several parts are constructed and arranged substantially as specified.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

NORMAN R. MARTIN.

Witnesses:

WILLIAM H. ADAMS,
JOHN GILLETTE, Jr.