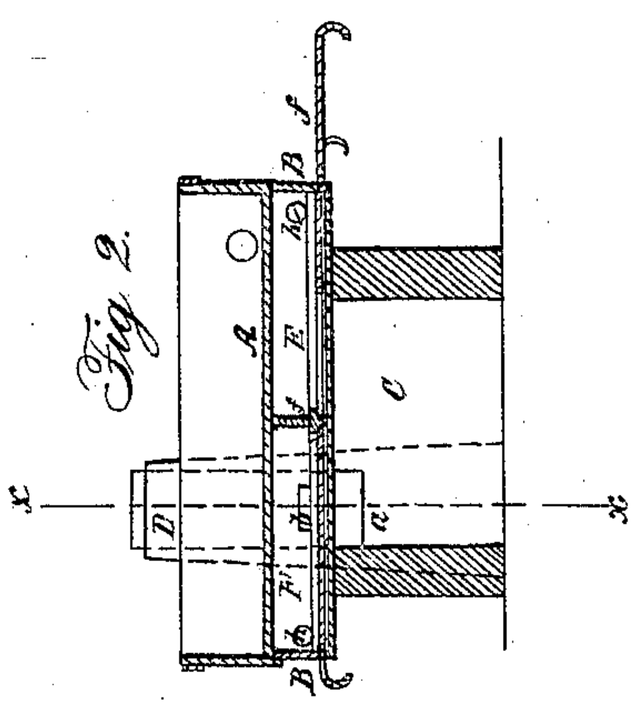
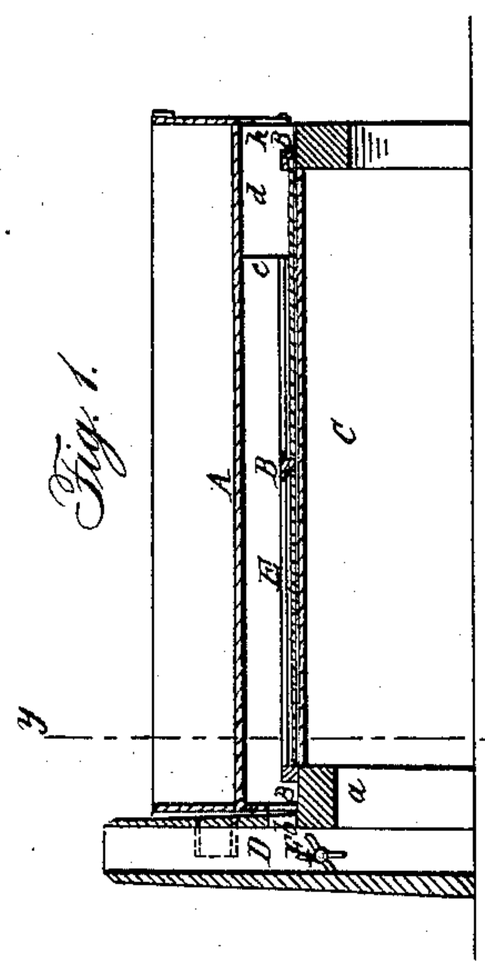
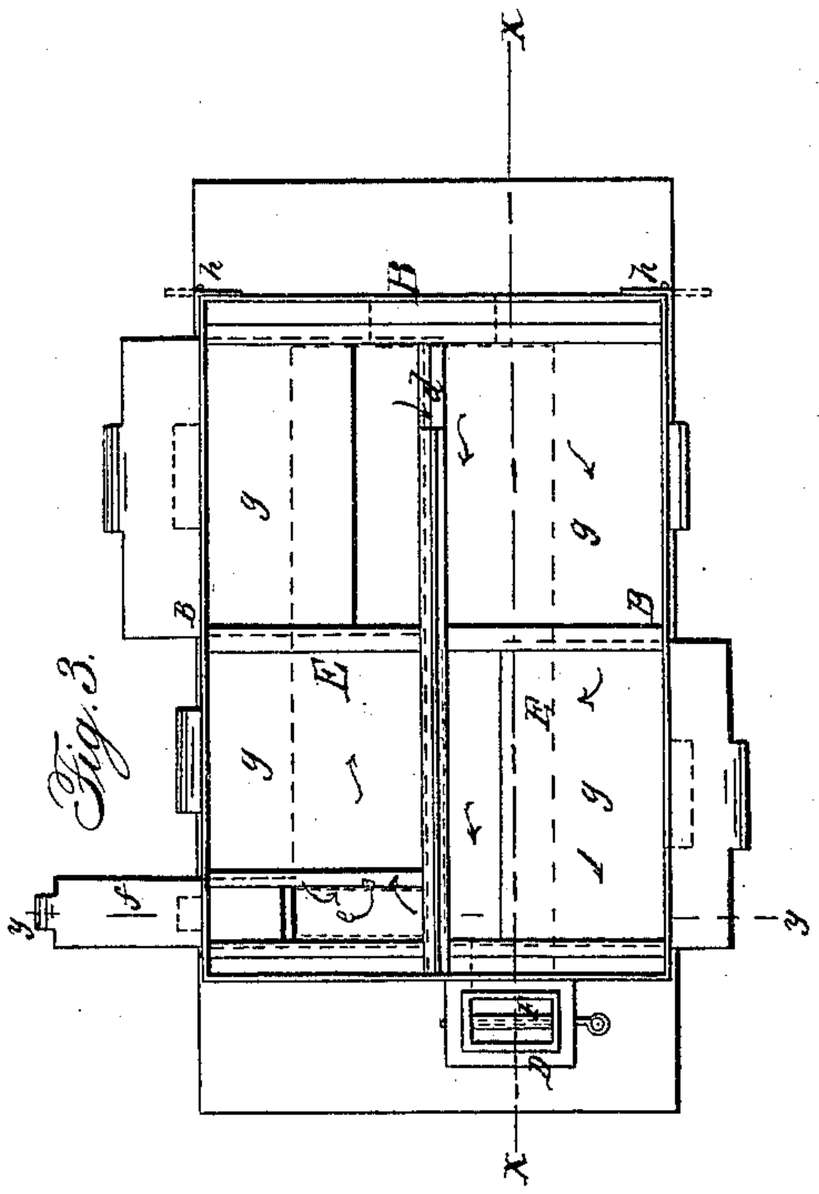
N. BOURNE.

Evaporating Pan.

No. 25,623. Patented Oct. 4, 1859.







Witnesses:
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UNITED STATES PATENT OFFICE.

NATHANIEL BOURNE, OF PEOSTA, IOWA.

IMPROVEMENT IN CONSTRUCTION OF EVAPORATING APPARATUS.

Specification forming part of Letters Patent No. **25,623,** dated October 4, 1859.

To all whom it may concern:

Be it known that I, NATHANIEL BOURNE, of Peosta, in the county of Dubuque and State of Iowa, have invented a new and useful Improvement in Evaporating Apparatus for Cane-Juice and other Liquids; 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, forming part of this specification, in which—

Figure 1 is a vertical section of an evaporating apparatus with my improvements, taken in the plane indicated by the line *x x* in Figs. 2 and 3. Fig. 2 is a vertical section of the same at right angles to Fig. 1, in the plane indicated by the line *y y* in that figure and Fig. 3. Fig. 3 is a plan of the same with the pan removed.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in providing an evaporating-pan with a double bottom having applied to it a system of shutters, by which the boiling or evaporation can be regulated, as hereinafter described.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

A represents an open pan set in or upon an iron box, B, which is supported on a setting of brick-work or of iron, and which combines with the pan to form a double bottom thereto, as shown in Figs. 1 and 2. C is the fire-place below the said box, and D is the chimney at one end thereof. The chimney has a direct communication with the fire-place by means of an opening, *a*, Figs. 1 and 2, and a communication with the space E within the double bottom by means of an opening, *b*, and is furnished with a damper, F, between the openings *a* and *b*, to shut off the direct communication with the fire-place. The box B is furnished with a central longitudinal partition, C, extending from the rear nearly to the front, so that when the pan is on the box B the space E is divided into two chambers or flues having a communication by an opening at *d*, where the partition *c* is discontinued. At the rear end of the box B, in the opposite chamber to that in which is the opening *b*, there is provided in the bottom of the said box a narrow opening, *e*, fitted with a sliding shutter, *f*, and the rest of the bottom of the box B is composed almost entirely of movable shutters *g g*, which may be of any convenient size and be made to slide, or composed of slats like blinds, or of revolving disks, or be of any other construction; and at each corner of the box B there is a valve or gate, *h*, for the admission of air when desired.

The operation of the apparatus is as follows: When a very strong heat is required, the damper F is opened, and the whole of the slides or shutters *f* and *g g* may be drawn out or opened to expose the inner bottom of the pan to the direct action of the fire; but when a moderate heat is desirable the damper F is shut, and all the slides or shutters, except the small one, *f*, are closed, to protect the inner bottom from the direct action of the fire and cause the flame and heated gaseous products of combustion to enter the space E within the double bottom by the opening *e* and take the course indicated by the arrows in Fig. 3—viz., first passing forward on one side of the partition *c*, then through the opening *d*, and returning on the other side of the partition and passing into the chimney by the opening *b*. A more moderate heat may be obtained by closing the shutter *f*, (leaving *g g* still closed,) and opening the damper F, and thus preventing the flame or gaseous products of combustion coming in contact at all with the inner bottom of the pan; and when a still more moderate heat is required the valves or shutters *h h* may be opened to admit cold air through the double bottom.

By the double bottom and system of slides herein described provision is made for regulating the heat of the pan with the greatest nicety, as may be required in different stages of the evaporating process, or by the varying intensity of the fire, and the burning or injury of the substance undergoing evaporation is effectually prevented.

I do not confine myself to any particular construction or arrangement of the shutters in the double bottom; but

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

The arrangement and combination, with the evaporating-pan A, of a series of partitions and shutters, substantially as and for the purpose herein shown and described.

NATHANIEL BOURNE.

Witnesses:
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