

J. F. SARGENT.
Sugar-Evaporator.

No. 218,320.

Patented Aug. 5, 1879.

Fig: 1.

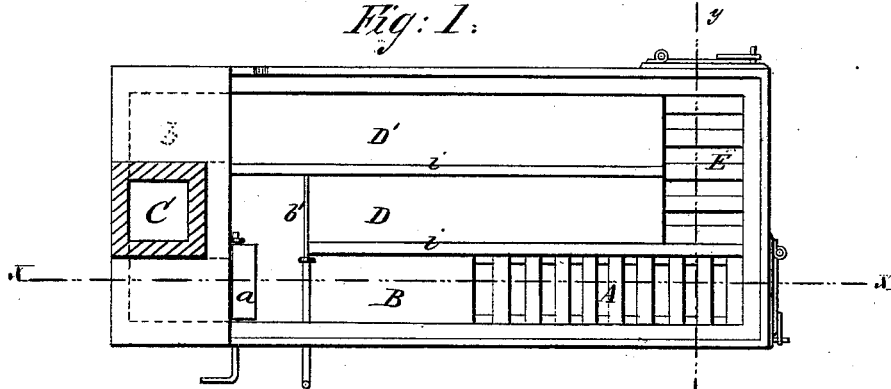


Fig: 2.

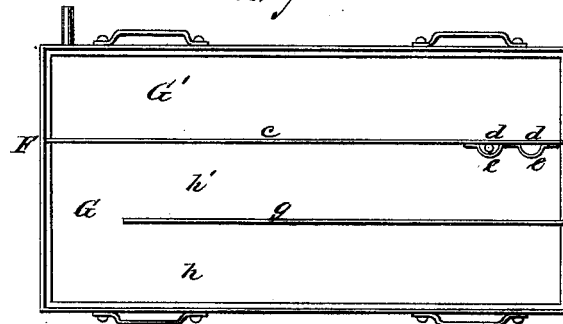


Fig: 3.

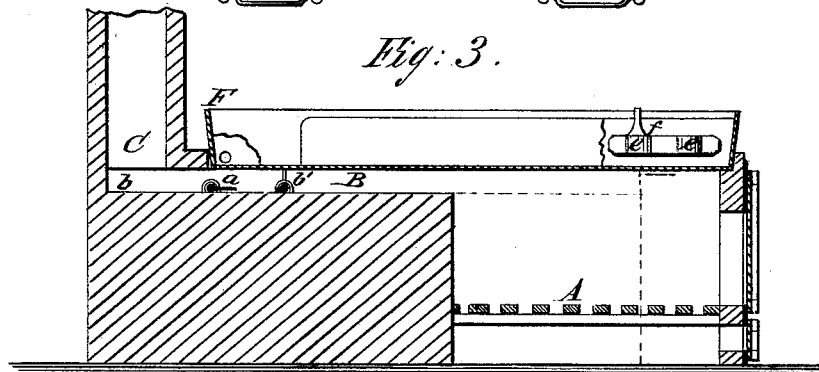
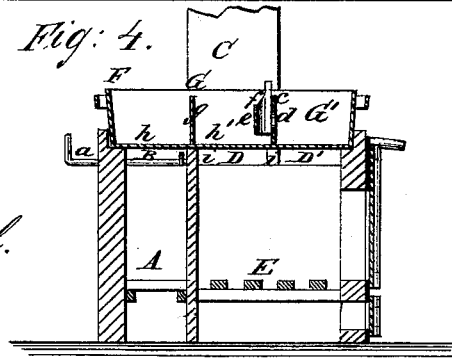


Fig: 4.



WITNESSES:

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JAMES F. SARGENT, OF STRAFFORD, VERMONT.

IMPROVEMENT IN SUGAR-EVAPORATORS.

Specification forming part of Letters Patent No. **218,320**, dated August 5, 1879; application filed May 1, 1879.

To all whom it may concern:

Be it known that I, JAMES F. SARGENT, of Strafford, in the county of Orange and State of Vermont, have invented a new and Improved Sugar-Evaporator, of which the following is a specification.

This invention relates to improvements in the construction of the furnace and evaporating-pans used in the manufacture of sugar; and the object of the said improvements is to direct the fire under the whole or a part of the pan; also, to enable a part of the pan to be used for boiling sap and another part for granulating the sirup.

The invention consists in the combination, with two fire-chambers and a dampered chimney, connected by a flue, of two flues, one of which has a passage and chamber; also, in combination with the evaporating-pan of a fire-chamber, three flues and dampers, whereby the products of combustion are carried under the pan, all as hereinafter described.

In the accompanying drawings, Figure 1 is a top plan of the furnace with the pan removed. Fig. 2 represents the pan. Fig. 3 is a longitudinal section of the evaporator and furnace on line *x x*, and Fig. 4 is a cross-section of the same on line *y y*.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A is the principal fire-chamber, with a flue, B, leading direct to the chimney C, provided, however, with a damper, *a*, by which the products of combustion can be interrupted and directed into the flue D, thence into flue D', from whence they find their way into the chimney through a passage, *b*, at the end of flue D'. The entrance to the flue D is provided with a damper, *b'*.

E is the secondary fire-chamber, opening into the flues D D', so that the products of combustion will pass through both flues to the chimney, or through D' alone in case the damper *b'* is closed.

The evaporating-pan F is divided into two parts, G G', by a partition, *c*, with openings or ports *d* near one end, over which are loops *ee*, for holding wooden plugs *f* over said openings. These plugs are flat on one side—that next to the partition—while on the opposite side they are conical, so that they will wedge

against the partition, and thus furnish a tight valve to close the openings when necessary.

The part G is divided longitudinally for part of its length by a partition, *g*, into two parts, *h h'*, to compel the sap, when poured into the front end of part *h*, to travel over the whole length of the flues B D as it rises in the pan.

The pan has beveled sides, and is set over the flues with the edge of its bottom in a rabbet in the crown thereof, as shown in Figs. 3 and 4, in which position the partitions between its several parts coincide with the divisions *i i* between the flues, as in Figs. 2, 4.

In using the furnace, fire is first made in the secondary fire-chamber E, to heat up afterward in the larger chamber.

By closing damper *a* and opening *b'* the products of combustion pass through flues B, thence through D D', and from there through passage *b* into the chimney. In this course they pass twice the length of the sap-division G, and once under the sirup-division G'.

When, however, it is desired to keep a fire in the chamber E for the benefit of the sirup without retarding the fire under the sap, the damper *b'* is closed and *a* opened, thus compelling all the products of combustion from main chamber to pass under the sap through flue B, while all from chamber E passes through flue D' under the sirup.

In this way the two operations of boiling the sap and "siruping down" can be conducted at once in the same pan.

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

1. In a sugar-evaporator, the two fire-chamber A E, the flue B, and the dampered chimney C *a*, in combination with the flues D D', the latter having passage *b* and damper *b'*, as shown and described.

2. The fire-chamber A, in combination with flues B D D', dampers *a b'*, and the evaporating-pan, whereby the products of combustion can be led under the pan three times its length, substantially as described.

JAMES FRANKLIN SARGENT.

Witnesses:

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