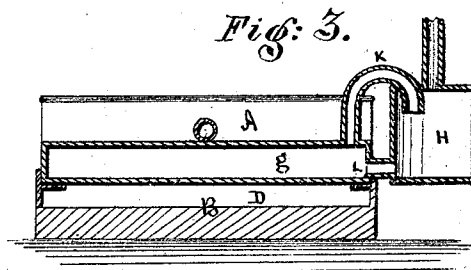
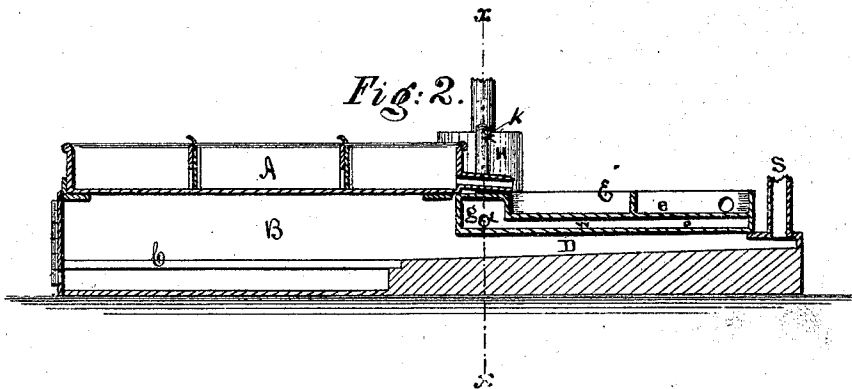
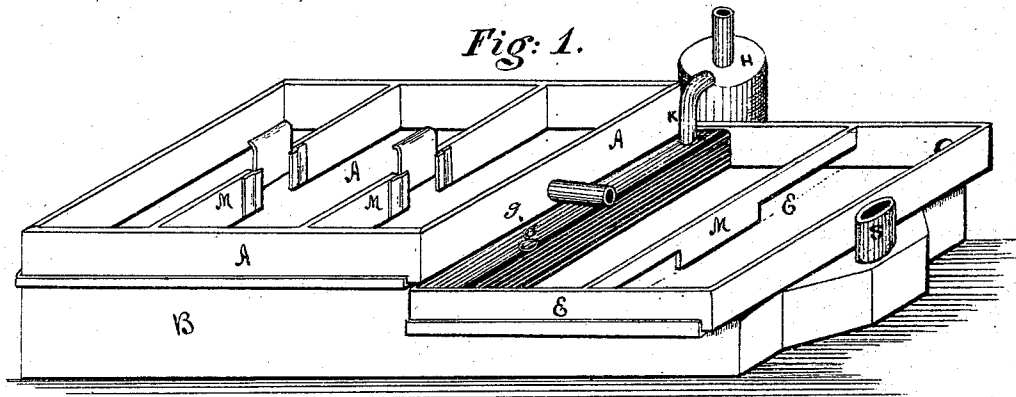


PETER ROBINSON.

Improvement in Apparatus for Evaporating Sugar, etc.

No. 122,194.

Patented Dec. 26, 1871.



Witnesses.

H. H. Young
Ewell A. Dick

Peter Robinson
Inventor
By J. and A. Burr atty.

UNITED STATES PATENT OFFICE.

PETER ROBINSON, OF HARRISBURG, ILLINOIS.

IMPROVEMENT IN APPARATUS FOR EVAPORATING SUGAR, &c.

Specification forming part of Letters Patent No. 122,194, dated December 26, 1871.

I, PETER ROBINSON, of Harrisburg, in the county of Saline and State of Illinois, have invented an Improved Evaporator for Sugar-Making and other purposes, of which the following is a specification:

Nature and Objects of the Invention.

My invention relates to an improved construction and arrangement of a hot-water pan for completing the evaporation of the sirup in the process of sugar-making, and to the combination thereof with a pan placed directly over the fire, in which to boil the green juice in the first stage of the process. Said invention consists, first, in constructing the hot-water pan with a water-back at that end thereof which is to be placed next to the fire, and with a double bottom connecting with said water-back; second, in combining a reservoir or tank with the water-chamber of the pan by means of two pipes, the one connecting the bottom of the reservoir with the bottom of said water-chamber, and the other leading from the top of the water-back into the top of the reservoir, so as to produce a circulation of the water heated in the water-back through the reservoir and the water-chamber and into the water-back again, and maintain thereby a uniform temperature under the whole pan; third, in arranging the hot-water pan in connection and combination with the principal boiling and evaporating-pan, so that one end of the water-back of the hot-water pan shall constitute the upper rear end of the fire-box, over which the boiling-pan is located, the top edge of the hot-water pan being upon a level with the bottom of the boiling-pan to permit a ready flow of the sirup from one into the other.

Description of the Accompanying Drawing.

Figure 1 is a view, in perspective, of my improved apparatus from the rear end thereof. Fig. 2, a central longitudinal section of the same; and Fig. 3, a vertical section through the water-back and reservoir of the hot-water pan in line *x x* of Fig. 2.

General Description.

A is an evaporating or boiling-pan of approved construction, placed directly upon a furnace, B. C is the grate of the furnace; D, a flue of about the same width as the furnace proper, extending from the level of the grate-bars at the rear end of the furnace, with an upward slope to the chimney S of the apparatus; E, a second evaporating-pan, formed with a double bottom, *e e*, Fig. 2, inclosing a water-space or chamber, *w*, and with a water-back, *g*, at one end thereof, communicating freely with the water-space *w*. This hot-

water pan is placed over the flue D, so that its upper edge shall be on a level with the bottom of the pan A, and its water-back *g* shall extend across the rear end of the furnace B. H is a separate reservoir or tank; K, a pipe extending from the top of the water-back *g*, and opening into the upper end of the tank H; and L, Fig. 3, a second pipe connecting the bottom of said tank H with the water-space *w* under the pan E. M M are suitable partitions in the pans A and E, with openings and gates arranged therein in the usual manner.

In the operation of my improved apparatus the juice is boiled in the first or upper pan immediately over the fire, where it is rapidly evaporated and reduced. When so far reduced as that it is liable to be scorched or burnt, the sirup is run off into the second or lower pan, where it is protected from the possibility of scorching by the water-chamber *w* intervening between the bottom of the pan and the hot flue, and by the water-back separating it from the fire. This second pan, in which the process of reducing and concentrating the sirup is completed, is heated to a uniform degree throughout by means of the water in the chambers beneath, which is brought to a boiling heat in the water-back and made to circulate with a constant flow into the tank H, and thence into the water-chamber to return again to the water-back and receive a fresh supply of caloric. By the peculiar arrangement of my apparatus, as hereinbefore described, the fire is thrown directly against the water-back of the second pan, keeping the water continually heated to its greatest intensity.

Claims.

I claim as my invention—

1. The double-bottomed pan E, in combination with the water-back *g* and fire-box or furnace B, substantially as and for the purpose herein set forth.
2. The circulating-tank H, in combination with the water-back *g* and water-space *w*, of the double-bottomed evaporating-pan E, substantially as and for the purpose herein set forth.
3. In combination with each other, the upper and lower pans A and E, furnace B, flue D, tank H, and water-space *g* and *w*, when the same are all connected and arranged to operate substantially as and for the purpose herein set forth.

Witness my hand to said specification this 24th day of August, 1871.

PETER ROBINSON.

Witnesses:

JOHN M. BURNETT, Jr.,
WARNER E. BURNETT.

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