(No Model.) 2 Sheets—Sheet 1.

M. MATHEWS & H. HILL.

EVAPORATING PAN.

No. 382,314. Patented May 8, 1888.

Fig. 1.

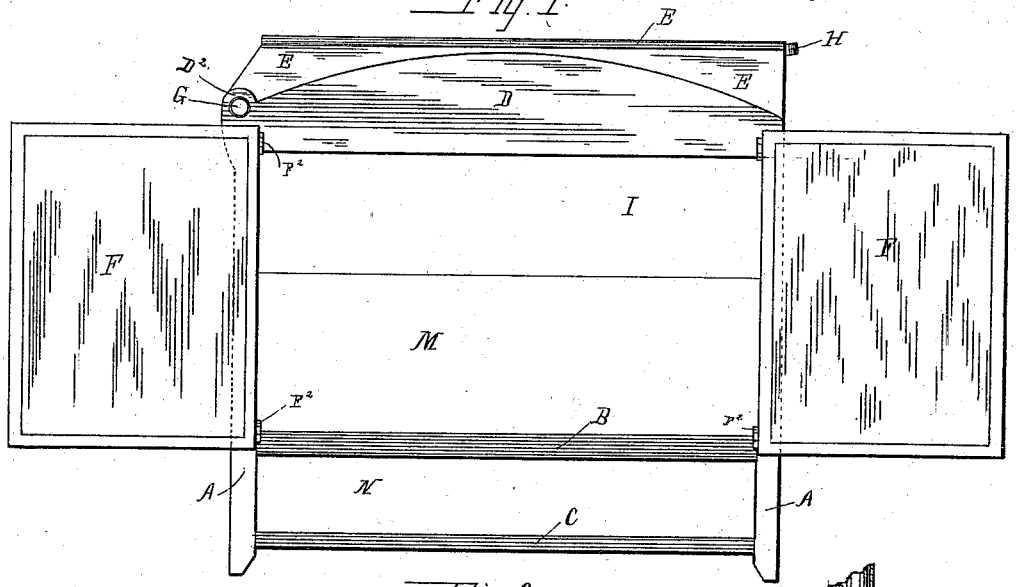


Fig. 2.

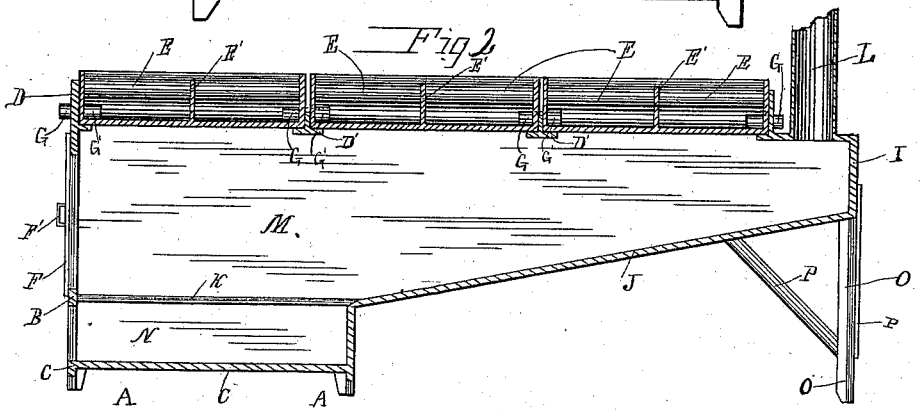
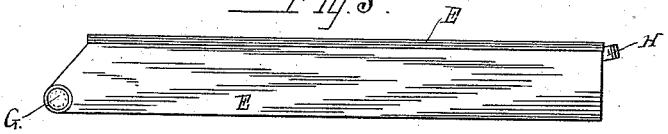


Fig. 3.



Witnesses.
R. A. Balderson.
F. C. Killigan.

Inventors.
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By L. Bingham.
His Attorney.

(No Model.) 2 Sheets—Sheet 2.

M. MATHEWS & H. HILL.

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Fig. 4.

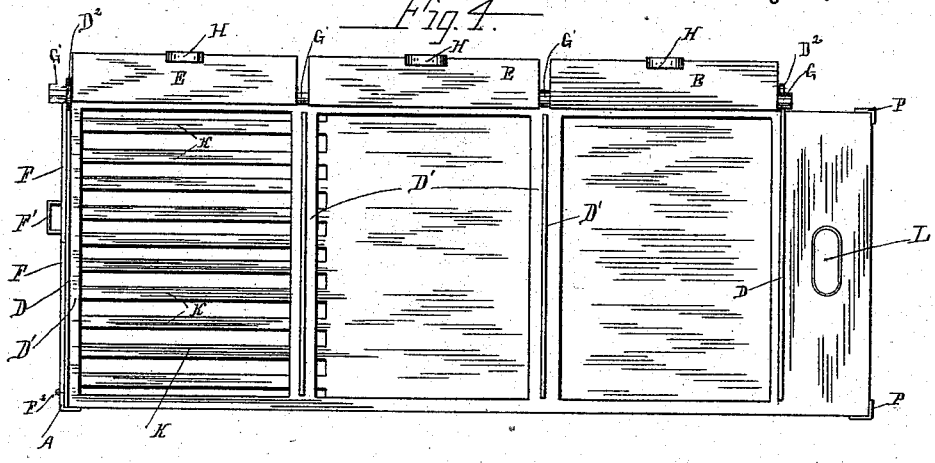


Fig. 5.

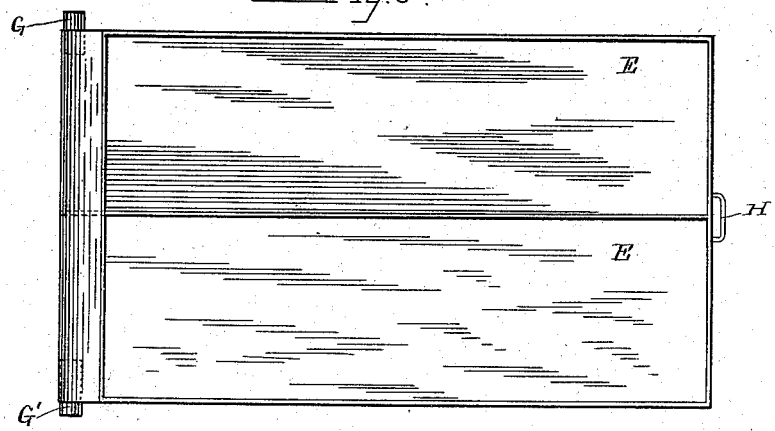
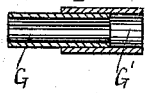


Fig. 6.



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UNITED STATES PATENT OFFICE.

MILTON MATHEWS, OF WARREN, AND HENRY HILL, OF CHESTER CROSS ROADS, OHIO.

EVAPORATING-PAN.

SPECIFICATION forming part of Letters Patent No. 382,314, dated May 8, 1888.

Application filed December 3, 1887. Serial No. 256,874. (No model.)

To all whom it may concern:

Be it known that we, MILTON MATHEWS and HENRY HILL, citizens of the United States of America, MILTON MATHEWS residing at Warren, in the county of Trumbull and State of Ohio, and HENRY HILL residing at Chester Cross Roads, Geauga county, State of Ohio, have invented certain new and useful Improvements in Evaporating-Pans, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to evaporating apparatus; and its objects are, first, to effect a thorough elimination of all moisture from every particle of the substance to be be dehydrated; second, to provide for a periodical shifting of the substance; third, to utilize all available caloric in the heating agency; fourth, to permit of ready access to the interior of the apparatus for inspection and cleansing purposes; and fifth, to attain these objects with structural simplicity and economy. We accomplish these ends by the apparatus illlustrated in the accompanying drawings, in which—

Figure 1 represents a front elevation of a sugar-evaporating pan and furnace embodying the essential features of our invention. Fig. 2 is a central longitudinal section of the same, showing the relative arrangement and adjustment of the parts. Fig. 3 is a side elevation of our improved evaporating-pans. Fig. 4 is a plan view of our apparatus, showing the evaporating-pans turned back on their common axis. Fig. 5 represents a plan view of the adjustable evaporating-pan; and Fig. 6 is a sectional view of the telescoping tubes, which serve the double purpose of axes to permit the tilting of the pans thereon and of communicating media between the pans to permit the free passage of the sirup.

The same designations indicate corresponding parts in the several views.

In the manufacture of cane-sugar, when the vegetable juices of the cane have by boiling been abstracted therefrom and the residual free acids been neutralized by lime, the first product resulting from such manipulation is the raw sugar, care having been exercised to prevent inversion by the maintenance of a low temperature. This raw sugar is then purified by dissolving in water, subsequently passed through bag filters, then filtered through bone-black to eliminate salts, remove color, &c., and thereafter it is boiled down in vacuum-pans to the point of crystallization. When it has crystallized into loaves, it is finally washed with a saturated solution of pure sugar in water to remove the mother-liquor or molasses.

Our improvements relate to the conversion of the vegetable juices into loaf-sugar, and therefore consist in the improved vacuum-pans and apparatus hereinafter described.

Upon suitable legs, A O, situated, respectively, in the front and the rear of the apparatus, the latter being braced by strips P, is mounted the furnace M, having an ordinary grate, K, resting upon a cross-rod, B, an ash-pit, N, formed by the bottom C, doors F provided with knobs F′, the sloping bottom J, after the form of a regenerative furnace, the rear wall, I, and the smoke-stack L. The open top of the furnace is equidistantly laid off by lateral flanges D and cross-rods D′, serving the same office, so that the square bed shown in the drawings will be formed on either side of the cross-rods D′ to accommodate the pans E. Each of the pans E is formed with a central division-wall, E′, which is perforated at the rear end, so as to be in alignment with the tubes G G′, which connect the adjacent pans telescopically, to permit the free passage of the sirup from one pan to another. By means of this interlocking arrangement of the pans there is formed additionally a common axis, whereon the pans may simultaneously be inclined to a common angle or in different planes, as well to effect the exposure of new faces of the sugar to the heat below as to accomplish the ready removal of the loaves when the evaporation process shall have been completed. Handles H serve for the ready manipulation of the pans E.

Having thus fully described our improvements, what we claim, and desire to secure by Letters Patent of the United States, is—

The combination of the furnace M, con-

structed as herein shown and described, and the pans E, provided with central division-walls, E′, and handles H, with tubes G G′, connecting adjacent pans and telescoping to form conduits between the pans for the passage of the sirup, and serving as axes by means of which each pan may be tilted independently of or simultaneously with the others, said division-walls E′ having perforations aligning with the tubes G G′, all substantially as shown and described.

In testimony whereof we affix our signatures in presence of two witnesses.

MILTON MATHEWS.
HENRY HILL.

Witnesses:
EDWARD A. VOIT,
JAMES B. STULL.