2 Sheets--Sheet 1.

F. O. MATTHIESSEN.

Centrifugal Machines in Sugar Manufacture.

No. 167,001. Patented Aug. 24, 1875.

Fig. 1

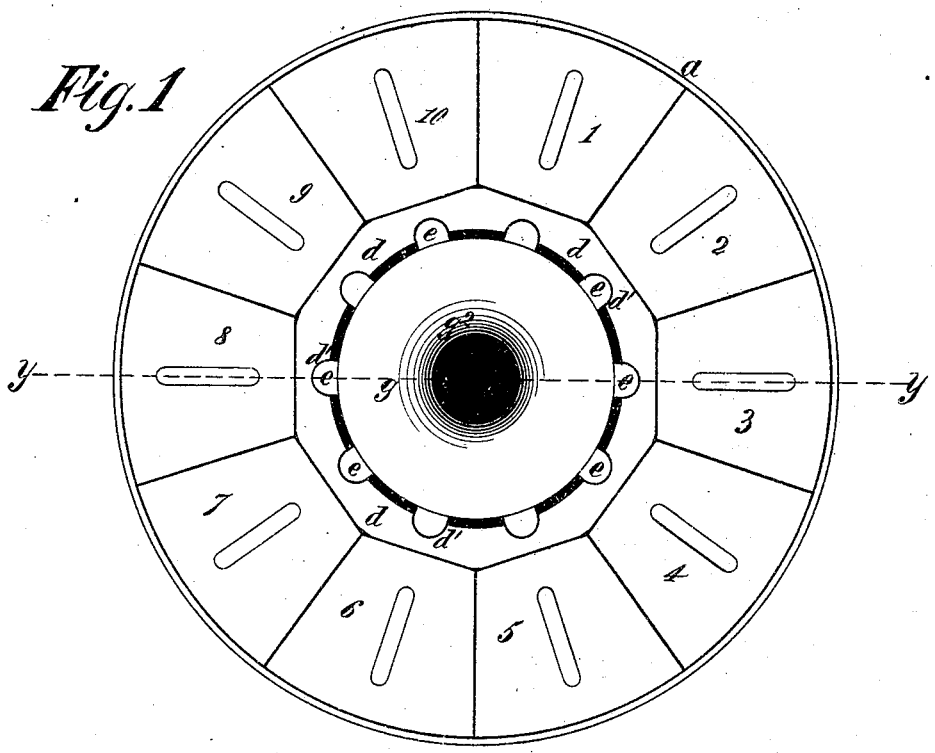
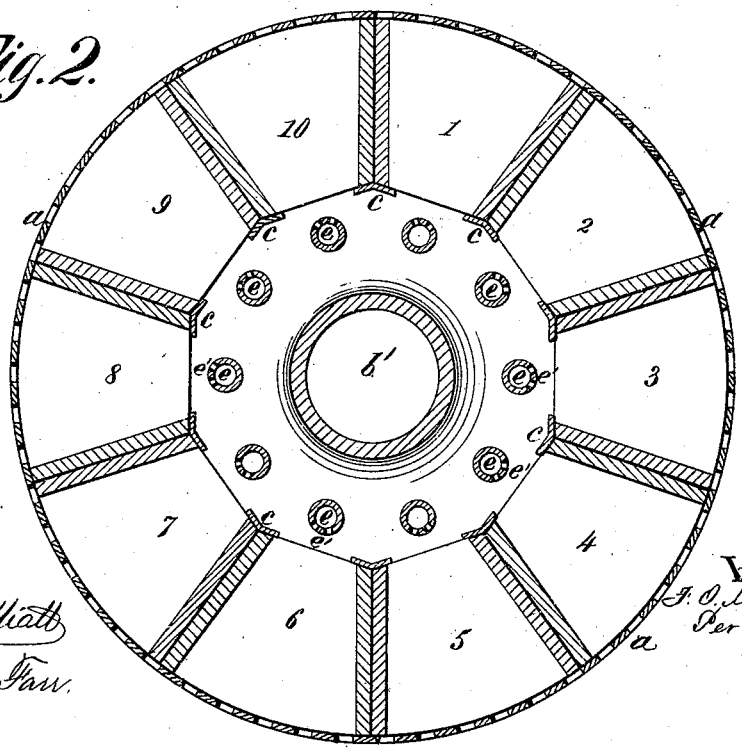


Fig. 2.



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2 Sheets--Sheet 2.

F. O. MATTHIESSEN.

Centrifugal Machines in Sugar Manufacture.

No. 167,001 Patented Aug. 24, 1875.

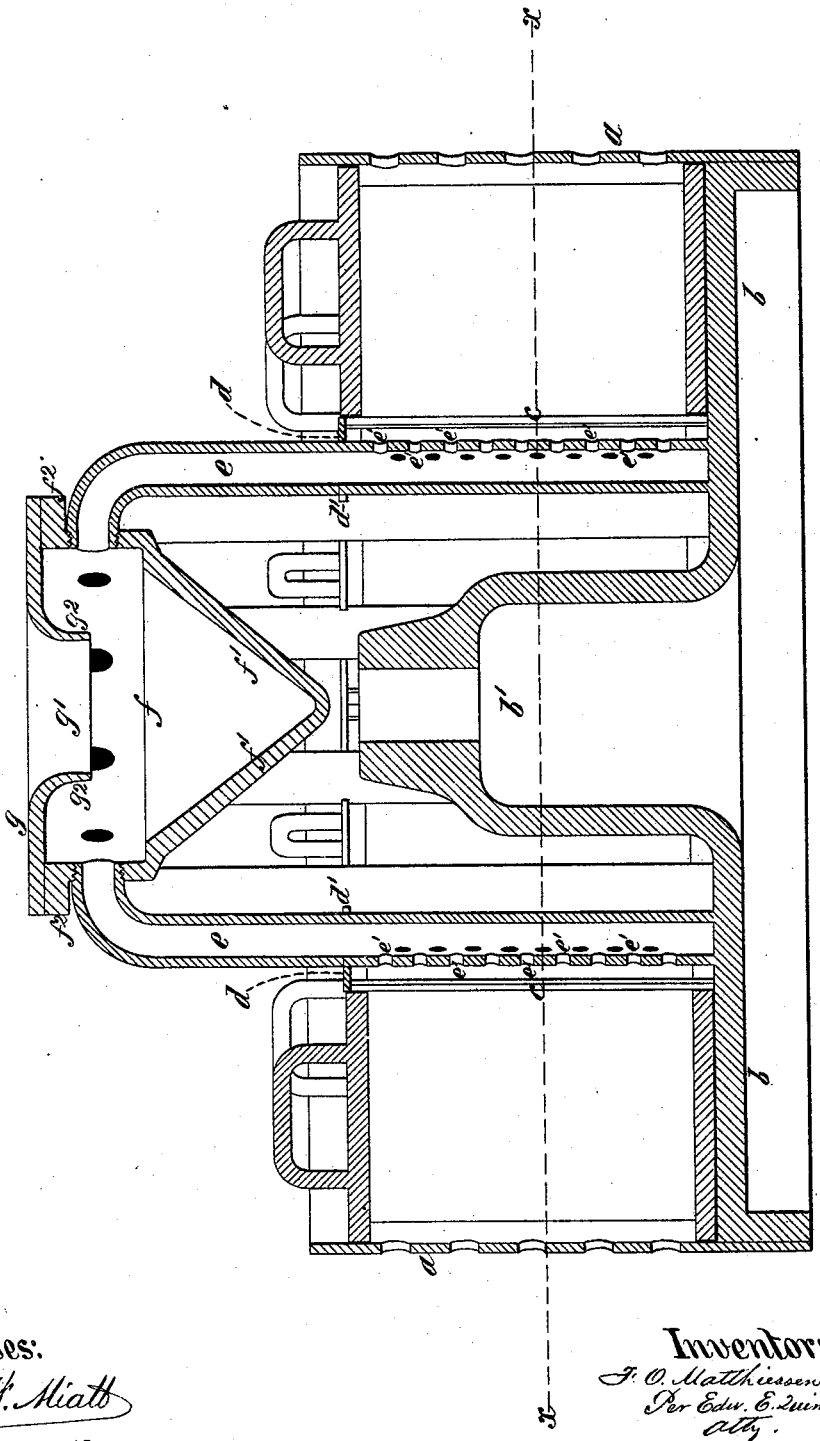

Fig. 3.

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UNITED STATES PATENT OFFICE

FRANZ O. MATTHIESSEN, OF IRVINGTON, NEW YORK.

IMPROVEMENT IN CENTRIFUGAL MACHINES IN SUGAR-MANUFACTURE.

Specification forming part of Letters Patent No. **167,001**, dated August 24, 1875; application filed August 10, 1875.

CASE C.

To all whom it may concern:

Be it known that I, FRANZ O. MATTHIESSEN, of Irvington, New York, have invented a certain Improvement in Centrifugal Apparatus for Liquoring Hard Sugar, of which the following is a specification:

My improvement relates to modifications of the centrifugal machines heretofore used in the manufacture of sugar, the purpose of which is to insure, by centrifugal action, the uniform diffusion of a prescribed quantity of white liquor through blocks of sugar contained in the molds.

My invention consists in arranging, in connection with the centrifugal machine, a series of perforated pipes placed vertically around the hub, and connected with a common reservoir, into which the required quantity of white liquor is deposited, and from which it flows into the distributing-tubes, and outwardly from perforations in those tubes in jets, which are projected against the inner surfaces of blocks of sugar contained in molds deposited in the centrifugal machine.

The object in liquoring hard sugar is to eliminate the green sirup it contains, which is accomplished by injecting into the sugar block a saturated solution of white sugar. This saturated solution, or so-called white liquor, as it permeates the mass of sugar, performs the mechanical function of driving the green sirup before it. The quantity of white liquor required, when the operation is carefully conducted, is prescribed by the quantity of green sirup which the sugar contains, a given quantity of white liquor being capable of dislodging a like quantity of green sirup. The quantity of green sirup contained in the sugar is easily deduced from observations of the sugar in its previous stages of manufacture.

It is the object of my invention to facilitate the measurement of the quantity of white liquor prescribed by the quantity of green sirup ascertained to be present in the blocks of sugar which are to be treated, and to insure, by centrifugal action, the uniform diffusion of this prescribed quantity of white liquor to all parts of all the blocks of sugar operated upon.

The accompanying drawings illustrating my invention are as follows: Figure 1 is a top view of the perforated drum of a centrifugal machine containing ten sugar-molds, and provided with a reservoir, which is supported in a central position immediately over the hub of the centrifugal machine by ten distributing-tubes, which extend down to and are affixed to the bottom of the drum. Fig. 2 is a horizontal section through the line $x\ x$ on Fig. 3, Fig. 3 being a vertical section through the line $y\ y$ on Fig. 1.

I have not deemed it necessary to show the cylindrical chamber surrounding the perforated drum, nor the shaft upon which the centrifugal machine revolves, nor the mechanism for driving it, as those are essential parts of centrifugal machines, the construction and operation of which are common and well known.

Referring to the drawings, a represents the perforated perimeter of my drum, which is affixed to the bottom plate b, the latter being provided with a raised central hub, b', of the usual form. The molds, numbered from 1 to 10, both inclusive, occupy the outer portion of the cylindrical chamber inside the drum, and bear inwardly against ten vertical pillars, c, which are arranged so as to respectively cover the joints between the molds and prevent the escape of white liquor through those joints. These pillars support a polygonal flange, d, which bears against the upper inner ends of the molds, and which is provided on its inner edge with the notches d', to admit the ten distributing-pipes e. The lower ends of these distributing-pipes are affixed to the bottom of the chamber, from which they rise vertically. Those parts of the pipes opposite the molds are provided with several rows of perforations, e'. The upper ends of the distributing-pipes are curved toward a common center, and are set in the circular vertical wall of the liquor-reservoir f. This reservoir has a depressed conical bottom, f^1, and is provided at its upper ends with an outwardly-projecting flange, f^2, to which a cap, g, is affixed. This cap has a central opening, g^1, the lip of which, g^2, is curved downward, the object of the cap being to prevent the overflow of liquor contained in the reservoir. The molds are proportioned and shaped in reference to occupy-

ing the entire portion of the drum-chamber between the pillars and the perforated wall of the drum, so that the sides of each mold will be in close contact with the sides of the adjoining molds, and the joints between the molds will come opposite the vertical pillars *c*.

In operating my apparatus the prescribed quantity of white liquor is poured into the reservoir *f*, after the molds containing hard sugar have been placed in the drum. The centrifugal machine is then caused to revolve at a high rate of speed, and the white liquor is driven by centrifugal action up the inclined conical bottom of the reservoir, and outward therefrom into the distributing-pipes, down which it falls, and from which it is injected, through the perforations *e'*, directly against the inner faces of the sugar contained in the molds. The conclusion of the operation is indicated by the cessation of the flow of white liquor from the molds, or may be known by noting the duration of the operation, the time required having been fixed by prior observation.

The reservoir *f* not only constitutes a measuring-vessel for measuring the quantity of white liquor required, but it acts as a containing-vessel, which is gradually emptied of its contents by the centrifugal motion of the machine, which forces the liquor in the bottom of the reservoir up the inclined surface thereof to the mouths of the distributing-pipes.

It will be seen that the cap *g* serves to retain the white liquor inside the reservoir, however rapid its rotation may be.

The construction of the deflecting-flange, supported by the vertical pillars, forms the subject of my pending application for a patent, designated Case A.

I claim as my invention in a centrifugal machine for liquoring hard sugar, substantially such as described—

1. The combination of a series of perforated distributing-pipes, arranged as shown with reference to the inner faces of the blocks of sugar contained in the molds, with a central reservoir having a depressed conical bottom, substantially as and for the purposes described.

2. The perforated drum of a centrifugal machine, substantially such as described, provided with the vertical pillars *c*, in combination with the series of distributing-pipes *e*, substantially as shown and described.

F. O. MATTHIESSEN.

Witnesses:
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