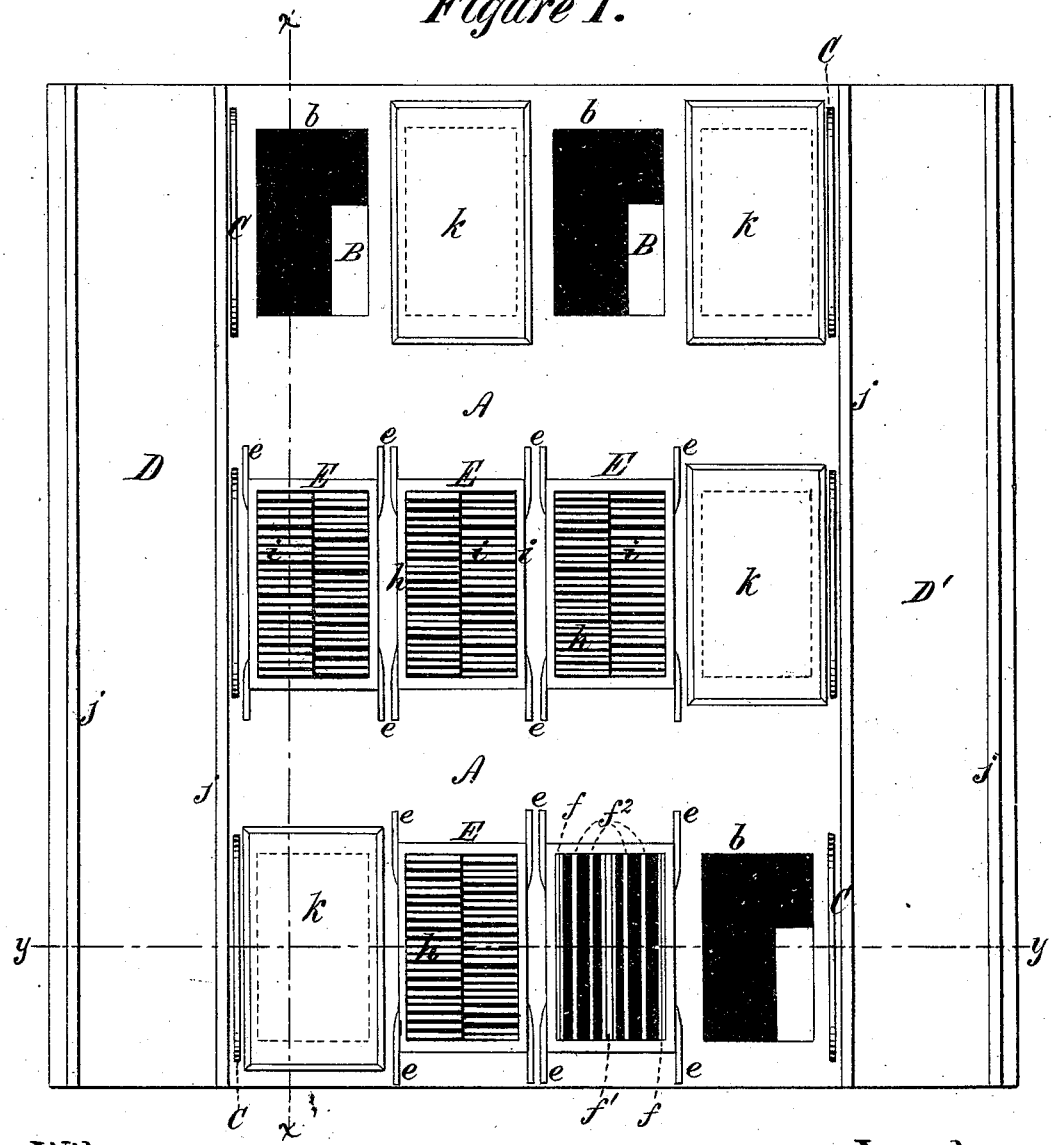
2 Sheets—Sheet 1.

W. R. ELMENHORST.

APPARATUS FOR DRYING HARD SUGAR.

No. 186,816. Patented Jan. 30, 1877.

Figure 1.



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2 Sheets—Sheet 2.

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APPARATUS FOR DRYING HARD SUGAR.

No. 186,816. Patented Jan. 30, 1877.

Figure 2.

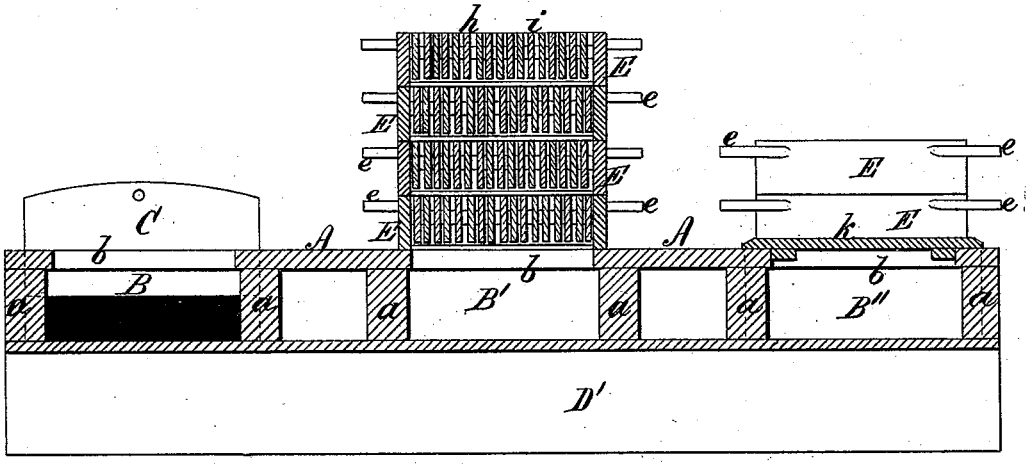
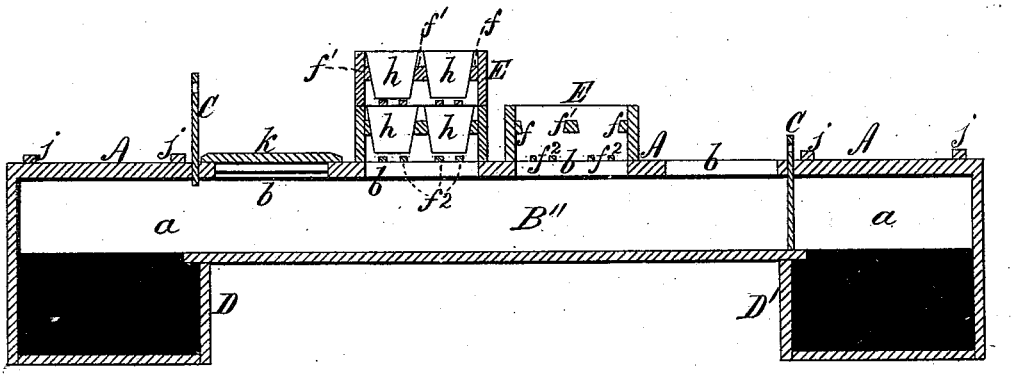


Figure 3.



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UNITED STATES PATENT OFFICE.

WALTER R. ELMENHORST, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO F. O. MATTHIESSEN AND WIECHER'S SUGAR REFINING COMPANY, OF SAME PLACE.

IMPROVEMENT IN APPARATUS FOR DRYING HARD SUGAR.

Specification forming part of Letters Patent No. **186,816**, dated January 30, 1877; application filed December 11, 1876.

To all whom it may concern:

Be it known that I, WALTER R. ELMENHORST, of Jersey City, New Jersey, have invented certain Improvements in Apparatus for Drying Hard Sugar, of which the following is a specification:

My improvements relate to devices for facilitating the conduct of an improved process which I have devised for drying hard sugar.

My invention consists, primarily, of a system of portable frames or hand-barrows of like shape and dimensions, and of such construction that each barrow affords support for a series of sugar slabs arranged flatwise at short distances from each other, and of a chamber supplied with hot or cold air, or both, having outlets, upon which the hand-barrows fit, and by means of which, when a number of barrows are placed singly over a corresponding number of outlets, or when different series of barrows are piled one above another, and placed over a corresponding series of outlets, hot or cold blasts of air discharged from the air-chamber are forced directly across the sides of the sugar slabs supported in the barrows.

My invention also includes the arrangement of my air-chambers on or beneath the floor of the room in which the drying operation is conducted, and the connection of such chambers with conduits provided with suitable valves for regulating the admission into the chambers of hot and cold air.

The outlets for the reception of the barrows are openings in the top of the air-chamber, or, in other words, in the floor of the drying-room; and I arrange tramways on the floor of the drying-room in suitable proximity to the openings, to facilitate the transportation of the barrows on platform-cars. I also provide covers for closing the air-chamber outlets when they are not in use.

The accompanying drawings are as follows:

Figure 1 is a view of the floor of my drying-room, exhibiting the arrangement of the outlets from three parallel air-chambers, and also showing some of the barrows in position, and some of the outlets closed by their covers. Fig. 2 is a longitudinal vertical section through the line $x\ x$ on Fig. 1, showing the manner in which the barrows may be piled one above the other. Fig. 3 is a transverse vertical section through the line $y\ y$ on Fig. 1, showing the interior construction of the barrows for supporting the sugar slabs, and exhibiting a cross-section of the air-supply conduits.

Referring to the drawings, A represents the floor of the drying-room, and B B′ B″ three air-chambers, which are alike in construction, each chamber being formed of the space between two adjacent floor-beams, $a\ a$, by ceiling across the under edges of the floor-beams. The opposite ends of the air-chambers are each provided with a slide-valve, C, by which communication is opened or closed between them and the air-supply passages or conduits D and D′. The top of each air-chamber has a series of openings, $b\ b\ b\ b$, through which air forced into the chamber escapes in an upward direction. A rectangular frame or hand-barrow, E, fits over each one of the openings b, and the sides and ends of this frame constitute the boundary-walls of a vertical passage in continuation of the opening b. The barrows E are provided at each end with the projecting handles e, to facilitate transportation. These hand-barrows are intended to be piled in indefinite series, one above another, the bottom one of each series being placed over one of the openings b. The inner side walls of each barrow are provided with shoulders f and a central bar, f^1, to afford bearings for the edges of the sugar slabs, and parallel bars f^2 are arranged across the bottom of the barrows, to catch the lower edges of the slabs, and thus prevent the slabs from falling through the barrow in case they are not held by their principal bearings f and f^1. The parallel bars f^2 are at a sufficient distance beneath the bearings f and f^1 to be out of contact with the sugar slabs resting upon those bearings, the bars f^2 being guard-bars, provided for the purpose of supporting the sugar only in the event of the accidental dislodgment of the slabs from their bearings f and f^1. The sugar slabs h are wedge-shaped, and are supported by their edges, as shown in Fig. 3.

It will be seen that by setting in slabs at slight distances from each other, as shown at *i*, Figs. 1 and 2, a series of narrow passages are formed, and that currents of air discharged from the air-chamber are compelled to pass through the spaces between the slabs.

In operation, each barrow is carried to the place where the sugar slabs are first made ready for drying, and filled with slabs, and then transported to the drying apparatus, and placed over one of the outlets *b* of one of the air-chambers, B, B′, or B″, or upon the top of a barrow previously so placed. For convenience in transporting the barrows, I provide tramways *j j*, upon which small platform-cars can be run. One of these cars, having been loaded with barrows, is stopped on the tramway opposite the end of one of the air-chambers. The barrows are then easily taken from the car and carried and placed over the adjacent outlets. I provide a sufficient number of covers, *k*, to close the outlets when they are not required for the reception of barrows. When the barrows have been placed in position over the outlets, one of the valves C is opened, and hot or cold air is forced into the chamber and upward through the spaces between the sugar slabs hanging in the barrows. When the drying operation is completed, the barrows are collected, placed upon a car, and removed from the drying-room.

The advantages which my apparatus affords are as follows: First, great convenience and economy in handling the sugar preparatory to and during the drying operation; secondly, a material hastening of the drying operation, owing to the subjection of the sugar slabs to the direct action of currents of air forced across their surfaces.

I claim as my invention, in an apparatus for drying sugar slabs—

1. The portable frame or hand-barrow E, provided with the shoulders *f* and f^1, and with the projecting handles *e*, as and for the purpose set forth.

2. In a frame or hand-barrow, substantially such as described, the parallel guard-bars f^2, as and for the purpose set forth.

3. The air-chamber B, situated upon or beneath the floor of the drying-room, provided with one or more outlets, *b*, and with valves C C, for opening and closing communication between the air-chamber and the air-supply passages D D′.

4. A drying-room for drying hard sugar, having tramways arranged upon its floor in convenient proximity to a series of openings in its floor, communicating with an air chamber or chambers beneath the floor, such chambers being connected with an air-supply conduit or conduits, provided with valves for regulating the admission into the air-chambers of hot or cold air, substantially as described.

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Witnesses:
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