

A. F. W. PARTZ.
Dryer for Refined Sugar.

No. 159,769.

Patented Feb. 16, 1875.

Fig. 1.

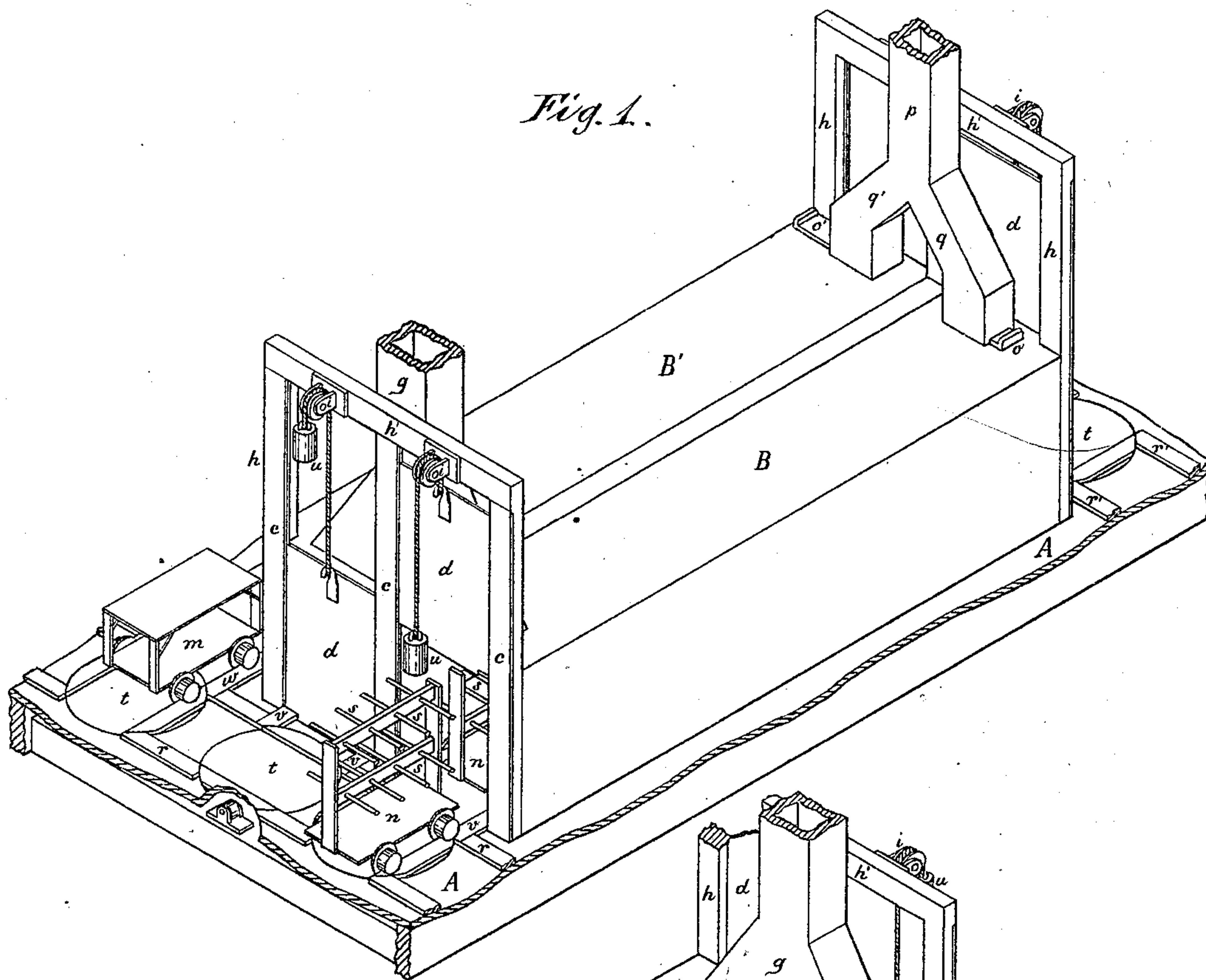
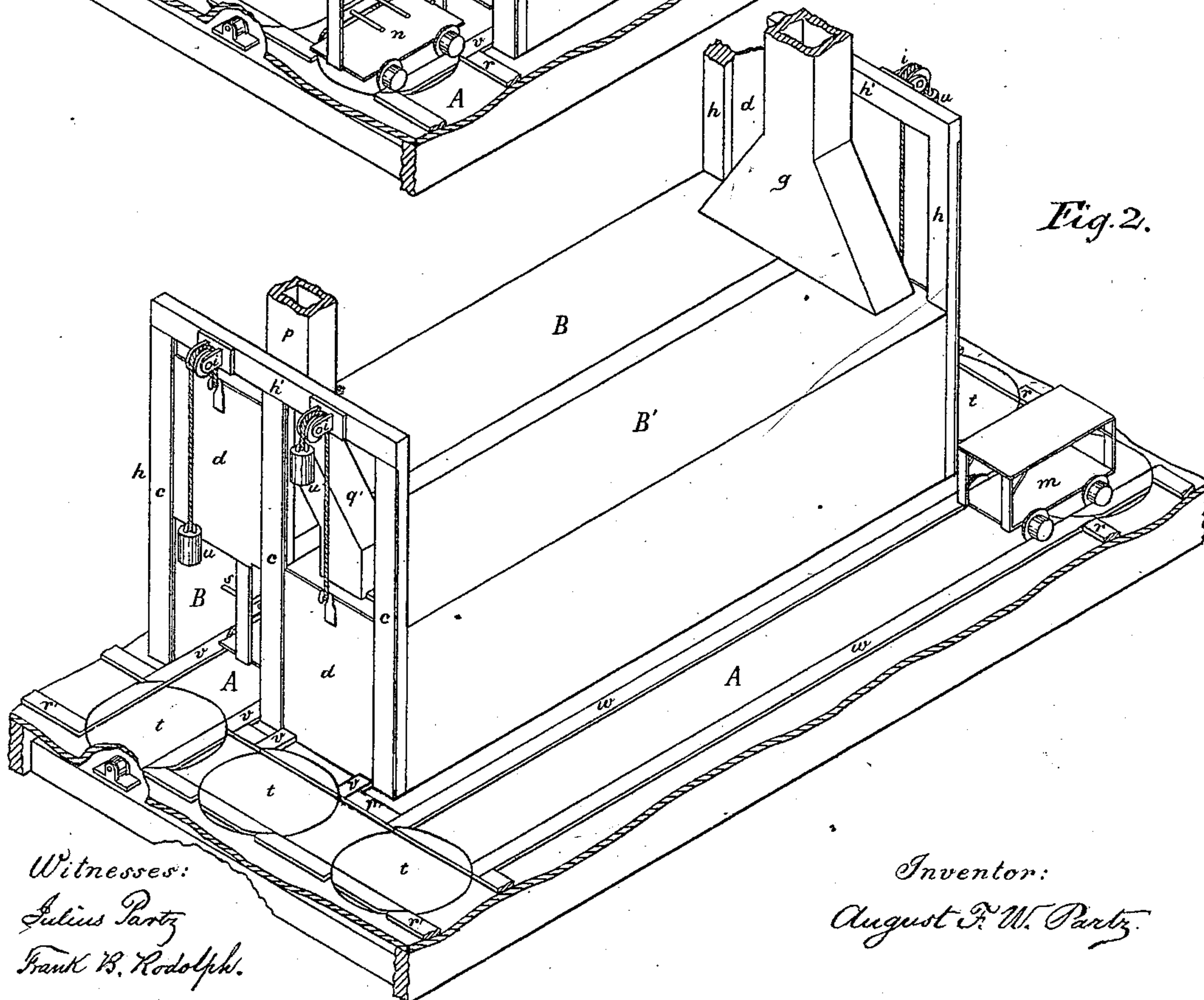


Fig. 2.



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UNITED STATES PATENT OFFICE.

AUGUST F. W. PARTZ, OF OAKLAND, CALIFORNIA.

IMPROVEMENT IN DRIERS FOR REFINED SUGAR.

Specification forming part of Letters Patent No. 159,769, dated February 16, 1875; application filed August 6, 1874.

To all whom it may concern:

Be it known that I, AUGUST F. W. PARTZ, of Oakland, in the county of Alameda and State of California, have invented a new and Improved Apparatus for Drying Refined Sugar, of which the following is a specification:

The drying of refined sugar as hitherto commonly practiced, by storing it in "stoves" or trunk-like chambers heated by steam and extending through several lofts, from which doors lead into them, has the objectionable features that the workmen have to labor in a temperature ranging from 120° to 130° Fahrenheit, and that there is no adequate provision for the supply of fresh air, and the removal of the air that has become charged with vapor.

My invention relates to a new apparatus by which the drying of sugar may be effected more expeditiously and regularly than by the old mode and means, while the operation is such that the workmen are not required to enter the drying-room, so that as high a heat may be applied as the sugar will bear without injury to its quality.

My improved process consists in exposing moist sugar, whether it be in the shape of loaves or in that of slabs, bars, blocks, or cubes, to a current of heated air forced by mechanical means through a suitably-constructed chamber or trunk, through which the sugar is gradually passed in a direction opposite to that of the air-current.

My improved apparatus is represented in the accompanying drawing, to which reference is had in the following full and exact description of my invention.

A is a floor or platform, upon which are built two adjoining chambers, B and B'. Although the drying of the sugar may be accomplished in but one chamber of sufficient length, it will generally be found more practicable to have two; and if there is not room for making these long enough, three or more chambers may be built alongside of each other. The ends of the chambers can be closed by sliding doors *d d*, which move up and down in ways *c c*, formed on the upright timbers *h h* of a frame at each end of the chambers. The doors are counterbalanced by weights *u u*, fastened to cords or chains which pass over pulleys *i i* on the cross-beams *h' h'*.

It may be so arranged that both doors of each chamber are counterbalanced by a single weight, and that they can be raised or lowered simultaneously by one person. Upon one end of the chambers B B' is a pipe, *p*, divided into two branches, *q* and *q'*, which open into both chambers, and are provided with dampers *o* and *o'*. Upon the other end of the chambers is another pipe or stack, *g*, which also communicates with both chambers. The pipe *p* leads to an air-heating apparatus of any suitable construction, connected with a fan-blower or some other appropriate device by which a current of air is driven through the heater, and thence, by way of pipe *p* and branch pipes *q q'*, through the chambers B B', from which it escapes by the stack *g*. Accordingly, as the dampers *o o'* are set, the current of air may be made to pass either through one or both of the chambers.

Inside of these chambers, and extending through them, are car-tracks *v v*, and alongside of the chamber B' is a like track, *w*. At each end of these tracks is a turn-table, *t t*, provided with short tracks, which correspond with the tracks *v* and *w*, and also with two cross-tracks, *r* and *r'*, beyond the ends of the chambers, so that by turning any one of the tables it can be brought in line either with one of the tracks *v* and *w*, or with the track *r* or *r'*. Thus a complete system of connected tracks is formed through and around the chambers B B'. Upon these tracks, which may be extended to any part of the floor, are placed a number of cars, *m m* and *n n*, intended to receive the sugar to be dried. The cars *m* are used when the sugar is in loaves or masses of other shapes that admit of its being deposited upon the platforms provided for that purpose. These platforms may be perforated, or grate-like frames of bars be substituted for them when deemed expedient. If the sugar has been pressed in matrices or frames such as are described in Letters Patent No. 131,899, and No. 132,921, issued to me October 1 and November 12, 1872, the cars *n* are employed, and in this case the matrices or frames containing the sugar are suspended by their handles on the cross-bars *s s*.

In describing the operation of drying, I will assume that both of the chambers B and B'

are filled with cars loaded with sugar, and that the last car went into the chamber B', that the doors *d* and *d'* are closed, and the dampers *o* and *o'* are open, and that a current of air heated to a temperature of from 140° to 150° Fahrenheit is forced through the pipes *p*, *q*, and *q'* into the chambers. The air, in passing through the chambers, gives off a portion of its heat to the moist sugar; the heat vaporizes the moisture, and the air taking up the vapor carries it off through the stack *g*. Meantime a car on one of the outside tracks *w* and *r* is loaded with moist sugar, while another car with dried sugar on the track *r'* is unloaded. The chamber B' having been supplied last, the freshly-loaded car is run upon the turn-table in front of the door *d* of the chamber B, and by turning the table ninety degrees its track is brought in line with that inside of the chamber, the turn-table at the other end of which being placed in the same position. When the sugar upon the car nearest to the pipe *q* is found by testing, or known by experience, to have become dry, the damper *o* is closed, both doors of the chamber B are raised, the loaded car standing ready upon the turn-table is pushed into the chamber, and the other cars being thereby moved forward, the last one is run out upon the turn-table in front of it, whereupon the doors are closed again, the damper *o* is reopened, and the process goes on as before. The discharged car is then unloaded, while another car previously discharged from the chamber B', and, after being emptied, transferred by means of the turn-tables to the track *w*, or farther to the track *r*, is reloaded with moist sugar, to be subsequently introduced again into the same chamber. Thus the contents of the two chambers

are gradually supplied and removed in alternate shifts, the cars that have been discharged and unloaded at one end being continually returned to the other, and there reloaded and re-entered.

It will be observed that the sugar is passed through the chambers in a direction opposite to the current of heated air, so that in the course of drying it is least exposed to the aqueous vapors evolved, and by degrees subjected to a higher temperature, which are the most favorable conditions for attaining the desired result.

Instead of effecting the transfer of the cars from one end of the chambers to the other by means of turn-tables, in the manner above set forth, the tracks *r* and *r'* may be made continuous, and a pair of low trucks, furnished with transverse tracks corresponding with the tracks *v w*, be placed upon them to receive the cars and carry them along the tracks *r r'*, in which case, however, the latter tracks must be lowered, so that the tracks upon the trucks are brought on a level with the tracks *v w*.

I claim as my invention—

In combination with the chambers B B', through which sugar is passed on cars to be dried, and passed in an opposite direction to the current of heated air, the inner and outer tracks *v w* and *r r'*, and the turn-tables *t t*, the hot-air pipe *p*, with its branches *q q'*, and the exhaust-pipe *g*, all constructed and arranged substantially as and for the purpose set forth.

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Witnesses:

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