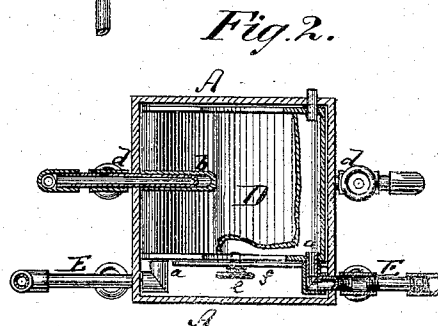
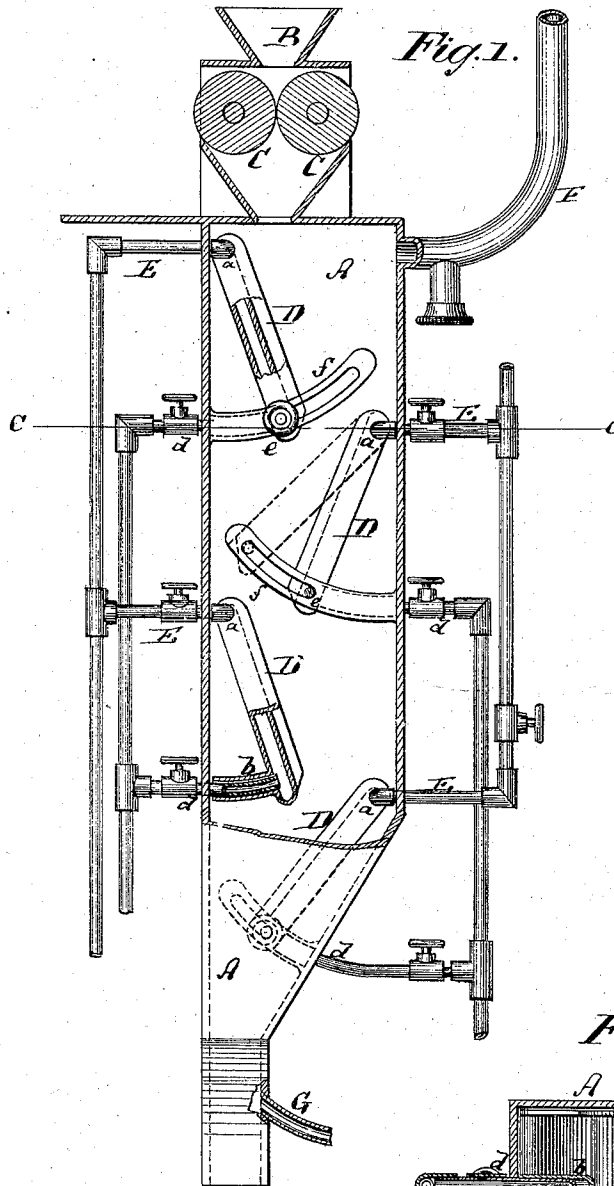


A. MACKEY.
Sugar-Driers.

No. 137,459.

Patented April 1, 1873.



Witnesses
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Fred Haynes

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UNITED STATES PATENT OFFICE.

ALEXANDER MACKEY, OF NEW YORK, N. Y.

IMPROVEMENT IN SUGAR-DRIERS.

Specification forming part of Letters Patent No. **137,459**, dated April 1, 1873; application filed February 5, 1873.

To all whom it may concern:

Be it known that I, ALEXANDER MACKEY, of the city, county, and State of New York, have invented an Improved Apparatus for Drying Sugar, &c., of which the following is a specification:

The object of this invention is to construct an apparatus which is to be more especially adapted to the drying of granulated sugar, in such manner that the drying will be carried on uninterruptedly and without exposing the sugar to danger of being crushed or powdered or otherwise deprived of its characteristics as granulated sugar. Heretofore the process of drying granulated sugar was usually carried on in complex machinery, by which the sugar was more or less exposed to contact with gripping or feeding devices, and by which it was more or less crushed, involving a subsequent process of sifting the crushed from the granulated portions, and occasioning a loss of labor, time, and material. My invention consists in the arrangement with the receiving or drying chamber of a series of inclined heating or drying plates, which are heated by steam passed through them, and which are pivoted or hinged in such manner that their inclination may be varied to allow the sugar to pass more or less rapidly over them, and more or less rapidly to complete the process of drying, as may be found necessary in each particular case. The inclined plates are by their hollow trunnions or pivots connected with the steam supply-pipes, and by curved pipes with the escape, so that a constant circulation of steam or equivalent heating substance can be carried on through them. It is evident that the invention is applicable also to the drying of other material than sugar, and I do not confine myself to its application to the last-named material.

In the accompanying drawing, Figure 1 is a vertical sectional view of my improved drying apparatus, and Fig. 2 a horizontal section of the same taken on the plane of the line C C, Fig. 1.

Similar letters of reference indicate corresponding parts in both the figures.

The letter A represents a vessel or chamber, made of metal or other suitable material, of rectangular or other shape, and of proper size.

At its upper end it connects with a suitable hopper, B, in which there may be feed-rollers C C for supplying the material to be dried to the chamber A with the requisite degree of speed. These rollers when used are rotated by suitable mechanism. D D are a series of plates or platforms arranged within the chamber A at varying heights, and made to extend across the same. Each of these plates or platforms D is at its upper part hung or pivoted in the chamber. The pivots or one of the pivots of each plate are made hollow to connect with a steam-supply pipe, E, from which elbows or straight portions extend toward and embrace or enter such hollow trunnions *a*, respectively. Each plate or platform D is made hollow, of metal or other material, to receive the steam which is supplied to it through the pipe E. The lower part of each plate or platform D is, by a curved pipe, *b*, connected with a curved steam-discharge pipe, *d*, the pipe *b* passing over or fitting into the pipe *d*, proper packing being provided to prevent the escape of steam between the joints. The curving of the pipes *b d* is taken on the circle which is struck from the pivot *a* as the center. On this pivot the plate or platform D can be swung to a greater or less degree of inclination, and it can be fastened in any suitable position by a set-screw, *e*, on a slotted arc, *f*, as shown in Fig. 1, or in any other suitable manner. In place of the curved pipes *b d* an equivalent flexible connection may be provided. The alternate plates D are pivoted to opposite sides of the chamber A, as shown, so that the sugar or other substance to be dried will flow from the hopper B upon the upper plate D, then slide down on the same and be discharged upon the upper part of the next lower plate D, and so on, becoming thus exposed in thin layers to the heated surfaces of all the several plates successively. In this manner the sugar or other material will be effectually and rapidly dried without becoming exposed to the danger of crushing or otherwise becoming injured.

It is evident that the office of the pipes E and *b d* may be reversed, if desired, so that the latter will serve as supplies and the former as discharge for the steam or heating substance employed.

The moist vapors can escape from the upper part of the chamber A through a pipe, F, and a pipe, G, enters the lower part of the chamber A for the purpose of supplying fresh air thereto.

The lower end of the chamber A may be contracted, as shown, to permit the direct discharge of the matter dried into a barrel or other final receptacle.

It will be observed that the more sloping the plates D are placed, the more rapidly will the sugar pass over the same, and the more rapid will consequently be the process of drying. The plates D are therefore set in accordance with the quantity of moisture to be removed. By means of the lower air-pipe G the sugar will or may be properly cooled directly before entering the barrel or final receptacle, so as not to shrink the same nor become caked therein.

Claims.

1. The chamber A provided with the pivoted

heating-platforms D, which are alternately arranged on opposite sides and adjustable on their pivots, substantially as described.

2. The hollow platform D provided with a hollow pivot, *a*, which connects with the steam-pipe E, as specified.

3. The curved pipe *b* extending from the pivoted hollow platform D into or over the curved pipe *d*, to allow the platform to vibrate on its pivot without severing its connection with the pipe *d*, substantially as herein shown and described.

4. The drying-chamber A containing the hollow adjustable pivoted platforms D D, and provided with the steam supply and discharge pipes E, and with the air-pipes F and G, substantially as set forth.

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Witnesses:

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