(No Model.)

L. J. & A. L. BARTHELEMY.

SUGAR DRIER.

No. 605,772. Patented June 14, 1898.

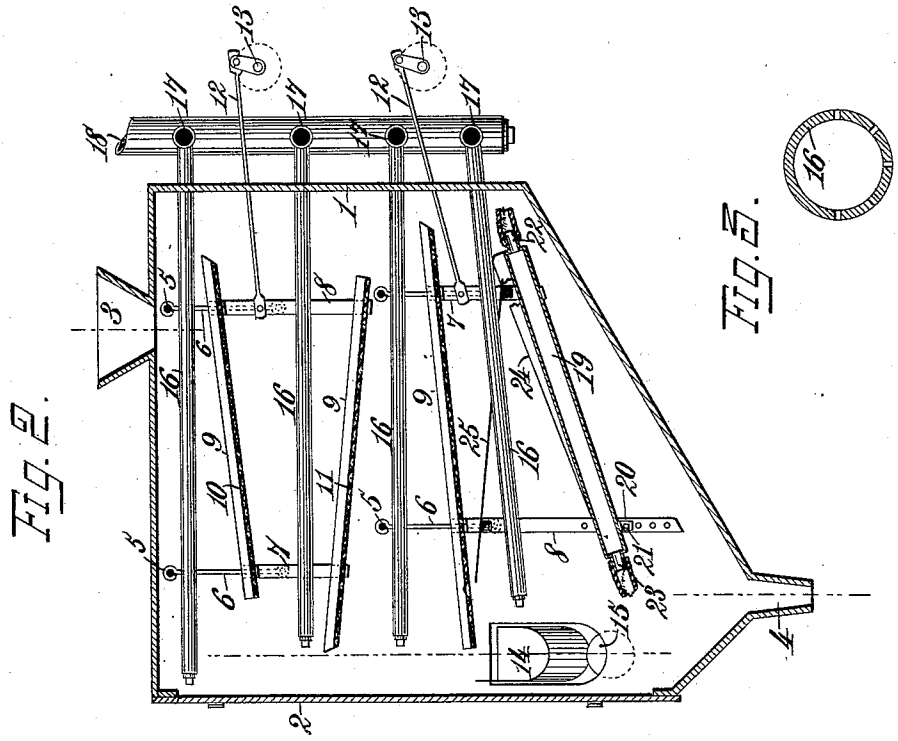

Fig. 2.

Fig. 5.

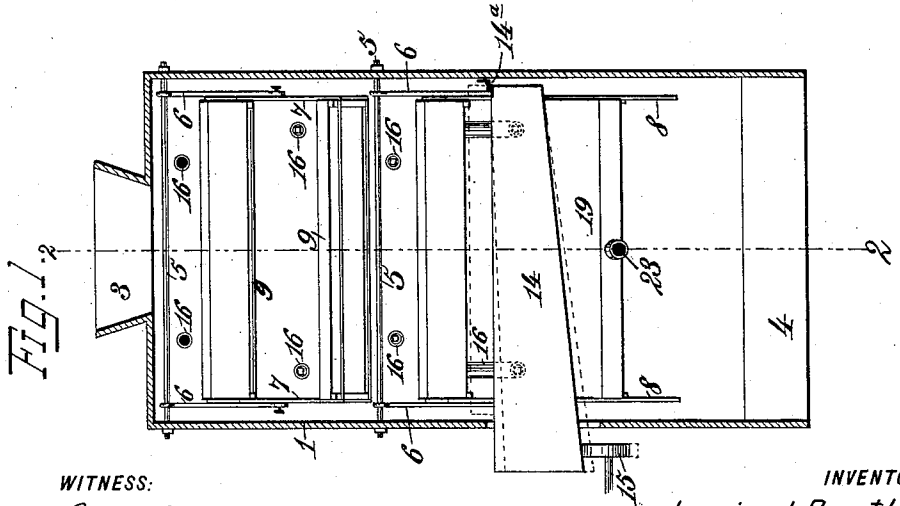

Fig. 1.

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LOUIS J. BARTHELEMY AND ARISTIDE L. BARTHELEMY, OF NEW ORLEANS, LOUISIANA.

SUGAR-DRIER.

SPECIFICATION forming part of Letters Patent No. 605,772, dated June 14, 1898.

Application filed March 30, 1897. Serial No. 629,989. (No model.)

To all whom it may concern:

Be it known that we, LOUIS J. BARTHELEMY and ARISTIDE L. BARTHELEMY, citizens of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Sugar-Driers; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon.

This invention relates to sugar-driers, and has for its object to provide an improved and efficient apparatus in which the lumps and scales are removed from the sugar and the moisture thoroughly driven off and evaporated, the sugar being discharged from the apparatus in a perfectly granular and dry condition; and to these ends our invention consists in the features and in the construction, combination, or arrangement of parts hereinafter described, and definitely pointed out in the claims following the description, reference being had to the accompanying drawings, forming a part of this specification, wherein—

Figure 1 is a transverse sectional elevation of our improved drier. Fig. 2 is a sectional view taken on the line 2 2 of Fig. 1, and Fig. 3 is a view in cross-section of one of the hot-air pipes.

Referring to the drawings, the numeral 1 indicates a metallic box provided at one end with a hinged door 2, adapted to be closed air-tight. In the top of the box is arranged a feed-hopper 3 and in the bottom a discharge-spout 4.

Arranged transversely of the box 1, and preferably secured in the sides thereof, as shown, are cross-rods 5, from which are suspended hangers 6. To the hangers 6 are pivoted brackets 7 and 8, the brackets 8, as shown, being longer than the brackets 7, for the purpose hereinafter made apparent. To the upper and lower ends of the brackets 7 and 8 are attached rectangular frames 9, in which are arranged sifters or screens 10 and 11. By making the brackets 7 and 8 of unequal length, as before described, the screens 10 and 11 are reversely inclined, the higher end of the under screens 11 being arranged beneath the lowermost end of the upper screens 10. We have shown two sets of these screens; but it will be manifest that any suitable number may be employed. To one of the brackets of each pair of sifters is attached one end of a connecting-rod 12, the other end of which is pivoted to a crank-shaft 13. There is one such connecting-rod and crank-shaft provided for each pair of sifters, by means of which the sifters are given a reciprocating movement.

Arranged transversely of the box 1 and beneath the lower end of the under sifter 11 of the lowermost set of screens is an inclined trough 14, that is attached to one of the sides of the box by a hinge 14^a, and at its other end projects through an aperture formed in the side of the box and rests on the periphery of an eccentric 15, which operates to impart a vertically-vibrating movement to the trough.

Projecting into the box 1 are a plurality of perforated hot-air pipes 16, that are closed at the ends within the box and at their other ends are coupled to branch pipes 17, that are connected to a manifold 18.

Arranged within the box 1 is an inclined steam-box 19, that is supported at its upper end in the brackets 7 of the lower set of sifters, and to the under side of the lower end of said steam-box are attached perforated lugs 20, which are fastened to the brackets 8 by bolts 21, that pass through the perforated lugs and through corresponding bolt-holes formed in the brackets. The brackets 8 are provided with a plurality of such bolt-holes, whereby the lower end of the steam-box may be vertically adjusted and any desired inclination be given to the steam-box. The steam-box at its upper and lower ends is provided with nipples 22 and 23 for the connection of steam-hose, the steam entering through the nipple 22 and the water of condensation discharging through the nipple 23. The sides of the steam-box are provided with upturned flanges 24 to prevent the sugar from dropping over the edges thereof. Attached to the brackets 7 and 8 above the steam-box is a shelf 25, said shelf being arranged beneath the lowermost sifter and inclined in a reverse direction to the steam-box.

The bottom of the box 1 is funnel-shaped,

as shown, so as to direct its contents into the discharge-spout.

The operation of our improved apparatus is as follows: Suitable power is employed to rotate the cranks 13 and eccentric 15, which operate to impart a vibrating or shaking movement to the sifter and the discharge-trough. Hot air is introduced through the perforated pipes 16, and steam is introduced into the steam-box by means of a steam-hose (not shown) connected to the nipple 22. Sugar is fed into the hopper 3 and falls onto the upper sifter 10. The finer particles of the sugar fall through the sifter 10 onto the sifter 11 next below and through the sifter 11 onto and through the next sifter and drops upon the inclined shelf 25, by which it is delivered onto the upper end of the steam-box 19. The sugar drops down over the steam-box and is discharged into the bottom of the box 1, from which it is discharged through the spout 4. At the same time the lumps of sugar that are too large to pass through the screens and the scales pass successively over the lower ends of the sifters onto the upper ends of the sifters next below, the sugar lumps in their passage being broken up and pass through the screens, and are finally dropped onto the steam-box in the manner before described, while such lumps as are unbroken and the scales are discharged over the tail end of the lowermost screen and fall into the trough 14, by which latter they are discharged from the box. The vibrating motion of the trough prevents the accumulation of lumps and sugar scales. During the passage of the sugar from one sifter to another the hot air operates to dry the same and facilitates the breaking up of the lumps, and as it passes over the steam-box the moisture is entirely driven off.

Having described our invention, what we claim is—

1. In a sugar-drier, the combination with a closed box having a feed-hopper, of a series of reversely-inclined, vibrating screens arranged one above the other a discharge-trough arranged beneath the tail end of the lowermost screen, and a plurality of perforated hot-air pipes projecting into said box, substantially as described.

2. In a sugar-drier, the combination with a closed box having a feed-hopper, of a series of reversely-inclined, vibrating screens arranged one above the other, a vibrating discharge-trough arranged beneath the tail end of the lowermost screen, and a plurality of perforated hot-air pipes projecting into said box, substantially as described.

3. In a sugar-drier, the combination with a closed box having a feed-hopper, of a series of reversely-inclined, vibrating screens arranged one above the other, a discharge-trough arranged beneath the tail end of the lowermost screen, and an inclined steam-box arranged beneath said lowermost screen, substantially as described.

4. In a sugar-drier, the combination with a closed box having a feed-hopper, of a series of reversely-inclined, vibrating screens arranged one above the other, a discharge-trough arranged beneath the tail end of the lowermost screen, and an inclined vibrating steam-box arranged beneath said lowermost screen, substantially as described.

5. In a sugar-drier, the combination with a closed box having a feed-hopper, of a series of reversely-inclined vibrating screens arranged one above the other, a discharge-trough arranged beneath the tail end of the lowermost screen, an inclined steam-box arranged beneath said lowermost screen, and a plurality of perforated hot-air pipes projecting into said closed box, substantially as described.

6. In a sugar-drier, the combination with a closed box having a feed-hopper 3 and a discharge-spout 4, of the cross-rods 5 fixed in the sides of the box, the hangers 6 suspended therefrom, the brackets 7 8 pivoted to said hangers, the frames 9 fixed to the upper and lower ends of said brackets and carrying screens, cranks 13, and connecting-rods 12 attached to the brackets 8, substantially as described.

7. In a sugar-drier, the combination with a closed box having a feed-hopper 3 and a discharge-spout 4, of a series of reversely-inclined vibrating screens arranged one above the other, a discharge-trough arranged transversely to and beneath the tail end of the lowermost screen, said trough being hinged at one end to the side of the box and projecting at its other end through an aperture in the opposite side, and an eccentric engaging and supporting the free end of said trough, substantially as described.

8. In a sugar-drier, the combination with a closed box having a feed-hooper 3 and discharge-spout 4, of a series of reversely-inclined vibrating screens arranged one above the other, a discharge-trough arranged beneath the tail end of the lowermost screen, and an inclined steam-box 19 supported at its upper end in the lowermost bracket 8 and adjustably attached at its lower end to the corresponding bracket 7, and means for vibrating said brackets, substantially as described.

9. In a sugar-drier, the combination with a closed box having a feed-hopper 3 and a discharge-spout 4, of a series of reversely-inclined vibrating screens arranged one above the other, a discharge-trough arranged beneath the tail end of the lowermost screen, and an inclined steam-box 19 supported at its upper end in the lowermost bracket 8 and having attached to the under side of its opposite end perforated lugs 20 attached to the brackets 7 by bolts 21, nipples 22 and 23 at the upper and lower ends of said steam-box, vertical flanges 24 at the sides of the steam-box, and means for vibrating the steam-box substantially as described.

10. In a sugar-drier, the combination with a closed box having a feed-hopper 3 and dis-

charge-spout 4, of a series of reversely-inclined vibrating screens arranged one above the other, a discharge-trough arranged beneath the tail end of the lowermost screen, an inclined shelf 25 arranged beneath said lowermost screen, and a vibrating steam-box disposed beneath said shelf, substantially as described.

In testimony whereof we have hereunto subscribed our names in the presence of two witnesses.

LOUIS J. BARTHELEMY.
ARISTIDE L. BARTHELEMY.

Witnesses:
STEPHEN MASCARO,
HARRIS GAGNÉ.