2 Sheets—Sheet 1

W. R. ELMENHORST.

Centrifugal Machine for Liquoring Hard Sugar.

No. 211,895. Patented Feb. 4, 1879.

Figure 1.

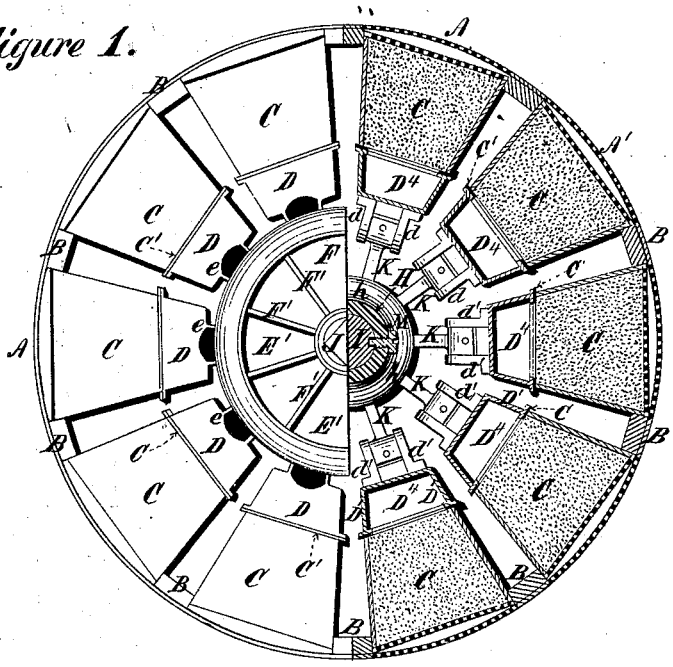
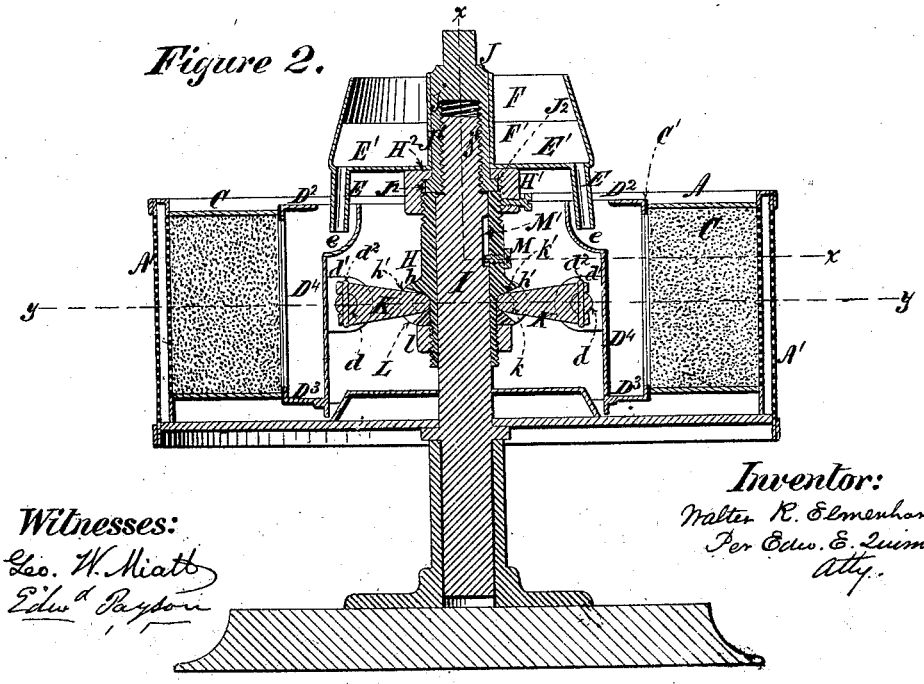


Figure 2.



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2 Sheets—Sheet 2.

W. R. ELMENHORST.

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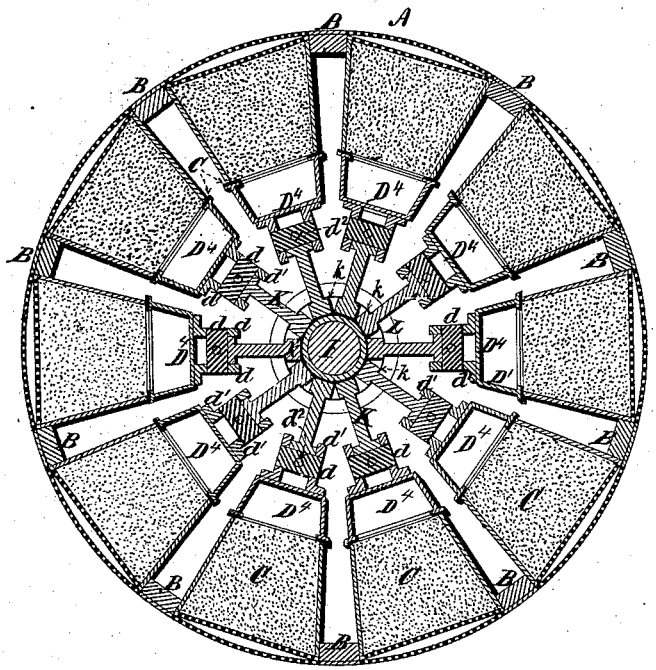
Figure 3.



Witnesses:

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UNITED STATES PATENT OFFICE

WALTER R. ELMENHORST, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN CENTRIFUGAL MACHINES FOR LIQUORING HARD SUGAR.

Specification forming part of Letters Patent No. **211,895**, dated February 4, 1879; application filed July 2, 1878.

To all whom it may concern:

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

My improvements relate to apparatus for liquoring hard sugar by centrifugal force; and the general nature of my invention consists in the combination, with the series of molds of a centrifugal machine, of a like series of pairs of radially-arranged partitions, joined at their tops and bottoms, and a central reservoir provided with a spout for each mold, by means of which liquid from the reservoir is conducted into the spaces between the partitions, and immediately opposite the inner sides of the molds, and therefrom is forced by centrifugal action into the sugar contained in the mold, the central reservoir being divided by radial partitions into as many compartments as there are molds, for the purpose of insuring the discharge of equal quantities of liquid by all the spouts.

My invention also includes the uniting of the two radial partitions required for each mold in the form of a box provided at its upper end with a chute, and in combining a number of such boxes corresponding with the number of molds contained in the machine with mechanism whereby the boxes, the edges of which are faced with an elastic gasket or packing, are simultaneously pressed against the inner edges of the molds, for the purpose of making tight joints between the molds and the boxes.

Finally, my invention includes the specific construction of the mechanism for forcing the boxes against the molds, which is herein shown and described.

The accompanying drawings, representing a centrifugal machine containing my improvements, are as follows: Figure 1 is a top view of one half of the machine, the other half being shown in transverse section on the line *x x* in Fig. 2. Fig. 2 is a central vertical section of the machine. Fig. 3 is a transverse section thereof through the line *y y* on Fig. 2.

My centrifugal machine has the usual basket A, provided with the perforated rim A′. I arrange on the inner side of the rim a series of vertical pillars, B, which are equidistant, and which serve as guides to hold the outer corners of the sugar-molds C.

Immediately opposite the inner side of each mold is a box, D, the edge of which conforms to the shape of the inner edge of the mold, and is covered with an elastic gasket, C′. The upper end of this box is provided with an opening for loosely receiving the lower portion of a spout, E, fixed to the bottom of one of the chambers E′ of the central reservoir, F, which is centrally supported above the spindle of the machine.

The reservoir is divided by the radial partitions F′ into a number of chambers corresponding with the number of molds in the machine.

When the molds are in position the liquoring-boxes are all forced simultaneously outward, so that their edges make tight joints with the inner edges of the molds, by means of spreading mechanism similar to that employed in opening an umbrella. This spreading mechanism consists of a sleeve, H, which is made to slide on the spindle I by means of the adjusting-screw J.

The lower portion of the adjusting-screw is a tube, J^1, having a female thread, *j*, cut on the inside of it, which engages a male thread, *j′*, cut on the upper portion of the spindle.

The lower end of the tube J^1 is provided with a laterally-projecting flange, J^2.

The upper end of the sleeve H is held against the end of the tube J^1 by means of the annular cap H^1, having an inside flange, H^2, which overlaps the upper side of the flange J^2.

The sleeve H is provided with a projecting shoulder, *h*, in which are formed a series of radial notches, *h′*, to receive the inner ends of the spreading arms K, each of which is provided with a transverse pivot, *k*, the ends of which rest in semicircular recesses *k′*, formed in the face of the shoulder *h*, on either side of each notch *h′*.

A correspondingly notched and recessed annulus, L, is slipped on the lower end of the sleeve H, and held up against the shoulder *h* by the nut *l*.

It will thus be seen that the transverse pivots on the inner ends of the spreading-arms

K have their bearings, one half in the recesses in the shoulder *h*, and the other half in corresponding recesses in the annulus L. At their outer ends each of the spreading-arms K is forked, and embraces a pivot, *d*, inserted in the ears d^1 on the inner side of one of the boxes D, the forked end of the arm K being secured to the pivot *d* by the vertical pin d^2.

The range of movement of the sleeve H is limited by means of the key-screw M, the inner end of which projects into the groove M′, formed longitudinally in the spindle I. It will be seen that by turning the actuating-screw J the sleeve H may be lowered or raised, and the boxes D accordingly either simultaneously thrust outward against the molds or drawn inward away from the molds.

In applying my improvements to centrifugal machines provided with the ordinary molds now in use, I find it convenient to employ boxes closed on the side toward the spindle of the machine, and to provide the inwardly-projecting chutes *e* to receive the ends of the spouts E instead of making a hole for the purpose in the top D^2 of the box.

The sides D^1, tops D^2, and bottoms D^3 of the boxes constitute deflectors and guides, which serve to insure the discharge of all the liquor from the boxes D, respectively, into the sugar contained in the molds with which the boxes are respectively in contact. The radial partitions F′ in the reservoir serve to insure an equal discharge by all the spouts of the liquor introduced into the reservoir.

It will, of course, be understood that various forms of mechanism may be employed to press the boxes and molds closely together, so as to make a tight joint between them—as, for example, the boxes may be stationary and the molds may be pressed inward against the boxes; or, the molds being stationary, the boxes may be pressed outward by means of cams instead of spreading arms. I prefer, however, the form of mechanism for this purpose which is herein described.

I am aware that various attempts have been made to liquor hard sugar in the centrifugal machine; and I do not, therefore, claim broadly apparatus adapting centrifugal machines to such a purpose, the distinguishing features of my invention being, first, the central reservoir provided with a spout for each mold, with radial partitions for insuring the discharge of equal quantities of liquor through all the spouts; secondly, the boxes D, the material parts of which are the sides D^1, which are radial partitions, and the ends or top D^2 and bottom D^3, which are horizontal partitions, the sides and ends answering to deflect and guide into the sugar-molds all the liquor injected into the several spaces within the deflectors and behind each sugar-mold, respectively, such spaces being the receiving-chambers D^4.

I claim as my invention in apparatus for liquoring hard sugar in the centrifugal machine—

1. A central reservoir for containing the sugar liquor divided by radial partitions into compartments of equal sizes, and provided with a downwardly-projecting spout from the bottom of each compartment, substantially as and for the purpose set forth.

2. The sugar-molds provided with the vertical deflector-plates D^1 and horizontal plates D^2 and D^3, in combination with a central reservoir, for the purpose of effecting an equal distribution to each mold of liquor discharged from the central reservoir.

3. The combination, with each mold, of deflectors or guides on the inner side of the mold and a spout projecting downward from a central reservoir divided by radial partitions into a number of compartments equaling the number of molds in the machine, for the purpose of conducting all the liquor discharged from any compartment of the reservoir into the mold immediately opposite the spout connected with such compartment.

4. A series of molds concentrically arranged in the basket of a centrifugal machine and an inner circle of liquor-distributing boxes, in combination with adjusting mechanism mounted upon the machine, for the purpose of simultaneously moving all the boxes either inward or outward on radial lines, substantially as and for the purpose set forth.

5. In a centrifugal machine for liquoring hard sugar, the combination of the mold C with the liquoring-box D and the packing-strip C′, for the purpose of making a tight joint between the liquoring-box and the mold, substantially as described.

6. The boxes D, provided with the chutes *e* and with the elastic gasket C′, in combination with the sleeve H and the radially-arranged spreading-arms K, constructed and operating substantially as and for the purpose set forth.

7. The sleeve H, provided with a projecting shoulder, *h*, notched and recessed, as shown and described, in combination with a notched and recessed annulus, L, and a nut, *l*, as and for the purpose set forth.

8. In a centrifugal machine for liquoring hard sugar, the reservoir F, provided with the radial partitions F′ and the spouts E, the boxes D, provided with the chutes *e*, the elastic gaskets C′, and the ears d^1, the spreading-arms K, each provided at its outer end with a transverse pivot journaled in one of the pairs of ears d^1, and at its inner end with a transverse pivot journaled in a central sleeve, the sleeve H, traversing a portion of the spindle I, and the actuating-screw J, engaging a screw-thread cut upon the spindle I, the whole arranged and operating substantially in the manner and for the purpose set forth.

W. R. ELMENHORST.

Witnesses:
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GEO. W. MIATT.