

F. O. MATTHIESSEN.
Centrifugal Liquoring Apparatus.

No. 221,894.

Patented Nov. 18, 1879.

Figure 1.

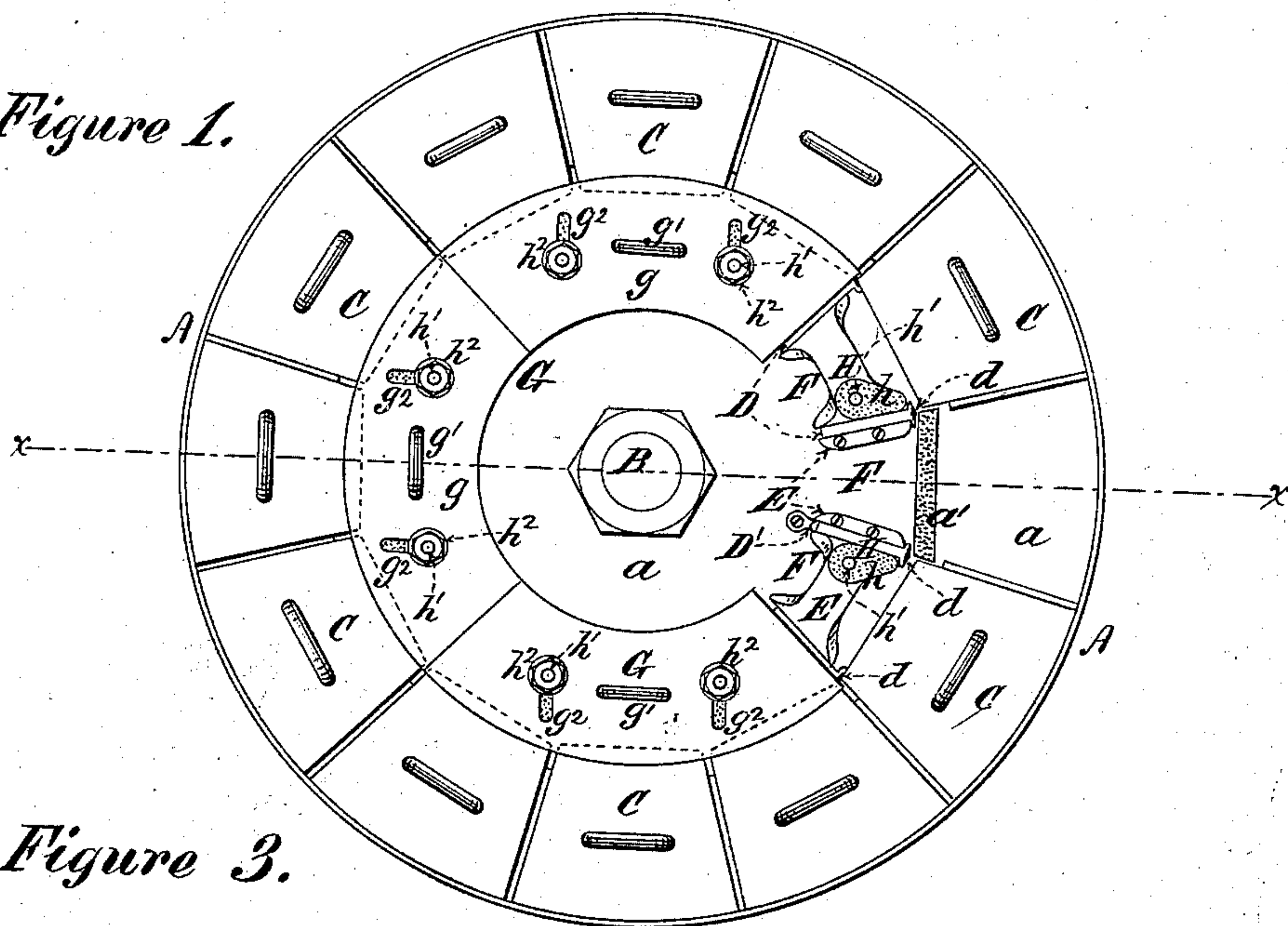


Figure 3.

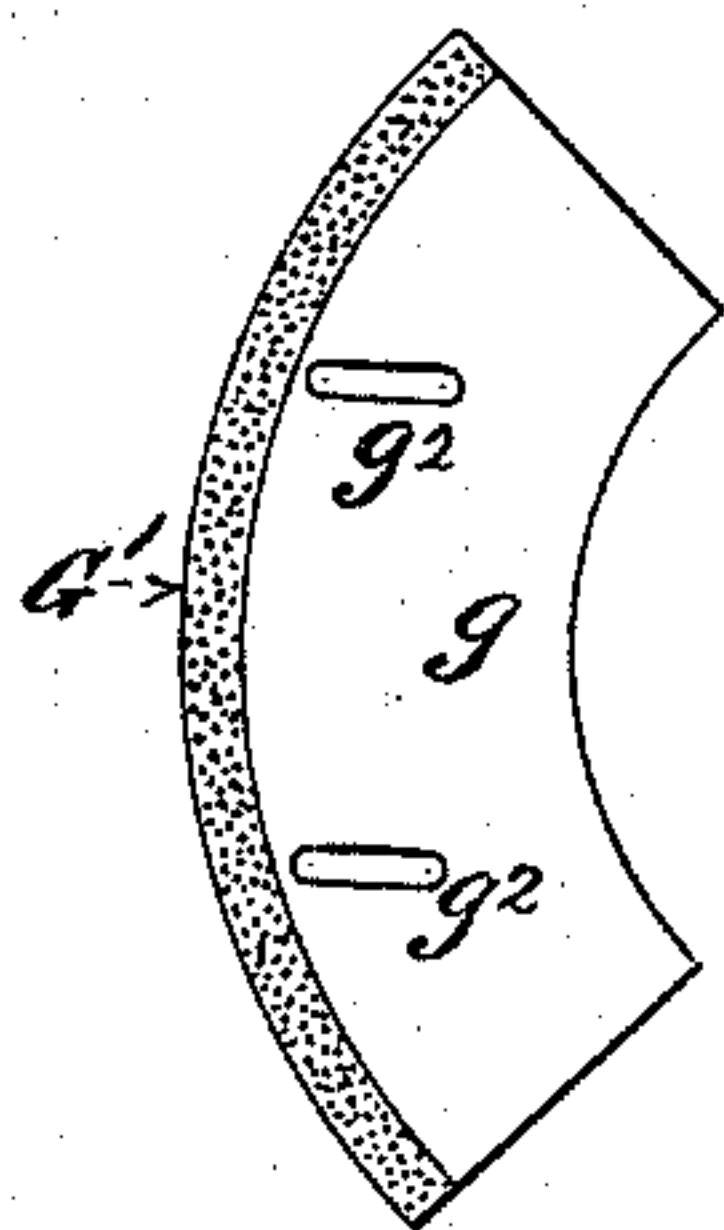
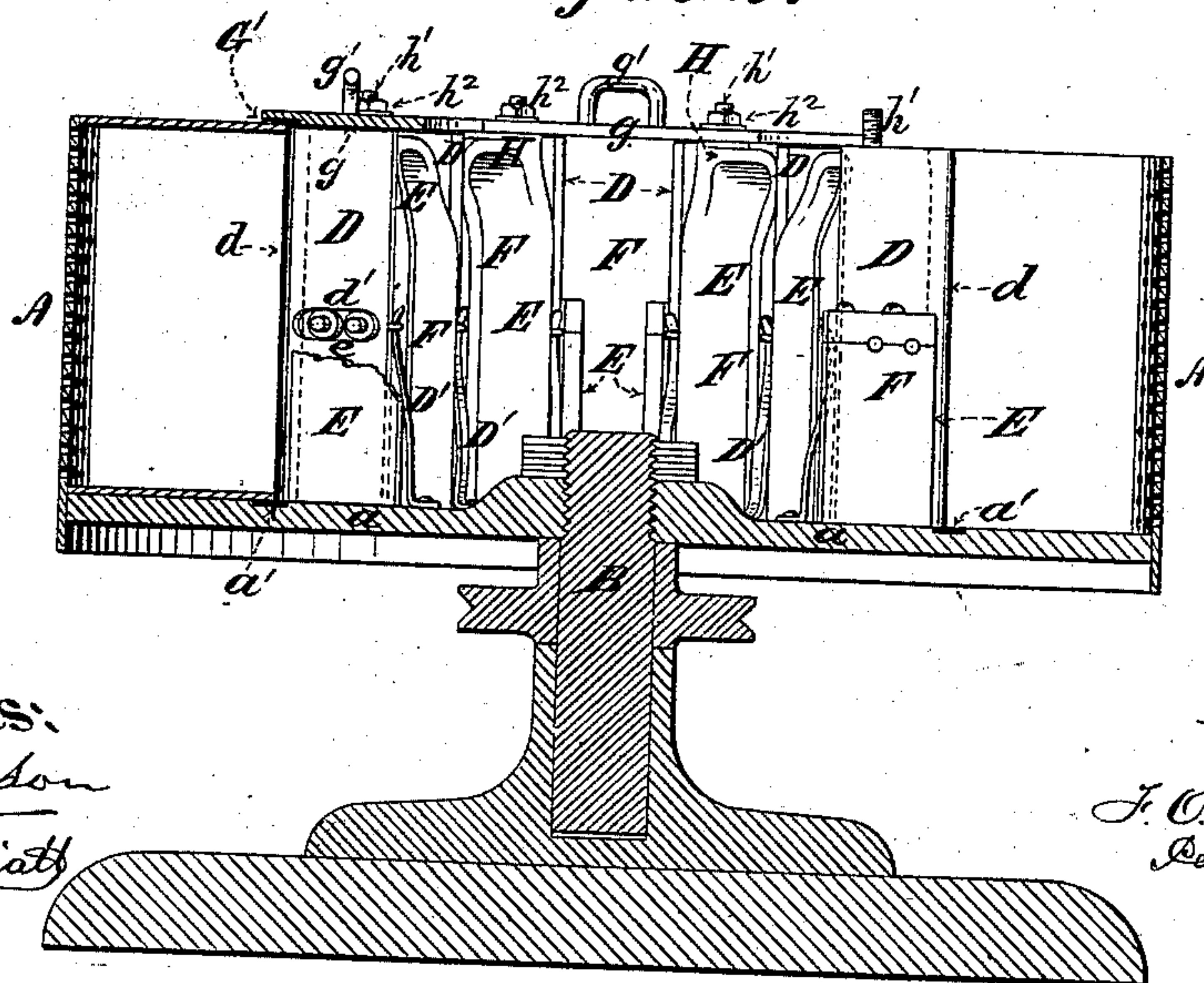


Figure 4.



Figure 2.



Witnesses:

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IMPROVEMENT IN CENTRIFUGAL LIQUORING APPARATUS.

Specification forming part of Letters Patent No. 221,894, dated November 18, 1879; application filed June 24, 1879.

To all whom it may concern:

Be it known that I, FRANZ O. MATTHIESSEN, of Irvington, New York, have invented certain Improvements in Centrifugal Liquoring Apparatus, of which the following is a specification.

My improvements relate to the class of devices used to pack the interstices between the sugar-molds in a centrifugal machine and those parts of the machine with which the sugar-molds are in proximity, for the purpose of preventing the escape, otherwise than through the sugar contained in the molds, of white liquor, which is introduced into a central reservoir or chamber in the machine preparatory to being driven by centrifugal force through the sugar contained in the molds; and my invention consists in providing in the floor of the basket packing-strips of soft rubber, upon which the inner edge of the bottom of each mold rests, and in providing for the inner edge of the top of each mold similar packing-strips, which are affixed to the under side of an annular plate, preferably made up of two or more independently-removable segments, which are supported in horizontal positions on the top of vertical standards affixed to the floor of the basket within the circle of molds. These plates are provided with clamping-screws, by means of which they are pressed firmly down, so that the packing-strips on their under sides bear closely upon the inner edges of the sugar-molds, making tight joints therewith and preventing the escape of white liquor over the tops of the molds. The packing-strips in the floor of the basket, upon which the mold rests, prevent the escape of white liquor under the bottom of the mold. The vertical interstices between the adjacent molds are closed by means of a packing-strip affixed to the outer edge of a sliding plate moving in a radial path between suitable guide-walls affixed to the floor of the basket.

When the machine is rotated the vertical sliding plates are driven outward by centrifugal force, and the packing-strips upon their outer edges are respectively held firmly against the inner vertical edges of the molds. I preferably provide each sliding plate with a spring strong enough to pull it radially inward when it is relieved from the action of centrifugal force by the stoppage of the machine.

The interior of the basket may be left open to form a receiving-chamber for the white liquor, or the usual central reservoir may be erected upon the upper end of the spindle upon which the basket is mounted, and may be provided with spouts projecting downward and outward, for the purpose of conducting the white liquor from the central reservoir into the liquoring-cells formed, respectively, by the several vertical sliding plates and by the bottom of the basket and the annular plate which carries the packing-strips for the upper edges of the molds.

In the accompanying drawings, representing a centrifugal machine containing my improvements, Figure 1 is a top view, showing the annular plate which forms the top of the cells made of four segments, one of which is removed for the purpose of showing the radial sliding plates and the standards upon which the segments are supported. Fig. 2 is a central vertical section through the line *xx* on Fig. 1. Fig. 3 is a view of the under side of one of the segments, showing the packing-strips for the tops of the molds. Fig. 4 is an edge view of the segment.

The drawings represent the ordinary basket A of a centrifugal machine mounted upon the usual vertical spindle B, and containing the usual sugar-molds C, arranged in a circle around the outer portion of the basket.

The floor *a* of the basket is provided with slightly-projecting packing-strips *a'*, upon which the inner edges of the molds respectively rest.

Vertical plates D are each loosely contained between two vertical guide-walls, E E, by means of which each vertical plate is guided so that it moves radially outward when the machine is set in motion, and a packing-strip, *d*, inserted on its outer vertical edge, is thereby compressed against one of the vertical joints between the adjacent side walls of the molds.

If desired, the sliding plates D may be provided with the horizontal slots *d'* for admitting the friction-rollers *e*, having their axes in the vertical guide-walls E; or the axes of the rollers may be pins inserted transversely through the sliding plate, and the rollers may be thus carried on the plates, the guide-walls E being slotted horizontally to provide a horizontal

track for the rollers on either side of the sliding plate.

A spring, D', with which each sliding plate may be provided, tends to pull it radially inward. The strength of this spring, however, is so proportioned that when the basket is rotated the centrifugal force, tending to drive the sliding plate radially outward, preponderates and overcomes the force of the spring.

The spaces F between the guide-walls are the liquoring-cells, and these cells are closed at the top by the removable annular plate G, which is preferably made of four independently-removable segments, *g*.

In several of the cells the guide-walls are carried up and joined at the top to form resting-places H for the segments *g*. Preferably these resting-places are provided with elastic packing *h*, surrounding a vertical bolt, *h'*, which projects upward through one of the slotted holes in the segments *g* to receive the nut *h²*, by means of which the segment is clamped down.

The drawings represent the annular plate G as being composed of four segments, *g g g g*, each of which is provided with a handle, *g'*, by means of which the segment may be lifted, and with two slots, *g²*, which are each parallel with a radial line bisecting the center of the segment.

The resting-places for the segments conform to the shape and position of the slots when the segments are clamped down, and the elastic packings *h*, upon which the segments rest, therefore prevent the escape of liquor through the slots *g²*.

On the under side of each segment, near its outer edge, I provide the packing-strips G', which bear, respectively, upon the upper inner edges of the molds, and prevent the escape of white liquor over the tops of the molds when the segment is clamped down.

In operation, when it is required to remove the molds, the nuts *h²* of one of the segments are unscrewed, and the segment is then lifted out and slid inward, thus clearing its outer edge from the sugar-molds and permitting their removal. When other molds have been introduced in the places of those removed, the segment is returned to its former position and clamped down, and the next segment is removed in the same way, and so on until all the molds have been changed and the segments clamped down into place, when the machine is ready to be put into operation.

White liquor may be poured into the central portion of the basket through the central opening of the annular plate G; or, if desired, the usual central reservoir may be mounted upon the spindle, and the white liquor, being poured into that, may be directed by means of spouts into the several liquoring-cells, from which it will be driven by centrifugal force through the sugar contained in the molds.

It will be observed that the effect of clamping down the segments composing the annular plate G is not only to compress the packing

on the top of the molds, but also the packing-strips inserted in the bottom of the basket, upon which the inner edges of the molds rest.

The radial sliding plates D are so proportioned in height as to move without much friction, and when they are thrust outward the upper end of the packing-strip with which the outer edge of each plate is provided is compressed against the edge of the packing-strip G' on the under side of the segmental plate *g*, and its lower end is compressed against the packing-strip *a'*, inserted in the floor of the basket.

The radial sliding plates may, if desired, be combined with mechanism by means of which their radial movements may be effected positively. Such mechanism is now employed for moving so-called "liquoring-boxes" outward and inward against and away from the molds; but there will usually be no necessity for the employment of such mechanism, as the centrifugal forces generated by the rotation of the machine will be found to drive the partitions outward with force enough to press their packing-strips tightly against the edges of the adjacent vertical sides of the molds.

I claim as my invention in centrifugal liquoring apparatus—

1. A series of sugar-molds concentrically arranged in the basket of a centrifugal machine, the floor of which contains elastic packing-strips, upon which the inner edges of the sugar-molds respectively rest, in combination with an annular plate provided with packing-strips, which bear respectively upon the inner edges of the tops of the sugar-molds, and with clamping devices by means of which the plates are pressed downward, thereby compressing the packing-strips respectively upon the inner edges of the top and bottom of the molds, substantially as and for the purpose described.

2. A series of sugar-molds concentrically arranged in the basket of a centrifugal machine, in combination with sliding vertical plates provided upon their outer edges with packing-strips, and contained between stationary guides, which direct the movements of the sliding plates in radial paths in line respectively with the several interstices between the sides of adjacent molds, substantially as shown and described.

3. An annular plate forming the tops of the liquoring-cells, composed of independently-removable segments, each provided upon its under outer edge with elastic packing-strips, and provided with clamping devices, by the operation of which the packing-strips can be firmly compressed upon the tops of the molds, substantially as shown and described.

4. The segments *g*, provided with the slots *g'*, in combination with the bolts *h'* and nuts *h²*, substantially as and for the purpose set forth.

F. O. MATTHIESSEN.

Witnesses:

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