No. 712,391. Patented Oct. 28, 1902.

J. R. LANGLOIS.

APPARATUS FOR MOLDING SUGAR.

(Application filed Nov. 24, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

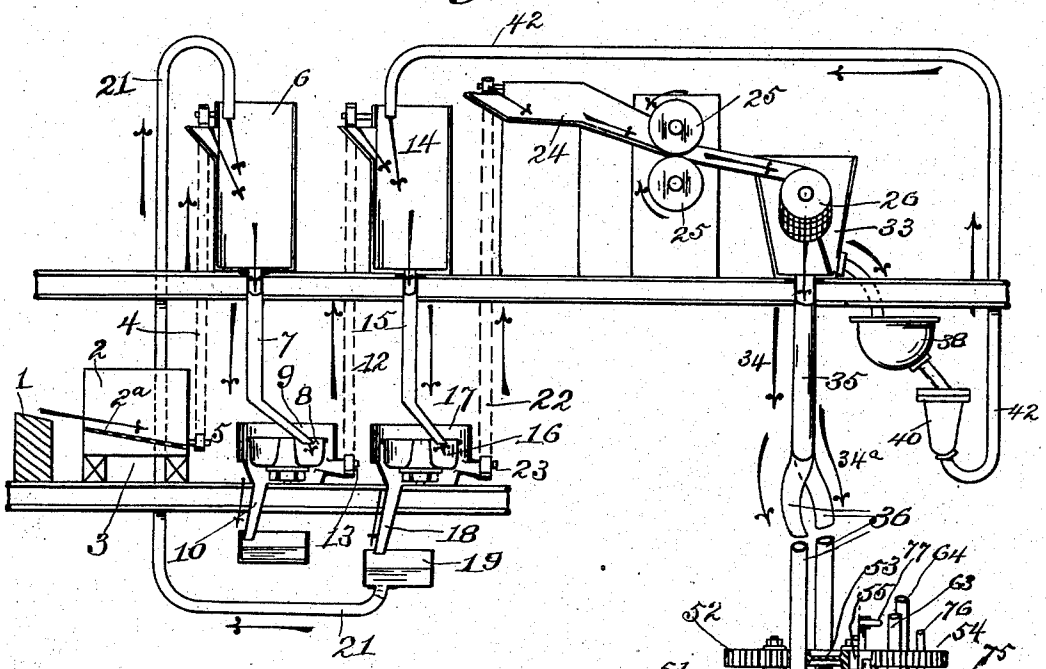
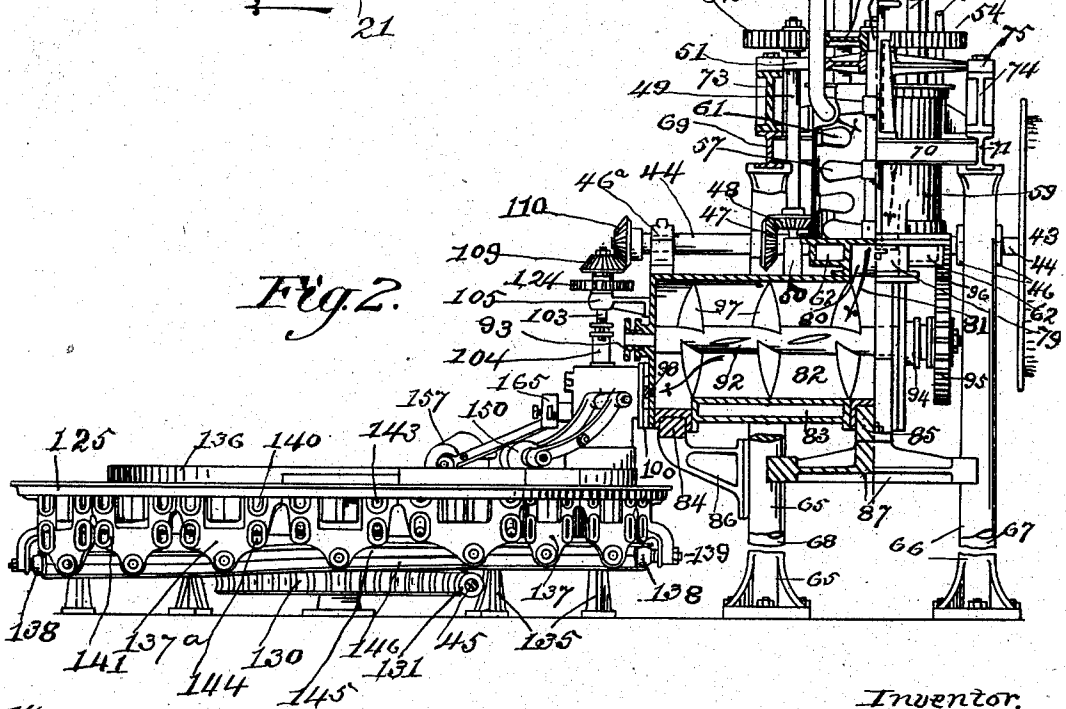


Fig. 2.



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Fig. 3.

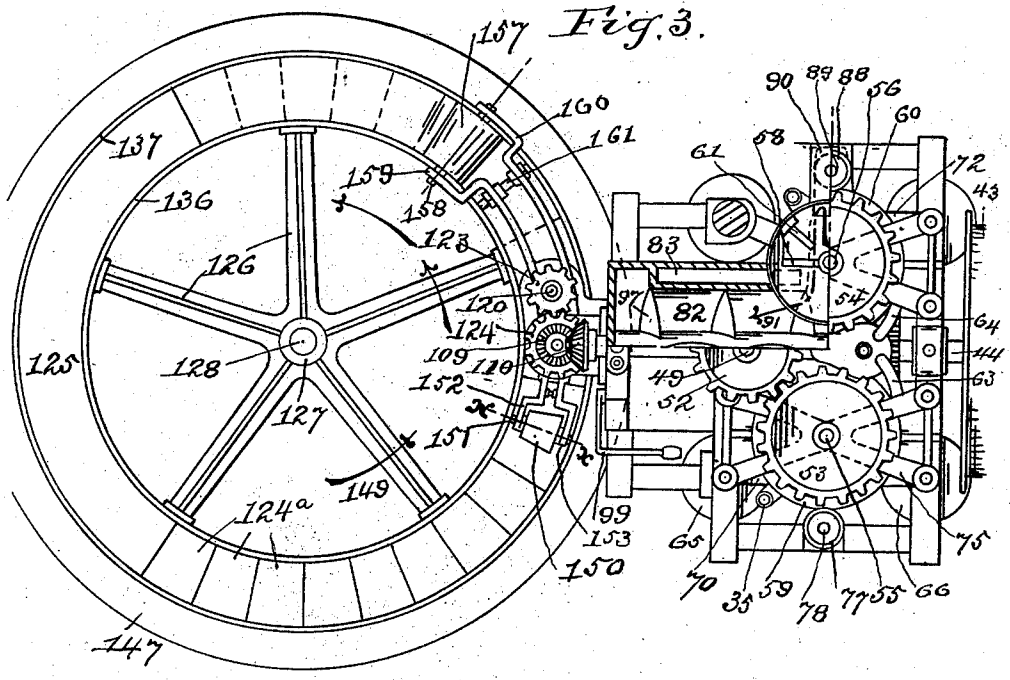


Fig. 5.

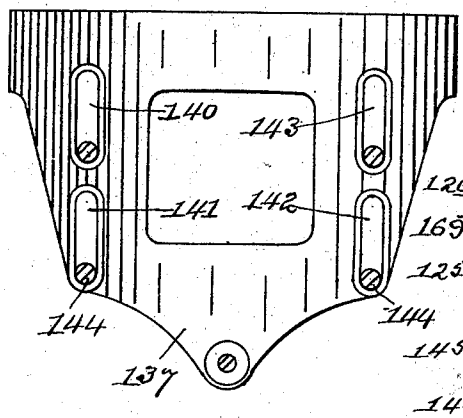
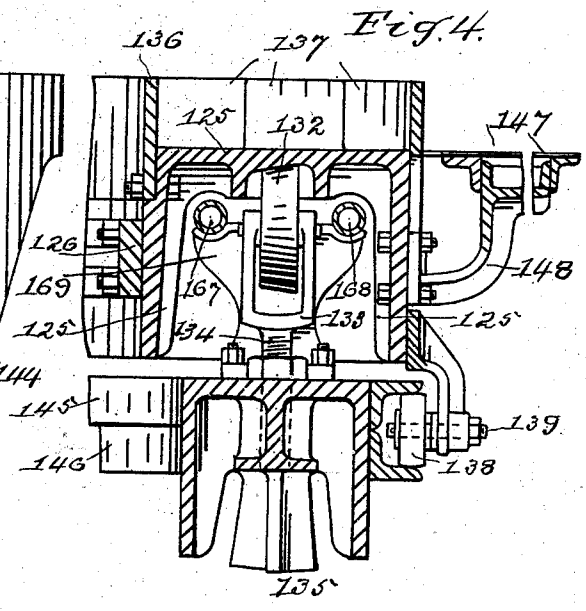


Fig. 4.



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Fig. 6.

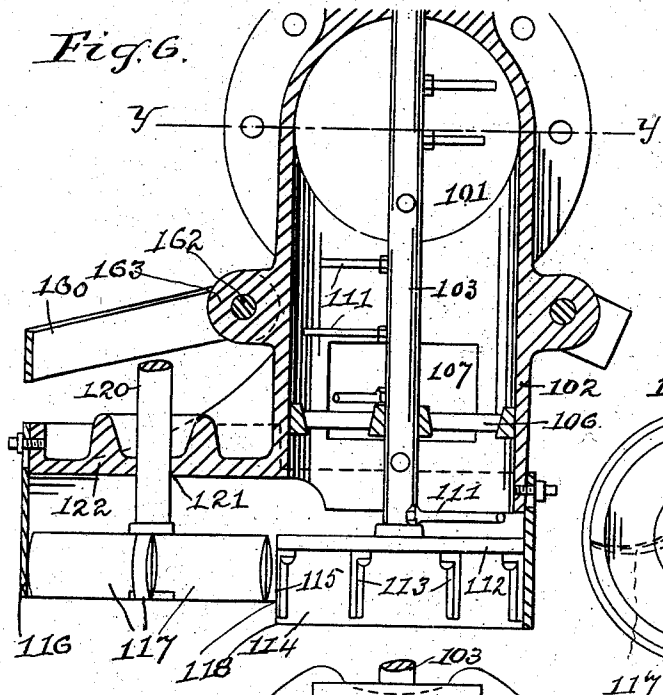


Fig. 7.

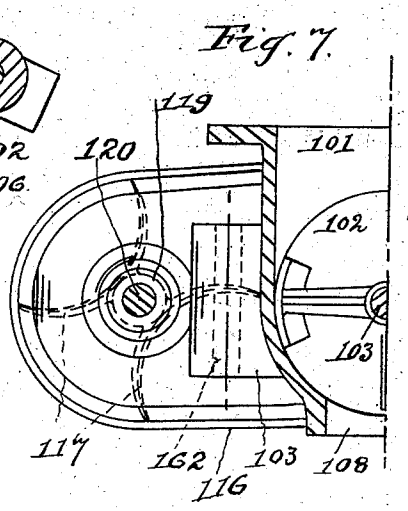
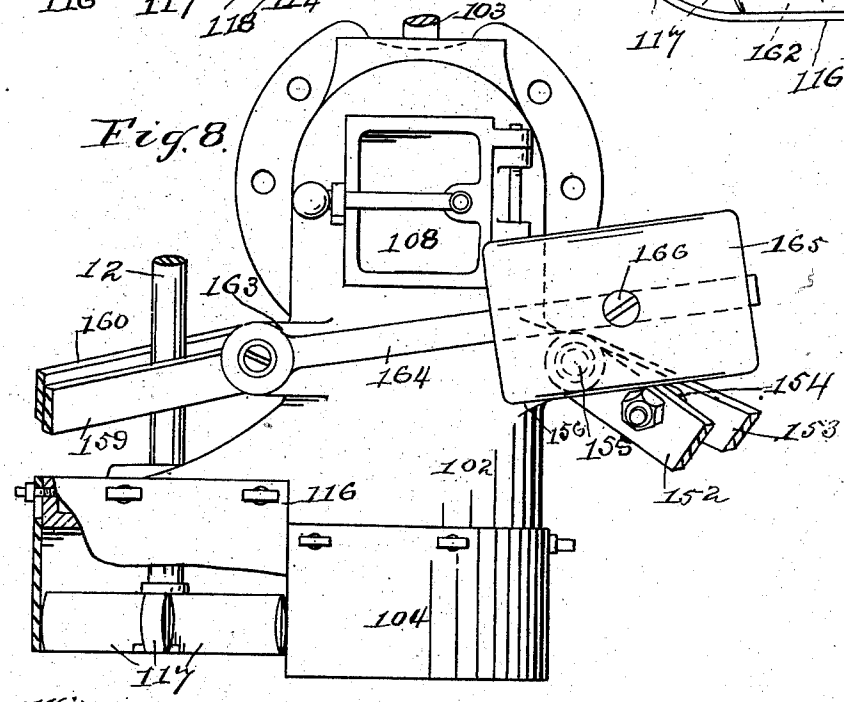


Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH ROBIN LANGLOIS, OF PARIS, FRANCE.

APPARATUS FOR MOLDING SUGAR.

SPECIFICATION forming part of Letters Patent No. 712,391, dated October 28, 1902.

Application filed November 24, 1899. Serial No. 738,211. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH ROBIN LANGLOIS, a citizen of the French Republic, residing at Paris, France, have invented certain new and useful Improvements in Apparatus for Molding Sugar, of which the following is a specification.

The object of this invention is to provide for quickly refining beet-root, cane, or other sugars by taking them in the raw and crystallized state and afterward washing, drying, and grinding for the purpose of forming the same into a pasty mass without compression and to provide a molding-machine for the treatment of the pasty mass.

In the accompanying drawings, forming part of this application, Figure 1 is a sectional elevation showing the apparatus for preparing the sugar for the molding-machine. Fig. 2 is an elevation of the molding-machine. Fig. 3 is a top view and part section of the molding-machine. Fig. 4 is a detail section on the line x x, Fig. 3. Fig. 5 is a detailed elevation of one of ten small plate-lifts. Fig. 6 is a detail vertical view of the distributer, partly broken away. Fig. 7 is a detail plan and sectional view of part of the feed cylinder or distributer. Fig. 8 is a detail elevation of the feed cylinder or distributer, partly broken away.

The same numeral references denote the same parts throughout the several views of the drawings.

The apparatus for refining or preparing the sugar for molding consists of a receptacle 2 adjacent to a quay 1, from which the sugar is unloaded into said receptacle and which is supported by a base 3; an elevator 4 to carry the sugar to a washing-tank 6, having a drip-pipe 7 discharging into a centrifugal 8, contained in a vessel 9, whence the drippings are discharged through a spout 10 into a vessel 11 for removal therefrom; an elevator 12 to carry the sugar from the vessel 9 to a second washing-tank 14, which has a drip-pipe 15 leading to a centrifugal 16 in a vessel 17, provided with a drip-spout 18, discharging into a receiver 19, whence the drippings are conveyed to the washer 6 by a pipe 21. An elevator 22 conducts the sugar from the vessel 17 to a drying-table 24, having crushing-rollers 25, and terminating at a cylindrical sieve 26, which is operated in a hopper 33 for bolting the sugar. A pipe 35 connects the hopper 33 with branch pipes 36 to carry the sugar which falls from the said sieve in a doughy or pasty mass to the molding-machine, hereinafter to be described. The impalpable sugar-powder is discharged from the bolting-hopper 33 into a boiler 38, thence to a filter 40, and the sugar liquid is carried from the filter to the washing-tank 14 by a pipe 42 for retreatment.

Referring to the machine for further treating or molding the sugar supplied from the above-described apparatus, a horizontal shaft 44, journaled in bearings 46 and 46^a, has a driving-pulley 43, and it is provided with a pinion 47, which meshes with a pinion 48 on the lower end of a vertical shaft 49, having bearings 50 and 51 and having a pinion 52 working in and between gears 53 and 54 on vertical shafts 55 and 56, respectively. The shafts 55 and 56 are provided with vanes 57, working through vertically-disposed mixing-cylinders 59 and 60, respectively, having vanes 61 and a double foundation forming a hot-water chamber 62, having supply-pipes 63 and 64. A horizontal finishing-cylinder 82 is located partly under the mixing-cylinders 59 and 60 and is provided with a shaft 92, having blades or knives 97 and a gear 95 meshing with a pinion 96 on the shaft 44. The projecting end of the cylinder 82 communicates with distributing-cylinder 102 by means of an opening 101, controlled by a slide 100, operated by a lever 99. The cylinder 102 is provided with doors 107 and 108 and a cross-bar 106, in which a shaft 103, having vanes 111, is journaled. The lower end of the shaft 103 has a disk 112, provided with depending arms 113, and said shaft has a pinion 109, in mesh with a pinion 110 on the shaft 44, and a gear 124, meshing with a gear 123 on a shaft 120, having distributer-arms 117. Supporting-pillars 65, 66, 67, 84, and 85, having brackets 86 and cross-beams 69, 70, 71, 75, and 87, constitute the principal parts of the frame structure of the machine.

The molding-table 125 has a series of removable copper plates 124^a, positioned in a trough formed upon the top surface of the table by a table-rim 136 and a series of vertically-slidable segments 137, held to the periphery of

the table by bolts 144, extending through the segment-slots 140, 141, 142, and 143. Each segment has a caster or wheel 138, operated between the rails of an inclined circular track 146, which is constructed upon supports 135, and the table 125 is revolved under the cylinder 102 by a worm-gear 130, operated by a shaft 145. Pivoted to ears 163 of the cylinder 102 are arms 152, 153, 159, and 160, the latter pair carrying a glazing or finishing roller 157 and the former pair carrying a presser-roller 150, controlled by an adjustable weight 165, connected to the arms 159 and 160 by a bar 164. These rollers work over the plates 124ª, with the discharge from the cylinder 102 between the rollers and the plates during the revolution of the table. The table 125 travels on conical rollers 132, journaled in U-shaped brackets 133, having a post 134 in the supports 135. The brackets 133 have wings 169, which hold circulating steam-pipes 167 and 168 under the table to heat the latter. An annular shell 147 is supported around the table 125 by brackets 148 for convenience in handling material from the table.

The operation is as follows: I take a sugar containing some parts of molasses and mineral salts and pass it through the refining apparatus shown in Fig. 1, which washes and frees it from the hair of the sugar-bags and from all extraneous bodies and produces a clear, moist, pasty mass, motion being imparted to the molding-machine through the pulley 43 and shaft 45. The pasty mass is carried by the pipe 35 to the mixing-cylinders 59 and 60, and after a sufficient mixing therein the mass is discharged into a kneading or finishing cylinder 82, whence the mass is discharged into the distributing-cylinder 102 and is worked by shaft 103 and its arms and the shaft 120 and its arms onto the plates 124ª of the table 125, where said mass is first pressed by the roller 150 and then by the glazing-roller 157, which forms the mass into a flat circular shape, the thickness of which is regulated by the difference in height between the points 118. (Shown in Fig. 6.) The revolution of the table on the inclined track causes the segments to slide vertically and brings the top edge of the segments flush with the top surface of the table at certain points of its revolution, so that after the doughy or pasty mass is cut the size of each of the plates 124ª the latter, with such mass thereon, may be removed or slid off onto the annular shelf 147 and other like plates substituted.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for mixing and molding sugar, the combination, of the vertical mixing-cylinders having a hot-water chamber at their base, the horizontal finishing-cylinder in communication with the mixing-cylinders, and having a hot-water chamber, and the distributing-cylinder receiving from the finishing-cylinder and discharging upon a molding-table, with the table, rollers pivotally hung from the distributing-cylinder and working upon the table, and means for revolving the said table.

2. In a machine for treating sugar, the combination of the cylinders having mixers, the finishing-cylinder having a shaft therein provided with blades, the vertical cylinder to feed the sugar from the mixing-cylinders, and the chain of gears and pinions for simultaneously operating the mixers, feeder and blade-shaft.

3. The combination, with the molding-table, the conical rollers upon which the table is revolved, of the segments movably connected to the periphery of the table, an inclined track, casters depending from the segments and working on the track, and means to revolve the table.

4. The combination, of the grinding-table having a rim, of the segments movably secured to and projecting above the periphery of the table so as to form a trough between said rim and the segments, removable molding-plates fitting in said trough, casters depending from the segments, an inclined track for the casters, and means to revolve the table.

5. The combination, with the vertical feed-cylinder, of the arms pivoted to one side of the cylinder, a presser-roller journaled in the arms, counterpoised arms pivoted to the other side of the cylinder, and a glazing-roller journaled in these arms.

6. The combination, with a suitable base, an inclined track upon the base, and rollers supported by the base, of the table, means for revolving the table on the rollers, the segments slidably connected to the periphery of the table, and the casters depending from the segments and working on the said track to slide the segments.

7. The combination with the circular table having a rim, and means for revolving the table, of a circular inclined track under the table, the segments slidably connected to the table, and the casters connected to the segments and working on the track to slide the segments so that certain of the latter with the said rim will form a table-trough and the others of the segments will drop away from the surface of the table according to the revolution of the table.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

JOSEPH ROBIN LANGLOIS.

Witnesses:

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