2 Sheets—Sheet 1.

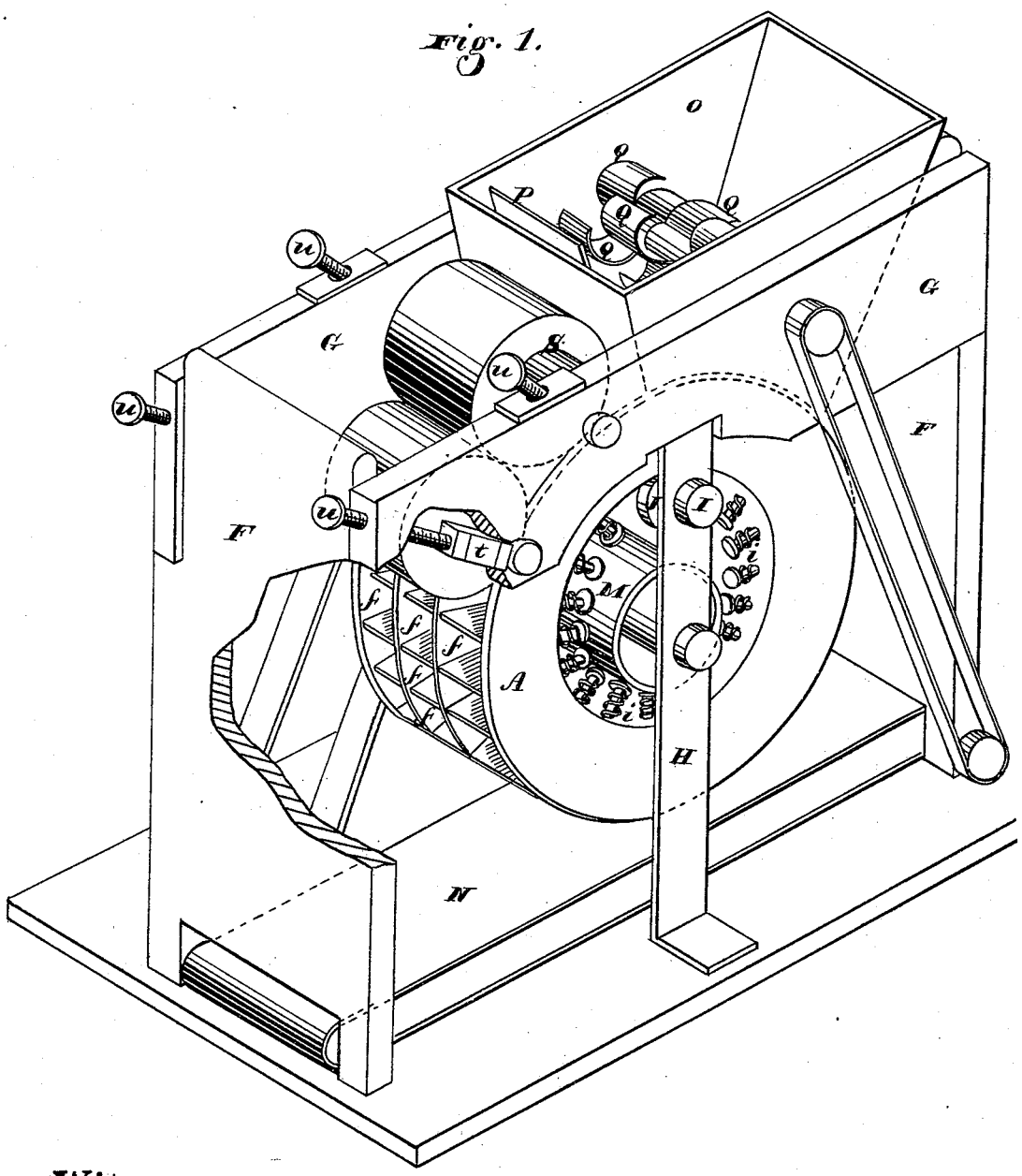
W. WADSWORTH, dec'd.

THIRSY L. WADSWORTH, Executrix.

MACHINES FOR COMPACTING LOOSE GRANULAR SUGAR INTO CUBES.

No. 181,883. Patented Sept. 5, 1876.

Fig. 1.



Witnesses

Geo. H. Strong

J. L. Boone

Inventor

Wadsworth Wadsworth Dec'd

by Dewey & Co

Atty's for Thirsy L. Wadsworth

Administratrix of the Estate of

said Wadsworth Wadsworth Dec'd

2 Sheets—Sheet 2.

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THIRSY L. WADSWORTH, Executrix.

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Fig. 2.

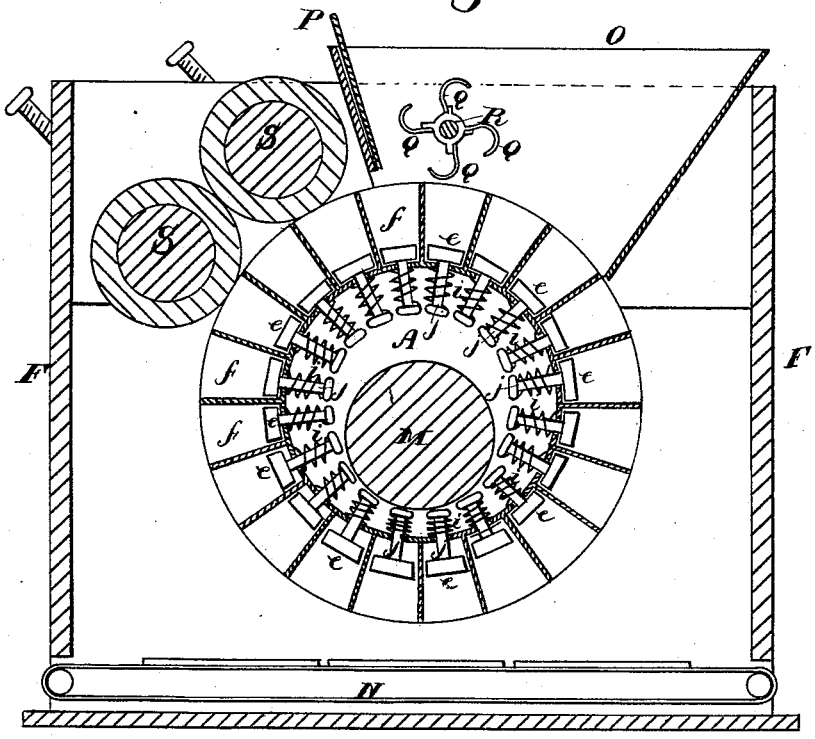
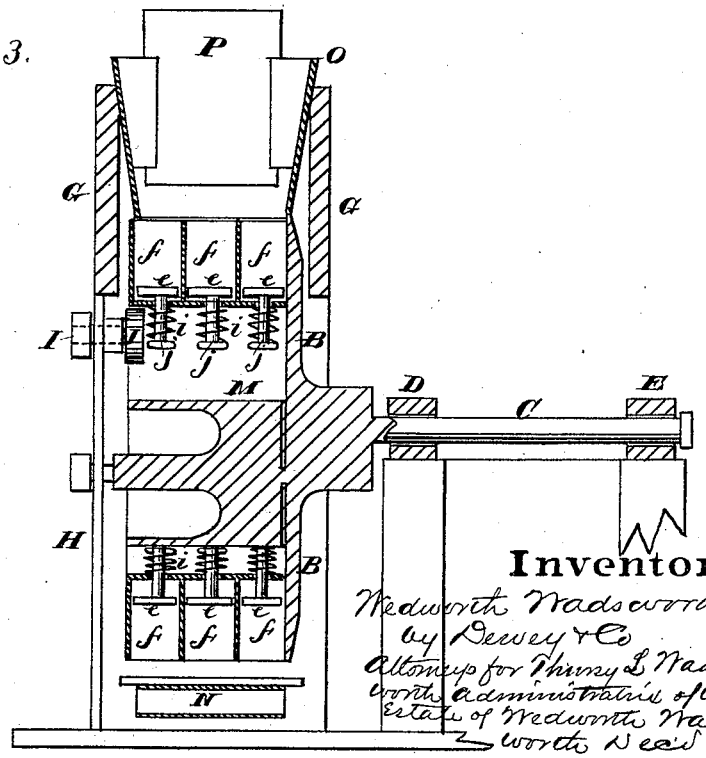


Fig. 3.



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Wadsworth Wadsworth by Dewey & Co Attorneys for Thirsy L. Wadsworth administratrix of the Estate of Wadsworth Wadsworth Dec'd

UNITED STATES PATENT OFFICE.

THIRSY L. WADSWORTH, OF SACRAMENTO, CALIFORNIA, EXECUTRIX OF WEDWORTH WADSWORTH, DECEASED.

IMPROVEMENT IN MACHINES FOR COMPACTING LOOSE GRANULAR SUGAR INTO CUBES.

Specification forming part of Letters Patent No. **181,883**, dated September 5, 1876; application filed June 2, 1876.

To all whom it may concern:

Be it known that WEDWORTH WADSWORTH, deceased, late of Sacramento, California, did invent certain new and useful Improvements in Machines for Compacting Loose Granular Sugar into Cubes; now, therefore, I, THIRSY L. WADSWORTH, of Sacramento, California, executrix of the estate of WEDWORTH WADSWORTH, deceased, do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawing.

The invention of said WEDWORTH WADSWORTH, deceased, relates to certain improvements in that class of machines for converting loose granular sugar into cubes and other solid form in which the molds into which the sugar is compacted are formed in the face or rim of a rotating drum, cylinder, or wheel.

The improvements of said WEDWORTH WADSWORTH consist, first, in an improved device for filling the molds with sugar from the hopper, so that the action of the machine will be positive; secondly, in the combination of one or more pressing-rollers with said rotating wheel or cylinder mold, said rollers being so applied that they will compress or condense the loose sugar into the molds; and, thirdly, in certain improvements in the method of mounting and operating the wheel or cylinder mold, all of which are fully described in the following specification, and illustrated in the accompanying drawing, in which—

Figure 1, Sheet 1, is a perspective view of this machine. Fig. 2, Sheet 2, is a longitudinal vertical section. Fig. 3, Sheet 2, is a transverse vertical section.

A is a drum or cylinder, one end of which is closed by a head or solid disk, B, while the opposite end is open. The horizontal shaft C, which supports this drum, extends outward from the center of the head or disk B, and is supported in boxes or standards D E, as represented. The outer face or rim of this wheel is formed into cells or cavities *f f* of the desired shape to form molds, which open outward, a piston, *e*, forming the bottom of each cell or cavity, as hereinafter described. Over this wheel or drum is constructed a frame, consisting of the upright end pieces F F, the upper ends of which are connected by the horizontal cross-pieces G G, one of which passes across on each side of the upper edge of the wheel. A strong upright, H, passes vertically across the open end of the cylinder, its lower end being secured to the base upon which the machine is constructed, while its upper end is secured to the middle of the cross-piece G. A short fixed shaft, I, is secured to this upright, so that it will project inside of the cylinder just below its rim, and a friction roller, J, is placed upon this shaft, so as to bear against the under side of the rim as the wheel or cylinder rotates, and receive the downward pressure, which is exerted upon the outer rim of the wheel by the pressure-rollers, to be hereinafter described.

As before stated, a piston forms the bottom of each cavity or cell. Each of these pistons has a rod or spindle, *j*, which passes through a hole in the inside shell of the cylinder, and projects radially a short distance inside of the shell toward its center, thus forming as many radial spindles as there are pistons or cells. Each spindle has a button-shaped head on its inner end, and a spiral spring, *i*, is coiled around the stem between the shell and head, so that the pressure of the spring will force the spindles inward toward the cylinder, and keep the pistons in the bottoms of the cells. A roller, M, is mounted inside of the molding-cylinder on a horizontal shaft, which is secured to the upright below the center of the cylinder, so that the roller, when mounted upon this shaft, will be eccentric to the interior of the cylinder. This roller is large enough to depress the spindles of the pistons as they are passed under it by the rotation of the cylinder, and thus cause the pistons to force the condensed blocks of sugar from the molds, so that they will drop into trays which are carried upon an endless belt, N, below the cylinder.

Above the cylinder, and at one side of a vertical line through its center, is mounted a hopper, O, between the horizontal cross-timbers G G, into which the loose granular sugar is deposited just as it comes from the centrifugal machine. The lower side of this hopper fits closely to the surface of the molds, while

the opposite side is provided with a sliding gate, P, which can be adjusted so as to provide any desired size of opening for regulating the depth of sugar to be deposited in and upon the molds. Inside of this hopper, near its bottom, is mounted a series of curved plates, Q Q, upon a horizontal shaft, R, which passes through the hopper, and is driven by a belt-connection with the power that drives the machine. These curved plates are placed spirally around the shaft, and are rotated backward, so that their convex sides will be drawn over the molds or cells as the wheel rotates. These plates, which are called the "feeding-plates," keep the sugar in the hopper loose by their stirring action, and as their convex sides pass over the molds they press the sugar into the cells, and insure their being filled, thus rendering the action of the machine positive, and preventing the sugar from lodging or packing in the hopper.

On the opposite side of a vertical line drawn through the center of the cylinder are mounted the pressing-rollers S S. Ordinarily a single pressing-roller will be employed; but two, or even more, can be used. These rollers are made of india-rubber, or other yielding elastic substance, and mounted upon a transverse shaft, which bears in the cross-timbers G G. The bearings in which the journals of these shafts rest are slotted, and a spring, *t*, which may be made of india-rubber or steel, is placed back of the journals. A set-screw, *u*, serves to regulate the pressure of these rollers by compressing the springs *t*.

It will thus be seen that, as the cylinder is rotated, the molds in its face or rim will be passed under the hopper, and be filled with the loose granular sugar by the curved pressing and feeding plates. The gate P will be sufficiently raised to allow a layer of sugar of a given thickness to lie upon the filled molds and pass out of the hopper. The molds then pass under the pressing-rollers S S consecutively, so that the superposed layer of sugar is pressed into and condensed in the molds or cells, thus producing a compact body in each mold. The further rotation of the cylinder brings the piston-rods, which actuate the pistons in the bottom of the molds, under the roller M, so that the piston is forced outward, and the block or cube of sugar is forced out of the molds, and caused to drop into the trays on the endless belt N. After the piston-rods pass the roller M, (the molds having been relieved of their contents,) the spiral springs *i* again restore the pistons to their original position in the bottom of the mold. The operation is, therefore, continuous. The cylinder deposits the sugar in the trays on the endless belt, while the endless belt moves continuously, and carries the trays to a point where they can be removed by the workman.

I am aware that molds or cells have been heretofore formed in the face or rim of a cylinder, and the sugar condensed into them; also, that pistons have been made to automatically force the pressed cubes or blocks out of the molds, so as to deposit them upon an endless belt; but the arrangement of the parts in this machine is different from that heretofore used. The action of the machine is rendered certain and positive, and a pressing device provided which is greatly superior to the platens heretofore used with that class of machines.

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

1. A circular rotating mold, A, supported as above described, in combination with the supporting friction-roller J, which is arranged to bear against the inner portion of the cylinder, and receive the downward pressure, substantially as above specified.

2. The hopper O, having the spirally-arranged broad plates or blades Q Q, mounted upon a transverse shaft, R, inside of it, near its bottom, substantially as and for the purposes described.

3. The hopper O, having the sliding gate P at one side, and provided with curved pressing and filling plates Q Q, arranged to be rotated at or near its bottom, in combination with the cylindrical rotating mold A, substantially as and for the purposes described.

In witness whereof I have hereunto set my hand.

THIRSY L. WADSWORTH,
Executrix of the estate of
Wedworth Wadsworth, deceased.

Witnesses:
A. J. WETZLAR,
F. FRIEDRICH.