

A. F. W. PARTZ.

Apparatus for Compacting Granulated Sugar into Blocks.

No. 133,884.

Patented Dec. 10, 1872.

Scale: 6 18 inches.

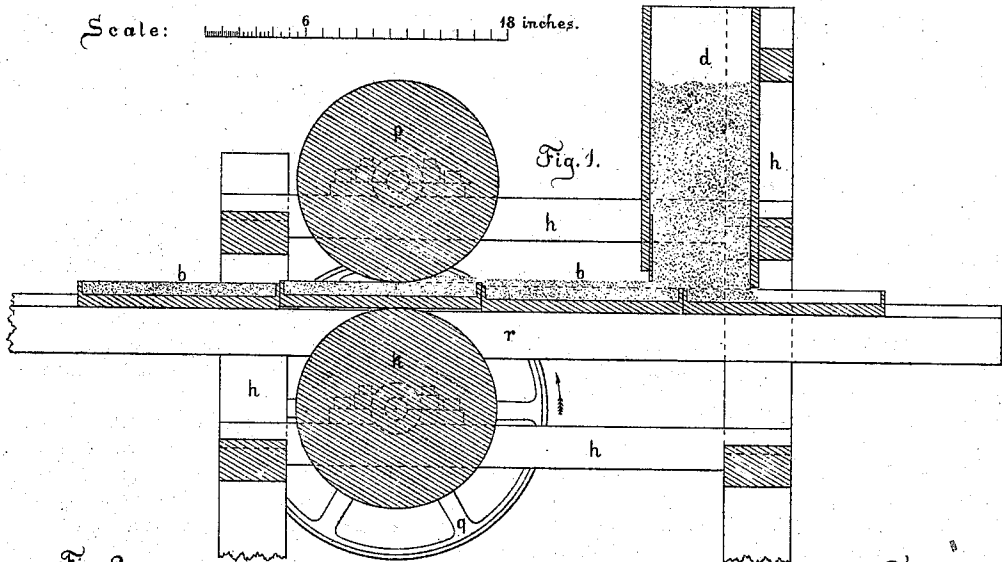


Fig. 1.

Fig. 2.

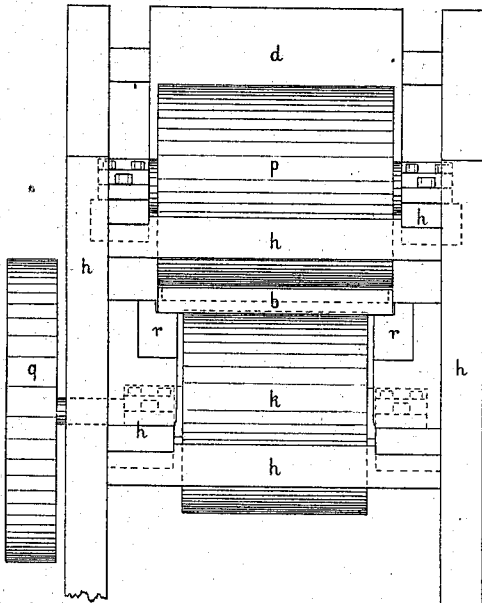
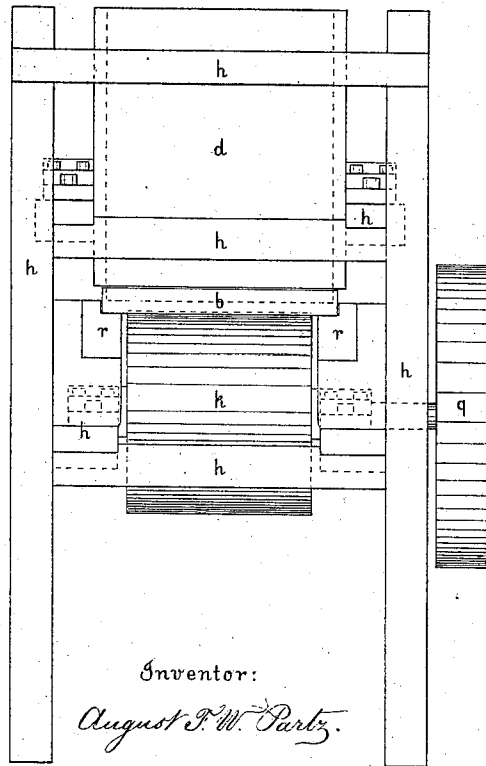


Fig. 3.



Witnesses:

Frank B. Rodolph.
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Inventor:

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UNITED STATES PATENT OFFICE.

AUGUST F. W. PARTZ, OF OAKLAND, CALIFORNIA.

IMPROVEMENT IN APPARATUS FOR COMPACTING GRANULAR SUGAR INTO BLOCKS.

Specification forming part of Letters Patent No. 133,884, dated December 10, 1872.

To all whom it may concern:

Be it known that I, AUGUST F. W. PARTZ, of Oakland, in the county of Alameda and State of California, have invented an Improved Machine for Compacting Granular Sugar, of which the following is a specification:

My invention relates to a mechanical device for depositing and compressing loose granular sugar in molds. It mainly consists in the combination of a bottomless filling-box with a horizontal pressing cylinder or roller, and rails or tracks beneath them, all being so arranged upon a frame that when trays or other shallow molds are placed, one against another, upon the rails and passed under the bottomless box, which is meanwhile supplied with moist granular sugar, and thence under the roller, a layer of sugar will be deposited upon them from the box and then be compressed by the turning roller. To cause the compression of the sugar to be effected by power transmitted from an engine, a second horizontal cylinder or roller, which can be revolved by means of a pulley or cog-wheel attached to it, is placed directly below the one already mentioned, just far enough from it to allow the molds to pass between, and so that its periphery slightly projects above the plane of the rails. Thus, by the revolution of this roller, the molds charged with sugar, being caught between it and the upper one and slightly lifted from the rails, are made to move along while the sugar is being compacted. The device above briefly described, so far as concerns the employment of rollers, is designed to render the compacting of granular sugar more expeditious and economic than it is when done by the use of a common press. If a layer of loose moist sugar is confined between two flat surfaces considerable power is required for its compression, and this is in great measure owing to the fact that the air contained in the interstices between the crystals has but little chance to escape, and has therefore mostly to be condensed in proportion as the bulk of the sugar is diminished. In producing the pressure by means of a roller far less power is needed, partly because the whole of it is temporarily exerted but upon a small area, and partly because the air can more easily escape; the machinery employed may consequently be of lighter build. A rotary motion

in this case, while it necessitates a less complex mechanism than a reciprocal one, also admits of a more expedite operation.

In the following full and exact description of my invention reference is being had to the accompanying drawing, of which Figure 1 is a vertical longitudinal section, and Figs. 2 and 3 are end elevations of a machine embodying my invention.

h h is a strong wooden frame, which may also be made of iron. *r r* are rails or tracks, and *b b* shallow boxes or trays, constituting molds that slide upon the rails by which they are laterally guided. *p* is a cylinder or roller made of hard wood or of iron and fastened upon a shaft that rests in bearings, in which it has a slight up and down play. *k* is another cylinder or roller made and supported like *p*, being of the same diameter, but of less length, and fixed upon a shaft which lies snug in its bearings, and is elongated on one side for having a driving-pulley, *g*, keyed upon it. The relative position of both rollers is such that when one of the molds, *b*, is shoved between them upon the rails *r*, it is lifted by the lower one about a sixteenth of an inch from the rails, while the periphery of the upper one is in contact with or close to the raised sides or rims of the mold. *d* is a square wooden box fastened to the frame *h*. Having no fixed bottom, it is successively supplied with a temporary one by the molds *b* as they are passed under it upon the rails, its sides reaching down so as almost to touch the rims of the molds, except the side facing the roller *p*, which is about half the depth of the molds shorter, and the lower part of which is made of sheet metal, because it has to serve as a "strike," leveling the sugar deposited upon the molds, and a thin metallic edge is better suited for that purpose than the edge of a board.

The operation is as follows: The roller *k* having been set in motion by power conveyed by a belt to the pulley *g*, making a few revolutions per minute in the direction indicated by an arrow, a workman, standing at that end of the machine which is shown in Fig. 3, places the molds *b* (of which there is a sufficient number to insure a continuous operation) upon the rails *r* and shoves them, one close after another, under the box *d*, while the same is continually supplied with moist granular sugar.

This may conveniently be done by letting the sugar shoot into it from an upper floor through a tube made of wood, sheet metal, or some suitable flexible material, the latter being preferable, as in cases of clogging a free passage is readily restored by a stroke against the tube. In passing under the box *d* the molds have a layer of sugar deposited upon them, the thickness of which is regulated by the lower edge of the box next to the roller *p*, so that it rises about one-half the depth of the molds above their rims. Shoved along upon the rails, the molds charged with sugar are caught, one by one, between the rollers *p* and *k*, and as, by the rotation of the latter, (while the former turns by friction,) they are forced through between them, the sugar is compacted to about two-thirds of its former bulk. Being pushed onward after leaving the rollers, the molds are taken off the rails and placed on racks for the sugar to dry and harden.

The molds used in connection with the machine herein presented need not be mere shallow boxes or trays, but may also be such compound molds for the shaping of granular sugar into cubes or bars as are described in two patents recently granted to me. In employing molds of this kind the frame of the machine only needs to be made wide enough to allow

the handles projecting from them to extend over one of the rails and to pass outside of the filling-box and beyond the corresponding end of the upper roller, which latter may advantageously be covered with sheet India rubber.

It is apparent that for the roller *k* some device may be substituted by which the molds can forcibly be passed under the roller *p* without being lifted from the rails. A mechanism on this principle I have employed with good effect, but the friction incident to an arrangement of that kind renders it less practicable than the plan herein set forth.

If it should be desired to be able to vary at will the amount of sugar to be deposited upon the molds, the piece of sheet metal forming the lower part of the side of the box *d* facing the roller *p* may be replaced by an adjustable sheet of the same material.

I claim as my invention—

The combination of the bottomless filling-box *d* with the pressing-roller *p*, the tracks *r*, and the molds *b*, substantially as and for the purpose herein specified.

AUGUST F. W. PARTZ.

Witnesses:

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