4 Sheets—Sheet 1.

A. de la MONTAGNIE.

PRESSES FOR MOLDING SUGAR INTO CUBES.

No. 181,920. Patented Sept. 5, 1876.

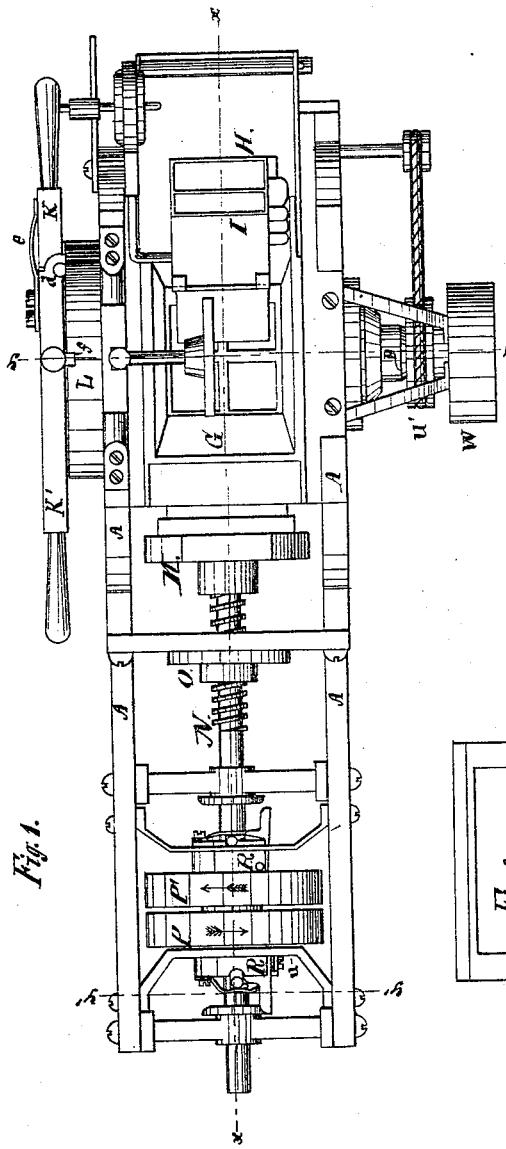

Fig. 1.

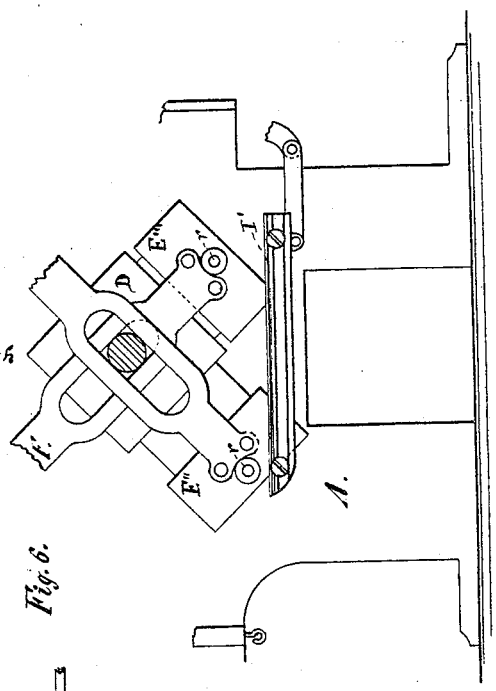

Fig. 6.

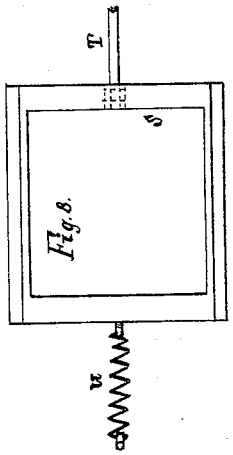

Fig. 8.

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A. de la MONTAGNIE.

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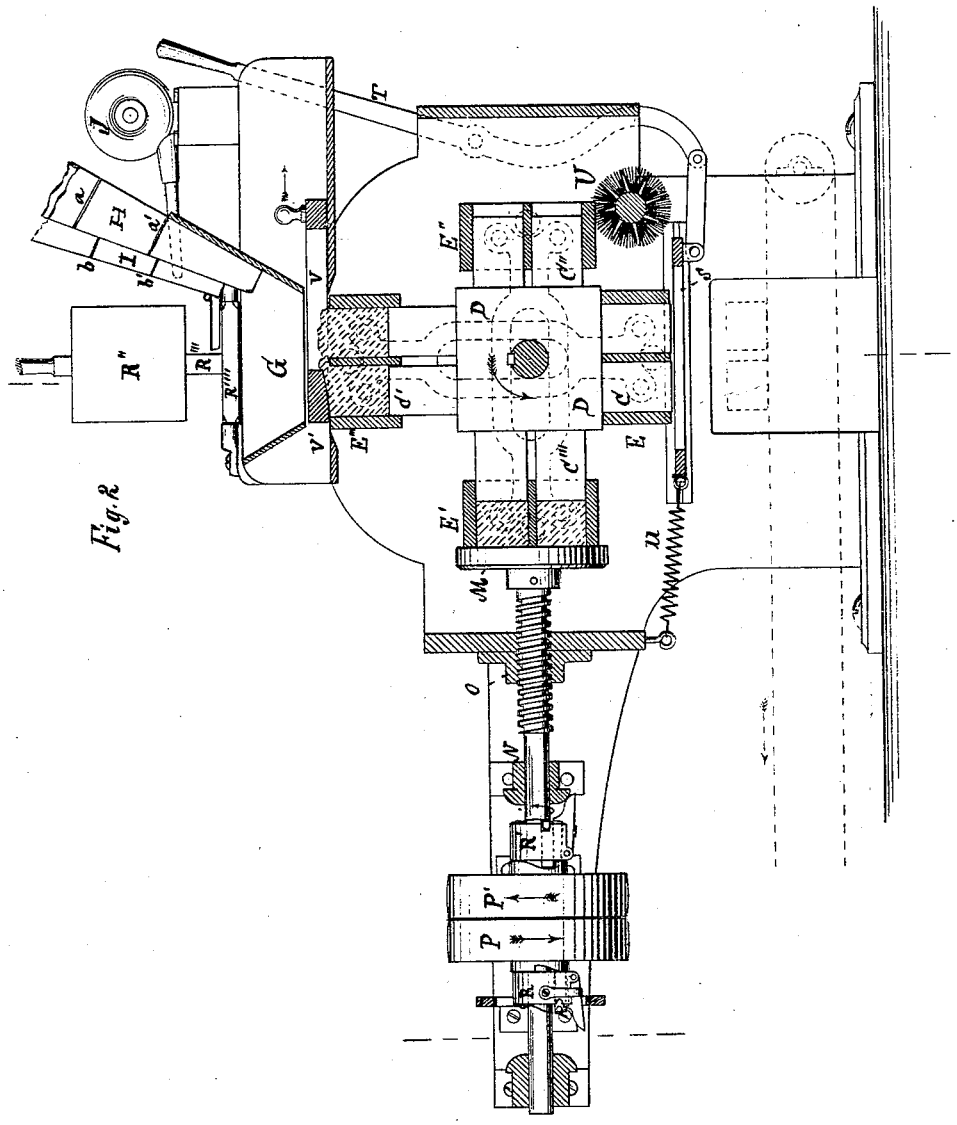

Fig. 2.

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4 Sheets—Sheet 3.

A. de la MONTAGNIE.

PRESSES FOR MOLDING SUGAR INTO CUBES.

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Fig. 3.

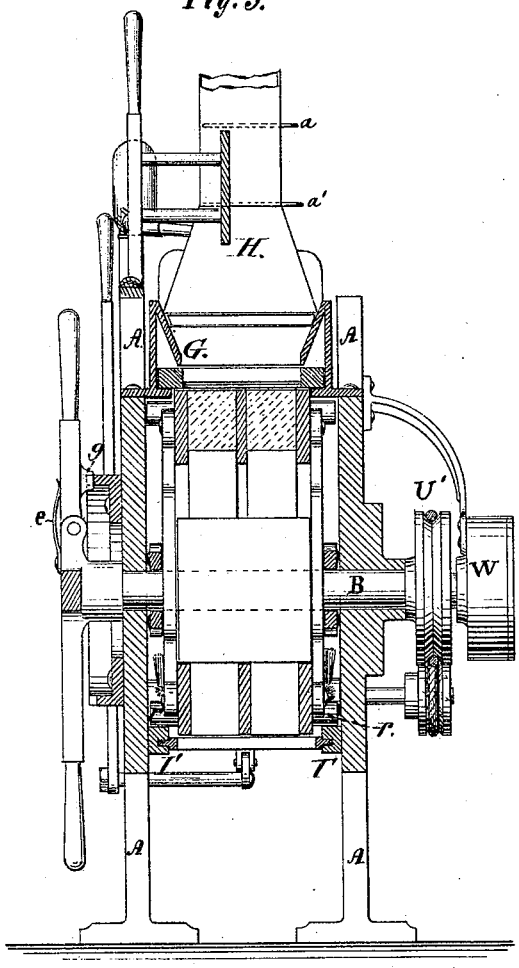
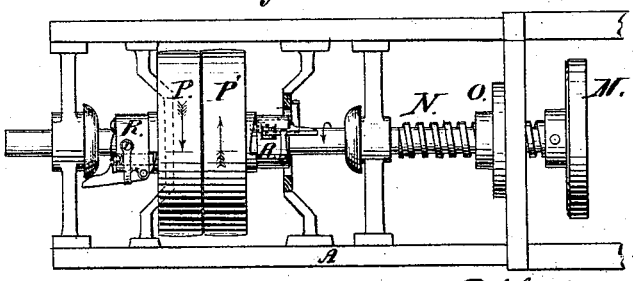


Fig. 3.



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A. de la MONTAGNIE.

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Fig. 4.

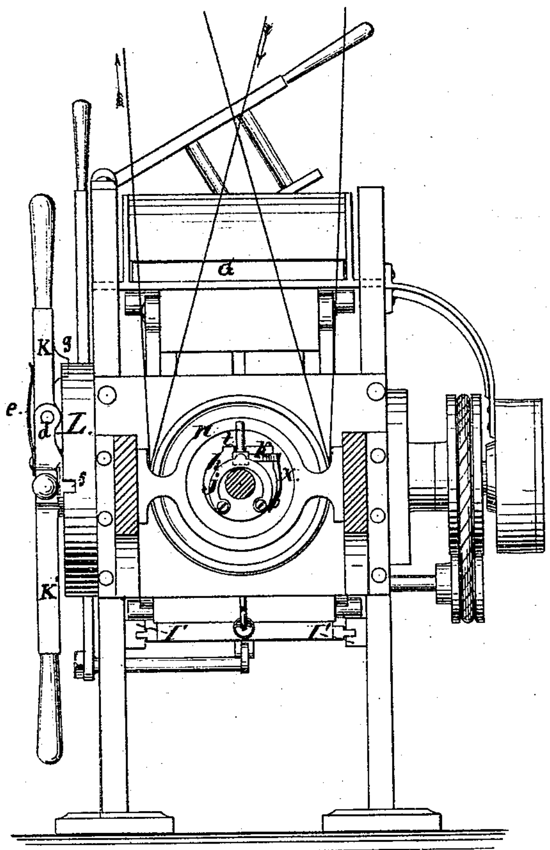
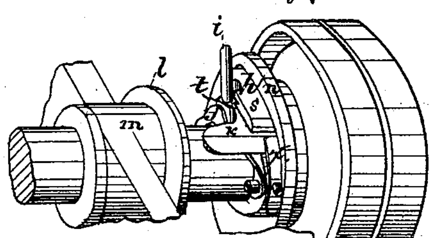


Fig. 7.



Witnesses:

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Inventor:

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his atty.

UNITED STATES PATENT OFFICE.

ALBERT DE LA MONTAGNIE, OF NEW YORK, ASSIGNOR TO HIMSELF AND DAVID ELSTON, OF BROOKLYN, N. Y.

IMPROVEMENT IN PRESSES FOR MOLDING SUGAR INTO CUBES.

Specification forming part of Letters Patent No. **181,920**, dated September 5, 1876; application filed June 15, 1876.

To all whom it may concern:

Be it known that I, ALBERT DE LA MONTAGNIE, of the city of New York, county and State of New York, have invented a new and useful Improvement in Sugar-Presses, of which the following is a specification, reference being had to the accompanying drawing, forming part of the same, in which—

Figure 1 is a plan of a sugar-press, containing my invention; Fig. 2, a vertical section of the same, taken on line *x x*, Fig. 1. Fig. 3 is also a section of the same, at right angles to section Fig. 2, and on line *y y*, Fig. 1. Fig. 4 is an end elevation, with a vertical sectional view on line *y' y'*, Fig. 1. Fig. 5 is a plan of a detached part of the frame of the press, on which is mounted the screw and follower with the pulleys and automatic clutches whereby the screw is actuated. Fig. 6 is a detailed view of a pair of the dies and connecting-arms with the guide-rails, whereby a reciprocating motion is given to the dies upon the plungers, as they revolve on their axis. Fig. 7 is a detailed view, on a large scale, of a part of the follower-shaft and one of the automatic clutches, and Fig. 8 is a plan of the scraper, hereafter particularly described.

My invention relates to that class of sugar-presses designed to press granular sugar into small hard masses, usually of cubical form, and consists of the devices and their combinations, herein particularly described and claimed as novel.

A is the frame upon which the moving parts are mounted. B is a revolving shaft, having its bearings in the sides of the frame, and upon which are mounted four sets of plungers, C C' C'' C'''. D is a large square block or mass, keyed to the shaft B, and the plungers project from its four sides. E E' E'' E''' are the dies in which the sugar is pressed, fitted to the plungers. The dies opposite each other are coupled together by connecting-bars F F at each end of the block D, provided with slotted openings at their centers, through which passes the shaft B, as plainly seen in full lines in Fig. 6, and in dotted lines in Fig. 2. These parts are so constructed that the dies, which are coupled together on opposite sides of the block D, may reciprocate back and forth upon their plungers without leaving them.

G is a hopper for conducting the sugar to the dies, and H a spout for conveying the sugar to the hopper. The latter is provided with two slides or valves, *a a'*, so arranged that the space between them will hold a charge of sugar for one of the dies or set of dies. I is an auxiliary smaller spout, provided also with slides or valves *b b'*, for a similar purpose, designed to hold and conduct thoroughly dry granular sugar, to be scattered over the top of each charge of the sugar after it is delivered in the dies, for the purpose of preventing the sugar, after being pressed, from adhering to the face of the presser or follower.

J is a blower, having a pipe leading into the compartment I between the slides *b b'*, whereby, when the lower slide or valve *b* is opened or removed, the blast from the fan is made to blow the dry sugar over the top of the charge in the dies, which has been previously delivered from the spout H. The said fan is operated by a belt from a counter-shaft or by any other source of motion. K K are arms or levers secured to one end of the shaft B, whereby the said shaft carrying with it the plungers E may be conveniently rotated by hand by the operator. One of these arms K is jointed, as at *d*, and the outer or free end is pressed toward the machine by a spring, *e*. L is a stop-ring or annulus, secured to the frame A, and provided with four notches, one at the top, another diametrically opposite at the bottom, and the other two one on each side, equidistant from the others. A projection, *g*, on the lever K engages these notches, and thereby locks the shaft in position at each notch to detain and hold the plungers and dies in the position shown in Fig. 2.

M is the presser or follower, secured to the screw-shaft N, the screw working in the nut O. On the shaft are two loose pulleys, P P', to be driven by belts running in opposite directions. Clutches R R' secured to the shaft are provided, one for each pulley. These clutches are constructed and arranged to operate automatically, so that when either engages with its pulley the other is disengaged from its pulley, and thereby the follower M is

moved alternately to and from the dies E E′ E″ E‴. The clutches are substantially similar in construction, and one of them is shown plainly on a large scale in Fig. 7. It consists of a collar, *h*, keyed to the shaft, through which passes a pin or bolt that engages a notch or shoulder on the hub of the pulley. From the outer end of the said bolt projects at right angles a stud or short arm, *i*, and *j* is a spring which presses the bolt into engagement with the said notch. *k* is a latch pivoted in the said collar and pressed toward the said bolt by a spring, *x*. These parts are so constructed and arranged that when the bolt is drawn out the nose *s* of the said latch falls in behind a side projection, *t*, on the head of said bolt, and withholds the said bolt from engagement with the notch in the hub of the pulley. *l* is a projecting ring or collar, secured to the inner end of the journal-box *m*, which serves to lift the latch *k* and throw it out of engagement with the projection *t* on the said bolt as the said latch is caused to ride up onto said collar, when the shaft B is run back from the dies.

When the shaft B is moved inward toward the dies the arm *i* is stopped against a ring, *n*, and the bolt from which it projects is thereby withdrawn from its engagements with the pulley P just as the follower has reached the desired limit of its movement in that direction. When the bolt is thus withdrawn it is, as before explained, held out of engagement with the pulley until the shaft B has completed its reverse movement, and the latch *k* is disengaged from the said bolt. The clutch, connected with the pulley P′, is of similar construction and operation; and it will be readily understood that by the operation of these two pulleys, running in opposite directions, the follower M is alternately driven to and from the dies. Upon the inner face of each side of the frame A is secured a rib, I′, Fig. 6, in such position that the friction-roller *r r*, turning on axes fixed in the dies E, will traverse the upper faces of the said ribs I′, as the shaft B is revolved, and the said dies are carried around with it, and that in so traversing said ribs each pair of dies will, in turn, be thrown upward on the plungers C, and placed in the position of the dies E‴ E″ and plungers C′ and C, as seen Fig. 2. By these means each die, as it in turn comes to its position under the hopper G, will be pushed off from its plunger, and ready to receive a charge of sugar. R″ is a presser-plate on a lever, R‴, which swings on an axis, R⁗. This is to be operated by hand, and its office is to compact somewhat each charge of sugar into the dies as it is delivered, so that it will not fall out as the die swings over into a horizontal position, where it is to be operated upon by the follower M. S is a scraper, the office of which is to detach the pressed cubes of sugar from the ends of the plungers in case they should be disposed to adhere to them. It consists of a frame, (shown detached at Fig 8,) which slides horizontally in grooves in the edges of the ribs I′. It lies immediately underneath the dies, so that pressed cubes of sugar, as the dies are pushed off from them, will project downward within this frame. Then, if the sugar sticks to the plungers, by sliding this frame in its ways or grooves the cross-rail of one end of it will strike the cubes and detach them, allowing them to fall into any desired receptacle below, or, as seen in dotted lines, Fig. 2, upon an apron or endless belt. T is a hand-lever, by which the said frame or scraper is actuated, the said lever moving it in one direction, and the spring *u* in the other. U is a revolving brush driven by a belt from a pulley, U′, on the shaft B, the office of which is to brush off from the face of the plunger any sugar which may remain after each operation of pressing.

A frame or scraper is provided to be operated entirely by hand to assist in compacting the sugar into the dies as it is delivered from the hopper G. A section of it, marked *v*, is seen in Fig. 2. The cross-bar *v′* is beveled at the inner edge of its under face, so that when it is drawn over the sugar it will tend to compact it somewhat, and scrape off what it cannot force downward into the dies.

In the drawings I have endeavored to represent four plungers in each side of the block D with corresponding dies. A greater or less number may be employed at pleasure.

The operation of this machine is as follows: The spout H being filled with sugar and the valve *a′* closed, the valve *a* is closed and *a′* opened. The charge contained between the valve falls through the hopper G into the dies E⁗, they being in the position seen in Fig. 2. A small quantity of very dry sugar is then discharged from the spout I, and, the blower being in motion, scattered over the surface of the mass in the dies. Then the presser R is swung down upon the sugar, forcing it into the dies, and compressing it somewhat. Then the frame *v* is slid quickly across the face of the dies, scraping off any surplus. Then the operator unlocks the lever K, and gives the shaft B a quarter turn, when the said lever is again locked, as hereinbefore described, and the dies E‴ are swung down into position opposite the follower M, which approaches, forces the dies upon their plungers, and compresses the sugar. While this is being done the next set of dies are filled in like manner. Another quarter-turn of the shaft B carries the dies E‴ down under the shaft, and forces them back onto their plunger off from the sugar, which falls in cubes upon the apron underneath, the scraper S operating to detach the cubes from the plunger, and the revolving brush U removing any sugar that may have adhere to the end surface of the plungers. In this manner the operation of pressing is repeated four times at each complete revolution of the shaft B. W is intended to represent an indicator, to be actuated by the shaft B,

whereby there may be indicated the number of pressing operations, and, consequently, the number of cubes of sugar pressed in any given time.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, in a sugar-press, of two plungers or sets of plungers secured at right angles upon a revolving shaft, with two dies or sets of dies fitted to said plungers and coupled together by connecting-bars, and a presser or follower actuated by a suitable mechanical power to accomplish the act of pressing sugar in the dies by forcing the dies upon the plungers, together with friction-rollers turning on axes fixed in the dies, and adapted to traverse ribs arranged on the frame of the machine, whereby the sugar pressed in one set of dies is delivered thereform, and the opposite set of dies is opened to receive the charge of fresh sugar, as and for the purposes described.

2. The combination of the dies and plungers E C, the scraper S, lever T, and spring *u*, constructed and operating as and for the purpose specified.

3. The combination of the dies and plungers, described and shown, the hopper G, spouts H and I, and presser R, constructed and operating as and for the purpose specified.

4. The combination of the revolving dies and plungers, the follower M, the pulleys P P′, and the clutches R R′, whereby the said follower is automatically caused to move to and from said dies and plungers, all constructed and operating as and for the purpose specified.

5. The combination of the rotary shaft B, the dies and plungers revolving therewith, the jointed lever *k*, and the notched annulus L, all constructed and operating as and for the purpose described.

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