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An Improved Cube Sugar Machine.

The old-fashioned method of making sugar in loaves and crushing it, is now almost entirely out of date and the manfacturers make it in small three-quarter-inch cubes ready for the market. A great deal of ingenuity has been shown by inventors in perfecting a machine to form the cubes expeditiously and in a satisfactorily exact manner, and large amounts of money have been expended in experimenting. The latest experiment in this line is the machine of Jasper & Boushey, recently patented through the MINING AND SCIENTIFIC PRESS Patent Agency. We visited the Bay Sugar Refinery, in this city, one day this week, to see the new machine in operation, and have prepared an engraving showing the details of operation.

The machine occupies a space of about four feet by nine. The sugar comes down from the centrifugal machine on the upper floor through the box, *A*. In this box is a roller, *V*, with pins, running at a speed of 1,800 to 2,000 revolutions, which, by centrifugal force, throws the damp sugar down on to an iron plate. These plates, *G*, are drawn underneath the box, *A*, one at a time, by means of the endless chain, *d*, which is operated by the eccentric cam, *L*, connecting rod, *e*, and the ratchet gear, *b*, *c*. As the plate, *G*, is drawn under the box, *A*, the sugar is pressed down by the centrifugal action of the roller, *V*. The plate, after being covered with sugar in this manner, is drawn along by the endless chain until it comes under the knife.

The cutting apparatus is a series of blades, *O*, forming squares, and is shown in detail in Fig. 2. These blades are operated by the bar, *T*, and the levers inside the frame, not shown in the engraving. Inside of each one of these squares is a presser or plunger, *P*, which fits closely to the sides of the square. As the knife or series of squares goes down these pressers, *P*, remain stationary until the knife, *O*, has performed its duties of cutting the soft sugar into cubes. Then the presser, *P*, comes down one-quarter of an inch with a pressure of 6,000 pounds, pressing the cubes cut by the knife, *O*, to the perfect size of three-quarters of an inch. The action of the knife, *O*, is to cut the sugar into cube shape, and that of the presser, *P*, to force the cubes into uniform size, and also make them compact so they will not crumble. After the sugar is cut and pressed and the knife, *O*, draws back three-quarters of an inch, the presser, *P*, begins also to draw back, both knife and presser moving upward for a quarter of an inch. By this means the pressers not only impress the sugar into solid cubes after they are cut by the knife, but also act as plungers to keep the cubes on the plate as the knives are withdrawn.

The cutting knives, *O*, are operated by the levers (not shown in the engraving), which draw down the bar, *T*, to which the knives are connected by rods, *x*, *x*. The pressers, *P*, are operated by the lever, *H*, connected with the bar, *S*, and rods, *r*, *r*. The bed plate, *M*, is a heavy piece of iron which takes the pressure necessary in forming the cubes.

The iron plates, *G*, are piled up in front of the feed box, *A*, and are drawn under by the endless chain, as described, one at a time. As the plates pass under the knives and pressers four cuts are made on each plate, there being about 10 pounds of sugar on each plate. The plates then pass on to the endless belt, *K*, which is operated by the roller, *J*, by which they are carried to the drying room. As the plates pass under the feed box, *A*, and receive the sugar, which is forced on them by the centrifugal motion of the revolving shaft and pins, *V*, the scraper, *U*, takes off the superfluous sugar. The details of this are shown in Fig. 3.

This scraper can be adjusted by set screws so as to get a certain amount of sugar on the plate according to the quality of sugar. Two small plows are fastened on the iron frame near the cutting knives, for scraping off the small, superfluous quantity of sugar left on the plates after the cubes are made. This waste is very small, amounting to no appreciable quantity.

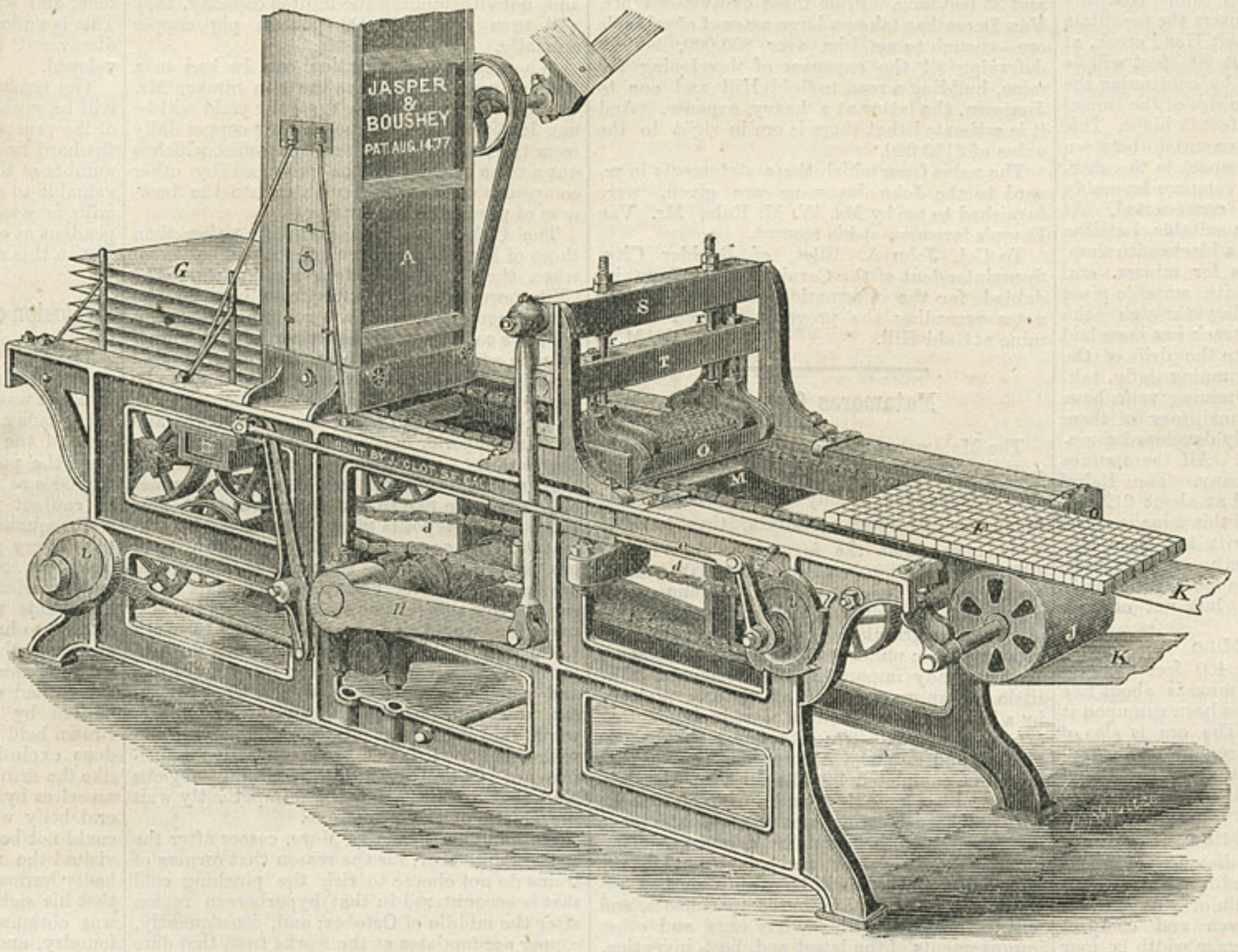

FIG. 1, JASPER & BOUSHEY'S IMPROVED MACHINE FOR MANUFACTURING CUBE SUGAR.

This whole machine weighs about two tons, and takes two-horse power to operate it. The machine now in operation (which was made by John Clot) at theBay Sugar Refinery, has a capacity of 60 pounds per minute. It requires one man to feed the sugar, one man to operate the machine and put the plates in position ready for passing through, and one man to take the plates, filled with sugar, from the belt and put them up in the drying room. The cubes are perfect in shape and the crystalline structure of the surface is plainly seen, which is not the case when the surface is sawed into cubes, as by some processes. The patentees (whose address is P. O. box 1,350) have also devised a plan for a drying room, by means of which, in connection with this machine, cube sugar may be prepared for the market in three hours' time. This machine marks an important era in the manufacture of sugar.

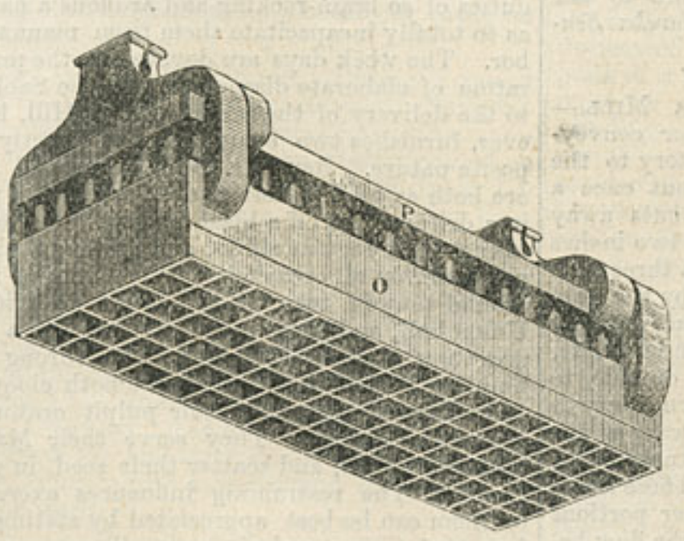

Fig. 2, Knife and Presser of Sugar Machine.

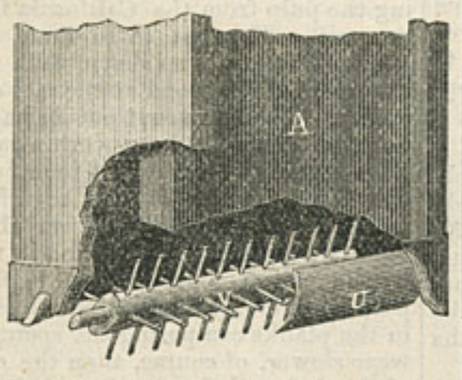

Fig. 3, Feeder and Scraper of Sugar Machine.

THE *Black Hills Pioneer* gives a list of 20 mills, carrying 195 stamps, now running in the Black hills, and names seven mills which will contain 125 stamps now in process of erection. These 320 stamps ought to reduce a good deal of rock if kept steadily running, though recent arrivals from the Black hills state that some of the mills have not rock enough to keep them running more than half of the time. Black hills quartz mills are gold mills, simply provided with stamps, copper plates and blankets. Of course they are inexpensive affairs when compared with silver mills, with their appliances for working rebellious ores.

IN consequence of a strike on the Great Southern and Western railroad in Ireland, the Postmaster General orders steamers from America to land only the Irish mails at Queenstown and take the others to Liverpool.

Notices of Recent Patents.

Among the patents recently obtained through Dewey & Co.'s SCIENTIFIC PRESS American and Foreign Patent Agency, the following are worthy of mention:

CONCENTRATOR.—Joseph S. Duncan, S. F. This is an improvement in concentrators, such as are employed to separate the valuable metalliferous particles and sulphurets from the refuse portions of ores. It consists of one or more vessels or chambers, of a peculiar shape, into which the pulp is introduced, and, as the heavier particles fall towards the bottom, they are met by a body of water which is given a rotating motion as it flows onward; and by its effect it causes the different grades in weight to settle into a series of receptacles extending down the sides of the vessel or vessels.

STONE LATHE.—Frank Kesseler, S. F. Marble manufacturers employ what is known as a rubbing or polishing wheel or bed, for grinding and giving a uniform surface to such pieces of plain surfaced stone as can be held down upon it.

This wheel or bed consists of a circular plate of cast-iron mounted horizontally upon a vertical shaft, and driven at a proper rate of speed, so that by pressing down upon the moving cast-iron surface of the bed or wheel, the surfaces of the stone will be ground evenly and uniformly. This invention consists in attaching to the frame of such rotary bed or wheel a lathe, by means of which the cast-iron grinding surface can be utilized for turning cylindrical forms, either true or conical.

SOLDERING IRON.—Thos. J. Walsh, S. F. This invention is an improvement on irons such as are used for soldering can tops, in which a circular ring of copper is employed to fit the rim to be soldered. The difficulty in heating these irons without burning and spoiling the copper ring is very great, and is a serious annoyance. Mr. Walsh's invention consists in the employment of an interior solid cylinder of iron, which is connected with a rod and handle, so as to be movable longitudinally, and this cylinder is thrust forward so as to be heated by the fire without exposing the copper ring, and is withdrawn into the ring, to which it communicates its heat for use.

BULLION SHIPMENTS.—Since our last issue shipments of bullion from prominent mines have been as follows: California, Sept. 22d, $201,342.38—total to date, $667,122.28; Con. Virginia, Sept. 22d, $141,477.38—total to date, $440,657.78; Northern Belle, Sept. 20th, $9,571.31; Northern Belle, Sept. 23d, $10,575.13; Leopard, Sept. 25th, $5,000. Following is an official statement of the bullion product for the last fiscal month of leading Comstock mines: Belcher, $25,200; California, $1,403,300; Chollar-Potosi, $25,100; Con. Virginia, $1,445,800; Justice, $202,300; Ophir, $7,900—total, $3,109,600.

THE tug *Wizard*, now lying at Pacific street wharf, has been almost completely rebuilt, at an expense of about $20,000. She has been renewed from below the water line, with new decks and new timbers, and her engines, which have been built by the Risdon Iron Works, are of the compound pattern, one cylinder 26 inches in diameter and the other 44.