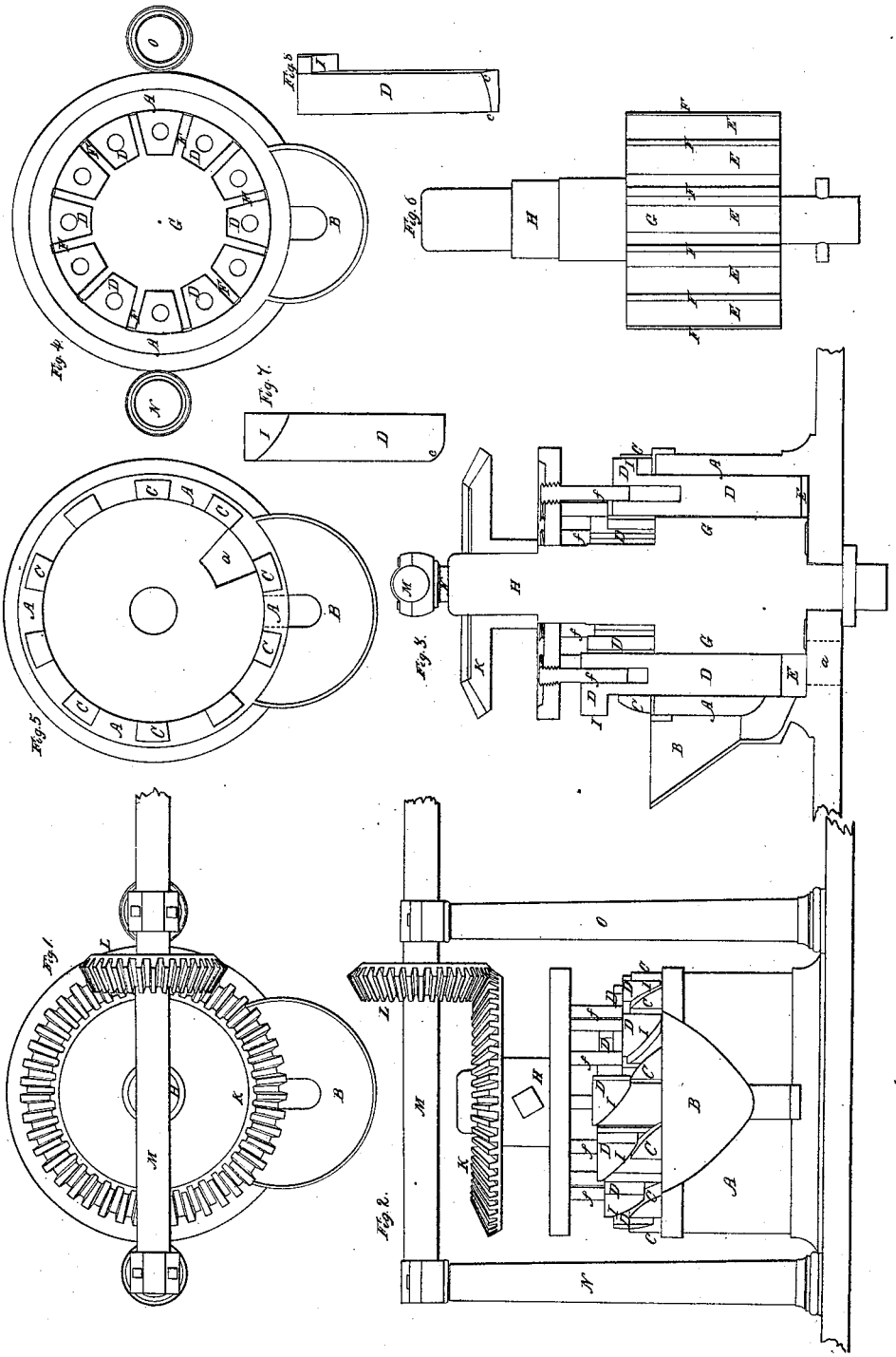
O. R. Chase.

Sugar Mach.

No. 7,718. Patented Oct. 15, 1850.



UNITED STATES PATENT OFFICE.

O. R. CHASE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND SILAS E. CHASE.

IMPROVEMENT IN MACHINES FOR PULVERIZING SUGAR.

Specification forming part of Letters Patent No. 7,718, dated October 15, 1850.

To all whom it may concern:

Be it known that I, OLIVER R. CHASE, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Machine or Mill for Powdering Sugar or various other Materials; and I do hereby declare that the same is described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1 denotes a top view of the said machine. Fig. 2 is an external elevation of it. Fig. 3 is a vertical and central cross-section of it. Fig. 4 is a horizontal cross-section of it, the same being taken through the stampers and cylindrical case or mortar. Fig. 5 is a top view of the cylindrical case or mortar as the same would appear when divested of the series of stampers and their cell-carrier. Fig. 6 is an external view of the cell-carrier as detached from the mortar. Fig. 7 is a front elevation of one of the stampers. Fig. 8 is a side view of the said stamper.

The external or first part of my invention consists of a cylindrical vessel or mortar, A, made of cast-iron or other suitable material, and of such thickness and dimensions as circumstances may require. It is entirely open at top, and has a hopper or tunnel conductor, B, arranged on it externally, and leading through its side and just above its bottom. It is also provided with an outlet or hole, *a*, made through its bottom, and near the outlet or discharging orifice of the hopper, as seen in Fig. 5. The top edge of this mortar is surrounded with a series of inclined planes or cams, C C C, &c., which are arranged at equal distances apart. A series of stampers, D D D, &c., is placed within the mortar and arranged around it and against the inner curved surface of it, each of the said stampers being placed in one of a series of cells, E E E, &c., formed by a series of plates or wings, F F F, &c., radiating from the external surface of a cylinder, G, which is fixed on a vertical shaft, H, whose foot is stepped into or through the bottom of the mortar, and so as to enable the shaft to freely rotate. From the external face of each of the stampers and at its upper end a cam, I, projects, as seen in the drawings, the said cam being so arranged that when the series of stampers is put in motion around and within the mortar (which will take place when the shaft H is put in revolution in the right direction) it will successively meet and run over the several cams C C C on the mortar. Each stamper, as soon as its cam is carried into contact with one of the cams C, begins its rise upward within its cell, and continues to do so until its cam passes entirely over and beyond the said cam C, when it will immediately fall down vertically, and upon sugar or any other matter which may be in its cell and underneath it. The lower end of the stamper is curved upward on its advancing edge, as seen at *c* in Fig. 7. The entrance-hole of the hopper should be placed below and directly between two adjacent cams C C, while the exit-hole or discharge-passage *a* should be placed below and directly between one of the said cams and that next in rear of it, the object of such a disposition of said parts being not only that any stamper in passing by the entrance-hole may be elevated sufficiently to allow the sugar to run from the hopper into he cell of the said stamper, but also that all he sugar previously received into such cell, and comminuted by the repeated blows of the stamper, may be expelled therefrom and through the bottom of the mortar immediately before such cell is brought into direct communication with the hopper. The rotation of the series of cells will cause the stampers, through the action of the cams, to alternately and successively rise and fall, each stamper being elevated and depressed as often as its cam is carried over and beyond any one of the mortar-cams.

In order to steady the stampers during their vertical motions, each may be made to slide upon a vertical pin or rod, *f*, of a series of such pins extended down from a circular horizontal plate fixed to the shaft H. The revolutions of the shaft H may be effected in any proper manner. In the drawings it is shown as provided with a bevel-gear, K, made to engage with a bevel-gear, L, fixed on a horizontal crank-shaft, M, disposed over it and supported by posts or standards N O.

In using the machine the sugar or other article to be crushed or powdered is poured into

the hopper. From thence it finds its way or runs into each of the cells as they are successively brought around into connection with the discharge-passage of the hopper. After being carried around and within the mortar by the cell, and in the meantime receiving a succession of blows from the stamper sufficiently to pulverize or powder it, the said quantity of sugar in the said cell is finally discharged through the opening *a* and out of the machine.

What I claim as my invention is—

The combination of a rotative series of cells, a rotative series of stampers, suitable machinery for actuating the stampers, and a cylindrical mortar, when arranged and made to operate together, and to receive, pulverize, and expel sugar or other material, substantially in the manner as hereinbefore specified.

In testimony whereof I have hereto set my signature this 19th day of August, A. D. 1850.

O. R. CHASE.

Witnesses:

R. H. EDDY,

BENJAMIN EDDY.