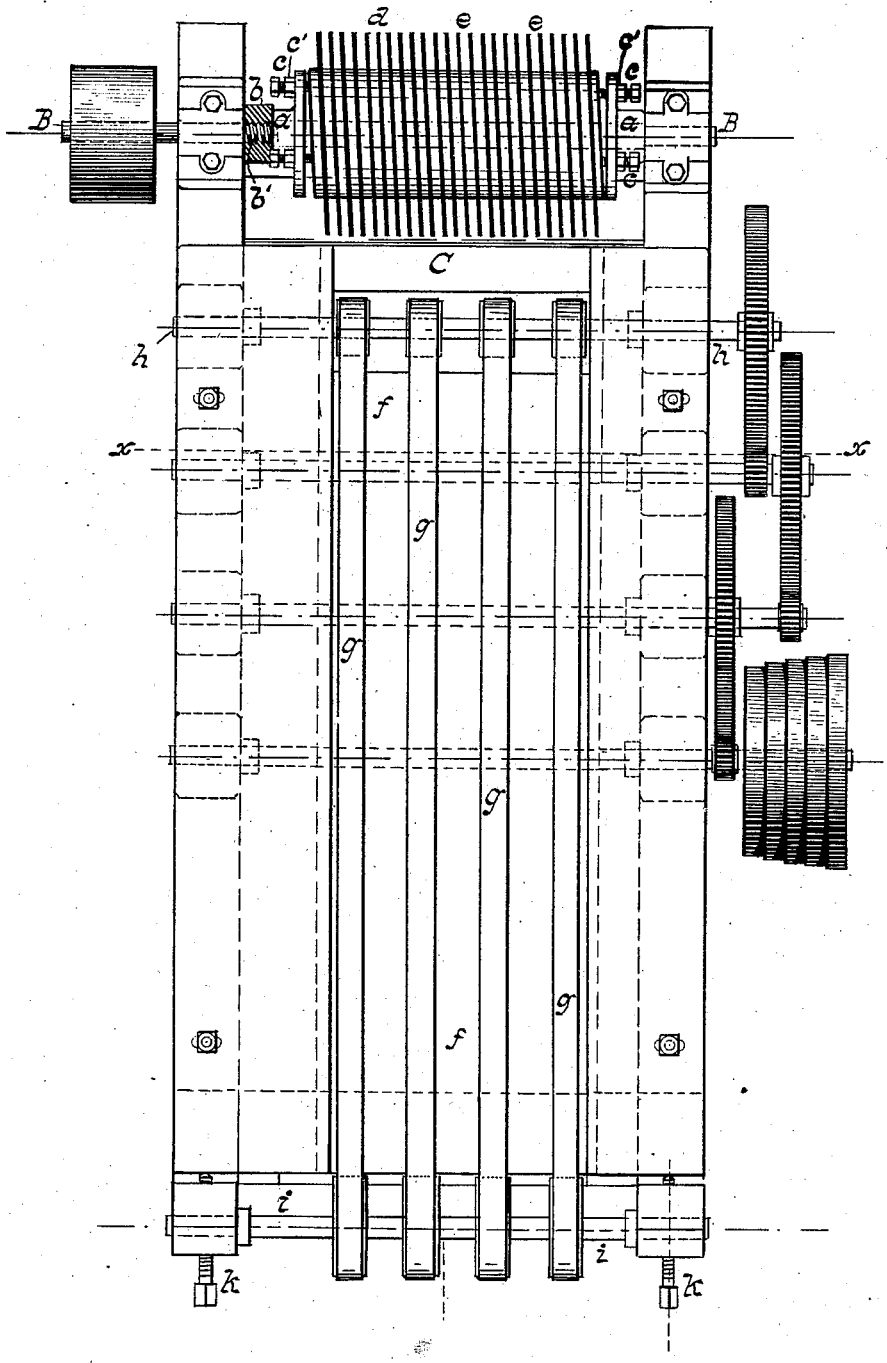
(No Model.) 2 Sheets—Sheet 1.

J. READ & S. C. BURDICK.

GRANULATING MACHINE.

No. 260,123. Patented June 27, 1882.

FIG. 1.



ATTEST:

Philip F. Larner.
Howell Berle.

INVENTORS:

Jacob Read
Samuel C. Burdick
By Wm. C. Wood
Attorney.

(No Model.) 2 Sheets—Sheet 2.

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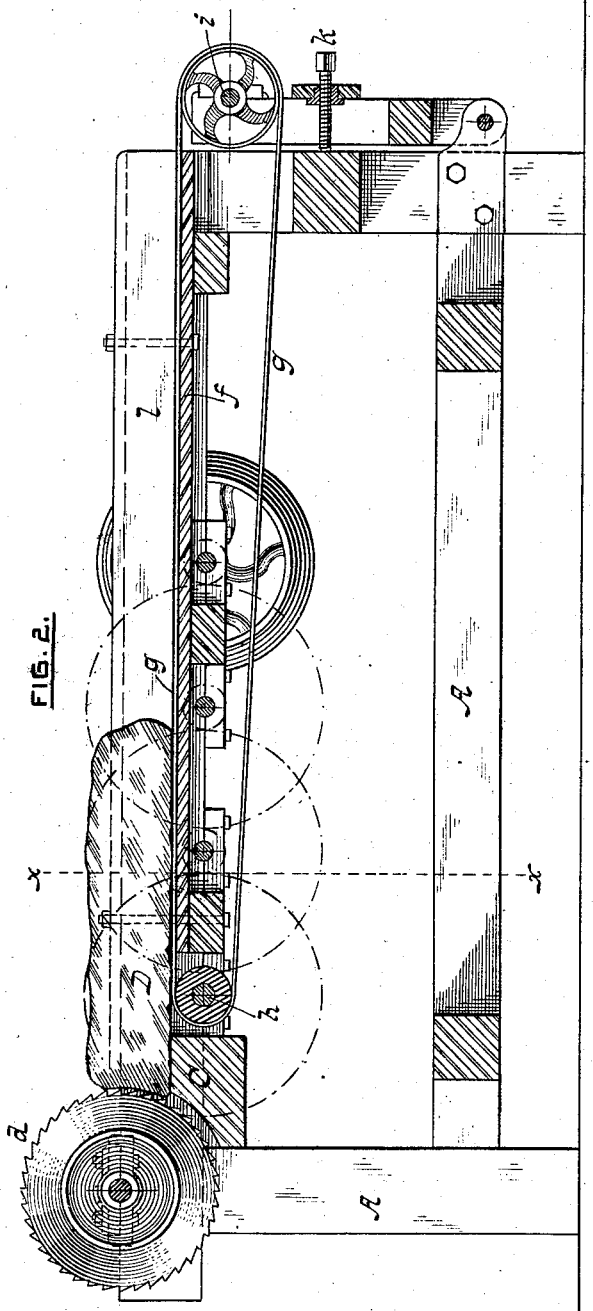

FIG. 2.

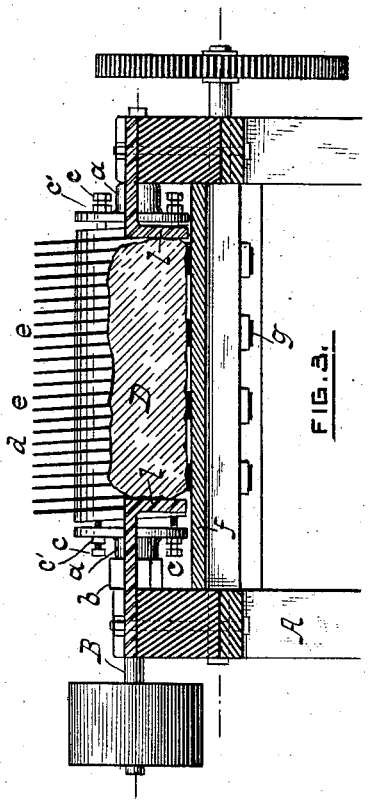

FIG. 3.

ATTEST:

Philip F. Larner.
Lowell Larke.

INVENTORS:

Jacob Read
Samuel C. Burdick.
By Wm. McMurtrie Attorney.

UNITED STATES PATENT OFFICE.

JACOB READ, OF YONKERS, NEW YORK, AND SAMUEL C. BURDICK, OF ORANGE, NEW JERSEY.

GRANULATING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 260,123, dated June 27, 1882.

Application filed December 30, 1881. (No model.)

To all whom it may concern:

Be it known that we, JACOB READ, of Yonkers, in the county of Westchester and State of New York, and SAMUEL C. BURDICK, of the city of Orange, county of Essex, and State of New Jersey, have invented a certain new and useful Machine for Granulating Glucose Cake; and we do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part thereof, is a clear, true, and complete description of our invention.

Our machines embody, as a novel and characteristic feature, a gang of splitting or rip saws, the teeth of which, in the performance of their granulating service, travel in various lines, or, in other words, pass in contact with the glucose cake, so that the teeth of each saw will not only operate in a space equal to the thickness of the saw, including its "set," but also overlap on each side, so as to include space not covered by the teeth of the saws next adjacent. This peculiar operation is rendered important on account of the tenacious character of the cake.

A gang of ripping gig-saws may be relied upon for fair performance, if the saws be inclined laterally, or, if not inclined, they may be operated with a complex longitudinal and lateral movement; but we prefer a gang of circular splitting or rip saws angularly mounted upon an arbor, so that each will operate as what are termed "wabbling" or "drunken" saws. With these saws means of various kinds may be employed for aiding in the proper presentation and feeding of the cake thereto. The gig-saws referred to would perform fair service, and although the circular form is much more desirable, we do not limit ourselves thereto, except as hereinafter indicated.

After a detailed description of a machine embodying our invention, and certain suggestions as to such variations as may be made therein, if desired, the features deemed novel will be specified in the several claims hereunto annexed.

Referring to the two sheets of drawings, Figure 1, Sheet 1, is a plan view of one of our machines as preferred by us. Fig. 2 is a longitudinal vertical section of the same mainly on a central line, but partially on a line with the center of one side of the frame of the machine. Fig. 3 is a lateral vertical section of the same on line *x*, Figs. 1 and 2.

The frame A may be constructed of any suitable material and in any desired form consistent with the purposes intended, provision being duly made for properly mounting the moving parts thereon.

The saw-arbor B is mounted in suitable boxes and provided with a driving-pulley. Inside of its boxes there is, at each end, a firmly-mounted collar, *a*, one of which is engaged by a clamping nut, *b*, fitted to a threaded portion, *b'*, of the arbor, as seen in Fig. 1. Each collar *a* has a pair of lateral adjusting-screws, *c*, which are provided with set-nuts *c'*, for angularly adjusting the saws *d* with relation to their arbor.

Between the saws there are annular disks *e*, also mounted on the arbor, and the eyes of said disks and of the saws are sufficiently larger than the arbor to enable them to be freely inclined thereon, so that they can readily be set at any desired angle by the adjusting-screws *c* and firmly clamped with relation to each other and to the arbor. As a rule, the saws should be so set that the teeth of each during a rotation will laterally cover a space equal at least to an adjacent intervening space; but a wider range of movement can be employed.

The inner ends of the screws *c* may be provided with recessed seats in the sides of the outer clamping-disks, *e*, and thereby assure their rotative connection with the arbor. The teeth of the saws are of the splitting or ripping order, and may be used with or without any set thereto. This gang of wabbling saws will perform the service desired, however the cake may be presented thereto, provided said cake is maintained practically stationary as against the tendency of the saws to move it. So far as our knowledge extends, neither a gang of wabbling rip-saws nor ripping gig-saws, as before herein referred to, have before been employed for any similar purpose, and such rip-saws, in combination with means of any kind for confining the cake against the moving action of the saws and enabling said cake to be progressively delivered thereto for granula-

tion, constitutes the main feature of our invention. The simplest embodiment of this combination would be the gang of rip-saws and a table arranged with relation thereto, after the manner of an ordinary saw-table. It is, however, preferable that the cake be presented to the saws more nearly in the plane of their arbor than would be the case as above indicated, and the dangers attendant upon feeding the cake by hand render it important that the machine be organized with special reference to automatically performing the service intended in the best manner. The action of the saw-teeth also renders it desirable that the cake be confined against lateral movement, and in view of these several conditions we have devised a feeding-table well suited for our purposes.

In front of the saws, and below the plane of their arbor, is a supporting-bed, C, upon which the front end of the glucose cake D rests closely adjacent to the saws. A table, *f*, is horizontally supported in a plane slightly below the top of the supporting-bed. Said table serves as a support for the series of endless belts *g*, driven by means of belt and gearing, connected with the drum-shaft *h* near the saws. At the front of the machine the endless-belt pulleys are mounted on a shaft, *i*, having its bearings in the upper end of a frame pivoted at its foot, and having set-screws *k*, by which said endless belts may be readily tightened. The speed of the endless belts may be varied, if desired, by means of the cone belt-pulley shown.

At each side of the table is a side plate, *l*, the distance between the two being equal to the width of glucose cakes as usually produced. The operation of the machine thus described is obvious, it being readily seen that the cake, being deposited upon the belts, will be slowly fed to the saws, and that the cake will meantime be sufficiently confined against the moving effect of the saws. When one cake is nearly worked up a succeeding cake causes the remains of the first to be advanced to the saws until wholly granulated.

It is obvious that for obtaining uniform results in granulation the feeding of the cake should be as uniform as possible. When a large heavy cake is put upon the endless belts and presented to the saws its gradually-diminishing weight will cause a gradual decrease in the frictional contact between it and the belts, which can be compensated for by increasing the speed of the belts, as with the cone-pulley. It can also be provided for by having the table *f* pivoted to the drum-shaft *h* and securing to the opposite end of said table the pivoted frame in which the front drum-shaft, *i*, is mounted, and providing a screw or lever by which the front end of the table may be raised or lowered for varying its inclination, and thus enabling the belts to maintain a practically uniform control of the cake regardless of its decreasing weight. The table being thus pivoted, the supporting-bed C should be connected therewith so that its upper surface would always occupy the same plane as the belts. The graduations in feeding afforded by the cone-pulley are generally sufficient for all practical purposes.

Considerable uniformity in feeding may be obtained without any graduating mechanism by careful attention in keeping on the bed successive cakes of glucose of an aggregate weight as uniform as possible; but this would generally necessitate, as a preliminary measure, the transverse sawing of the cakes into short and comparatively uniform lengths.

We are aware that spiraled plates with cross-cut teeth have heretofore been employed in machines for making wood pulp; but such plates are unsuited for our purpose, unless provided with "splitting" or ripping teeth, because the "cross-cut" teeth, in operation upon glucose cake, have insufficient capacity for clearance, and are speedily filled with glucose, and therefore fail to produce the granulating effect desired.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, substantially as hereinbefore described, of a gang of granulating-saws having splitting or ripping teeth and a bed for supporting the material to be granulated while presenting it to the saws.

2. The combination, substantially as hereinbefore described, of a gang of wabbling circular ripping-saws and a bed for supporting the material to be granulated while presenting it to the saws.

3. The combination, substantially as hereinbefore described, of a gang of wabbling ripping-saws and a bed provided with feeding mechanism for progressively presenting to the saws the material to be granulated.

4. The combination, substantially as hereinbefore described, of a gang of wabbling ripping-saws and a bed provided with variably-operated feeding mechanism, whereby the solid mass of material to be granulated may be fed to the saws with practical uniformity, regardless of its progressively-diminished weight.

5. The combination, substantially as hereinbefore described, of a gang of wabbling ripping-saws and a bed provided with side plates for laterally confining the mass of material to be granulated in presenting the same to the saws.

6. The combination of the arbor and the gang of wabbling circular ripping-saws simultaneously adjustable to any desired inclination on said arbor, substantially as described.

JACOB READ.
SAML. C. BURDICK.

Witnesses:
JNO. J. LOUTH,
S. H. MAKIN.