Nov. 18, 1924. 1,515,993

B. E. BEYER

APPARATUS FOR FEEDING VISCOUS MATERIALS

Filed Oct. 12, 1922 2 Sheets-Sheet 1

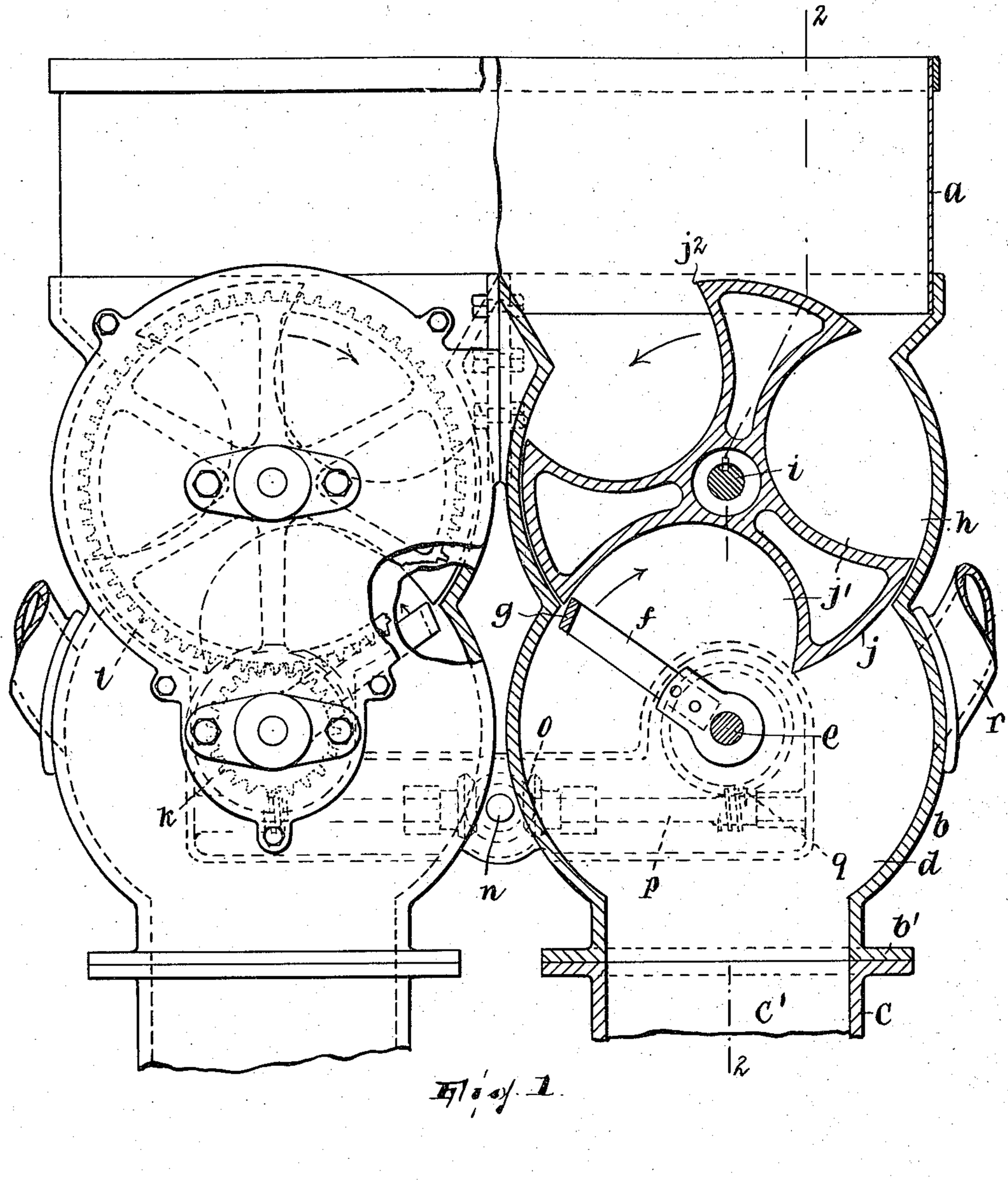

Fig. 1.

WITNESS

Wm. L. Bell

INVENTOR,

Bertrand E. Beyer,

BY

Johnson, Howard & Howard.

ATTORNEY

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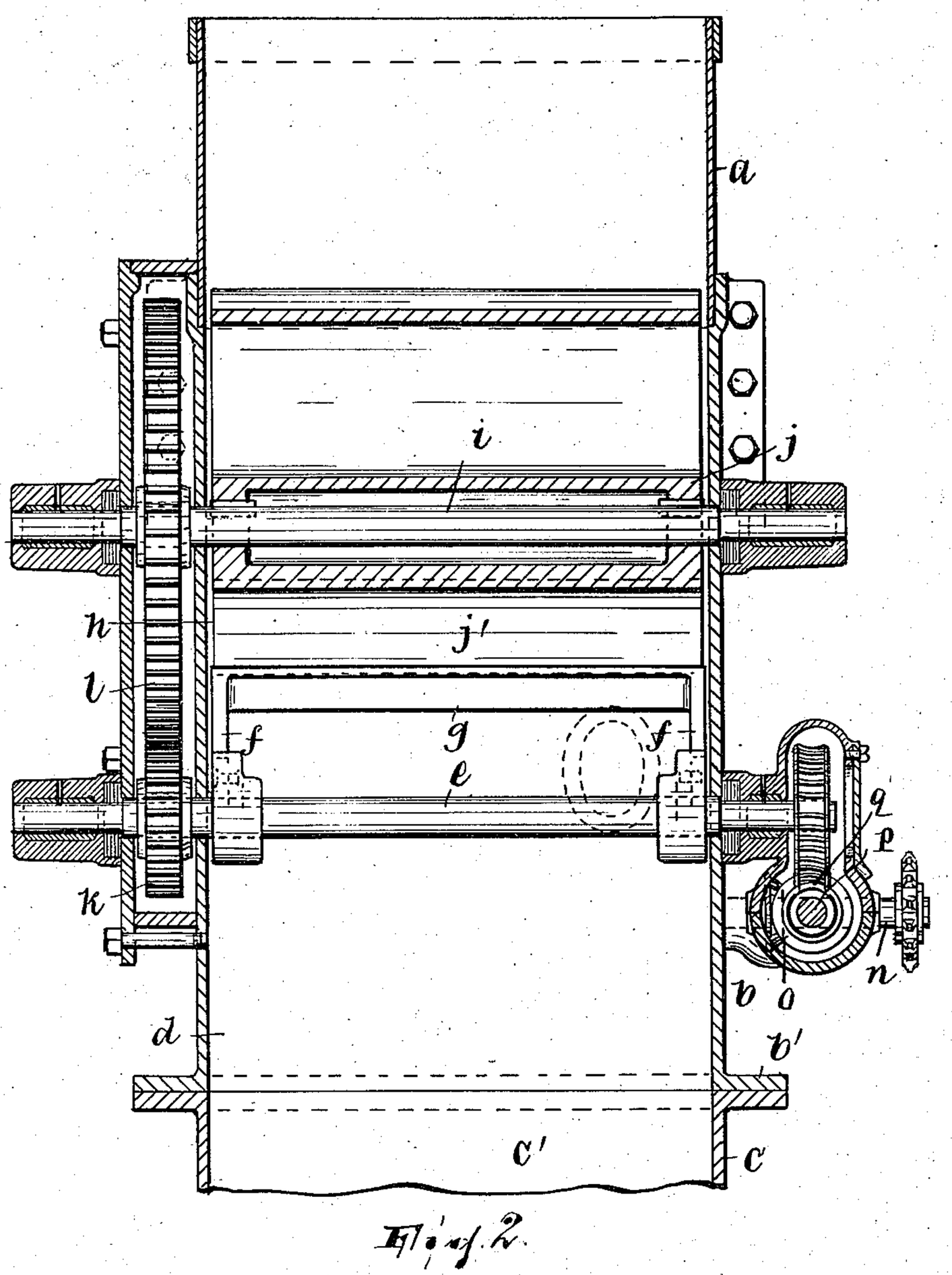

Fig. 2.

WITNESS

Wm. L. Bell

INVENTOR,
Bertrand E. Beyer,
BY
John Sturdevant.
ATTORNEY.

Patented Nov. 18, 1924. 1,515,993

UNITED STATES PATENT OFFICE.

BERTRAND E. BEYER, OF PATERSON, NEW JERSEY, ASSIGNOR TO GENERAL NORIT CO., LTD., OF NEW YORK, N. Y., A CORPORATION.

APPARATUS FOR FEEDING VISCOUS MATERIALS.

Application filed October 12, 1922. Serial No. 594,224.

To all whom it may concern:

Be it known that I, BERTRAND E. BEYER, a citizen of the United States, residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Apparatus for Feeding Viscous Materials, of which the following is a specification.

This invention relates to mechanism for feeding plastic substances for example, the filtering material used in refining sugar, which material, after being washed, becomes a plastic substance requiring to be fed into a furnace in order by heat to deprive it of all viscous matter. Heretofore this feeding has been done by hand, and the principal object of the invention is to provide means whereby the work can be done without exposing the workmen to the direct heat of the furnace; the invention contemplates the use of a pocketed feeding member and means associated therewith for insuring the substantially complete clearing of each pocket at the point of discharge.

In the drawings,

Fig. 1 is a side elevation, partly in section, of the improved apparatus; and

Fig. 2 is a vertical sectional view on line 2—2, Fig. 1.

a is a hopper into which the plastic material to be fed may be shovelled or otherwise deposited. This hopper is shown surmounting the housings of two feeding means, but there may be any number of the latter.

The housing of each feeding means is a hollow vertically passaged upright casting *b* shown flanged, at *b'*, at its lower end and adapted to rest thereat on a support *c* having an opening *c'* leading into the furnace with which the lower end of the passage of the housing registers. Two opposite sides of the housing stand in vertical planes, as shown in Fig. 2, but the other two opposite sides are at two different elevations curved outwardly (Fig. 1) to the contour of a cylinder, thus conforming to the cylindrical spaces occupied by certain structures in revolving, now to be described.

In the lower of these spaces, *d*, revolves a clearer blade consisting of a shaft *e* journaled in the housing with its axis coincident with that of said space and two arms *f* bolted thereon near the planiform sides of the housing and joined at their extremities by the blade-proper *g*, which is arranged parallel with the shaft but set in a plane preferably lying in a chord of the circular path in which the blade moves; the blade-proper *g* is offset from the shaft a distance approximately equal to the radius of the space *d*.

In the upper space, *h*, revolves a feeding member consisting of a shaft *i* journaled in the housing with its axis coincident with that of said space and a cylinder *j* keyed thereon and approximately equalling in diameter that of said space, said cylinder having pockets *j'*, in the present case three in number; since the clearer blade is in the present example arranged relatively lateral of the axis of the feeding member, these pockets are formed in the periphery of the latter.

The axes of the spaces *d* and *h* are so spaced from each other that the imaginary cylinders to which said spaces conform intersect each other, wherefore the blade and feeding member in rotating move each through the cylindrical space which the other occupies in rotating.

The blade and feeding member are geared for rotation together so that the former will coincide with (or enter and leave) each pocket at regular intervals during their rotation; in the present instance, there being three pockets and the feeding member and blade being arranged to rotate in opposite directions, the speed ratio is three revolutions of the blade to one of the feeding member. To this end *k* is a pinion fixed on shaft *e* and meshing with a gear *l* fixed on shaft *i;* these are shown in full lines in Fig. 2 and in dotted lines in Fig. 1 at the left, but omitted at the right. The thus-intergeared members may be driven in any way, as from a suitably rotated shaft *n* connected by bevel gearing *o* with a rotary shaft *p* connected with the shaft *e* by the worm-and-worm-wheel connection *q*.

As to its length, each pocket is as long as the blade. Its width and depth and general transverse form are determined as follows, that is to say, in cross-section the surface of the pocket is parallel and close to the curve which is described by the extremity (the free or outer edge of blade proper *g*) of the blade with respect to the feeding member when they are rotating in unison, as the result of being intergeared, and assum-

ing as stated that they are timed so that the pocket receives the blade while the latter is moving through that third of its circular path which is next to the member *j*; in other words, the member and blade being intergeared so as to rotate together in such relation and at such speed ratio that the blade will enter the pocket at regular intervals during their rotation, the pocket has its surface parallel and close to the curve described by the extremity of the blade with respect to said member when the blade is travelling in the pocket.

By this construction each pocket may not only be made to have the maximum capacity consistent with the feeding member performing efficiently the work of taking increments from the mass but perfect clearing of each pocket at the point of discharge, when it faces downward, is effected. This last is a very important consideration, for the mass is sticky and adheres very tenaciously in the pockets; and if each pocket is not substantially perfectly evacuated at the point of discharge, the material, being sticky and tending to pack, becomes a serious factor in imposing resistance to rotation of the feed-member and blade, so that an undue load is put on the driving means and there is likelihood of injuring the mechanism and the feeding operation is retarded.

Since the feeding member and blade are made in the example shown to rotate in opposite directions, there results, when each pocket is shaped as stated, an acute cutting edge j^2 at what may be termed the "following" margin of the pocket, which very materially reduces the resistance of the feeding member to rotation, it being understood that as soon as each pocket presents itself to the hopper the material falls therein by gravity and fills the pocket and that the edge j^2 then acts to plow or cut its way through the mass so as to detach the portion which the pocket thus receives. There further results a material lessening of the amount of fumes and heat that escape upwardly through the housing *a*, which is provided at *r* with a vent for them.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

In combination, a rotary feeding member, a rotary clearer blade having its axis of rotation exterior of, but the circular path in which its extremity travels extending into, the space in which said member rotates, said member having a pocket for the plastic material to be fed positioned therein so as to receive said blade, and means gearing said member and blade to rotate together in such relation and at such speed ratio that the blade will enter the pocket at regular intervals during their rotation, said pocket having its surface forming with the peripheral surface of the feeding member and at the relatively following margin of the pocket an acute cutting edge.

In testimony whereof I affix my signature.

BERTRAND E. BEYER.