UNITED STATES PATENT OFFICE.

AUGUSTE BEYER, OF PARIS, FRANCE.

IMPROVEMENT IN MACHINES FOR GRINDING AND MIXING PASTY SUBSTANCES.

Specification forming part of Letters Patent No. **208,562**, dated October 1, 1878; application filed December 23, 1876.

To all whom it may concern:

Be it known that I, AUGUSTE BEYER, of Paris, France, have invented a new and Improved Machine for Grinding and Mixing Pasty Substances, of which the following is a specification:

In the accompanying drawing, Figure 1 represents a plan view, and Fig 2 a vertical longitudinal section on line *x x*, Fig. 1, of my improved machine for grinding and mixing pasty substances.

Similar letters of reference indicate corresponding parts.

The invention relates to a novel construction of machines for grinding and mixing soap, chocolate, and other pasty substances, in which revolving rolls, having different velocities and disposed so as to convey the pasty mass simultaneously with the grinding and mixing either back in the feed-hopper or into an adjacent machine of similar construction, or into a machine for compressing and molding the mass, the improved machine saving the time and labor hitherto required in common mixing-machines for conveying the mass either into the hopper of the same machine for a second passage or to the next machine.

The invention consists of a number of mixing-rolls, which revolve at different and increasing speed to take up the pasty mass and transmit the same from one roller to the next adjoining. Some or all of the rolls are disposed in inclined or vertical position to the lowermost roll for raising the mass and reconveying it automatically, by serrated and clearing knives, into the hopper or to an adjoining machine.

In the drawing, A represents the supporting-frame of my improved machine for grinding and mixing soap, chocolate, alimental compositions, pigments, pharmaceutical, and other preparations of pasty nature. On the frame A are arranged a number of parallel rolls, B, of which some or all may be arranged at a suitable angle or vertically to the lowermost roll, as desired. For most purposes four rolls, B, of which two are arranged horizontally, the other at some angle above the same, are sufficient, as shown in the drawing. These rolls B are revolved by suitable gearing at different speed, the speed of the second being greater than that of the first, the speed of the third roll greater than that of the second, and so on, for the purpose of taking up the mass after having passed between the rolls from one to the other. The bearings C of the revolving rolls B are adjustable by means of suitable set-screw bolts in the guide-recesses of the frame for the purpose of regulating the distance between the rolls and securing the parallel position of the same.

The mass is raised by means of the upper rolls B to any suitable height above the lowermost roll, and thrown back into the feed-hopper D by means of a serrated knife, E, and a clearing-knife, E′, which are arranged in connection with the uppermost roller B at the side toward the hopper. The serrated knife E swings on suitable pivots, and is retained in position to the roll by a weighted arm, *a*, and adjusted nearer to or farther from the same by set-screws *b* applied to lever-arms of the knife. The clearing-knife E′ is also capable of adjustment to the upper roll B, and takes up that part of the mass not removed by the serrated knife. The serrated knife cuts up the mass into a number of strips that pass through the recesses of the same, and exerts thereby a mixing action, which, in connection with the grinding-pressure of the rolls, produces the more intimate intermingling of the different substances or colors of the mass.

The hopper D is provided with a sliding horizontal partition, *d*, on which the mass is dropped from the knives, the partition being simply drawn out when the entire quantity is passed through the machine, and thereby the mass dropped into the lower part of the hopper for being again fed to the lower rolls and passed through the machine. The mass may be either returned to the hopper for being passed through the same machine or conducted by outer knives, E E′, of similar construction, into the hopper of a second mixing-machine, or into the hopper of a compressing and molding machine for being brought into final shape.

The main advantage of the mixing-machine consists in the automatic raising of the mass for being reconveyed or conducted off without extra labor and in the thorough grinding and intermingling of the substances of the mass by the action of the rolls and knives.

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The main advantage of the mixing-machine consists in the automatic raising of the mass for being reconveyed or conducted off without extra labor and in the thorough grinding and intermingling of the substances of the mass by the action of the rolls and knives.

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

1. The series of grinding and mixing rolls B B B B, in combination with the dividing and clearing knives attached to the upper roll of the series, and the hopper D, provided with the sliding partition *d*, whereby the material under treatment is returned to the action of the series of rolls, or discharged from the same, at the will of the operator, substantially as and for the purpose specified.

2. The combination of the notched or serrated dividing-knife E and the clearing-knife E′ with the upper roll B of a grinding and mixing machine, substantially as herein set forth, for the purpose specified.

AUGUSTE BEYER.

Witnesses:
PAUL GOEPEL,
C. SEDGWICK.