

No. 813,190.

PATENTED FEB. 20, 1906.

M. F. WILLIAMS.
DISINTEGRATING MACHINE.
APPLICATION FILED AUG. 13, 1904.

Fig. 1.

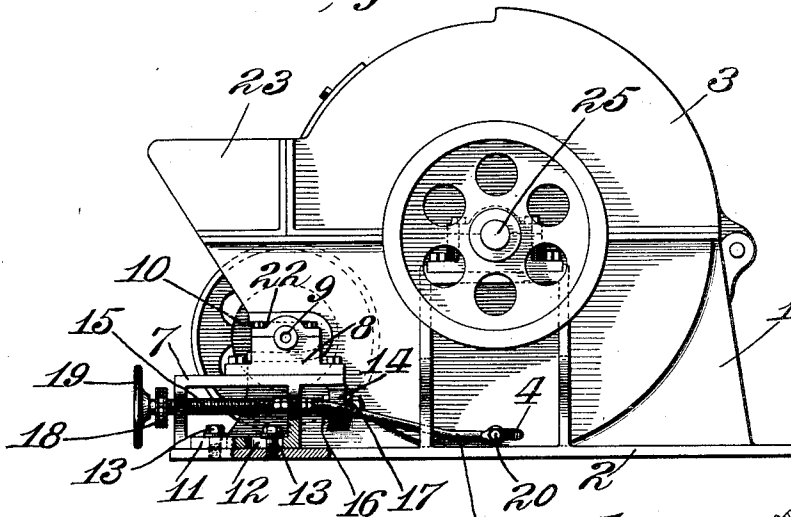


Fig. 2.

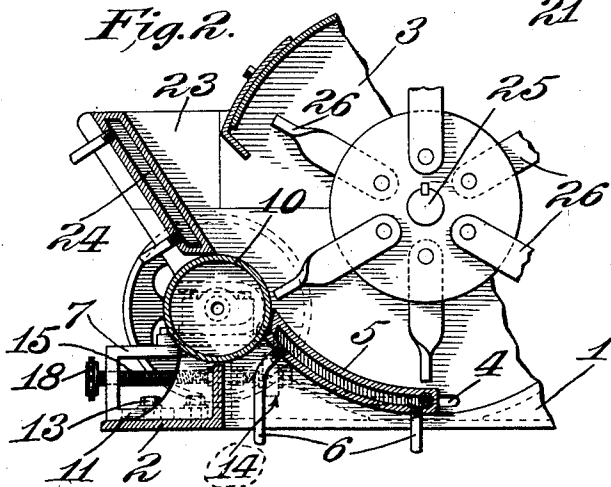


Fig. 4.

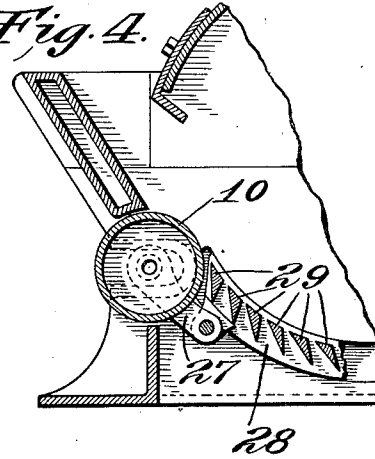
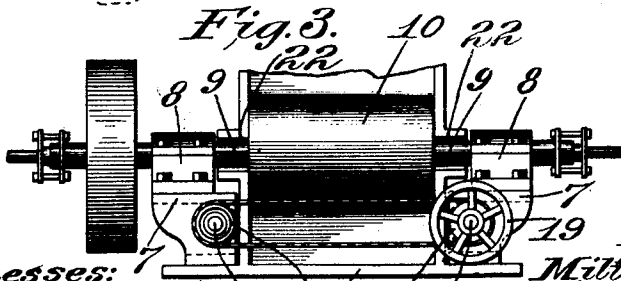


Fig. 3.



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UNITED STATES PATENT OFFICE.

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DISINTEGRATING-MACHINE.

No. 813,190.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed August 13, 1904. Serial No. 220,665.

To all whom it may concern:

Be it known that I, MILTON F. WILLIAMS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Disintegrating-Machines, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevational view, partly in section, of a shredding and pulverizing machine constructed in accordance with my invention. Fig. 2 is a fragmentary sectional view through a portion of the disintegrating-chamber, the hopper including the breaker-plate, and the grinding-plate with the adjustments therefor. Fig. 3 is a fragmentary end view of the machine, showing the adjusting devices; and Fig. 4 is a modified form of hopper and connection between the grinding-plate and breaker-plate.

This invention relates to a machine for disintegrating or pulverizing material—such, for example, as the machine shown and described in my Patent No. 726,602, dated April 28, 1903; and one of the objects of the invention is to provide means whereby the breaker-plate and the grinding-plate in the machine may be synchronously adjusted so that irrespective of the adjustment of the two plates their relative positions will not be changed.

With these and other objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as will be hereinafter described and afterward pointed out in the claims.

The reference numeral 1 designates the base of the machine, which is provided with base-flanges 2. The base carries the usual disintegrating casing or chamber 3, which in this instance is provided with elongated openings or slots 4. A grinding-plate 5 is slidably supported within the disintegrating-chamber 3 on shoulders formed on the walls of said chamber, as shown in Fig. 2, said grinding-plate 5 being in the form of a hollow segment comprising a steam-jacket carrying

pipes 6, one of which is an inlet-pipe and the other an outlet-pipe.

Supported at one end of the machine are bearing-support brackets 7, which consist of approximately rectangular frames, on the top edges of which are the bearing-blocks 8 to receive the shaft 9 of a hollow cylindrical breaker-plate 10, similar to the one illustrated in my patent above referred to. As heretofore stated, it is the purpose of this invention to provide means whereby this breaker-plate and the grinding-plate may be synchronously adjusted so that their relative positions will be permanent. This is preferably accomplished by providing the lower bars 11 of the brackets 7 with slots 12, through which bolts or other suitable fastening devices 13 project, said fastening devices being rigid with the base 1.

On the opposite sides of the base are lugs 14 for the reception of the threaded adjusting devices 15, which project through said lugs and are permitted to rotate, but are held against reciprocating movement by the collars 16 and 17. These adjusting devices are threaded in the vertical bars of the brackets, so that the rotation of the adjusting devices will cause the brackets to slide upon the base in a direction which may be governed by the direction of rotation of the adjusting device. In order that both brackets may be adjusted simultaneously, I have provided sprockets 18 on said adjusting devices, and on one of them I have provided a hand-wheel 19, so that said adjusting devices may be operated in an obvious manner.

Projecting through the slots 4 in the chamber-casing 3 are projections or lugs 20, which are rigid with the grinding-plate 5. The rods 21 are connected to these projections 20 and to the bearing-brackets 7, so that whenever the brackets are moved movement will be imparted to the grinding-plate through the medium of the rods 21, the limit of movement of the grinding-plate being governed by the lengths of the slots 4 and the adjusting movement of the breaker-plate shaft being permitted by the slots 22 in the disintegrating-chamber casing. The hopper 23 at the feed end of the machine is provided with a

steam-jacket rear wall 24, which is rigid with the hopper portion of the machine, so that the relative position of the breaker-plate may be adjusted with relation thereto.

5 25 designates a rotating shaft which carries the beaters or hammers 26 of any preferred construction, said shaft being driven by a suitable belt. (Not shown.) The shaft 9 is driven at a different speed from the shaft 25 and by a different belt, so that the adjustment of the breaker-plate and the grinding-plate will in no wise affect the operation of the shaft 25, carrying the beaters or hammers 26.

From the foregoing it will be obvious that 15 the single adjusting means for controlling the position of the breaker-plate will effectually cause the grinding-plate to move synchronously with said breaker-plate, so that the relative positions of the two plates will not 20 be changed at any adjusted position of either plate.

In Fig. 4 are shown the roller breaker-plate and links 27, mounted on the axles thereof, said links being pivotally connected to lugs 25 projecting on the under sides of curved side bars, mounted in guideways in the side frames of the machine. These side bars, which are indicated at 28, carry cage-bars, (indicated at 29.) In this way the connection between 30 the roller breaker-plate and the grinding-surface is within the casing instead of being outside of the casing, as shown in Figs. 1, 2, and 3. In the construction shown in Fig. 4 the roller breaker-plate may be adjusted horizontally, while the grinding-plate is capable 35 of concentric movement with respect to the axis of rotation of the pivoted revolving hammers which cooperate with the breaker-plate and said grinding-plate. The pivotal connection between said roller breaker-plate and 40 the concentric movement of the grinding-plate is such that while the breaker-plate moves horizontally the grinding-plate may move concentrically; but the relative positions of the breaker-plate and grinding-plate 45 will not appreciably be changed.

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

50 1. In a machine of the class described, the combination with a disintegrating-chamber, a hopper, a rotary breaker-plate and a grinding-plate, of means for imparting synchronous movement to the rotary breaker-plate 55 and grinding-plate for purposes of adjustment; substantially as described.

2. In a machine of the class described provided with a rotary beater, a horizontally-adjustable rotary breaker-plate, a grinding-plate concentrically adjustable with respect 60 to the axis of rotation of the beater, the

breaker-plate being adjacent to the entrance-opening of the machine and the grinding-plate being immediately below said breaker-plate, and means for imparting synchronous 65 movement to the breaker-plate and grinding-plate; substantially as described.

3. In a machine of the class described provided with rotary beaters, a horizontally-adjustable rotary breaker-plate, a grinding-plate concentrically adjustable with respect 70 to the axis of rotation of the beaters, and a connecting means between the two whereby the movement of one will impart movement to the other; substantially as described. 75

4. In a machine of the class described provided with rotary beaters, a horizontally-adjustable rotary breaker-plate, a grinding-plate concentrically adjustable with respect 80 to the axis of rotation of the beaters; sliding bearings supporting the breaker-plate, and rigid connections between the sliding bearings and the grinding-plate; substantially as 85 described.

5. In a machine of the class described provided with rotary beaters, a cylindrical casing having an opening in its periphery and a horizontally-adjustable rotary breaker-plate 90 adjacent to said opening, a grinding-plate below the breaker-plate and concentrically adjustable with respect to the axis of rotation of the beaters, sliding bearings supporting the breaker-plate, and connecting means between the sliding bearings and the grinding-plate; substantially as described. 95

6. In a machine of the class described provided with a pivotally-mounted beater, the combination with a cylindrical casing having an opening in its periphery, of a horizontally-adjustable rotary breaker-plate, a grinding-plate concentrically adjustable with respect 100 to the pivot of the beater, sliding bearings supporting the breaker-plate, and a screw for imparting motion to the sliding bearings whereby the rotary breaker-plate and the grinding-plate will be synchronously moved; substantially as described. 105

7. In a machine of the character described, the combination with a rotary breaker-plate and a grinding-surface, of means for simultaneously adjusting the breaker-plate horizontally and the grinding-surface in a curved 110 path; substantially as described.

8. In a machine of the character described, the combination with a roller breaker-plate, 115 of means for adjusting the same horizontally, a grinding-surface capable of concentric movement with respect to the axis of rotation of the pivoted revolving hammers which cooperate with the breaker-plate and said grinding-surface, and a pivotal connection between said roller breaker-plate and said con- 120

centrically-movable grinding-surface; substantially as described.

9. In a machine of the character described, the combination with pivoted revolving hammers, of a roller breaker-plate, a grinding-surface concentrically movable with respect to the axis of rotation of said hammers, a link connection between said grinding-surface and said roller breaker-plate, and means for

adjusting said parts simultaneously; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 10th day of August, 1904.

MILTON F. WILLIAMS

Witnesses:

F. R. CORNWALL,
GEORGE BAKEWELL.