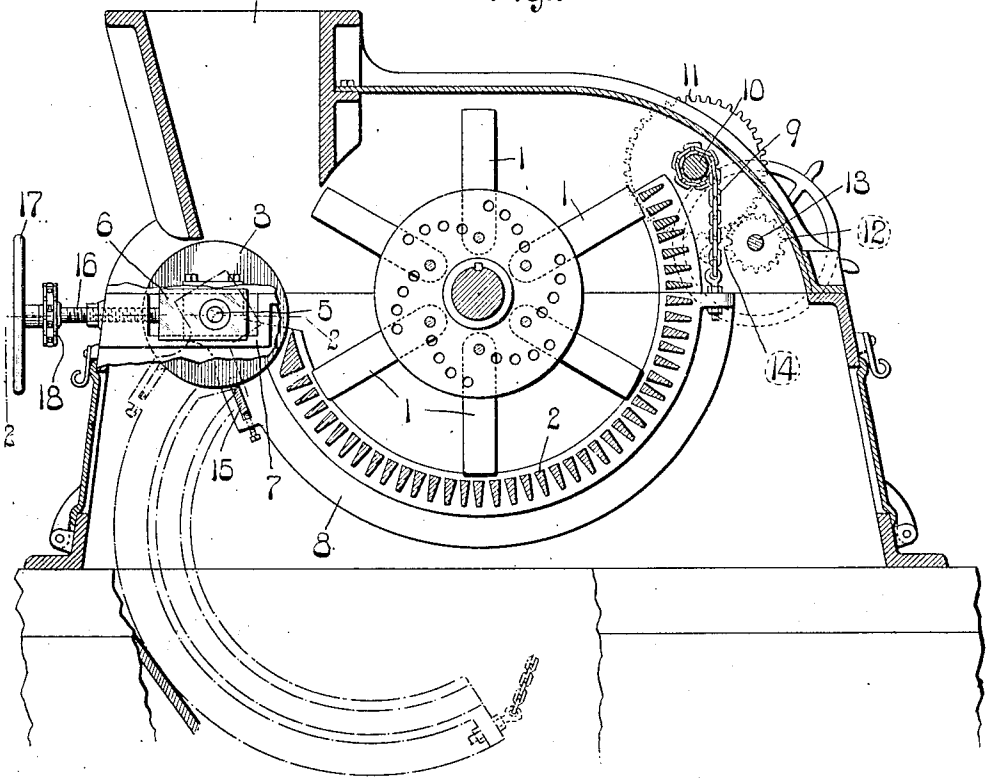
M. F. WILLIAMS.

CRUSHER AND PULVERIZER.

APPLICATION FILED DEC. 16, 1907.

904,909. Patented Nov. 24, 1908.

Fig. 1.



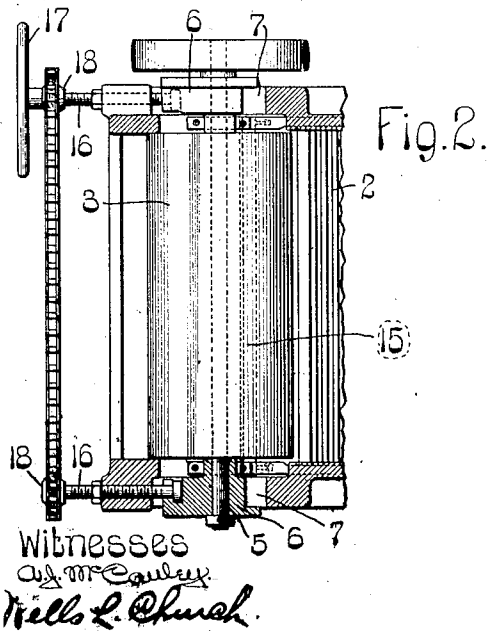
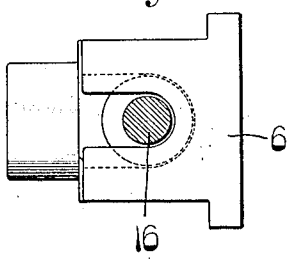


Fig. 2.

Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

MILTON F. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER AND PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CRUSHER AND PULVERIZER.

No. 904,909. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed December 16, 1907. Serial No. 406,727.

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 Crushers and Pulverizers, 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 longitudinal sectional view of a crusher or pulverizer constructed in accordance with my invention; Fig. 2 is a horizontal sectional view taken on the line 2—2 of Fig. 1; and Fig. 3 is a detail view illustrating the connection between the adjusting shafts and the bearings for the shaft of the rotatable breaker plate.

This invention relates to crushers and pulverizers, and has for its object to produce a machine of the character described that is provided with a rotatable breaker plate, a pivotally mounted grinding surface, and means for simultaneously moving said breaker plate and grinding surface toward and away from the axis of the rotating hammers or beaters.

Referring to the drawings which illustrate the preferred form of my invention, 1 designates the rotating hammers or beaters of the machine, and 2 designates a grinding surface or cage with which the beaters cooperate to disintegrate the material.

A rotatable breaker plate consisting of a roll 3 is arranged adjacent the feed opening or mouth 4 of the machine, and the shaft 5 to which said roll 3 is rigidly secured is journaled in blocks 6 slidingly mounted in guideways 7 on the frame of the machine. The support 8 which carries the grinding surface or cage 2 is fulcrumed on extensions on the blocks 6 in which the shaft 5 of the roll 3 is journaled, and a flexible member or chain 9 is secured to the opposite end of said support for raising and lowering it to discharge or dump the contents of the cage. The flexible member 9 is fastened to a winding shaft 10 having a gear 11 that meshes with a pinion 12 on a manually-operated shaft 13 and a pawl 14 is provided for engaging the pinion 12 to prevent retrograde movement of the shafts 10 and 13 so as to retain the cage in its elevated position. The roll 3 not only forms a breaker plate but also operates to feed the material onto the cage or grinding surface, and a scraping blade 15 is adjustably mounted in the support 8 for the grinding surface underneath the roll 3 to remove any material which adheres to the roll.

Movement is imparted to the blocks or bearings 6 for the shaft of the roll 3 so as to move said roll and also the grinding surface toward the axis of the rotating beaters to compensate for the wear on the ends of the beaters or hammers 1, by means of screw-threaded shafts 16 passing through screw-threaded bearings in the frame of the machine and having swiveled connections with the bearings 6.

One of the shafts 16 is provided with a hand-wheel 17 and both shafts are provided with sprocket wheels 18 over which a chain passes so that the bearings or blocks 6 will be moved simultaneously when the hand-wheel 17 is turned.

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

1. A crusher or pulverizer provided with beaters or hammers, a pivotally mounted grinding surface and a rotatable breaker plate, and means for simultaneously adjusting said grinding surface and rotatable breaker plate relatively to the hammers; substantially as described.

2. A crusher or pulverizer comprising hammers or beaters, a roller arranged at the mouth of the machine, a support for said roller, a grinding surface pivotally connected to the support on which the roller is mounted, means for raising and lowering the free end of said grinding surface, and means for simultaneously moving the roller and grinding surface toward and away from the beaters; substantially as described.

3. A crusher or pulverizer comprising hammers or beaters, a rotatable breaker plate arranged adjacent the feed opening of the machine, a support for said breaker plate, a pivotally mounted grinding surface carried by the support on which said breaker plate is mounted, and means for simultaneously moving said rotatable breaker plate

and grinding surface toward and away from the axes of the beaters; substantially as described.

4. A crusher or pulverizer comprising rotatable beaters or hammers, a roller arranged adjacent the feed opening of the machine, adjustable bearings in which the shaft of said roller is journaled, and a support pivotally mounted on the bearings for the shaft of said roller and provided with a grinding surface; substantially as described.

5. A crusher or pulverizer comprising beaters or hammers, a roller arranged adjacent the feed opening of the machine, a plurality of bearings in which the shaft of said roller is journaled, a support pivotally mounted on the bearings for said shaft and provided with a grinding surface, and means for moving all of said bearings simultaneously to adjust the roller and grinding surface relatively to the beaters; substantially as described.

6. A crusher or pulverizer comprising rotatable beaters or hammers, a roller arranged adjacent the feed opening of the machine, bearings in which the shaft of said roller is journaled, means for adjusting said bearings simultaneously, a curved grinding surface carried by a support that is pivotally mounted on the supporting means for said roller, and means for raising and lowering the free end of said grinding surface; substantially as described.

7. In a machine of the character described, a support provided with a curved grinding surface, a rotatable breaker plate arranged at one end of said grinding surface, and a stationary scraping blade mounted on said support for removing the material that adheres to said breaker plate; substantially as described.

8. A crusher or pulverizer comprising beaters or hammers, a roller arranged adjacent the mouth of the machine, a support for said roller, a curved grinding surface carried by a support that is pivotally mounted on the support for said roller, means for raising and lowering the support for the grinding surface, and a stationary scraping blade adjustably mounted on said support and coöperating with the roller to remove any material that adheres thereto; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this eleventh day of December 1907.

MILTON F. WILLIAMS.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.