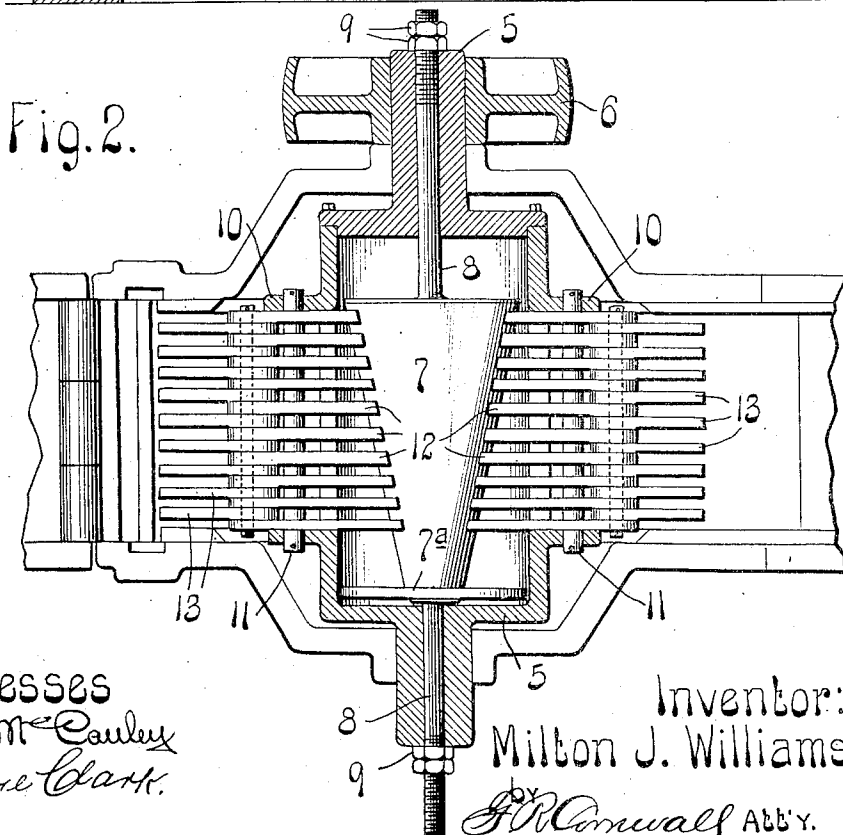
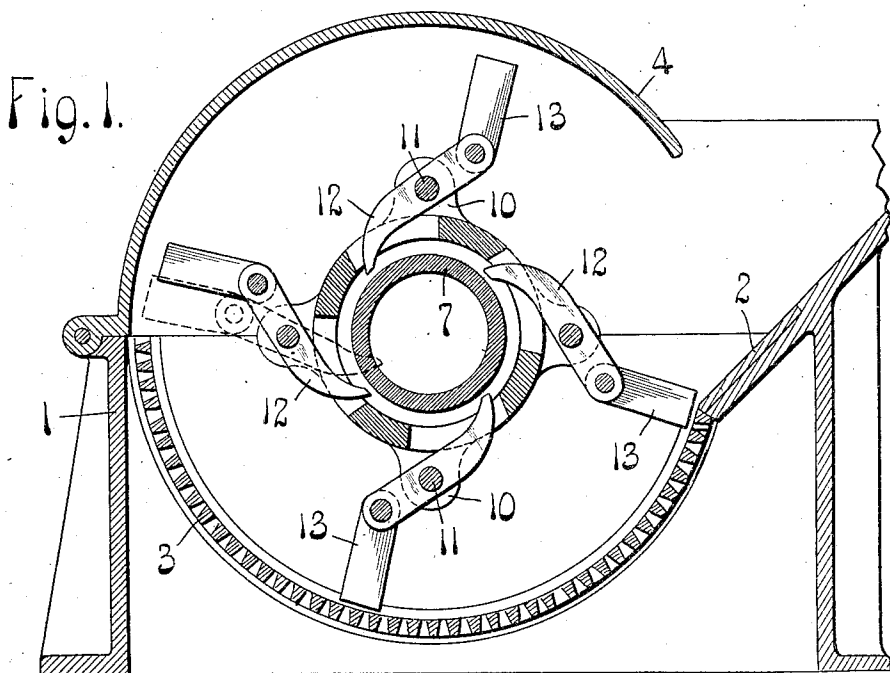


M. J. WILLIAMS.
PULVERIZER.
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939,769.

Patented Nov. 9, 1909.



Witnesses
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UNITED STATES PATENT OFFICE.

MILTON J. WILLIAMS, OF CHICAGO, ILLINOIS.

PULVERIZER.

939,769.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed February 16, 1909. Serial No. 478,211.

To all whom it may concern:

Be it known that I, MILTON J. WILLIAMS, a citizen of the United States, residing at Chicago, Illinois, have invented a certain new and useful Improvement in 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 vertical sectional view through a pulverizer constructed according to my improvement; Fig. 2 is a horizontal fragmentary sectional view through the same.

This invention relates to a new and useful improvement in pulverizers of that type commercially known as the "Williams mills", characterized by the pivoted revolving hammers which act upon the material as it enters the machine at the hopper or feed end thereof, crushing said material as it rests upon the bottom of the hopper, or breaker plate, as it is sometimes called, the material being further disintegrated or crushed by the hammers acting thereon as the material is carried over the cage or grinding surface. The crushed material falls through the openings in the cage or grinding surface into a suitable receptacle located beneath the machine. The hammers or beaters which revolve about the shaft, while made of a material whose resistance to wear is its essential quality, will, in time, wear away at their striking ends, and the farther these striking ends are removed from the breaker plate and grinding surface, the less becomes the capacity of the machine.

It is the purpose of my present invention to provide means whereby these revolving hammers or beaters may be adjusted outwardly to take up this wear (or inwardly, if occasion requires, as when a new cage is introduced to replace a worn one), said means being operable from the outside and effecting the simultaneous and uniform adjustment of all of the hammers or beaters.

In the drawings, 1 indicates the casing, 2 the breaker plate, 3 the grinding surface or cage, and 4 the cover of the machine, which may or may not be hung, as desired.

5 is a shaft mounted in bearings in the side frames of the machine, one end of said shaft carrying a pulley 6 and the other end,

a balance wheel (not shown), if desired. Within the casing of the machine, shaft 5 is enlarged and made hollow to receive a longitudinally adjustable cone 7, the apical end of which is provided with a guiding flange 7^a. Threaded rods 8 project from each end of the cone through the shaft 5, they being provided with nuts 9 on their ends, by which the cone may be adjusted longitudinally within its chamber.

Arranged about the shaft 5 are lugs 10 in which are mounted rods 11. On these rods are levers 12 whose inner ends pass through openings in the enlarged portion of shaft 5 and bear against the cone 7. The outer ends of levers 12 carry pivoted hammers 13 which act upon the material to be reduced in the machine.

In operation, if the hammers 13 wear at their striking ends the cone 7 is adjusted so that the inner ends of all of the levers ride down inclined surface of the cone, which causes the hammers to move outwardly, such outward movement taking up the wear on the hammer ends. The outer ends of levers 12 are the most heavily weighted, and consequently centrifugal force will act upon such outer ends of said levers causing their inner ends at all times, in operation, to hug the surface of the cone. When the proper adjustment has been effected, the cone is locked against longitudinal displacement by the nuts 9.

I am aware that minor changes in the construction, arrangement and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

Having thus described my invention, what I claim is:

1. In a pulverizer, the combination with a casing, of a rotating element therein, hammer supports carried by said element, longitudinal rows of pivoted revolving hammers mounted on said hammer supports and means adjustable in a direction across the path of movement of said hammers for engaging the hammer supports and taking up wear at the ends of the hammers.

2. In a pulverizer, the combination with a casing, of a rotating element therein, longitudinal rows of pivoted revolving hammers arranged on said rotating element, each of said hammers having supports of various

lengths depending upon the position of the hammer in the row, and means cooperating with said hammer supports for taking up wear at the ends of the hammers.

3. In a pulverizer, the combination with a casing, of a shaft mounted therein, a member carried by said shaft within the casing, hammer supports of various lengths carried by said member, hammers pivotally connected to said hammer supports, and means adjustable lengthwise the shaft for cooperating with said hammer supports to take up wear at the ends of the hammer supports.

4. In a pulverizer, the combination with a casing, of pivotally revolving hammers arranged therein, a cylindrical member for carrying said hammers, and a threaded rod and cone within said cylindrical member for adjusting said hammers inwardly and outwardly, said rod extending through the end of the cylindrical member and provided at its extremity with a nut for locking the parts in their adjusted positions.

5. In a pulverizer, the combination with a casing, a cylindrical member mounted therein, levers of various lengths mounted upon said cylindrical member, hammers pivotally mounted on the outer ends of said levers, and an adjustable cone arranged within the cylindrical member and cooperating with the inner ends of said levers of varying lengths.

6. In a pulverizer, the combination with a casing, of a shaft mounted therein, hammer

supports pivotally carried by said shaft, hammers pivotally mounted on the outer ends of said supports, the inner ends of said hammer supports being of varying lengths, and means movable longitudinally the shaft and cooperating with the inner ends of said hammer supports for taking up wear at the ends of the hammers, and devices for locking said last mentioned means in adjusted positions.

7. In a pulverizer, a casing, a cylindrical member journaled for rotation therein, a series of revolving hammers pivotally arranged on the cylindrical member, and means arranged within the cylindrical member for adjusting the hammers outwardly to take up the wear on the ends thereof, which means is adjustable from the exterior of the cylindrical member.

8. In a pulverizer, a casing, a cylindrical member journaled for rotation therein, a series of levers pivotally arranged on the cylindrical member, adjustable means within the cylindrical member for engaging the inner ends of all of the levers, and revolving hammers pivotally connected to the outer ends of the levers.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 8th day of February, 1909.

MILTON J. WILLIAMS.

Witnesses:

WILL MELVILLE,
REINHOLD E. WINTER.