M. J. WILLIAMS.

PULVERIZER.

APPLICATION FILED FEB. 16, 1909.

939,770. Patented Nov. 9, 1909.

Fig. 1.

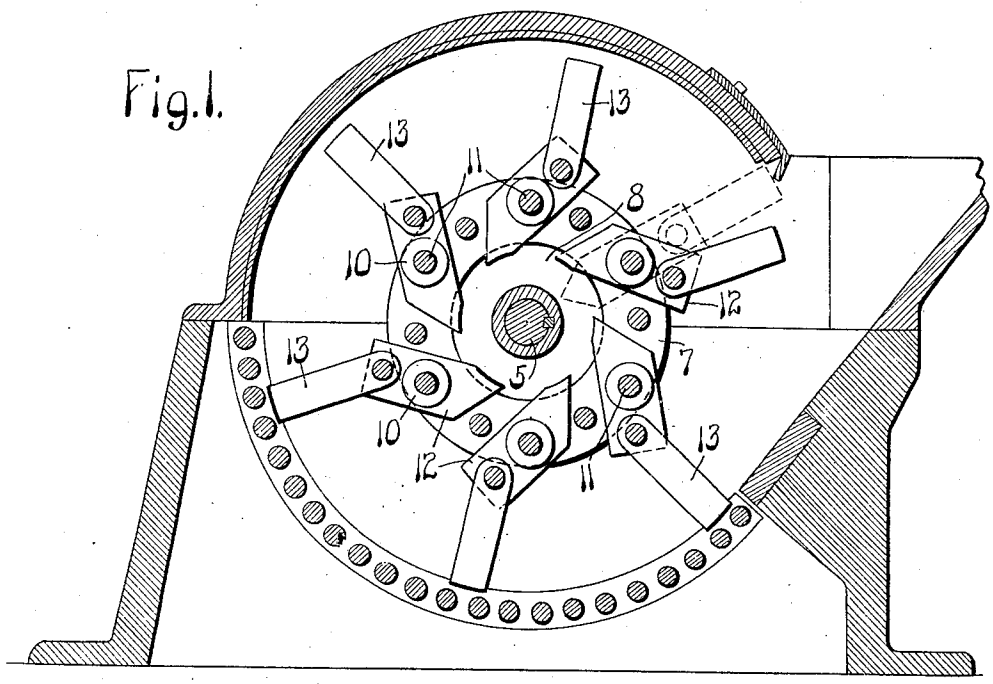
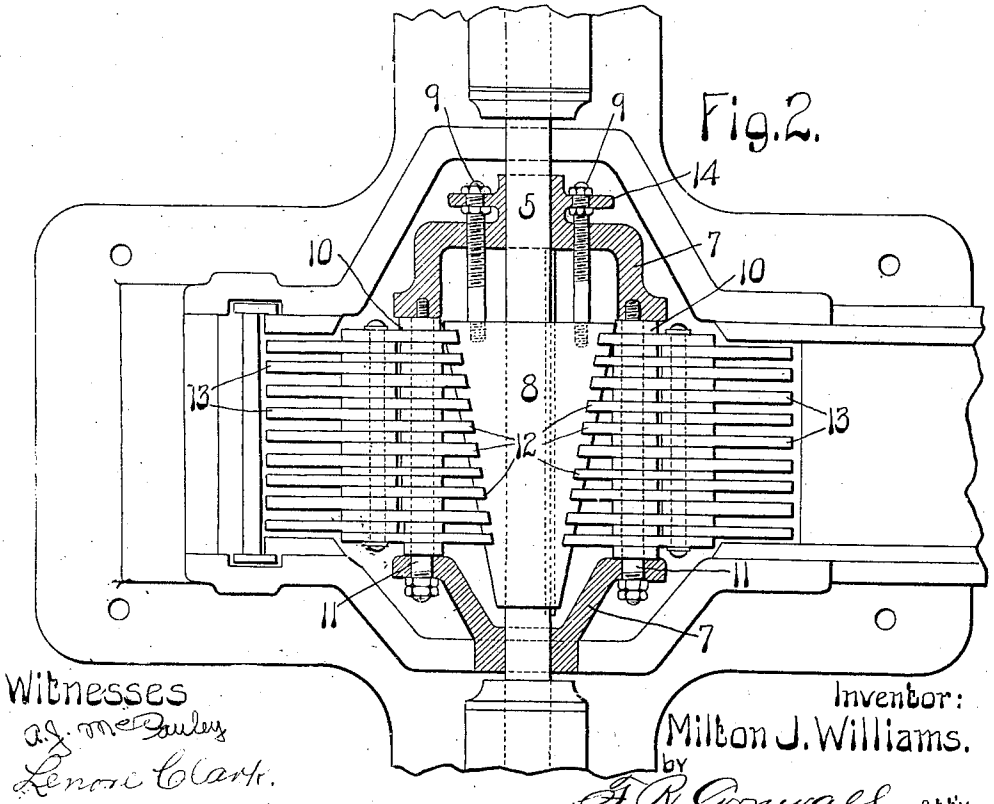


Fig. 2.



Witnesses

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by

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UNITED STATES PATENT OFFICE.

MILTON J. WILLIAMS, OF CHICAGO, ILLINOIS.

PULVERIZER.

939,770. Specification of Letters Patent. Patented Nov. 9, 1909.

Application filed February 16, 1909. Serial No. 478,212.

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 inside of the casing and effecting the simultaneous and uniform adjustment of all the hammers or beaters.

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 carries head pieces 7, between which head pieces and feathered on shaft 5, is arranged an adjustable cone 8. Threaded rods 9 project from the base of the cone through one of the head plates 7.

10 are lugs arranged between the head pieces 7, said lugs being formed with openings for the passage of clamping screws 11. On some of these clamping screws are levers 12, whose inner ends bear against cone 8. 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 8 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 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 on the rods 9. These nuts are arranged on each side of a ring 14 secured in position upon one of the head casings 7.

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 shaft mounted therein, head pieces on the shaft within the casing, a series of levers arranged between the head pieces, hammers pivotally carried by the levers, a member arranged to slide on the shaft between the head pieces and engaging all of the levers and adjustable means seated in one of the head pieces and engaging said sliding member.

2. In a pulverizer, the combination with a casing, of pivoted revolving hammers arranged in said casing, a shaft for carrying said hammers, head pieces on the shaft and between which said hammers are mounted, and means arranged wholly within the casing and coöperating with one of said head pieces for adjusting said beaters inwardly and outwardly.

3. In a pulverizer, a casing, a shaft journaled therein, head pieces on the shaft within the casing, rods connecting said head pieces, levers of different lengths mounted on said rods, hammers pivotally carried by the outer ends of the levers, a conical member loosely mounted on the shaft between the head pieces and engaging the inner ends on the levers and adjustable means seated in one of the head pieces for shifting the conical member lengthwise upon the shaft.

4. In a pulverizer, the combination with a casing, a shaft mounted in said casing, head pieces carried by said shaft, a cone mounted between the head pieces, means for adjusting said cone longitudinally upon the shaft, rings secured in position between said head pieces, levers pivotally mounted between said rings and having their inner ends bearing upon said cone, and hammers or beaters carried by the outer ends of said levers.

5. In a pulverizer, a casing, a shaft mounted for rotation therein, head pieces arranged on the shaft, levers pivotally held between the head pieces, rotating hammers pivotally carried by the outer ends of the levers, an adjustable member arranged between the head pieces and coöperating with the inner ends of the levers for adjusting the hammers inwardly and outwardly, and means whereby said adjustable member is locked after adjustment.

6. In a pulverizer, a casing, a shaft mounted for rotation therein, head pieces on the shaft within the casing, a series of sets of levers pivotally mounted between the head pieces, rotating hammers pivotally carried by the outer ends of the levers, a cone arranged to slide upon the shaft between the head pieces and with which cone the inner ends of all of the levers engage, and means carried by said cone and passing through one of the head pieces for moving the cone to adjust the hammers inwardly and outwardly.

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

MILTON J. WILLIAMS.

Witnesses:

WILLIS MELVILLE,

REINHOLD E. WINTER.