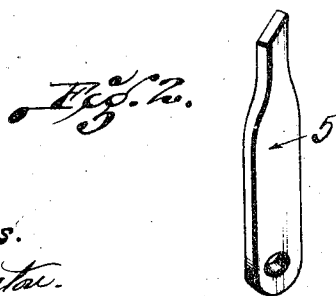
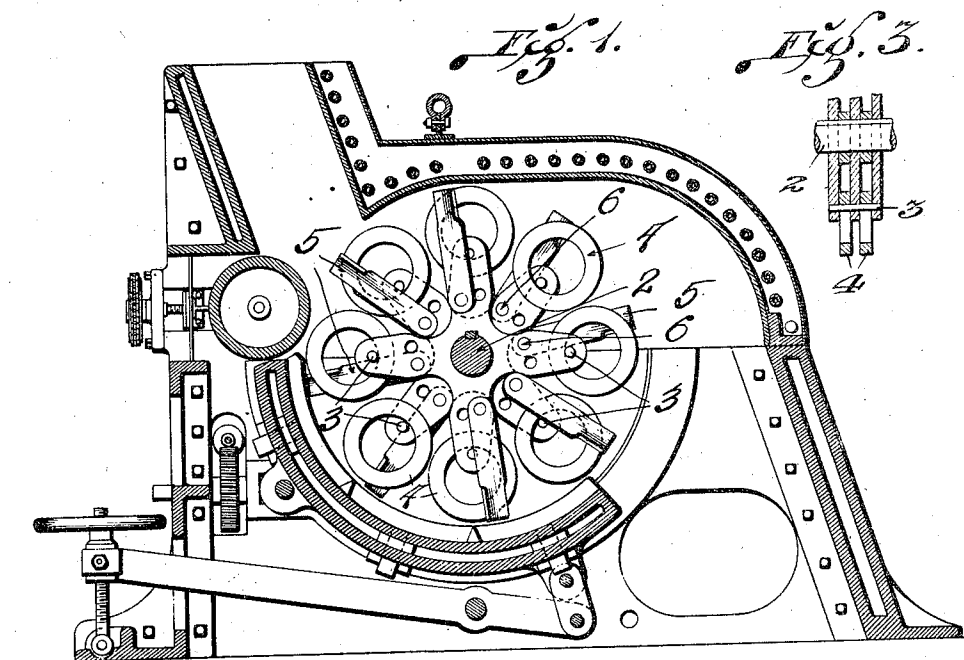


A. F. WILLIAMS.
PULVERIZER.
APPLICATION FILED JUNE 15, 1910.

1,014,191.

Patented Jan. 9, 1912.



WITNESSES.

E. M. Harrington.
W. O. Smith

INVENTOR

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By J. R. Cornwall, Att.

UNITED STATES PATENT OFFICE.

ARTHUR F. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER AND PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI.

PULVERIZER.

1,014,191.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed June 15, 1910. Serial No. 567,034.

To all whom it may concern:

Be it known that I, ARTHUR F. WILLIAMS, a citizen of the United States, residing at 2701 North Broadway, St. Louis, Missouri, 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 sectional view through my improved form of pulverizer. Fig. 2 is a detail view of one of the hammers or beaters which are used in conjunction with the rings. Fig. 3 is a detail sectional view taken at right angles to Fig. 1, and illustrating the ring hammers and the plates between which said ring hammers are positioned.

This invention relates to a new and useful improvement in pulverizers for reducing shale, limestone, coal, etc., the object being to use loosely mounted rings in connection with hammers or beaters.

In the accompanying drawings I have illustrated a form of casing similar to that illustrated in the Williams Patent No. 878,921, dated February 11, 1908, and have also shown an adjustable grinding surface adjusted by means disclosed in said patent, so that it is unnecessary to give the detail description thereof here. The material to be reduced is introduced into the hopper at the feed end of the machine and passes over a cylindrical breaker plate to where it is first acted upon by the rings or beaters.

2 is the shaft provided with supports which may be in the form of star plates having three or four points, four being shown, the points of said plates being staggered or alternated with reference to adjacent plates. In these points are pivot rods 3 which pass through the registering opening and on these pivot rods are mounted rings, 4, whose openings are of such size that they permit free movement thereof upon the pivot rods 3. The thickness of the rings 4 is substantially the same as that of the star plates so that the rings may be nested together as shown in Fig. 3. By this ar-

range ment the rings always are staggered with respect to each other and consequently have a rolling contact area equal to the length of shaft on which the supporting plates are mounted. The rings are alternated with hammers or beaters 5 (see Fig. 1) whose pivot rods 6 pass through openings in the points of the stars within the circle defined by the pivot rods 3. There may be one or more openings for the pivot rod 6 located different distances from the shaft whereby said pivot rods may be adjusted for the purpose of compensating for wear on the ends of the hammers.

I am aware of the Goetz Patent, No. 945,160, dated January 4, 1910, and therefore do not claim anything disclosed in said Goetz patent.

My improvement consists in arranging the supporting plates so that the rings supported thereby are in close proximity and in line to act in sequence upon the material introduced into the hopper. By using the hammers or beaters 5 alternately with the rings these elements may act upon the hard lumps of material introduced to break them, so that they may be more easily acted upon by the rolling rings 4 to further crush and pulverize the material.

What I claim is:

In a machine of the class described the combination of a casing and a breaker surface, a grinding surface, a shaft, supporting plates on the shaft with points staggered with relation to each other, rings arranged between the ends of the projecting points on alternate plates, and in line with the body portion of an intermediate plate, the plates and rings being of substantially the same thickness and hammers or beaters adjustably and pivotally mounted on said supporting plates, said rings and hammers being nested to form a substantially continuous crushing area.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 10th day of June, 1910.

ARTHUR F. WILLIAMS.

Witnesses:

M. P. SMITH,
ALMA GEBHART.