No. 845,171 PATENTED FEB. 26, 1907.

W. H. GARDNER.

CRUSHER AND PULVERIZER.

APPLICATION FILED DEC. 28, 1905.

Fig. 1.

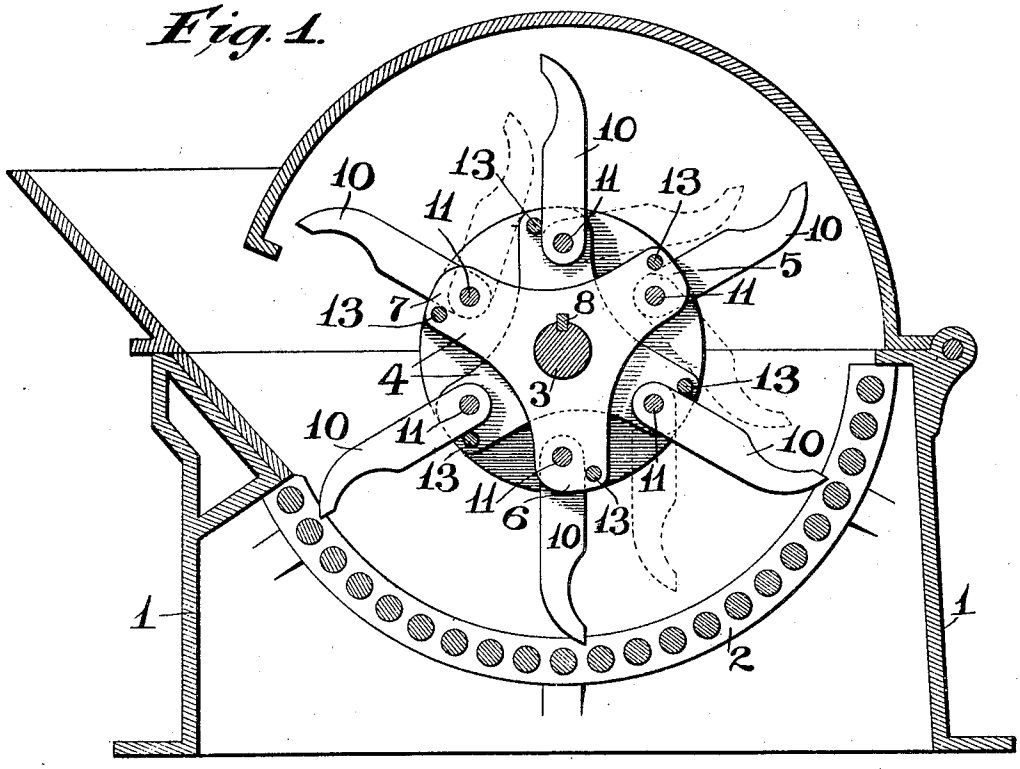
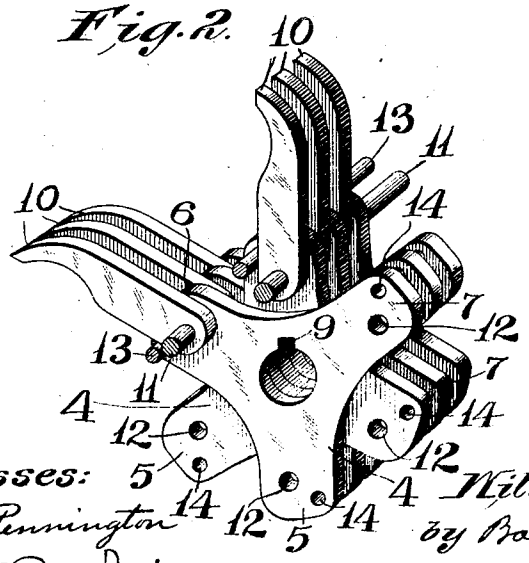


Fig. 2.



Witnesses:
G. A. Pennington
A. J. McCauley.

Inventor:
William H. Gardner,
by Bakewell & Cornwall.
Attys.

UNITED STATES PATENT OFFICE.

WILLIAM H. GARDNER, OF BASIC CITY, VIRGINIA, ASSIGNOR TO WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CRUSHER AND PULVERIZER.

No. 845,171. Specification of Letters Patent. Patented Feb. 26, 1907.

Application filed December 28, 1905. Serial No. 293,611.

To all whom it may concern:

Be it known that I, WILLIAM H. GARDNER, a citizen of the United States, residing at Basic City, Virginia, 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.

Figure 1 is a vertical longitudinal sectional view through the casing of a crusher and pulverizer, the disintegrating mechanism being shown in elevation; and Fig. 2 is a perspective view of a number of the hammer-supports and hammers carried thereby.

This invention relates to the general class of crushers and pulverizers; and one of the objects thereof is to provide a disintegrating mechanism, including a shaft with radial hammers arranged thereabout and swingingly secured in their relative positions, so that the centrifugal action of the shaft will cause the hammers to contact with the material to be acted upon and to provide means for preventing interference between the respective hammers.

In the drawings I have illustrated a casing which I designate by the reference-numeral 1 and having a cage or grate 2 at the bottom portion thereof; but this casing and cage may be of any other preferred form adapted for the purpose to be accomplished.

In the casing is mounted a shaft 3, on which are a plurality of substantially triangular hammer-supports 4, having radial wings, (designated by the reference-numerals 5, 6, and 7, respectively.) These hammer-supports are arranged side by side on the shaft 3, to which they are preferably keyed by a key 8, insertible in a keyway 9 in the respective hammer-supports and in a similar keyway in the shaft. The hammer-supports are arranged in alternating series—that is to say, the projecting wings on one hammer-support are arranged intermediate the corresponding wings on the adjacent support—so that the hammers 10 may be pivoted and disposed radially around the shaft. The hammers 10 are illustrated as being of the "hawk-bill" type; but other forms may be employed, if desired. The pivots 11 extend through openings 12 in the respective wings, and these pivots preferably consist of rods which project through the entire series of supports; but separate pivots might be employed in lieu of the rods 11. Stops (illustrated as rods 13) pass through openings 14 in the respective wings, and these stops 13 are arranged adjacent to the pivots of the respective hammers and are supported by the same wing which carries the particular hammer whose movement it is desired to limit. The movement of the pivoted hammer in one direction is limited by the alternating wing of the adjacent hammer-support and in the opposite direction by the stop.

By reference to Fig. 1 it will be observed that the stops 13 are arranged in front of the hammers, so that there is no liability of the hammers coming in contact with each other when the machine is at rest or when they are moving at a slow speed. Thus the chances of dulling the hammers or otherwise interfering with them will be avoided. Of course when the speed of the shaft is high the hammers will be maintained in true radial lines from the axis of the shaft or but slightly deflected, owing to contact with the material; but when the machine is slowing down or just started or moving at a slow speed the hammers might contact with each other were it not for the fact that the supports are provided with stops which would limit the forward movement of each hammer.

I have shown what to me at this time appears to be the best construction of the hammer-supports and hammers; but I do not limit myself to the exact form shown, but reserve the right to make such changes and alterations in form, proportion, and minor details of construction as may suggest themselves from time to time and come within the scope of the following claim.

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

In a machine of the class described, the combination with a shaft, of hammer-supports connected to said shaft and each consisting of a plurality of radially-extending wings, said hammer-supports being so arranged that the wings of one support are arranged midway the wings of the adjacent

support, hammers pivotally connected between the outer ends of the wings of alternate supports, and continuous rods extending through the wings of the supports in front of the pivots of the hammers and adjacent to said pivots to limit the forward movements of the hammers; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 22d day of November, 1905.

WILLIAM H. GARDNER.

Witnesses:
H. L. WISE,
M. E. BEAN.