O. J. WILLIAMS.

ROTARY PIVOTED HAMMER.

APPLICATION FILED MAY 23, 1919.

1,317,769. Patented Oct. 7, 1919.

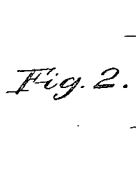


Fig. 2.

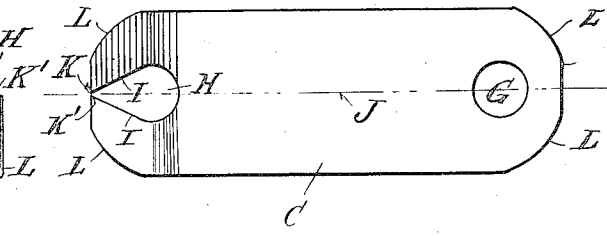


Fig. 3.

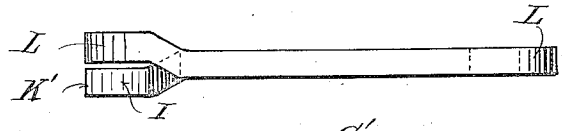


Fig. 4.

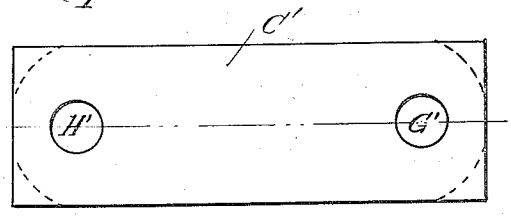


Fig. 5.

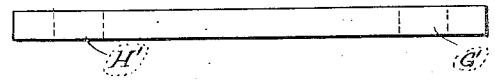


Fig. 6.

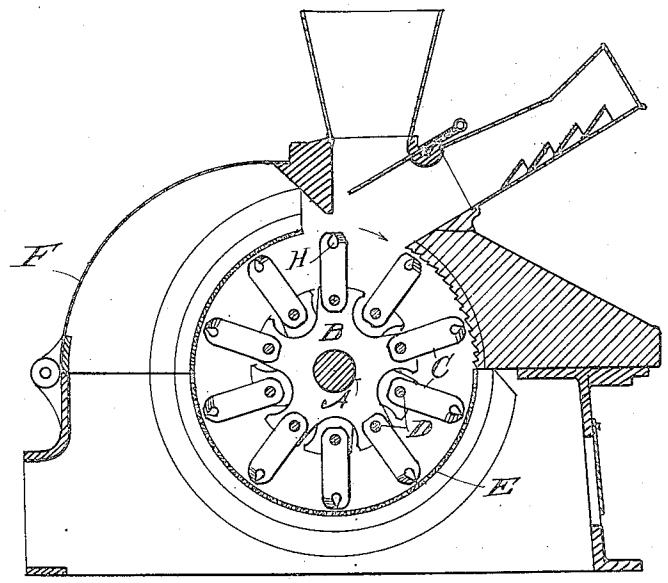


Fig. 1.

Inventor

Oliver J. Williams,

By H. M. Paisted,

Attorney.

UNITED STATES PATENT OFFICE.

OLIVER J. WILLIAMS, OF BURLINGAME, CALIFORNIA, ASSIGNOR TO WILLIAMS PATENT CRUSHER & PULVERIZER CO., OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

ROTARY PIVOTED HAMMER.

1,317,769. Specification of Letters Patent. Patented Oct. 7, 1919.

Application filed May 28, 1919. Serial No. 300,237.

To all whom it may concern:

Be it known that I, OLIVER J. WILLIAMS, a citizen of the United States, residing at Burlingame, in the county of San Matéo and State of California, have invented certain new and useful Improvements in Rotary Pivoted Hammers, of which the following is a specification.

This invention relates to certain new and useful improvements in rotary pivoted hammers the peculiarities of which will be hereinafter described and claimed.

The main object of my invention is to provide a rotary pivoted hammer especially adapted for cutting fibrous material and shredding feed such as alfalfa; another object is to provide such a cutting edge upon a worn out hammer of the style named hereafter and renew the life of said hammer. In the accompanying drawing on which like reference letters indicate corresponding parts Figure 1 represents a vertical sectional elevation across the shaft of a machine provided with my improved hammers; Fig. 2 an enlarged view of the operative cutting end of such a hammer; Fig. 3 a view of the width or side face of such a hammer; Fig. 4 an edge view of the same as it lies in the plane of rotation; Fig. 5 a double-ended rectangular bar hammer shown in face view or width, the life of which it is desired to renew; and Fig. 6 an edge view of the latter hammer.

The letter A designates the shaft of a machine on which are mounted suitable disks B carrying hammers C by hammer rods D passing through said disks. The disks are cut out as shown, for the reception of the pivoted ends of the hammers which are thus mounted alternately in circular rows in the planes of rotation. A suitable cage E cooperates with the outer or operative ends of said hammers, and a suitable casing F incloses the cage and rotor above described.

These hammers consist of a flat rectangular bar of steel of considerable width as compared with the thickness, and such width is $2\frac{1}{2}$ inches for example, while the thickness or lesser dimension of the bar varies from $\frac{1}{16}$th of an inch to $\frac{5}{8}$th of an inch, according to the material that it is desired to operate on and shred or cut in said machine. This style of hammer has near one end a hole G for pivotal mounting on the hammer rod D, and at the other end is formed a recess H consisting of a semi-circular base to a triangular slot, the sides I of which are formed by planes converging from the opposite ends of the base to the outer end or head of the hammer where they intersect at the axis J through the shank and pivot center G. Acute angles are thus formed which provide oppositely directed cutting edges K—K′ that are substantially in the axial plane and are as long as the shank is thick. Said cutting edges may therefore be reduced to a $\frac{1}{16}$th of an inch when such is the thickness of the rectangular bar, or may be $\frac{5}{8}$th of an inch when such is the thickness of said bar. In order to make said cutting edges operative in the reverse directions when the hammer is reversed on its pivot so as to bring the opposite edge to the front, the divided head or prongs forming said head, are offset in opposite directions laterally as shown in Figs. 2 and 4. The cutting edge K therefore has clear action upon the material when rotating in one direction, while the offset prong with its edge K′ has similar unobstructed action when the hammer is rotating in the opposite direction,—as would be the case when the hammers are reversely mounted upon the hammer rods to bring the other cutting edge into action when the previous action of the first cutting edge has been diminished by wear.

It will be observed that the cutting edge K connects by the straight plane I with the semi-circular base of the recess H which thus serves as a clearance for the material being cut. The same opening acts as a clearance when the opposite cutting edge is in action as when reversely mounted. The outer corners of the head are preferably rounded at L so that the offset prongs are provided with clearance at the outer ends between the cutting edges and the cage E and constitute what is known in the trade as an "Ideal" point or cutting edge. It will be noted that on account of these cutting edges K—K′ being substantially in the radial line through the pivot of the hammer and the shaft A, the cutting edges are brought closer to the cage than if said edges were either forward or behind the radial plane mentioned. It is thus practicable to obtain with my hammer, a closer adjustment to the grinding cage and a finer grinding or shredding action upon the material fed to the mill.

In machines of the class described, a com-

mon form of hammer is used which hammer is shown in detail in Figs. 5 and 6. This hammer C′ is made of a plain rectangular straight bar of steel of suitable length and having square ends provided near each end with a hole G′—H′ adapted alternately to form the pivotal point of support when mounted respectively upon the hammer rod D. When this form of hammer has been worn off at the corners as shown by dotted lines in Fig. 5, and all four corners have been worn down by reversing the hammer upon the rod D, this hammer is practically worn out. It is another object of my invention to renew the life of such a hammer by cutting a triangular portion from one pivot hole, such as H′ Fig. 5, to the adjacent end, and offsetting the prongs of the divided head thus formed in opposite directions so that it will form a recess and present the appearance of the hammer shown in Figs. 2, 3 and 4 previously described. Two new cutting edges thus being formed upon a practically wornout hammer, will renew its effective use and operation at slight expense by providing two cutting edges like those shown and described above.

Another function of the finished hammer as shown in this application, is that the rounded corner on the forward side edge of the hammer that was previously a square corner but now has been worn down and in my improved construction has been bent to one side of the central plane of rotation, will still act but with a scrubbing effect upon the material in the cage, while it will be followed up immediately by the cutting edge on the same hammer in the new form shown; therefore the rounded edge and the cutting edge both on the same hammer and both on the forward edge for the time being of the said hammer, act in conjunction and supplement one another by their rubbing and cutting effect practically simultaneously operating.

It is understood that my form of hammer as above described may be made from a blank of proper shape in the first instance without waiting for a hammer of the style shown in Figs. 5 and 6 to become worn out or become rounded on its edges before changing it to the style of hammer shown in the previous figures and thereby renewing its life and effectiveness. Likewise a statement of dimensions is given for the purpose of illustration and I am not confined to the sizes mentioned.

I claim:

1. A rotary pivoted hammer comprising a rectangular bar shank of a greater width than thickness having a hole near one end for pivotal mounting, and having a recess at near the opposite head end in the axis of said shank,—said recess dividing the head end into two prongs, and said prongs being set out laterally in opposite directions from the plane of the width of the shank.

2. A rotary pivoted hammer comprising a rectangular bar shank of a greater width in the plane of rotation than thickness, having a hole near one end through the lesser dimension of the bar for pivotal mounting, and having a recess at the opposite head end shaped like a semi-circle with its two ends connected by substantially straight planes to the head end of the axis through the shank, forming two prongs with acute cutting edges,—said prongs being offset laterally in opposite directions from the wide faces of said shank and having reversible cutting edges.

3. A hammer of the character described comprising a flat bar shank having a head divided to form prongs and said prongs being offset laterally from the plane of rotation, one prong having a rounded point and the other prong having a cutting point on the forward edge and coöperating in simultaneous operation, substantially as described.

In testimony whereof I have affixed my signature.

OLIVER J. WILLIAMS.