No. 792,485. PATENTED JUNE 13, 1905.

M. F. WILLIAMS.

CAGE FOR SHREDDING MACHINES.

APPLICATION FILED JAN. 14, 1905.

Fig. 1.

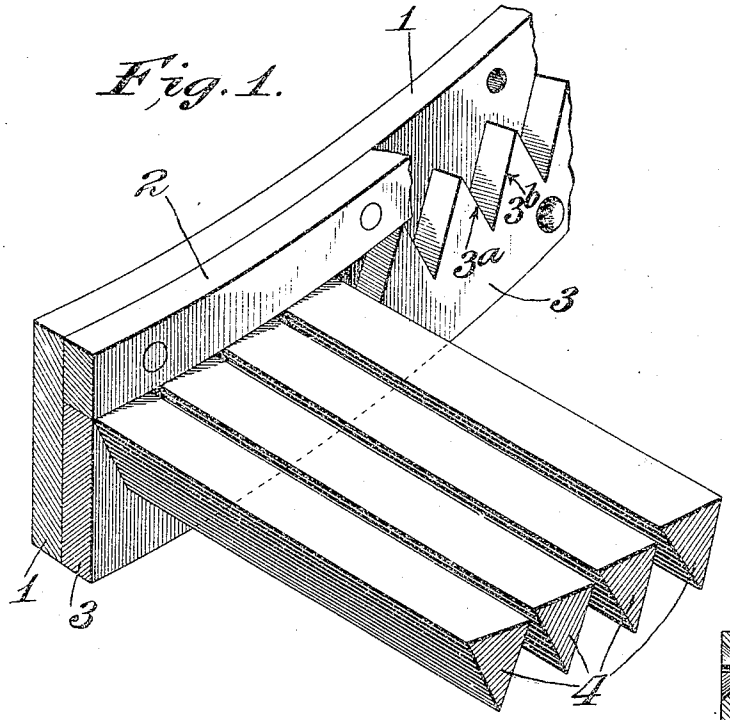


Fig. 3.

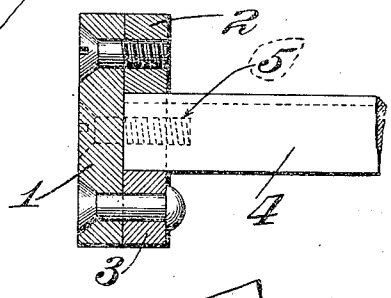
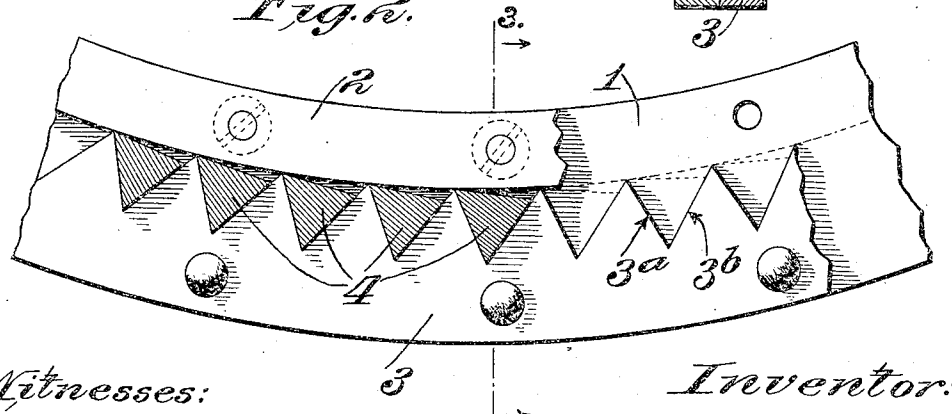


Fig. 2.



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UNITED STATES PATENT OFFICE.

MILTON F. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER & PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

CAGE FOR SHREDDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 792,485, dated June 13, 1905.

Application filed January 14, 1905. Serial No. 241,102.

To all whom it may concern:

Be it known that I, MILTON F. WILLIAMS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Cages for Shredding-Machines, 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 perspective view of a portion of a cage, illustrating my improvement. Fig. 2 is an elevational view thereof, and Fig. 3 is a sectional view on the line 3 3 of Fig. 2.

This invention relates to a new and useful improvement in cages for shredding-machines, the object being to construct a cage for fine grinding or pulverizing whereby the grinding edges of the cage-bars may be renewed quickly simply by turning the bars in their respective sockets. While I have shown the bars as being triangular in shape, it is obvious that square bars or bars of other polygonal shapes can be employed. It is desirable, however, to provide the bars with equiangular corners and symmetrical in shape, whereby they may be lifted out of their sockets, partially rotated, and reintroduced into their sockets, so as to present new cutting edges to the material. This is an important element of my invention, because in fine shredding the sharp edges of the bars are quickly worn and a great saving is effected by being able to change the position of the bars, so as to present new cutting edges instead of renewing the bars, as is frequently done. Where triangular bars are used, there are three adjustments amounting to the presentation of three new cutting edges, and where square bars are used it is possible to present four new cutting edges, &c.

Another object of my present invention is to so construct the mounts for the cage-bars that they can be quickly and cheaply manufactured. The demands for finely-spaced cages in fine shredding are such that calls are made for cages having openings as small as one-twentieth of an inch between the bars. It has been the practice to stamp or punch out the bar-mounts; but this proceeding is slow and cumbersome, and, furthermore, the punch has to be adjusted for each new opening, so that not only does the metal stretch, but other irregularities are bound to exist, resulting in variously sized and spaced openings between the bars. Another objection to bar-mounts so constructed is the fact that where it is desired to have an opening of, say, one-twentieth of an inch between the bars there is not enough material left in the bar-mount to hold it together, with the result that the punching if it does not divide the bar longitudinally leaves it in such shape on account of the web one-twentieth of an inch thick between the openings that it is desirable to file these openings through in order to dispense with the irregularities resulting from their presence, the separate parts of the bar-mounts so punched out being then riveted to a backing-plate.

My present invention contemplates the manufacture of bar-mounts by the use of an ordinary gear-cutting machine in which a plurality of bar-mounts can be simultaneously made, they being clamped together in a well-known manner, so that the gear-cutter can operate across their respective faces. After the bar-mounts are so produced according to the sizes of the bars to be mounted therein the said bar-mounts are riveted to a backing-plate, which is of such width as to accommodate a keeper-plate introduced above the bars to hold them in position.

With these objects in view the invention consists in the construction, arrangement, and combination of the several parts, all as will be hereinafter described, and afterward pointed out in the claims.

In the drawings, 1 indicates the backing-plate, which is preferably curved, so as to properly fit the curved groove in the side frame of the machine.

2 is the keeper-plate, which is preferably a plain bar secured onto the backing-plate 1 at its upper edge, so that the said keeper-plate

can be removed for the purpose of turning the bars.

3 indicates the bar-mount, which is preferably riveted to a backing-plate 1. I will describe the construction of this bar-mount with respect to its adaptability to triangular bars; but it is obvious that this description applies equally to bars having a different cross-section.

4 indicates the cage-bars, which are shown as triangular in shape—that is, the cutting edges are formed equi-angular and the bar is symmetrical in shape. One side of the seat in the bar-mount for the cage-bar—for instance, the side 3^a—is equal to any side of the cage-bar which rests thereagainst. The opposite side of the seat 3^b in the bar-mount is unequal in length with respect to any side of the cage-bar coöperating therewith and to the side 3^a. The greater length of the side 3^b determines the size of the opening between the cage-bars, and it is obvious that it is possible by this construction to determine the size of the openings between the cage-bars with accuracy in order that all of said openings between cage-bars may be uniform. For instance, in the drawings the side 3^a is equal to one of the sides of the triangular bar, while the side 3^b is equal to another side of the triangular bar plus the width of the opening. To increase or diminish the size of the openings between the cage-bars, it is only necessary to change the length of the side 3^b.

When the bars are in position, they are held in their seats by the keeper-plate, which bears against the cutting edge, and in order to enable the cage to be removed as an entirety I may use securing-screws 5, (shown by dotted lines in Fig. 3,) which pass through the back plate into the end bars and one or more intermediate bars.

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 the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with a back plate, of a bar-mount having bar-seats in its upper edge, the side walls of the bar-seats being unequal the difference between the lengths of the side walls determining the space between the bars, bars in said seats, and a keeper for holding said bars in the seats; substantially as described.

2. The combination with a bar-mount having seats in its upper edge whose walls are of unequal lengths the difference between the lengths of the side walls determining the space between the bars, bars mounted in said seats so as to present cutting edges, and means for holding said bars in said seats; substantially as described.

3. The combination with a bar-mount having bar-seats in one edge, the side walls of said seats being of unequal lengths, the difference between the lengths of said side walls determining the space between the bars, and bars in said seats; substantially as described.

4. The combination with a bar-mount having V-shaped bar-seats in one edge, the walls of said seats being of unequal lengths, and triangular bars mounted in said seats; substantially as described.

5. The combination of a backing-plate, a bar-mount having V-shaped seats in its upper edge, the side walls of said seats being of unequal lengths, triangular bars mounted in said seats, and a keeper-plate secured to the backing-plate; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 10th day of January, 1905.

MILTON F. WILLIAMS.

Witnesses:
F. R. CORNWALL,
GEORGE BAKEWELL.