No. 877,690. PATENTED JAN. 28, 1908.

M. F. WILLIAMS.

SHREDDING MACHINE.

APPLICATION FILED MAR. 18, 1907.

2 SHEETS—SHEET 1.

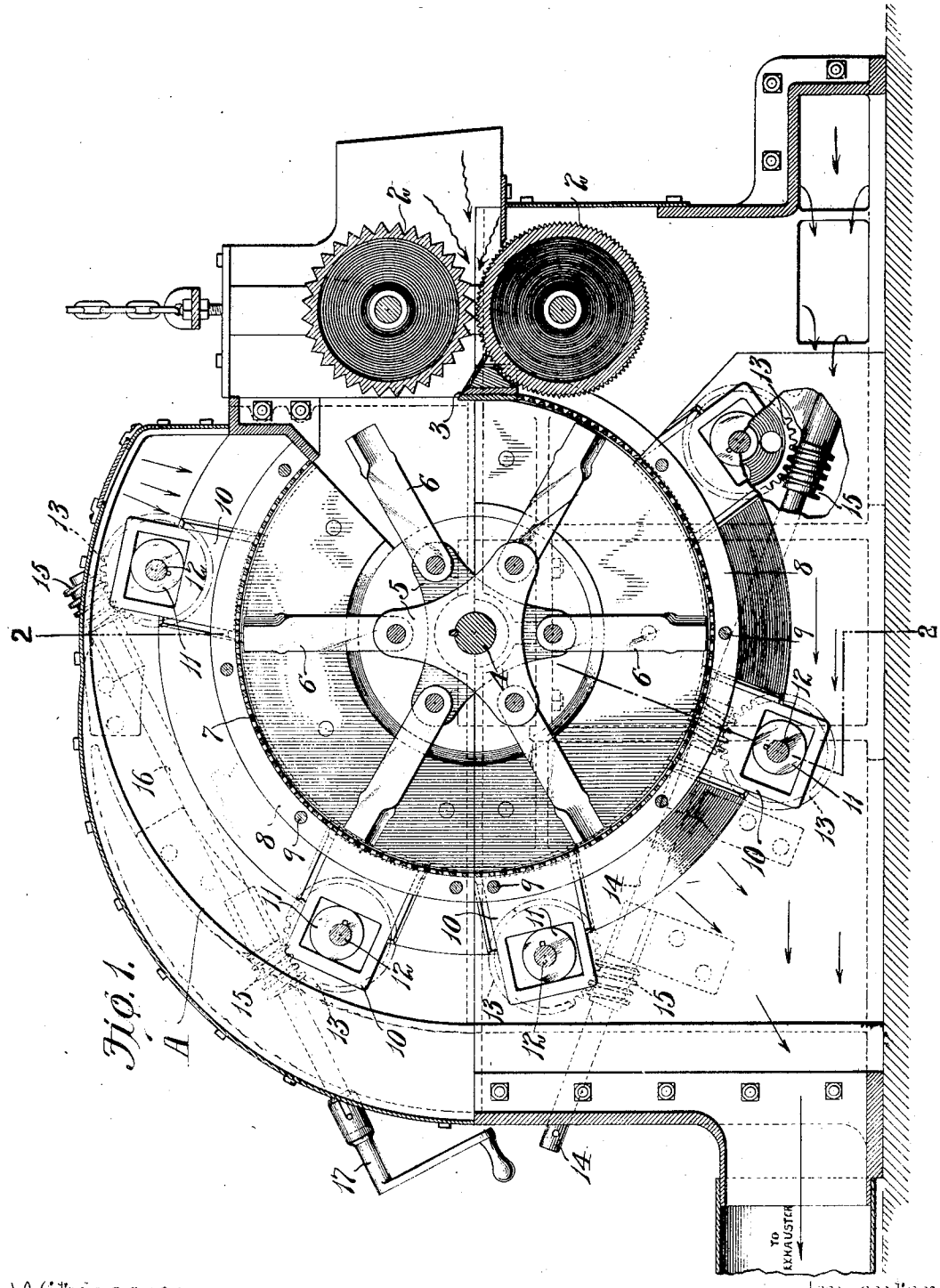


Fig. 1.

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By Bakewell Cornwall Attys.

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2 SHEETS—SHEET 2.

Fig. 2.

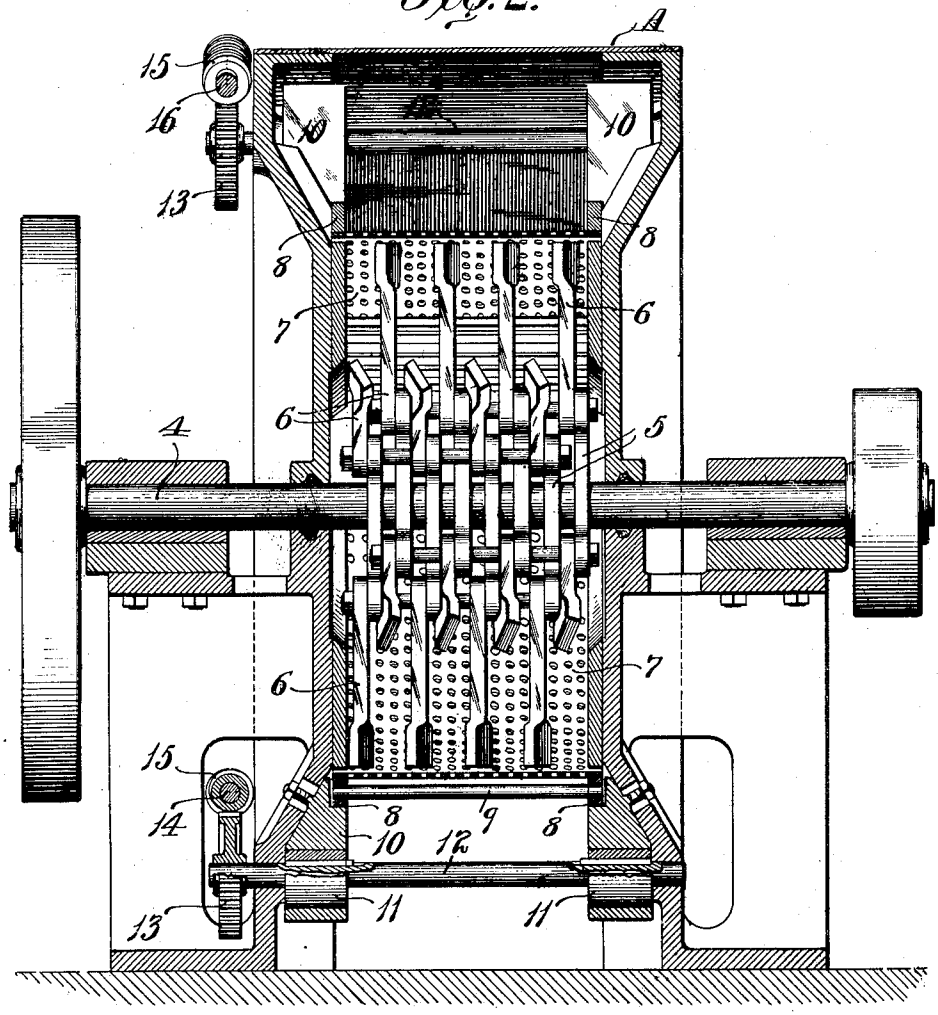
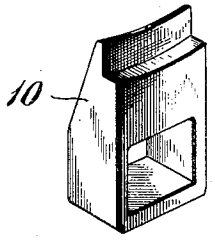


Fig. 3.



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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.

SHREDDING-MACHINE.

No. 877,690. Specification of Letters Patent. Patented Jan. 28, 1908.

Application filed March 18, 1907. Serial No. 363,138.

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 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 horizontal sectional view through my improved machine; Fig. 2 is a vertical cross sectional view on the line 2—2 of Fig. 1; and Fig. 3 is a detail view of one of the clamping blocks.

This invention relates to a new and useful improvement in shredding machines, particularly to that class which are designed to operate upon the fibrous materials to reduce or shred them into fine particles.

The object of my present invention is to provide a means for clamping the grinding surface in position so that said grinding surface may be readily removed.

I have found by experiment that when machines of this character operate upon guayula the gummy substance exuded by the plant fills up the various crevices around the grinding surface, and when it is desired to remove the grinding surface for purposes of cleansing or renewal, the hardened gummy substance acts practically as a cement rendering the removal of the grinding surface exceedingly difficult.

In the drawings, A indicates the casing of the machine, the upper half of which is removable.

2 are feed rollers between which the material to be operated upon is fed into the machine and over a bar 3. This bar, as shown, is made up of several sections appropriately secured together so that the wearing surfaces of the bar may be removed.

4 is a shaft on which are mounted the hammer supports 5, said hammer supports carrying the revolving beaters or hammers 6.

7 is a grinding surface, in this instance in the form of perforated plates mounted upon curved side bars 8, which are connected together by through bolts 9. This grinding surface is made of two sections, the lower section abutting against the breaker bar, and the parting between the lower and upper sections occurring in the horizontal plane of the shaft where the casing is divided.

By referring to Fig. 2 it will be observed that the side members of the frame diverge or flare outwardly approximately around the grinding surface so as to form an enlarged chamber.

Fitting against the inner flaring faces of the side walls of the casing are clamping blocks 10, which blocks are each preferably provided with stud bolts extending through slots in the side frame, and having nuts on their outer ends whereby said blocks may be clamped in position. The inner ends of these blocks are recessed to provide seats for the curved side bars of the grinding surface, as shown in Figs. 2 and 3. Each of the clamping blocks is formed with an opening in its outer end, in which opening operates a cam 11.

12 are rods on which the cams 11 are mounted, there being two cams on each rod. One end of each rod 12 is provided with a worm wheel 13.

14 is a shaft mounted in suitable bearings extending from the side walls of the casing, and upon which shaft are arranged worms 15 for engaging the worm wheels 13 identified with the clamping devices of the lower section of the grinding surface.

16 indicates a rod having worms for engagement with wheels identified with the clamping devices of the upper section of the grinding surfaces.

17 is a removable handle adapted to fit the ends of rods 14 or 16, whereby said rods may be rotated so as to force the blocks 10 inwardly or outwardly as the case may be.

In operation if it is desired to remove the grinding surface, the upper portion of the casing is lifted, which gives access to the upper section of the grinding surface, enabling the same to be removed quickly as its only points of supporting contact are those afforded by the clamping blocks 10. This supporting contact is preferably in the nature of a machine-fit so that there is little liability of the entrance of material operated upon in the machine so as to effect a cementing action between the clamping blocks and the curved members of the grinding section.

Should there be any tendency of the supporting blocks to stick to the grinding surface section, it is only necessary to operate the rod 16 so as to move the supporting

blocks outwardly. Moving outwardly in diverging lines, the supporting blocks will be forced to separate from the grinding surface section. After the top section of the casing has been removed, the rod 14 can be rotated so as to move the supporting blocks 10 cooperating with the lower grinding surface section outwardly in diverging lines, which will release the lower section of the grinding surface and enable its ready removal. When a new section is to be introduced or when the sections of the grinding surface are introduced, the supporting blocks are preferably adjusted to their outermost position and are then moved inwardly so as to clamp the grinding sections firmly in position.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a machine of the character described, the combination with a removable grinding surface formed in sections, blocks for supporting one section of said grinding surface in position, and means common to all of said blocks for operating them simultaneously; substantially as described.

2. In a machine of the character described, the combination with a removable grinding surface formed in sections, of a plurality of supports for holding one section of said grinding surface in position, and means for simultaneously moving said supports in divergent directions to release said grinding surface; substantially as described.

3. In a machine of the character described, the combination with side frame plates, of a removable grinding surface arranged between said side frame plates and provided with openings through which the material passes, said side frame plates flaring outwardly so as to provide an enlarged space around said grinding surface, and means for supporting said removable grinding surface in position, said supporting means being located in said enlarged space so as not to obstruct the openings in the grinding surface; substantially as described.

4. In a machine of the character described, the combination with a removable member forming a portion of a grinding surface, of a plurality of supporting blocks arranged at angles to each other and coöperating with said grinding surface member, a cam cooperating with each of said blocks, and means for simultaneously rotating said cams; substantially as described.

5. In a machine of the character described, the combination with a concentrically-arranged removable grinding surface divided into sections, of radially disposed supporting blocks therefor, a rotatable shaft, and means operated by said shaft and coöperating with devices connected to said blocks whereby two or more of said supporting blocks are moved in a radial direction when said shaft is rotated; substantially as described.

6. In a machine of the character described, the combination with a substantially curved removable member forming a section of a grinding surface, of radially arranged supporting blocks coöperating therewith, cams coöperating with said blocks, gear wheels conjoined to said cams, and a gearing connecting said gear wheels so as to operate all of said cams in unison; substantially as described.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twelfth day of March 1907.

MILTON F. WILLIAMS.

Witnesses:
F. R. CORNWALL,
GEORGE BAKEWELL.