No. 757,705. PATENTED APR. 19, 1904.

M. F. WILLIAMS.

SHREDDING MACHINE OR THE LIKE.

APPLICATION FILED APR. 6, 1903.

NO MODEL.

Fig. 1.

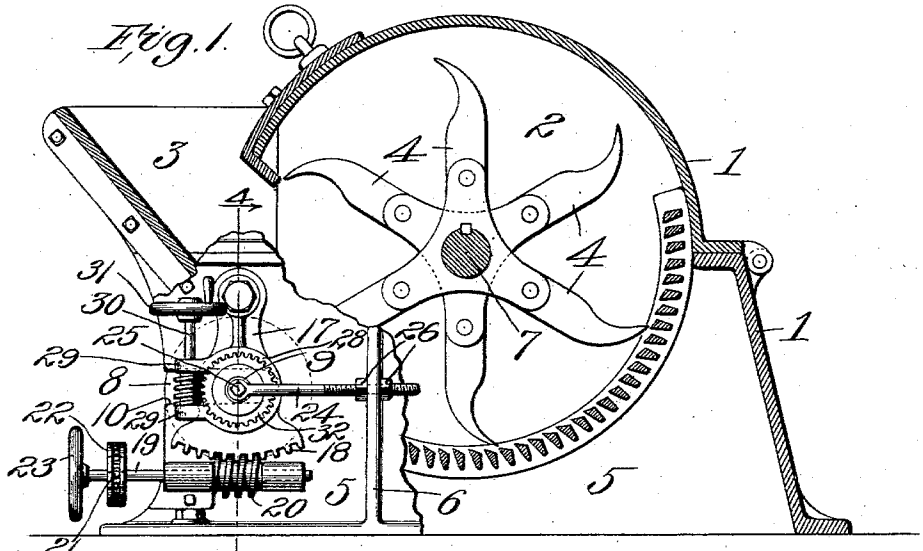


Fig. 5.

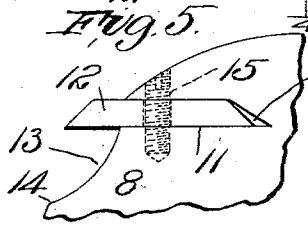


Fig. 2.

Fig. 4.

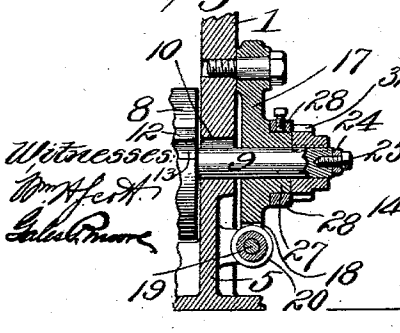
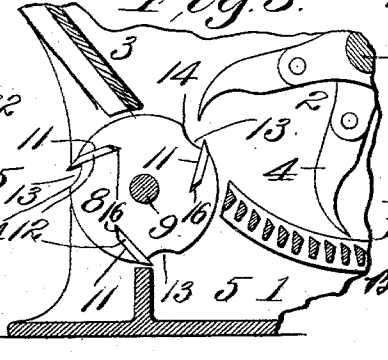


Fig. 3.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 757,705. Patented April 19, 1904.

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 OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 757,705, dated April 19, 1904.

Application filed April 6, 1903. Serial No. 151,351. (No model.)

To all whom it may concern:

Be it known that I, MILTON F. WILLIAMS, a citizen of the United States, residing at the city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Shredding-Machines or the Like, 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 view partly in side elevation and partly in transverse sectional elevation. Fig. 2 is a front elevation. Fig. 3 is a fragmentary view in transverse sectional elevation. Fig. 4 is a detail sectional elevation on about the line 4 4 of Fig. 1, and Fig. 5 is a fragmentary detail illustrating a portion of the breaker-roll and one of its knives.

This invention relates to shredding-machines and the like, and more particularly to the breaker element or roll thereof and the mounting of the same.

One object of the present invention is to provide a convenient and efficient mounting for the breaker element or roll by means of which said roll can be readily adjusted toward and away from the coöperating beaters. Another object is to provide convenient and efficient means by which the roll can be circumferentially adjusted; and a further object is to provide the breaker element or roll with knives which coöperate with the before-mentioned beaters in order to thoroughly disintegrate the material being acted upon.

To these ends and also to improve generally upon apparatus of the character indicated the invention consists in the various matters hereinafter described and claimed.

In the accompanying drawings the invention is shown as applied to a bark-shredding machine of a well-known type; but it will be apparent that the invention can be conveniently applied to machines of other types than that illustrated.

Referring now more particularly to the drawings, 1 represents the casing of the machine, said casing being provided with the usual operating-chamber 2 and feed-hopper 3, the rotatable beaters 4 being supported in the operating-chamber in a well-known manner. The side plates of the casing are marked 5 and are shown as provided with the customary transverse supporting-plates 6, upon which the main operating-shaft 7 is supported in a manner which is well understood. The breaker member or anvil is shown as a roll 8 and has stub-shafts or axles 9 projecting from its ends, said shafts being received in suitable longitudinally-extending recesses 10 in the before-mentioned side plates 5 of the casing, said recesses preferably opening upon the edge of the said casing-plates in order to permit ready insertion and removal of the breaker-roll. Suitable slots or pockets 11 are formed in the breaker-roll and open upon the periphery of the same, said slots extending the length of the roll and being adapted to receive knives 12. Three of such knives are here shown, and the breaker-roll is circumferentially adjustable in order to bring any desired knife into proper position to coöperate with the beaters 4. Preferably the roll is provided with depressions or cut-away portions 13, which are immediately in advance of the knives. Thus as a piece of bark or the like moves into the machine it engages the breaker-roll, and its free end is held by said roll slightly above the cutting edge of the knife, so that the bark does not scrape over the cutting edge and dull the same. The beaters are adapted to strike the bark or other material at a point intermediate the knife-edge and the opposite edge of the depression 13, so that the said edge 14, formed between such depression and the body portion of the periphery of the roll, forms a breaking edge, the material being broken upon this edge and upon the projecting knife-edge.

Preferably each knife is sharpened upon each of its longitudinal edges, so that each knife can be reversed when desired, the knives being held in position in their pockets in any suitable manner, as by screws 15. The inner end wall 16 of a pocket is preferably spaced

from the cutting edge of a knife resting in such pocket, as most clearly shown in Fig. 5, so that the cutting edge of a knife in a pocket does not bear against such inner wall 16, and thus become dulled. Manifestly the knives cannot only be turned edge for edge in order to present fresh cutting edges, but the roll can be circumferentially adjusted in order to bring a new knife into proper coöperative relation to the beaters, a dulled knife being withdrawn from its pocket, sharpened, and reinserted while one of the other knives is in operative position, thus making it unnecessary to stop the operation of the machine in order to sharpen the knives.

Pivoted upon the side plates 5 are carrier-plates 17, through which the shafts 9 extend and in which said shafts are journaled, said carrier-plates having segmental lower ends provided with worm-teeth 18, and suitably journaled in bearings upon said side plates are substantially longitudinally disposed shafts 19, provided with worms 20, which mesh with the said teeth 18. Said shafts are provided with sprocket-gears 21, which are connected by a sprocket-chain 22, and one of the shafts being provided with a hand-wheel 23 movement of said hand-wheel serves to rotate both shafts simultaneously, whereby the pivoted carrier-plates are adjusted toward or away from the beaters and carry the breaker-roll 8 with them. In order to lock and firmly secure the carrier-plates and the breaker-roll in adjusted positions, eyebolts 24 are suitably secured to the breaker-roll or to the carrier-plates, as by means of cap-screws 25 passing loosely through the eyes of the bolts and entering the ends of the shafts 9, and the threaded portions of said bolts pass through suitable openings in the before-mentioned transversely-extending casing-plates 6 and receive locking-nuts 26 upon opposite sides of said casing-plates. The nuts being properly loosened, the carrier-plates and their roll can be moved; but when said nuts are tightened to clamp the casing-plates 6 between coöperating pairs of them the carrier-plates and roll are firmly held against movement. The carrier-plates 17 and the heretofore-described adjusting and locking mechanism are herein shown as applied to a roll adapted to be circumferentially adjusted and to be held in circumferentially-adjusted positions. It is apparent, however, that without departing from the spirit of the invention constantly-rotating rolls or other breaker elements can be mounted and adjusted toward and away from the beaters and locked in such adjusted positions in the manner herein described.

Mechanism is also provided for circumferentially adjusting the breaker-roll, and this is now to be considered. Upon the outwardly-projecting hub or extended bearing 27 of one of the carrier-plates is fastened a sleeve 28, which is provided with lugs 29, and journaled in these lugs is a worm-shaft 30, having a hand-wheel 31. Non-rotatably secured upon the projecting end of one of the shafts 9 is a worm-gear 32, whose teeth mesh with the worm upon the worm-shaft 30, so that rotation of said worm-shaft causes circumferential adjustment of the roll in a manner which will be readily apparent. Preferably set-screws 33 extend through the said carrier-plates and engage the roll-shafts, whereby the roll can be locked or set in adjusted positions.

I am aware that minor changes in the construction, arrangement, and combination of the several parts of the device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of the invention.

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 indicated, pivotally-supported carrier-plates, a breaker member carried by said plates, said plates having segmental gears thereon, and gears coöperating with said segmental gears for adjusting said plates pivotally; substantially as described.

2. In a machine of the character indicated, pivotally-supported carrier-plates having segmental gears formed upon their ends, a breaker member supported directly upon and carried by said plates, and suitably-supported worms coöperating with said gears; substantially as described.

3. In a machine of the character indicated, a casing having transverse plates, pivotally-supported carrier-plates having segmental gears upon their ends, a breaker-roll journaled in said plates, adjusting-gears coöperating with said segmental gears, eyebolts at the ends of said roll and passing through said transverse casing-plates, and nuts upon said bolts engaging opposite sides of said casing-plates; substantially as described.

4. In a machine of the character indicated, the combination with beaters, of carrier-plates adjustable toward and away from said beaters, a breaker-roll journaled in said carrier-plates, and means carried by one of said plates for adjusting said roll circumferentially; substantially as described.

5. In a machine of the character indicated, the combination with beaters, of carrier-plates adjustable toward and away from said beaters, a breaker-roll journaled in said carrier-plates and provided with a gear, and an adjusting-gear coöperating with said first-mentioned gear and supported upon one of said carrier-plates; substantially as described.

6. In a machine of the character indicated, the combination with beaters, of carrier-plates adjustable toward and away from said beaters, a breaker-roll journaled in said carrier-plates, a gear upon said breaker-roll, one of said carrier-plates having a hub thereon, a collar

supported upon said hub and provided with lugs, and a gear journaled in said lugs and coöperating with said first-mentioned gear to adjust said breaker-roll circumferentially; substantially as described.

7. In a machine of the character indicated, the combination with slotted frame-plates, of exteriorly-arranged hangers pivoted to said frame-plates, the pivotal points of the hangers being above the slots, a roller breaker element mounted in said hangers between the frame-plates, the spindle of said element passing through the slot, means for adjusting the hangers simultaneously in different directions so that the breaker element preserves parallelism, and pivoted revoluble beaters cooperating with said breaker element; substantially as described.

8. In a machine of the character indicated, the combination with a casing, of a grinding-surface, pivoted revoluble beaters, and a feed-hopper, of hangers pivoted to the casing, a revoluble breaker element suspended by said hangers so as to be interposed between the lower edge of the hopper and the front edge of the grinding-surface, and means for adjusting the hangers and their carried breaker element inwardly and outwardly with respect to the revoluble beaters, said means preserving parallelism of the breaker element to its associate parts; substantially as described.

9. In a machine of the character indicated, the combination with a casing, of a grinding-surface, pivoted revolving beaters, a feed-hopper, hangers pivotally mounted on the casing, a revoluble breaker element suspended by said hangers, cutting or breaking edges carried by said breaker element for supporting the material at the time it is being operated upon by the revolving beaters, means for bodily adjusting the breaker element inwardly and outwardly, said means preserving parallelism of said breaker element with respect to its associate parts, and independent means for circumferentially adjusting said breaker element; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 2d day of April, 1903.

MILTON F. WILLIAMS.

Witnesses:
GEORGE BAKEWELL,
GALES P. MOORE.