

F. E. HEMINGS.
WOOD CHIPPING MACHINE.
APPLICATION FILED JAN. 3, 1911.

1,064,829.

Patented June 17, 1913.

Fig. 1

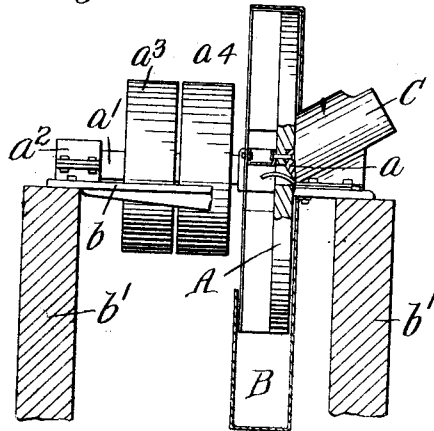


Fig. 2.

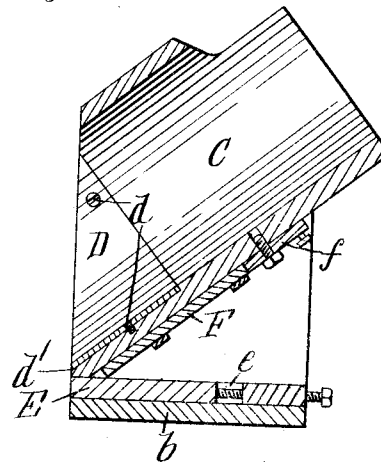


Fig. 3

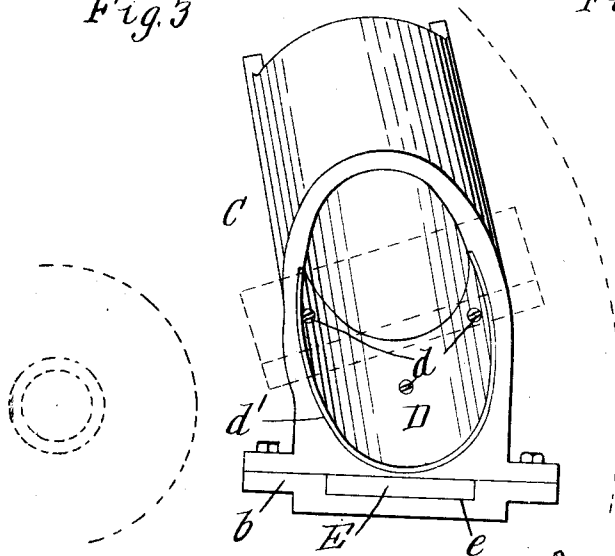


Fig. 4.

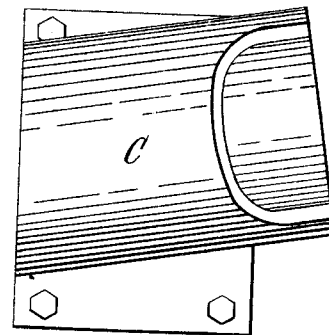
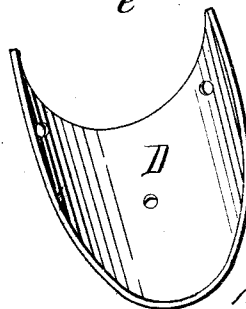


Fig. 5.



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UNITED STATES PATENT OFFICE.

FREDERICK ELMER HEMINGS, OF CARTHAGE, NEW YORK, ASSIGNOR TO CARTHAGE MACHINE COMPANY, OF CARTHAGE, NEW YORK.

WOOD-CHIPPING MACHINE.

1,064,829.

Specification of Letters Patent.

Patented June 17, 1912.

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To all whom it may concern:

Be it known that I, FREDERICK ELMER HEMINGS, a citizen of the United States, residing at Carthage, in the county of Jefferson and State of New York, have invented a new and useful Improvement in Wood-Chipping Machines, of which the following is a specification.

This invention relates to wood-chipping machines of the kind employed in the manufacture of paper for cutting wood crosswise of the grain to produce the chips from which the wood pulp is made, and more particularly to improvements in the feed boxes of such machines. A common type of these machines comprises an inclined feed box in which the wood, in the form of logs or sticks, is placed, and a rotary cutting disk furnished on one side with knives which travel across the open lower end of the feed box to slice off the projecting ends of the logs or pieces of wood. In the operation of the machine, the pressure of the cutter knives on the wood is resisted principally by the bottom and outer side wall of the feed box, which is usually of substantially rectangular shape in cross-section, and these walls are speedily worn so as to destroy the feed box. It has therefore been customary to provide the bottom and outer side wall of the feed box with lining or wear plates which are set into these walls and receive the wear. As these wear plates can be renewed they greatly prolong the life of the feed box. This construction is, however, objectionable in that the separate bottom and side wear plates leave the intervening corner of the box unprotected, and this corner is worn away by the wood so that when new wear plates are put in place a cavity or so-called "rat hole" is left between the adjacent edges of the new wear plates, with the result that numerous slivers are formed which do not readily disintegrate and therefore cause serious trouble in the production of the pulp.

One of the objects of this invention is to avoid this serious objection by producing a feed box with a single wear plate of such form and arrangement that it will properly protect those portions of the walls of the box which are subject to wear and will present an unbroken or uninterrupted wearing surface which will not leave any cavities or crevices in the box which can result in the formation of slivers. This result is accom-

plished by making the feed box of circular cross-section, or with curved instead of straight walls, and removably securing in its lower end a curved lining or wear plate which covers those portions of both the bottom and side walls of the box that are subject to wear; that is, the wear plate covers the lower end portion of the curved bottom of the box and extends without break or interruption as high up the sides of the box as necessary to protect these walls from wear.

Another object of the invention is to so construct and arrange the feed box that the pressure and wear of the wood under the action of the knives will fall principally upon the curved bottom of the box, and so that the cutter knives do not have to be as long as those heretofore used, to extend completely across the open end of the feed box.

In the accompanying drawings: Figure 1 is a longitudinal sectional elevation of a wood-chipping machine provided with a feed box embodying the invention. Fig. 2 is an enlarged fragmentary sectional elevation of the feed box. Fig. 3 is an end elevation of the feed box, showing by broken lines the path of the cutter knives. Fig. 4 is a plan view of the feed box. Fig. 5 is a detached perspective view of the wear plate for the feed box.

Like reference characters refer to like parts in the several figures.

A represents the rotary cutter of a wood-chipping machine, B the casing in which the cutter revolves, and C the feed box for the wood to be chipped. The cutter is constructed and mounted in the ordinary way, consisting of a vertical disk or wheel which is furnished at one of its vertical side faces with knives *a* and is secured to a horizontal shaft *a'* which is journaled in suitable bearings *a''* and is provided with fast and loose pulleys *a'''* *a''''* for a driving belt, or is driven by any other suitable means. The cutter A and casing B are supported by a frame or bed *b* secured on a suitable foundation *b'*.

The feed box C is supported by the frame *b* at one side of the cutter A in position for the cutter knives to sweep across its open lower end. The feed box is circular or substantially circular in cross-section and is arranged to incline downwardly toward the cutter so that the wood will feed downwardly in the box to the cutter by gravity. The box also preferably extends obliquely

to the vertical plane of the axis of the cutter, whereby its open lower end, which is parallel with the plane of the cutter A, has the form of an ellipse which leans toward one side, and the knives of the cutter move past the end of the box in an arc which follows the general direction of the major axis of this ellipse, as indicated in Fig. 3. By reason of this shape and arrangement of the feed box, the cutter knives do not have to be as long as the knives in a machine having a rectangular feed box in order to extend entirely across the open end of the box and properly cut a log or a plurality of sticks which practically fill the box. The pressure of the knives is also exerted more nearly in the direction of the major axis of the ellipse and toward the bottom of the box, thus reducing the wear on the outer side wall thereof. Furthermore, if the logs or pieces, when they are reduced in length, are thrown out of their lengthwise position in the box by the cutter, they tend to roll by gravity back to such lengthwise position in the bottom of the box and are thus prevented from getting crosswise in the box.

D represents the lining or wear plate for protecting the walls of the feed box from wear. This wear plate is curved correspondingly to the interior surface of the feed box and is secured by rivets *d*, or in any other suitable manner, in a seat *d'* in the lower end of the box with its inner surface flush with the inner surface of the feed box. The wear plate covers the end portion of the curved bottom of the box and extends upwardly preferably somewhat more than half-way up the side walls of the box, thus partially covering these curved side walls. The single curved wear plate thus covers and protects those portions of the walls of the feed box which are subject to wear, and it can be renewed at small expense when worn. As there are no portions of the walls of the box left exposed to wear between separated wear plates, the renewal of the wear plate cannot form any cavities or crevices which would result in the formation of slivers.

E represents the usual stationary bed knife which is confined in a guide-way *e* in the frame or bed *b* beneath the feed box, and is provided with adjusting screws for advancing it from time to time as may be required by reason of the wearing of its cutting edge.

F is a bar slidably mounted on the bottom of the feed box and actuated by an eccentric *f* for clamping and firmly holding the inner end of the bed knife E.

I claim as my invention:

1. In a wood chipping machine, the com-

bination with a rotary vertical cutter provided with knives on one of its vertical faces, of a feed box for the wood located at that side of the cutter having the knives, said feed box being of substantially circular cross-section and having a lower end of elliptical form substantially parallel with said cutter and having a removable curved wear plate in the lower end of said box which extends across the curved bottom and part way up the curved side walls of said feed box, substantially as set forth.

2. In a wood chipping machine, the combination with a rotary cutter, of a feed box for the wood which inclines downwardly toward the cutter and has curved bottom and side walls and is provided interiorly in a seat at its lower end with a removable curved wear plate which extends across the curved bottom and part way up the curved side walls of the feed box, the inner edge of said wear plate intersecting the lower end face of said box in a plane substantially at right angles to the axis of said box, substantially as set forth.

3. In a wood chipping machine, the combination with a rotary disk cutter having a knife in one side thereof, of a feed box for feeding wood to said cutter, said feed box comprising a tube of substantially circular cross-section mounted at one side of the cutter at an inclination to the plane of the latter and having a recess in the lower part of its inner surface adjacent to its mouth and extending away from the cutter and part way up the sides of the tube, and a removable curved wear plate mounted in said recess and having its inner surface flush with the inner surface of the tube, substantially as set forth.

4. In a wood chipping machine, the combination with a rotary disk cutter having a knife in one side thereof, of a feed box of substantially circular cross-section mounted at one side of said cutter with its axis inclined to the plane of the cutter, said box having an open end of elliptical shape adjacent to the side of the cutter, the major axis of said ellipse being inclined at an acute angle to a radius of the cutter tangent to the lowest point of the opening, and a removable curved wear plate mounted in the bottom of said box adjacent to the open end thereof and extending up the sides of said box, substantially as set forth.

Witness my hand, this 27th day of December, 1910.

FREDERICK ELMER HEMINGS.

Witnesses:

J. E. O'HARA,
G. B. LOOMIS.