G. M. MERWIN.

ENSILAGE CUTTER.

APPLICATION FILED JAN. 12, 1918.

1,327,346.

Patented Jan. 6, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

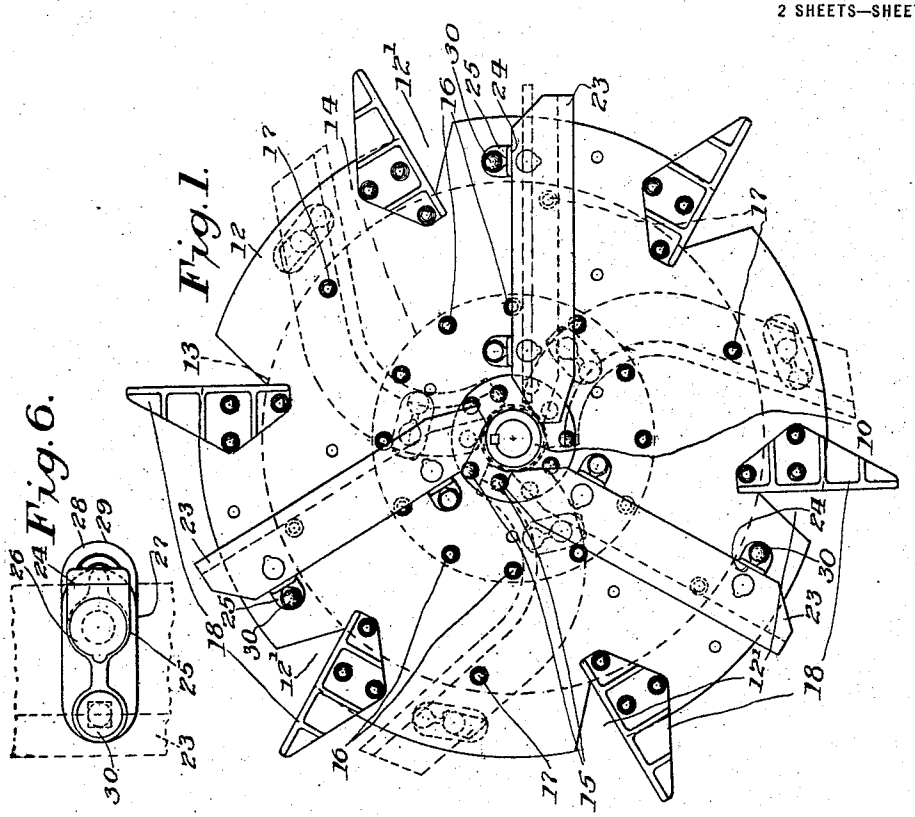


Fig. 6.

Fig. 2.

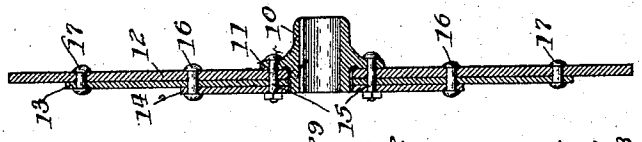


Fig. 3.

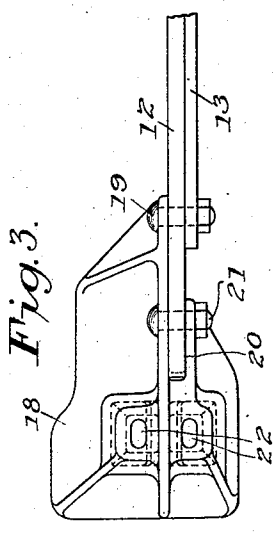


Fig. 4.

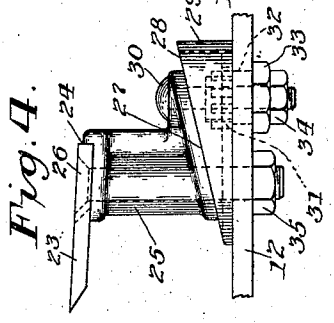
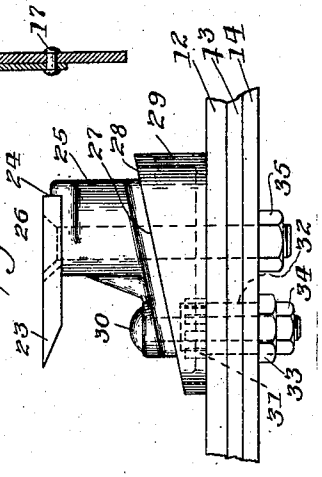


Fig. 5.



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2 SHEETS—SHEET 2.

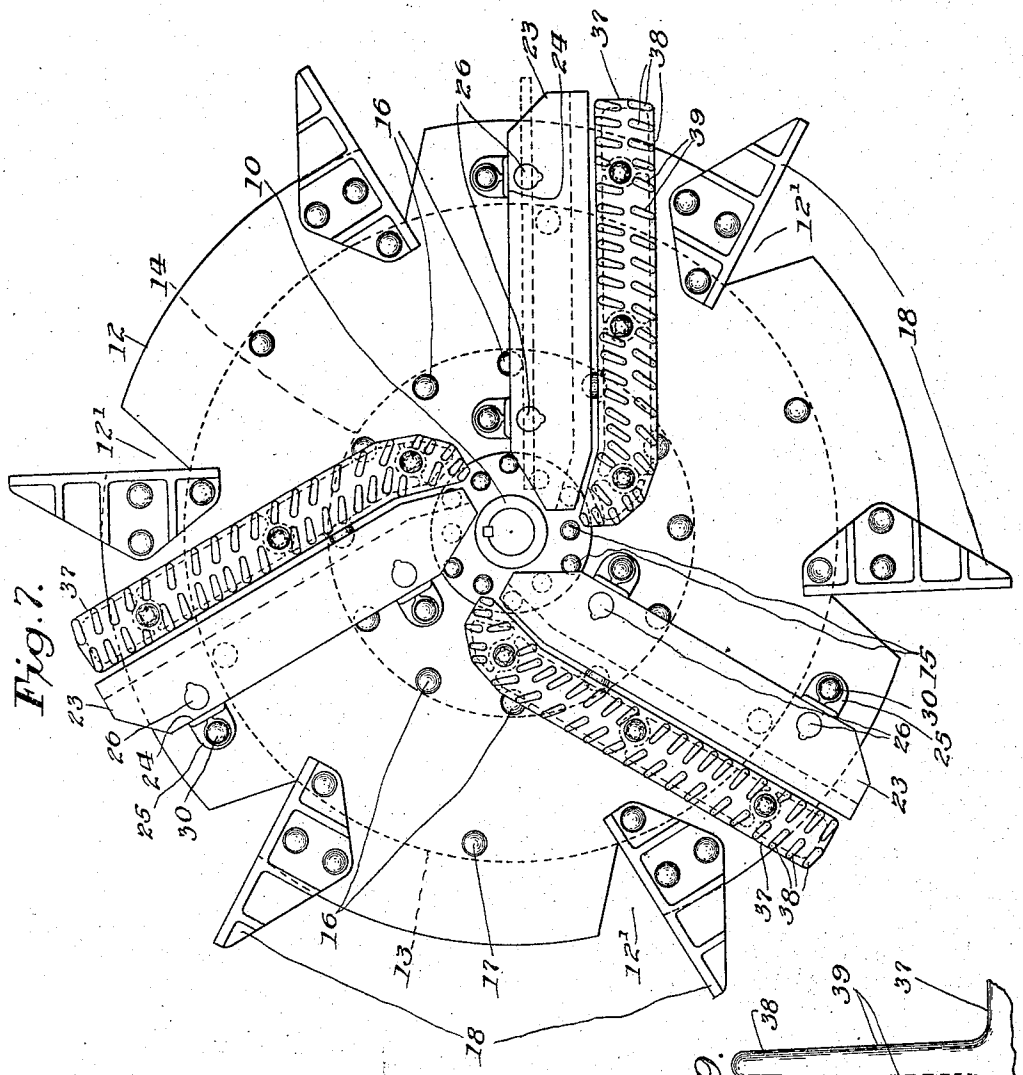


Fig. 7.

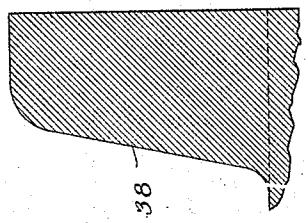


Fig. 8.

Fig. 9.

Inventor
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UNITED STATES PATENT OFFICE.

GEORGE M. MERWIN, OF BERWYN, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO INTERNATIONAL HARVESTER COMPANY, A CORPORATION OF NEW JERSEY.

ENSILAGE-CUTTER.

1,327,346. Specification of Letters Patent. Patented Jan. 6, 1920.

Application filed January 12, 1918. Serial No. 211,508.

To all whom it may concern:

Be it known that I, GEORGE M. MERWIN, a citizen of the United States, residing at Berwyn, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Ensilage-Cutters, of which the following is a full, clear, and exact specification.

My invention relates to ensilage cutters, and more particularly to the rotating cutter head used in this class of machines.

The type of cutter head heretofore employed has been made of cast iron, and it has been found in many instances that the cast iron cutter heads are unable to withstand the severe strains to which they are subjected, and in some instances the operators have been severely injured by the "bursting" of the cutter head. It will readily be seen that a cutter head of this type, namely, revolving on a horizontal axis and weighing several hundred pounds, would do a considerable amount of damage upon bursting when revolving at the rate of 800 to 1000 revolutions per minute, and such bursting is not at all unusual with the cast iron type of cutter head since the centrifugal force acting upon the head, which is revolving at such a high rate of speed, will constantly tend to disintegrate the cutter head and throw outwardly portions thereof where there is any defect or flaw in the casting.

The present invention has for its object to improve and strengthen the construction of the rotary cutter head in such a way as to render its use more safe, and to minimize the liability to accident.

With the above object in view my invention is embodied in a cutter head comprising a plurality of disks secured together, and having cutting means mounted thereon.

I have illustrated in the accompanying drawings one embodiment of my invention, and in these drawings—

Figure 1 shows a front elevation of my improved cutter head;

Fig. 2 is a section view of the cutter head with the knives and fan blades removed;

Fig. 3 is an enlarged view of the outer portion of the cutter head, showing in detail the construction of the fan blade;

Figs. 4, 5 and 6 are detailed views showing the mounting of the knives on the cutter head;

Fig. 7 is a front elevation of the wheel shown in Fig. 1, equipped with shredder blades and straight knives; and,

Figs. 8 and 9 are sectional and elevational views of a shredder tooth.

In illustrating my invention I have shown the vertical type of cutter head, which revolves on a horizontal axis, and the cutter head is provided with a central journal or hub 10, having an outwardly projecting flange 11, to which are riveted a plurality of steel disks or plates 12, 13 and 14. These disks are each provided with a central opening or aperture which fits over the outer circumference of the bearing sleeve 10, the disk 12 having a maximum outer circumference, 13 having a smaller outer circumference than 12, and 14 having a minimum outer circumference.

As illustrated clearly in Fig. 2, the disks 12, 13 and 14 are secured by rivets 15 to the flange 11 of the journal 10, the rivets 15 passing through each of the disks or plates. The disks are also secured together by rivets 16, which pass through the three disks, and the disks 12 and 13 are secured together by rivets 17, which pass through the disk 13 near its outer periphery, and also pass through the disk 12.

By the construction above described I have secured a rigid and extremely strong construction, which has the desired weight, this weight being necessary since the cutter head also serves as a fly wheel.

In Fig. 3 I have illustrated in detail the construction of the fan blades 18, which are made of cast steel, and are secured to the outer circumferential portion of the disk 12. The disk is notched, as shown at 12′, to increase the fan action of the blades. The inner portions of the fan blades 18 are secured by rivets 19 to the disk 12, these rivets also passing through the outer circumferential portion of the disk 13. This fan blade is provided with a channel portion 20, which fits the outer circumferential portion of the disk 12, and is secured thereon by rivets 21, which pass through the walls of the channel and through the disk 12. The fan blade is also provided with suitable pockets 22 for lead, or other suitable metal, which is placed therein to increase the weight of the fly wheel and to balance the same.

In Fig. 1 I have illustrated in connection

with my cutter head both curved and straight knives, the straight knives being shown in full lines and the curved knives in dotted lines. This cutter head is provided with suitable apertures for securing either type of knife, since some operators prefer one type and others prefer the other type, and it will of course be understood that only one type is used at one time. The usual stationary knife coöperates with the rotating knives, but this construction differs in no way from the common construction, and has not been illustrated.

In Fig. 4 I have shown the knife mounting for the outer end of the straight knife, this mounting being secured only to the disk 12.

In Fig. 5 is shown the mounting for the inner end of the curved knife, and this mounting is secured to all three disks 12, 13 and 14.

The particular construction of the knife mountings and adjustment forms no part of the present invention, and is illustrated and claimed in my co-pending application No. 38,301, filed July 6, 1915. This construction may, however, be described briefly as follows:

The knives 23 are seated in channels 24 on the outer ends of the posts 25, and are secured therein by lock bolts 26. The posts 25 are provided at the lower ends with inclined bearing surfaces 27, which contact with bearing surfaces 28 on the outer faces of wedges 29. These wedges and posts are provided with registering apertures to receive the bolts 26 and 30. The wedge is also provided with a suitable recess on its under face to receive a pinion 31, formed integral with the sleeve 32, which is journaled in the disk 12, and is provided on its outer end with a head 33. The securing bolt 30 above referred to passes through the rear portion of the post 25, through the wedge 29, sleeve 32 and head 33, and is secured in place by a nut 34 on the outer end thereof. The lock bolt 26 is provided on its outer end with a nut 35. When it is desired to adjust the knife the bolts 34 and 35 are loosened, and the head 33, sleeve 32 and pinion 31 are turned, thereby moving the wedge 29 longitudinally and at the same time adjusting the post 25 inwardly or outwardly, as the case may be.

In Fig. 7 I have illustrated my improved cutter head equipped with straight knives and shredder blades. The position of the stationary cutter knife has been indicated in dotted lines at 36, and it will be seen that this knife is disposed in a substantially horizontal plane substantially tangent to the periphery of the cutter head shaft.

The shredder blades 37 are located adjacent to and in advance of the knives 23, and are provided with teeth 38. These teeth are so located on the blades that their faces 39 are disposed in planes perpendicular to tangents drawn from the periphery of the cutter head shaft. By this arrangement the shredder blades contact with the stalks of the material being fed through the machine in a series of planes substantially parallel to the longitudinal axes of the stalks.

From the above description it will be seen that I have provided an extremely rigid and firm construction which will not be liable to bursting or breakage, and which possesses decided and material advantages over the construction heretofore used.

While I have, in the above specification, described one embodiment which my invention may assume, it will be understood that the invention is capable of many modifications, and that such modifications may be used without departing from the spirit and scope of the invention, as expressed by the following claim.

What I claim as new is:

A cutter head for ensilage cutters comprising a journal member having a cylindrical sleeve portion and an outwardly extending flange, a plurality of flat concentric disks of different diameters each of said disks being positioned on said sleeve portion and being secured to said flange, supplementary means connecting said disks together, a plurality of knives secured to said disks and extending from the outer edges of said disks inwardly toward the center thereof, and fan blades having channels therein fitting over the outer circumferential portion of the disk of greatest diameter and having an extension overlapping a plurality of said disks, and means passing through a plurality of said disks for securing said fan blades to said disks and certain of said disks to each other.

In testimony whereof I affix my signature.

GEORGE M. MERWIN.