United States Patent

[11] 3,542,302

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[54] **WOOD CHIPPER DISC AND KNIFE MOUNTING**
6 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **241/298;** 144/176, 144/218; 241/92
[51] **Int. Cl.** **B02c 7/12;** B27g 13/08
[50] **Field of Search** 144/176, 162, 218, 219; 241/298, 296, 92

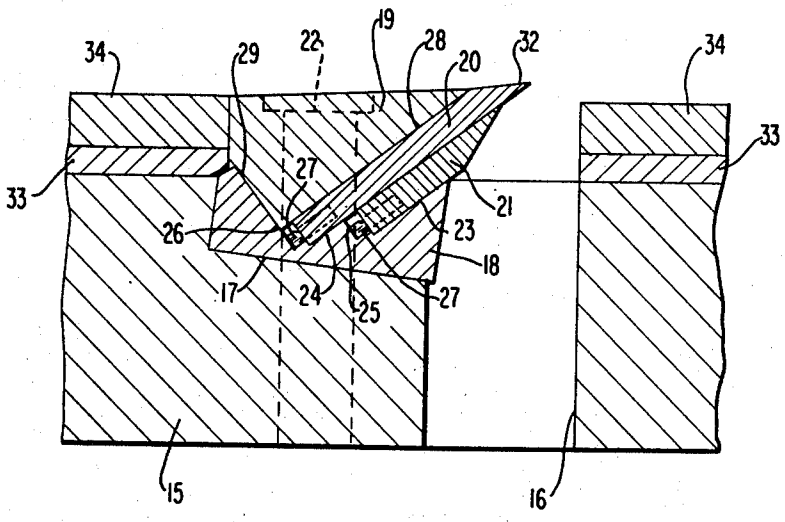
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2,712,904	7/1955	Durkee	144/176X
3,000,578	9/1961	Riches et al.	241/92
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Primary Examiner—Donald R. Schran
Attorney—Lawrence L. Colbert

ABSTRACT: A chipper disc assembly wherein the chipper knives are very securely held to withstand the constant pounding of the log and readily replaceable wear plate segments are provided between adjacent knives on the disc, rendering maintenance economical and reducing the need for knife adjustment.



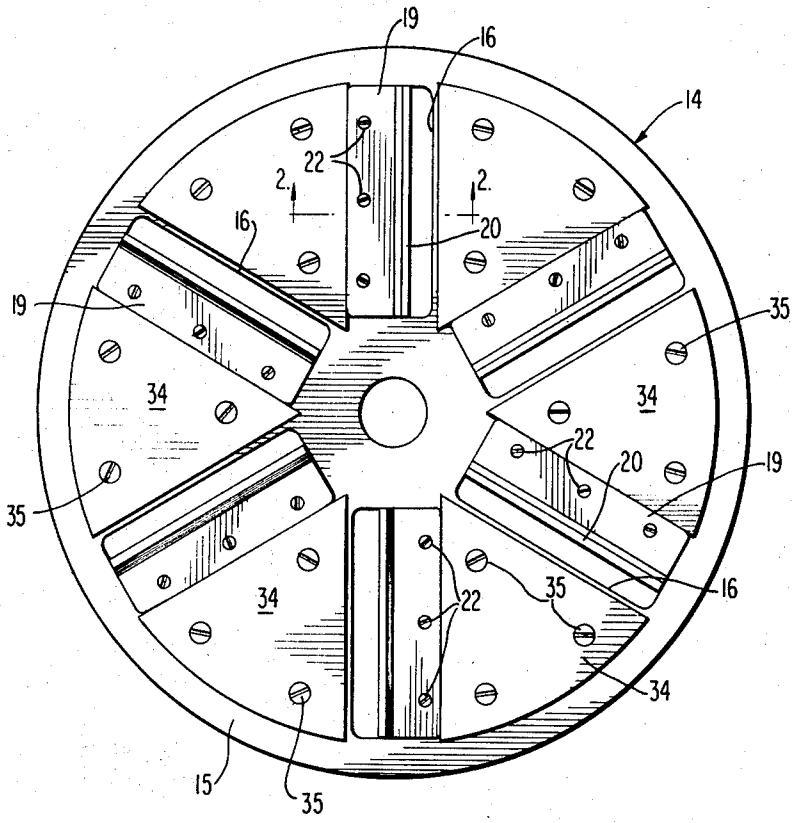

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FIG.1

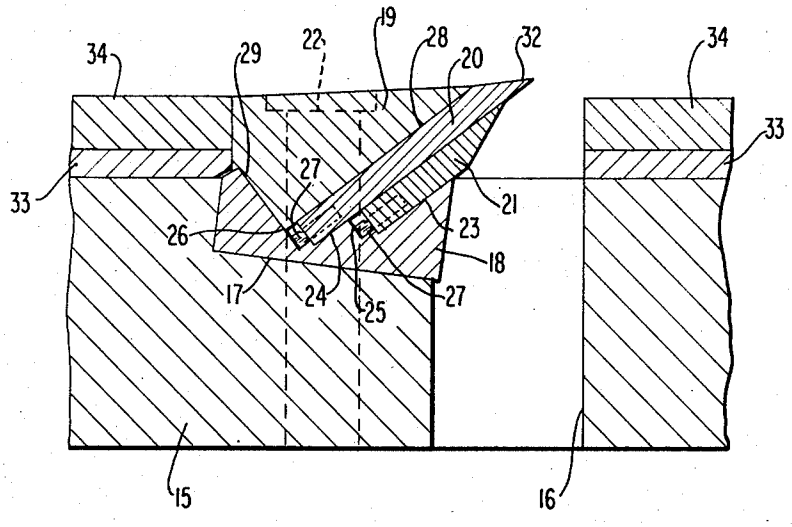

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FIG.2

FIG.3

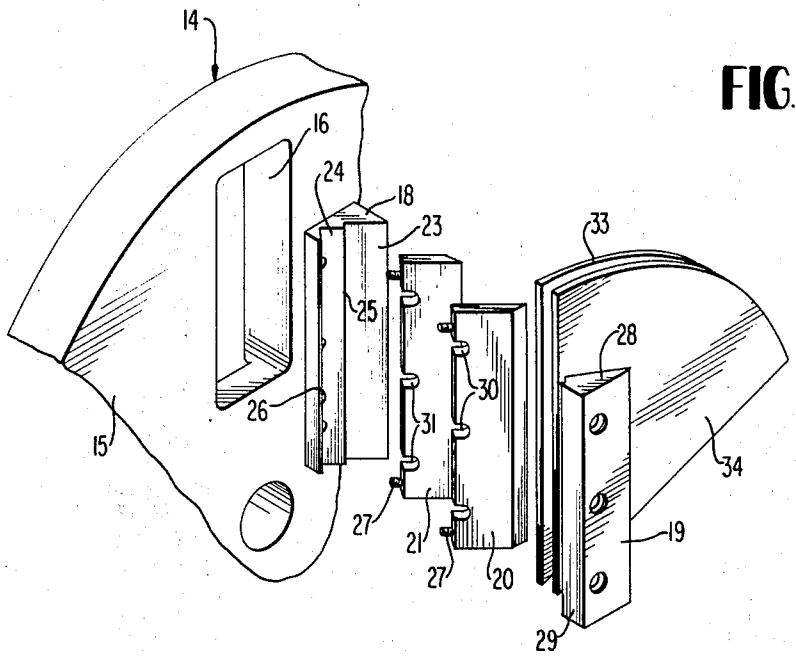
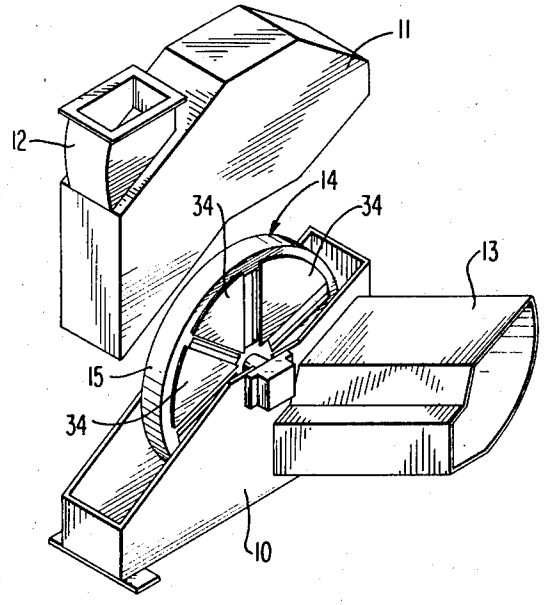

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FIG.4


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WOOD CHIPPER DISC AND KNIFE MOUNTING

Disc type wood chippers for reducing logs and the like to usable chips for the paper pulp industry are quite well known. Examples of such machines are shown in prior U.S. Pat. Nos. 1,906,486; 2,712,904; 3,144,995 and 3,297,067.

While generally successful, such machines have suffered from certain deficiencies notably in connection with the mounting of the chipping knives on the heavy rotary steel or cast iron disc which constitutes the heart of the chipping machine.

It has proven very difficult to clamp the chipper knives securely to withstand the heavy pounding inherent in the chipping operation and to minimize the need for frequent knife tightening and adjustment. Attempts to improve this situation have resulted in structures which are unduly complicated and require complex machining and increased numbers or parts which cannot be justified economically.

The present invention aims to overcome these prior art defects through the provision of a greatly improved chipping knife mounting and carrier disc which is extremely sturdy and durable, relatively simplified in construction and having means to accommodate the excessive wear caused by the engagement of the log with the disc during rotation of the latter.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a side elevation of a chipper disc assembly embodying the invention.

FIG. **2** is an enlarged fragmentary vertical section taken on the line **2–2** of FIG. **1**.

FIG. **3** is a fragmentary exploded perspective view of one chipper knife mounting and associated elements.

FIG. **4** is a diagrammatic exploded perspective view of a wood chipping machine of the type embodying the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings wherein like numerals designate like parts, the numeral **10** designates the machine base and lower housing section, the companion top cover **11** being shown separated from the base in FIG. **4** and carrying the wood chip discharge duct **12**. The usual log infeed spout **13** is carried by one side of the base **10** and the cutting disc assembly **14** to which the present invention is specifically directed is mounted on a main rotary shaft supported by the base **10**. The above general organization is conventional as depicted in any of said prior patents and need not be dealt with in further detail herein.

The chipper knife disc assembly **14** includes a disc body **15** of steel or the like having plural circumferentially equidistantly spaced chip slots **16** formed therethrough. Adjacent one side of each slot **16**, the disc body **15** is provided in one face with a relatively deep square cornered recess **17** for the accommodation of a knife holder **18**, knife clamp **19**, chipper knife **20** and counter knife **21**. The elements **18** through **21** are securely seated in assembled relationship on the slightly slanting bottom face of the recess **17** and are maintained rigidly secured to the disc body **15** by means of Allen screws **22** or like fasteners.

It should be mentioned here that the number of slots **16** and chipper knife assemblies have been shown in the drawings as the preferred arrangement but this number is not critical and in some instances the number may be smaller or greater.

Referring particularly to FIGS. **2** and **3**, each knife assembly has its holder **18** recessed to provide stepped parallel seating faces **23** and **24** for the aforementioned knives **20** and **21** whose opposed faces are also in contacting relation as shown in FIG. **2**. The holder **18** further includes stepped shoulders **25** and **26** at right angles to the seating faces **23** and **24**, against which adjusting screw stops **27** in the rear edges of the knives **20** and **21** abut. This allows the chipper and counter knives **20** and **21** to be adjusted for proper cutting engagement with the log and substantially locked after adjustment.

The clamp **19** of generally triangular configuration has a diagonal face **28** contacting the chipper knife **20** over substantially the upper side of the latter for security. Another substantially right angular face **29** of the clamp contacts the shoulder **26** of the holder **18**, and when the fasteners **22** are tightened up, a very secure gripping and wedging action is provided by the clamp **19** against the knives **20** and **21** and the underlying holder **18**. Additionally, the holder **18** is firmly anchored in its recess **17**.

As best shown in FIG. **3**, the rear edges of knives **20** and **21** are notched at **30** and **31** to provide clearance for the Allen screws **22** which extend through the assemblage of parts in FIG. **2** and into screw-threaded openings provided in the disc body **15**.

As shown in FIG. **2**, the cutting leading edge **32** of chipper knife **20** projects about one-half the distance across the chip slot **16** and is angled to deliver the chips through this slot so that they may enter the housing and pass through the outlet **12**.

An important feature of the invention resides in the provision of separate filler and wear plate segments **33** and **34** between each circumferentially spaced pair of knife assemblies and slots of the disc body. Each superposed pair of filler and wear plates is firmly anchored to the disc body **15** by recessed Allen screws **35** or by similar means whereby the outer faces of the wear plates **34** lie in a common plane slightly below the cutting edges **32** of the chipper knives. As shown, the plates **33** and **34** constitute equally-sized segments of a circle and are shaped like pie slices. They effectively cover substantially the entire surface of the disc body on the side thereof which receives the log. The wear plate segments **34** are readily removable and replaceable as wear occurs and they render the maintenance of the disc assembly economical and convenient. Additionally, the thickness of the filler plates **33** may be changed if desired to regulate the knife setting. The arrangement of separate filler and wear plate segments renders the disc assembly versatile and economical and the only maintenance generally required is the replacement occasionally of wear plates **34** and the sharpening or replacement of chipper knives. It is believed that the advantages and economies of the structure and the simplicity thereof will be recognized by those skilled in the art.

In view of the cited prior patents, it is believed that a description of the general mode of operation of the machine, which is conventional, is unnecessary herein.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to, without departing from the spirit of the invention or scope of the subjoined claims.

I claim:

1. A chipper knife assembly for a wood chipping machine of the rotary disc type comprising a disc body having a chip slot formed therethrough on a radial line and having a recess formed therein at one side of the chip slot in the working face of the disc body, a holder seated within the recess and having a pair of diagonal stepped seating faces and a coacting pair of right angular stepped shoulder faces, a counter knife and a chipper knife resting upon the seating faces and being in opposed contacting relation, screw stop elements in the rear edges of said knives engaging said shoulder faces, a clamp element including a diagonal face contacting the outer side of the chipper knife over a major portion of the area of the latter and also contacting one of the shoulder faces, fastener means engaging through the clamp and holder and anchored to the disc body and securing the holder, clamp and said knives in rigid assembled relationship, the chipper knife extending diagonally beyond one wide wall of the slot to a point near the center of the slot with its cutting edge projecting outwardly of the working face of the disc body, a filler plate element on the working face of the disc body adjacent the sides of the holder and clamp remote from said slot, a wear plate element mounted on the filler plate element and having an outer wear face substantially flush with an outer face of the clamp and said cutting

edge, and means to secure the filler and wear plate elements to the disc body fixedly.

2. A chipper knife assembly as defined by claim 1 which includes a plurality of said chip slots, recesses and parts mounted therein disposed in circumferentially equidistantly space relation on the disc body, and said filler plate and wear plate elements arranged between adjacent pairs of slots and being equally sized and collectively covering substantially the working face of the disc body.

3. A chipper knife assembly as defined by claim 1 wherein said clamp has a wedge portion with one side of the wedge portion contacting the chipper knife and the other side contacting one of said shoulder faces of the holder.

4. A chipper knife assembly as defined by claim 1, wherein said counter knife is narrower than the chipper knife and underlies the chipper knife and is beveled oppositely to the chipper knife and has a forward leading edge terminating inwardly of the cutting edge of the chipper knife and parallel thereto, the chipper knife cutting edge and counter knife beveled portion serving to guide wood chips into said chip slot of the disc body.

5. A chipper knife assembly as defined by claim 1, wherein said screw stop elements are set screws engaging within screw-threaded openings in said rear edges and being independently adjustable.

6. A chipper knife assembly as defined by claim 1, wherein said fastener means comprises screws having their heads recessed in said clamp so that the exterior surface of the clamp is free of obstructions.