Nov. 3, 1953 C. A. JOHNSON 2,657,723

KNIFE BLADE MOUNTING FOR CHIPPERS

Filed Oct. 20, 1950

Fig. 1

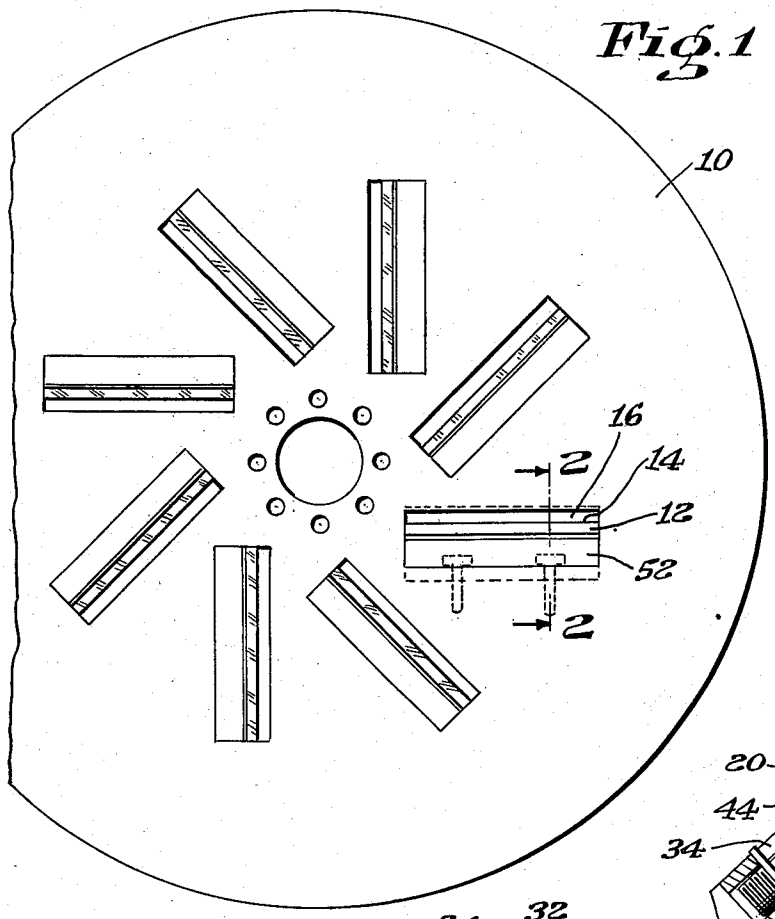


Fig. 2

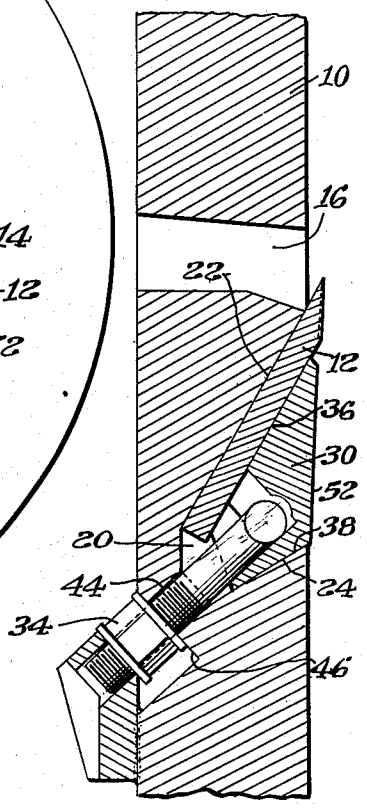


Fig. 6

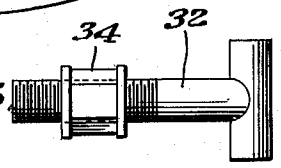


Fig. 4

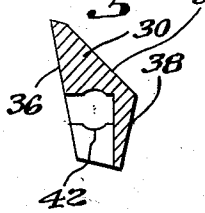


Fig. 3

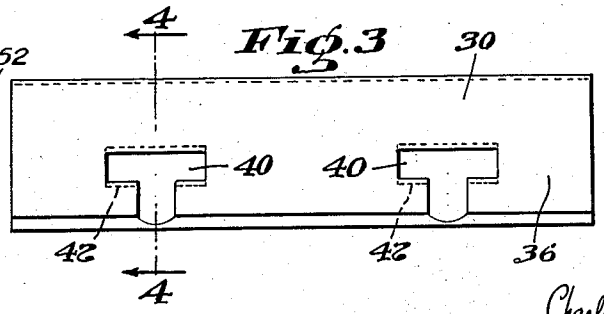
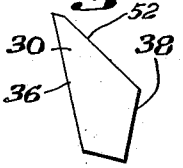


Fig. 5



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KNIFE BLADE MOUNTING FOR CHIPPERS

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4 Claims. (Cl. 144—219)

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This invention relates to chippers and particularly to the type of rotary chippers utilized for reducing logs to chips in preparation for conversion into wood pulp in the pulp industry.

Such chippers comprise a heavy steel disc having knives disposed in recesses and extending radially of the disc, or tangentially with respect to a circle concentric with the disc axis, with their cutting edges projecting beyond the face of the disc. For the purposes of maintenance, the knives are detachably mounted in the recesses. Usually, each blade is provided with spaced slots through which bolts are passed to clamp the blades in the recesses in properly adjusted protruding position, all as clearly shown in Ottersland Patent No. 2,299,248.

The primary object of this invention is to provide an improved detachable knife blade mounting for disc chippers. A further object is to provide such a mounting which obviates the necessity of drilling, slotting or otherwise specially shaping the blades to accommodate clamping devices. A further object of the invention is to provide a blade mounting which permits a maximum of blade clamping pressure consistent with the geometric relation of the parts required for disposition of the surfaces forming the cutting edge of the blade to give optimum cutting action with minimum power consumption.

My improved mounting is shown in the accompanying drawing as applied to an 8-knife disc though it will be understood that the invention is equally applicable to a disc having any other number of blades.

In the drawings,

Fig. 1 is a face view, partially broken away, of a chipper disc showing certain parts associated with one knife blade in dotted lines;

Fig. 2 is an enlarged cross-sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is an enlarged plan view of one of the elements of the clamping device shown in Fig. 2;

Fig. 4 is a cross-sectional view taken along the line 4—4 of Fig. 3;

Fig. 5 is an end elevation of the element of Fig. 3; and

Fig. 6 is a plan view of another element of the clamping device shown in Fig. 2.

The heavy steel disc 10 is provided with suitable recesses as will be hereinafter described for mounting eight knife blades 12 in such manner that the cutting edge 14 of each blade projects beyond the face of the disc 10 and extends over a chip slot 16 which passes through the disc 10.

The chipper disc of Fig. 1 is designed to rotate

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in use in a counter-clockwise direction with the logs being gravity fed thereto in a conventional known manner at an angle to the face of the disc at a point to the left as shown in Fig. 1 of the axis of the disc. The knives 14 are received in blade receiving recesses 20 which are each separate from the chip slots 16, but closely adjacent thereto. The recesses 20, one of which is shown in Fig. 2, are of V-shaped cross-section and are formed by a leading disc wall 22 and a following disc wall 24 converging inwardly from the face of the disc. As shown, the surfaces formed by the walls 22 and 24 are both angularly related to the face of the disc and are both inclined in the cutting direction of its rotation.

The blades 14 are fastened to the disc 10 by means of a wedge-shaped clamping member 30, shown in more detail in Figs. 3–5 inclusive, and associated fastening means comprising a T-bolt 32 and cooperating nut 34 (Fig. 6).

The clamping member 30 has opposed faces 36 and 38 which bear the same angular relationship as that of the converging disc walls 22 and 24, and, in the form shown, is provided at its bottom edge, as shown in Fig. 3, with T-shaped bolt-receiving recesses having internal countersinks 42.

The recesses 20 continue backwardly from the face of the disc into spaced apertures 44 designed to permit passage of screw-threaded T-bolts 32 to the back of the disc, which, as shown in Fig. 2, is suitably cut away to provide a seating face 46 for each nut 34, each seating face 46 being normal to the axis of the aperture 44.

With the parts formed as thus described, it can be seen that by setting the bolts in the T-recesses 40 and then passing the bolts through the apertures 44, the wedge-shaped clamping members 30 may be placed in the recess overlying a blade 14 which, in turn, lies against the disc wall surface 22. The wedge member is then drawn into the recess 20 by revolving the nuts 34 relative to bolts 32 to lock the clamping member 30 which is so shaped and of such size that, when the clamp 30 firmly wedges the blade 12 against the surface 22, the exposed face 52 of clamping member 30 is disposed inwardly towards the disc from the plane of revolution of the cutting edge 14.

In the preferred form of the device, and in order to secure maximum wedging action, the axis of aperture 44 and, therefore the axis of the bolt 32 in fastening position, bear the same angular relation to the face of the disc as the bisector of the angle of intersection of the projections of

the opposed surfaces **36** and **38** of the clamping members **30**. By reason of such geometry, the pressure exerted by the clamping member **30** against the flat blade **12** extends over a large area, and provides a clamping pressure far greater than that secured by bolting on the cantilever principle of the Ottersland patent.

Also, it will be seen that no special shaping of the flat blade **12** is required since neither the fastening bolts **32** nor any other element passes through the blade **12**.

The T-bolts are made detachable from the clamping member **30** so that clamping members of different overall depth may be utilized, depending upon the particular thickness of the blade **12**.

I claim:

1. A rotary chipper disc having a working face, a knife blade receiving recess in said face, said recess being of V-shaped cross-section and formed by leading and following walls converging inwardly from the face of the disc, both of said walls being angularly related to said disc face and both being inclined in the direction of cutting rotation of said disc, a wedge-shaped blade clamping member having opposed surfaces bearing the same angular relationship as that of said converging walls, said clamping member having an internally countersunk recess on its inner edge, and co-operating fastening means extending from said clamping member through the back wall of said disc and seated in the countersink of said clamping member recess and against a back surface of said disc, respectively for wedging said clamping member against a flat blade lying against said leading angularly related disc wall with the cutting edge of the blade projecting beyond the face of the disc, the exposed face of said clamping member in wedging position being disposed inwardly of the plane of revolution of said cutting edge in rotation of said disc.

2. A rotary chipper disc as claimed in claim 1,

wherein the axis of said fastening means bisects the angle of intersection of the planes of the opposed surfaces of the clamping member.

3. A rotary chipper disc having a working face, a knife blade receiving recess in said face, said recess being of V-shaped cross-section and formed by leading and following walls converging inwardly from the face of the disc, both of said walls being angularly related to said disc face and both being inclined in the direction of cutting rotation of said disc, a wedge-shaped blade clamping member having opposed surfaces bearing the same angular relationship as that of said converging walls, and fastening means extending from said clamping member through the back wall of said disc and seated against a back surface of said disc for wedging said clamping member against a flat blade lying against said leading angularly related disc wall with the cutting edge of the blade projecting beyond the face of the disc, the exposed face of said clamping member in wedging position being disposed inwardly of the plane of revolution of said cutting edge in rotation of said disc.

4. A rotary chipper disc as claimed in claim 3, wherein the axis of said fastening means has substantially the same angular relation to the face of the disc as the bi-sector of the angle of intersection of the said opposed surfaces of the clamping member.

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