This invention relates to a log debarker having revolving flails.

An important object of the invention is to provide log debarking mechanism specially designed for removing bark from timber in order to free the timber of all foreign matter, so that the saw dust and slabs subsequently produced, when the timber is manufactured into lumber, will be clean and thus more desirable for converting into other commercial forms.

The invention also embodies the provision of novel debarking elements which are brought into successive contact with the log surface to loosen and remove the bark.

A further object of the invention is the provision of improved debarking mechanism embodying novel driving means therefor, whereby the bark may be easily and completely removed from a log in a single operation or pass through the mechanism.

Other objects and advantages will be apparent from the following specification which is illustrated by the accompanying drawings, wherein—

Figure 1 is a side elevation of the complete machine;
Figure 2 is a side elevation of the front track, or conveyor;
Figure 3 is a vertical, sectional view thereof;
Figure 4 is a vertical, sectional view taken on the line 7—7 of Figure 5;
Figure 5 is an elevational view of the timber guide;
Figure 6 is an enlarged, fragmentary, elevational view of the timber guide or track; and
Figure 7 is a cross-sectional view taken on the line 7—7 of Figure 5.

Referring now more particularly to the drawings, wherein like numerals of reference designate the same parts in each of the figures, the numeral 1 designates an upright stand whose upper end is formed into a ring, as 2, to which the supporting, drum-like frame 3 is secured in any preferred manner. As shown, it is secured to the ring by means of suitable bolts.

Mounted to rotate about the frame is a bracket or crosshead 4, which is confined against substantial longitudinal movement on the frame by means of an external rib 5 on the frame in front of the bracket and the upright stand 4, as is clearly shown in Figure 3. Between the bracket 4 and the stand 1 there is bolted to the bracket an annular sprocket wheel 6 provided to receive a sprocket chain 7 driven from a suitable source. The bracket 4 is thereby revolved on the frame.

Fixed in any preferred manner, as by bolts, on the forward end of the frame, is an annular ring 8 whose margin is provided with sprocket teeth, and a continuous but non-traveling sprocket chain 9 in mesh with opposite groups of the teeth of the ring 8, but spaced from those teeth intermediate said opposite groups because of being trained over sprocket wheels 13, as described later.

The bracket 4 has the lateral radially projecting extensions 4a, 4b at opposite sides, and in these extensions, or arms, are provided with forwardly directed, rotatable spindles 10, 11, which are mounted to rotate in bearings 11 therein. Each bearing has an inside pocket 12, said pockets being, preferably, transversely aligned, and on the spindles in said pockets there are the sprocket wheels 13 which rotate with said spindles. The sprocket chain 9 being held against travel by the fixed sprocket 8, engages over the sprocket wheels 13, and rotates them upon rotation of the head 4, and consequently rotates the spindles 10.

Fastened on the forward ends of the spindles 10, to rotate therewith, are the circular, wheel-like anchors 14, 16, which obviously rotate with the spindles.

A preferred form of the driving mechanism has been described, although it is obvious that this mechanism can be readily modified mechanically without departing from the principle of its operation and use.

Spaced about the periphery of the anchors 14 are the debarking elements 15. These elements are preferably of flexible character, such as lengths of chain or cable which are secured at their ends to the margins of the anchors 14. These elements may be of any selected length, and form loops which, as is illustrated in Figures 2 and 3, will contact the surface of the logs being sent through the equipment in a manner hereinafter explained.

Spaced to the rear of the frame above referred to, is a supporting structure embodying upperstanding supporting beams 16, 18 which are laterally spaced the required distance, and a transverse shaft 17 whose ends have bearings in said beams and, at one end, said shaft 17 extends out beyond its supporting beam, and fixed thereon is a sprocket wheel 18 over which the sprocket chain 19 operates, said sprocket chain 19 being driven from a suitable source of power.

Connecting bars 20, 21, are pivotally mounted on the transverse shaft 17 and extend each way beyond said shaft. These connecting bars are united into a unitary frame structure by crossrods 21, and are provided at each end with aligned openings which form bearings for transverse end shafts 17a, 17b having intermediate their ends sprocket wheels 22a, 22b over which is trained an endless sprocket chain 22. On opposite sides of this chain and firmly secured to
the bars 20 are elongated guide plates 24, 24, which diverge upwardly, as shown in Figure 7, and which extend substantially from end to end of said frame.

An additional sprocket wheel 22 is mounted on shaft 17 (see Fig. 7) adjacent the sprocket wheel 18, and a corresponding sprocket wheel 22c (see Fig. 6) is mounted on one end of the shaft 17b. An endless chain 22b is trained over the sprocket wheels 22 and 22c, whereby chain 19 and sprocket wheel 18 drives chain 23 through shaft 17, sprocket wheel 22, chain 23b, sprocket wheel 22c, shaft 17b, and sprocket wheel 22b. Intermediate the ends of transverse shaft 17, a guide sprocket wheel 18a is mounted so that the central portion of the upper run of the chain 23 will be constantly supported or guided while the equipment is in operation, the upper run of said chain 23 moving upwardly along the timber guide or track. The sprocket wheels 22c and 22b, respectively, are fixed on the transverse shafts 17a and 17b.

The log to be operated on is moved on to the guide plates 24, which form a track, and the chain 23 engages with the underside of said log and moves it along, as indicated in Figure 3, thus forming a conveyor.

Upper connecting bars 25, 25 have rear ends mounted to pivot on a transverse shaft 25 which is mounted in bearings in the upper ends of the beams 16, and the forward ends of these connecting bars 25 are mounted on a transverse shaft 27 which, in turn, is mounted to rotate in suitable bearings in the lower ends of corresponding hanger bars 28. When the shaft 27 is driven (by means not illustrated), it drives the sprocket chain 23c.

These connecting bars 25 are united into a unitary frame structure by cross-rods 29. Secured to opposite sides of said last mentioned frame, are elongated guide plates 30, 30 which diverge downwardly, as shown in Figure 7, and which extend substantially from end to end of said frame as shown in Figures 1 and 6. Levers 32, 32 are pivoted between their ends to a suitable overhead support 33, and pivoted to opposite ends of these levers and depending therefrom are the hangers 28, 28, and hangers 34, 34. Each hanger 34 is formed of two parts having a slip joint connection 35, and each hanger is normally held retracted by a pull spring 36 whose ends are connected to the respective sections. Forwardly of the frame is an outfeed track corresponding in structure to the lower, or receiving, track at the rear of the machine. However, this forward or outfeed track, while slightly different from the rear track, is mounted and constructed to receive the forward end of the log as it moves along through the machine, and to support it in proper position while the debarking elements are operating.

The forward track includes angular frames 37, 75 whose forward ends are supported on a transverse shaft 39. The ends of this shaft are supported by upstanding supporting legs 40, 40, which are spaced to give the required clearance for the log being conveyed. A transverse shaft 42 is mounted in bearings in the lower ends of the spaced hangers 34 and supports the rear ends of the frames 37, the latter providing bearings for a short transverse shaft 43. A sprocket chain 38 operates between said frames and over sprockets on the shafts 39, 42 and 43.

Secured to the frames 37 and diverging upwardly therefrom are guide plates 41, which extend from end to end of the frames 37, the rear ends of the frames and guide plates being upwardly and forwardly pitched so as to readily receive the forward end of an approaching log.

A track or conveyor is thus provided which is supported at its rear end by the strong coil springs 36, thus allowing the track to center relative to the frame 3.

The bracket or crosshead 4 has the sprocket wheel 5 fixed thereon as hereinafter stated and suitably driven by a sprocket chain 7 from a selected source of power. Accordingly, the crosshead or bracket 4 is revolved about the coincident horizontal axes of the stationary drum 3 and the stationary sprocket wheel 7, and the non-traveling sprocket chain 9, being meshed with the revolving sprocket wheels 12, causes rotation of the sprocket wheels 13, the shafts 10 on which said sprocket wheels are fixed, and the anchors 14, and thus causes the loops 15 to revolve around the axes of the shafts 10. Said anchors and loops also revolve around the log to be debarked and thus knock the bark from it as it moves along the conveyors.

What I claim is:

A log debarker comprising a supporting frame including a stationary drum, an annular crosshead surrounding the drum and rotatable thereon, annular rotatable anchors mounted on the crosshead to revolve with the crosshead about the axis of the drum, means for rotating the crosshead, flexible debarking elements attached at peripherally spaced points on the margin of the anchors, an annular sprocket immovably secured to said drum in concentric relation to the axis of the drum and having external peripheral teeth, a rotatable sprocket connected in driving relation with each of said anchors, and a non-traveling endless chain in intermeshing engagement with said immovable sprocket and said rotatable sprockets, and operable upon rotation of the crosshead to rotate said anchors.

WILLIAM P. MCCOMB, Jr.

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