

May 21, 1946.

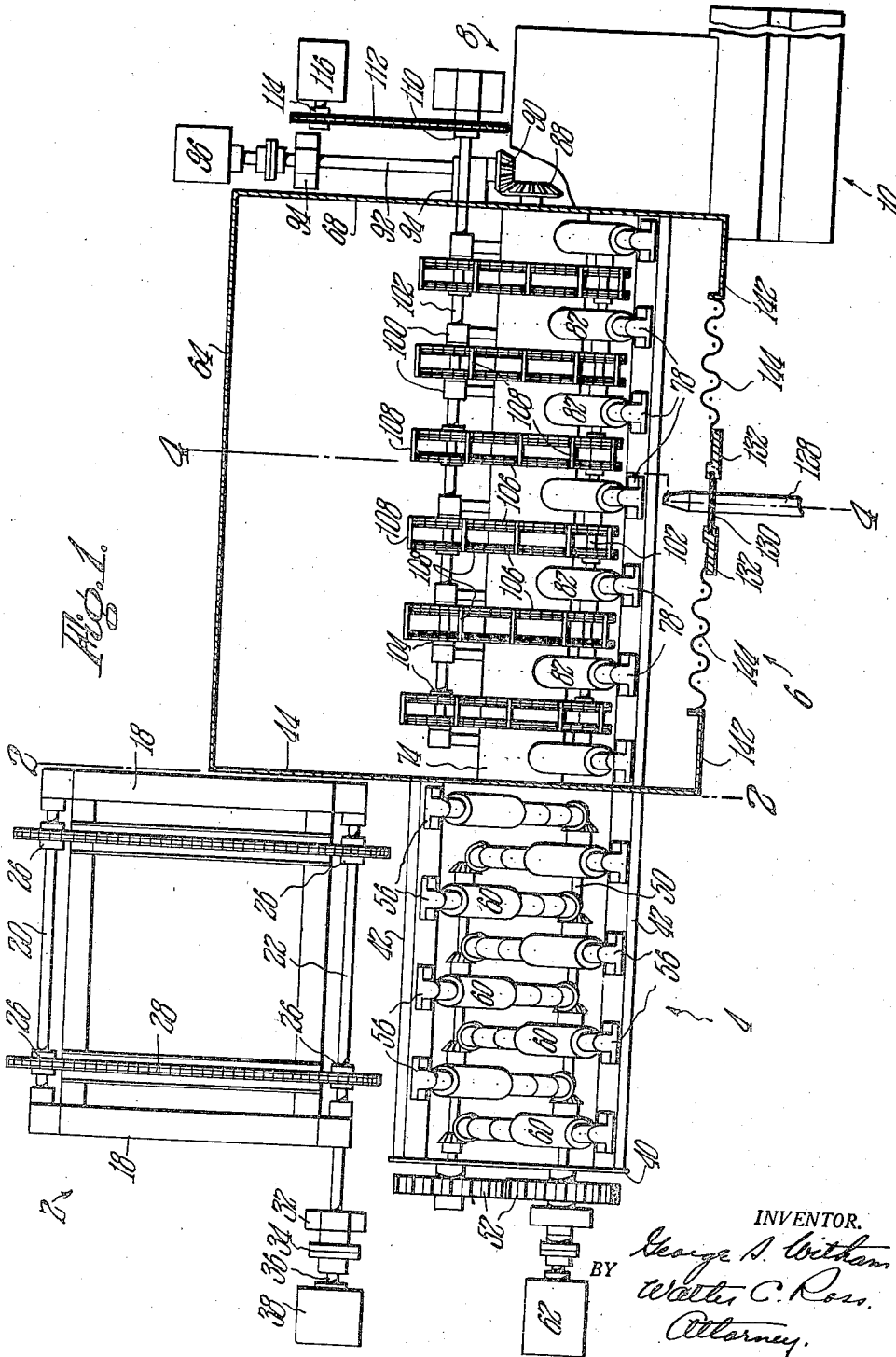
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2,400,725

APPARATUS FOR DEBARKING TIMBER

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Fig. 2.

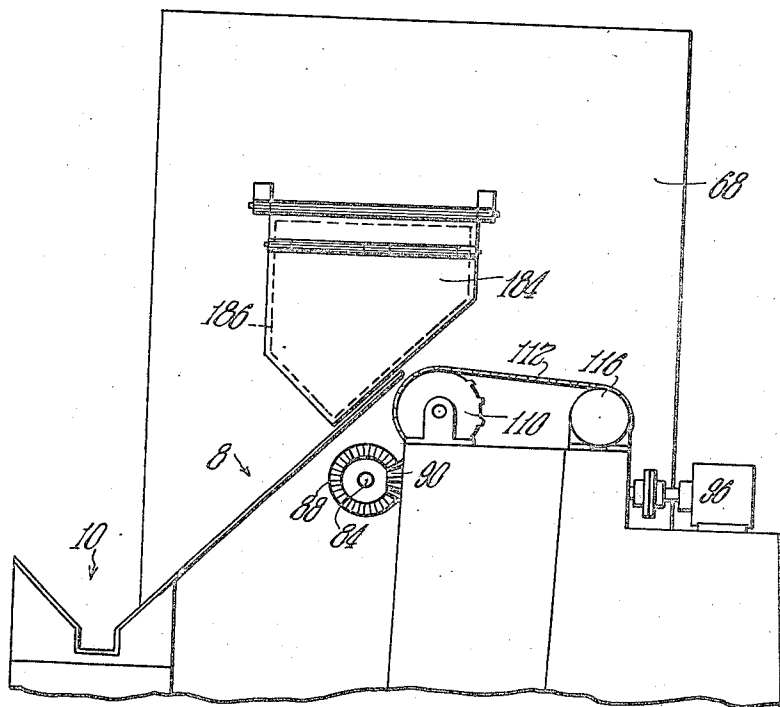
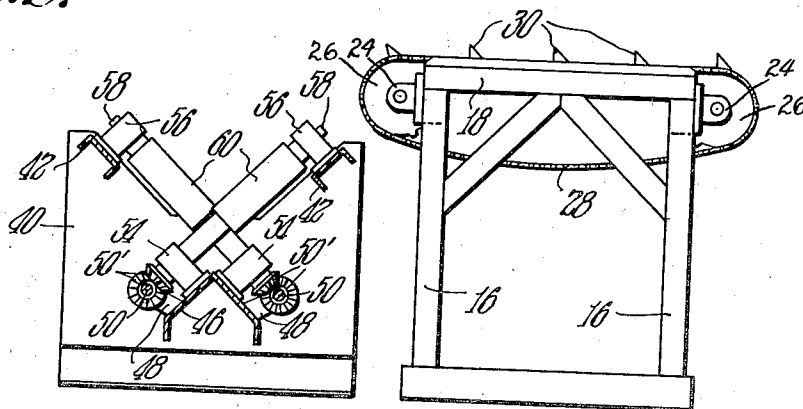


Fig. 3.

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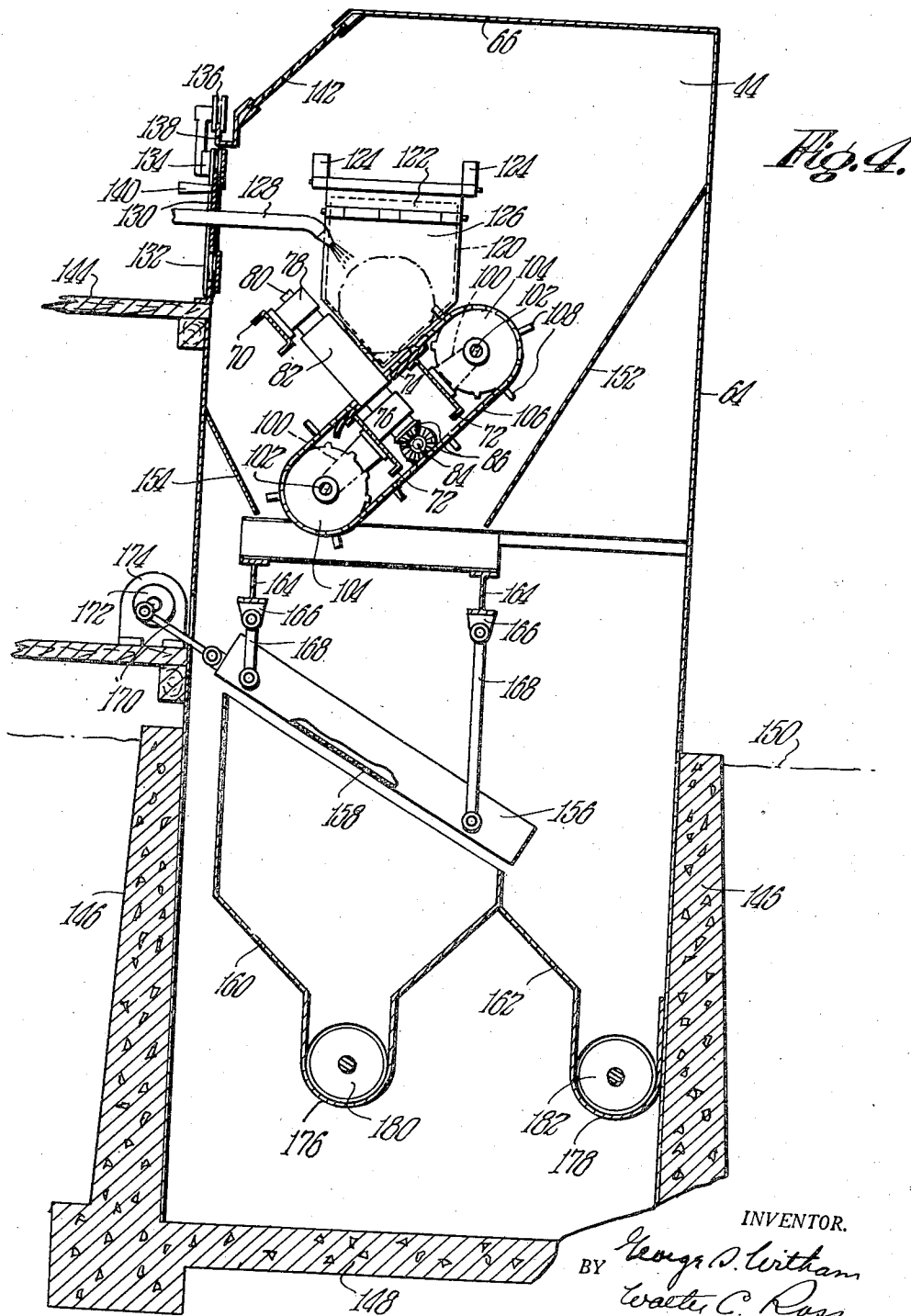
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APPARATUS FOR DEBARKING TIMBER

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Application July 21, 1944, Serial No. 546,044

8 Claims. (Cl. 51-14)

This invention relates to apparatus for debarking timber.

The principal objects of this invention are directed to improvements in methods of and apparatus for debarking timber and the apparatus is characterized by its simplicity of construction and speed and economy in operation.

According to certain novel features of the invention, timber is debarked automatically without the usual necessity of manual manipulation, thereby to attain speed in the debarking operation and to bring about low-cost production without objectionable waste of the wood.

As one feature of the invention, the timber is subjected to the action of a blasting operation, such as blasting with sand, shot, emery, or other materials adapted to function with an abrasive action for the debarking operation and, while so being blasted, the timber and blast-delivering means are moved relative to one another thereby to effectively remove the bark without impairing the timber.

According to another feature of the invention, the relative movement of the timber and blast-delivering means is constructed for various relative speeds and directions of movement whereby timber of various kinds may be operated on for the debarking thereof. A still further feature of the invention is that the apparatus is of such a nature as to be adapted for operation in any desired location and therefore may well be used in the woods where the timber is felled, thereby to effect economy and efficiency.

Various novel objects and advantages will be observed from the following description of the invention in the form at present preferred, it being understood that various changes and modifications may be made, all within the spirit and scope of the invention.

In the drawings:

Fig. 1 is a partial plan and sectional plan view of an apparatus embodying the features of the invention;

Fig. 2 is a sectional elevational view on the line 2-2 of Fig. 1;

Fig. 3 is an end elevational view of the apparatus shown in Fig. 1; and

Fig. 4 is a sectional elevational view on the line 4-4 of Fig. 1.

Referring now to the drawings more in detail, the invention will be fully described.

The apparatus may be constructed and arranged for operation on timber of various sizes and lengths and the same comes within the meaning of logs herein.

In general, the apparatus includes a feed deck 2 onto which logs are placed and from which they are delivered to feeding means 4. The said feeding means passes the logs into a compartment 6 wherein means for manipulating the logs moves them relative to a blast nozzle or nozzles for the debarking operation. Said feeding means transports the logs subsequent to the debarking operation to a chute 8 from which they pass to a chute 10 which may or may not be provided with means for moving the logs therealong.

The feed deck 2 includes uprights 16 secured to side members 18 in such a way as to provide a rigid platform. Shafts 20 and 22 rotatable in bearings 24 secured to the platform carry sprockets 26 around which are endless chains 28 that are provided with pushers 30.

One of the shafts such as 22 extends for rotation through a bearing 32 and is coupled by 34 to a shaft 36 of a motor 38. As the shaft 22 is rotated, the chains are operated so that the pushers act on and propel logs from the deck 2 into the feeding means 4.

An end member 40 is connected by longitudinal members 42 to a wall 44 of the compartment 6. A lower member 46 extends between the member 40 and said wall 44.

Bearings 48 are fixed on member 46 and have rotatable therein shafts 50. Lower bearings 54 are fixed to member 46 and upper bearings 56 are fixed to members 42 and have rotatable therein the shafts 58 of rolls 60. Intermeshing gears 60' on the lower ends of the roll shafts 58 and on the shafts 50 are provided so that as said shafts 50 are rotated the rolls 60 are driven.

One of the shafts 50 is connected for rotation to a motor 62 which motor may be of the variable speed reversible type. As the logs are pushed from off the feed deck 2, they are received on the rolls 60 which, when in rotation, feed the logs to the right (in Fig. 1) to the compartment 6.

The compartment 6 has rear and upper walls 64 and 66 respectively and an end wall 68. Longitudinal members 70 and 72 extend between the walls 44 and 68 of the compartment 6 and the members 72 have a plate 74 fixed thereto.

Lower and upper bearings 76 and 78 respectively on the members 70 and 72 have rotatable therein the shafts 80 of rolls 82. A drive shaft 84 is suitably mounted for rotation and said shaft 84 and the shafts 80 are provided with intermeshing gears 86.

Said shaft 84 extends through wall 68 and has a gear 88 fixed thereto which is in mesh with a gear 90 fixed on a shaft 92. The shaft 92 is ro-

tatable in bearings 94 and is operatively connected to a motor 96, which motor 96 is preferably of the reversible, variable speed type and when in rotation serves to rotate shaft 84 and, thereby, rolls 60 in the desired direction and at the desired speed.

Bearings 100 are carried by members 72 and have shafts 102 rotatable therein. Pairs of spaced sprockets 104 are fixed to the shafts 102 between adjacent rolls 82 and endless chains 106 are in engagement therewith. The chains of each pair of sprockets have connected thereto bars 108 arranged at intervals along the endless chains.

One of the shafts 102 has a sprocket 110 that is connected by an endless chain 112 to a sprocket 114 of a motor 116. Said motor will preferably be of the variable speed, reversible type.

The rolls 82 move the logs longitudinally while the bars 108 on the chains 106 engage and rotate the logs. Logs are fed by the rolls 60 into the compartment through an opening 120 provided in wall 44 (see Fig. 4). A member 122 is hinged to brackets 124 carried by wall 44 and a door 126 is hinged to member 122. Said door is arranged to be opened by logs fed forwardly by the rolls 60.

Normally said door 126 closes the opening 120. Logs fed to the compartment 6 are received on the rolls 82 and chains 106 by which they are moved relative to a nozzle or nozzles, such as 128.

The rolls 82 may be rotated at any desired speed as may the chains, and said rolls and chains may be operated in opposite directions. In this way the log or logs may be moved relative to the nozzle or nozzles both transversely and rotatively and at any desired and necessary speeds. There may be a combined longitudinal and rotative movement of the log in either direction so as to present the periphery of the log to the nozzle for the most effective action thereof.

The nozzle 128 preferably extends through a carrier 130 that is slidable up and down between guides 132. The guides 132 carry brackets 134 having rolls 136 rotatable thereon that roll on a track 138. A manually engageable member 140 may be provided for manipulation of the carrier 130 back and forth and up and down.

Since the nozzle is movable and since the log is moved by the rolls and chains, it is possible to readily and quickly remove the bark on a log by the abrasive material delivered by the nozzle.

Extensions 142 of walls 44 and 68 are connected by flexible material 144 to the guides 132, thereby to close the front side of the compartment. The nozzle is connected to a suitable apparatus for delivering the desired kind and amount of abrasive material at the desired pressure which will depend on the particular timber being operated upon and its condition. A window 142 is provided and this may be protected by a screen if desired (see Fig. 4).

A platform, indicated by 144, is provided for the operator and the walls forming the compartment may, as in Fig. 4, extend between foundation walls 146 to a lower floor 148. A ground line is indicated by dot-dash lines 150.

Baffles 152 and 154 converge from the walls of the compartment for directing abrasive material and bark to a movable screen 156. Said screen 156 has a perforated bottom wall 158 adapted to pass abrasive material into a hopper 160 while bark is delivered into a hopper 162.

Longitudinal members 164 carry brackets 166 to which are pivoted links 168 having their lower ends pivoted to the screen 156. The screen 156 is moved back and forth by a link member 170

pivoted thereto that is eccentrically pivoted to a disc 172 fixed to the shaft of a motor 174.

Sumps 176 and 178 are provided for the hoppers 160 and 162 and screw conveyors 180 and 182 in the sumps may be provided for moving the brasive material and bark to a location for handling and returning the abrasive material to the blasting apparatus. The wall 68 is provided with a door construction 184 similar to that already described and which normally closes an opening 186, through which barked logs are delivered onto the slide 8 which directs the logs to the chute 10.

In operation logs are successively transferred from the feed deck 2 by the chains 28 to the angularly disposed rolls 60. Said rolls are rotated to move the logs towards and into the compartment 6 where they are received by the rolls 82 and chains 106. The logs are fed through the compartment while at the same time being rotated and relative to the nozzle or nozzles for the blasting operation.

In some cases the rolls 82 are rotated alternately in opposite directions to move the log back and forth when necessary and desirable. In any event, the logs may be moved in various ways for the action of the nozzle which also may be moved by the operator all to obtain the most effective blasting effect in the shortest practicable time without waste of the wood.

The rolls 60 and the rolls 82 may if desired be provided with roughened surfaces for the more efficient manipulation of the logs and this may be accomplished by projections or prongs, grooves or whatever may be desired. The various motors are preferably of the reversible and variable speed type and may be controlled from a central point accessible to the operator who may observe the operation and manipulate or operate the various components in a manner to obtain the best results.

The invention may be embodied in other specific forms without departing from the essential characteristics thereof. Hence, the present embodiments are therefore to be considered in all respects merely as being illustrative and not as being restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all modifications and variations as fall within the meaning and purview and range of equivalency of the appended claims are therefore intended to be embraced therein.

What it is desired to claim and secure by Letters Patent of the United States is:

1. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said feeding means including a plurality of rolls arranged in spaced relation in rows adapted to rotatably support logs and means for driving the same and a wall of said compartment provided with an opening through which logs may pass having a door movable relative thereto operable by a log, and the axes of the rolls of one row disposed angularly relatively to the axes of the rolls of the other row.

2. Apparatus for debarking logs comprising in

combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said feeding means including a plurality of rolls arranged in spaced relation in rows adapted to rotatably support logs and means for driving the same and a wall of said compartment provided with an opening through which logs may pass having a door movable relative thereto operable by a long, and the axes of the rolls of one row disposed angularly relatively to the axes of the rolls of the other row, whereby the upper log supporting surfaces of the rolls of the rows form a V.

3. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said nozzle means including guideways movable horizontally relative to said one wall and a nozzle carrier movable vertically in said guideways.

4. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said manipulating means including a row of spaced rolls and chains having upper log engaging runs therebetween, and means to operate said rolls and chains.

5. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said manipulating

means including a row of spaced rolls and chains having upper log engaging runs therebetween, and independent means to operate said rolls and chains in opposite directions and at variable speeds.

6. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said manipulating means including a row of spaced rolls and pairs of chains therebetween with spaced bars for engaging logs connecting the chains of the pairs, and means for operating said rolls and chains.

7. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said manipulating means including a row of spaced rolls and pairs of chains therebetween with spaced bars for engaging logs connecting the chains of the pairs, and means for operating said rolls and chains, the axes of said rolls and upper runs of said chains relatively angularly disposed.

8. Apparatus for debarking logs comprising in combination, walls forming a closed compartment, feeding means for feeding logs to said compartment, nozzle means associated with one wall of said compartment for discharging abrasive debarking material, and manipulating means in said compartment for moving logs longitudinally and rotatively relative to said nozzle means whereby the surface of a log is presented progressively to said nozzle means, said manipulating means including a row of spaced rolls and pairs of chains therebetween with spaced bars for engaging logs connecting the chains of the pairs, and means for operating said rolls and chains, the axes of said rolls and upper runs of said chains relatively angularly disposed whereby the upper surfaces of the rolls and upper runs of the chains form a V.

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