Aug. 14, 1962 F. D. MARBLE ET AL 3,049,158

DEBARKER

Filed March 30, 1960 3 Sheets-Sheet 1

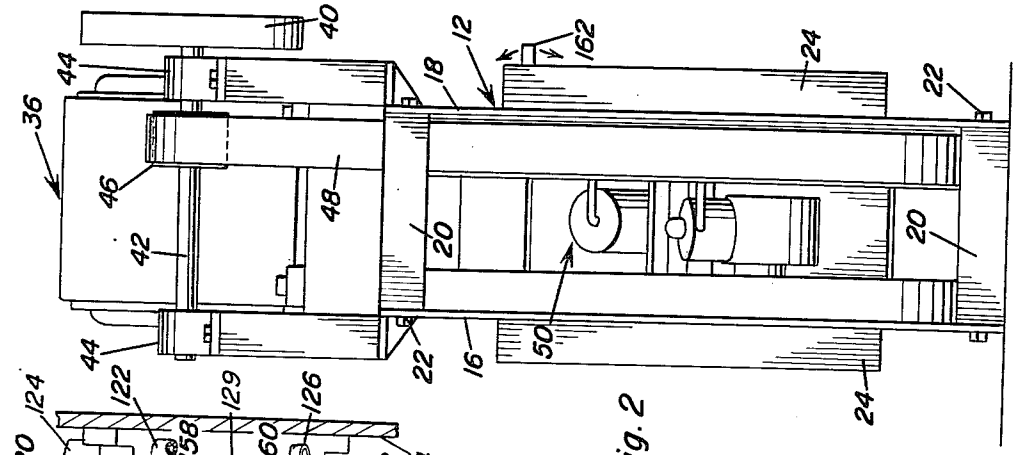


Fig. 2

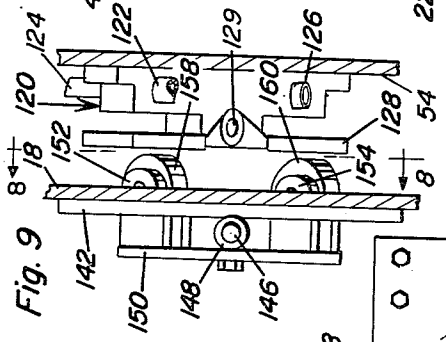


Fig. 9

Fig. 1

Fig. 7

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Fig. 3

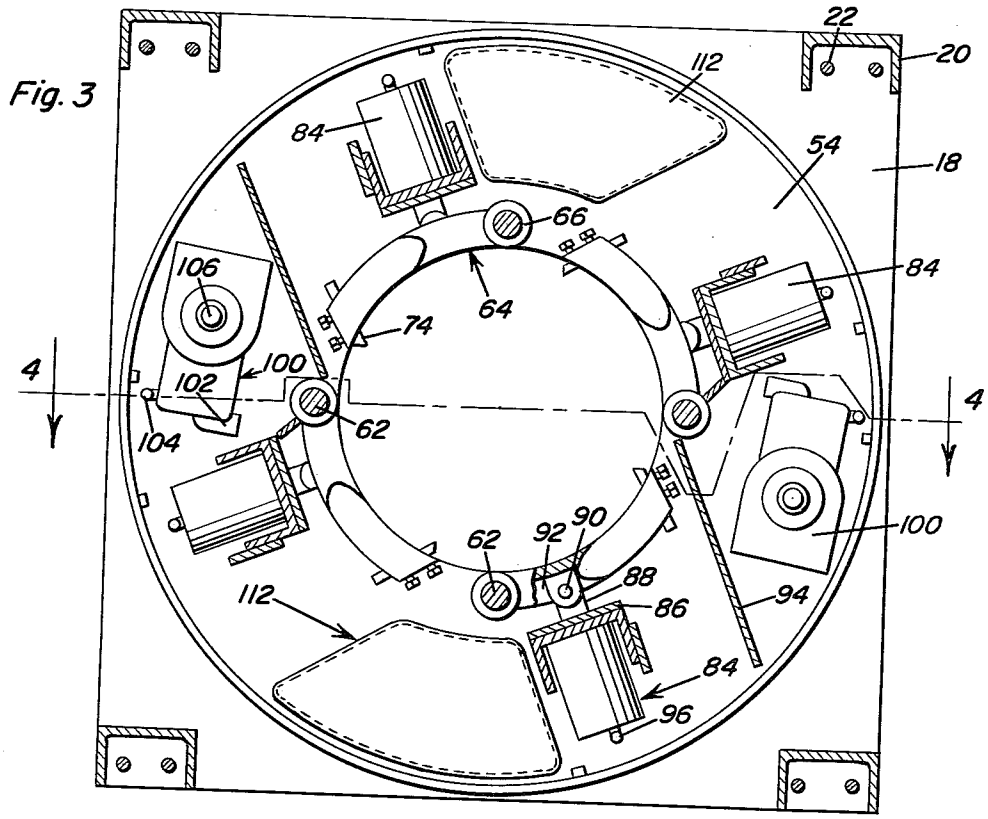
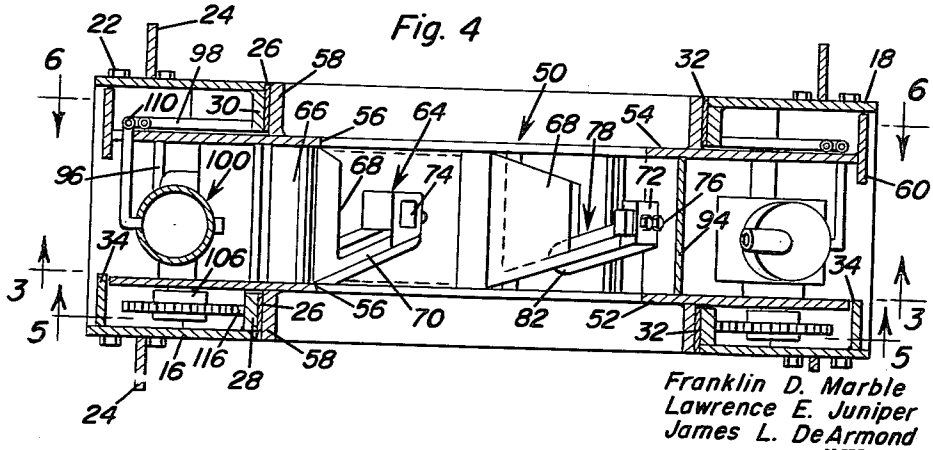


Fig. 4



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Fig. 5

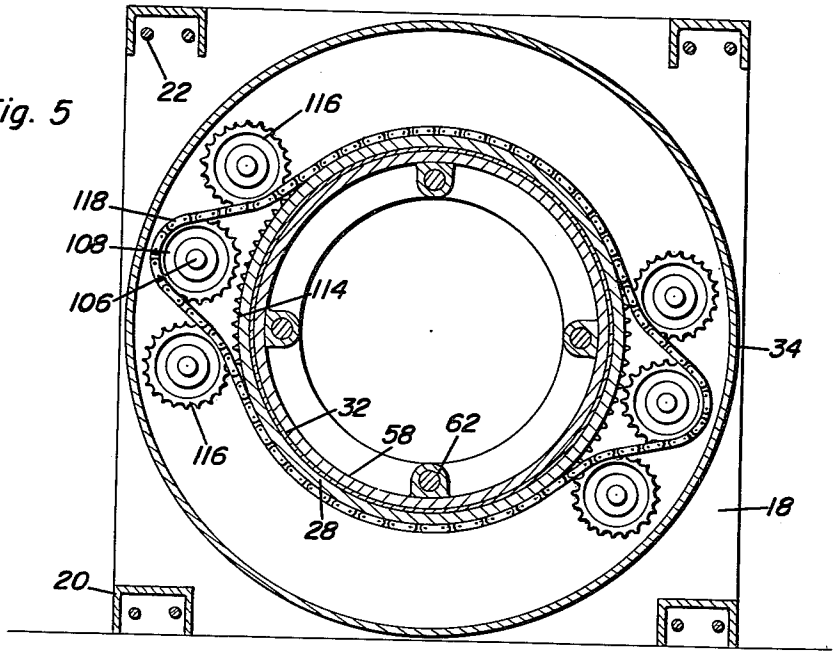


Fig. 6

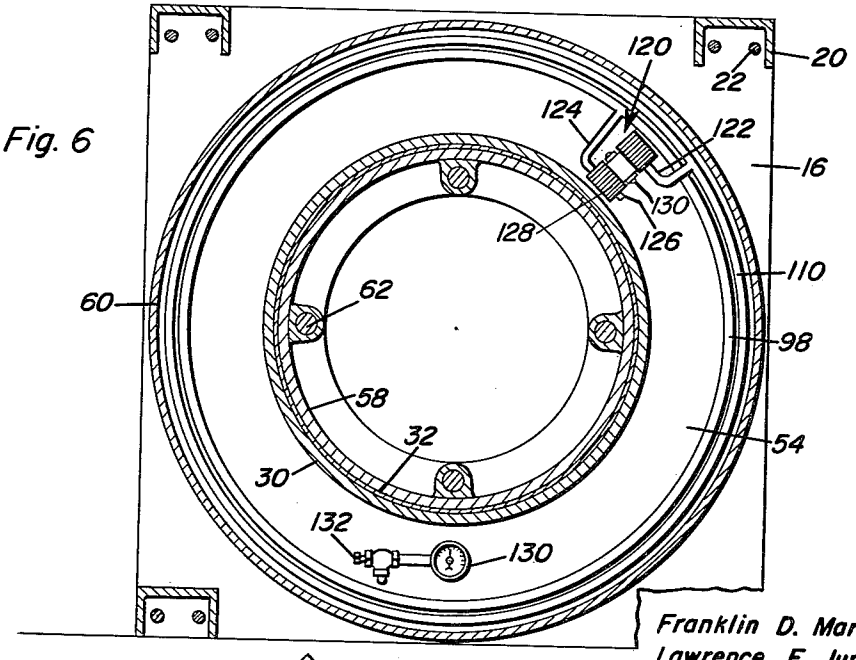
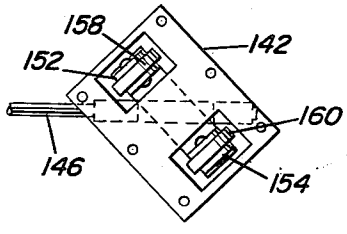


Fig. 8



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3,049,158
DEBARKER

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5 Claims. (Cl. 144—208)

This invention relates generally to rotary bark removing machines and more particularly to a novel and improved debarker device allowing an operator to control the pressure on the debarking tools without the need of external compressors.

The prior art discloses several forms of rotary debarking devices. Each of these devices generally includes a rotary assembly having tools associated therewith adjacent a large entrance extending through the assembly whereby the tools may engage the log and strip the bark therefrom as the log is moved through the log entrance. The tools that strip the bark from the log are extended toward the log and controlled by various means. Several of the devices utilize stationary compressors which in turn are connected to the rotary assembly for operating cylinders operatively connected to the tool holders. Other devices utilize tanks or reservoirs carried by the rotary assembly which are initially filled and utilized to operate the cylinders. These latter devices require the replenishing of the reservoirs or tanks several times during the daily operation of the device. Of the several different devices disclosed by the prior art, each is possessed of significant disadvantages which either makes it exceedingly costly or substantially ineffective for properly stripping the bark from logs.

In view of the above, it is the principal object of this invention to provide a novel debarker device for efficiently stripping logs of their bark. Moreover, it is an object of this invention to provide a novel and improved debarker device which substantially lessens the expense involved in stripping the bark from logs.

It is a more particular object of this invention to provide a novel debarker device wherein air cylinders, compressors, and reservoir tanks are carried by a barker ring assembly rotatably supported in a housing. Through the novel mounting of the compressors on the assembly, it is possible to maintain a constant source of air pressure for the cylinders so as to allow the engagement and disengagement of the debarking tools with the log at any given time. Also, the novel mounting of the compressors enables the system air pressure to be increased or decreased in an extremely easy manner.

It is a still more particular object of this invention to provide a novel debarker construction which is relatively simple in design and accordingly inexpensive to manufacture. The simplicity of design assures substantially maintenance free operation and further provides for reliability and durability.

It is a still more particular object of this invention to provide a novel debarker including a housing having a barker ring assembly rotatably supported thereby. Power means are provided for rotatably driving the assembly with respect to the housing. Compressors are carried by the assembly and the relative rotatable movement between the assembly and the housing activates the compressors for pressurizing an air supply in reservoirs also carried by the assembly and connected to the compressors. The housing and assembly define registered openings which comprise a log entrance. The assembly supports pivotally mounted tool holders adjacent the log entrance with cylinders pivotally connected to the tool holders for enabling the holders to be projected into the log entrance and engage the log. The cylinders are of course pressurized by the air supply from the reservoirs which in turn are pressurized by the compressors. Control means are provided for regulating the air supply to the cylinders and the resulting projection of the tool holders into the log entrance.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is an elevational front view of the debarker mechanism illustrating particularly the housing and power means supported thereby;

FIGURE 2 is an elevational side view of the debarker mechanism;

FIGURE 3 is a sectional view taken substantially along the plane 3—3 of FIGURE 4;

FIGURE 4 is a sectional view taken substantially along the plane 4—4 of FIGURE 3;

FIGURE 5 is a sectional view taken substantially along the plane 5—5 of FIGURE 4;

FIGURE 6 is a sectional view taken substantially along the plane 6—6 of FIGURE 4;

FIGURE 7 is a fragmentary elevational view of a portion of the control means carried by the housing for controlling the air discharge from the reservoir to the cylinder;

FIGURE 8 is an enlarged fragmentary elevational view showing a portion of the valve control means opposite to that illustrated in FIGURE 7; and

FIGURE 9 is an enlarged sectional view taken substantially along the plane 9—9 of FIGURE 7.

With continuing reference to the drawings, numeral **10** generally represents the debarker mechanism including a housing **12** and power means **14**. The housing **12** includes a pair of spaced end plates **16** and **18** joined to each other by a plurality of channels **20** extending therebetween. Bolts **22** likewise secure the plates **16** and **18** to each other. The end plates **16** and **18** are each provided with stiffening ribs **24** which extend outwardly therefrom. Each of the end plates **16** and **18** is provided with an aperture therein indicated by the numeral **26**. The apertures **26** are centrally disposed in the plates **16** and **18** and constitute a passage through the housing. The plates **16** and **18** are respectively provided with inwardly extending circular flanges **28** and **30** bordering on the apertures **26**. Bearing strips **32** are circular and supported on the inner surface of the flanges **28** and **30**. A circular guard **34** extends from the plate **16** toward the plate **18**.

The power means **14** are supported on the housing **12** and include a motor or engine **36** which drives a belt **38** which in turn drives power wheel **40** mounted on shaft **42** in bearing block **44**. Also secured to the shaft **42** is a second wheel **46** which drives belt **48** which in turn drives a barker ring assembly generally designated as **50** with respect to the housing **12**.

The barker ring assembly **50** includes a pair of disks **52** and **54**. The disks **52** and **54** are provided with aligned central circular holes **56**. Secured to the disks **52** and **54** are outwardly extending circular flanges **58** which border substantially on the holes **56** provided in the disks **52** and **54**. The aligned holes **56** constitute an assembly opening and together with the housing opening form a log entrance. The flanges **58** are rotatably engaged with the bearing strips **32** secured to the flanges **28** and **30**. A circumferential flange **60** is secured to the disk **54** and receives therearound belt **48**. Accordingly, it will be appreciated that as the belt **48** is driven, the barker ring assembly

50 is rotated with respect to the housing 12 as the belt 48 frictionally engages the circumferential flange 60 of disk 54.

The disks 52 and 54 are joined by rods 62 which extend between the disks around the central holes 56. Tool holders 64 are provided with sleeves 66 which are pivotally received on the rods 62 between the disks 52 and 54. The tool holders 64 are provided with a body portion 68 secured to the sleeves 66 and tapering forwardly thereof. An extension 70 projects from the body 68 and terminates in a tool holding portion 72 receiving cutting bit 74 secured by setscrews 76. A space 78 is thereby formed between the body 68 and the tool holding portion 72 which serves to free bark from jamming in front of the bit 74. Tool stiffening elements 82 may be utilized on either side of the projection 70 if desired.

Air cylinders 84 are mounted on the assembly 50 between the disks 52 and 54 by structural members 86. The cylinders 84 are provided with pistons rods 88 which are terminally pivoted at 90 to ears 92 secured to the tool holders 64 spaced from the rods 62. It will be appreciated therefore that as the cylinders 84 project the piston rods 88 therefrom, the tool holders 64 are pivoted about the rods 62 to carry the stripping bits 74 into the registered openings defined in the housing 12 and assembly 50 which together constitute the log entrance. Bark deflectors 94 are also secured between the disks 52 and 54.

Each of the cylinders 84 is provided with an air intake line 96 which extends through the disk 54 and is connected on the other side thereof to a common line 98. That is, each of the inlet lines 96 of the cylinders 84 is connected to a common tubular line 98 which is mounted on the outer side of the disk 54.

Compressor units 100 are likewise carried by the assembly 50 between the disks 52 and 54. The compressors are each provided with an intake 102 and an outlet 104. Each of the compressors 100 is likewise provided with a compressor drive shaft 106 which extends through the disk 52 and has terminally secured thereto a sprocket gear 108. Each of the compressor outlet lines 104 communicates with a common line 110 mounted on the outer side of the disk 54 concentrically with the line 98 communicating with the inlets 96 of the cylinders 84. Reservoirs 112 are likewise supported by the assembly 50 between the disks 52 and 54 and are provided with lines communicating them with the tubular line 110.

An annular toothed rack or ring gear 114 extends around the flange 28 secured to the plate 16 remote from the aperture 26. Idle gears 116 are mounted on both sides of each of the compressor driveshafts 106. A sprocket chain 118 is engaged with the annular rack 114 on the flange 28 and extends around the sprocket gears 108 secured to compressor drive shafts 106 between the idle gears 116. It will therefore be appreciated that as the belt 48 rotatably drives the assembly 50 by frictionally engaging the circumferential flange 60, the assembly 50 will be rotatably driven relative to the housing 12 so as to cause the sprocket gears 108 to be rotatably driven as they move along the sprocket chain 118. Inasmuch as the sprocket gears 108 are secured to the compressor driveshafts 106, the compressors 100 are driven to establish a high pressure in tubular lines 110 and reservoirs 112.

In order to utilize the pressure established in line 110 and the reservoirs 112, valve control means are provided. A substantially conventional three-way pressure valve 120 is mounted on the outer surface of the disk 54 between the end plate 18 and the disk 54. The valve 120 is provided with an inlet port 122 communicating with the line 110 and an outlet port 124 communicating with the line 98. An exhaust port 126 opens to the atmosphere. A valve lever 128 is pivotally mounted on a pin 129 and respectively controls the communication between the ports 122, 124 and 126. In one extreme position of the lever 128, the ports 122 and 126 may be communicated directly to entirely bleed the pressure line 110. At intermediate positions of the pedal 128, the line 98 may be partially pressurized from the pressurized line 110. A pressure gauge 130 may be mounted on the disk 54 for indicating the pressure in the reservoirs 112 and line 110. A relief valve 132 may be provided therewith if desired.

In order to control the positioning of lever 128, control means 140 are provided on the end plate 18 of the housing 12. Initially, an opening is formed in the end plate 18 and a bracket 142 is mounted thereover. A pair of sleeves 144 are secured to the bracket and a rod 146 rotatably extends therethrough. Intermediate the sleeves 144, a collar 148 is secured to the rod 146 for rotation therewith. A plate 150 is tangentially secured to the collar 148 and has pairs of spaced ears 152 and 154 extending perpendicularly thereto toward the plate 18. Openings 156 are provided in the bracket 142 and the ears 152 and 154 extend therethrough. The pairs of ears 152 and 154 respectively rotatably support wheels 158 and 160. The wheels 158 and 160 are engageable with the lever 128 of the valve 120 on either side of the pin 129. It will be appreciated that by manually rotating the rod 146 by utilization of the handle 162 terminally secured thereto, the plate 150 may be moved to an angular position with respect to the plate 18 so as to cause projection of one of the wheels 158 or 160 toward the lever 128 and the corresponding withdrawal of the other of the wheels from the lever 128. Depending upon the direction of rotation of the rod 146, the wheel 158 or the wheel 160 may be projected toward the lever 128. Inasmuch as the assembly 50 continues to rotate, the lever 128 is brought into engagement with the projected one of the wheels 158 and 160 so as to cause the pivoting of the lever 128 about the pin 129. By so doing, a selective communication may be established between the ports 122, 124 and 126.

It will therefore be appreciated that the apparatus disclosed permits the operator to control the pressure on the debarking tools without the need of outside compressors, thereby eliminating the necessities of springs, rotating air seals, rubber bands, tool pressure created by centrifugal force, special shaped arms, or the requirement of stopping the rotating air tank to relieve or build up air pressure therein. The apparatus further permits the accurate stripping of the bar from a log as the log is moved through the log entrance constituting the registered openings in the housing 12 and barker ring assembly 50. It will be appreciated that the apparatus accordingly minimizes the time required for the debarking process and accordingly minimizes the expense involved therewith.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a log debarking machine, the combination of a housing, a barker ring rotatable in said housing, a projectable and retractable debarking tool holder carried by said ring, a fluid operator carried by the ring and operatively connected to said tool holder, a reservoir for fluid under pressure carried by the ring, valve means carried by said ring for communicating said fluid operator selectively with said reservoir and with the atmosphere, and means provided on said housing for actuating said valve means during rotation of the latter with said ring, said valve means including a rocker arm movable between a first position wherein the valve means communicate the fluid operator with said reservoir and a second position wherein the valve means communicate the fluid operator with the atmosphere, said actuating means including a control handle movably mounted on said housing, and a pair of detents operatively connected to said handle, said

detents being selectively engageable with the rocker arm of said valve means during rotation of said ring for selectively moving the rocker arm between its first and second positions.

2. The device as defined in claim 1 wherein said rocker arm of said valve means is pivotally mounted intermediate the ends thereof and includes a pair of free end portions, said detents of said actuating means being selectively engageable with the respective free end portions of said rocker arm.

3. The device as defined in claim 1 wherein said rocker arm of said valve means is pivotally mounted intermediate the ends thereof for rocking movement toward and away from said housing and includes a pair of free end portions, said actuating means also including a shaft having said handle secured thereto, and a lever secured intermediate its ends to said shaft for rocking movement toward and away from said ring, said pair of detents being mounted on the respective end portions of said lever and selectively engageable with the respective free end portions of said rocker arm.

4. In a log debarking machine, the combination of a housing, a barker ring rotatable in said housing, a projectable and retractable debarking tool holder carried by said ring, a fluid operator carried by the ring and operatively connected to said tool holder, a fluid pump and a reservoir for fluid under pressure carried by the ring, a three-way valve carried by the ring for selectively communicating said pump and reservoir with the atmosphere in one position of the valve, said pump and reservoir with said fluid operator in a second position of the valve, and

said fluid operator with the atmosphere in a third position of the valve, and means provided on said housing for actuating said valve during rotation of the latter with said ring, said valve including a rocker arm movable between first, second and third positions corresponding respectively to the three positions of the valve, said actuating means including a control handle movably mounted on said housing, and a pair of detents operatively connected to said handle, said detents being selectively engageable with said rocker arm during rotation of said ring for selectively moving the rocker arm between its first, second and third positions.

5. The device as defined in claim 4 wherein said rocker arm of said valve is pivotally mounted intermediate its ends for rocking movement toward and away from said housing and includes a pair of free end portions, said actuating means also including a shaft rotatably mounted on said housing and having said handle secured thereto, and a lever secured intermediate its ends to said shaft for rocking movement toward and away from said ring, said pair of detents being mounted on the respective end portions of said lever and selectively engageable with the respective free end portions of said rocker arm.

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