

June 2, 1959

G. C. MORGAN ET AL

2,888,966

ROTATING AIR SEAL

Filed Feb. 14, 1955

4 Sheets-Sheet 1

Fig. 1

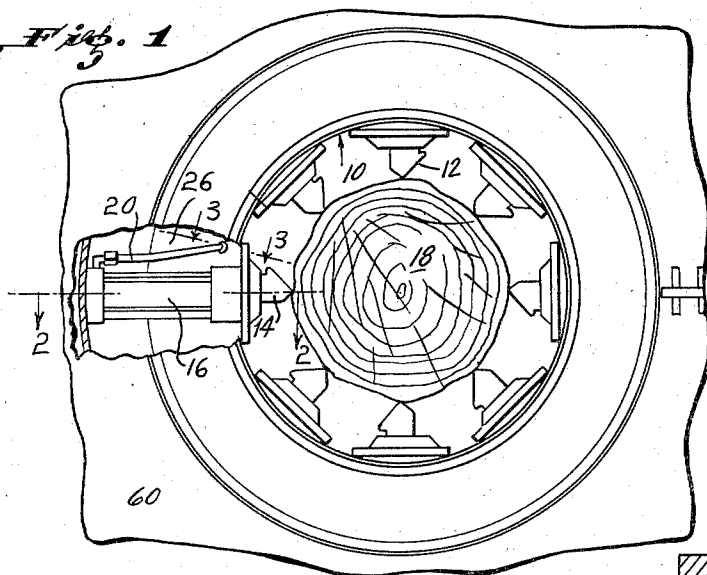


Fig. 2

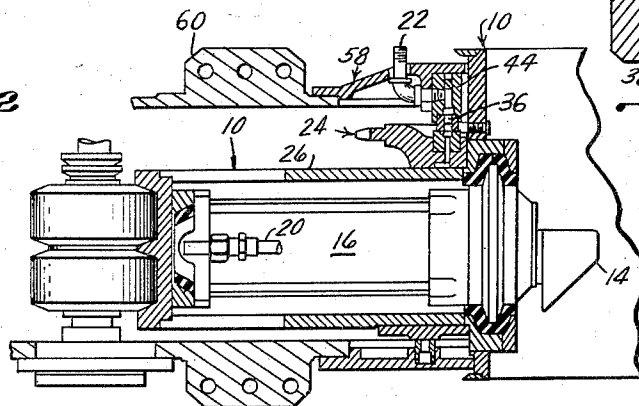
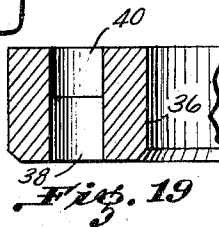


Fig. 19

Fig. 3

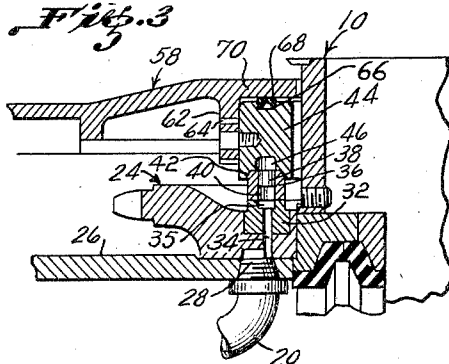
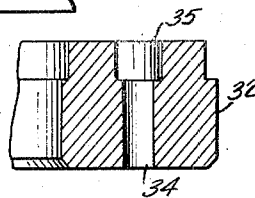


Fig. 16

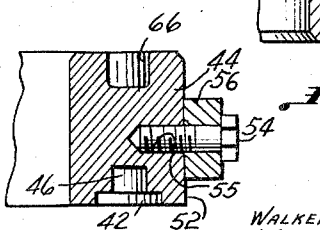


Fig. 12

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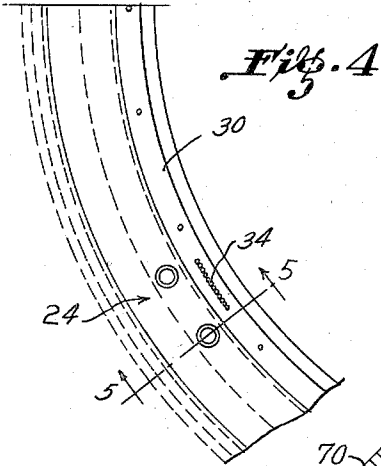
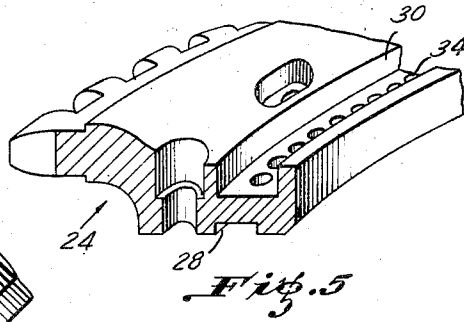
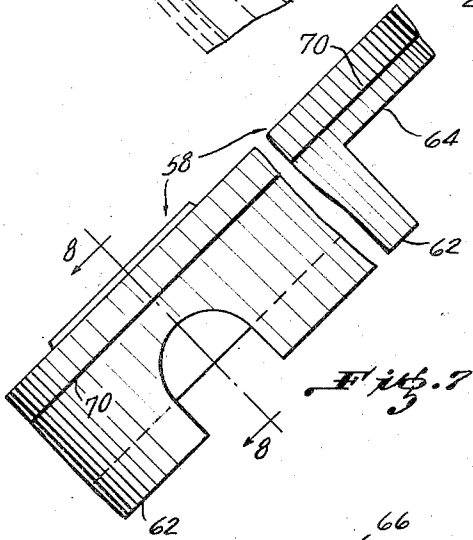
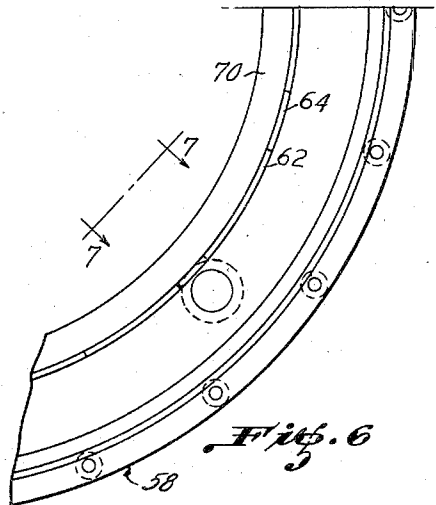
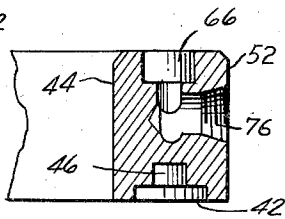
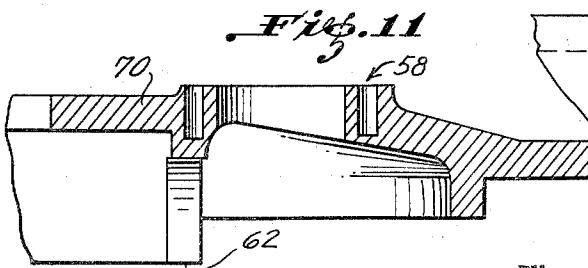
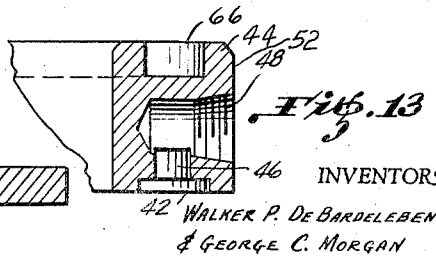
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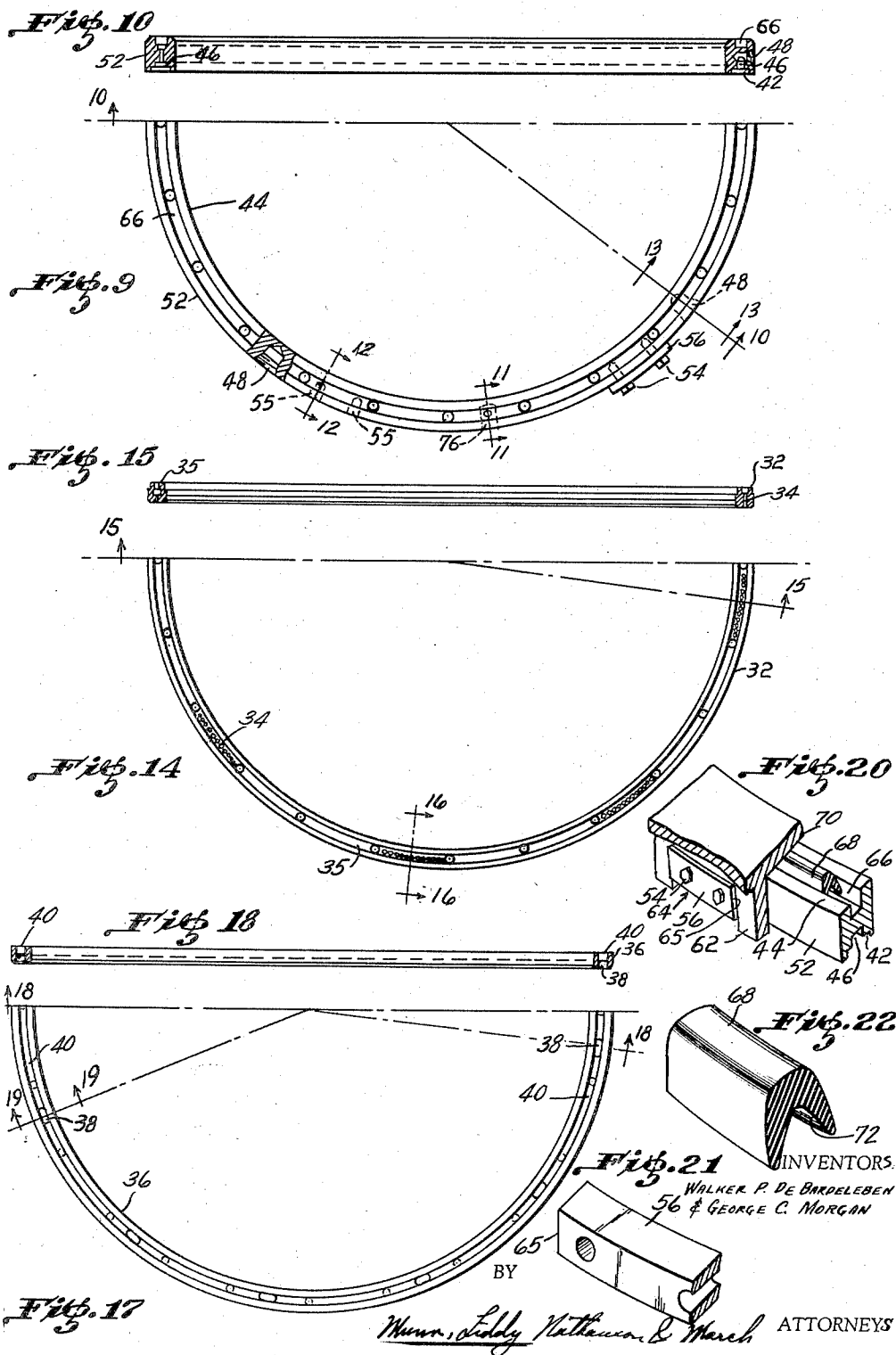
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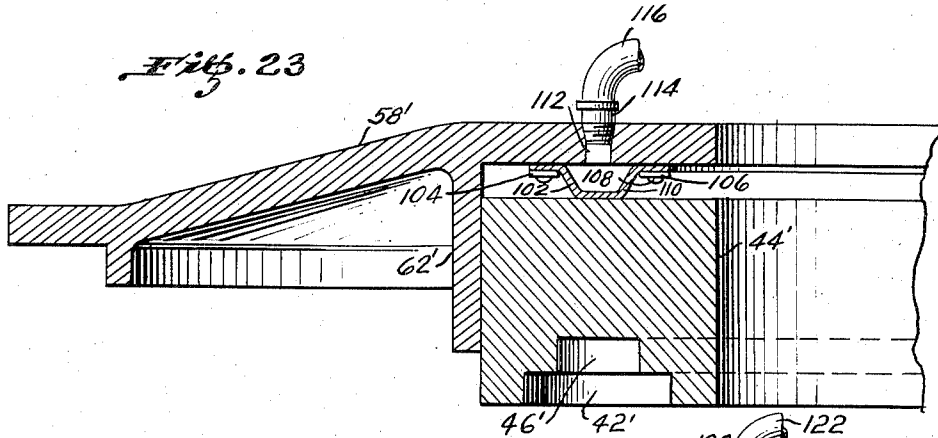
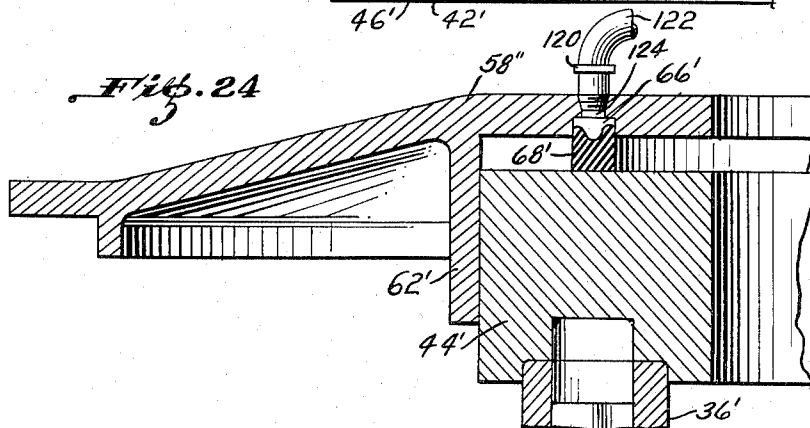
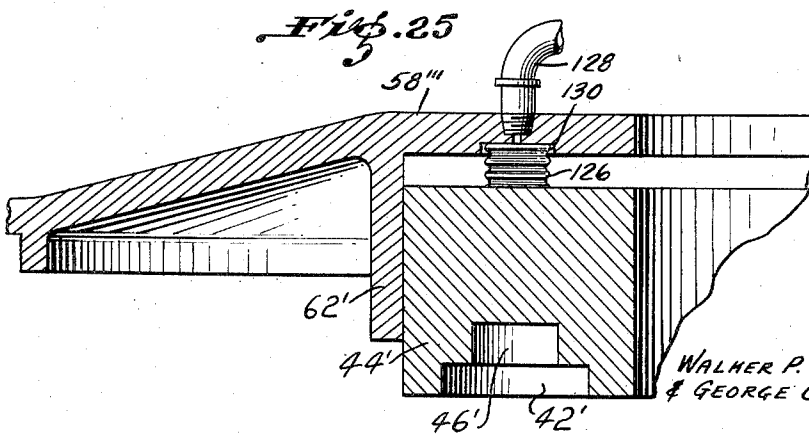
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ROTATING AIR SEAL

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Application February 14, 1955, Serial No. 488,047

17 Claims. (Cl. 144-208)

This invention relates to seals and in particular to a rotating air seal, adapted for use as a part of a log-debarking apparatus.

One form of log-debarking apparatus comprises a group of knives or cutting tools mounted for rotation about a central axis. A log is fed lengthwise through the machine as the tools rotate about the log. As with every machine, each log debarker has certain limitations as to the size of logs that can be accommodated. The minimum size of log is limited by the amount by which the tools can be moved or advanced toward the center of rotation, whereas the maximum size is limited by the distance that the tools can be retracted from the center of rotation.

The tools used for peeling the bark comprise a cutting or abrading device, attached to a fluid motor. The fluid motor can be operated to advance the tool toward a log received in the machine. The fluid motor is mounted with the tool on a rotating element which rotates with respect to the main frame of the machine. This rotating element is referred to as a rotor. There thus arises the problem of transmitting fluid from a source of fluid pressure to the fluid motors mounted on the rotor. Obviously some form of slipping or sliding connection must be utilized.

This invention relates to providing a rotating fluid seal as part of a means for conducting fluid under pressure from a source to fluid motors mounted in a moving element, and an object of the invention is to provide a sealed connection between conduits which are movable relative to each other.

The log-debarking apparatus is of considerable size, and, as the rotating elements have a substantial weight there are inertia problems to overcome in providing a satisfactory sealed connection. Also there is apt to be a considerable amount of end thrust from time to time during the operation of the machine. Furthermore, as a practical matter, perfect alignment of the rotor with respect to the stationary elements of the machine is not obtained. Therefore, a flexible sealed connection is necessary. The connection must accommodate the movements of the rotor with respect to the frame, and yet still maintain a proper sealed connection. In addition provision for accommodating wear, or for adjusting the elements of the sealed connection to accommodate wear, must be provided. An object of the invention is to provide a seal which is flexible, which accommodates misalignment of relatively movable elements, which accommodates wear of the sealing elements, and yet which still maintains a proper fluid-sealed connection. In the art to which this invention relates the sealed connection may be referred to as a seal.

In the log-debarking apparatus fluid is transmitted under pressure through the seal and to the fluid motors advancing the tools toward the log. Also in the type of apparatus illustrated herewith, the seal, in addition, has a fluid system which maintains the sealed connection between the stationary and rotary elements of the debarker.

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An object of this invention is to provide a separately controlled fluid system or sealing means for maintaining such sealed connection. Formerly it was the practice to utilize the same fluid supplied to the motors as fluid for sealing the elements of the seal. However, in our invention a separate fluid-supply control is used to seal the elements of the seal.

One purpose for devising a seal in which separate fluid supply is provided for controlling the sealing effect is that the separate seal control thus provided can be used to control the fluid motors as hereinafter described.

According to the instant invention (and as will be apparent from the following description), if fluid pressure is diminished in the sealing chamber of the seal, fluid pressure to the motors will be lost and the motors will be instantly retracted. This gives quick release of the tools. A further advantage in the instant invention is the fact that the sealed relationship can be obtained prior to the introduction of fluid under pressure to the fluid motors. Thus, the loss of fluid experienced with previously known devices when pressure is supplied to the motor is eliminated. With the previously known construction, when pressure was supplied to the motors the same pressure was bled into the sealing chamber, and it took some time for the seal to be accomplished. In the meantime the pressure fluid was escaping through the seal. Also on many occasions it was found to be impossible to obtain the desired tool control due to poor sealing. The sealing was poor due to inability to build up proper pressure (for proper sealing) with the pressure used for the fluid motors. With the instant invention, any pressure can be supplied to the seal without regard to the pressure (unit pressure) supplied to the tool-operating motors.

Another object or further advantage of the invention is that lower pressure can be used to maintain the seal.

An additional advantage is that with separate systems there is no loss of the sealing effect due to leakage at the fluid motors or to mishaps.

A further advantage or object is the provision of a seal with which occasional misalignment or vibration may occur without separation of the seal elements with consequent loss of "holding power" (fluid pressure) in the fluid motors.

These and other objects and advantages will become apparent from the following description and the accompanying drawings, in which:

Figure 1 is a fragmentary elevation illustrating a log debarker showing the tools used for peeling the bark as they are mounted on the machine, certain parts being broken away to show one of the tool assemblies.

Figure 2 is an enlarged-scale fragmentary section on the line 2-2 of Figure 1, illustrating the tool assembly as mounted in the log debarker, a rotating element or rotor in which the tool assembly is mounted and an air seal between the rotor and its supporting frame as constructed in accordance with the invention.

Figure 3 is a further enlarged fragmentary section taken along the line 3-3 of Fig. 1.

Figure 4 is a fragmentary elevation of the outer side of a rotor sprocket gear attached to the rotor of Fig. 2.

Figure 5 is a fragmentary, enlarged-scale perspective section of the sprocket gear of Fig. 4. The section is taken along line 5-5 of Fig. 4.

Figure 6 is a fragmentary elevation of the inner side of a cover for the rotor.

Figure 7 is an enlarged-scale fragmentary elevation taken along line 7-7 of Fig. 6.

Figure 8 is a fragmentary section taken along line 8-8 of Fig. 7.

Figure 9 is an elevation of the outer side of one-half of a ring-shaped member which may be termed a float-

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ing fluid-transmitting ring and also shows a guide bar connected to the outer periphery of the floating ring.

Figure 10 is a section of the floating ring of Fig. 9 taken along line 10—10 of Fig. 9.

Figure 11 is an enlarged section taken along line 11—11 of Fig. 9.

Figure 12 is an enlarged section taken along line 12—12 of Fig. 9, but adds the guide bar to the fluid-transmitting floating ring.

Figure 13 is an enlarged section taken along line 13—13 of Fig. 9 and corresponds to the structure shown at the right-hand end of Fig. 10.

Figure 14 is an elevation of the outer side of one-half of a ring-shaped member termed a sprocket-insert ring.

Figure 15 is a section taken along line 15—15 of Fig. 14.

Figure 16 is an enlarged section taken along line 16—16 of Fig. 14.

Figure 17 is an elevation of the inner side of a ring-shaped member which may be termed a floating nozzle ring.

Figure 18 is a section taken along line 18—18 of Fig. 17.

Figure 19 is an enlarged section taken along line 19—19 of Fig. 18.

Figure 20 is a fragmentary perspective view illustrating a guide bar and its co-operation with the fluid-transmitting ring of Fig. 9 and a flange of the cover of Fig. 6.

Figure 21 is a fragmentary, enlarged-scale perspective view of the guide bar of Fig. 20.

Figure 22 is a fragmentary perspective view of a sealing element, and

Figures 23—25 are fragmentary sections similar to Fig. 3, illustrating other forms of operating means.

Similar reference characters in the several views indicate similar parts.

Referring now in particular to the drawings, and considering the elements as shown therein, the log debarker comprises a rotor 10, and a series of peeling tools 12 which are mounted at spaced intervals in the rotor. The debarking tools comprise a tool or cutter head 14 and a piston-and-cylinder combination 16. The tool head is connected to the piston. By admitting fluid under pressure into the cylinder the tool head is forced toward a log 18. Air is preferred as the fluid medium. A conduit 20 connects directly to the cylinder. A conduit 22 connects to the stationary portion of the debarking machine. The problem obviously involves transmitting air from the conduit 22 to the conduit 20, and to the cylinder-piston combination 16.

An annular rotor sprocket gear 24 is affixed to a rotor frame 26, and the conduits 20 are connected to the rotor frame 26. When pictured as in Figure 5, the rotor sprocket gear has an annular fluid channel 28 extending around its forward surface. The conduits 20 are in communication with this channel. Also, the sprocket gear 24 has an annular rearwardly opening channel 30 formed concentric with the center of rotation of the rotor. A sprocket-insert ring 32 seats in the channel 30 of the gear 24 and is connected to the gear by screws or other suitable fastening means. Groups of passages or conduits in the form of holes 34 are provided at spaced intervals around the circumference of the insert ring 32. The holes are drilled through the sprocket-insert ring 32 and through the rotor sprocket gear 24 to the fluid channel 28 after the sprocket-insert ring 32 and sprocket gear 24 are assembled. The groups of holes 34 are spaced at 45° intervals around the ring. The rear end of the conduits or passages 34 are connected at the rear side of ring 32 by an annular channel 35. An annular second ring 36 rests on the ring 32. The ring 36 may be termed a floating nozzle ring. The latter has a series of slots 38 extending approximately halfway therethrough from its rear surface to approximately the middle of the ring and a channel 40 interconnects the interior end of

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the slots. This channel is adapted to confront the channel 35 in the assembled debarker. Both channel 35 and channel 40 are made concentric with the center of rotation of the rotor.

The floating nozzle ring 36 is received in an annular channel 42 in the inner surface of a fluid-transmitting floating ring 44, the channel 40 facing forwardly of the channel 42. The floating nozzle ring 36 is connected to the fluid-transmitting floating ring 44 by spaced screws or other fastening means (not shown), Figure 9 showing holes therefor and Figure 17 showing (in broken lines) tapped bores therefor. A second annular channel 46 communicates with the channel 42 and confronts the slots 38 in the assembled combination of the ring 44 and the ring 36. The channel 46 is connected with the conduits 22 by means of fittings inserted in openings 48.

The outer side 52 of the floating ring 44 co-operates with screws 54 by means of threaded holes 55 provided at spaced intervals. These screws in turn mount guide bars 56.

A rotor cover 58 is connected to a debarker frame 60 by suitable screws or other fastening means. The cover has a forwardly extending annular flange 62 and the floating fluid-transmitting chamber flange ring 44 seats within the annular flange 62. The flange 62 has slots 64 at intervals corresponding with the intervals at which the screws 54 and guide bars 56 are spaced. The guide bars 56 have shoulders 65 which face corresponding shoulders in the openings 64 of flange 62. These shoulders are positioned laterally with respect to the lower surface of ring 36 and thus also with respect to the upper surface of ring 32. The guide bars 56 and connected rings 36 and 44 can move as a unit laterally of the forward surface of ring 36 and the rear surface of ring 32, but the facing shoulders of the slots 64 and guide bars 56 prevent rotation of rings 36 and 44 with respect to the debarker frame. The fluid-transmitting floating ring 44 and floating nozzle ring 36 thus do not rotate with the rotor.

In its rear face, the fluid-transmitting ring 44 has a second channel 66. A seal 68 cooperates with the channel 66 to form a fluid chamber. The seal 68, which may be formed of leather, rubber, or other suitable material, seats in the channel 66 and has sliding contact with the sides of the channel. The seal 68 is adapted to have its rear surface bear against a flange 70 of the cover 58. The seal 68 is V-shaped on its forward surface, as indicated at 72, thus forming a fluid chamber with the channel 66 even though the seal is fully seated in the channel. The channel 66 communicates with a fluid fitting and conduit (not shown) inserted into an opening 76. The conduit leads to a control means for controlling the pressure and amount of fluid. The rear channel 66 does not communicate with the forward channel 46.

In assembling the above-described apparatus, the sprocket gear 24 is connected to the sprocket-insert ring 32 by means of suitable screws with the channel 35 facing rearwardly of the sprocket gear. The floating nozzle ring 36 is seated in the channel 42 of fluid-transmitting floating ring 44 and is connected thereto by screws (not shown) provided for this purpose. The ring 36 is seated in the channel 42 of floating ring 44 with the channel 40 facing away from the floating ring 44. The seal 68 is then seated in the annular channel 66. Next, the sprocket gear is connected to the rotor, and the floating ring 44 and cover 58 are assembled in proper relation with respect thereto. The cover 58 is connected to the rotor stand or frame 60. When thus assembled the forward surface of ring 36 faces the rear surface of ring 32. These two surfaces are preferably smoothly finished and adapted to seat against each other. The surface conditions are such that the two rings can rotate relatively to each other in sliding engagement and a fluid seal can be maintained between the two rings by pressing them against each other. The two rings are pressed against each other by admitting fluid under pressure into

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the chamber formed by the channel 66 and seal 68, thus urging the floating ring 44 and its connected ring 36 against the ring 32. When the mating surfaces of ring 36 and ring 32 are in engagement, fluid can be admitted through the conduit 22 and the opening 48 into the channel 46. From there it will pass through the rings 36 and 32, sprocket gear 24 and rotor frame 26 to the conduits 20, and operate the fluid motors 16 connected to the tools 14. Bark is removed from a log, such as log 18, by rotating the rotor 10 around the log. The ring 44 and its associated ring 36 are prevented from rotating by virtue of engagement of the guide bars 56 with the walls of slots 64 in the flange 62. The floating ring 44 and ring 36, however, can move longitudinally of the debarker, since the stop bars 56 can move in the slots 64. The conduits can be sufficiently flexible to readily permit such movement. As described above, the fluid chamber provided by the channel 66 and the seal 68 is separate from and not connected to the channel 46. Thus, separate fluid-pressure control is provided for effecting the seal, that is, the urging of the ring 36 against the ring 32, and for operating the motors which move the tools. There are a number of advantages to such construction. Among these are the fact that the seal can be effected prior to the introduction of fluid into the fluid motors. The fluid pressure of the motors can be instantly released by reducing the pressure in channel 66, thus giving a more flexible and faster acting control. Also, the loss of fluid is reduced and the sealing pressure can be controlled independently of the pressure of the fluid being supplied to the fluid motor. Separate pressure regulation has obvious advantages, such as the fact that the motors can be more delicately adjusted to the particular operating conditions without effecting the sealed relationship between the rings 36 and 32.

Figures 23, 24 and 25 are views similar to Fig. 3, but illustrating different forms of seal-operating means constructed in accordance with the invention. Referring first to Fig. 23: a rotor cover 58' has an annular flange 62', and a fluid-transmitting floating ring 44' cooperates with the rotor cover and flange in the same manner that flange 62 and cover 58 cooperate with the fluid-transmitting floating ring 44. Unlike the construction illustrated in Fig. 11, however, the fluid-transmitting floating ring 44' connects only to the conduit delivering fluid to the piston-cylinder combination and not to a second conduit for supplying fluid to the means effecting the desired sealed connection.

An annular sheet of rubbery material 102 extends concentric to the main axis of the debarker and behind the floating ring 44'. Rings 104, 106 press lateral edges of the sheet 102 against the rotor cover 58'. Screws 108 can be used for this purpose. There is thus formed an air chamber 110. The latter communicates with a passage 112. Fitting 114 connects a conduit 116 to the passage 112. The method of introducing fluid into the chamber 110 is obvious and the seal-operating means functions in a manner similar to that previously described. Thus the floating ring 44' is pressed forwardly by admitting fluid into the chamber 110.

Figure 24 shows a channel 66' formed in a cover 58'' concentric to the debarker main axis. A seal 68' seats in the channel 66' in the same manner that the seal 68 seats in the channel 66. A fitting 120 connects a conduit 122 to a passage 124 and the channel 66'. There is thus formed a construction similar to that of Fig. 3, and which operates in the same manner. Figure 25 shows a flexible bellows 126 mounted in a cover 58''' and connected to a fluid supply by a conduit 128. The seal is affected and controlled through the bellows. A number of bellows are positioned around the rotor cover 58''' and preferably seat in pockets 130.

The seals 68, 68' and sheet 102 need not be continuous; a number of such members can be placed at intervals around the rotor cover.

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The construction disclosed permits misalignment between the fixed and rotating elements of the log debarker. Also, slight longitudinal movement of the elements is possible without disturbing the fluid connections.

While we have shown and described a preferred form of our invention, it will be understood that variations in details of form may be made without departure from the invention as defined in the appended claims. Further, words such as inward and outward, or downward and rearward, or forward and rear are not used in any restrictive sense in describing surfaces or faces or other elements or relative positions herein, and, since the apparatus disclosed and claimed may be used while positioned at any desired angle no restriction to a particular angular disposition of the apparatus relative to the horizontal, for example, or direction of feed is intended. All uses of the claimed invention are within the intended scope of the invention no matter what the arrangement of the claimed invention with respect to any plane or line of feed.

We claim:

1. In a log-debarking apparatus, a frame, a rotor supported on said frame for rotation about an axis, a fluid-operated motor mounted on said rotor, a source of fluid pressure connected to said frame, means for conducting said fluid pressure from said frame to said fluid-operated motor comprising a first ring connected to said frame, a rotating ring connected to said rotor, said first ring contacting said rotating ring along a smooth surface and adapted to slide over said surface, fluid-transmitting channels extending through both of said rings, the channels of one of said rings being aligned with the channels of the other of said rings, said rotating ring having a conduit in communication with the channels therein, said conduit being connected to said fluid-operated motor, said first ring being in communication with a second conduit leading to said fluid source, said first ring having a second fluid channel, third conduit means connected to said second fluid channel and to a source of fluid under pressure, a seal seated in and sealing said second channel, said seal being slidable outwardly from said second channel under the influence of pressure in said second channel so as to engage said frame, and said first ring being slidable with respect to said seal toward said rotating ring under the influence of said pressure so as to contact said rotating ring along said smooth surface when said seal engages said frame.

2. A means for transmitting fluid between a fixed and a movable element comprising a first ring connected to said fixed element and a second ring connected to said movable element, said rings being slidable with respect to each other along mating surfaces, fluid passageways extending through each of said rings, the passageways of one of said rings being in communication with the passageways of the other of said rings, a flange connected to said fixed element, said first ring being mounted in said flange for movement toward and away from said second ring and means for urging said first ring into close sliding fit with said second ring comprising a channel formed in said first ring, a member seated in said channel and slidable therein toward said flange, means for introducing pressurized fluid into said channel to urge said member against said flange, said member sealing said channel and preventing the escape of fluid therefrom, said first ring being movable away from said flange toward said second ring when said pressurized fluid is admitted to said channel, and second means for introducing fluid into said passageways.

3. In a log-debarking apparatus, a fixed frame; a rotatable member having a fluid motor for operating a tool; means for conducting fluid under pressure from said fixed frame to said fluid-operated motor comprising a pair of relatively rotatable rings, one of said rings being connected to said motor, the other of said rings being connected to said frame, said rings having mating sliding sur-

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faces, mating fluid passageways extending through said rings, and conduit means for transmitting fluid under pressure from said frame to said passageways; and means for urging one of said rings toward the other of said rings to maintain a sealed connection between said rings and said mating passageways comprising a fluid channel, a member mounted in said channel and adapted to be urged against said frame by fluid pressure admitted to said channel, and means separate from said conduit means for connecting said channel to a source of fluid under pressure.

4. A fluid-transmission system for transmitting fluid from a fixed member to a member movable relatively to said fixed member, said system comprising a first ring supported in one of said members, a second ring supported in the other of said members, said rings having cooperating sliding surfaces adapted to be pressed into close engagement with each other and surfaced so as to effect a seal preventing the escape of fluid between said surfaces, aligned fluid conduit means in said rings for the transmission of fluid through said rings when in sealed engagement, and means for urging one of said rings against the other of said rings for effecting said sealed engagement comprising a fluid chamber formed in one of said rings, an element slidably mounted in said chamber, said element having a sealed connection with said chamber, means for conducting fluid under pressure into said chamber, said element being movable against said fixed member and one of said rings being movable toward the other of said rings upon the admission of fluid under pressure into said chamber, a second fluid chamber formed in one of said rings, said second fluid chamber being in communication with said conduit means, and means for introducing fluid under pressure into said second fluid chamber.

5. In a log-debarking apparatus, a fluid motor for operating a tool; a frame, said motor being rotatable with respect to said frame; first conduit means for transmitting fluid under pressure from said frame to said motor comprising a pair of relatively movable elements, one of which is connected to said frame, said elements having mating surfaces, one of said elements being movable with respect to the member in which it is mounted in a direction toward the other of said elements to force one of said mating surfaces against the other of said mating surfaces; means for moving said one of said elements in said direction comprising a fluid chamber in said element, a device mounted in said chamber and adapted to be urged outwardly of said one of said elements against said frame, said device sealing said chamber against the escape of fluid therefrom, said one of said elements being movable with respect to said device toward the other of the elements when said device abuts said frame and there is fluid under pressure in said chamber, and fluid conduits extending through said elements to said motor; means for transmitting fluid under pressure to said chamber; and a second separate means for transmitting fluid under pressure to said conduits.

6. A sealed fluid connection between two relatively movable parts comprising a frame and a movable member movably mounted on said frame, said movable member including two relatively movable elements in sliding engagement along mating smoothly finished surfaces, each of said elements having a fluid chamber extending there-through, said chambers of said elements being in communication with each other, means for admitting fluid into said chambers, means for urging one of said elements against the other comprising an additional fluid chamber formed in said one of said elements, a member mounted in said additional fluid chamber and slidable outwardly thereof against said frame, and second means for admitting fluid from a fluid supply into said second fluid chamber.

7. In a log-debarking apparatus, a rotor; a fluid-operated tool motor mounted in said rotor; a frame, said rotor being rotatably mounted on said frame; means for

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conducting fluid from said frame to said motor comprising a first element, means mounting said element on said rotor, a second element, means mounting said second element on said frame, said elements being engageable along complementary sliding surfaces, a conduit in each of said elements, the conduit of one element being aligned with the conduit of the other element, and means for conducting motor-operating fluid to said conduits and from said conduits to said motor, one of said elements being movable with respect to its mounting means so as to bring said surfaces into engagement; a chamber formed in said one of said elements on the side opposite the complementary surface of said one of said elements; a sealing member mounted in said chamber and slidably movable therein outwardly therefrom away from said complementary sliding surface of said one of said elements and into engagement with means connected to said means mounting said one of said elements; and a conduit for admitting fluid under sealing pressure into said chamber beneath said seal, said seal being adapted to be urged outwardly against the last named means by said fluid and said one of said elements being adapted to be urged toward the other of said elements by said fluid to bring said surfaces into engagement.

8. In apparatus for conducting fluids between a fixed member and a member relatively movable with respect to said fixed member, said members having complementary slidingly engageable surfaces, a conduit means extending through each of said members and adapted to be in communication when said members are in engagement with each other along said surfaces; means for admitting fluid to be conducted through said conduit means; one of said members comprising two elements, one of which is movable laterally of said surfaces with respect to the other of said elements; means for moving said one of said elements with respect to the other of said elements for urging said surfaces into firm engagement comprising a chamber formed in part on one of said elements, a portion of said chamber being formed by the other of said elements, and means for admitting fluid into the last-named chamber portion to exert pressure in said last-named chamber portion for urging said elements outwardly of each other and said one of said members into engagement with said other of said members.

9. In means for transmitting fluid between a non-rotatable and a movable element in which said non-rotatable element comprises a first ring; said movable element comprising a second ring connected to said movable element, and said rings being slidable along mating surfaces with respect to each other; a fluid passage extending through each of said rings with the passageway of one of said rings facing the passageway of the other of said rings; a flange connected to said nonrotatable element, said first ring being movably mounted in said flange for movement laterally of said surfaces toward and away from said second ring; and means for urging said first ring into a close, sealed sliding fit with said second ring comprising a chamber formed in said nonrotatable element, a portion of said chamber being formed by a movable member, and means for introducing a fluid under sealing pressure into said chamber for moving said member intermediate a portion of said nonrotatable element and said first ring and into pressure-exerting relationship with one of the latter.

10. The apparatus of claim 9, in which said means forming said chamber comprises a sheet of rubbery material having opposite edge flanges, and support pieces contacting said edge flanges, said sheet of rubbery material being mounted intermediate the first mentioned flange and said first ring, said opposite edge flanges being connected to one of the last two named elements and maintaining said rubbery sheet in sealed contact therewith to form said chamber, said movable member being constituted by that portion of said rubbery sheet intermediate said support pieces and being extendable inter-

mediate said flange and said first ring and engageable with one of the latter.

11. The apparatus of claim 9, in which the movable member of said chamber is connected to said flange, and in which said movable member comprises a seal member forming one side of said chamber and being movable with respect to the opposite side of said chamber toward said first ring, said seal member normally engaging said first ring.

12. The apparatus of claim 9, in which said chamber comprises a bellows positioned intermediate said flange and said first ring and extensible therebetween, said bellows normally engaging said first ring.

13. The apparatus of claim 9, in which said means forming a chamber is formed in part at least of rubbery material with a portion of said material engaging said first ring and being extensible with respect to said flange to urge said first ring toward said second ring.

14. Means for transmitting fluid between a fixed and a movable member, said members having cooperable relatively movable engageable surfaces; a fluid passageway extending through each of said members and the fluid passageway of one member being in alignment with the passageway of the other member; one of said members being formed of two elements with one of the elements being movable with respect to the other of said elements transversely of said surfaces, one of said engageable surfaces being on said one of said elements and facing another of said engageable surfaces on the other of said members; means for moving said one of said elements with respect to the other of said elements transversely of said surfaces comprising means forming a chamber in one of said elements, said chamber having a movable portion movable with respect to the rest of said chamber transversely of said surfaces into and out of pressure exerting contact with the other of said elements, said movable portion constituting a seal for sealing fluid under pressure in said chamber, means for admitting fluid under sealing pressure into said chamber for forcibly urging said movable portion against said other of said elements, and forcing movement of said one of said elements relatively transversely of said surfaces, and urging the last-named element away from said other of said elements and said surface of one of said elements into engagement with the other of said members along said another of said engageable surfaces; and means for admitting fluid into said passageways under a pressure different from said sealing pressure.

15. In a log-debarking apparatus, a frame, a rotor rotatably mounted on said frame, a first ring secured to said rotor, a fluid tool motor mounted on said rotor, a fluid conduit in said first ring, means connecting said fluid conduit with said motor, said first ring having a first surface, a second ring mounted in said frame, said second ring having a surface on one side thereof in sliding engagement with said first ring along said first surface, said second ring having a fluid channel formed on said one side in communication with said conduit in said first ring, means for introducing fluid into said channel, a second channel on the opposite side of said second ring, a sealing element mounted in said second channel and in sliding engagement with the sides of said second channel and slidable outwardly of said second channel in a direction lateral to said surface of said

second ring, said second ring being movably mounted in said frame for movement laterally of said surface of said second ring, said frame having a flange, said sealing element being engageable with said flange upon sliding movement of said element outwardly of said second channel, and means for admitting a second fluid under pressure into said second channel beneath said sealing element for urging said sealing element against said flange and said second ring surface against said first surface of said first ring.

16. The apparatus of claim 15 in which said frame has a second flange, guide bars fixedly connected to said second ring and movably received in said second flange, said guide bars having shoulders laterally positioned with respect to said surfaces, and shoulders on said second flange facing the first-mentioned shoulders, said second ring and guide bars being movable laterally of said surfaces with said guide bars received in said second flange, said guide bars serving to prevent rotative movement of said second ring.

17. In a log-debarking apparatus, a rotor; a fluid motor and a tool operated by said motor being mounted in said rotor; a frame; said rotor being rotatably mounted on said frame; means for conducting fluid from said frame to said motor comprising an element mounted on said rotor and a second element mounted on said frame, said elements being engageable along complementary sliding surfaces, a conduit in each of said elements with the conduit of one element being aligned with the conduit of the other element said conduits extending through the respective sliding surfaces of said elements and being in communication with each other at said surfaces, and means for conducting fluid under one pressure to said conduits and from said conduits to said motor; one of said elements being movable with respect to its mounting means; means for urging the complementary surface of said one of said elements against the complementary surface of the other of said elements comprising means for moving said one of said elements with respect to its mounting means, said means for moving including means forming a fluid-retaining chamber in said one of said elements, at least one portion of said means forming the chamber being movable with respect to the rest of said chamber, and means for admitting fluid under a second pressure into said chamber to cause said one portion of said means forming said chamber to move relative to said one of said elements and exert pressure against said one of said elements and its mounting means and thus cause relative movement between said one of said elements and its mounting means and urge said complementary surface of said one of said elements into fluid-sealed engagement with said other of said elements along the complementary surface of the latter.

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