This invention relates to improvements in rotary debarker machines and more particularly to improvements in the machine disclosed in my prior Patent No. 2,908,302 issued October 13, 1959.

The primary object of the invention is to provide a debarking machine having a rotary tank provided with a plurality of pivoted Skinner arms movable into engagement with a log passing through the center of the tank wherein the arms are actuated by pistons under constant fluid pressure within the tank, the pistons being disposed to reciprocate at right angles to the radius of the tank to eliminate the drag of centrifugal force on the pistons upon rotation of the tank.

A further object of the invention is to provide a rotary debarker having an annular tank divided into a series of fluid pressure compartments and a series of askew-shaped Skinner arms pivotally mounted on the inner periphery of the tank having connection with pistons within and responsive to the fluid pressure in said compartments, said pistons being disposed at right angles to the radius of the tank whereby eliminating the drag of centrifugal force on the pistons and counter-acting the centrifugal force on the Skinner arms when the tank is rotated.

A still further object of the invention resides in providing a stator bearing ring and rotor bearing ring to rotatably support the tank for rotation, said rings having an interlocking tongue and groove connection to equally distribute the weight of the tank around the entire circumference of the bearing rings.

A still further object of the invention resides in providing an annular tank divided into fluid pressure compartments having pistons mounted therein at right angles to the radius of the tank responsive to the fluid pressure in said compartments, and intermediate compartments for mounting the Skinner arms and connecting levers between the Skinner arms and pistons, said intermediate compartments being free of fluid pressure.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

FIG. 1 is a side elevational view of the annular tank of a rotary debarking machine, partly in section,

FIG. 2 is a cross section taken on line 2—2 of FIG. 1,

FIG. 3 is a section taken on line 3—3 of FIG. 2, and

FIG. 4 is a cross section taken on line 4—4 of FIG. 3.

Referring to the drawing, the numeral 5 designates an annular metal tank which is divided by transverse partitions 6 into a series of compartments 7 and 8 arranged in alternate relation. The compartments 7 are adapted to receive and hold a compressed fluid such as air, gas or the like and communication is established between the compartments by conduits 9 extending between the openings 10 in the side walls 11 of the compartments. As more clearly shown in FIG. 1, a cylinder 12 is mounted in each of the compartments 7 with one end of the cylinder in open communication with the compartment and the other end extending through the partition at one end of the compartment and secured thereto by bolts 13 extending through the flanges 14 surrounding the end of the cylinder. Thus, it is seen the cylinders are mounted in the compartments 7 at right angles to the radius of the tank. A piston 15 is slidably mounted in the cylinder having a sealing ring 16 attached to the head of the piston for sealing engagement with the wall of the cylinder. A connecting rod 17 has one end pivotally connected to the piston, as at 18, and its opposite end pivotally connected, as at 19, to a lever 20 in compartment 8. The bottom of the cylinder 12 is mounted thereon having sealing engagement with the wall of the cylinder and sealing plate 22 covers the inner end of the cylinder. Both the sealing ring 21 and sealing plate 22 have central slots for passage of the connecting rod 17. The lever 20 extends through an opening 23 in the inner wall 24 of compartment 8 and is integrally connected to a bearing 25 formed integral with the outer end of the askew-shaped Skinner arms 26. The bearing 25 is journaled on shaft 27 supported by brackets 28 attached to the side walls of the tank by bolts 29. The Skinner arms 26 are provided with a suitable skinnng tool 29, such as a head or the like on their inner ends for removing the bark from a log as the log moves through the center of the tank. The pistons 15 are reciprocated by the constant fluid pressure in compartments 7 to move the levers 20 and thus swing the Skinner arms 26 towards the center of the tank into engagement with the log. Movement of the lever 20 and piston 15 is limited by a spring loaded stop 30 mounted on a bracket 31 in compartment 8.

The tank 5 is mounted for rotation in the frame 32 of the machine by bearing rings 33 and 34 attached to the frame and to the side walls 11 of the tank. The rings are formed of mechanite or other low friction metal. One of the rings is formed with an annular tongue 35 having interfitting engagement with an annular groove 36 formed in the other ring. As shown in FIG. 4 the ring attached to the wall of the tank is secured in place by nuts and bolts 37 and 38. Thus, the load supported by the bearing rings is equally distributed around the entire circumference of the rings. The tank is rotated by any suitable means such as a drive belt 39 trained around the outer periphery of the tank which is driven by a pulley 40 mounted on a drive shaft 41.

In operation, a suitable feeding mechanism moves the logs axially through the center of the tank 5 while the tank is rotated in a clockwise direction. When the end of a log abuts the askew-shaped Skinner arms 26 they are spread outwardly by the pressure of the log against the arms allowing the log to pass between the arms. The fluid pressure in the compartments 7 exerts a constant pressure on the pistons 15 which through the connecting rods 17 and levers 20 swings the Skinner arms 26 towards the axis of the tank and thus maintains the Skinner tools 29 in bark removing engagement with the logs. The centrifugal force on the Skinner arms 26 created by the rotation of the tank is counteracted by positioning the cylinders 12 and pistons 15 at right angles to the radius of the tank whereby the centrifugal force on the pistons and connecting rods counterbalances the centrifugal force imparted to the Skinner arms. The tank is rotatably supported by rotor and stator rings 33 and 34 having a tongue and groove connection which supports the radial and thrust load equally around the circumference of the tank.

It is to be understood that the form of the invention herein shown and described is a preferred example of the same and changes in the shape, size and arrangement of the parts may be made without departing from the spirit of the invention.

Having thus described my invention, I claim:

1. In a log-skinnning machine, an annular tank divided transversely into a series of compartments with alternate compartments containing fluid under pressure, means establishing communication between said alternate compartments to equalize the pressure in said compartments, cylinders mounted in said alternate compartments in open communication with said compartments and at right angles to the radius of said tank, pistons slidably mounted in said cylinders, a series of askew-shaped Skinner arms
pivotally mounted on the inner periphery of said tank for swinging movement towards the axis of said tank, means connecting said arms with said pistons, and means for rotating said tank.

2. In a log-skinning machine, an annular tank divided transversely into a series of compartments with alternate compartments containing fluid under pressure, means establishing communication between said alternate compartments to equalize the pressure in said compartments, pistons mounted to reciprocate in said alternate compartments, a series of skinner arms pivotally mounted around the inner periphery of said tank, means connecting said skinner arms to said pistons to swing the skinner arms towards the center of said tank, and means for rotating said tank.

3. In a log-skinning machine, an annular tank divided into a series of compartments, with alternate compartments containing a fluid under pressure, means establishing communication between said alternate compartments to equalize the pressure in said compartments, a plurality of skinner arms pivotally mounted around the inner periphery of said tank for swinging movement towards the center of said tank, levers extending from said arms into the intermediate compartments of said tank, reciprocable means responsive to the fluid pressure in said alternate compartments connected to said levers, said reciprocable means being movable at right angles to the radius of said tank, and means for rotating said tank.

4. In a log-skinning machine, a supporting frame, an annular tank divided by transverse partitions into a series of compartments with alternate compartments containing a fluid pressure medium, means establishing communication between said alternate compartments to equalize the pressure in said compartments, cylinders mounted in an end wall of said alternate compartments at right angles to the radius of said tank, pistons mounted in said cylinders under constant fluid pressure, a plurality of skinner arms pivotally mounted around the inner periphery of said tank, means within the intermediate compartments of said tank connecting said pistons with said skinner arms for moving the arms towards the center of said tank, stator bearing rings mounted on said frame, rotor bearing rings carried by the side walls of said tank having interfitting rotating connection with said stator rings, and means for rotating said tank.

5. In a log-skinning machine, an annular tank having a central passage for axial movement of logs therethrough, said tank being divided by transverse partitions into a series of compartments with alternate compartments connected together and containing fluid under pressure, askew-shaped arms pivotally mounted in the intermediate compartments for swinging movement towards and from the axis of said tank, cylinders mounted in each of said alternate compartments at right angles to the radius of said tank with one end in open communication with the compartment, pistons slidably mounted in said cylinders, means connecting said pistons with said arms for swinging the arms upon reciprocation of said pistons, and means for rotating said tank.

6. In a log-skinning machine as described in claim 5 including means in the intermediate compartments for limiting inward swinging movement of said arms.

References Cited in the file of this patent

UNITED STATES PATENTS

1,444,765 Veedor ------------------ Feb. 6, 1923
2,798,519 Hansel ------------------ July 9, 1957
2,908,302 Mullis ------------------ Oct. 13, 1959