

Nov. 15, 1960

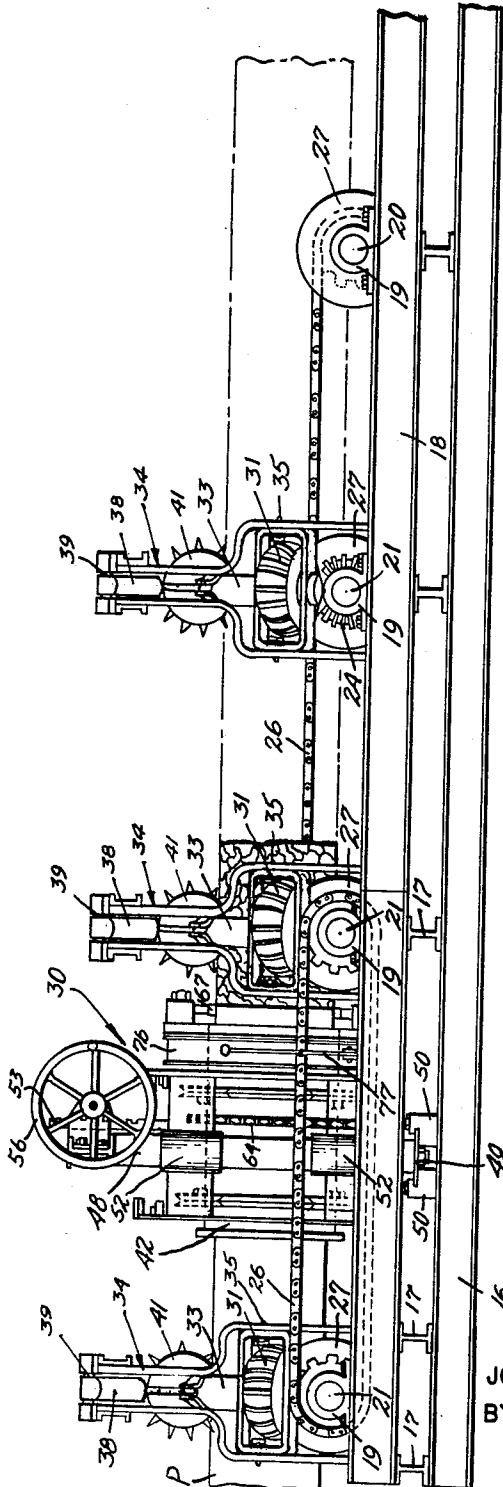
J. J. UHLENKOTT
POLE-DEBARKING MACHINE

2,960,128

Filed Dec. 29, 1958

5 Sheets-Sheet 1

FIG-1



INVENTOR.
JOHN J. UHLENKOTT
BY

Herman A. Buff

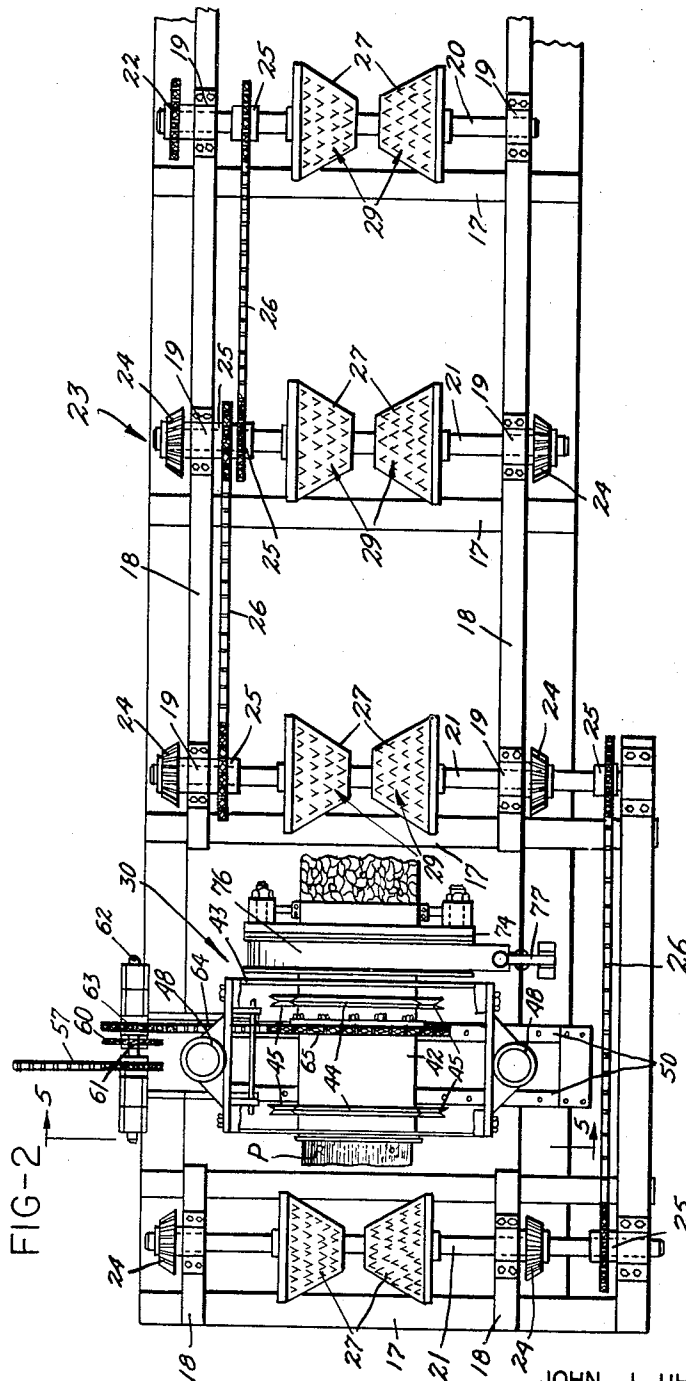
Nov. 15, 1960

J. J. UHLENKOTT
POLE-DEBARKING MACHINE

2,960,128

Filed Dec. 29, 1958

5 Sheets-Sheet 2



INVENTOR.
JOHN J. UHLENKOTT

BY

Norman B. Hoff

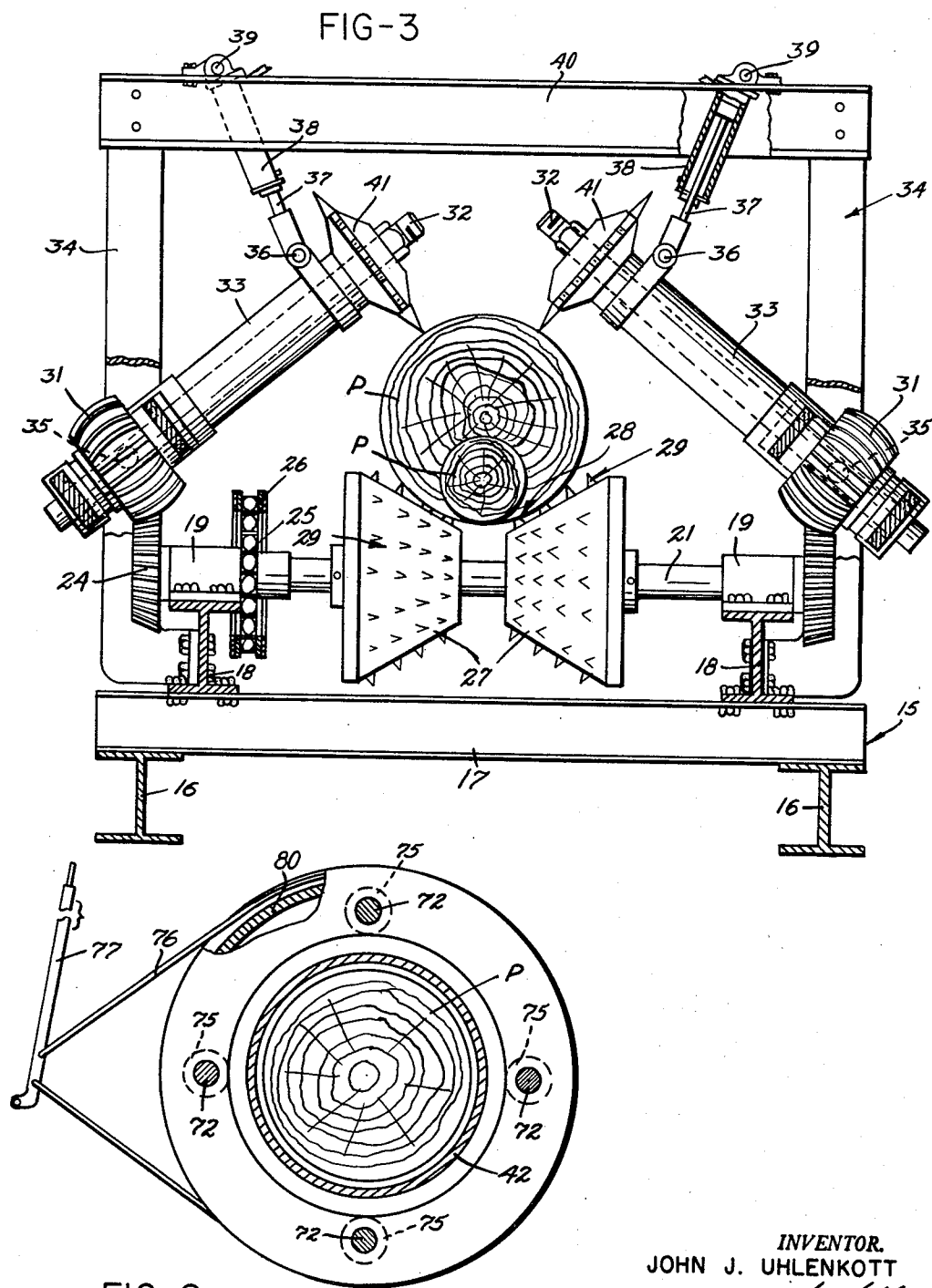
Nov. 15, 1960

J. J. UHLENKOTT
POLE-DEBARKING MACHINE

2,960,128

Filed Dec. 29, 1958

5 Sheets-Sheet 3



Nov. 15, 1960

J. J. UHLENKOTT
POLE-DEBARKING MACHINE

2,960,128

Filed Dec. 29, 1958

5 Sheets-Sheet 4

FIG-7

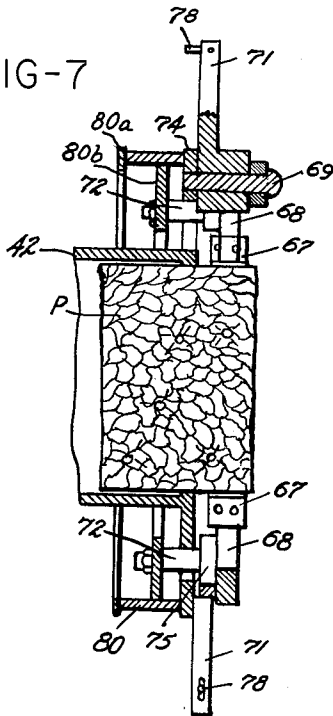


FIG-4

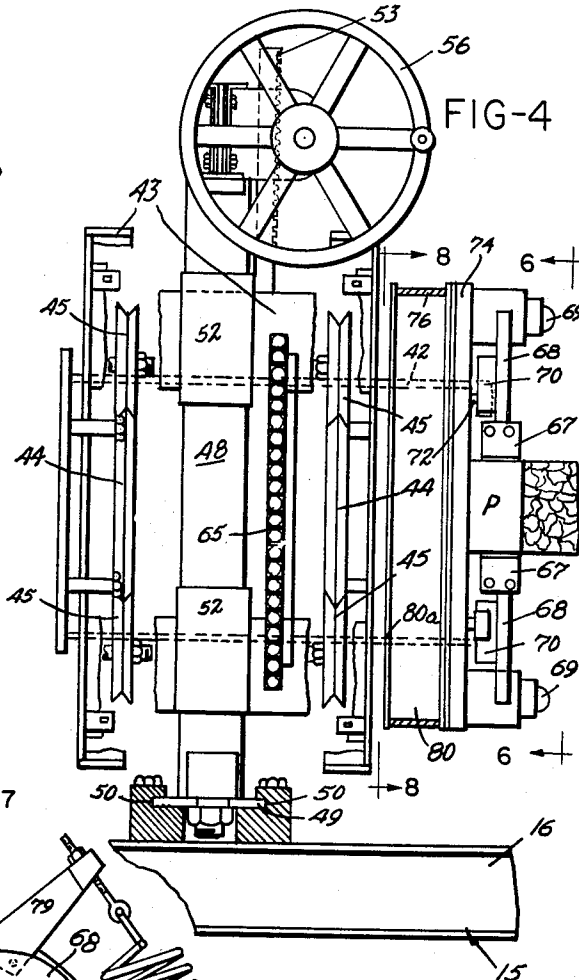
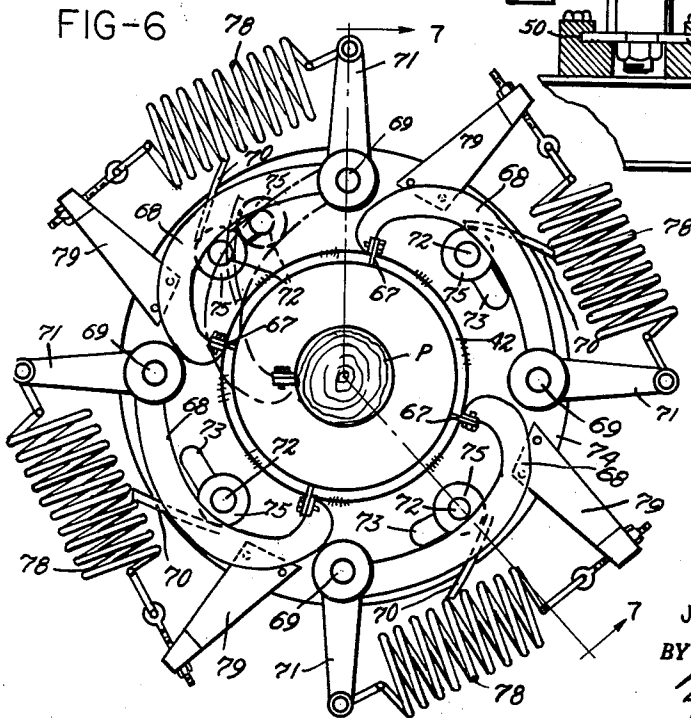


FIG-6



INVENTOR,
JOHN J. UHLENKOTT

BY *Norman W. Hoff*

Nov. 15, 1960

J. J. UHLENKOTT
POLE-DEBARKING MACHINE

2,960,128

Filed Dec. 29, 1958

5 Sheets-Sheet 5

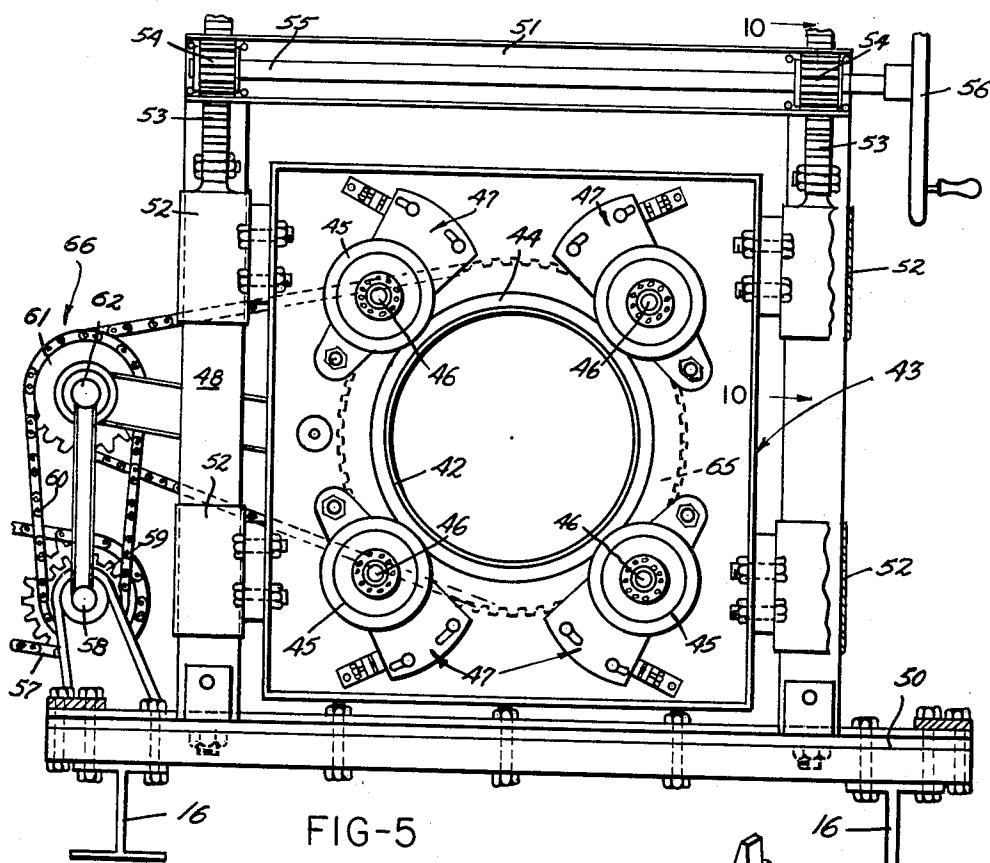


FIG-5

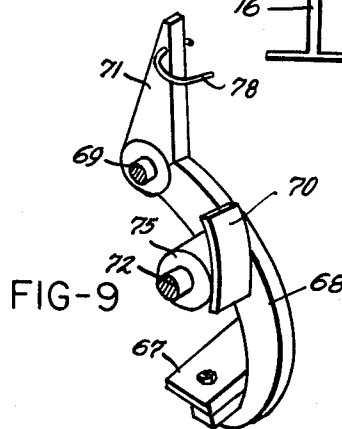


FIG-9

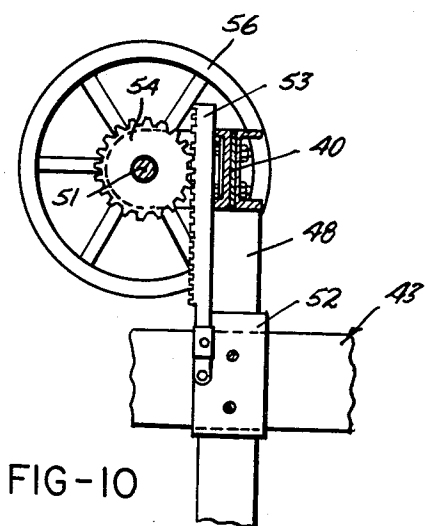


FIG-10

INVENTOR.
JOHN J. UHLENKOTT
BY *[Signature]*

1

2,960,128

POLE-DEBARKING MACHINE

John J. Uhlenkott, Keuterville, Idaho
(228 E. Rowan, Spokane, Wash.)

Filed Dec. 29, 1958, Ser. No. 783,281

2 Claims. (Cl. 144—208)

My present invention is a pole-debarking machine. There are many uses to which wooden poles may be put and frequently it is desirable to remove the bark therefrom. Such removal among other things decreases the susceptibility of the pole to wet rot and improves its appearance when employed in an untreated or unpainted condition. It also prepares the pole for painting or treatment if this is desired.

Poles are differentiated from logs by reason of their circumferential size, and may vary from very small size upwardly, say, for example, from 2 to 14 inches in diameter. It is desirable to remove the bark from these poles rapidly and cleanly without mutilating the wood thereunder.

The most prevalent debarking device which has proven satisfactory in the field for logs is a type having an interchangeable blade supported on an articulate arm which will readily accommodate logs having irregularities in peripheral size and shape. Examples of which may be seen in my Patents Nos. 2,830,630 and 2,867,316. However, this type of debarking blade and arm combination is not entirely satisfactory when used with small diameter poles because of the tendency of the poles to deflect from their normal axial extension when pressures are created in the pole during the bark removing process.

Therefore among the particular objects of the present invention is the provision of a debarking machine which is particularly adapted to remove the bark from relatively small diameter poles without undue mutilation of the wood.

Another object of the present invention lies in the provision of a pole debarking machine which has plural bark-removing blades mounted upon a revolvable circumferentially continuous powered head adapted to receive and pass a pole therethrough.

Yet another object of the invention lies in the provision of a pole-debarking machine which has a means for conveying a pole along a predetermined path and a revolvable head including plural blades for removing the bark from the pole as it travels along said path.

These and other important objects of the present invention will become apparent during a study of the accompanying drawings wherein I disclose one physical embodiment of the proposed invention constructed in accordance with the best mode I have thus far devised. But it is to be understood that the drawings are supplied for the purpose of illustration only and are not intended to limit the scope of the invention beyond that defined in the appended claims.

In the drawings wherein like numerals are employed to designate like parts:

Figure 1 is a side elevation of my improved log debarking device;

Figure 2 is a plan view of the same having upper portions of the pole conveying means removed to show the parts thereunder;

Figure 3 is a lateral cross section taken substantially

2

on the plane indicated at line 3—3 of Figure 1 and having parts broken away for convenience of illustration;

Figure 4 is an enlarged fragmentary vertical view of the debarking head and supporting frame and having the near members broken away for convenience of illustration;

Figure 5 is a lateral cross section upon an enlarged scale taken substantially on the plane indicated at line 5—5 of Figure 2;

Figure 6 is an elevation taken substantially on the plane indicated by line 6—6 of Figure 4 but having the debarking blades radially expanded;

Figure 7 is a fragmentary lateral cross section taken substantially on the planes indicated at line 7—7 of Figure 6;

Figure 8 is a lateral sectional view taken substantially on the plane indicated by line 8—8 of Figure 4;

Figure 9 is a fragmentary perspective view of one blade support arm showing the cooperation of the cam and cam follower; and

Figure 10 is a vertical view partially in cross section taken substantially on the plane indicated by line 10—10 of Figure 5.

In the drawings I have shown a supporting base indicated in its entirety by the numeral 15 which includes longitudinally extending I-beams 16—16, laterally extending cross beams 17—17 having their ends resting upon the I-beams 16, and longitudinally extending support members 18—18 which are bolted or otherwise secured to the cross beams 17. Secured to the support members 18—18 are laterally aligned pairs of pillow blocks 19—19 which journal the ends of shafts 20 and 21—21. On one end, shaft 20 is provided with a sprocket 22 by means of which rotary power is received from a suitable source by the conveying means indicated in its entirety by the numeral 23 which is adapted to axially convey successive poles over a predetermined path at a predetermined speed. Outwardly of the pillow blocks 19, the shafts 21 have fixed thereon bevel gears 24 the purpose of which will be subsequently seen. Sprockets 25 and cooperating chains 26 constitute power transmission means for interconnecting the several shafts 20 and 21 for coincident rotation. Intermediate the pillow blocks 19 and substantially along a medial line of the conveying means 23 I provide on each shaft 20 and 21 a pair of frusto-conical rollers 27 which are disposed with respect to each other so as to cooperatively form a V-shaped saddle 28 (Figure 3) in which poles P of various diameters may rest. It will be noted that the conical faces of the rollers 27 are provided with spikes which are designed to penetrate the peripheral surface of the poles and as the shafts 20 and 21 are rotated, and thus axially convey the pole over the predetermined path defined by the several saddles 28 as aforesaid.

The spikes 29 on the rollers 27 preceding the bar-removing head, indicated in its entirety by the numeral 30, serve an additional function of precluding axial rotation of the pole upon which the head is operating to remove the bark. To further facilitate this holding function I provide intermeshing gears 31—31 each of which is substantially a segment of a sphere and designed to mesh with the bevel gears 24 as seen most clearly in Figure 3. Each of the gears 31 is securely fixed to a shaft 32 which is journaled in a supporting sleeve 33 pivotally carried by a standard 34 of the conveying means at a point 35 indicated on Figure 3 of the drawing, so that the supporting sleeve 33 may pivot about this point while the gear 31 remains in mesh with the bevel gear 24 within certain limits.

Adjacent to their outer ends, each of the sleeves 33 is pivotally secured at 36 to the piston rod 37 of a hydraulic servo motor 38, having its opposed end pivotally secured at 39 to a cross bar 40 supported on the upper ends of

the standards 34. It will thus be seen that by selectively raising and lowering the sleeves 33, the outer free ends of the shafts 32 may be raised and lowered with respect to a pole P resting in the saddles 28 on the conveyor 23.

Fixed on the free ends of the shaft 32 are spiked driving wheels 41 which may be selectively lowered to effect penetration of the spikes into the peripheral surface of the pole P and increase the pressure on the spikes 29 of rollers 27 in addition to that pressure which is normally supplied by the weight of the pole P. Since the shafts 32 are also driven through the bevel gear connections 24—31, they assist in propelling the pole axially along the conveyor 23 to the head 30.

The head 30 comprises an elongated cylindrical member 42 which is journaled for rotation in a frame 43. Encircling this cylindrical member 42 are spaced V-shaped annular tracks 44 each of which is disposed with its apex presented outwardly. These tracks roll in plural V-shaped rollers 45, each of which is journaled for rotation on a shaft 46 carried by an adjusting mechanism 47 adjustably secured to the frame 43. It will thus be seen that the cylindrical member 42 is journaled for rotation within the frame 43 in such manner that a pole P may enter and pass through the cylindrical member 42 which is axially aligned to receive a pole being advanced by the conveying means 23.

Since poles are frequently curved over their length rather than being exactly straight, and since the axis of different sized poles is disposed at a different location with respect to the axis of the cylindrical member 42 of the head 30, the frame 43 is mounted for vertical and lateral floating movements to compensate for the pole irregularities. Vertical posts 48 are fixed at their lower ends to a horizontally disposed slide plate 49 carried by spaced ways 50 which are secured to the base 15. The upper ends of the posts 48 are interconnected by a rigid member 51.

Sleeves 52 encircle the posts 48 for sliding movement thereover. To the upper sleeves 52 are secured rack bars 53 which mesh with pinions 54 rigidly fixed to cross shaft 55 journaled on the member 51 and having a hand wheel 56 on the end thereof. It will be seen that by rotating the hand wheel 56 the frame 43 may be raised and lowered in accordance with manual selection.

It is also to be noted that the frame may raise and lower independently of manual rotation of the wheel 56 when sufficient vertical pressures are applied to the frame to cause the rack bar 53 to rotate the cross shaft 55.

Rotary motion from the source of power for the conveyor is transmitted at speeds proportional to the conveyor speed by a chain 57 to a countershaft 58 which has a sprocket 59 about which a chain 60 is trained which chain 60 is also trained about a sprocket 61 carried by idler shaft 62 which in turn through a sprocket 63 and chain 64 transmit rotary motion to the cylindrical member 42 having an enlarged sprocket 65 thereabout. It will thus be seen that rotary motion is transmitted through the transmission thus described and indicated in its entirety by the numeral 66 and constitutes means for rotating the head 30.

At its mouth or receiving end, the head 30 is provided with a plurality of debarking blades 67. The blades are here shown to be four in number and may be more or less as desired. Each blade is carried by a curvate blade support arm 68 which it will be seen is formed in an indefinite arc and is pivotally secured at 69 to a radial flange 74 of the head 30 at a point substantially 90° from the point at which the blade 67 is designed to contact the pole P passing through the head 42. Each arm has welded or otherwise securely fixed thereto a cam 70. The bell crank 71 is an integral part thereof and disposed on the side of the pivot point 69 opposed to the curvate portion of the arm carrying the blade 67 so that pressures exerted upon the bell crank 71 will tend to pivot

the arm 68 about the pivot point 69 to move the blade outwardly.

A brake drum 80 having a marginal flange 80a loosely encircles the cylindrical member 42. An inwardly projecting annular ring 80b is welded or otherwise secured to the drum 80 and has axially parallel shafts 72 which extend through elongated apertures 73 formed in the radial flange 74 which is welded or otherwise rigidly secured to the cylindrical member 42 and to which the pivot pins constituting the pivot point 69 are secured. Pins 72 extending therethrough said apertures have rollers 75 journaled on the outer ends thereof which constitute cam followers. With the pins 72 extending through the apertures and the rollers pivotally secured on the ends thereof I have formed a lost motion connection between the flange 74 and the brake drum 80.

As seen in Figure 8 the brake drum 80 is provided with a brake band 76 which is manually controlled by means of a hand lever 77 so that drag may be selectively released and applied on the brake drum 80 according to manual selection.

The manual application and release of drag causes the pins 72 to traverse the length of the slots 73 thus shifting the rollers or cam followers 75 from one end thereof to the other which in cooperation with the cams 70 of the arms 68 alternately raise and lower the arms to dispose the blades 67 in their outermost radial position as shown in full line of Figure 6 and alternately in their innermost radial position as indicated at one of said arms by the broken lines of Figure 6. The relative positions of the cam followers 75 are also shown by comparison of a full line and broken line disclosure.

It will thus be seen that the blades 67 may be manually removed to their outermost radial position to admit a pole P into the head 42 and upon release of the brake lever 77 they will be returned to a position of contact with the pole P for the purpose of removing the bark by means of the tension springs 78. The springs 78 are secured at one end to the bell cranks 71 and at the opposed end to brackets 79 rigidly fixed with respect to the flange 74 of the head 42.

In operation, a pole is placed upon the saddles 28 formed by the spiked rollers 27 and is advanced to the point where the spiked driving wheels 41 may be lowered to penetrate and hold the pole P in position while continuing to convey the pole axially toward and into the head 42 which is prepared to receive the pole P by applying pressure to the lever 77, thus retarding the brake drum 80 which causes the pins 72 to shift to the full line position of Figure 6, and by cam action simultaneously moving the several blades 67 to their outermost radial positions, thus admitting the end of the pole P. When the end is disposed in a plane coincident to the several blades 67, the lever 77 is released and the springs 78 urge the debarking blade 67 into debarking relationship with the pole P, whereupon continued rotation of the head 42 will cause the several blades 67 to rotate about the pole P, removing the bark therefrom.

Any axial deformity of the pole P is compensated for by the ability of the frame 43 to slide vertically over the posts 48 and the ability of the posts 48 to move laterally by reason of the association of the plate 49 with the ways 50. To insure centering of the head 30 with the pole P, the hand wheel 56 may be manually rotated to selectively position the head.

Having thus described my invention, I desire to secure by Letters Patent of the United States the following:

1. In a pole-debarking machine having means for axially conveying a pole along a predetermined path at a predetermined speed; means for removing bark from said pole comprising a frame disposed adjacent to said path; an apertured head journaled for rotation on said frame and disposed and adapted to receive and pass therethrough said pole; power means rotating said head at a speed proportional to the speed of the advancing pole; blade support arms pivotally secured to said head on axes parallel to the

5

axis of movement of said pole and spaced circumferentially about said head; blades on the ends of said arms and disposed for contacting the peripheral face of said log; resilient means yieldably urging said blades into debarking contact with said pole; a brake drum carried by said head through a lost motion connection and rotatable therewith; cams carried by each of said blade support arms; cam followers rigid with said brake drum and cooperating with said cams for yieldably disposing said brake drum at a normal position relative to said head wherein said blades are disposed at their innermost radial positions; and manually operable braking means for retarding movement of said brake drum for effecting momentarily a relative change of position between said brake drum and said head through said lost motion connection for spreading said blades to their outermost radial positions by relative movements of said cam followers with respect to said cams.

2. In a pole-debarking machine having means for axially and non-rotatively conveying a pole along a predetermined path at a predetermined speed; means for removing bark from said pole comprising a frame disposed adjacent to said path; an apertured head journaled and powered for rotation on said frame and disposed and adapted to receive and pass therethrough said pole; blade support arms spaced circumferentially about said head and pivoted thereon for radial tilting movements; blades on the ends of said arms and disposed for contacting the peripheral face of said log; resilient means yieldably

6

urging said blades into debarking contact with said pole; a brake drum carried by said head through a lost motion connection and rotatable therewith; cams carried by each of said blade support arms; cam followers rigid with said brake drum and cooperating with said cams for yieldably disposing said brake drum at a normal position relative to said head wherein said blades are disposed at their innermost radial positions; and manually operable braking means for retarding movement of said brake drum for effecting momentarily a relative change of position between said brake drum and said head through said lost motion connection by spreading said blades to their outermost radial position by relative movements of said cam followers with respect to said cams.

References Cited in the file of this patent

UNITED STATES PATENTS

1,248,700	Olson	Dec. 4, 1917
2,341,640	Mehlhorn	Feb. 15, 1944
2,718,910	St. Clair	Sept. 27, 1955
2,733,743	Warner	Feb. 7, 1956
2,815,776	Annis et al.	Dec. 10, 1957
2,821,220	Nicholson	Jan. 28, 1958
2,843,168	Lunn	July 15, 1958
2,857,945	Brundell et al.	Oct. 28, 1958

FOREIGN PATENTS

145,439	Sweden	May 25, 1954
---------	--------	--------------