A. ROBERTS & A. LIBERT.

LOG PEELING AND TRIMMING MACHINE.

APPLICATION FILED OCT. 17, 1910.

**1,016,442.**

Patented Feb. 6, 1912.

4 SHEETS—SHEET 1.

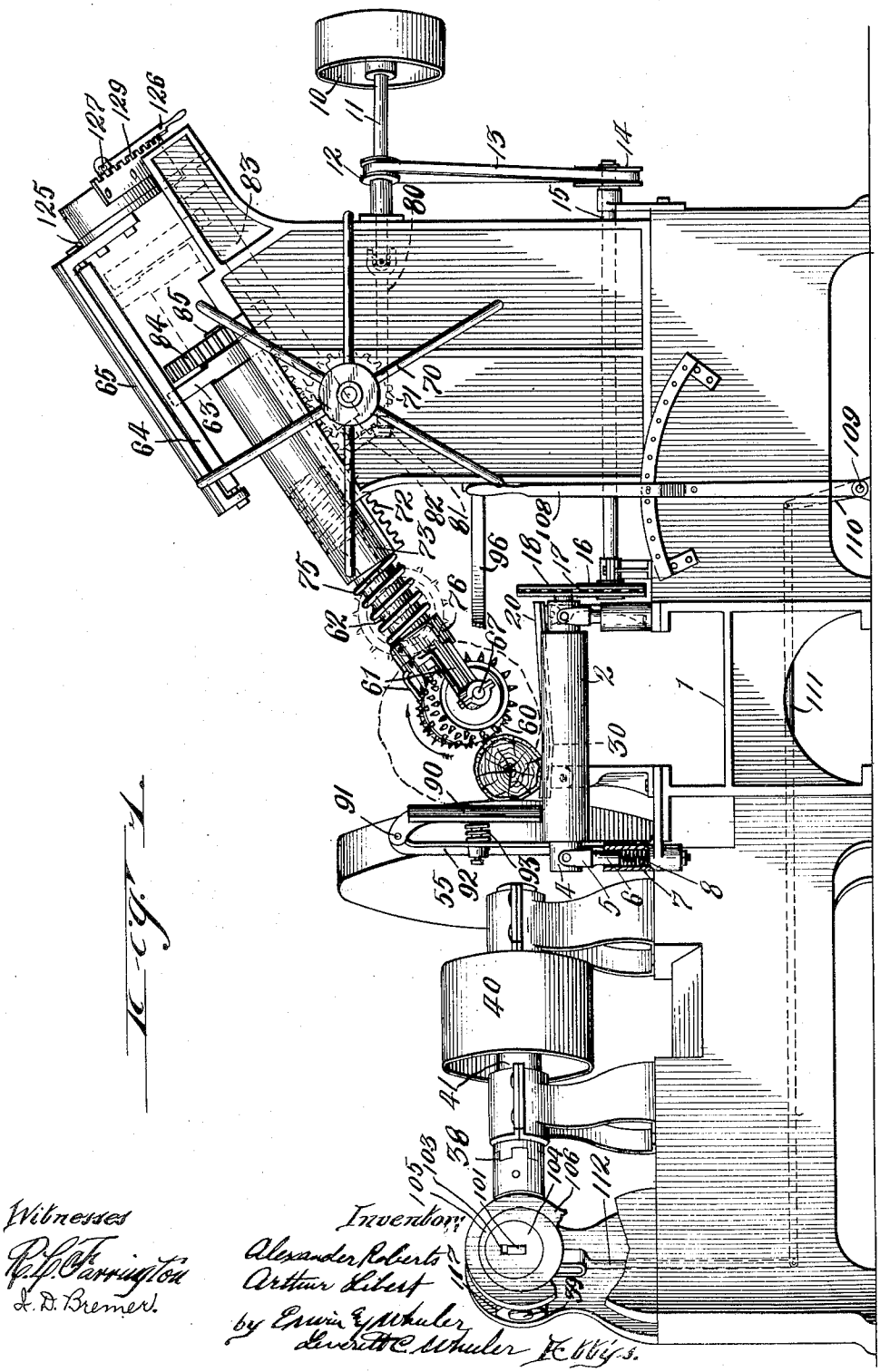

Fig. 1.

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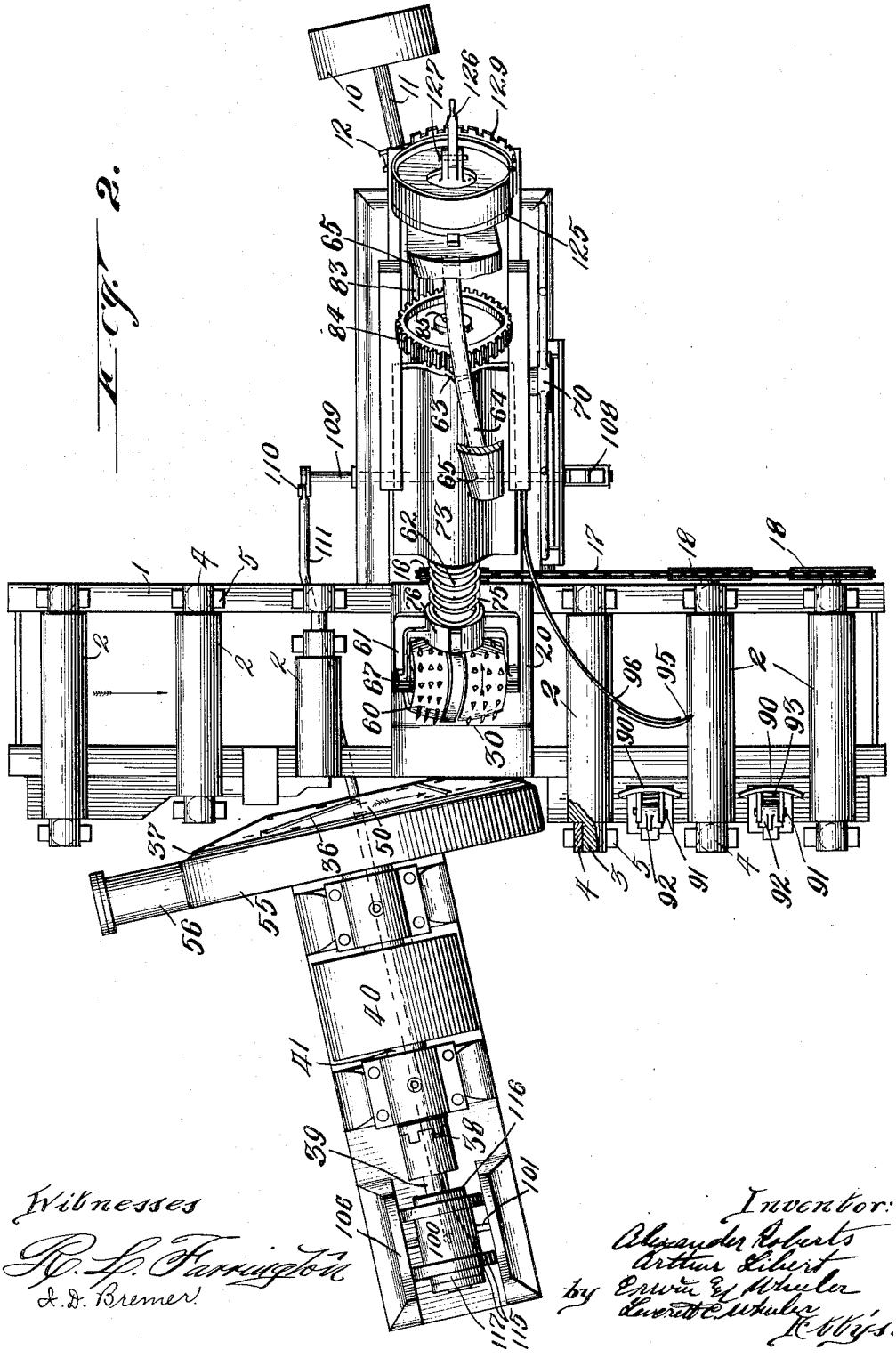
4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

Fig. 6.

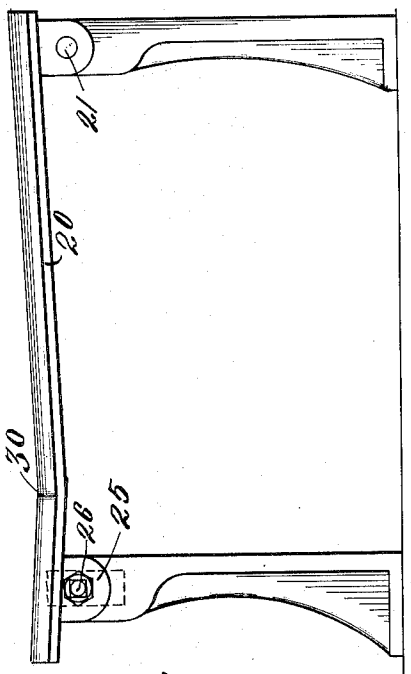



Fig. 7.

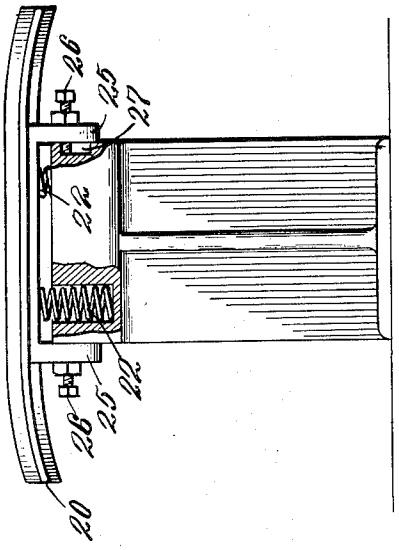



Fig. 3.

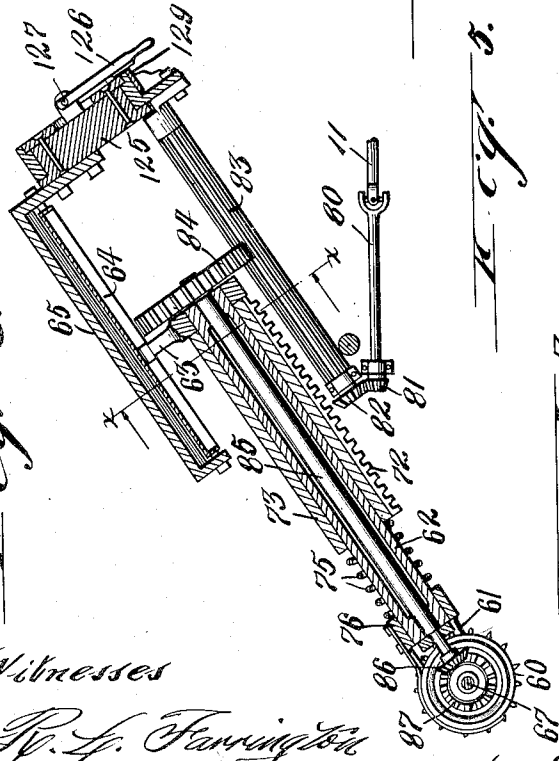



Fig. 5.

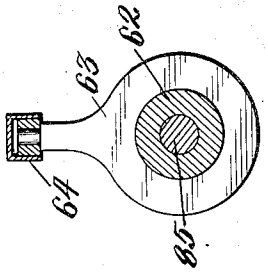
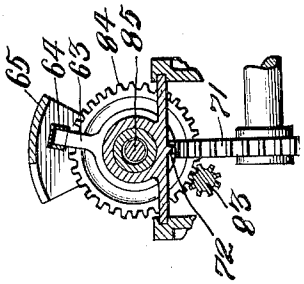



Fig. 4.

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4 SHEETS—SHEET 4.

Fig. 8.

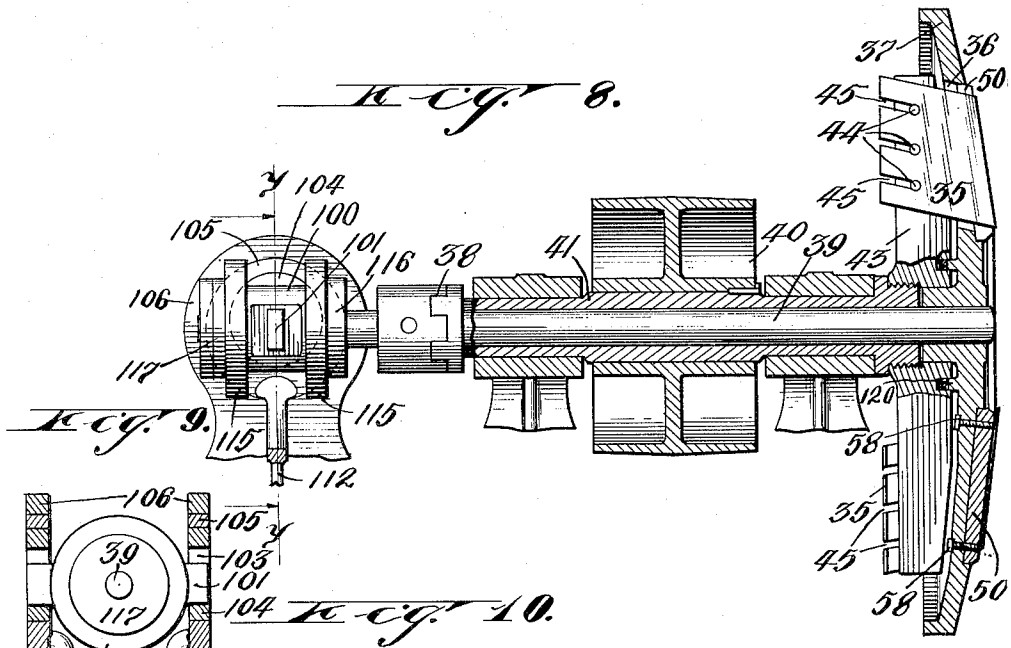



Fig. 9.




Fig. 10.

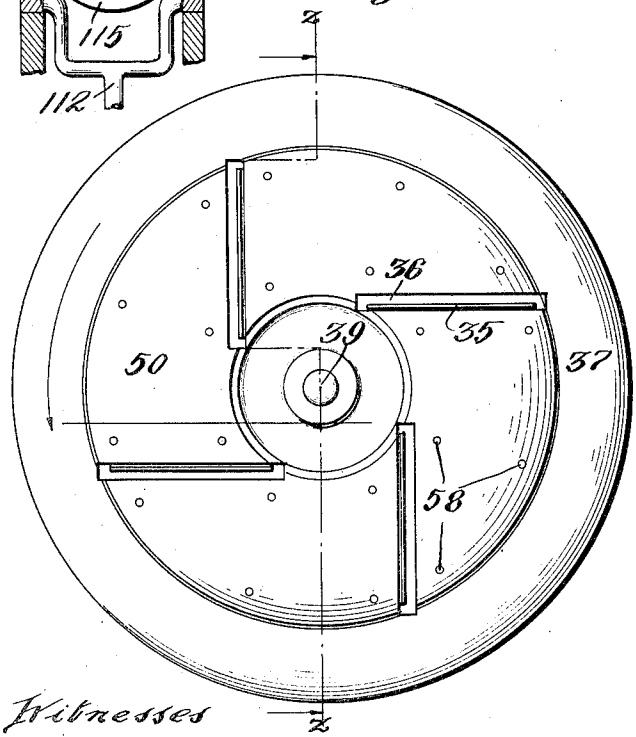
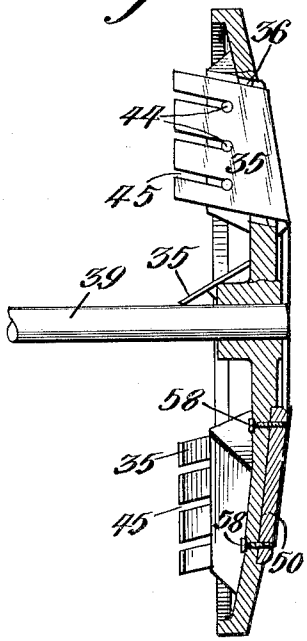



Fig. 11.

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# UNITED STATES PATENT OFFICE.

ALEXANDER ROBERTS AND ARTHUR LIBERT, OF GREEN BAY, WISCONSIN.

## LOG PEELING AND TRIMMING MACHINE.

1,016,442. Specification of Letters Patent. Patented Feb. 6, 1912.

Application filed October 17, 1910. Serial No. 587,434.

*To all whom it may concern:*

Be it known that we, ALEXANDER ROBERTS and ARTHUR LIBERT, citizens of the United States, residing at Green Bay, county of Brown, and State of Wisconsin, have invented new and useful Improvements in Log Peeling and Trimming Machines, of which the following is a specification.

Our invention relates to improvements in log peeling and trimming machines, with especial reference to that class of such machines shown and described in our former Patent, numbered 934,464, and dated September 21st, 1909.

The object of this invention is to provide improved log turning and feeding mechanism and also to improve the bark removing mechanism, whereby the same will be more durable and more easily adjusted than in the structure heretofore employed for this purpose.

Our invention also has for its object certain improvements in structural detail, the purpose of which will be apparent from the description.

In the following description, reference is had to the accompanying drawings, in which—

Figure 1 is a rear elevation of our improved mechanism as it appears in operation upon a log of comparatively small diameter and with dotted lines indicating the position of the log advancing and rotating drum, when in operation upon a large log, the latter being also indicated in dotted lines. Fig. 2 is a plan view of the same, with a portion of the guide supporting casing partially broken away to show the curved guide for adjusting the inclination of the drum which advances and rotates the logs. Fig. 3 is a detail sectional view, showing the guide casing, guide, and shaft housing of the drum in longitudinal section, the drum and its driving connections being illustrated in full. Fig. 4 is a detail sectional view, drawn on line *x—x* of Fig. 3. Fig. 5 is a detail view of the drum adjusting arm, drum supporting sleeve, and guiding shaft, with the drum adjusting arm illustrated in its relation to the curved guide way, which is shown in section. Fig. 6 is a view of an inclined and resiliently mounted table for supporting that portion of the log from which the bark is being removed. Fig. 7 is a view of the inner end of said table with a portion of the bed partially broken away to show the resilient mounting of the table upon the bed, and its movable connection therewith. Fig. 8 is a detail view of the bark removing member and its actuating connections, part in longitudinal section, on line *z—z* of Fig. 10. Fig. 9 is a sectional view, drawn on line *y—y* of Fig. 8. Fig. 10 is a face view of the bark removing member, showing the removable wear plate and the edges of the knives. Fig. 11 is a sectional view, drawn on line *z—z* of Fig. 10, showing a modified form of construction.

Like parts are identified by the same reference characters throughout the several views.

The bed frame 1 is provided with a series of transverse rollers 2 over which the logs are fed. These rollers are provided with end trunnions 3, journaled in sleeve bearings 4. The latter are each mounted in the forked arms 5 of a supporting post 6, which is socketed in a supporting frame member 7 upon a cushion spring 8. The rollers 2 are thus resiliently mounted and allowed to yield vertically under the pressure of the logs. Motion is transmitted to the rear rollers 2 by any suitable driving connections, such as driving pulley 10, shaft 11, pulley 12, belt 13, pulley 14, shaft 15, sprocket wheel 16, chain 17 and sprocket wheels 18, the latter being mounted upon the trunnions of said rollers. The two positively driven rollers at the rear end of the frame, together with three rollers 2 at the front end of the frame, and one of the rear group constitute a supporting conveyer for the logs. The first four rollers 2 run idle, and between the third and fourth idle rollers, a table 20 is mounted. This table is hinged to one side of the frame at 21, (see Fig. 6), and at the other side of the frame it is supported from the frame by springs 22, which are socketed in the frame, as clearly shown in Fig. 7. A bracket 25, secured to the lower margin of the table, forms a bearing for the spring 22, and is provided with depending arms having inwardly projecting members, such as screws 26, which loosely engage in elongated notches or channels 27 in the frame. The screws 26 serve as stops to limit the vertical movement of the table by reason of their engagement in said notches 27.

The front and rear margins of the table 20 have a rounded downward inclination, as also clearly shown in Fig. 7, and the

upper surface of the table is inclined from the respective sides of the conveyer to a point 30, near that side of the table which is supported by the springs 22, the inclination of the table top being such that when a log of average weight is mounted upon the table, that portion of the table between the point 30 and the spring supported margin will occupy substantially a horizontal position, and that part of the table between the hinged margin and the point 30 will have sufficient inclination to cause the log to roll toward the spring supported margin, where the bark will be stripped from the log by a set of knives 35. The cutting edges of these knives extend through slots 36 in a knife guard 37, which is dished or provided with a convex surface opposing the side of the conveyer. Said slots are disposed tangentially to a comparatively small circle around the end of a supporting and driving shaft 39. The guard 37 is rotated from a pulley 40 through a sleeve 41 and shaft 39, coupled thereto at 38 in a manner to permit a relative axial movement. The shaft 39 is secured directly to the guard 37 and the sleeve 41 is secured to a carrier 43, upon which the knives or blades 35 are directly mounted and attached by bolts 44, which pass through open ended slots 45 and bind the blades 35 to the member 43. Segmental wear plates 50 are secured to the inner face of the guard 37, between the slots 36. The slots 36 are sufficiently wide to permit the bark which is scraped or planed off by the knives, to pass through said slots into the casing 55, from which the pieces of bark are delivered through a chute 56 to any suitable point of discharge. The blades 35 serve as fan wings, and operate in a well known manner for the delivery of the bark.

The guard 37, and the knives, are supported at such an angle that the knives 35 will operate upon the log on the downwardly moving side and directly opposite the spring supported margin of the table 20. That portion of the guard 37, which is directly opposite the table, is substantially parallel with the table margin. The tangential position of the slots and the knives therein, is such that when the knives are acting upon a log, they are approaching a horizontal position, as will be readily understood from an inspection of Fig. 10. The wear plates 50 are secured to the guard 37 by bolts 58 inserted from the outer side of the guard and which have threaded engagement with the guard and the wear plates 50. With this construction, each of the wear plates can be readily removed and replaced by a new one when worn.

The log is held against the knives not only by its own weight, which causes it to roll to the lower side of the table 20, but also by a spiked drum 60, which drum is used to feed the log forwardly and to control its forward movement. This drum is journaled in the forked arms 61 of a sleeve 62, provided at its upper end with an arm 63, projecting upwardly into a curved guide way 64, carried by a casing bracket 65. The sleeve 62 may be moved longitudinally along the guide way 64, and when so moved, the arm 63, traveling in the curved guide, will cause the sleeve to oscillate to some extent and thus tilt the axis of the spiked drum 60. The curvature of the guide way 64 is such that this tilting movement is most pronounced when the arm 63 is near the lower end of the guide way 64. When near the upper end, the drum 60 and its supporting shaft or trunnions 67 will occupy nearly a horizontal position. The sleeve 62 may be manually actuated along the guide 64 by means of a hand wheel 70, gear wheel 71 connected therewith, rack bar 72, and a sleeve 73 mounted upon the sleeve 62.

It will be observed that a spring 75 is interposed between the lower end of the sleeve 73 and the collar 76 at the lower end of the sleeve 62. This permits the sleeve 62 to move upwardly in sleeve 73 against the tension of the spring 75, whereby the spiked drum 60 is permitted to yield, when it encounters knots or thickened portions of the log.

The spiked drum 60 is caused to rotate in its axial bearings in the arms 61. This rotative motion is transmitted to the drum from the shaft 11 through the universally jointed extension 80 thereof, beveled gear wheels 81 and 82, gear wheels 83 and 84, shaft 85, and beveled gear wheels 86 and 87, the latter being fast upon the shaft 67. The gear wheel 83 is in the form of a ribbed roller with teeth or ribs of sufficient length to remain continuously in mesh with the gear wheel 84, as the latter moves upwardly and downwardly with the movement of the sleeve 62 along the guide way 64.

In operation, the logs are delivered over the idle rollers 2 at the front end of the conveyer, the forward end of the log being inserted between the spiked drum 60 and that portion of the carrier 37 which is parallel with and adjacent to the spring supported margin of the table 20. The machine being in motion, the knives will pass successively along the surface of the log and strip the bark therefrom. The log will be rotated to expose its periphery to the action of the knives by means of the spiked drum 60, which rotates in the direction indicated by the arrow in Fig. 1. The slight inclination of the axis of this drum will cause the log to advance slowly, the inclination of the drum axis being such that the log will advance sufficiently to permit the knives to remove the bark without cutting materially into the body of the log underneath the bark.

It will of course be understood that when the log is inserted, the drum will be adjusted in a proper position to receive it by means of the hand wheel 70, but in case portions of the log are encountered which are thicker than the end first inserted, the drum will yield in passing over this thicker portion against the tension of the spring 75. If further yielding is necessary, the reactionary pressure of the spring pushing upwardly on sleeve 73 may cause a retractive or upward movement of sleeve 73, in which case the movement of the arm 63 in guide 64 will lessen the inclination of shaft 67 and thus diminish the speed at which the log advances, the surface area of the thickened portion of the log being greater and therefore requiring a larger amount of time for the stripping of the bark therefrom. When the log passes from between the knife and the spiked drum 60, it is conveyed away from the machine by the positively driven rollers 2 at the rear end of the conveyer.

While the log is being operated upon by the knives, the end which has passed the knives is prevented from swinging laterally by spring cushion guide arms 90, suspended pivotally at 91 from the upper ends of suitable standards 92 connected with the frame 1. These arms 90 are cushioned intermediate of their ends upon springs 93, interposed between the arms and the standards 92. The lower ends of the guide arms 90 are preferably held slightly above the plane of the rollers 2. An auxiliary guiding member 95 is preferably supported from the opposite side of the conveyer by an arm 96, pivoted to the frame and extending horizontally and rearwardly over the positively driven rollers 2. This auxiliary guiding member 95 presses the log against the suspended guide arms 90 with sufficient force to keep the log longitudinally alined upon the conveyer.

It is desirable to move the guard 37 inwardly and outwardly with reference to the knives 35, and the carrier 43, in order to increase or diminish the projection of the cutting edges beyond the faces of the wear plates 50. To accomplish this, the shaft 39 is extended beyond the coupling member 38 and journaled in an adjustable bearing member 100. Said bearing member is provided with outwardly extending lugs 101, which engage in openings 103 in disks 104. These disks are mounted in eccentrics 105 supported in frame standards 106, as clearly illustrated in Fig. 1. By oscillating the eccentrics 105, the disk 104 may be moved toward the front or rear, thus actuating the shaft 39 longitudinally. The openings or slots 103 in the disks 104 are of sufficient length to allow for any vertical movement of the disk 104 caused by the oscillation of the eccentrics 105. These eccentrics are manually oscillated by means of a hand lever 108, the motion of which is transmitted through a rock shaft 109, arm 110, link 111, and forked lever 112, the forked arms of said lever being connected to the respective eccentrics 105, as shown in Fig. 9. The coupling 38 is in the form of an ordinary clutch, the outer member of which is fast on the shaft 39 and the inner member of which is fast upon the sleeve 41. The teeth of this coupling are of such length that the movement of shaft 39 above described, may take place without uncoupling said shaft from the sleeve 41. The bearing member 100 is provided with end disks 115, and these disks, with the bearing member, are located between the collar 116, fast upon the shaft 39, and a set of nuts 117 secured to the outer end of said shaft. This affords means for transmitting the longitudinal movement of the bearing member to the shaft without interfering with the rotation of the latter.

In order to preserve an exact adjustment of the blades or knives 35 in the slots 36, we provide the guard 37 with projections 120, which are socketed in the carrier 43, preferably seating against a suitable packing or cushioning material. This and various other structural details will readily suggest themselves to the ordinary mechanic and therefore need not be specifically described herein.

It is sometimes desirable to change the inclination of the rotary log turner or spiked drum 60 independently of the size of the log. Occasion for such changes will arise when logs of different character are fed through the machine, in as much as the thickness of the bark varies with the species of the tree from which the log is cut. It therefore follows that where logs have thin bark, the inclination of the drum 60 upon its axis should be greater than where the bark is thick, in order that the log may be more rapidly advanced. To meet this requirement, we employ means for bodily shifting the guide 64. This is accomplished in substantially the same manner as illustrated in our former Patent, numbered 934464, the guide supporting casing bracket 65 being mounted upon a rotative head piece 125, which head piece is adjusted rotatively by means of a lever 126. The lever 126 is hinged to the head piece at 127 and is also employed to lock the head piece in any desired position of adjustment by engaging the lever 126 with a toothed segment 129.

We attach great importance, however, to the means provided by our present invention for tilting the log turner 60 on its axis of rotation proportionately to its distance from the bark remover, since with this construction, the speed of the log is automatically regulated in proportion to its size,

so that it is not necessary to constantly readjust the bracket 65 for the purpose of varying the inclination of the spiked drum or log turner 60. Referring to Fig. 11, it will be observed that a knife guard 37 is employed like that shown in the other views, but the carrier 43 is omitted. The knives or blades 35 are therefore directly secured by the bolts 44 to outwardly extending projections 130, which are rigidly attached to, or formed integrally with the guard 37.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a machine of the described class, the combination with a log support, of a rotating bark remover operative at one side of said support, a rotary log turner adapted to receive a log between it and the bark remover, and means for automatically varying the inclination of the axis of the log turner in accordance with the diameter of the log.

2. In a machine of the described class, the combination with a log support, of a rotating bark remover operative at one side of said support, a rotary log turner adapted to receive a log between it and the bark remover, and means for tilting the log turner upon the axis of its rotation, said rotary log turner being movable toward and from the bark remover, and said tilting means being arranged to progressively swing the axis of its rotation toward a horizontal position as it recedes from said bark remover.

3. The combination with a log support, of a rotary bark remover, operative at one side of the log, a rotary log turner provided with a spiked periphery, an inclined shaft supporting said turner, a mounting for said shaft movable longitudinally with the shaft to cause the turner to approach and recede from the bark remover, an arm projecting upwardly from said supporting shaft, and a guide way in which said arm engages, said guide way being formed to oscillate said shaft about its central axis when the shaft is adjusted longitudinally, together with means for rotating said turner.

4. In a machine of the described class, the combination of a rotary bark remover, a set of log supporting rollers, resilient supporting devices for each end of each of said log supporting rollers, and a rotary log turning device.

5. In a machine of the described class, the combination of a rotary bark remover, a set of log supporting members, resilient supporting devices for each of said log supporting members, and a rotary log turning device, said rotary log turning device being inclinable upon its axis of rotation and having means for automatically changing its inclination in proportion to the diameter of the log, said device being provided with spikes and being adapted to rotate and advance the log along said supports.

6. In a machine of the described class, the combination with a rotary bark remover, a log feed way provided with a set of resiliently supported rollers, a log supporting table interposed between the rollers of said feed way and having one margin adjacent to the bark remover, and a resilient support for said table margin, the opposite margin of said table being raised and hinged to a suitable support, and the remaining sides being downwardly inclined in the direction of said rollers.

7. In a machine of the described class, the combination with a rotary bark remover, a log supporting table having one margin adjacent to the bark remover, and a resilient support for said table margin, the opposite margin of said table being raised and hinged to a suitable support, together with a rotary log turner operating above said table to rotate logs in contact with the bark remover.

In testimony whereof we affix our signatures in the presence of two witnesses.

ALEXANDER ROBERTS.
ARTHUR LIBERT.

Witnesses:
LEVERETT C. WHEELER,
O. R. ERWIN.