March 29, 1932. DE LONA CALAHAN 1,851,156

BARK REMOVING MACHINE

Filed July 17, 1928 2 Sheets-Sheet 1

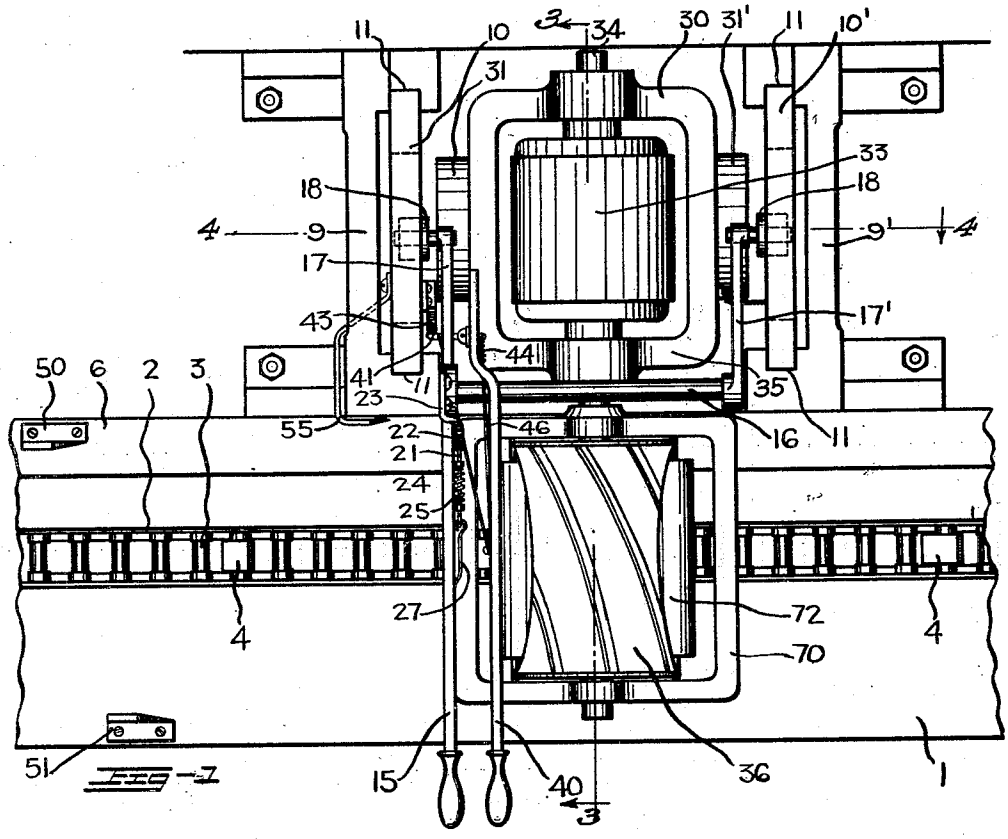

Fig-1

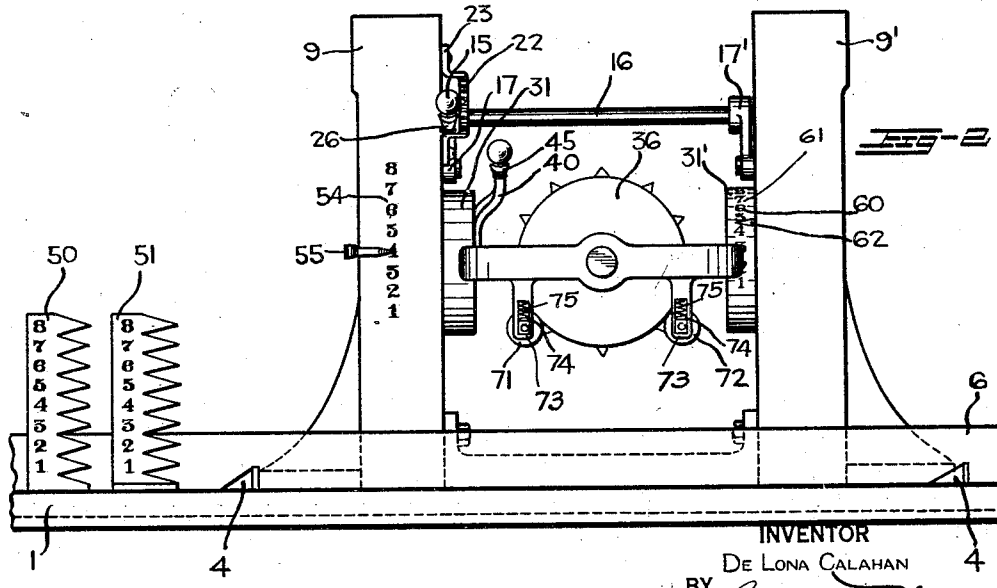

Fig-2

INVENTOR
DE LONA CALAHAN
BY Cook & Robinson
ATTORNEY

March 29, 1932. DE LONA CALAHAN 1,851,156

BARK REMOVING MACHINE

Filed July 17, 1928 2 Sheets-Sheet 2

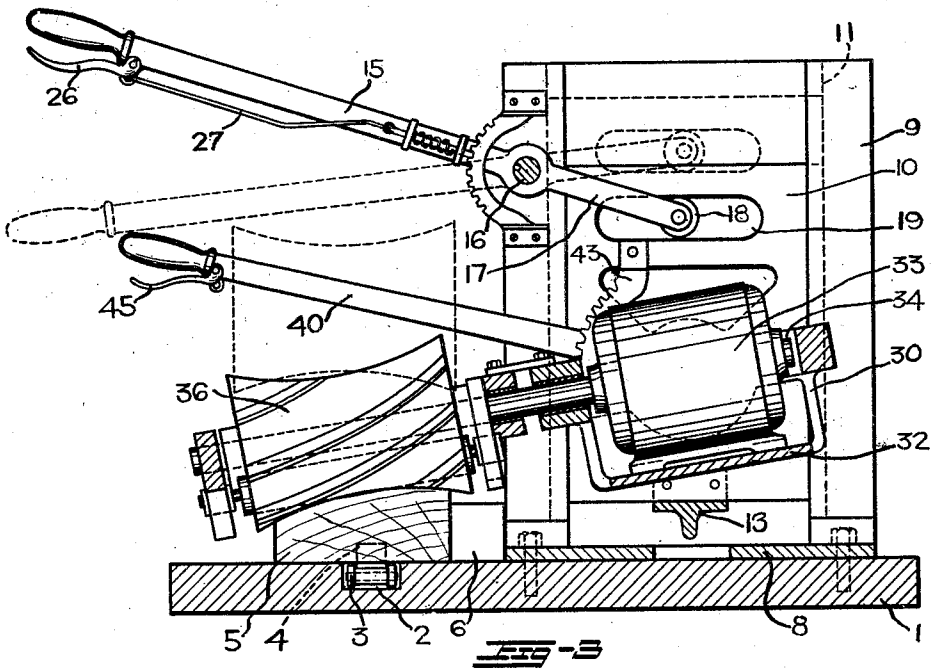

Fig-3

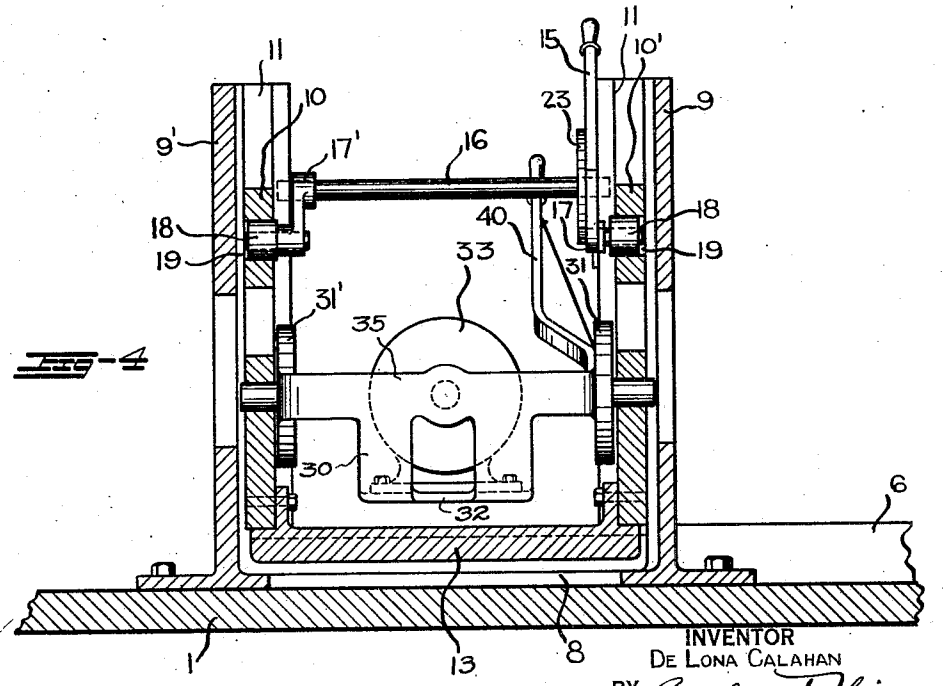

Fig-4

INVENTOR
DE LONA CALAHAN
BY Cook & Robinson
ATTORNEY

Patented Mar. 29, 1932 1,851,156

UNITED STATES PATENT OFFICE

DE LONA CALAHAN, OF FAIRFAX, WASHINGTON

BARK REMOVING MACHINE

Application filed July 17, 1928. Serial No. 293,432.

This invention relates to machines for removing bark from wood and particularly to machines for that purpose in which provision is made for advancing the pieces of wood from which bark is to be removed across a table against a cutter, and wherein the cutter, or bark removing element, is adjustable to permit a desired operation on pieces of various size and shape as they are conveyed past it.

It is the principal object of the present invention to provide a bark removing machine of the above stated character that is especially designed for operation on short, waste pieces of wood of irregular size and shape and particularly for the removal of bark from slab wood or pieces which, for various reasons, are not desirable or suitable for sale as commercial lumber but which are suitable and desirable for paper pulp.

More specifically stated, the invention resides in the provision of a power driven bark removing machine, embodying a revolving cutter head which is mounted on a carrier which in turn is supported in a frame that is vertically adjustable so as to provide for bodily raising and lowering the cutter and its carrier to suit pieces of wood of various heights, and wherein the carrier is pivotally mounted in the vertically adjustable frame so that the cutter may be tilted to any suitable degree in accordance with the curvature or slope of the surface from which the bark is to be removed.

It is also an object of the invention to provide gauging devices adjacent the path along which the pieces to be barked are delivered to the machine whereby the operator may determine the positions to which the parts should be adjusted for any particular piece, and also to provide easily operable means for effecting and retaining the desired adjustments.

Other objects of the invention reside in the various details of construction and in the combination of parts and in their mode of operation, as will hereinafter be described.

In accomplishing these and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:—

Figure 1 is a plan view of a bark removing machine made in accordance with the present invention.

Figure 2 is a side elevation of the machine.

Figure 3 is a cross sectional view taken substantially on the line 3—3 in Figure 1 and illustrating the up and down pivotal movement of the cutter carrier and the vertical adjustment of the carrier support in the main frame.

Figure 4 is a cross section on the line 4—4 in Figure 1.

Referring more in detail to the drawings—

1 designates what may be a horizontal table or base on which the wood barking machine is mounted and which is provided longitudinally along one side with a groove, or guide, 2 within which an endless conveyer chain 3 operates; the conveyer being provided at regularly spaced intervals with conveying lugs 4 whereby the pieces of wood from which bark is to be removed, as indicated at 5 in Figure 3, will be engaged and advanced along the table to the bark removing mechanism. A guide rail 6 is fixed to the table parallel with the line of travel of the conveyer in such manner as to serve as a means whereby the pieces will be guided in their travel and properly positioned with respect to the bark removing cutter, presently described.

Located alongside of the conveyer guideway and fixed to the table, or base, 1, is a rigid frame structure comprising a base plate 8 with opposite end frames 9—9′. These frames are parallel and in spaced relation and between them there is mounted a vertically adjustable frame or carrier by means of which the cutter and its driving motor are supported. This carrier comprises opposite end plates 10—10′ which have their opposite side edges slidably contained in a vertical guideway 11 provided in the end frames 9—9′. The two plates are rigidly joined and braced by a cross bar 13 that extends between their lower ends and which is securely bolted thereto.

The frame, embodied by the two end plates

10—10′ and the cross bar 13, is vertically adjustable in the main frame by means of a lever 15 which is keyed on a rock shaft 16 which extends between and is pivotally supported by the end frames 9—9′. Fixed to the shaft 16, are inwardly extending arms 17—17′ which lie adjacent the inner sides of the plates 10—10′ and which are provided, at their ends, with rollers 18 supported in horizontal slots 19 in the plates. Adjustment of the outer end of the lever 15 upwardly or downwardly will effect vertical adjustment of the movable frame and any desired adjustment may be retained by engaging a latch bolt 21 carried by the lever 15 with the notches 22 of a segment 23 that is fixed to the end frame 9 concentrically with respect to the shaft 16. The bolt 21 is here shown as slidably carried by a supporting bracket 24 fixed to the lever and is urged inwardly to locking position by pressure of a coiled spring 25, but it may be disengaged from the segment to permit a change of adjustment by pressure against a grip piece 26 that is pivotally attached to the lever adjacent the handle portion, and connected to the bolt by means of a rod or wire 27.

Pivotally mounted within the vertically adjustable frame, is a motor and cutter supporting carrier, or frame, 30, of rectangular form provided at its opposite ends with trunnions 31—31′ which are pivotally mounted in the end plates 10—10′.

Formed integral with, or otherwise attached to the frame 30, is a base plate 32 on which an electric motor 33 is securely mounted so that its shaft 34 will extend at a right angle to the direction of travel of the conveyer and directly across the path of the pieces of wood delivered thereby, as shown best in Figures 1 and 3. In the present construction, the shaft is shown to be extended through a bar 35 formed in the frame 30 so as to steady the motor, and fixed on the outer end of the shaft, is the bark removing cutter 36 which, preferably, is of a cylindrical form with its surface concaved and provided with suitable cutting knives, ribs or burrs extending lengthwise thereof. The cutter is supported directly above the path of travel of the piece advanced by the conveyer and, by adjustment of the pivotally mounted carrier frame and suitable adjustment of the vertically movable frame, may be disposed in various positions to best suit pieces of various thickness and curvature.

As a means of adjusting the pivoted carrier to the different positions required and for holding it at any position of adjustment, I have provided the adjusting lever 40 which is rigidly fixed to the frame 30 to extend laterally, as does the lever 15, across but substantially above the conveyer. This lever is equipped with a locking bolt 41 adapted to be engaged with notches of a plate segment 43 attached to the end plate 10. The bolt is yieldably held in locking position by a coiled spring 44 bearing against it and it may be released by the pressure against a grip plate 45 mounted at the end of the lever and connected to the bolt by a rod or wire 46.

With the parts so arranged, it is possible to raise and lower the motor and cutter body in accordance with the width or thickness of the piece to be operated on, and also it is possible to tilt the cutter to cause its trimming surface to coincide with the curvature of the surface from which bark is to be cut, so that there will be no appreciable waste of wood.

In order that the operator may accurately determine the positions to which the parts should be adjusted for each particular piece of wood as it is delivered to the cutter, I have provided the gauge devices 50 and 51, which are in the form of graduated scales, and are fixed vertically to the base 1 adjacent opposite sides of the path along which the pieces are advanced to the machine. These scales are graduated vertically in inches so that, as a piece of wood is delivered between them, its height or thickness at both the inner and outer edges may be determined. Also, on the outer face of the frame 9, as shown in Figure 2, is a column 54 graduated in inches and, fixed to the end plate 10 of the vertically adjustable frame, is a pointer 55 adapted to follow along the vertical column 54. The position to which the vertically adjustable frame should be adjusted to suit any piece of wood is dependent upon the thickness of the piece, which the operator may determine by watching it as it passes the scale 50. He then adjusts the frame vertically by manipulation of the lever 15 until the pointer 55 coincides with the number in the column 54 which is the same as the thickness of the piece in inches.

The slope or inclination to which the cutter should be adjusted is dependent upon the curvature or slope of the piece of wood from which bark is to be taken, as shown by the scales 50 and 51, and proper adjustment is made by reference to graduations, as at 60, which I have provided on an arcuate surface 61 of the frame 30; this surface being formed concentrically about the trunnion 31′ with a pointer 62 fixed to the end plate 10′ and terminating adjacent the arcuate surface. In operation of the machine, the operator reads the thickness of each piece at its inner and outer edges as it is delivered to the machine past the scales 50 and 51; he then adjusts the vertical frame by means of the lever 15 in accordance with the reading on the scale 50. He then adjusts the pivoted frame in accordance with the reading on the scale 51, that is, if the thickness of the piece should be shown to be 6 inches at the inside and 3 inches at the outside, he adjusts the vertically movable frame to the 6 inch mark, as indicated by the

position of the pointer 55, with respect to the graduated column 53, and then adjusts the pivoted frame to bring the 3 inch mark of the column 60 in line with the pointer 62. It is to be understood, of course, that these marks have all been accurately placed so that the cutter will be properly elevated and inclined for any piece when set according to the readings made as the piece passes the scales 50 and 51.

As a means of holding the pieces steady while passing beneath the cutter, I have provided a frame 70 supported from the motor shaft and held against rotation by connection with the frame 30. This frame 70 encircles the cutter and, at opposite sides of the cutter, has mounted therein rollers 71 and 72 adapted to roll upon the pieces delivered to the cutter. The rollers 71 and 72 have trunnions at their ends mounted in bearings 73 which are slidably mounted in grooves 74 in their supporting frame structure, with springs 75 pressing against the bearings to urge the rollers downwardly.

Assuming the device to be so constructed, it is readily apparent that the conveyer will operate to bring the pieces of wood in rapid succession to the revolving cutter head and that the operator may readily determine the positions to which the vertically movable and pivoted frames should be adjusted to best suit each particular piece as it is delivered to the cutter. It is also apparent that by providing a machine of this character, wherein the cutter may be vertically adjusted as well as tilted to various inclined positions, the bark may be removed from pieces of various thickness and slope with a minimum loss of wood. The vertical adjustment provides for raising and lowering the cutter to accommodate pieces of various thickness, as measured on the scale 50, while the pivoted frame permits tilting of the cutter so that the cutting surface will correspond to surfaces of varying slope as determined by the reading of the scale 51 in connection with the reading of the scale 50.

It is readily apparent that various details of construction and combination of parts could be altered without departing from the spirit of the invention and, for this reason, I do not wish to be limited only to the construction as herein illustrated since the novelty of the invention is thought to reside in the construction which provides for both vertical and pivotal movement of the cutter supporting frames.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent, is:

1. A machine of the character described, comprising in combination, a guideway, a conveyer means for advancing wood pieces along the guideway, a base frame structure mounted adjacent the guideway, a second frame vertically adjustable in the base frame, a third frame pivotally supported within the second frame to rock on an axis that is horizontal and parallel to the guideway, a motor mounted on the pivoted frame having its drive shaft extended in a plane at right angles to the direction of the guideway, a cutter head on said shaft operable to remove bark from pieces of wood moved along the guideway, a lever fixed to the pivoted frame whereby it may be pivotally adjusted to change the inclination of the cutter with respect to the guideway, a releasable lock on said lever whereby the adjustment may be retained, an adjusting lever pivotally mounted on the base frame and operatively connected to the vertically adjustable frame and a releasable lock carried thereby whereby it may be held at different positions of adjustment.

2. In a machine of the character described, in combination with a guideway along which wood pieces may be advanced and a cutter head mounted transversely with respect to the direction of travel of said pieces and having an adjustable support whereby the cutter may be raised or lowered and also axially tilted, of gauge devices for indicating the thickness and slope of each piece delivered along the guideway, means for adjusting the cutter head vertically and axially to suit each piece and indicating means on the adjustable supports for determining when these adjustments correspond to readings taken from the thickness and slope indicating gauges.

3. A machine of the character described, in combination, a guideway, means for advancing wood pieces along the guideway, gauge devices at opposite sides of the guideway for indicating the thickness of the pieces at their inner and outer edges, a base frame fixed adjacent the guideway, a second frame vertically adjustable therein, a third frame pivotally mounted in the second frame to rock on an axis parallel to the guideway, a cutter head mounted on the pivoted frame to overlie the guideway and operable to remove bark from pieces delivered therealong; said cutter being disposed with its axis transversely to the guideway, means for raising or lowering the vertically adjustable frame, means for adjusting the pivoted frame and graduated scales on the base frame and on a supporting member for the pivoted frame cooperating with pointers fixed to the adjustable parts whereby their positions of adjustment may be made to correspond with readings on the gauge devices adjacent the guideway.

4. In combination, a conveyer by which slab wood pieces may be advanced successively with the bark surfaces thereof exposed, a frame structure mounted adjacent the conveyer, a cutter supporting frame vertically adjustable in the said frame structure, a motor driven shaft mounted on said adjustable frame and supported to swing pivotally

in a vertical plane transversely of the conveyer and a cutter head mounted on the said shaft and adapted by adjustment of the frame to be brought against the slabs to remove the bark therefrom as they are successively advanced by the conveyer.

Signed at Fairfax, Washington, this 30th day of June, 1928.

DE LONA CALAHAN.