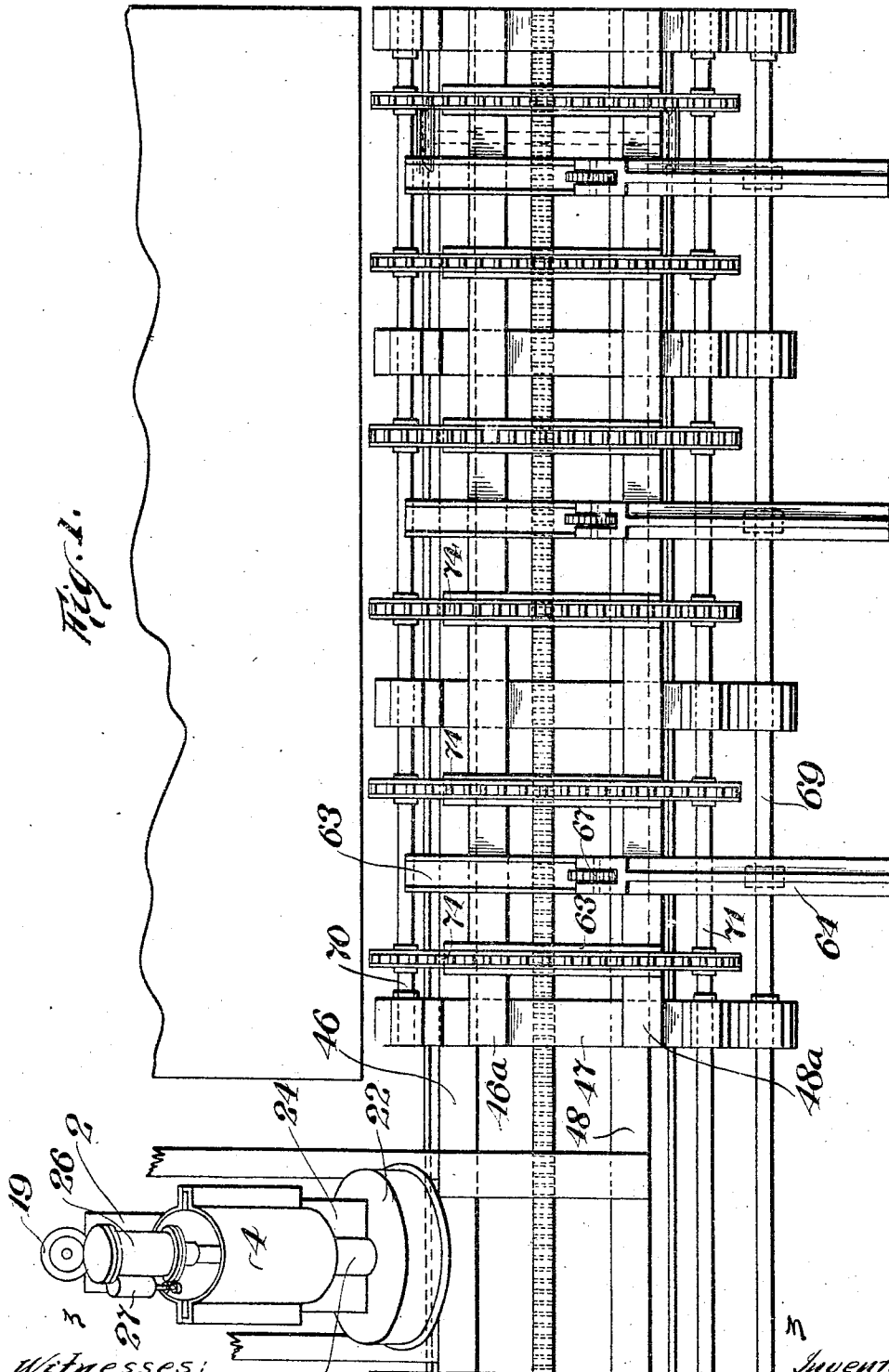


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 ROSSING APPARATUS FOR REMOVING BARK FROM LOGS.
 APPLICATION FILED SEPT. 1, 1911.

1,060,928.

Patented May 6, 1913.

3 SHEETS—SHEET 1.



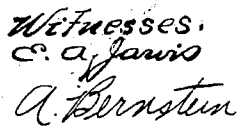
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UNITED STATES PATENT OFFICE.

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ROSSING APPARATUS FOR REMOVING BARK FROM LOGS.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ORRIE J. MILLS, a citizen of the United States, residing at Hudson Falls, New York, have invented certain new and useful Improvements in Rossing Apparatus for Removing Bark from Logs, of which the following is a clear, full, and exact description.

This invention relates to a rossing apparatus for removing the bark from logs with as little waste of the wood as possible, and although the embodiment shown is more particularly designed for handling long logs such as telegraph poles and the like, it is understood that the chief features of my apparatus are equally well adapted to operate on small logs.

In log-barking machines heretofore employed, the barker proper or cutting-knife is usually mounted in immovable bearings and the log is forced up against the same by suitable means to obtain the proper adjustment of cut.

In the present improvement I have produced an apparatus whereby the barker has a universally adjustable mounting relative to a log-supporting carriage so that it may be adjusted for any desired cut upon the log on said carriage, and, moreover, is arranged so that the pressure of the cut may be under the easy control of an operator at all times.

My invention consists further in various details of construction and in the general combination of parts whereby the operation of the machine is generally improved and rendered more simple and efficient in control, all of which will be hereinafter described, while the scope of my invention will be pointed out in the appended claims.

In the preferred embodiment of my invention as shown in the accompanying drawings, Figures 1 and 1^a show in separate halves a plan view of the front portion of the machine; Fig. 2 shows a side view of the entire machine with the front portion thereof in section; Fig. 3 is a detail section along line 3—3 of Fig. 2; Fig. 4 is a detail section through line 4—4 of Fig. 2; Fig. 5 is a detail section of the buffer connection through line 5—5 of Fig. 2; and Fig. 6 is a section of the operating cylinder through line 6—6 of Fig. 2.

Referring more particularly to Fig. 2 of the drawings, 1 indicates the upright stationary supporting frame for the barker,

and mounted in bearings at the front portion of the same is a vertical operating shaft 16 adapted to be rotated through gears 19 and 20 from a suitable source of power, such as belt pulley 21. Vertically slidable upon the front of this frame is mounted a yoke 3 having collars 3^a and 3^b surrounding the shaft 16, between which is mounted a sleeve 2^a of the swinging barker frame 2. The slidable yoke 3 has a rearwardly extending tail-piece 38 engaging a vertically-disposed screw-shaft 39, whereby said yoke 3 and supported barker frame 2 are vertically adjusted by the turning of the same. The shaft 39 may be operated by bevel gears 40, 41 and hand-wheel 42. The sleeve 2^a of the swinging barker frame 2 has fixed to its lower end a worm gear 43 engaged by a similar gear 44. This gear 44 is mounted in the lower extension 3^b of the yoke 3 and is provided with a crank 45 for turning the same and swinging frame 2 in different positions around shaft 16. The front portion of the swinging barker frame 2 is formed into a casing 4, in which is slidably mounted a bearing sleeve 7 (shown in Fig. 4), having lateral feather portions 24 guided in slots 5 and 6 of said casing 4 as shown. Adjusting nuts 9 and 10, together with bearing pieces 9^a and 10^a respectively, may be provided in these slots for guiding the sleeve 7 in its reciprocations.

Rotating within the bearing sleeve 7 is the shaft 8 carrying at its outer end the knife-carrier or cutter 22 of the barker. This knife-carrier may be of any usual form having the knives 23 for rossing bark and need not be more particularly described. The cutter 22 may be replaced if desired by a grindstone or the like when light work is to be performed. The shaft 8 is rotated by means of a gear 11 engaging with a long pinion 12 carried on shaft 13 mounted in said casing 4, said shaft 13 being in turn operated through bevel gears 14 and 15 from shaft 16. The bevel gear 15 has a suitable keyed connection to the shaft 16, such as by key 17 and slot 18, so that it may slide thereon and rotate therewith during the vertical adjustments of yoke 3.

At the upper portion of the barker frame 2 is mounted my preferred means for moving the rotary knife-carrier and its shaft 8 backward and forward within the casing 4. Said means in the present embodiment consist of a power cylinder 26 having a piston

26" and rod 8^a working therein. The movements of the piston are controlled by a suitable valve chest 27 as shown, having inlet and outlet ports 31 and 32 and valve 29 operated by hand lever 30. The piston rod 8^a of the cylinder 26 is connected to the rotating shaft 8 of the knife carrier 22 through a buffer casing 25, which also has lateral feathers 24^a guided in the slots 5 and 6 of the casing 4, whereby said shafts and their connection slide freely backward and forward within said casing 4.

Referring more particularly to Fig. 5, it will be seen that the ends of the piston rod 8^a and shaft 8 are inclosed and connected by means of a buffer box 33 in the interior of said casing 25. The end of the piston rod 8^a extends within the box 33 and is provided with a disk 34 at its end, above and below which are seated coil springs 35, 36 respectively. The rotating shaft 8 is connected at its end to the box 33 by ball-bearings, whereby it may rotate relatively thereto. It will be seen by this construction that I have provided a yielding connection between the ends of the piston rod 8^a and the shaft 8, whereby all violent shocks are absorbed in their reciprocations, and moreover shaft 8 is so connected that it may rotate freely without rotating any of the other parts.

The log-carriage in the present embodiment comprises a frame of considerable length adapted to travel backward and forward in front of the barker or knife-carrier 22 for presenting the log thereto. This frame may be made up of lengthwise beams 46 and 48 carrying on their underside bearings for shafts 49^a, having grooved wheels 49 thereon traveling on the rails 50. Cross-beams 47 connect the lengthwise beams 46 and 48, and said cross-beams as shown are preferably mounted so as to incline from their inner ends adjacent the barker downwardly toward their outer ends as shown in Fig. 2. Supplemental lengthwise beams 46^a and 48^a may be mounted above the cross-beam 47, and are connected by additional slotted cross-beams 63 to form the bed proper of the carriage. Carried in bearings at the forward ends of beams 47 is a shaft 70, upon which are fixed at suitable intervals sprockets 72, and likewise upon the rear end of said beam 47 is mounted a shaft 71 carrying sprockets 73. Extending around each pair of sprockets 72 and 73 is an endless toothed feeding chain 74 guided across the bed of the carriage through the slotted beam 63. I also prefer to slidably mount at suitable intervals along the bed of my carriage bumpers 64 which have a vertical abutment 64^a at their forward ends, and a rack 65 at their rear ends engaging with the gear 66 of shaft 69. Toothed

idlers 67 are mounted in the abutting face 64^a of the bumpers, and the several gears 66 for operating the bumpers are mounted upon a lengthwise shaft 69 carried in bearings on the cross-beams 47.

It will be observed that the cross beams 63 70 are slightly inclined downwardly from front to rear, and in conjunction with the abutting faces 64^a of the bumpers provide a jaw-like support for receiving the log.

The parallel shafts 69 and 71 extending 75 across the rear ends of the cross-beams 47 of the carriage may be rotated in either direction for causing the toothed chains 74 and the bumpers 64 to travel transversely backward and forward across the log carriage. These shafts 69 and 71 may be also rotated during the lengthwise travel of the carriage and are suitably operated as follows: Referring more particularly to Fig. 1^a, I have shown parallel driving shafts 69^a 85 and 71^a which are mounted in non-traveling bearings 100 and 101, and it is understood that the log-carriage travels in its lengthwise direction with the shafts 69 and 71 in parallel relation with the shafts 69^a and 71^a. The shaft 69^a may be operated in either direction by means of oppositely-rotating pulleys 80 and 81 and reversible clutch 89^a. The adjacent ends of shafts 69^a and 69 which overlap during the travel of the log-carriage are formed square in cross-section, and have slidably mounted thereon pinions 75 and 76 in engagement with one another, which pinions are carried within bearing yoke 77 slidably mounted upon both shafts 69 and 69^a, although not rotatable therewith. It is understood of course that the pinions 75 and 76 are connected so as to rotate with their respective shafts and are kept in mesh by the bearing yoke 77 sliding therewith. Shaft 71^a is likewise rotated in either direction by pulleys 82 and 83 and reversible clutch 84^a. The adjacent ends of shafts 71, 71^a are also made square, having slidably mounted thereon and rotatable therewith pinions 78, 78^a respectively. The bearing yoke 79 connecting the two shafts acts to keep said pinions 78 and 78^a in mesh during their sliding movement. The bearing yokes 77 and 79 are freely slidable upon the ends of the shafts which they respectively connect and are not rotatable therewith, and it is obvious that through this construction an operable connection is maintained between the respective shafts 69^a and 69, 71^a and 71 during the lengthwise travel of the log-carriage. The reversible clutch 89^a of the operating shaft 69^a is operated from a hand-lever 93 through connecting rod 92, bell-crank lever 91, rod 90 and lever 89. Similarly, the reversible clutch 84^a is operated from hand-lever 88 through rod 87, bell-crank lever 86, rod 84 and lever 84^b.

For giving movement to the traveling log-carriage there is provided on the under side of the same a suitable rack 51 engaged by gear 52 carried on shaft 54 and operated through gears 55 and 56 from a clutch 59^a. The reversible clutch 59^a is adapted to engage with either pulley 57 or 58, which, it is understood, rotate in opposite directions. Said clutch is controlled from a lever 62 through rod 62^a, bell-crank 61, rod 60 and lever 59.

The tool carrier which supports the shaft 8 of the rossing tool is arranged so that the thrust of the rossing tool against the log is in a line passing between the points of support of the log, that is, between the points at which it engages the chains 74 on its underside and the bumpers 64 on its innerside. From this arrangement the thrust assists in holding the log in place. Furthermore, as the rossing tool cuts upon its forward plane face, the tendencies of the rossing tool to rotate the log neutralize each other. In other words, the abrading or rossing tool cuts in a plane transverse to the axis of rotation.

Operation: The operation of this apparatus may be briefly summarized as follows. The log being placed upon the bed of the carriage when the same is at one side of the barker, the operator manipulates lever 62 to start the carriage in its travel past the barker, which, it is understood, is being rotated at a suitable speed for rossing the bark. During the travel of the carriage past the barker, the operator by moving lever 88 causes the conveying chain to move in the direction of the arrow in Fig. 2, whereby the log is slowly turned over upon its bed. The toothed idlers 67 during its movement tend to keep the log from shifting in a lengthwise direction relative to the bed of said carriage. To bring the log in its proper position at the front portion of the carriage, the operator may also manipulate lever 93, which causes the bumper 64 to move said log forward. It is also understood that during this rossing action upon the bark, the operator may accurately adjust his barker for proper cutting by turning hand-wheel 42 which raises the barker, and if the log tapers toward one end, the action of the barker may be inclined relatively to the axis of said log by swinging the same upon its sleeve 2^a through the manipulation of adjusting crank 45. In this way the barking knives 23 may be made to act upon the log at just the point and angle desired. Moreover, if the operator suddenly wishes to withdraw the barker from the log due to the encountering of knots or uneven places, he manipulates valve lever 30, which through the cylinder 27, quickly withdraws the knife-carrier from contact with the log and yet may be quickly returned to action upon the

same by the further manipulation of lever 30.

It will thus be seen that in my apparatus I have provided means for handling logs of an extensive length and am enabled to adjust the knife-carrier of the barker in any desired relation to the log, and also accurately control the pressure with which said knives bear upon the log during their action. Furthermore, it is to be observed that control of all the different parts of the machine is brought to the same locality, whereby a single operator may stand in position to observe carefully the work being done, and by the manipulation of the different levers within his reach may control and adjust the action of the machine.

It is further understood that when the log has been completely rossed, the same may be easily removed from its bed by manipulating levers 88 and 93 to reverse the travel of chain 74 from that shown by the arrow in Fig. 2, and to also move the bumpers 64 forward and on their bed. This coöperative action of both chains 74 and 64 will quickly deliver the log from its bed upon any suitable table arranged to receive the same.

What I claim is:

1. In a log-barking machine in combination, a supporting bed for said log, a rotatable knife-carrier and a supporting frame therefor, means under the control of the operator for moving said knife-carrier in said frame toward and away from said log comprising a reciprocating piston and a yielding buffer connection between said piston and knife-carrier, means for rotating said carrier during its reciprocation, and means for moving said log past said knife-carrier.

2. In a log-barking machine in combination, a supporting bed for said log, a rotatable knife-carrier and a supporting frame therefor, means under the control of the operator for moving said knife-carrier in said frame toward and away from said log comprising a reciprocating piston and a yielding buffer connection between said piston and knife-carrier, said yielding connection provided with means for allowing said knife-carrier to rotate without rotating said piston, means for rotating said knife-carrier during its reciprocation, and means for moving said log past said knife-carrier.

3. In a log-barking machine in combination, a supporting bed for said log, a rotatable knife-carrier and a swinging frame for supporting the same, means for adjusting said frame and carrier at different angles relative to the axis of said log, means for reciprocating said knife-carrier in said frame toward and away from said log, means for rotating said carrier during its reciprocations, and means for moving said log past said knife-carrier.

4. In a log-barking machine in combination, a supporting bed for said log, a rotatable knife-carrier and a vertically-adjustable and laterally-swinging frame for supporting the same, means for adjusting said frame and carrier at different angles relative to the axis of said log and also vertically with respect to said log, means for reciprocating said knife-carrier in said frame toward and away from said log, means for rotating said carrier during its reciprocations, and means for moving said log past said knife-carrier.

5. In a log barking machine in combination, a supporting bed for the log, bumpers mounted on said log bed arranged to move transversely thereon, a rotatable rossing tool and an adjustable supporting frame therefor holding said rossing tool opposite to said bumpers and arranged so that the line of thrust of said tool on the log passes between the points of support of the log on said bed and said bumpers, and means for moving said log past said rossing tool.

6. In a log-barking machine in combination, a supporting bed for said log, a rotatable knife-carrier and an adjustable supporting frame therefor, means for rotating said knife-carrier in said frame, log bumpers mounted on said log-bed to move transversely thereon for holding said log against the knife-carrier, log-rolling devices mounted on said bed, and separate means under the control of the operator for operating said log-rolling devices and said log bumpers at desired times, and means for moving said log past said knife-carrier.

7. In a log-barking machine in combination, a traveling carriage for supporting said log, a rotatable knife-carrier and an adjustable supporting frame therefor, means for rotating said knife-carrier in said frame, log bumpers mounted on said carriage to move transversely thereon for holding said log against the knife-carrier toothed idlers mounted on said bumpers for preventing the endwise shifting of said log relative to said carriage, and means under the control of the operator for operating said log bumpers in either direction during the movements of said carriage.

8. In a log-barking machine in combination, a traveling carriage for supporting said log, a rotatable knife-carrier and an adjustable supporting frame therefor, means for rotating said knife-carrier in said frame, log bumpers mounted on said carriage to move transversely thereon for holding said log against the knife-carrier, toothed idlers mounted on said bumpers for preventing the endwise shifting of said log in both relative to said carriage, endless conveying chains moving transversely of said log-bed for rotating said log, and separate means under the control of the operator for operating

said chains and said log bumpers in either direction during the movements of said carriage.

9. In a log-barking machine in combination, a traveling carriage for said log comprising an inclined bottom, and log bumpers mounted thereon for moving transversely thereof, said bumpers having abutting faces rising at an acute angle from said inclined bottom, a rotatable knife-carrier and a vertically-adjustable and laterally-swinging frame for supporting the same, means for adjusting said frame and carrier at different angles relative to the axis of said log, means for rotating said knife-carrier in said frame, and means for moving said traveling log-carriage past said knife-carrier.

10. In a log barking machine in combination, a supporting bed for the log, bumpers mounted on said log bed arranged to move transversely thereon, a rotatable rossing tool and an adjustable supporting frame therefor holding said rossing tool opposite to said bumpers and arranged so that the line of thrust of said tool on the log passes between the points of support of the log on said bed and said bumpers, and means for moving said log past said rossing tool, said rossing tool having an abrading face disposed in a plane transverse to the axis of rotation thereof.

11. In a log-barking machine in combination, a log support adapted to receive a log, means for turning said log on said support, an opposed abrading cutter rotatably supported and arranged to engage the outer face only of the log, and movable in a plane transverse to the longitudinal axis of the said log support toward and away from said log support, means for moving said log support longitudinally past said cutter and means for forcing said rotating cutter against said log support with a yielding pressure.

12. In a log barking machine in combination, a supporting bed for the log, bumpers mounted on said log bed arranged to move transversely thereon, a rotatable rossing tool and an adjustable supporting frame therefor holding said rossing tool opposite to said bumpers and arranged so that the line of thrust of said tool on the log passes between the point of support of the log on said bed and said bumpers, means for moving said log past said rossing tool, said rossing tool having an abrading face disposed in a plane transverse to the axis of rotation thereof, and means for adjusting said supporting frame to change the angular position of the axis of rotation of said rossing tool.

13. In a log-barking machine in combination, a log support adapted to receive a log, an opposed cutter rotatably supported and movable toward and away from said log

support, and fluid-pressure means under manual control for moving said rotating cutter toward and away from said log.

14. In a log barking machine in combination, a supporting bed for the log, bumpers mounted on said log-bed arranged to move transversely thereon, a rotatable rossing tool and an adjustable supporting frame therefor holding said rossing tool opposite to said bumpers and arranged so that the line of thrust of said tool on the log passes between the points of support of the log on said bed and said bumpers, means for moving said log past said rossing tool, said rossing tool

having an abrading face disposed in a plane transverse to the axis of rotation thereof, means for adjusting said supporting frame to change the angular position of the axis of rotation of said rossing tool, and means for moving the said rossing tool toward the log and longitudinally on the axis of rotation thereof.

Signed at New York city, New York, this 30th day of August, 1911.

ORRIE J. MILLS.

Witnesses:

BEATRICE MIRVIS,
CHESTER T. NEAL.