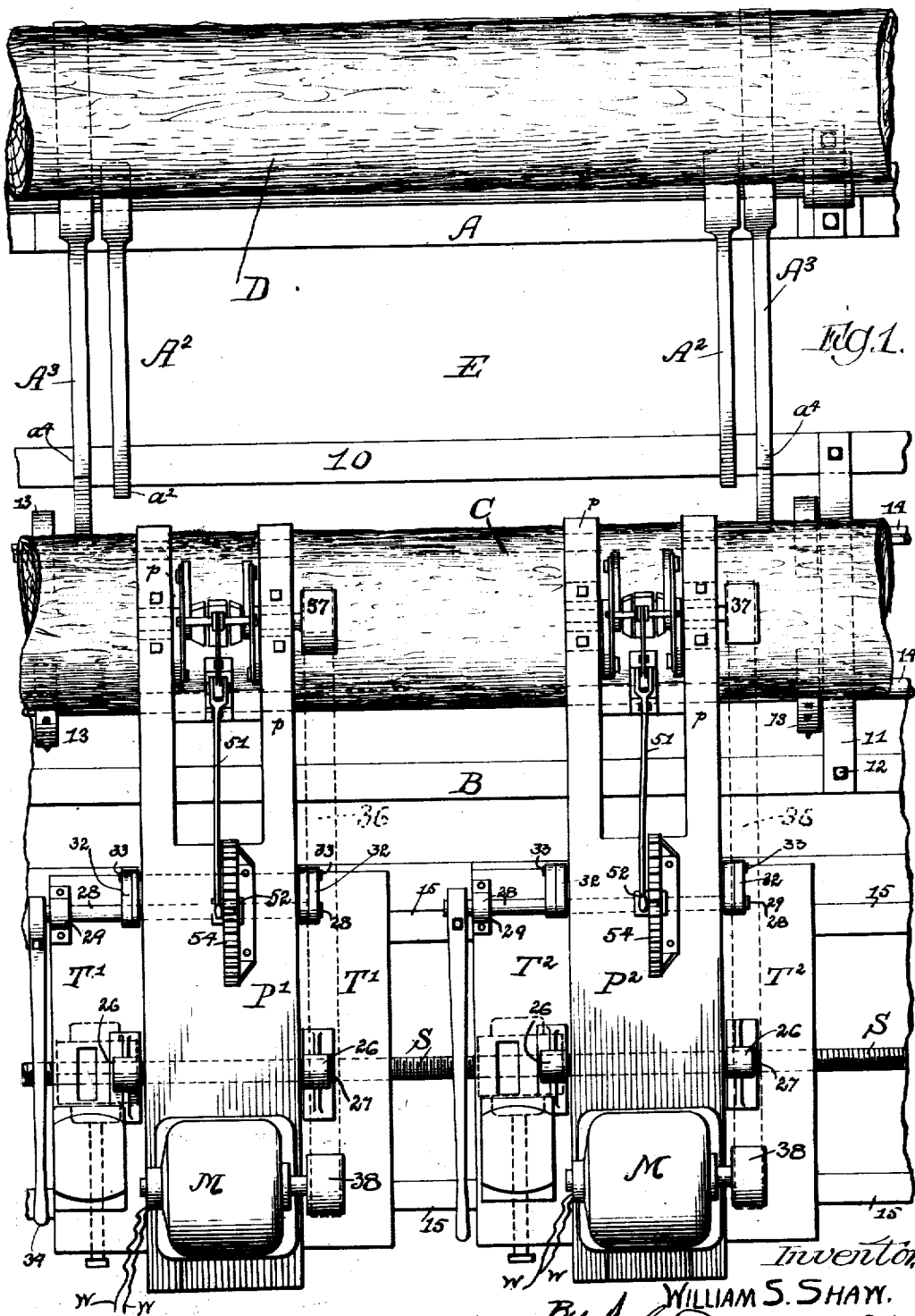


W. S. SHAW.
BARK PEELING MACHINE.
APPLICATION FILED JAN. 30, 1920.

1,358,993.

Patented Nov. 16, 1920.

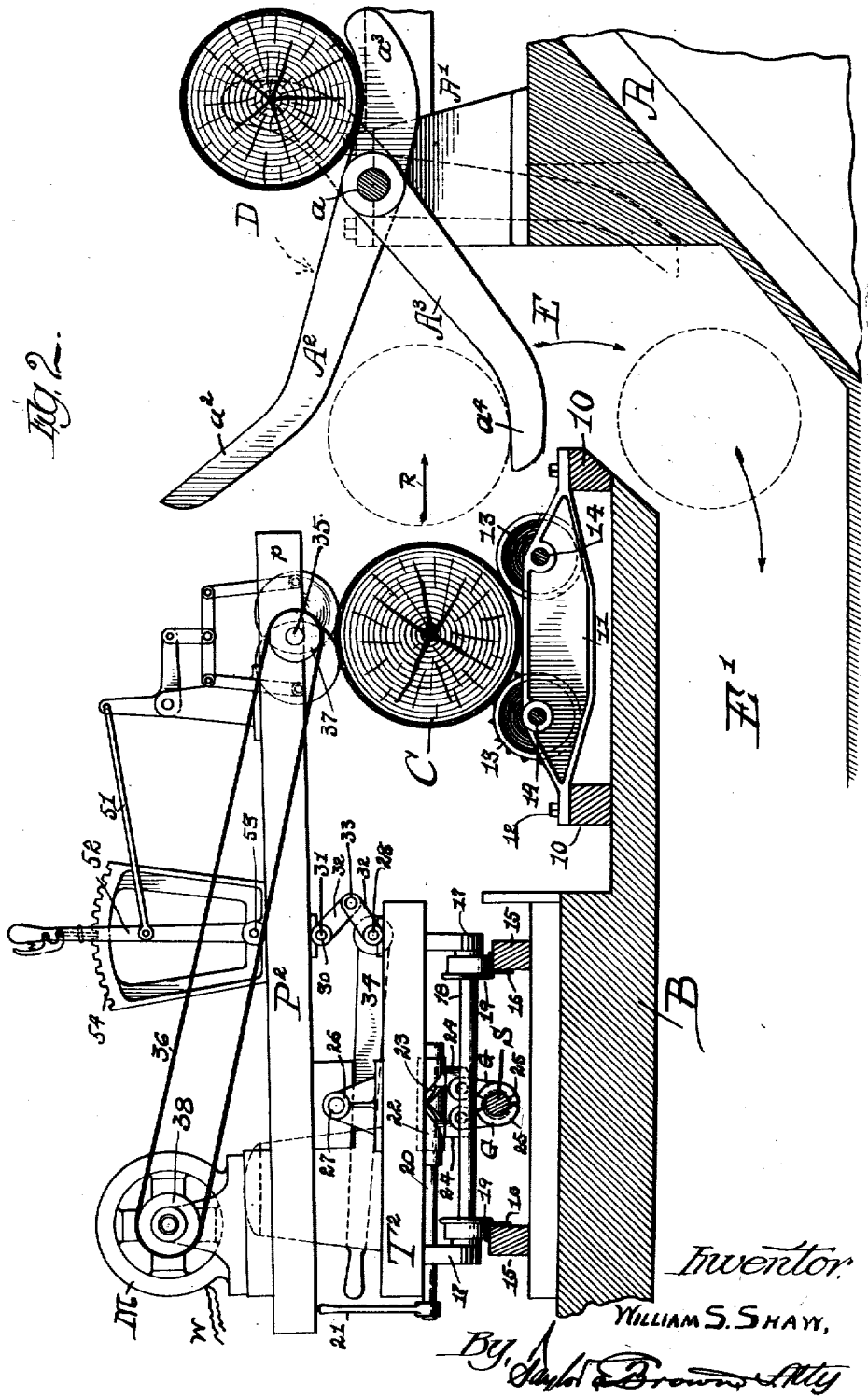
4 SHEETS—SHEET 1.



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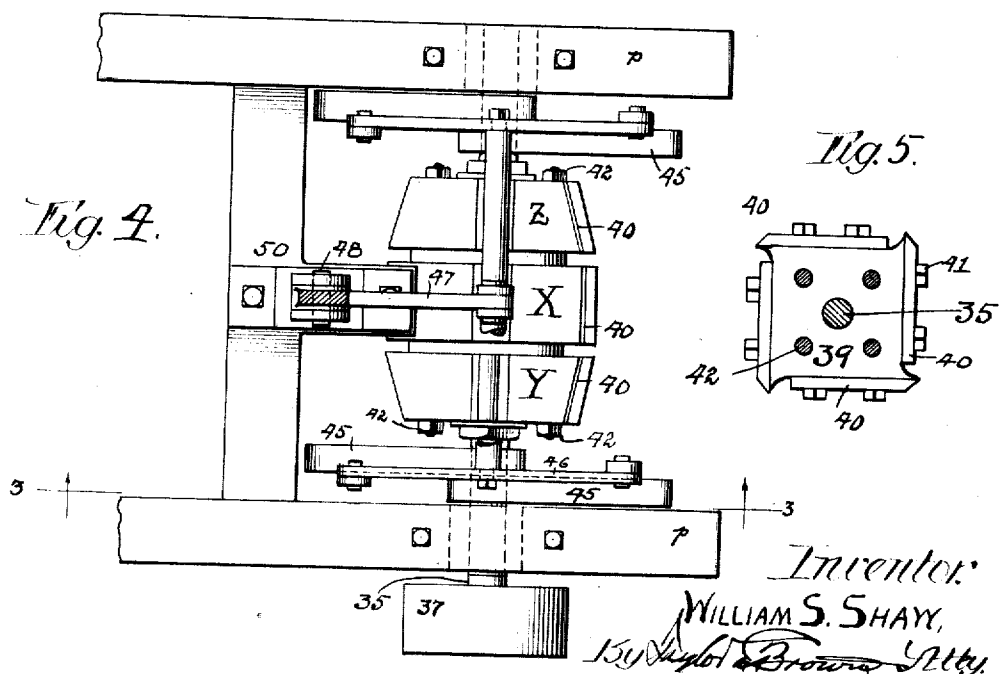
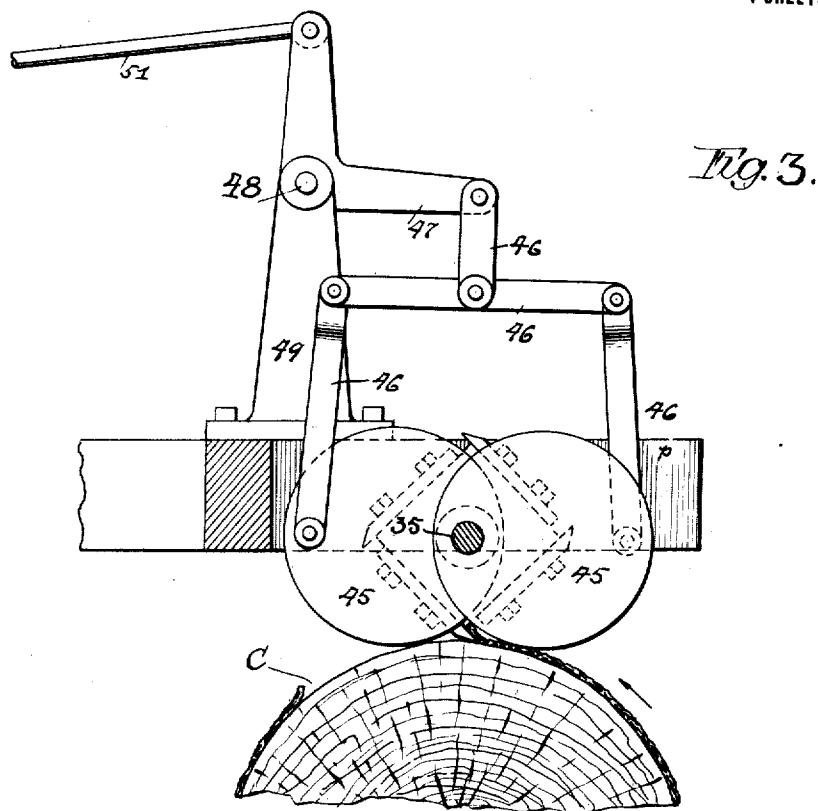
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Fig. 6

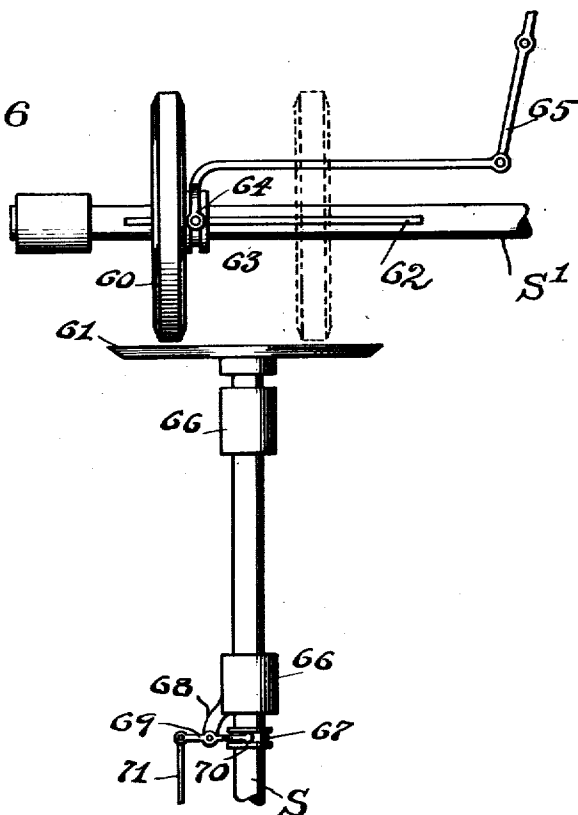
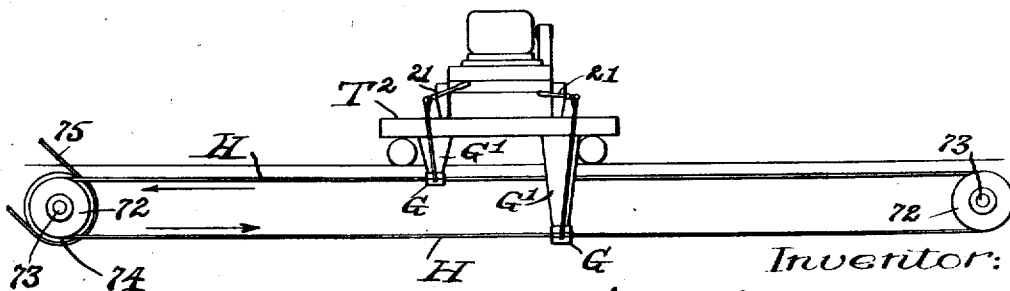


Fig. 7



Inventor:

William S. Shaw,

By *Taylor & Brown* Attys.

UNITED STATES PATENT OFFICE.

WILLIAM S. SHAW, OF CHICAGO, ILLINOIS.

BARK-PEELING MACHINE.

1,358,993.

Specification of Letters Patent.

Patented Nov. 16, 1920.

Application filed January 30, 1920. Serial No. 355,168.

To all whom it may concern:

Be it known that I, WILLIAM S. SHAW, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Bark-Peeling Machines, of which the following is a specification, reference being had to the accompanying drawings, and to the reference characters marked thereon, which form a part of this specification.

This invention relates to improvements in machines for peeling the bark from logs and is designed, more particularly, for removing bark to be used in tanning operations.

In machines heretofore in use, the log to be operated upon has been brought down on a runway and delivered to the peeling machine, which is provided with means for turning or rotating the log about its longitudinal axis, and while being so rotated, rotary cutting knives are moved longitudinally of the log. A plurality of rotary cutters or knives have been employed, the axis of each cutter shaft being transverse to the longitudinal axis of the log, whereby chips of the bark are removed by longitudinal cuts as the cutter or cutters travel the length of the log or travel a predetermined distance lengthwise of the log. In order to remove the bark, with any degree of economy, by such machines, it has been necessary to have a plurality of knives, usually twelve, operating simultaneously on the log; and inasmuch as the cutting edge of the knife, chipping longitudinally of the log, would cut tangentially of the circumference of the log, a relatively small bite or chip was obtained. Moreover, the log would be imperfectly peeled or stripped of its bark unless rotated slowly, and unless, also, the longitudinal movement of the plurality of cutters occurred slowly. Thus a great loss of time was experienced which, together with the considerable amount of power required to operate a plurality of knives simultaneously, and move them lengthwise of the log, made machines of this type not only expensive in the first instance, and costly to maintain in repair, but otherwise very objectionable and impractical.

It is the principal object of my invention to eliminate these and other objections to the machines now in use. To this end, the chief novel features of my machine reside in the

fact that I use but two cutter units simultaneously, instead of ten or twelve cutter units; in means whereby each cutter unit is arranged to peel the bark from one-half of the length of the log; in means whereby the distance apart of these cutter units may be varied so that logs of different lengths may be peeled in a single operation; in means whereby the cutting knives are operated by a rotary shaft lying above and parallel with the longitudinal axis of the rotating log; in means whereby a wider knife blade is used and consequently a more perfect and economical bite of the bark may be obtained; in means whereby the cutters are so shaped and arranged as to perform the peeling operation when moving in either direction throughout the length of the log; in means whereby the end of the platform carrying the cutter head is not only movable with respect to the log, but carries also guides or means for adjusting the knife edges with respect to the log so as to peel the bark to any depth required.

The foregoing and other features of my invention will be more fully understood as I proceed with my specification.

In the drawings:

Figure 1 is a top plan view of a log peeling machine showing the essential features of my invention.

Fig. 2 is an end view of the same, partially in section.

Fig. 3 is an enlarged end view partially in section, of the application of the cutting knife unit to the log; the view being taken in the plane indicated by the line 3—3 of Fig. 4.

Fig. 4 is a top plan view, enlarged, partially in section, of the cutting knife unit and the movable platform carrying the same.

Fig. 5 is an end view of one of the cutter heads showing, in section, the shaft on which it is mounted and the bolts by which the parts are secured together to form the cutting knife unit.

Fig. 6 is a plan detail view of the friction gear reversing mechanism for one of the shafts.

Fig. 7 is a side view of a modified means for reversing the travel of the truck carrying one of the cutting knife units.

A represents, as a whole, a runway by which the logs are brought down to the machine and delivered to the machine for peel-

ing. B represents the base of the machine, as a whole. C is a log positioned on the machine, ready to be peeled; and D is the next succeeding log on the runway A, in position to take the place of the log C when the bark from the latter shall have been peeled. E is a discharge chute or opening between the end of the runway A and side of the base B, into which chute the log C is delivered, as indicated by the dotted line in Fig. 2. The chute E leads into a discharge conduit E'. This conduit may be provided with the usual chain or other type of conveyer by which the log may be moved longitudinally beneath the machine B into the river or any other place desired.

Upon the top surface of the base B are a pair of longitudinally arranged timbers 10, 10, extending at right angles to the direction of travel of the log D upon the runway A. Upon these timbers are provided saddles 11 secured thereto by bolts 12. The log C is mounted upon and given a rotary motion by a plurality of antifriction rotatable supports or rollers 13, 13, mounted on rotary shafts 14, 14, journaled in the saddles 11. The parts described may be of any conventional form and, as they constitute, *per se*, no part of the present invention, are not further described in detail; nor are the means for actuating the rotatable shafts 14, 14, illustrated.

A pair of track timbers 15, 15, are mounted on the upper part of the base B in parallel relation to the axis of the log C when upon the rollers 13, said timbers 15 being provided, preferably, with suitable tracks 16, in this instance of angle iron. T' and T² are carriages of similar construction. Said carriages, T² for example, are each provided with underhanging journal bearings 17, 17, carrying transversely arranged wheel axles 18, each axle carrying a pair of wheels 19 adapted to run over the rails 16. Secured to the under side of the truck T² is a rotatable shaft 20 operated by a handle 21 and carrying a cam head 22, in which grooves or cam guideways 23 are cut,—see Fig. 2. Pivotaly supported also from the under side of the truck T² are a pair of grippers G, G, each comprising a short arm 24 and a long arm 25. The end of the short arms 24 enter the cam guides 23. The proximate inside faces of the long arms 25 are screw threaded to mesh, with the teeth on the opposite sides of the shaft S. The shaft S is suitably mounted intermediate of the track 16, 16, and extends lengthwise of the entire base B, the axis of the shaft S being parallel with the axis of the shafts 14, 14.

When the handle 21 is rotated in one direction, the grippers G will engage the rotating shaft S, with the result that the truck T² will be moved down the track longitudinally of the shaft; and when said

handle is moved in the other direction, the grippers G are released so that the toothed arms 25 will be disengaged from the shaft S and the truck T² will then come to rest.

The shaft S may be rotated and reversed by any suitable means, as for example, that shown in Fig. 6, wherein S¹ is a continuously rotating driving shaft carrying one of a pair of friction gears 60, 61, the gear 61 being mounted upon the end of the shaft S. The gear 60 is slidably mounted on the shaft S¹ by means of the spline 62. A circumferentially grooved collar 63 is attached to the gear 60. A yoke 64 upon the end of the operating lever 65 engages the yoked collar 63. 66, 66 are bearings for the shaft S and 67 is a yoked collar secured to the shaft S. One of the bearings 66 carries a bracket 68 on which is pivoted a lever 69. One end of said lever is yoked as shown at 70, and engages the circumferentially grooved collar 67. 71 is an actuating rod attached to the lever 69. From this construction, it will be manifest that the movement of the rod 71 will, through the lever 69 and yoke 67, slide the shaft S longitudinally through the bearing 66 sufficiently to cause the face of the friction wheel 61 to contact with the rim of the gear 60.

When the gear 60 is in the position shown in full lines in Fig. 6, the shaft S will be rotated in one direction and when the gear 60 is moved longitudinally of the shaft S¹ into the position indicated in dotted lines, the shaft S will be reversed and will rotate in the opposite direction. The shaft S¹ is continuously rotated by any suitable source of motive power, not shown in the drawings.

In Fig. 7, I have illustrated a modification for reversing the travel of the trucks T¹, T², in which the shaft S is omitted and a continuous cable H traveling through two pairs of grippers G, are used. The grippers G are secured to the truck by depending brackets G', G', of different lengths, whereby one set of grippers G may engage with the upper and the other gripper with the lower lap of said cable. This latter is trained over pulleys 72, 72, mounted upon shafts 73, 73. One of the shafts 73 is a drive shaft and carries a pulley 74 actuated by a belt 75, running to any suitable source of power. The arrows indicate the direction of the travel of the cable H.

When the truck T² is to be driven in one direction, one of the handles 21 is actuated to cause these grippers G with which it is connected, to take hold of adjacent lap (say the upper lap) of the cable H, the other handle 21 being so actuated as to have its associated grippers G open. The lower lap of the cable will thus freely pass through the lower grippers while the upper grippers will carry the truck with and in the direction of travel of the upper lap of the cable

H. The position of the levers 21 will, manifestly, cause the truck to travel in the opposite direction.

Upon the upper surface of the truck T² are a pair of trunnion supports 26, 26, having suitable bearings for the trunnions 27, 27, which extend outwardly from the operating platform P². A platform P' is similarly mounted on the truck T'. A shaft 28 suitably journaled in bearings 29 is located on the top of the truck T² at the side adjacent to the log C. In alinement above the shaft 28 and secured in journal boxes 30 to the under side of the platform P² is a shaft 31, which shaft 31 extends transversely of the platform P², its axis being parallel to the axis of the shaft 28. Toggle link arms 32, 32, are pivotally secured together at 33, the free end of one toggle arm 32 being mounted upon the shaft 28, and the free end of the other toggle arm 32 being arranged upon the shaft 31. An operating lever 34 is secured to the end of the shaft 28. When the lever 34 is moved by the operator, the toggles 32, 32, are actuated, with the result that the platform P² is rotated about the axis of the trunnions 27 as a pivot. This results in the forward end of the platform P² which carries the knife cutting mechanism, being moved up or down, that is toward or away from the log C.

The knife cutting mechanism is operated by a rotating shaft 35, suitably mounted in the forward end of the platform P², with its longitudinal axis parallel with the longitudinal axis of the log C. Said shaft is rotated by means of a belt 36 passing over a pulley 37 on the shaft 35 and pulley 38 on the shaft of an electric motor M. W are suitable feed wires for conducting the current to the motor M.

The knife holding end of the platform P² is cut away in the center so as to afford two extending arms p. To the under side of each arm p, p, suitable journal boxes for the shaft 35 may be bolted. On the shaft 35, I mount a plurality of cutter heads 39, each head carrying a plurality of cutter knives 40 secured thereto by bolts 41. Three of these cutter heads 39 are preferably employed, and they are secured together upon the shaft 35 by means of bolts 42, which latter extend transversely through the cutter heads 39 and parallel with the shaft 35.

It will be noticed, by reference to Fig. 4, that the cutting edge of the central set of knives 40 is relatively long and is adapted to take a wide bite in the bark of the log. Said cutting edge extends parallel with the axis of the shaft 35, while the cutting edges of the knives 40 on the other two sets extend obliquely and not parallel with the axis of the shaft 35. Moreover, the direction of obliquity of one of these end sets Y and Z is directly opposite to that of the other set

of knives. For purposes of identification, I have indicated the central set of knives, as a whole by the letter X and the right hand set of knives, as a whole, by the letter Y, and the left hand set, as a whole, by the letter Z.

In the travel in one direction of the truck T², the knives Z, X, engage the bark of the log, while when traveling in the reverse direction on the next log, the knives Y, X, engage the bark of the log. Moreover, it will be noticed that instead of having the shaft 35 extend transversely of the log C, it extends lengthwise of the log. Thus, in operation, the bark is taken off almost in the form of shavings instead of chips, and a complete and perfect peeling of the bark is effected.

In the operation of the machine, the tables P' and P² are spaced on the shaft S a suitable distance apart, (measuring from the center to center of the sets of knives X), a distance equal to one-half of the length of the log to be peeled. Thus, starting with one of the sets of knives at one end of a twelve-foot log, the corresponding set of knives on the other truck will be set six feet away. Both trucks T' and T² travel in the same direction and at the same speed, by reason of the rotation of the shaft S. It follows that each set of knives will peel six feet of the twelve foot log and that both sets work simultaneously. The log C will then be dumped into the chute E and a fresh log, D, takes its place. The shaft S will then be reversed and thereupon both seats of trucks T' and T² will start in the reverse direction and the cutting knives on the two trucks working simultaneously will each cut six feet of the new twelve foot log. Then the cycle of operation may be repeated. Where the log, for example, is fourteen feet long or sixteen feet long, the trucks T' and T² are spaced seven or eight-feet apart instead of six.

I find that by this arrangement, the logs are operated upon with great rapidity, and since but two sets of cutting knives are employed, instead of twelve or more, the cost of the machines is greatly reduced and the power required to operate the two sets of knives is reduced to a minimum. Moreover, by this construction, the cutting or peeling operation is performed very much more efficiently.

The means for feeding the log into the machine and removing the peeled log from the machine, will now be described. On the runway A, I provide suitable journal bearings A' for the shaft a. On this shaft a are mounted arms A² inclined in an upwardly and forward direction. The extreme outer end a² is still further inclined upwardly. It follows that as these arms A² extend over and above the chute E, the log traveling

down the runway will be arrested and prevented from falling into the chute E² by means of these arms A². Mounted upon the shaft *a* are other arms A³, each of which is provided with a rearward extension *a*³ and a forward extension *a*⁴. The rearward extension *a*³ is slightly concave at its upper edge so that the log D coming down the runway after running up on the arm A² will roll back and be finally supported and held by the rear extension *a*³. When the log C has been peeled, it is pushed sidewise in the direction indicated by the arrow R off from its support and rotating rollers 13 until it rests upon the extension *a*⁴ and the arm A³. The weight of the log will then move the arm A³ into the position indicated by the dotted line in Fig. 2, the arm A³ rotating the shaft *a* to which it is attached. Presently the log C will drop into the chute E and pass on through the conduit E' and the log D, being simultaneously raised by the upward movement of the arm *a*³, will roll forward along the upper edges of the arms A² and onto the supporting rotating wheels 13, 13. The extreme outer end of the arm A² rests on top of the timber 10 when the arm A³ rotates the shaft *a*.

The operator sits upon the platform P² and his weight supplements the normal weight of the moving end of the platform sufficiently to depress the cutting knives and give a proper bite or cut of the cutting knives in the bark of the log. Any suitable gages may be used to limit the depth of the bite or cut,—one form of which I have shown herein, and will now proceed to describe. Referring more particularly to Figs. 2 and 3,—eccentrically mounted upon the main shaft 35 are gage disks 45 secured by a set of toggle links 46 to one end of a bell crank lever 47, pivoted at 48 to a standard 49, which extends upwardly from and is bolted to a cross arm 50 extending between the two arms *p, p*, of the platform P². The other end of the bell crank lever 47 is secured to a link 51 connected to an operating lever 52 pivotally mounted at 53 to a notched segment 54 which latter is secured to the platform P².

It follows from this construction that the marginal edges 55 of the disks 45 may be moved up or down with relation to the cutting edge of the knife blades 40 so as to adjust the depth of cut or bite of the knife into the log.

I claim as my invention:

1. In a bark peeling machine, means for rotating the log, a truck movable lengthwise of the log, a pivoted platform movable on the truck, a rotating cutter mounted on the forward end of the platform adapted to engage the log, means associated with the platform to operate the cutter and means on the truck for simultaneously moving the

truck and the platform lengthwise of the log while the cutter knives are in operation.

2. In a bark peeling machine, a track, a truck movable along said track, means for actuating the truck, a pivoted platform mounted on the truck, rotatable cutter knives mounted on the platform, means for supporting the log in a direction parallel to that of the track, and means for rotating the log, said cutter knives being adapted to peel the bark from the log by rotating in a direction transverse to the longitudinal axis of the log.

3. In a bark peeling machine, means for rotating the log, a truck movable lengthwise of the log, a pivoted platform movable on the truck, a rotating cutter mounted on the forward end of the platform adapted to engage the log, means associated with the platform to operate the cutter, means on the truck for simultaneously moving the truck and the platform lengthwise of the log while the cutter knives are in operation, and operative means between the truck and the platform for oscillating the platform.

4. In a bark peeling machine, means for rotating the log, a truck movable lengthwise of the log, a pivoted platform movable on the truck, a rotating cutter mounted on the forward end of the platform adapted to engage the log, means associated with the platform to operate the cutter and means for moving the truck lengthwise of the track in either direction.

5. In a bark peeling machine, means for rotating the log, a truck movable lengthwise of the log, a pivoted platform movable on the truck, a rotating cutter mounted on the forward end of the platform adapted to engage the log, means carried by the platform to operate the cutter, means on the truck for simultaneously moving the truck and the platform lengthwise of the log while the cutter knives are in operation, and operative means between the truck and the platform for oscillating the platform, said means comprising toggle links between the truck and the platform and a lever for actuating said links.

6. In a bark peeling machine, means for rotating the log, a truck movable lengthwise of the log, a pivoted platform movable on the truck, a rotating cutter mounted on the forward end of the platform adapted to engage the log, means carried by the platform to operate the cutter, means on the truck for simultaneously moving the truck and the platform lengthwise of the log while the cutter knives are in operation, and an adjustable guide on the forward end of the platform.

7. In a bark peeling machine, a rotatable cutter shaft mounted upon a support adapted to travel lengthwise of the log, means

for supporting and rotating the log, means for rotating the cutter shaft in a direction transverse of the longitudinal axis of the log, a plurality of cutter heads mounted on said shaft, a plurality of cutting knives mounted on each of said cutter heads, the cutting edge of the knives of one cutter head being parallel to the longitudinal axis of the cutter head shaft and the edges of the knives of the other cutter head being inclined at an angle to the longitudinal axis of the cutter head shaft.

8. In a bark peeling machine, a cutter head comprising a rotatable shaft, means for rotating the same in a direction transverse to the axis of the log to be operated upon, said cutter comprising three heads secured together on the cutter shaft, a plurality of cutting blades secured to each cutter head, the edges of the blades of the central cutter head being parallel with, the edges of the blades of the two other cutter heads being inclined to, the longitudinal central axis of the cutter shaft.

9. In a bark peeling machine, a cutter head comprising a plurality of heads, each carrying a plurality of knives, the central cutter head knife edges being parallel with the longitudinal axis of the cutter shaft, the edges of the cutting knives of the end cutter head being inclined in opposite directions with respect to the longitudinal axis of the cutter head shaft.

10. In a bark peeling machine, means for supporting and rotating the log, a track arranged parallel to the longitudinal axis of

the log, a truck mounted on said track, a rotatable screw threaded shaft extending lengthwise of the track, means for rotating said shaft, cooperating means between the truck and the shaft whereby the truck will be caused to travel in either direction on the track, a platform pivotally mounted on the truck, a cutter head on the forward end of said platform and means for operating the cutter head.

11. In a bark peeling machine, means for supporting and rotating the log, a track arranged parallel to the longitudinal axis of the log, a truck mounted on said track, a rotatable screw threaded shaft extending lengthwise of the track, means for rotating said shaft, cooperating means between the truck and the shaft whereby the truck will be caused to travel in either direction on the track, a platform pivotally mounted on the truck, a cutter head on the forward end of said platform and means for operating the cutter head, the said movable platform comprising extension bars at its forward or floating end and journal bearings in said extension bars in which the cutter head shaft is rotatably mounted.

In testimony that I claim the foregoing as my invention I affix my signature in the presence of two witnesses this 28th day of January, 1920.

WILLIAM S. SHAW.

Witnesses:

B. L. MACGREGOR,
TAYLOR E. BROWN.