

Feb. 5, 1946.

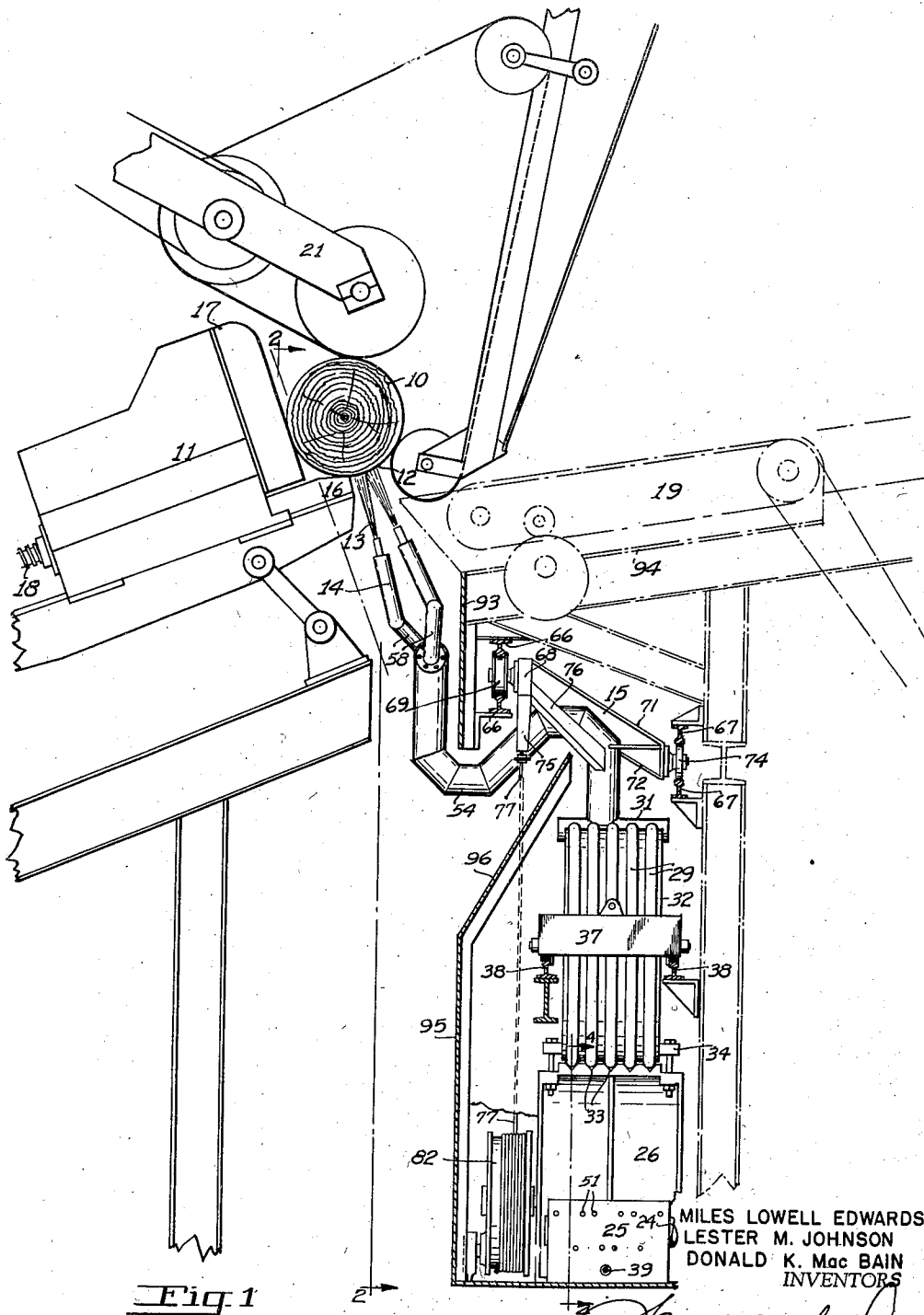
M. L. EDWARDS ET AL.

2,393,978

LOG BARKING APPARATUS

Filed July 14, 1942

3 Sheets-Sheet 1



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Harold Cook
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LESTER M. JOHNSON
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3 Sheets-Sheet 2

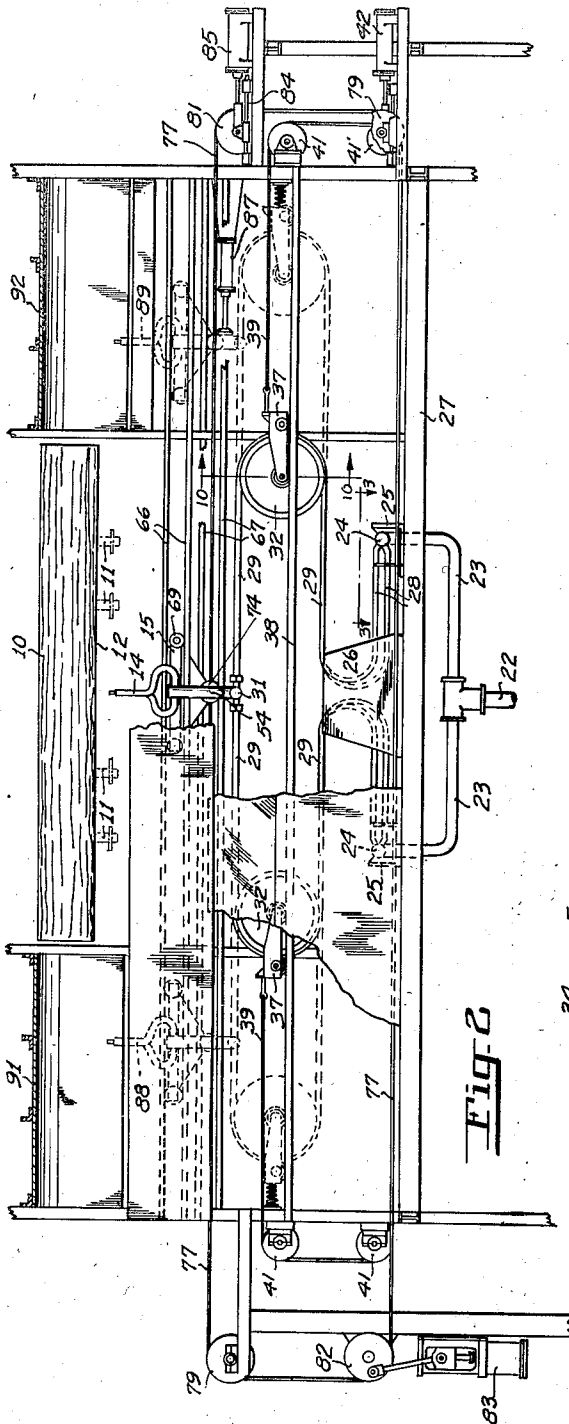


Fig. 2

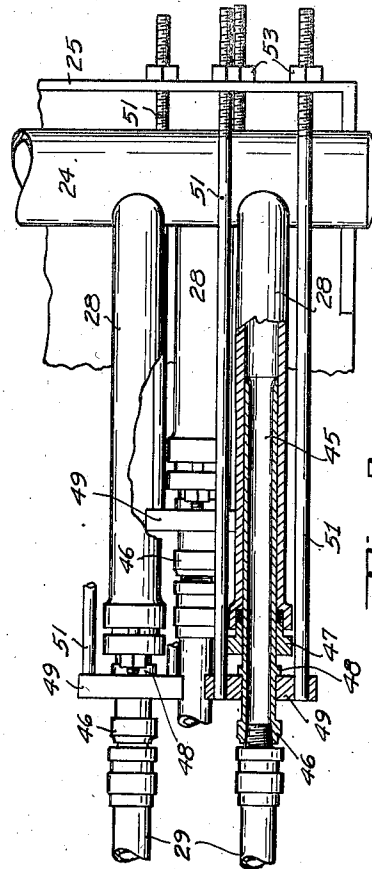


Fig. 3

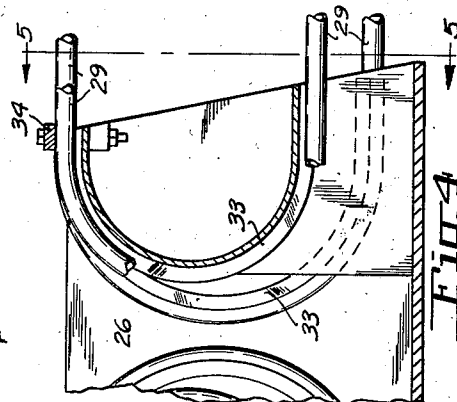


Fig. 4

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LOG BARKING APPARATUS

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3 Sheets-Sheet 3

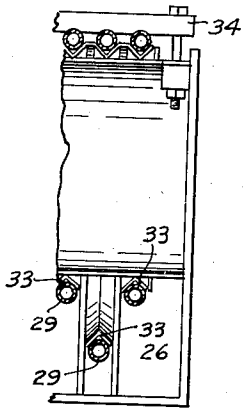


Fig. 5

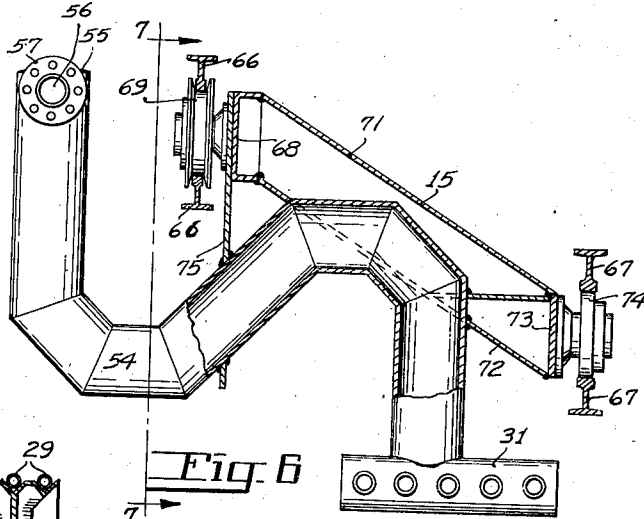


Fig. 6

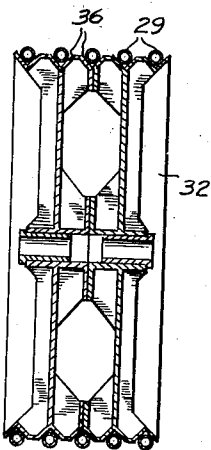


Fig. 10

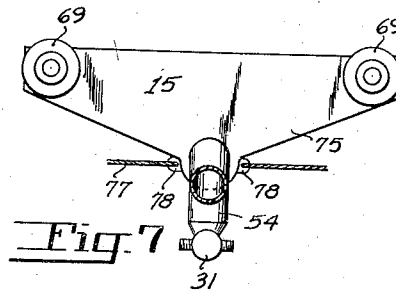


Fig. 7

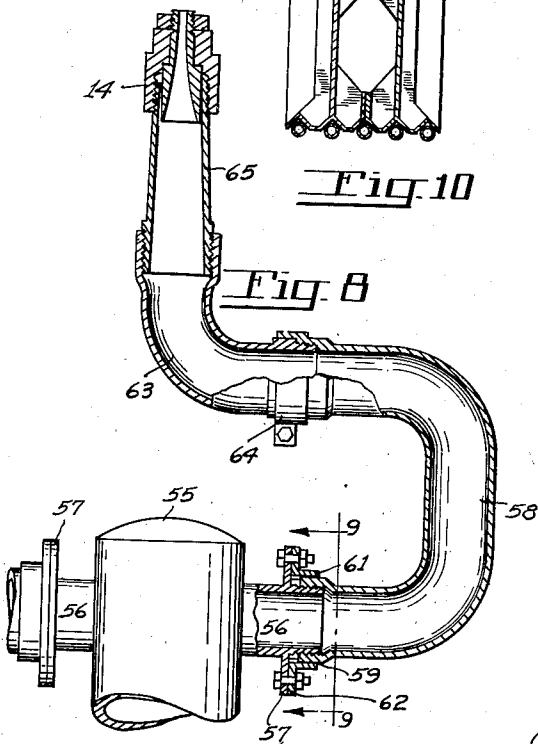


Fig. 8

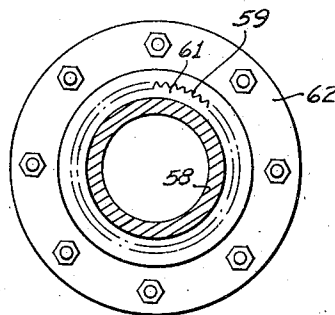


Fig. 9

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2,393,978

LOG BARKING APPARATUS

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Application July 14, 1942, Serial No. 450,837

16 Claims. (Cl. 144—208)

This invention relates to hydraulic bark removal apparatus, and, while it is not necessarily to be limited thereto, the invention is particularly applicable for removing bark from logs which are subsequently to be utilized for the manufacture of pulp.

A first step in the treatment of logs to be used in pulp manufacturing processes comprises the removal of bark from the outer surface thereof. Letters Patent No. 2,342,533, granted February 22, 1944, to Miles Lowell Edwards, for Method of removing bark from logs, discloses a method of removing bark from logs hydraulically. In carrying out the method disclosed in the above mentioned patent, a jet of water is directed at the surface of the log in a substantially perpendicular direction with respect thereto, and under a relatively high pressure. The nozzle arrangement forming the jet is moved relative to the log longitudinally thereof and substantially parallel with respect to the log surface. Depending upon the width of the fluid jet, a strip of bark is removed longitudinally of the log by one pass of the nozzle arrangement, after which the log is rotated slightly upon its support and a subsequent pass of the nozzle made with respect thereto, this process being repeated until a complete removal of the bark from the log surface is effected.

To carry out the above referred to process in an efficient, commercially practicable manner entails the provision of various accessory apparatus such as a log support including loading and unloading means, log indexing or rotating means, a nozzle arrangement, and means for effecting relative longitudinal movement between the log and the nozzle. It is a general object of the present invention to provide a new and improved arrangement of apparatus for carrying out the method of the invention referred to above, and which is particularly suitable for use with relatively large sized logs.

More specifically, it is one object of the invention to provide a new and improved nozzle supporting arrangement for hydraulic bark removal apparatus and operating means therefor.

A further object of the invention is to provide a new and improved arrangement for supplying high pressure operating fluid to a traveling nozzle of a hydraulic bark removing apparatus.

A still further object of the invention is to provide a new and improved hydraulic bark removal apparatus including a traveling nozzle and means for supplying high pressure operating fluid thereto, which arrangement is relatively flexible

and is adapted for high speed operation in a safe and efficient manner.

Another object of the invention is to provide a new and improved hydraulic log barking apparatus including a traveling nozzle carriage arrangement and enclosure therefor so that the carriage is substantially protected from injury due to flying debris resulting from the log barking operations.

In accordance with the illustrated embodiment of the invention, a log is supported in a generally horizontal position upon a suitable supporting means whereby a longitudinal strip portion of the log surface is exposed to the action of a jet of operating fluid. The nozzle arrangement forming the jet is mounted for movement longitudinally of the log upon a traveling carriage which is supported on suitable guide tracks extending substantially parallel with the adjacent log surface. Suitable motor means are provided for imparting a reciprocating movement to the nozzle carriage upon the guide tracks. Hydraulic fluid under relatively high pressure is supplied from a stationary header to the nozzle carriage by means of a plurality of relatively flexible high pressure conduits. For preventing sharp bending or kinking of the conduits during the reciprocating movements of the nozzle carriage, a supporting arrangement is provided therefor to automatically take up the slack therein. The nozzle carriage and the hydraulic system in general, including the operating means therefor, is shielded behind an arrangement of baffles which provide protection against possible injury due to flying debris or accumulations thereof resulting from the log barking operations.

Numerous additional objects and advantages of the invention will become apparent from a perusal of the following description, taken in connection with the accompanying drawings, while the features of novelty will be pointed out with greater particularity in the appended claims.

In the drawings, Figure 1 is a side elevation of the log barking apparatus, the enclosing housing being shown in section; Figure 2 is a view of the log barking apparatus, taken along the line 2—2 of Figure 1; Figure 3 is an enlarged plan view with certain portions broken away, taken on the line 3—3 of Figure 2, showing details of the feeder hose anchoring arrangement; Figure 4 is an enlarged sectional view of the hose anchoring structure, taken along the line 4—4 of Figure 1; Figure 5 is a cross sectional view, taken along the line 5—5 of Figure 4; Figure 6 is an enlarged view of the nozzle carriage shown in

Figure 1; Figure 7 is a sectional view, taken along the line 7-7 of Figure 6, but of a somewhat reduced scale; Figure 8 is an enlarged sectional view of one of the nozzle mounts shown in Figure 1; Figure 9 is an enlarged cross sectional view taken along the line 9-9 of Figure 8; and Figure 10 is an enlarged cross sectional view of one of the hose supporting sheaves, taken along the line 10-10 of Figure 2.

Referring more particularly to the view of Figure 1, a log 10 is shown resting upon a suitable support, indicated generally at 11, in such manner that a longitudinal strip portion 12 of the log is exposed to the action of a hydraulic jet 13 directed thereagainst from a nozzle arrangement 14 which will be described hereinafter in greater detail. The nozzles 14 for forming the jets 13 are mounted on a suitable carriage 15 for movement longitudinally of the log whereby a strip of bark extending the full length thereof is removed in a manner as described in the above mentioned patent application.

The log support 11 may be of any suitable form for holding the log in a predetermined position adjacent the path of movement of the nozzle arrangement. The specific arrangement shown is comprised essentially of a plurality of bracket arms 16 which are adapted to loosely support the log 10 upon the foremost ends thereof. Extending upwardly from each of the bracket arms 16 is an adjustable stop 17 which engages with one side of the log for limiting movement thereof in the direction of the stop. The various stops 17 may be independently adjusted by means of a suitable screw 18 associated with each. Any suitable means may be provided for loading logs onto the support such as the skids, indicated by dotted lines 19, which need not be described in greater detail. A brief description is made herein of the log handling means in order that a better understanding may be had of the invention of the instant application, though the details of such apparatus are not a part of the present invention. For a more complete description of the particular details of the log supporting means 11, the loading means 19, as well as the log unloading means (not shown here), reference may be had to our copending application, Serial No. 450,836, entitled Log barking apparatus, filed concurrently herewith, and assigned to the Weyerhaeuser Timber Company, the assignee of the present application.

After one strip of bark has been removed from the log, it is then rotated upon the support by any suitable turning means such as the arrangement shown schematically in dotted lines, indicated generally at 21. The particular details of the log turning arrangement form no part of the present patent application, it being separately described and claimed in our copending patent application, Serial No. 450,838, entitled Log turning apparatus, filed concurrently herewith, and assigned to the Weyerhaeuser Timber Company, the assignee of the present application. By alternately passing the nozzle arrangement longitudinally of the log and rotating the log upon the support through predetermined angular increments, depending upon the width of the strip of bark removed by each pass of the nozzles, the entire surface of the log may be thoroughly cleaned of bark.

Either by means of a supporting arrangement as shown, or of some other type, the log is so supported that one side thereof is exposed to the action of the hydraulic jets. With the log supported as shown in Figure 1, this exposed side,

or strip portion 12, extends along the underneath side of the log and just slightly to one side of the vertical plane through the axis thereof. The upper bearing surfaces of the bracket arms 16 are horizontally aligned and the stops 17 are so adjusted that the log is supported in the same relative position on each bracket arm, that is, just slightly to the rear of the foremost ends of each bracket arm. Thus the strip portion 12 of each successive log positioned on the support is caused to lie in substantially the same position and direction relative to the jet nozzle. In this manner compensation is made for varying diameters between different sized logs and also for the difference in diameter between the opposite ends of any one log, so that the exposed strip portion 12 will always lie in substantially the same predetermined position irrespective of the inherent angle of taper of the various logs. The nozzle carriage 15 is mounted for movement along a fixed line parallel with the front ends of the bracket arms 16, and the spacing between the end of the nozzles and the strip portion 12 of the log surface acted upon by the jet will be constant for all different logs. The importance of such uniformity of spacing will be appreciated when it is considered that high pressure jets operate with maximum efficiency at a predetermined distance from the nozzle orifice, the particular distance depending, of course, upon the specific characteristics of the nozzles employed.

It will become obvious as this description proceeds that it is not essential to the present invention that the longitudinal strip portion 12 exposed to the action of the hydraulic jet 13 extends along the lower side of the log. This is merely one way for supporting logs so that one side thereof will always lie in a predetermined position relative to the nozzles, and to eliminate the necessity for making adjustments either of the log position upon the support or of the nozzle arrangement.

The nozzle structure, the supporting carriage, the operating means for the carriage, the hydraulic fluid transmission system, and other appurtenant apparatus, will now be described in greater detail.

Referring particularly in Figure 2, water is supplied under a relatively high pressure from a pump (not shown) to a pipe 22 from which it flows through branch pipes 23 into a pair of distributing headers or manifolds 24. The manifolds 24 form a part of the hose anchoring structure 25 which is mounted upon a framework member 27 of the apparatus supporting structure. From the manifolds 24 the fluid is distributed among a plurality of pipes 28, to the outer ends of which are adjustably connected flexible feeder hoses 29 extending to the header 31 of the nozzle carriage 15. The adjustable connection between the pipes 28 and the flexible hoses 29 will be described hereinafter in greater detail. Depending, of course, upon the rate of bark removal desired, a considerable volume of water will normally be required at the nozzles, and, since a single large diameter high pressure feeder conduit connecting the stationary headers with the nozzle carriage would inherently be relatively inflexible, it is preferred to employ a relatively large number of small diameter hoses arranged in parallel. Small diameter hoses which will withstand extremely high pressures and yet possess a relatively high degree of flexibility are readily obtainable. In the particular arrangement shown, a plurality of such hoses 29 extend from the fixed hose support

26 in opposite directions and are looped about a pair of spaced sheaves 32 and are doubled back toward each other and connected to corresponding opposite sides of the nozzle carriage header 31.

The hose support 26, being more clearly shown in the Figures 4 and 5, includes a plurality of semicircular guides 33, V-shaped in cross section, in which the hoses 29 are disposed and retained therein by suitable clamping means 34 extending across the top of the hose support. The sheaves 32, supporting the looped sections of the hoses 29 between the fixed ends and the traveling nozzle carriage 15, consist essentially of drums having peripheral grooves 36 (see Figure 10) in the outer surfaces thereof for receiving each of the hoses 29 whereby they are maintained in a spaced relation with respect to each other. The sheaves 32 are mounted for free rotation upon suitable 4-wheel carriages 37 mounted upon a pair of parallel guide rails 38. In order to keep the hoses taut, the sheaves 32 are urged apart by means of a cable 39 extending between the oppositely facing ends of the sheave carriages 37. The cable 39 extends around a rectangular arrangement of pulleys 41 mounted on the framework, while a suitable tension of the cable is maintained by means of a servo-motor arrangement 42, which motor has its piston connected to an adjacent pulley 41' which is slidably mounted upon the framework.

Since the constant pull exerted upon the hoses by the servo-motor 42 acting through cable 39 and sheaves 32 tends to stretch and elongate the hoses, it is desirable to provide some means for taking up any slack which may result in one or more of the hoses due to non-uniform stretching, and whereby the total stress may be uniformly distributed therebetween. As shown in Figure 3, the pipes 28 connected at one end to the header 24, have coupling pipes 45 telescopically arranged therein and which are coupled at their outer ends 46 to corresponding ones of the hoses 29. A suitable packing gland arrangement 47 prevents leakage from between the pipes 28 and 45. The outer end of each pipe 45 is provided with an annular shoulder 48 against which is seated an annular collar 49, which collar is adjustably secured by elongated rods 51 extending through openings in the fixed wall of the anchor structure 25. By adjustment of the nuts 53 on the outer ends of the rods 51, the tension in the various hoses may readily be equalized.

The pressure fluid is conducted from the supply conduit 22 through the plurality of hoses 29 to the header 31 on the nozzle carriage and flows therefrom through the S-shaped pipe or gooseneck 54 to the discharge nozzles 14. Referring particularly to Figures 6, 7, 8 and 9, the gooseneck 54, which may be formed of a plurality of bevel cut pipes of heavy wall section, is closed at the outer end as shown at 55. A pair of outlet pipes 56 communicate with and extend outwardly in diametrically opposed relation from the gooseneck adjacent the closed end 55. The outer end of the outlet pipes are externally threaded and provided with bolting flanges 57 substantially at the terminus of the threads. U-shaped pipes 58 have one end threaded onto the pipe 56 and which ends are, furthermore, provided with longitudinally extending external serrations 59 which are engaged by internal serrations provided in the flange 61 of a ring 62 bolted to the bolting flange 57 on the outlet pipe. The purpose of the serrated flange ring provided over the end of the pipe section 58 is to prevent rotation of the U-

shaped pipe upon the outlet pipe, which might otherwise occur as a result of the reaction created by the fluid being discharged through the nozzle under high pressure. With particular reference to Figure 1, it will be observed that there is an angular relation between the U-shaped pipes and the nozzles mounted thereon in order that the nozzles 14 may be arranged in the same lateral plane.

The opposite end of the U-shaped pipe section 58 is internally threaded and connected to an elbow 63 which is further secured in place by the bolting collar 64. A nozzle adapter 65 threaded onto the end of the elbow 63 has a suitable nozzle 14 mounted in the outer end thereof.

The gooseneck 54 is rigidly secured to the carriage 15, which travels between double tracks 66 and 67. The carriage 15 is a three-wheel triangular shaped structure comprising a longitudinal channel shaped frame member 68, at each end of which are secured double flanged wheels 69 arranged between the tracks 66. A pair of parallel substantially triangular shaped plates 71 and 72 extend from the frame member 68 and are connected by a wheel supporting plate 73 at their apices. The third wheel 74 is secured to the plate 73 and rides between the tracks 67. The lower triangular shaped plate 72 is cut for receiving therethrough a portion of the gooseneck 54 which is suitably welded thereto. The gooseneck is further fixed to the carriage by a triangular shaped, vertically disposed plate 75 which is secured to the face of the frame member 68 and provided with an opening in the lower end thereof for the gooseneck pipe, the two being suitably welded together. Channel shaped braces 76 secured between the gooseneck and the opposite ends of the frame member 68 impart additional rigidity to the structure.

Means are provided for imparting a reciprocating movement to the nozzle carriage upon its supporting tracks. A cable 77 having its ends attached to the opposite sides of the carriage such as to the triangular plate 75, as indicated at 78, extends in opposite directions with respect thereto parallel with the carriage tracks and about a rectangular arrangement of guide wheels including idler pulleys 79, a tension pulley 81 and a driving drum 82. The cable passes a plurality of times about the drum 82 so as to have considerable frictional contact therewith, the drum 82 being adapted to be driven in either direction of rotation by a suitable motor 83 for operating the nozzle carriage between its limit positions. The tension pulley 81 is slidably mounted upon guide shafts 84 and is connected to the piston of a pneumatic or hydraulic cylinder 85 which, similar to cylinder 42, exerts a constant pull upon the tension pulley 81 so as to keep the cable 77 tight at all times. Suitable pneumatic buffer cylinders 87 mounted upon the apparatus framework have outwardly extending pistons arranged in the path of the carriage travel and are adapted to be engaged thereby to bring the carriage to rest at the end of movement in either direction.

With the nozzle carriage driven by motor 83 through the cable 77 as described, it will be obvious that the hose supporting sheaves 32 will follow the movement of the nozzle carriage. By virtue of the cable connection shown between the opposite sides of the sheave carriages 37 and the tensioning cylinder 42, the hoses will be kept taut throughout the movement of the nozzle carriage 15, and, since the sheaves may be of a suitable relatively large diameter, sharp bending or

kinking of the hoses upon reciprocation of the nozzle carriage is positively precluded.

The length of travel of the nozzle carriage 15 is somewhat greater than the maximum length of the log to be barked thereby. With reference to Figure 2, the opposite limit positions of the nozzle carriage are indicated by dotted lines at 88 and 89, respectively. These limit positions are occupied by the nozzle carriage during the period of time within which the log is turned upon the supporting structure to position it in readiness for the next pass of the hydraulic jets. Depending, of course, upon the efficiency of the particular type of log turning means employed, the turning operation may be effected within the short space of time that it takes for the nozzle carriage to be brought to rest in one or the other of its opposite limit positions and accelerated in the opposite direction.

It is obviously impractical to provide valve means for shutting off the water supply, upon the nozzle carriage reaching the opposite ends of the log, for the duration of time required for reversing the direction of travel thereof. On the other hand, the jets of high pressure fluid issuing from the nozzles during this interim constitute a definite hazard unless properly shielded. As shown in Figure 2, suitable shields 91 and 92 are provided at the opposite ends of the log 11 and are suitably anchored to the apparatus framework, which shields extend over the nozzle carriage in the opposite end zones of its path of travel. Such shields intercept the jets of water and direct it downwardly to a place of disposal.

The high velocity jets of water issuing from the nozzles 14 and impinging against the surface of the log, for scouring the bark therefrom will result in the scattering of debris over a considerable area. In order to prevent this flying debris, or accumulations thereof, from injuring or impairing the normal operation of the nozzle carriage and various apparatus associated therewith, suitable baffle means are provided and which are made possible by virtue of the particular carriage design shown including the gooseneck feed pipe 54 between the header 31 and the nozzles 14. Referring particularly to Figure 1, it will be observed that a baffle plate 93 depends downwardly from the upper wall 94 of the carriage housing into the upwardly facing elbow of the gooseneck 54. The front wall 95 of the carriage housing is provided with an upper inclined portion 96 which extends upwardly into the downwardly facing elbow of the gooseneck 54 to a point substantially even with the lowermost edge of the baffle 93. The gooseneck thus extends downwardly through the horizontal slot provided between the baffle 93 and the inclined wall portion 96 through which slot little or no debris falling downwardly from the log 10 will pass. It is to be understood that suitable end and rear walls may be provided for completing the enclosure for the nozzle carriage and other apparatus associated therewith as may be required.

In operation, a log having been positioned upon the foremost ends of the bracket arms 16, the stops 17 are adjusted to cause a longitudinal strip portion 12 of the underneath surface of the log to overhang the ends of the bracket arms 16 in a plane substantially parallel with the tracks 66 and 67. As the log is rotated, each successive longitudinal strip portion of the log surface is caused to lie in substantially the same position and direction relative to the jet nozzle. The nozzle carriage 15 is supported upon the tracks

66 and 67 for reciprocal movement longitudinally of the log and in a plane substantially parallel with the overhanging longitudinal strip portion of the log surface.

The motor 83 being energized to drive the drum 82 in successively opposite directions of rotation, the nozzle carriage is moved longitudinally of the log, first to one end zone 88 and then to the other end zone 89, as reciprocal movement is imparted thereto. Thereupon water is supplied under a relatively high pressure from a pump (not shown) and is delivered by the nozzles in the form of a jet directed at the surface of the log in a direction perpendicular thereto. The conformation of the jet is such, and the pressure of the water sufficient, to effect removal of the bark from the overhanging longitudinal strip portion of the log.

As has been stated, the length of travel of the nozzle carriage 15 is somewhat greater than the maximum length of a log to be barked, and during the short space of time that the nozzle carriage occupies either of the end zones the log is rotated upon the bracket arms 16 to cause a successive longitudinal strip portion of the log surface to overhang the ends of the bracket arms. By alternately passing the nozzle arrangement longitudinally of the log and rotating the log upon its support through predetermined angular increments, according to the width of the strip of bark removed by each pass of the nozzles, the entire surface of the log is thoroughly cleaned of bark.

Having described the principle of the invention in what is considered to be a preferred embodiment thereof, it is desired that it be understood that while the invention has been described in considerable detail, such details are only for purposes of description and are not intended by way of limitation, since, obviously, many changes may be made therein without departing from the true spirit and scope of the invention.

We claim:

1. A hydraulic log barking apparatus comprising means for stationarily supporting a log in a generally horizontal position, a nozzle for directing a jet of water against the surface of the log for effecting removal of bark therefrom, a carriage for supporting said nozzle, a source of water under pressure, a flexible conduit connecting said nozzle to said source, means for moving said nozzle carriage longitudinally of the log, means for supporting said conduit between said carriage and the connection to said source, and means for moving said conduit supporting means simultaneously with said carriage to prevent kinking of said conduit.

2. A hydraulic log barking apparatus comprising means for supporting a log in a generally horizontal position, a nozzle for directing a jet of water against the surface of the log for effecting removal of bark therefrom, a carriage for supporting said nozzle, means for moving said carriage longitudinally of the log and substantially parallel with the surface thereof next adjacent said nozzle, a source of water under pressure, a flexible conduit connecting said nozzle to said source, a sheave for engaging said conduit between said nozzle and the connection thereof to said source, and means for moving said sheave simultaneously with movement of said carriage so as to maintain said flexible conduit taut.

3. A hydraulic log barking apparatus comprising means for supporting a log in a generally horizontal position, a nozzle for directing a jet of water against the surface of the log for effect-

ing removal of bark therefrom, a carriage for supporting said nozzle, said carriage being movable longitudinally of the log, means guiding the movement of said nozzle carriage substantially parallel with the surface of the log next adjacent the end of said nozzle, a header supplied with water under pressure, a pair of oppositely looped flexible conduits connected between said header and said nozzle, the loops of said conduits extending in the direction of carriage movement, sheaves supporting said conduits between said header and said nozzle, tracks supporting said sheaves for movement in the same direction simultaneously with the movement of said carriage, and means connecting said sheaves for maintaining said conduits taut.

4. A hydraulic log barking apparatus comprising means for supporting a log in a generally horizontal position, a nozzle for directing a jet of water under high pressure against the surface of the log for effecting removal of bark therefrom, a carriage for supporting said nozzle, means for moving said carriage longitudinally of the log, the length of travel of said carriage being somewhat greater than the length of said log, and means adjacent the opposite ends of the log on said support for intercepting the jet of water from said nozzle as said carriage is moved beyond the respective ends of said log and for directing the water to a place of disposal.

5. A hydraulic log barking apparatus comprising a nozzle carriage, tracks for supporting said carriage, means for moving said carriage on said tracks, fixed conduit means for supplying high pressure fluid, a plurality of flexible conduits connecting said fixed conduit means and said carriage, sheave means supporting said flexible conduits, a cable connected to said sheave means, tension means operating on said cable to keep said flexible conduits taut, and means for equalizing stress in said flexible conduits.

6. In a hydraulic log barking apparatus, a log supporting mechanism for engaging the underneath surface of a log, said mechanism being terminated adjacent the point of bearing contact with the log so as to expose a continuous lower longitudinal strip portion of the log surface, nozzle means directed at said log in a direction substantially perpendicular to the surface of the log, a nozzle carriage, means affixed to said carriage and to said nozzle for supporting said nozzle, track means for supporting said carriage for movement longitudinally of the log and substantially parallel with said continuous lower longitudinal strip portion of the log surface, means for effecting reciprocal movement of said carriage on said track means, and conduit means connecting said nozzle to a source of water under pressure.

7. In a hydraulic log barking apparatus, means for so supporting a log in a substantially horizontal position as to expose a continuous longitudinal strip portion of the log surface to the action of a hydraulic jet, nozzle means directed at said log in a direction substantially perpendicular to the surface of the log, a nozzle carriage, means affixed to said carriage and said nozzle for supporting said nozzle, means for supporting said carriage for reciprocal movement longitudinally of the log and substantially parallel with said continuous longitudinal strip portion of the log surface, means for effecting reciprocal movement of said carriage longitudinally of said log, a source of water under pressure,

conduit means connecting said source to said nozzle means, and means for supporting said conduit means for movement in the same direction simultaneously with the movement of said carriage.

8. In a hydraulic log barking apparatus, means for so supporting a log in a substantially horizontal position as to expose a continuous longitudinal strip portion of the log surface, nozzle means directed at said log in a direction substantially perpendicular to the surface of the log, a nozzle carriage, means affixed to said carriage and said nozzle for supporting said nozzle, means for supporting said carriage for reciprocal movement longitudinally of the log and substantially parallel with said continuous longitudinal strip portion of the log surface, means for effecting reciprocal movement of said carriage longitudinally of said log, a source of water under pressure, and conduit means connecting said nozzle to said source.

9. In a hydraulic log barking apparatus, a nozzle carriage, tracks for supporting said carriage, means for imparting reciprocal movement to said carriage along said tracks, fixed conduit means for supplying high pressure fluid, a plurality of flexible conduits connecting said fixed conduit means and said nozzle carriage, means for supporting said flexible conduits for movement in the same direction simultaneously with the movement of said carriage, and means for applying tension to said plurality of flexible conduits throughout movement of said carriage.

10. In a hydraulic log barking apparatus, means for supporting a log in a generally horizontal position, a nozzle carriage, means for supporting said carriage for movement longitudinally of the log and substantially parallel with the surface thereof next adjacent said carriage, fixed conduit means for supplying water under pressure, a plurality of flexible conduits connecting said fixed conduit means and said nozzle carriage and having looped sections between their fixed ends and said carriage, sheaves supporting the looped sections of said conduits, means for urging said sheaves apart to keep said conduits taut, and means for moving said sheaves coincidentally with movement of the nozzle carriage.

11. A hydraulic log barking apparatus comprising a hose anchoring structure including a header, means for supplying water under pressure to said header, a plurality of distributor pipes communicating with said header, coupling pipes telescopically engaging said distributor pipes, a nozzle carriage, a header on said carriage, a plurality of flexible conduits connecting said coupling pipes and the header on said carriage, and means for adjusting the over all length of said pipes to compensate for nonuniform stretching of said conduits.

12. In a hydraulic log barking apparatus, means for supporting a log in a generally horizontal position, a nozzle for directing a jet of water against the surface of the log for effecting removal of bark therefrom, a carriage for supporting said nozzle, means on said carriage fixedly supporting said nozzle in position for directing said jet of water at said log in a direction substantially perpendicular to the surface of the log, a trackway for supporting said carriage for reciprocal movement longitudinally of the log and substantially parallel with a continuous longitudinal strip portion of the log surface, the ends of said trackway extending beyond

the opposite ends of said log and providing limit positions occupied by said nozzle after each run of the carriage, means for turning said log during each time said nozzle occupies one of said limit positions for presenting successive longitudinal strip portions of the log surface to the action of said jet, and means extending over the nozzle carriage in the opposite end zones of its path of travel for intercepting the jet of water and directing the water downwardly to a place of disposal.

13. In a hydraulic log barking apparatus, means for so supporting a log that a continuous longitudinal strip portion of the log surface lies in a predetermined position relative to the path of movement of a nozzle arrangement, a nozzle for directing a jet of water in a direction substantially perpendicular to the surface of the log, a nozzle carriage, means affixed to said nozzle and to said carriage for supporting said nozzle, means for rotating the log on the support for exposing successive longitudinal strip portions of the log surface to the action of said jet, tracks supporting said carriage for movement longitudinally of the log and substantially parallel with said continuous longitudinal strip portion of the log surface, conduit means connecting said nozzle to a source of water under pressure, means for imparting reciprocal movement to said carriage longitudinally of the log, and means adapted to follow movement of the nozzle carriage for supporting the conduits between said source and the nozzle carriage.

14. A hydraulic log barking apparatus comprising means for supporting a log in a generally horizontal position, nozzle means directed at said log in a direction substantially perpendicular to the surface of the log, a nozzle carriage, a gooseneck shaped conduit affixed to said nozzle means and to said carriage for supporting said nozzle

means, track means supporting said carriage for movement longitudinally of a log on said support, a wall between said log supporting means and said track means, means defining an opening through said wall parallel to and coextensive with said track means, said gooseneck shaped conduit extending through said opening for positioning said nozzle adjacent a log on said support.

15. A hydraulic log barking apparatus comprising means for supporting a log in a generally horizontal position, nozzle means directed at said log in a direction substantially perpendicular to the surface of the log, a nozzle carriage, means affixed to said nozzle means and to said carriage for supporting said nozzle means, means for effecting relative movement between said nozzle means and the surface of said log in directions substantially parallel with the longitudinal axis of said log, and conduit means connecting said nozzle means with a source of water under pressure.

16. A hydraulic log barking apparatus comprising means for supporting a log in a generally horizontal position, nozzle means directed at said log in a direction substantially perpendicular to the surface of the log, a nozzle mounting, means affixed to said nozzle means and to said mounting for supporting said nozzle means, means for effecting relative movement between said nozzle and the surface of said log in directions substantially parallel with the longitudinal axis of said log, means for rotating said log for exposing successive longitudinal strip portions of the log surface to the action of a jet of water issuing from said nozzle, and conduit means connecting said nozzle with a source of water under pressure.

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