United States Patent [19]

Howell

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[54] **RADIO CONTROLLED SKYLINE SKIDDER**

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[52] **U.S. Cl.** **212/7,** 212/87, 212/125, 214/85.5

[51] **Int. Cl.** **B66c 17/06**

[58] **Field of Search** 212/87, 81, 84, 89, 7, 212/76, 77, 124, 125, 127, 91–97; 214/92, 94, 394, 396, 85.5, 3; 104/112

[56] **References Cited**

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[57] **ABSTRACT**

A log skidder employed in a cable logging operation which utilizes a skyline with the skidder including supporting assemblies engaged with the skyline for movement of the skidder on the skyline in the same manner as a carriage is moved on the skyline. The skidder is moved along the skyline and is in the form of a self-contained vehicle having a radio controlled winch thereon for skidding logs to a position adjacent the skyline from a position remote from the skyline thus, in effect, windrowing the logs so that the logs can be more efficiently carried by a carriage with a grapple thereon to the yarding or landing area.

6 Claims, 5 Drawing Figures

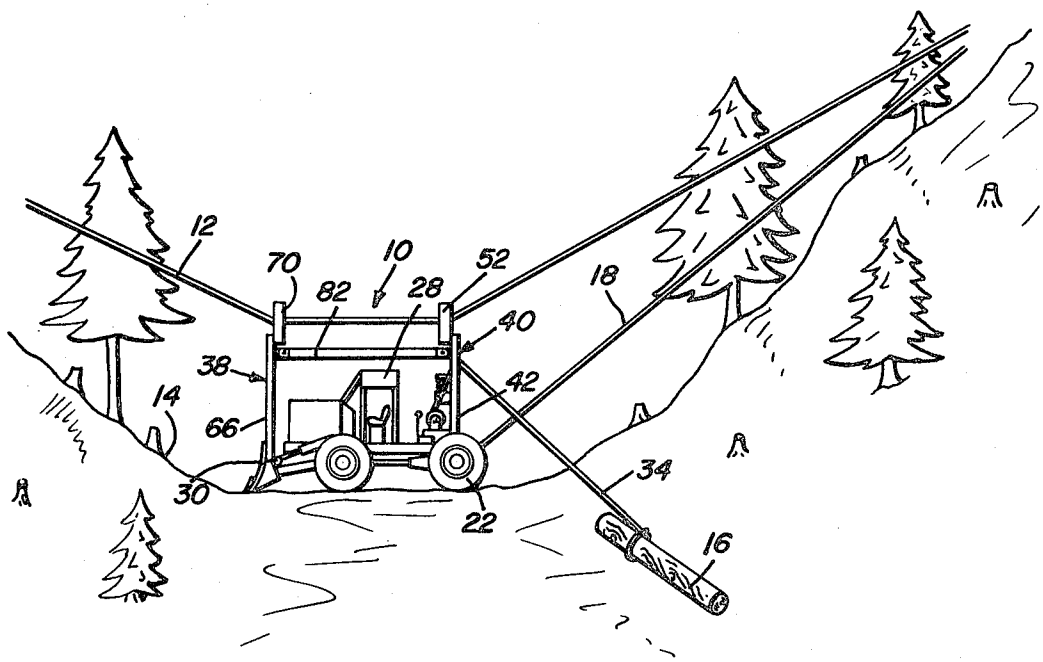


FIG. 1

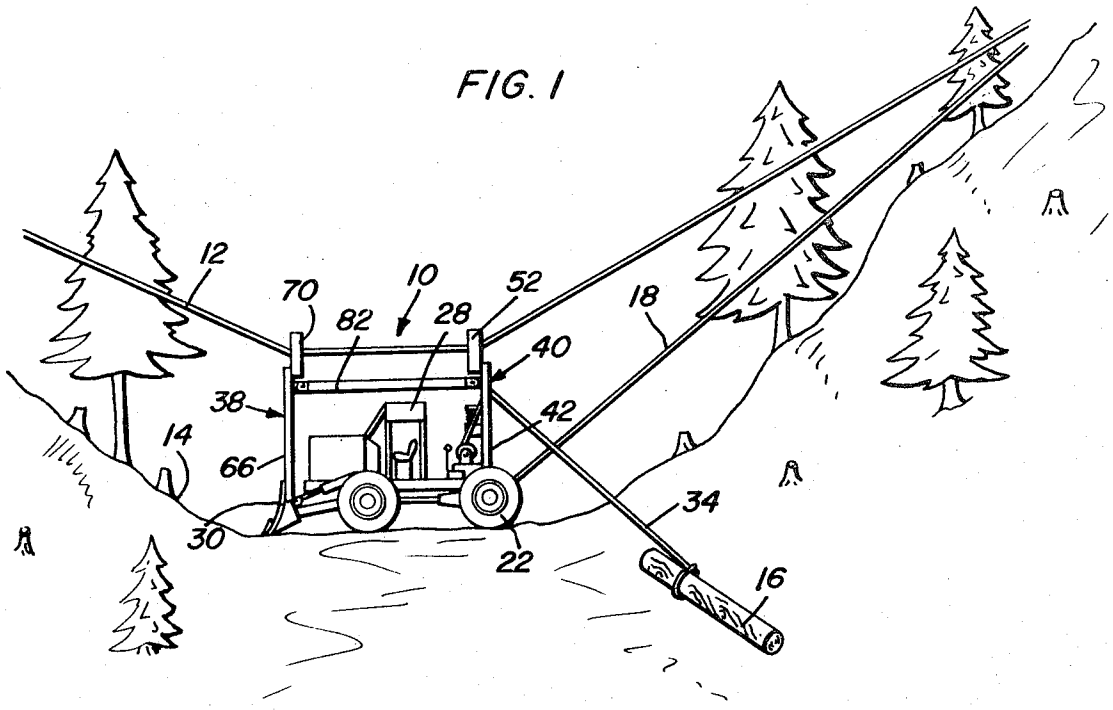

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FIG. 3

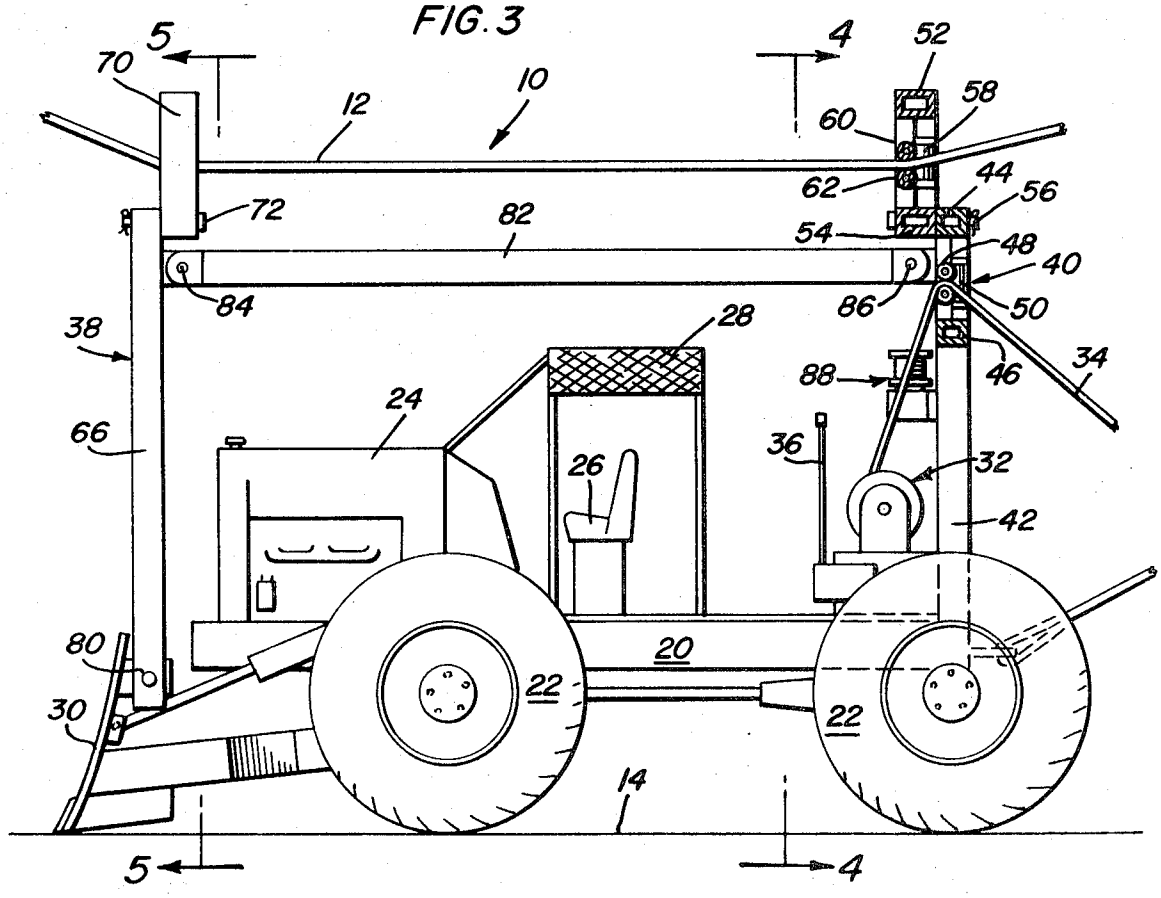

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FIG. 2

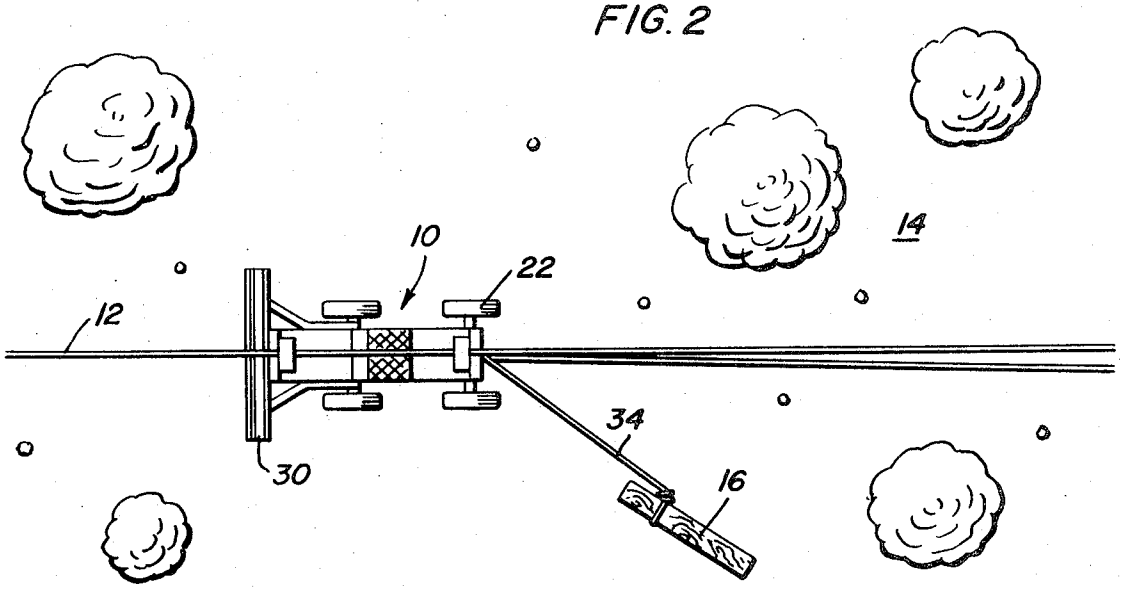


FIG. 5

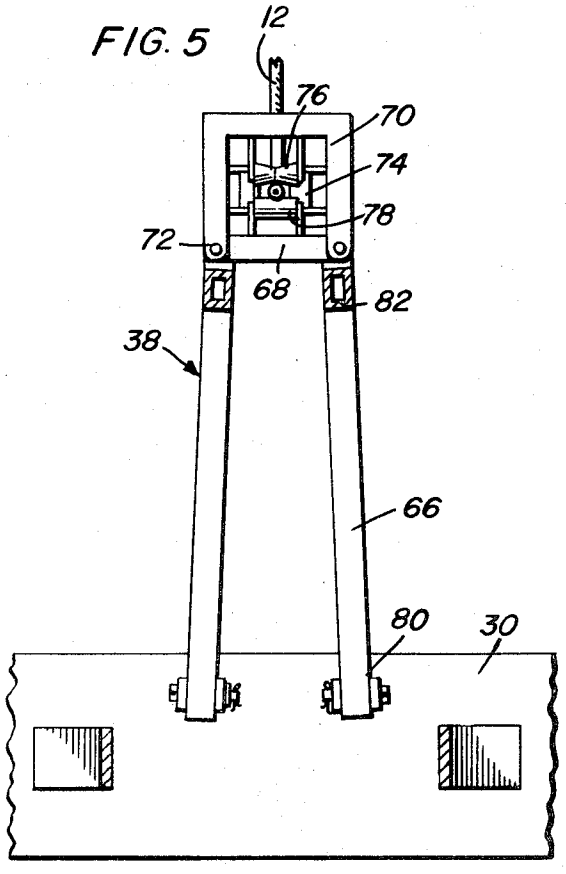
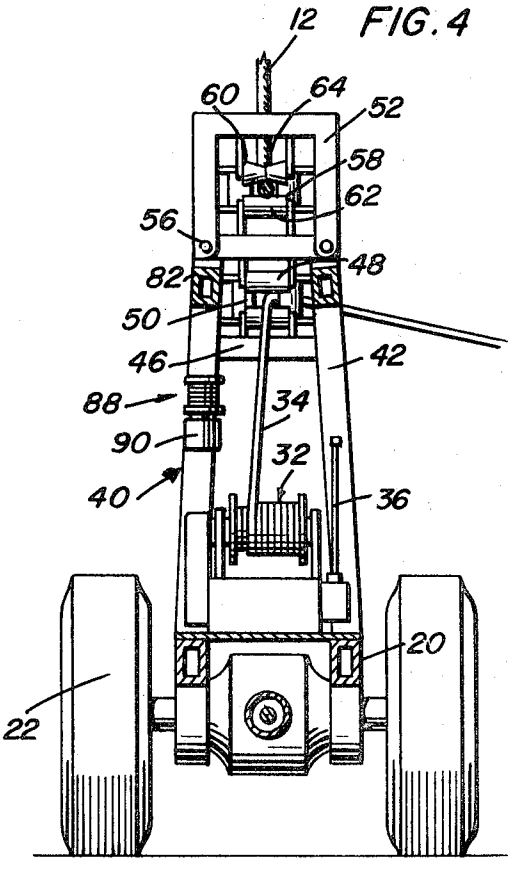


FIG. 4



RADIO CONTROLLED SKYLINE SKIDDER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention generally relates to improvements in a logging operation and more particularly a skidder in the form of a vehicle having facilities incorporated thereon for supporting engagement with a skyline for movement to a desired location by using the skyline to enable logs to be windrowed generally in adjacent relation to the skyline.

2. Description of the Prior Art

Cable logging operations are generally well known in the logging industry. Prior U.S. Pat. No. 3,083,839 issued Apr. 2, 1963, describes various logging operations including the type having a skyline that traverses the area to be logged and is supported from a yarder or loader at one end and a spar, stump or other suitable anchor point at the opposite end in which a carriage moves along the skyline by the use of a snubber cable. In present operations and as disclosed in the above-mentioned patent, various arrangements are provided on the carriage for grasping or otherwise supporting a turn of logs for movement to the yarding area or landing adjacent the yarder. In some instances, grapples are supported from the carriage for engagement with the logs. In other instances, the snubber cable can be used to skid the logs from a remote point or a separate cable and winch mounted on the carriage may be used to skid the logs from a remote point and also support the logs while they are being carried to the landing. In many instances, the operative apparatus on the carriage is radio controlled and the cost of present day arrangements is relatively high.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a skyline skidder in the form of a self-contained vehicle having structural features incorporated thereon to enable a skyline to be engaged therewith so that the skidder can be moved along the skyline by a snubber cable substantially in the same manner as a carriage is moved along the skyline with the vehicle being positioned in contact with the ground surface by slackening of the skyline and being tied down by guy wires, lines or the like connected to an electrically operated winch or any other suitable winch with the skidder also including a radio controlled winch for skidding logs from a remote location to a location adjacent to the skyline thereby windrowing the logs to enable easy access thereto so that the logs may be carried to the landing by a carriage having a gravity operated grapple or the like thereon thereby enabling a relatively inexpensive structure to be employed to carry the logs to the landing and enabling the skidder, which is normally employed in a yarding operation, to be employed for windrowing the logs.

A further object of the invention is to provide a skyline skidder in the form of a vehicle having forward and rearward towers thereon each of which is provided with a guide and supporting device which removably receives the skyline to enable the skidder to be assembled in relation to the skyline and released therefrom in an efficient manner.

Still another important object of the invention is to provide a skyline skidder which materially reduces the overall cost of a cable logging operation by enabling the logs to be skidded or windrowed by the use of a separate winch mechanism thereby enabling the remainder of the rigging of the operation to be relatively light weight inasmuch as the major forces encountered during a logging operation occur during the skidding or windrowing operation so that only the radio controlled winch mechanism will require a relatively heavy cable.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic elevational view illustrating a skyline logging operation with the skyline skidder of the present invention incorporated therein.

FIG. 2 is a top plan view of the arrangement of FIG. 1 illustrating the manner in which logs are windrowed by the skyline skidder of the present invention.

FIG. 3 is a side elevational view of the skyline skidder. FIG. 4 is a vertical sectional view taken substantially upon a plane passing along section line 4—4 of FIG. 3 illustrating the rear tower assembly on the skyline skidder.

FIG. 5 is a vertical sectional view taken substantially upon a plane passing along section line 5—5 of FIG. 3 illustrating the structure of the front tower on the skyline skidder.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now specifically to the drawings, the skyline skidder of the present invention is generally designated by numeral 10 and is illustrated in association with a skyline 12 which extends through or traverses the uneven terrain 14 from which logs 16 are to be removed in a logging operation. The specific construction of the skyline cable and the yarder and other associated equipment with the skyline is not disclosed since this is well known. The skyline 12 may be tightened or slackened in a well known manner and the skidder 10 may be moved along the skyline 12 by utilizing a snubber cable or in-haul cable 18 which is also operated in a conventional manner to move the skidder along the skyline when desired. In some instances, it may also be necessary to use an out-haul cable to move the skidder outwardly from the landing. However, for purposes of the present disclosure, the logging operation is considered to be an uphill operation thus requiring only the use of the snubber cable 18.

The skidder 10 is in the form of a self-contained vehicle of substantially conventional construction and which includes the usual frame 20 supporting, driving and steerable wheels 22, an internal combustion engine 24 for supplying power, a seat 26 for an operator associated with controls for the vehicle, a protective cage or enclosure 28 for the operator, and a bulldozer blade 30 on the forward end thereof. The vehicle is in the form of a skidder or tractor which may be of the wheeled type or the endless track type and the specific structural details thereof are not significant to the present invention. Also, the skidder includes a radio controlled winch assembly 32 having a skidding or win-

drowing cable 34 connected thereto and including an antenna 36 for a receiver on the winch assembly which is controlled by a transmitter carried by a person connecting the cable 34 to the logs 16 by using choker cables, tongs or the like so that operation of the winch assembly 32 is remotely controlled by the person connecting the cable 34 to the logs 16. The winch assembly can also be manually controlled at the skidder in a well known manner.

Attached to the vehicle is a front tower 38 and a rear tower 40. The rear tower 40 includes a pair of upwardly converging frame members 42 rigidly affixed to the frame 20 in any suitable manner and oriented rearwardly of the radio controlled winch assembly 32. The upper ends of the members 42 are interconnected by a cross member 44 at the top end thereof and a transverse member 46 spaced downwardly therefrom. Supported from the cross member 44 and the cross member 46 are horizontally disposed rollers 48 and supported from the members 42 are vertically disposed rollers 50 disposed in overlapping relation to each other to provide a guide roller assembly for the cable 34 so that as the cable leaves the winch assembly 32, it extends upwardly through the guide rollers 48 and 50 so that the cable 34 may be oriented in substantially any angular direction to the skidder and still effectively enable the logs to be skidded or windrowed.

Attached to the upper end of the tower 40 is an inverted U-shaped frame 52 having the lower ends of the legs thereof removably connected to a crosspiece 54 rigid with and fixed to the crosspiece 44 by the use of removable pins, bolts or the like 56. The vertical legs of the U-shaped member 52 have vertical rollers 58 mounted thereon and the top crosspiece of the U-shaped member 52 has a horizontal roller 60 thereon and the cross member 54 has a horizontal roller 62 thereon with the rollers being overlapping in relationship for forming a roller guide for the skyline 12. By removing one or both of the pins 56, the guide assembly which receives the skyline 12 may be disconnected to enable the tower and thus the skidder to be connected to or disconnected from the skyline 12. The top roller 60 has the center 64 thereof of smaller diameter thus forming a double tapered roller to guide the skyline towards the center of the roller thereby maintaining a self-centering relationship for the skyline and the guide assembly inasmuch as the skyline when tensioned will normally be disposed in the center of the top roller 60. The specific shape and configuration of the structural components may vary and various connecting devices may be employed for enabling disconnection of the components. For example, only one side wall of the frame 52 may be removable or the top wall and top roller may be removable or pivotal with the structural components being of channel-shaped configuration, angle iron configuration or the like.

The front tower 38 includes upwardly extending and converging members 66 interconnected by a pair of rigid top members 68 comparable to the members 44 and 54 in a rear tower. A U-shaped frame 70 is disposed in inverted position on the tower and detachably connected thereto by bolts or pins 72. Vertical rollers 74 are supported on the vertical members of the frame 70 while a horizontal roller of the double tapered type 76 is supported on the top member of the frame 70 and a horizontal roller 78 is supported on the member 68 for forming a guide assembly for the skyline 12. Removal of the pins or bolts 72 enables the skyline to be inserted into the guide assembly or removed therefrom thereby enabling the skidder 10 to be connected to the skyline and moved along the skyline 12 by appropriate manipulation of the snubber cable 18. The lower ends of the members 66 of the front tower 38 are connected with the blade 30 by suitable bracket and fastening structure 80 which includes a pivotal connection so that the blade 30 may be raised and lowered or manipulated in any desired manner without necessarily disconnecting the front tower 38 therefrom. The front and rear towers are interconnected by connector bars 82 pivotally connected to the members 66 by pivot pins 84 and pivotally connected to the members 42 by pivot pins 86 which may be in the form of removable bolts or the like. Thus, the bulldozer blade 30 on the skidder may be employed without disconnecting the tower 38 therefrom but the brace bars 82 will retain the towers in properly spaced and associated relation during use of the skyline skidder.

Also attached to the rear tower 40 is a tie-down winch assembly generally designated by numeral 88 which is electrically operated by a suitable electric motor 90 and enables the skidder to be anchored in place by the use of guy lines or the like which may also extend through the roller guide assembly for the cable 34 and be anchored in any position to a stump, tree or the like so that the skidder will not be moved during the skidding or logging operation. Various bracing may be employed as desired and the vertical orientation of the tie-down winch enables the guy wire or guy wires to extend in either direction laterally of the skidder.

The skidder 10 is connected with and rides on or moves along the skyline with the specific structure of the skidder being variable although it is desired to employ the skidder that would normally be employed in a logging operation thereby eliminating the necessity of purchasing an expensive carriage. Connecting the skidder to the skyline enables it to be let down through steep terrain or traverse substantially any type of terrain and is especially useful in thinning timber with it being effective for pulling logs from remote points on both sides of the skyline into a substantially straight row along the skyline. The skidder is then disconnected from the skyline and the yarder pulls the logs to the landing in a conventional manner, such as with a small gravity carriage. This eliminates the necessity of purchasing a costly radio controlled skyline carriage and enables more effective logging operations to be conducted where the size of the tract or the expected production does not justify such a large expenditure.

The present invention may be incorporated into any existing skidder or any new skidder with their conventional arch either retained or removed. Also, the snubber line may be connected to either end of the skidder for desired movement. Further, the skidder can assist in its own movement by employing a radio controlled automatic transmission and a steering arrangement which is also radio controlled to facilitate movement of the skidder in areas in which an operator on the skidder would be in danger.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and

equivalents may be resorted to, falling within the scope of the invention.

What is claimed as new is as follows:

1. A skidder for use with a skyline cable and snubber cable usable to move the skidder over rough terrain, said skidder comprising a vehicle having front and rear towers and a powered winch for reeling and unreeling a logging cable by which logs may be pulled from a point remote from the vehicle to a point adjacent said vehicle, means on the towers for releasably attaching the vehicle to a skyline cable so that said vehicle may be so positioned and oriented on a rough terrain to facilitate log movement from a tree cutting or felling area to a landing or yarding area, each of said towers including roller guide means for receiving a skyline cable, a portion of said roller guide means being detachable to provide an entranceway and exitway for mouting the towers onto a skyline cable, said tower on the rear of the vehicle including a roller guide assembly for a cable connected with a power winch to enable the cable to be utilized for pulling logs in substantially any lateral direction from the vehicle, the rear tower including a tie-down winch having a guy line connected therewith for anchoring the skidder in a direction opposite to the forces exerted on the skidder by pulling logs.

2. The structure as defined in claim 1 wherein said winch for pulling logs is radio controlled.

3. The structure as defined in claim 2 wherein the roller guide means each include a top roller having a smaller center diameter thus forming double tapered rollers engaging the skyline cable whereby the skyline cable will be centered therein.

4. The structure as defined in claim 3 wherein the tower at the front of the vehicle is supported from a bulldozer blade, and longitudinally extending connecting bars interconnecting the front and rear towers with a pivotal connection thereby enabling the blade to be altered in position without disconnecting the front tower therefrom.

5. A skidder for use with a skyline cable and snubber cable usable to move the skidder over rough terrain, said skidder comprising a vehicle having front and rear towers and a powered winch for reeling and unreeling a logging cable by which logs may be pulled from a point remote from the vehicle to a point adjacent said vehicle, means on the towers for releasably attaching the vehicle to a skyline cable so that said vehicle may be positioned and oriented on a rough terrain to facilitate log movement from a tree cutting or felling area to a landing or yarding area, each of said towers including roller guide means for receiving a skyline cable, a portion of said roller guide means being detachable to provide an entranceway and exitway for mounting the towers onto a skyline cable, the tower at the front of the vehicle being supported from a bulldozer blade, and longitudinally extending connecting bars interconnecting the front and rear towers with a pivotal connection thereby enabling the blade to be altered in position without disconnecting the front tower therefrom.

6. A skidder for use with a skyline cable and snubber cable usable to move the skidder over rough terrain, said skidder comprising a vehicle having front and rear towers and a powered winch for reeling and unreeling a logging cable by which logs may be pulled from a point remote from the vehicle to a point adjacent said vehicle, means on the towers for releasably attaching the vehicle to a skyline cable so that said vehicle may be so positioned and oriented on a rough terrain to facilitate log movement from a tree cutting or felling area to a landing or yarding area, each of said towers including roller guide means for receiving a skyline cable, a portion of said roller guide means being detachable to provide an entranceway and exitway for mounting the towers onto a skyline, said rear tower including further winch means and said front tower further including a bulldozer blade alterable in various positions in front of said front tower.

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