

1,359,296.

W. VAN INMAN.
TRACTOR.

APPLICATION FILED JAN. 17, 1920.

Patented Nov. 16, 1920.

4 SHEETS—SHEET 1.

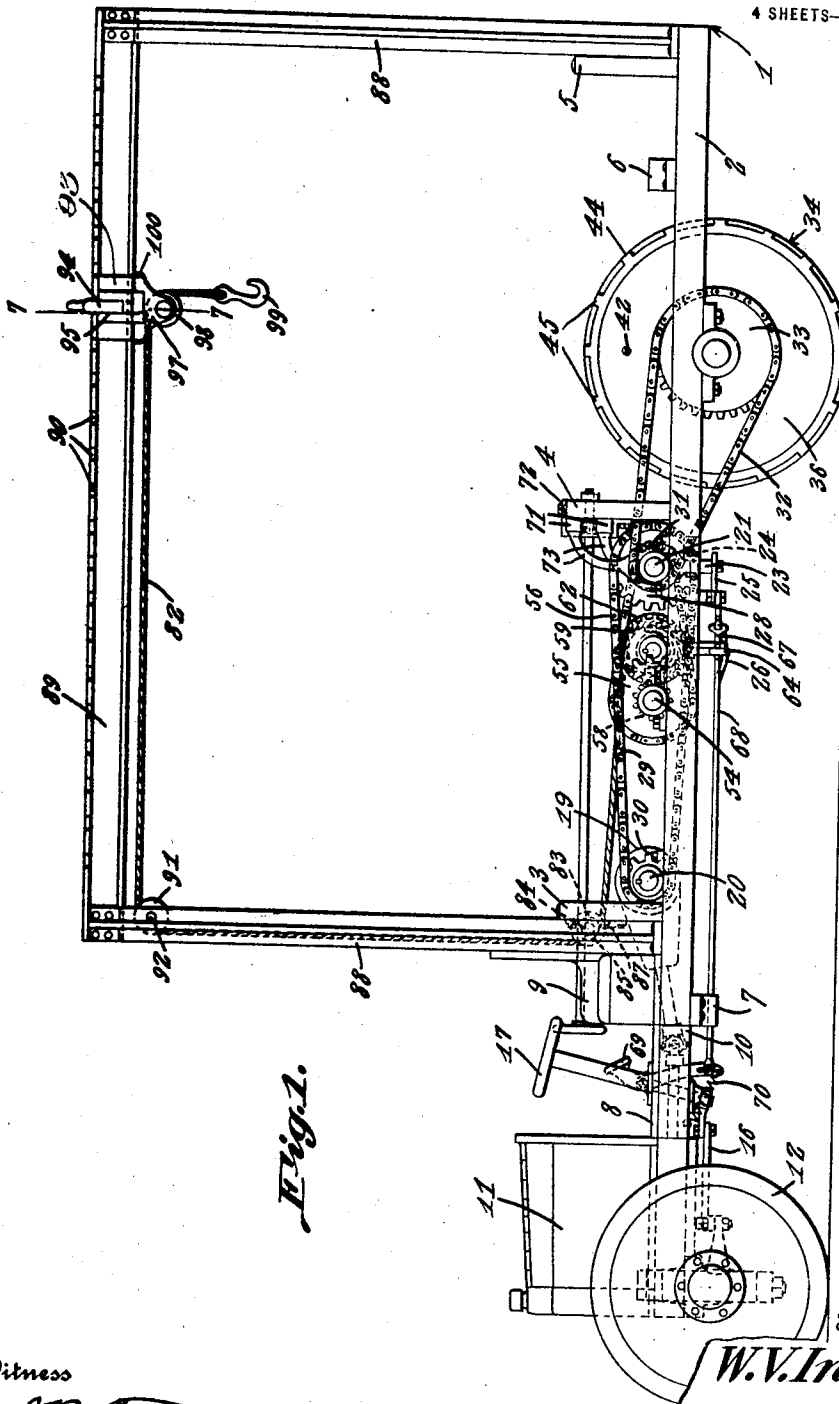


Fig. 1.

Witness

J. R. Inman

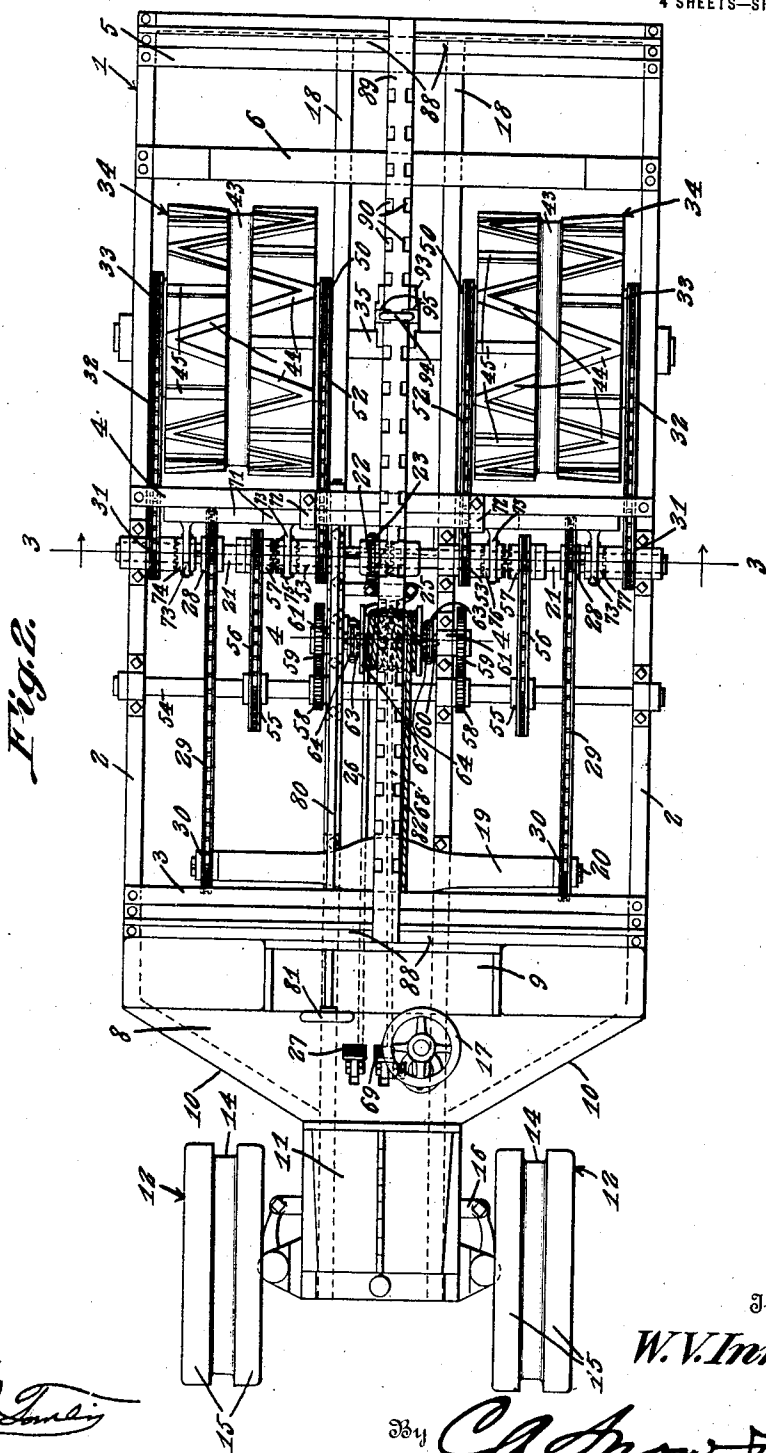
Inventor

W. V. Inman,

By

C. A. Snow

Attorneys



Witness

J. R. [Signature]

Inventor

W. V. Inman,

By

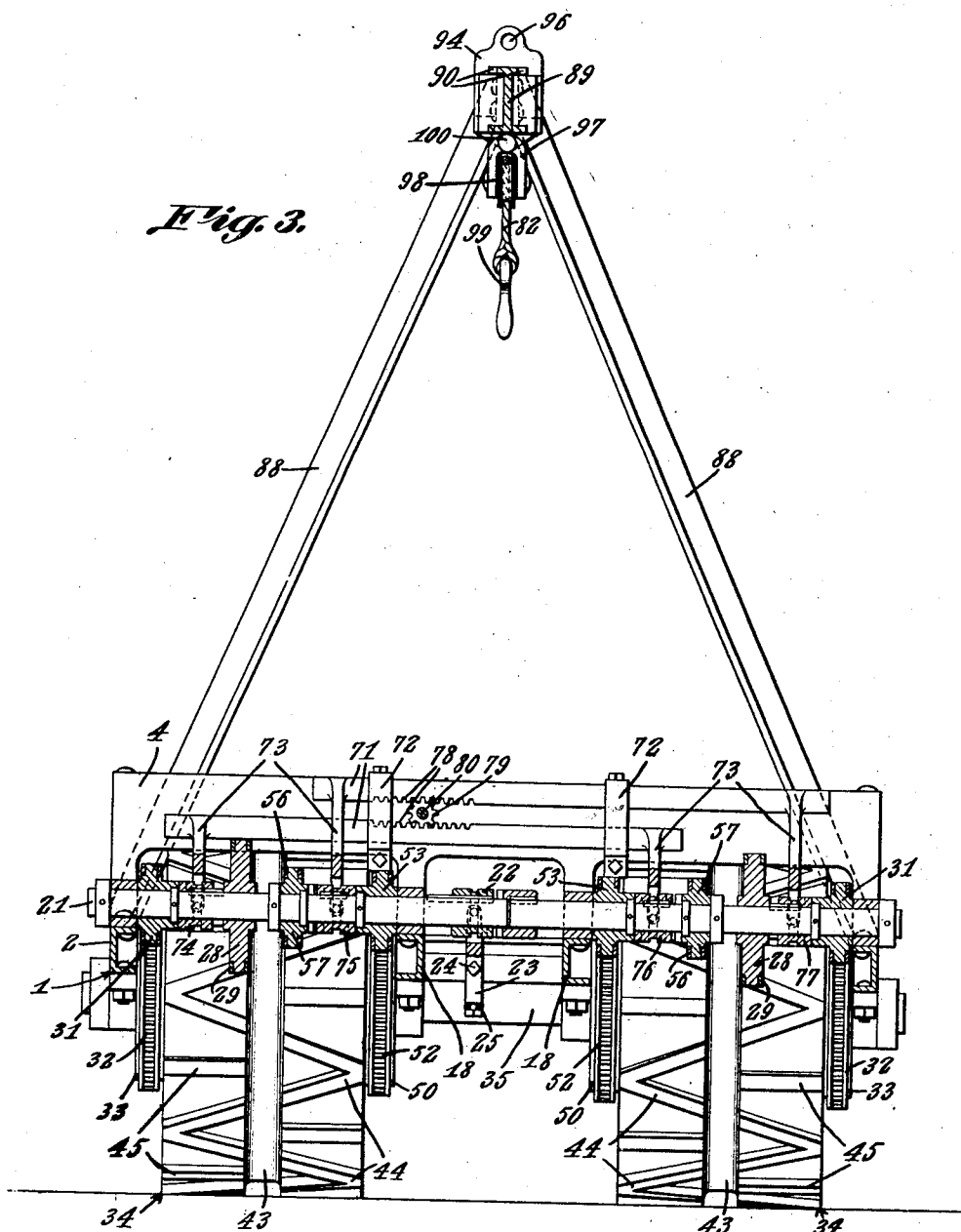
C. A. Snow & Co.

Attorneys

1,359,296.

W. VAN INMAN.
TRACTOR.
APPLICATION FILED JAN. 17, 1920.

Patented Nov. 16, 1920.
4 SHEETS—SHEET 3.



Witness

J. R. Inman

Inventor
W. V. Inman,

By

C. A. Snow & Co.
Attorneys

1,359,296.

Patented Nov. 16, 1920.
4 SHEETS—SHEET 4.

Fig. 4.

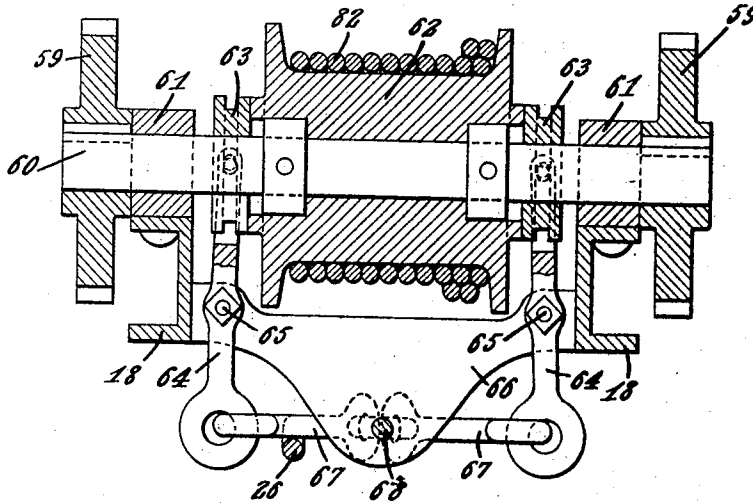


Fig. 5.

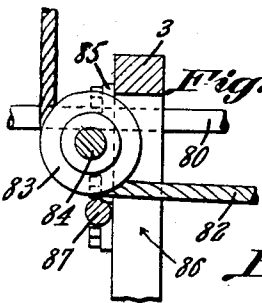
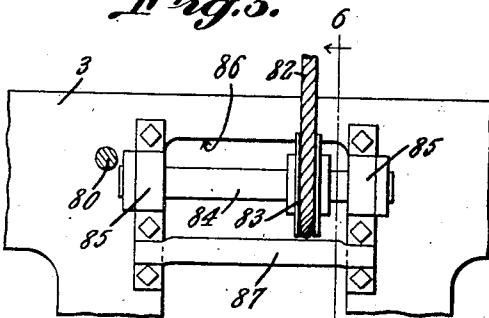


Fig. 6.

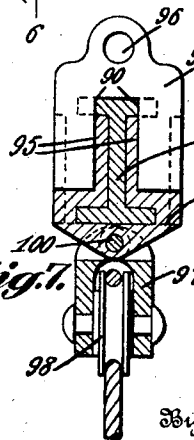
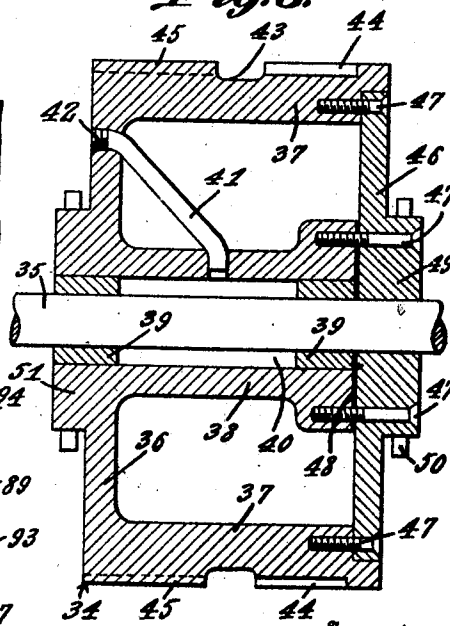


Fig. 7.

Fig. 8.



Witness

J. R. Smith

Inventor
W. V. Inman,

C. A. Snow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

WALTER VAN INMAN, OF RIDGLEY, TENNESSEE.

TRACTOR.

1,359,296.

(Specification of Letters Patent.

Patented Nov. 16, 1920.

Application filed January 17, 1920. Serial No. 351,993.

To all whom it may concern:

Be it known that I, WALTER VAN INMAN, a citizen of the United States, residing at Ridgley, in the county of Lake and State of Tennessee, have invented a new and useful Tractor, of which the following is a specification.

The device forming the subject matter of this invention is a tractor, adapted peculiarly but not exclusively to be used in the forest, for handling timber.

One object of the invention is to provide a novel form of vehicle propulsion.

Another object of the invention is to provide novel means whereby a winding drum may be operated, at the will of an operator.

A further object of the invention is to improve the construction of the traction wheel.

Another object of the invention is to improve the means whereby the traction wheel is lubricated.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that, within the scope of what is claimed, changes in the precise embodiment of the invention shown can be made without departing from the spirit of the invention.

In the accompanying drawings:—

Figure 1 shows in side elevation, a device constructed in accordance with the invention; Fig. 2 is a top plan; Fig. 3 is a cross section on the line 3—3 of Fig. 2; Fig. 4 is a cross section on the line 4—4 of Fig. 2; Fig. 5 is a fragmental front elevation disclosing a portion of one of the parts of the frame of the truck; Fig. 6 is a section on the line 6—6 of Fig. 5; Fig. 7 is a section taken approximately on the line 7—7 of Fig. 1; and Fig. 8 is a section taken through one of the rear traction wheels.

The device forming the subject matter of this application comprises a truck including a frame 1 embodying side bars 2 connected by cross pieces 3, 4 and 5. The side bars 2 of the frame 1 may be connected by a rear brace 6 and by a front brace 7. The cross pieces 3, 4 and 5 are adapted to

support a deck (not shown), but since the deck may be constructed as desired, and in view of the fact that to show the deck would merely obscure certain important features of the tractor, the deck has been omitted. A platform 8 is carried by the forward portions of the side bars 2 and supports a seat 9. In advance of the seat 9, the side bars 2 converge, as indicated at 10, and support an engine 11. Front wheels 12 are movably mounted on the forward axle of the vehicle, in accordance with the well known automobile construction, and are provided with grooves 14 which adapt these wheels to traverse a track. Each wheel 12 is provided, upon each side of its groove 14, with relatively broad treads 15 which adapt the front wheels to traverse relatively soft soil, without sinking thereinto. The front wheels 12 may be controlled by a steering mechanism 16 of any desired sort, terminating in a wheel 17 located in accessible relation to the operator's seat 9.

The frame 1 comprises longitudinal beams 18 located between the side bars 2, the beams 18 supporting a differential casing 19, the differential comprising shafts 20. Axially aligned shafts 21 are journaled for rotation on the frame 1 and are located to the rear of the differential mechanism 19—20. The inner ends of the shafts 21 are adapted to be connected by a clutch 22 controlled by a lever 23 fulcrumed at 24 on the frame work of the vehicle, the lever being operated, in its turn, by a bell crank lever 25, fulcrumed on the frame work of the vehicle, and under the control of a forwardly extended rod 26, pivoted to a pedal 27 mounted on the platform 8 in front of the seat 9. The aligned shafts 21 are supplied with sprocket wheels 28 coöperating with sprocket chains 29 engaged with sprocket wheels 30 on the differential shafts 20. Sprocket wheels 31 are loose on the shafts 21 and are connected by sprocket chains 32 with sprocket wheels 33 forming parts of rear ground wheels 34 journaled on an axle 35 carried by the rear portion of the frame 1.

Each ground wheel 34 includes a side wall having a rim 37, the side wall having an inwardly extended bearing 38 located within the rim 37. Bushings 39 are mounted on the axle 35 and coöperate with the bearing 38 to form a rotatable mounting for the wheel 34. The bushings 39 define also, within the bearing 38, an oil chamber 40, access

to which is had by a pipe 41 one end of which opens through the bearing 38 and is mounted therein, the other end of the pipe 41 being mounted in the side wall 36 and opening therethrough. The outer end of the pipe 41 may be closed by a screw or other closure 42. It will be obvious that oil may be introduced into the chamber 40 through the pipe 41, the bushings or bearings 39 being lubricated so as to rotate readily on the axle 35.

The rear ground wheels 34 are provided with peripheral grooves 43, adapting these wheels to traverse a rail road. The rim 37 of each wheel 34 is supplied with zig-zag ribs 44 and alternating transverse ribs 45, the ribs 45 being disposed opposite to the apices of the zig-zag ribs 44. All of the ribs 44 and 45 are interrupted by the groove 43. The wheel 43 embodies an end plate 46 held by securing elements 47 to the edge of the rim 37 and to one end of the bearing 38. A gasket 48 is interposed between the end plate 46 and the end of the bearing 38, to the end that the oil in the oil chamber 40 may not leak away. The end plate 46 is provided with a hub 49 carrying a sprocket wheel 50 and at this point it may be noted that the side wall 36 of the wheel 34 is provided with a hub 51 whereon the sprocket wheel 33 is mounted. Sprocket chains 52 connect the sprocket wheels 50 with sprocket wheels 53 loose on the shaft 21.

An auxiliary shaft 54 is disposed transversely of the truck frame and is journaled thereon, in advance of the shafts 21. The auxiliary shaft 54 carries a sprocket wheel 55 coacting with a sprocket chain 56 engaged around a sprocket wheel 57 loose on the shaft 21, each of the shafts 21 being connected, in this manner, with the auxiliary shaft 54. The auxiliary shaft 54 is provided with a pinion 58 meshing into a gear wheel 59 mounted on a winding shaft 60 journaled in bearings 61 on the longitudinal beams 18 of the truck frame. A drum 62 is loose on the winding shaft 60 but is adapted to be connected therewith by clutches 63 operated by levers 64 fulcrumed at 65, intermediate their ends, on a bracket 66 connecting the longitudinal beams 18 as clearly shown in Fig. 4 of the drawings. The outer ends of links 67 are pivoted to the lower ends of the levers 64, the inner ends of the links being pivoted to a forwardly extended rod 68 pivoted to the lower end of a pedal 69 fulcrumed on the platform 8 and located in accessible relation to the seat 9. A spring 70 coöperates with the pedal 69 to maintain the clutches 63 normally out of engagement with the drum 62.

Guides 72 are mounted on the front side of the cross piece 4, and in these guides, actuating bars 71 are mounted for right line reciprocation. The bars 71 are provided

with forwardly extended depending arms 73. The arms 73 of one of the bars 71 carry clutches 74 and 76, whereas, the arms of the other bar carry clutches 75 and 77, the clutches 74 and 75 being keyed to one of the shafts 21, to slide therealong and to rotate therewith, the clutches 76 and 77 bearing a similar relation with respect to the other shaft 21. The bars 71 are supplied with racks 78 coöperating with a pinion 79 secured to the rear end of a shaft 80 journaled for rotation in the cross pieces 3 and 4 and provided at the forward ends with a wheel 81 located in advance of the cross piece 3 and accessible from the driver's seat 9.

A flexible element 82 is wound about the drum 62 and is extended forwardly around an idler 83 mounted to rotate and to slide on a shaft 84. The shaft 84, as clearly shown in Figs. 5 and 6 is supported by brackets 85 mounted on the forward side of the cross piece 3, the cross piece 3 being provided with an opening 86 wherein the flexible element 82 operates when the idler 83 moves longitudinally of the shaft 84. The brackets 85 are provided with a guide rod 87 extended across the opening 86 and serving to hold the flexible element 82 engaged with the idler 83. An auxiliary frame is mounted on the main frame of the truck, the auxiliary frame including upwardly converging legs 88, connected at their upper ends with a longitudinal track, preferably in the form of an I-beam 89 supplied in its upper edge with seats 90. A shaft 92 connects the forward legs 88 near to their upper ends, and on this shaft, an idler 91 is journaled for rotation. The flexible element 82 is extended upwardly from the idler 83 and is trained rearwardly across the idler 91. A rider 93 is mounted to reciprocate on the I-beam or track 89 and is provided with side seats 95. A U-shaped latch 94 is adapted to be straddled on the track 89, the arms of the latch coöperating with the seats 90 of the track 89 and with the seats 95 of the rider 93. Obviously, through the instrumentality of the latch 94, the rider 93 may be held in adjusted positions longitudinally of the track 89. The latch 94 may be supplied in its upper end with an opening 96 whereby the latch may be manipulated conveniently. A hanger 97 is pivoted at 100 to the lower end of the rider 93, to swing transversely of the track 89, the hanger carrying a sheave 98 about which the flexible element 82 is trained and extended downwardly. The lower free end of the flexible element is provided with a hook 99, or with a grapple or grab of any desired sort.

The structure hereinbefore described comprises a vehicle propulsion, and a hoisting mechanism, mounted on a vehicle, means being provided whereby, at the will of an operator, the propelling means and the hoist-

ing mechanism may be coupled one at a time, with an engine. The operation of the vehicle propelling means will be first set forth.

5 The pedal 27 and the rod 26 together with the bell crank lever 25 and the lever 23, constitute a means whereby the clutch 22 may be made to couple the shafts 21 together so that the wheels 34 may be driven simultaneously. Assuming, then, that the wheels 10 34 are to be driven together, rotation is imparted to the shaft 80 through the instrumentality of the hand wheel 81. The pinion 79, coöperating with the racks 78, moves the bars 71 outwardly in opposite directions. The clutch 74 and the clutch 76, it 15 is to be recalled, are operated by one bar 71, whereas the clutch 75 and the clutch 77 are operated by the other bar 71. When the bars 71 are moved outwardly in opposite directions, the clutches 74 and 77 couple the sprocket wheels 31 to the respective shafts 21. The clutches 75 and 76 couple the sprocket wheels 53 to the respective shafts 21. The 20 clutches 75 and 76 are not engaged with the sprocket wheels 57, when the parts are arranged as above described, and therefore, the winding shaft 60 of the hoisting mechanism is not actuated. This statement will 25 be understood better after the operation of the hoisting mechanism has been traced out.

When the parts of the vehicle propelling means have been coupled up as above explained, then there is established a driving 35 train comprising the engine 11, the differential shafts 20, the sprocket wheels 30, the sprocket chains 29, the sprocket wheels 28, the shafts 21, the sprocket wheels 31, the sprocket chains 32, the 40 sprocket wheels 33, and the wheels 34. Similarly, the wheels 34 are driven from the shafts 21 by the sprocket wheel 53, the sprocket chains 52 and the sprocket wheels 50. It is to be observed that a double drive 45 for each of the wheels 34 is provided, each wheel being driven by a force applied to its outer side and to its inner side, as well. Should it be desired to impart a drive to one of the wheels 34, to the exclusion of the 50 other wheel 34, then the clutch 22 may be manipulated to disconnect the shafts 21, it being obvious that the driving effort will be transmitted to one of the wheels 34 alone. This operation will be useful under many 55 circumstances, for instance, when one of the wheels 34 has firm hold in the ground, and the other wheel is spinning in the mud.

When the hoisting mechanism is to be brought into operation, the hand wheel 81 60 is used to rotate the shaft 80, the pinion 79 coöperating with the racks 78 to move the bars 71 inwardly. Then, the clutches 75 and 76 connect the sprocket wheels 57 to the shafts 21. Without tracing through, again, 65 the operation of the propelling means, it

will be seen that when the clutches 75 and 76 couple the sprocket wheels 57 to the shafts 21, the vehicle propelling means will be put out of operation.

When the parts have been arranged, as 70 above set forth, so as to couple up the hoisting mechanism for operation, then there is established a driving train including the engine 11, the differential shafts 20, the sprocket wheels 30, the sprocket chains 29, 75 the sprocket wheels 28, the shafts 21, the sprocket wheels 57, the sprocket chains 56, the sprocket wheels 55, the auxiliary shaft 54, the pinions 58, the gear wheels 59 and the winding shaft 60. 80

The pedal 69 may be actuated by the operator, the rod 68, the links 67 and the levers 64 operating the clutches 63, so that the clutches 63 couple the drum 62 to the shaft 60. When the drum 62 is connected with 85 the shaft 60 to rotate therewith, the flexible element 82 is wound upon the drum, and moves over the idlers 83 and 91, and over the sheave 98. As the flexible element 82 accumulates on the drum 62, the idler 83 90 slides longitudinally of the shaft 84, the guide rod 87 serving to keep the flexible element 82 engaged with the idler 83—all of which will be understood clearly when Fig. 5 of the drawings is noted. 95

The latch 94 may be lifted out of the seats 95 in the rider 93 and out of the seats 90 on the track 89. Then the rider 93 may be shifted longitudinally of the track 89 so that the free end of the flexible element 82 may 100 be located as occasion may demand.

The construction of the device is such that it will travel readily along a pole road or track, where such a track exists, and when the track ceases, the device may be oper- 105 ated along soft ground in the forest or in swamps, the foregoing advantages arising out of the fact that the wheels 12 are grooved as shown at 14 and out of the fact that the wheels 34 are grooved as shown at 110 43, both the front and rear wheels having relatively broad treads, which enable the wheels to operate in a satisfactory way upon relatively soft soil. The specific arrangement of the ribs or traction cleats 44 and 115 45 gives the rear wheels 34 a strong hold on the ground.

Having thus described the invention, what is claimed is:—

1. In a hoisting mechanism, a frame; a 120 first shaft on the frame; means for driving the first shaft; an auxiliary shaft on the frame; a winding shaft on the frame; means for operatively connecting the winding shaft with the auxiliary shaft; a drum 125 loose on the winding shaft; a clutch connecting the drum with the winding shaft; an operative connection between the first shaft and the auxiliary shaft, and including a member rotatable on the first shaft; a 130

clutch connecting said member with the first shaft; a bar slidable on the frame and provided with a rack, the bar being connected with the last specified clutch; and a shaft
5 under the control of an operator and journaled on the frame, the last specified shaft being provided with a pinion meshing into the rack.

2. A hoisting device including a main
10 frame; an auxiliary frame mounted on the main frame and including an elevated track in the form of an I-beam; a rider adjustable along the lower flange of the I-beam, the rider and the upper flange of the I-beam
15 being provided with cooperating side seats;

a latch engaging the side seats of the rider and of the beam to hold the rider in adjusted positions on the beam; a winding drum mounted on the main frame; means carried by the main frame for operating 20 the drum; and a flexible element connected with the drum and engaged slidably with the rider.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

WALTER VAN INMAN.

Witnesses:

W. E. SMITH,

T. N. FEATHERSTON.