This invention relates to log hoisting and hauling carts, and has more particular reference to a two-wheeled trailer type such as is adapted to be hitched to a tractor or other power vehicle, and the primary objective of the invention is to generally, specifically and otherwise improve upon known marketed and patented log wagons, this in a manner to better serve the aims and requirements of manufacturers and users alike.

The purpose of this log cart or trailer is to lift and suspend one end of a log or logs, when transporting same from the stump, where cut, to the sawmill set in lumbering operations. The usual practice is to drag the log along the ground, which causes the log to rotate and the bark thereof to be completely covered with dirt by the time it arrives at the sawmill. This dirt on the log is a very great handicap in sawing it, as the saw quickly becomes dulled, and the sawmill must be shut down for sharpening the saw a number of times each shift. By carrying the log with only one end scraping along the ground, it is possible to keep the log almost entirely clean, and the re-sharpening period, twenty minutes, is eliminated entirely, except during the noon rest time, and at the end of the shift. If the saw is not dulled by dirt, the whole sawing operation is speeded up considerably, and several hours' sawing time saved during each shift.

One phase of apparent novelty has to do with the adoption and use of a well balanced, simple, two-wheeled cart characterized by a horizontal frame, a perpendicular frame attached to and riding vertically therefrom, and an upwardly inclined, rearwardly projecting boom attached to said frames and provided at its rear hoisting and hauling end with a cable-accommodation sheave.

Further novelty is predicated upon the wheel-supported axle, this provided with a motion-transmitting, fixedly mounted gear meshing with a power take-off gear on a suitably mounted shaft, appropriate operational facilities being provided between said axle and shaft, and said shaft carrying a brake-equipped drum for cable winding and reeling purposes.

In carrying out the preferred embodiment of the invention, I have evolved and produced an adequate and expedient structural assemblage which is comparatively simple, substantially fool-proof, sturdy and reliable, and otherwise constructed and balanced to achieve the desired aims in a practicable and reliable manner.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein like reference numerals are employed to designate like parts throughout the views:

Figure 1 is a side elevational view of a trailer-type log hoisting and hauling cart constructed in accordance with the principles of the instant invention.

Figure 2 is a top plan view of the structure seen in Figure 1.

Figure 3 is a rear end elevation.

Figure 4 is a view, partly in section and partly in elevation, showing the arrangement and construction of the drum-equipped power take-off shaft.

Figure 5 is a section on the plane of the line 5—5 of Figure 4, looking in the direction of the arrows.

Figure 6 is an enlarged fragmentary detail section illustrating the axe and means for mounting the traction wheels thereon.

Figure 7 is an enlarged section of the plane of the line 7—7 of Figure 6, looking in the direction of the arrows.

Briefly, the invention comprises a horizontal frame supported by two cleated wheels on a free running axle supporting a vertical frame above the wheels, which in turn supports a boom which runs at an angle from the front end of the machine or appliance up over the rear axle, extended beyond the rear wheels, and this in turn supports a sheave pulley. The cleated wheels, approximately three feet in diameter, are mounted on the axle with ratchets on the axle and pawls on the wheels so that when the machine is pulled forward, the axle must turn. However, the machine, because of the ratchet and pawl action, may be backed without the axle turning, and also because of the ratchet and pawl arrangement, the machine may be pulled forward and turned side-wise, allowing the wheels to travel the necessary different speeds to make the turn. As the machine is pulled forward, the axle thus turns a gear wheel mounted on the axle and this in turn drives another meshed gear wheel, which is free running on another axle or shaft, attached to the frame, above and in front of the wheel axle.

Referring now to the drawings by distinguishing reference numerals and referring first to Figure 1, it will be seen that the structure comprises a horizontal frame 8 of the top plan configuration seen in Figure 2. On the rear rectangular portion of said frame is a perpendicular complemental frame 9 attached to and rising perpendicularly from the horizontal frame.
3 block 10 to which an I-beam 11 forming a boom is attached. This boom is suitably inclined and has its forward end attached to the corresponding end of the frame and has its rear end provided with an adapter bracket 12 well over and beyond the rear end of the frame and carrying a pulley or sheave 13. The frontal portion of the frame 8 is provided with a tongue 14 and an appropriate hitch 15 attachable to the tractor construction shown in dotted lines in Figure 1. The rear axle 16 (see Fig. 6) is journaled for rotation in bearings provided in the side members of the frame 8 and the projecting outer ends have traction-type, ground-engaging wheels 17 loosely mounted for rotation thereon. In this connection, it will be observed that a ratchet wheel 18 is fixed to the axle and that a pivoted pawl 19 (see Fig. 7) is pivotally mounted on the hub of the wheel so that when the machine is pulled forward by the tractor, the axle is thus turned. This pawl and ratchet arrangement also provides for the aforementioned back-up and differential action previously set forth. While considering Figure 6, it will be observed that a suitable gear 20 is fixedly mounted on the axle, this being the power transmission gear which serves in a manner to be hereinafter set forth.

The construction is now continued to Figure 4 which discloses the horizontal power or motion take-off shaft 21 journaled in bearings 22 and having at one end an idling gear 23 in mesh with the gear 20. A reeling and winding drum of suitable construction 24 is pinned or otherwise keyed on the central portion of the shaft 21 for rotation therewith. One of the end heads of the drum is provided with a brake drum 25 which has expandable and retractable brake shoes 26 coact. The brake shoe assembly is attached by suitable bracket means 27 (see Fig. 2) to a stationary part of the frame. The drum 24, obviously, accommodates the hoisting and pulling cable 28 whose free end is trained over the pulley 13 and terminates in a nose 29 connectable with the log-engrapping chains or grab 30 (see Figs. 1 and 2). A clutch collar 31 is always splined on the central portion of the shaft 21 between the winding drum and the idling gear 23. It is pressed into driving connection with the gear 23 by an expansion spring 32. The clutch collar is disengaged by a pivotally mounted and shiftable yoke 33. Remote control means is provided for actuating said yoke 33. Obviously, when the clutch is engaged, the gear 23 is driven and the shaft 21 is also driven therewith, these parts receiving motion from the axle 16 and its fixed gear 20. In Figure 3, an appropriate hanger structure 34 is provided for the remote control cable 35 passing over a pulley 36. A hand grip 37 on the line 35 serves to control the latter, this being suitably supported in an accommodation guide 38. At this point, attention is directed to a brake lever 39 of a hand-control type coacting with a latch and segmentally mounted on the frame. This brake lever serves to actuate a push-pull rod 40 for controlling the brake shoe. Any appropriate linkage, as at 41 (see Fig. 2), may be employed to provide an operating connection between the rod and brake shoe.

During the hauling of the logs from the site where cut to the sawmill set, the log wagon is pulled by a tractor (not shown), and its operation is as follows:

The tractor operator reaches over the back of his seat and sets the control to the brake lever so that the main pulley drum cannot revolve and allow the cable to run out or off of the drum. He disengages the clutch wheel from the gear wheel on the same axle so that the revolution of the cleated wheels is not transmitted to the pulley drum. Or, in other words, the machine is allowed to run entirely free. The operator then proceeds to the place where he desires to pick up the logs, and backs the tractor and log wagon forward far enough for the front end of the dragged logs he desires to haul to the sawmill set. The operator then releases the hand brake arrangement so that the drum runs free, and pulls out the cable so that the log grabs can be set in the log or logs he proposes to haul to the sawmill. The operator then remounts and sees that the hand brake is not set. He then pulls the control cable so that the pulleys of the pulley wheel will become engaged in the gear wheel, thus transmitting all motion from the cleated wheels to the cable drum. He then puts the tractor in motion, and the weight of the logs on the cable and pulley causes a great deal of traction on the cleated wheels, which, as soon as they start, of course, cause the drum to revolve and this causes the cable to be wound up on the drum. The operator drives the tractor and wagon forward far enough for the front end of the dragged logs to be well off of the ground. He then disengages the clutch wheel from the gear by the control on the front end of the log wagon. At the same time, he sets the hand brake so that the pulley drum cannot revolve, and the logs now being secured, he sets another cleat and the operator proceeds to the sawmill set, dragging the logs behind the log wagon, with only one end of the logs dragging on the ground.

It has been found that the weight of the logs transmitted through the cable to the sheave wheel, and from there through the boom and frame to the cleated wheels provides simple traction so that the drum always revolves when the controls are properly set, and the wagon is pulled forward, thereby winding up the cable and so dragging and lifting the logs being hauled.

Now referring to Figure 1, the boom in the frontal and vertical frames 8 and 9 suitably wheel supported and the inclined boom 11, this extending well to the rear of the trailer and wheels on said trailer to provide the requisite accommodation base and elevation for lifting the log ends to the desired points for dragging purposes.

Additional novelty is predicated on the shaft, drum, gear and clutch assembly emphasized in the construction shown in Figure 4.

Further novelty is believed to reside in the pawl and ratchet means and lose wheel mounts, that is, the features 16, 17, 18 and 19 seen in Figures 6 and 7. Incidentally, the remote control devices for the clutch and brake are secondary and may be, therefore, of any appropriate construction and arrangement.

A careful consideration of the foregoing description, in conjunction with the illustrative drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

I claim:

1. A log handling, lifting, lowering and haul-
ing trailer in the form of a cart and comprising a horizontal frame having means at its front end for attachment to a tractor or the like, an axle on the extreme rear end of said frame, a motion-transmitting gear keyed on said axle, ratchet wheels also keyed on the end portions of said axle, ground-engaging wheels mounted for idling on said end portions of the axle, said ground-engaging wheels being provided with pivoted pawls and said pawls being cooperable with said ratchet wheels, a vertical frame attached to and rising from the horizontal frame directly above said axle and wheels, an inclined beam attached at its front end to the corresponding front end of the said horizontal frame and secured intermediate its ends to the crown portion of the vertical frame and extending and reaching rearwardly and well above both frames, said beam constituting a fixed log suspending and hauling boom and being provided at its rear end with a lifting, lowering and cable-accommodation pulley, a shaft mounted for rotation on the horizontal frame, a reeling and winding drum for the cable on said shaft, and an operating connection between the axle and shaft, remote controlled clutch means on said shaft, and brake means associated with the shaft and drum.

2. A log handling, lifting, lowering and hauling trailer in the form of a cart and comprising a horizontal frame having means at its front end for attachment to a tractor or the like, an axle on the rear end of said frame, a motion-transmitting gear keyed on said axle, ratchet wheels also keyed on the end portions of said axle, ground-engaging wheels mounted for idling on said end portions of the axle, said ground-engaging wheels being provided with pivoted pawls and said pawls being cooperable with said ratchet wheels, a vertical frame attached to and rising from the horizontal frame directly above said axle and wheels, an inclined beam attached at its rear end to the corresponding front end of the said horizontal frame and secured intermediate its ends to the crown portion of the vertical frame and extending and reaching rearwardly and well above both frames, said beam provided at its rear end with a lifting, lowering and cable-accommodation pulley, a shaft mounted for rotation in bearings on said horizontal frame in close spaced parallelism to said axle, a cable-winding drum keyed on said shaft, a gear mounted for idling on the shaft and in mesh with said first-named gear, a clutch collar splined on said shaft and engageable with said second-named gear for keying it to the shaft, remote controlled clutch collar operating means on said shaft, and brake means associated with the shaft and drum.

3. A log handling, lifting, lowering and hauling trailer in the form of a cart and comprising a horizontal frame having means at its front end for attachment to a tractor or the like, an axle on the rear end of said frame, a motion-transmitting gear keyed on said axle, ratchet wheels also keyed on the end portions of said axle, ground-engaging wheels mounted for idling on said end portions of the axle, said ground-engaging wheels being provided with pivoted pawls and said pawls being cooperable with said ratchet wheels, a vertical frame attached to and rising from the said horizontal frame directly above said axle and wheels, an inclined beam attached at its front end to the corresponding front end of the said horizontal frame and secured intermediate its ends to the crown portion of the vertical frame and extending and reaching rearwardly and well above both frames, said beam provided at its rear end with a lifting, lowering and cable-accommodation pulley, a shaft mounted for rotation in bearings on said horizontal frame in close spaced parallelism to said axle, a cable-winding drum keyed on said shaft, a gear mounted for idling on the shaft and in mesh with said first-named gear, a clutch collar splined on said shaft and engageable with said second-named gear for keying it to the shaft, remote controlled clutch collar operating means on said shaft, and brake means associated with the shaft and drum.

WILLIAM M. LARGEN.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,326,078</td>
<td>Jarvis</td>
<td>Aug. 11, 1942</td>
</tr>
<tr>
<td>2,035,194</td>
<td>Langdon</td>
<td>Mar. 24, 1936</td>
</tr>
<tr>
<td>1,418,378</td>
<td>Iverson</td>
<td>June 6, 1922</td>
</tr>
<tr>
<td>1,394,561</td>
<td>Elsinger et al.</td>
<td>Mar. 23, 1920</td>
</tr>
<tr>
<td>1,113,408</td>
<td>Burlingame</td>
<td>Oct. 13, 1914</td>
</tr>
<tr>
<td>985,645</td>
<td>Voeller</td>
<td>Feb. 28, 1911</td>
</tr>
<tr>
<td>906,841</td>
<td>Whitcomb</td>
<td>Dec. 15, 1908</td>
</tr>
<tr>
<td>801,415</td>
<td>Strange</td>
<td>Oct. 10, 1905</td>
</tr>
<tr>
<td>757,383</td>
<td>Spotswood</td>
<td>Jan. 19, 1897</td>
</tr>
<tr>
<td>21,449</td>
<td>Schuyler et al.</td>
<td>Sept. 7, 1858</td>
</tr>
</tbody>
</table>