A. OPSAL.

LOGGING WIRE ROPE CARRIAGE.

APPLICATION FILED DEC. 10, 1915.

1,205,778.

Patented Nov. 21, 1916.

2 SHEETS—SHEET 1.

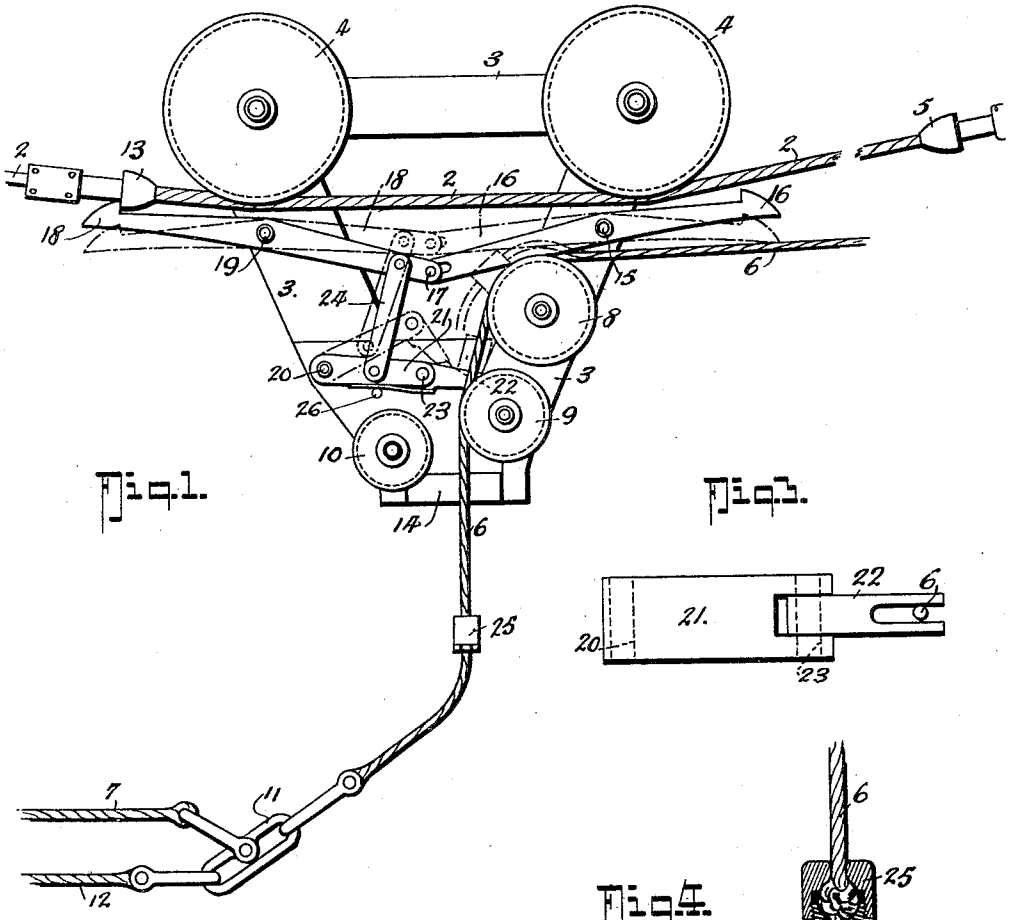


Fig. 1.

Fig. 2.

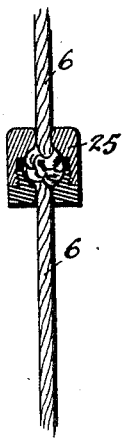


Fig. 4.

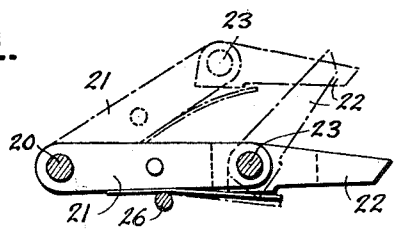


Fig. 3.

WITNESS

Charles J. Diller.

INVENTOR

Andrew Opsal

BY

Fred G. Dieterich Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C

A. OPSAL.

LOGGING WIRE ROPE CARRIAGE.

APPLICATION FILED DEC. 10, 1915.

1,205,778.

Patented Nov. 21, 1916.

2 SHEETS—SHEET 2.

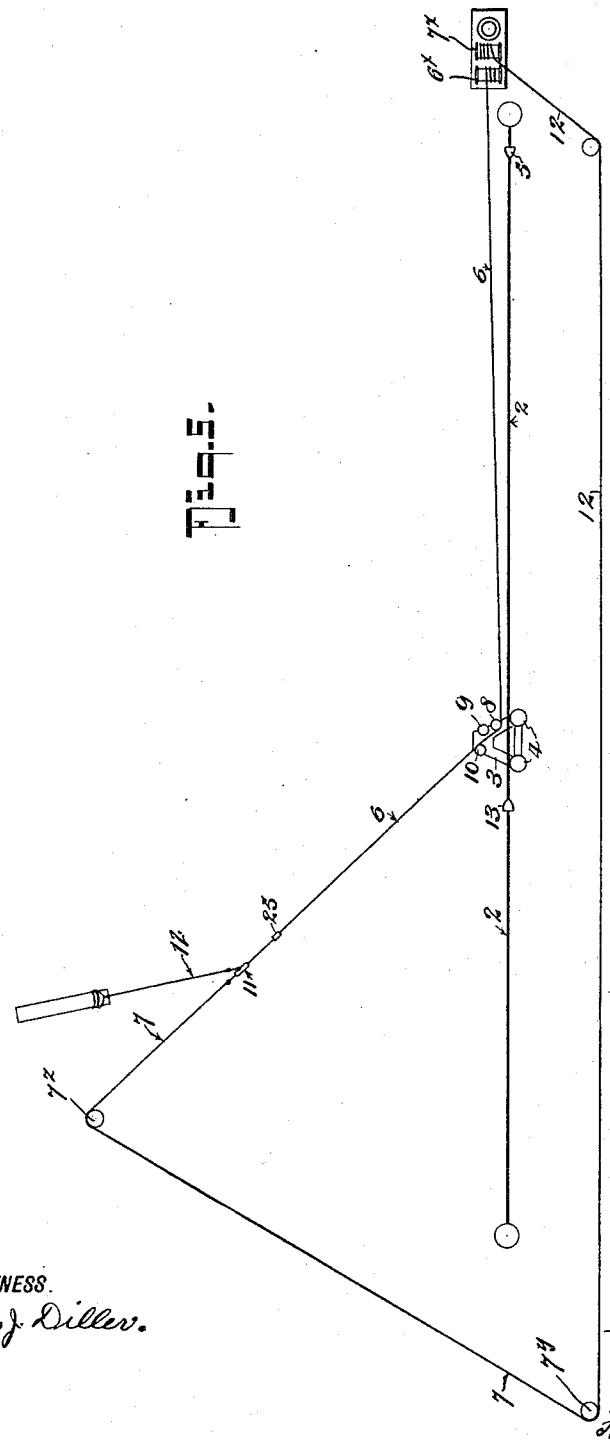


Fig. 5.

WITNESS.

Charles J. Diller.

INVENTOR

Andrew Opsal

BY

Fred G. Peterson & Co

ATTORNEYS

THE NORRIS PETERS CO., PHOTO LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ANDREW OPSAL, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

LOGGING WIRE-ROPE CARRIAGE.

1,205,778. Specification of Letters Patent. Patented Nov. 21, 1916.

Application filed December 10, 1915. Serial No. 66,192.

To all whom it may concern:

Be it known that I, ANDREW OPSAL, a citizen of the Dominion of Canada, residing at Vancouver, in the Province of British Columbia, Canada, have invented certain new and useful Improvements in Logging Wire-Rope Carriages, of which the following is a specification.

This invention relates to a carriage for overhead wire rope transmission of that class used for the conveyance of logs from the woods to the yarding-in station for transport by rail or water. With this overhead system of wire rope conveyance of logs, a track rope from the yarding-in station out into the woods is supported at a suitable height from the ground, on which track rope a carriage is operated by a hauling line of wire rope from the drums of a donkey engine located beyond the yarding-in station. To this carriage the logs are snaked by the hauling line from the place of cutting on either side of the track rope and are elevated to the carriage for transmission to the yarding-in station.

The improvements as set forth in this application enable the overhead carriage to automatically secure itself to any desired position on the track rope, from which position the hauling-in rope from the donkey engine may be drawn out laterally from the carriage to the place of cutting. After the load is connected to the tag line of the hauling-in rope the load is snaked through the woods to the track rope and is lifted off the ground and secured to the carriage. When the load is so secured the carriage is automatically released from its attachment on the track rope and is free to travel with its load along the rope to the yarding-in station where it is automatically latched and the load released, and the carriage is then automatically released from its attachment at the yarding-in station that it may be moved out for another load.

The particular means by which these objects are attained are fully set forth in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a side elevation of the carriage and its rope connection, the front plate of the carriage being removed to reveal the several connected mechanisms. Fig. 2 is a detail elevation of the load sustaining pawl with its movements indicated by dot and dash lines. Fig. 3 is a plan of the same, and Fig. 4 is a detail section of the carriage release and load sustaining attachment of the hauling-in line. Fig. 5 is a diagrammatic view illustrating the invention in use.

In these drawings 2 represents the track rope on which the carriage 3 runs on sheaves 4 from the yarding-in end of the rope at 5 out into the woods from which the logs are being brought. The hauling-in rope from one of the drums 6^x of the donkey engine adjacent the yarding-in end 5 is represented by 6 and the hauling-out rope, by which the carriage is drawn into the woods, is represented by 7.

The outer end of the hauling-in rope 6 from the donkey engine passes over a sheave 8 in the upper part of the carriage 3 and down between two sheaves 9 and 10 and lateral rollers 14 mounted in the lower part of the same, and is connected by a link 11 to the tag line 12 to which the load of logs is connected, so that the tag line forms a connected continuation from the end of the hauling-in rope. The hauling-out rope 7 from the other drum 7^x of the same donkey engine passes around a sheave 7^y approximately in the line of the track 2 at a location beyond the desired limit 13 of movement of the carriage thereon, and therefrom passes around another sheave 7^z in the woods beyond the location from which the logs are to be brought in, which location may be some distance on either side of the track 2, and the outer end of this hauling-out rope 7 is then connected to the same link 11 that connects the hauling-in rope 6 to the tag line 12, see Fig. 5. So connected the hauling-out rope 7 may draw the carriage 3 out along the track rope 2 to the desired limit 13 of its movement thereon and therefrom will haul out the tag line 12 and hauling-in rope 6 into the woods laterally from the carriage 3 on the track rope 2 to the place from which the load of logs is to be taken. When the load is connected to the tag line 12 the hauling-out line 7 is paid out from the drum of the donkey engine and the hauling-in line is drawn in to draw the load from the position in the woods to the carriage on the track rope and thereafter will pull the carriage along the track rope to the yarding-in station. No claim for novelty is made on this operation, but to enable the

operation to be conducted automatically, means is provided for automatically latching the carriage 3 on the track rope 2, both at 5 at the yarding-in station and at any position 13 on the track rope to which the logs are drawn in from the woods. Means is also provided whereby the load, when elevated from the ground to the carriage 3, may be sustained there, and coöperatively with this sustaining means when the load has been elevated the carriage is automatically released from the securing means to the track rope so that it is free to travel along the track rope to the yarding-in station. The mechanism is so designed that after the load arrives at the yarding-in station the carriage will automatically latch itself there and the latching action releases the sustaining means and permits the load to be lowered. When the load is removed the tackle may be lifted to the carriage and will be automatically secured there, and the same movement of the rope which lifts the tackle unlatches the carriage and leaves it free to be drawn out again to the other end of the track or to the location thereon from which the hauling-in rope is carried to the place of cutting. At this location the carriage is again automatically latched and the end of the load hauling rope with its connected tackle is simultaneously released from the carriage and continues its movement to the place from which the logs are being conveyed for connection to it of another load.

The mechanism by which these several functions are automatically performed is as follows: Secured on the track rope 2 adjacent to the yarding-in station is a member 5 having a conical end directed toward the outer end of the track 2 and shouldered toward the donkey engine, which is at that end of the line. A similar member 13 is secured on the track line 2 at the desired outward limit of the carriage 3 thereon, the conical end of which member 13 is directed toward the yarding-in station and shouldered toward the outer end of the line. These conical members may be secured in any convenient manner on the track rope and being conical their efficacy as a means for latching the carriage to is not affected by twisting of the rope.

Pivotally mounted at 15 on the carriage 3 over the sheave 8, over which the hauling-in rope passes, is a latch lever 16, the outer end of which is designed to engage and retain a hold of the shouldered projection of the member 5 at the yarding-in station and the inner end of this lever 16 is pin and slot connected at 17 to the inner end of a similar latch lever 18 pivotally mounted at 19 at the other end of the carriage, the outer end of which latch lever is designed to engage the shouldered projection of the member 13 which is secured on the track rope 2 at any desired outward limit of the movement of the carriage thereon.

Mounted on a pin 20 above the sheave 10 is a pawl 21, the end 22 of which is articulated on a pivot 23 to move in the plane of the pawl's movement in either direction from the straight alinement of the pawl. The articulated outer end 23 is designed to normally rest on the upper side of the sheave 9 or other suitable support and may be fork-ended to permit the rope 6 to pass through it around that sheave, or the sheave may be grooved to effect the same object. The articulated end 23, although it may move in either direction from its straight alinement with the pawl 21 to which it is connected, is constrained, see Fig. 2, to maintain a position in alinement with that pawl by a spring or other means that will return it to its normal position of straight alinement. The body 21 of the pawl is checked against downward movement by a pin 26 secured on the frame 3.

Secured on the hauling-in rope 6 adjacent the connection of the tag line 12 thereto, is a member 25, such that when the end of the line 6 is drawn in to the carriage this member 25 will lift and pass the articulated end 22 of the pawl 21 but that end 22, after the member 25 has passed it, will spring back to its normal position, and will by the support of that articulated end resting on the upper side of the sheave 9, prevent the line 6 moving backward until it is required to do so. The member 25 is preferably made as a wired enlargement interlaced in the rope 6 which enlargement fits between two cupped members secured together, as shown in Fig. 4. The member 25, after passing the pawl 21, will, as it attempts to pass over the sheave 8, engage the inwardly projecting portion of the latch lever 16, and that lever being connected to the latch lever 18 will lift the inner end of 18 and release the outer latch end from engagement with the shoulder of the conical end 13 secured on the track rope and will leave the carriage 3 free to move on the track rope under the tension on the hauling-in rope 6 which lifted the load to the carriage 3.

The pawl 21 is connected intermediate of its ends, by a link 24 to one of the two latch levers so that as either latch lever is lifted the pawl 21 with its end 22 will be lifted a sufficient amount to permit the end of 22 to clear its support on the sheave 9 and allow the member 25 on the hauling-in rope 6 to pass out and thereby lower any load that may be on it, or will permit the hauling-in rope 6 to be drawn out from the carriage 3 when the rope 7 is drawing it back to the woods for another load.

In use, when the carriage 3 with a load arrives at the yarding-in station, the latch

end of the lever 16 engages and is secured to the conical member 5 secured on the track rope at that end. The latching of the carriage lifts the pawl 21 and the load falls to the ground. The load is then removed and the hauling-in rope 6 is wound in by the donkey engine to lift and secure the tag line 12 and its connected tackle to the carriage 3. When the member 25 secured near the end of the hauling-in rope 6 passes to the upper side of the pawl 21 22, it engages and lifts the inner end of the lever 16 and lowers the outer latch end of the same to release the carriage from the member 5 by which it was retained in position, and the carriage falls away from that attachment. The hauling-out rope 7 is then wound in on the drum of the donkey engine and the hauling-in rope 6 is allowed to run out, the member 25 being above the pawl end 22 cannot fall back so that it is sustained in its connection to the carriage 3 as the carriage is drawn out along the track 2 by the hauling-out rope 7 to the desired position 13 on the track rope where it is automatically latched by the latch lever 18. The latching movement simultaneously lifts the pawl 21 and permits the sustaining member 25 on the hauling-in rope 6 to pass out and without check this rope 6 and its connected tag line 12 and tackle are drawn from the carriage 3 into the woods to the place from which the next load is to be taken. When the next load of logs is connected to the tag line 12 the drum of the hauling-out rope 7 on the donkey engine is disconnected and the rope 6 is wound in, and the load of logs is snaked by it from the woods to the carriage 3 on the track line 2 and is elevated to the carriage until the member 25 engages and lifts the articulated outer end 22 of the sustaining pawl 21 and thereafter engages and lifts the inner end of the latch lever 16, which inner end being connected to the inner end of the latch lever 18 releases the outer end of that lever from the attachment 13 on the track rope to which the carriage is latched, and the carriage with the load suspended from it on the member 25 is drawn by continued haul of the rope 6 to the yarding-in station where it is automatically latched to the member 5. The latching movement as before described simultaneously lifts the pawl 21 and permits the suspended load to fall. The load is then moved and the operation previously described is repeated.

It will be noted that the entire operation of snaking in the load, lifting it to the carriage 3, releasing the carriage 3 and permitting it to travel on the line 2 to the yarding-in station at 5, and the lowering of the load there, is automatically performed by the operation of the donkey engine and no further attendance is required than that necessary in attaching the load to the tag line in the woods and the release of the load from the tag line at the yarding-in station. Again, the lifting of the empty tackle to the carriage at the yarding-in station, the release of the carriage from that station, the attachment of the carriage at the location 13, the release of the hauling-in line permitting the tag line and its connected tackle to be drawn from the carriage 3 into the woods is also automatically performed by the operation of the donkey engine.

The use of this device not only effects a considerable saving of labor but what is of greater importance avoids the necessity of attendance in the line of movement of the logs, which services are unavoidably attendant with great danger to life and limb.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. In an overhead transmission system, the combination with an overhead track rope and a carriage endwise movable thereon, a member secured to the track at each end of the desired limit of movement of the carriage thereon, a latch lever pivotally mounted at each end of the carriage, the outer end of each lever designed to engage and secure the carriage to the member secured to the track, the inner end of which latch levers are connected that they may move together, a sheave mounted in the carriage under one of the latch levers, over which sheave a rope by which the carriage is drawn on the track passes before connection to the load, a member secured on the hauling rope adjacent the connection of the load thereto which member is designed to engage the inner end of the latch lever adjacent the sheave over which the line passes, and means located beneath the sheave over which the line passes for sustaining the load on the latch operating projection secured on the hauling rope.

2. In an overhead transmission system, the combination with an overhead track rope and a carriage endwise movable thereon, of means for automatically securing the carriage to the track at each end of the desired limit of movement of the carriage thereon, a sheave mounted in the carriage over which sheave a carriage hauling rope passes for connection to the load, a member secured to the hauling rope adjacent the connection of the load thereto, which member is adapted to automatically release the carriage connection to the track when drawn within the carriage, a load sustaining pawl pivotally mounted in the lower part of the carriage, said pawl having an end pivotally connected to it and normally projecting in alinement with it, resilient means returning this pawl end to its normal position of alinement, a stop limiting downward movement

of the main pawl, a stop limiting downward movement of the pivotally mounted pawl end, and means connected with the carriage releasing means for lifting the pawl off its stop.

3. In an overhead transmission system, the combination with an overhead track rope and a carriage endwise movable thereon, a member secured on the track rope at each end of the desired limit of movement of the carriage thereon, said member having a conical end directed toward the carriage and a shoulder at the opposite end, a latch lever pivotally mounted on each end of the carriage and projecting beyond its end to engage the shouldered end of the member secured on the track rope, the inner ends of which latch levers are connected to move together, a sheave mounted on the carriage beneath the inwardly projecting end of one of the latch levers over which sheave the rope from the donkey engine passes which hauls in the carriage the end of which hauling-in rope is connected to the load and to the line from the donkey engine which hauls out the carriage, a member secured on the hauling-in rope adjacent the load connection thereto which member is adapted to engage and lift the inner end of the latch lever to effect release of the carriage from either member secured on the track rope, a load sustaining pawl pivotally mounted in the lower part of the carriage, said pawl articulated intermediate of its ends to move in the same plane as the general movement of the pawl, said pawl end adapted to permit passage upward of the carriage releasing attachment on the hauling-in line but preventing backward movement of the same, resilient means for maintaining the articulated end in alinement with the pawl, a stop limiting downward movement of the main pawl, a stop limiting downward movement of the articulated end of the pawl, a connection between the main part of the pawl and one of the carriage latch levers whereby movement of either latch lever to release the carriage will lift the main pawl and permit its articulated end to move downward and the member secured on the hauling-in rope to pass out.

4. In an overhead transmission system, the combination with an overhead track rope and a carriage endwise movable thereon, latch members on the track rope between the locations of which the carriage is movable, oppositely disposed latching levers mounted on the carriage and having a pin and slot connection with one another, a pawl mounted on the carriage, a link connecting the pawl with one of said levers, a sheave on the carriage, a hauling in rope passing over said sheave, said pawl having its free end adapted to rest on said sheave, a stop on said hauling in rope adapted to engage the end of said pawl to move said pawl to release the carriage, a stop pin on the carriage for restraining the movement of said pawl in one direction, said pawl being adapted to restrain said hauling in rope when said rope abutment has passed the free end of said pawl on the hauling in movement, said hauling in rope abutment adapted to engage one of said levers for releasing purposes, substantially as shown and described.

5. In an overhead transmission system, the combination with an overhead track rope and a carriage endwise movable thereon, latch members on the track rope between the locations of which the carriage is movable, oppositely disposed latching levers mounted on the carriage and having a pin and slot connection with one another, a pawl mounted on the carriage, a link connecting the pawl with one of said levers, a sheave on the carriage, a hauling in rope passing over said sheave, said pawl having its free end adapted to rest on said sheave, a stop on said hauling in rope adapted to engage the end of said pawl to move said pawl to release the carriage, a stop pin on the carriage for restraining the movement of said pawl in one direction, said pawl being adapted to restrain said hauling in rope when said rope abutment has passed the free end of said pawl on the hauling in movement, said hauling in rope abutment adapted to engage one of said levers for releasing purposes, said pawl having the end which engages said sheave articulated and means tending to hold the parts of said pawl in alinement.

6. The combination with the track rope and the carriage which runs along the rope, of latch-stops at the extremities of the track, a pair of oppositely disposed and connected latch levers mounted on the carriage, hauling line sheaves on the carriage over which the hauling line passes, a stop fixed on the hauling line, and an articulated pawl device coöperative with the line stop and the latches for releasing the carriage and sustaining the load.

In testimony whereof I affix my signature.

ANDREW OPSAL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."