W. L. BARTON.

OVERHEAD WIRE TRANSPORT SYSTEM.

APPLICATION FILED SEPT. 24, 1921.

1,422,650.

Patented July 11, 1922.

2 SHEETS—SHEET 1.

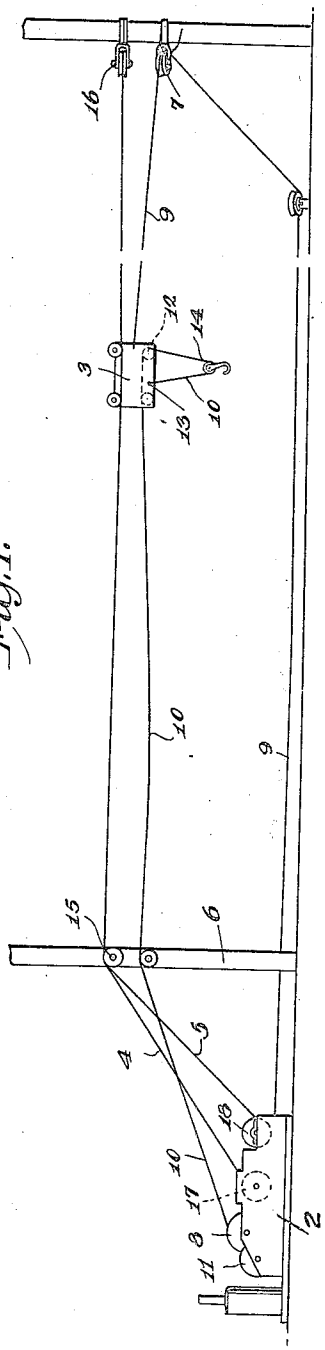


Fig. 1.

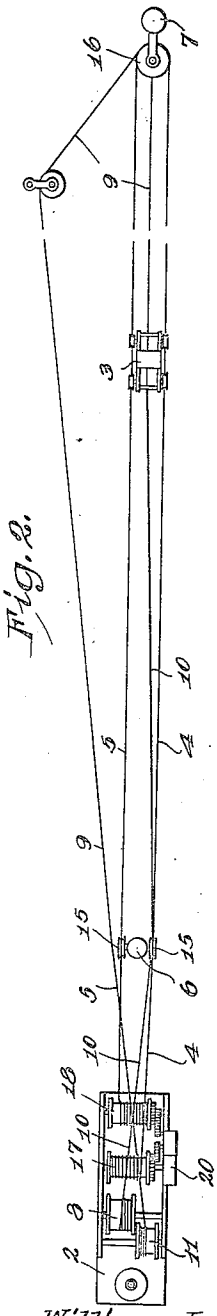


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

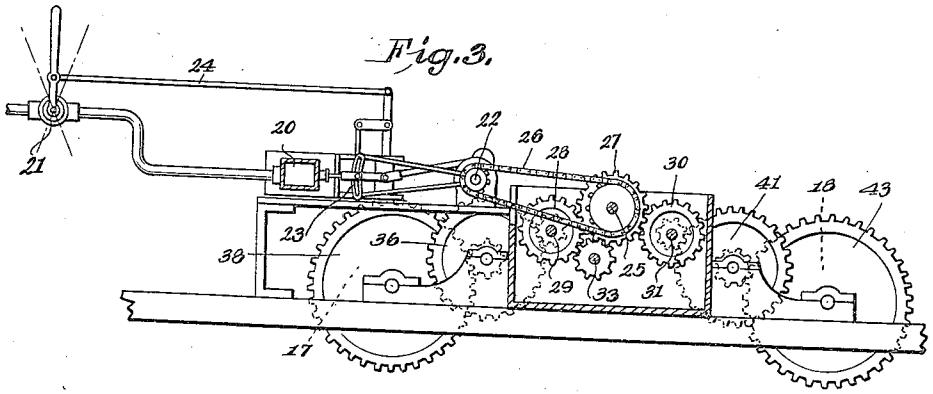


Fig. 4.

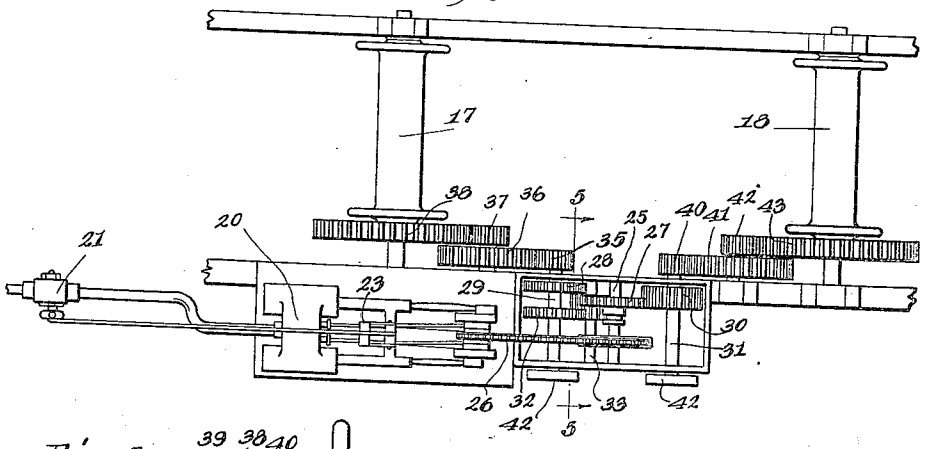


Fig. 5.

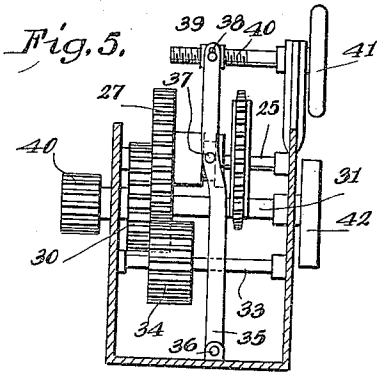
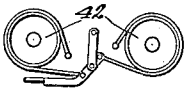


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM L. BARTON, OF VANCOUVER, BRITISH COLUMBIA, CANADA, ASSIGNOR OF FORTY-FIVE PER CENT TO JOHN L. KERR, OF VANCOUVER, BRITISH COLUMBIA, CANADA.

OVERHEAD WIRE TRANSPORT SYSTEM.

1,422,650. Specification of Letters Patent. Patented July 11, 1922.

Application filed September 24, 1921. Serial No. 502,862.

To all whom it may concern:

Be it known that I, WILLIAM L. BARTON, citizen of the Dominion of Canada, residing at Vancouver, Province of British Columbia, Canada, have invented certain new and useful Improvements in Overhead Wire Transport Systems, of which the following is a specification.

This invention relates to a system of overhead wire rope transportation wherein the load bearing carriage is endwise movable on two track ropes and the load is elevated to and from the carriage by the rope by which the carriage is drawn along the track, and is secured at any desired position of elevation by endwise movement of the track ropes.

The invention comprises the system of such suspension and the means for endwise moving the track ropes to effect this lock and release of the load suspension, and for simultaneously moving both ropes in the same direction, whereby the carriage may be lowered for examination and attention and raised thereafter to its normal running elevation.

The invention is particularly described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Fig. 1 is a general elevation of the track and the operative means used in connection therewith.

Fig. 2 is a plan of the same.

Fig. 3 is a detail to an enlarged scale of the track rope operating mechanism.

Fig. 4, a plan of the same.

Fig. 5 is a section of the gear box containing the first and second motion gears, showing the means by which the gears are changed, and

Fig. 6 is an outline drawing showing a means of applying the brakes while changing gears.

In these drawings 2 represents the donkey engine by which the carriage 3 is drawn in both directions on the wire rope track lines 4 and 5, which lines are stretched between spar poles 6 and 7 located at the inner and outer ends of the track line.

The carriage 3 is drawn outward by an out-haul line 9 from a reel 11 on an ordinary donkey engine, which line passes over sheaves at the outer end of the track and is connected to the carriage. It is drawn inward by a hauling line 10 from an independently movable reel 8 on the donkey engine, which line passes over a sheave 12 on the outer end of the carriage, around a sheave 14 of the load bearing block and is anchored at 13 to the carriage.

By this means the load is elevated to the carriage and the rope 10 secured thereto to sustain the load at any desired position of elevation, and is released from the carriage to lower the load, as fully described in an application filed by me on the 5th August, 1921 under Serial No. 490,123, and is now waiting consideration of the Office.

As described in that application the track lines 4, 5 are one rope or are so connected as to be movable together and is carried by the sheaves 15 and 16 of the spar poles 6 and 7. The operation of clamping the hauling rope 10 to the carriage and the releasing it therefrom is accomplished by endwise movement in relation to one another of the parts 4 and 5 of this rope.

One end of the track rope 4, 5 is secured to a reel 17 of a hauling mechanism to be described, and the other end after being doubled around the sheave 16 on the outer spar pole 7, is connected to the opposite side of a reel 18 rotatable with 17 in either the same or in opposite directions. Being wound from opposite sides of the reels 17 and 18, if the reels are rotated in the same direction, the rope will be wound on the one and correspondingly unwound off the other, giving the desired endwise movement of the track rope 4, 5.

In addition to having facility for rotating the reels to wind and unwind the ropes 4 and 5 simultaneously to move them in opposite directions, the mechanism is such that they may be simultaneously rotated to move the ropes in the same direction to lower and raise the track ropes to and from the ground with the carriage suspended on them.

The mechanism by which these results are accomplished is as follows: The reels 17 and 18 are carried in a frame which is adjacent and may be secured to the frame of the donkey engine 2. 20 represents a steam engine deriving its supply of steam from the donkey engine 2, which supply is controlled by a throttle valve 21, and the direction of rotation of the crank shaft 22 is reversible by means of a link motion 23. The throttle

lever and link motion are co-operative, the throttle lever being connected by a rod 24 to a bell crank lever which raises and lowers the reversing links. The throttle valve having two open positions, one on each side of the central closed position, in reversing, the steam is cut off while the engine is being reversed and then opened as reversal is attained.

The crank shaft 22 drives the first motion shaft 25 by means of a sprocket chain 26. On this first motion shaft 25 a gear wheel 27 is mounted on a feather key, the teeth of which wheel mesh with those of a wheel 28 secured on a shaft 29 parallel to 25, and through a gear wheel 30 secured on a shaft 31 on the opposite side.

The wheel 30 is twice the width of the wheel 27 and the wheel 27 is susceptible of endwise movement on its shaft 25 to take it out of mesh with the wheel 28 while retaining mesh with the wheel 30. Secured on the same shaft 29 as the wheel 28 is a similar gear wheel 32, and below the shaft 25 is a parallel shaft 33 on which is secured a wheel 34, the teeth of which mesh with those of the wheel 32 and the wheel 27.

Movement of the shafts 29 and 31 are respectively communicated to the reels 17 and 18 by a train of gears 35, 36, 37, 38 to the reel 17 and 40, 41, 42, 43 to the reel 18.

Through this mechanism assuming the wheel 27 to be in mesh with 28 and 30, the reels 17 and 18 will be rotated in the same direction, and that direction of rotation may be reversed by reversing the engine. The ends of the track lines 4 and 5 being wound in opposite directions on the reels 17 and 18, when the reels are rotated in the same direction the rope will be unwound off one reel and wound on the other and the two parallel lines 4 and 5 of the track rope will move endwise in opposite directions and will operate the mechanism for securing the load at any desired position of elevation from the carriage which securing means is released by reversing the engine 20 and consequently the movement of the track ropes 4 and 5.

When it is desired to lower or raise the track lines 4 and 5 to or from the ground, the ropes 4 and 5 are paid out simultaneously from the drums 17 and 18 by endwise moving the wheel 27 on its feathered shaft 25, whereby driving connection of 27 with 30 is maintained but the shaft 29 is rotated in an opposite direction, being driven through the intermediate gear 34 meshing with 27 and with the wheel 32 on the shaft 29. The reels 17 and 18 are thus rotated in opposite directions and the track lines 4 and 5 being wound on these reels from opposite sides, the line is paid out from both reels at once, thus lowering the track lines 4 and 5 to bring the carriage to the ground level for examination and may be simultaneously wound on both to elevate and tighten the track ropes.

Endwise movement of the wheel 27 on its feathered shaft 25 is preferably obtained by a lever 35 pivoted at 36 to the frame and having studs at 37 engaging a groove formed in the hub of the wheel 27, the free end of which lever 35 is slotted to engage studs 38 projecting from diametrically opposite sides of a nut 39 movable on a screw 40 provided with a hand wheel 41.

On the ends of the shafts 29 and 31 are secured brake wheels 42 with the necessary brake straps which may be used to relieve the strain of the gears 28, 30 and 32 of the overhead track ropes when changing gears.

The distinctive features of this system are that the load bearing carriage runs on two parallel lines of track rope instead of on one only, and that these track lines are disposed side by side: Also that these track lines are not anchored at the ends, but the loop of the rope passes around a sheave at the further end of the track, and the ends are connected to and wound on separate reels of a hauling engine, with provision whereby the two ropes may be simultaneously paid out or drawn in, whereby the track ropes may be lowered together to the ground and raised together therefrom.

There is also provision on the hauling reels whereby either rope may be paid out from its reel while the other is drawn in, whereby the two parallel lines of the track rope may be endwise moved in relation to one another. This endwise movement of the track ropes is used for several purposes: It enables a mechanism to be operated on the track line carriage for clamping to the carriage its hauling and load lifting line and for releasing the same (which mechanism is the subject of a pending application). It also enables a mechanism (the subject of a separate application) to be operated on the sheave which supports the outer end of the track rope, by which that end sheave may be traversed laterally to either side and thus enables a wide area of land to be worked over.

These features are considered to be novel, substantial and important improvements in overhead transportation systems when applied to logging, and may also be applicable to other purposes.

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. An overhead transportation system wherein the transporting carriage runs on two parallel lines of track rope with provision for running the track lines in opposite directions in relation to one another.

2. An overhead transportation system wherein the transporting carriage runs on two parallel lines of track rope disposed

side by side and provision for endwise running the track lines in opposite directions in relation to one another.

3. An overhead transportation system wherein a loop of the track rope passes around a sheave at the outer end of the track and the ends are wound on separate reels of a hauling mechanism, which mechanism has provision by which the line may be wound or unwound simultaneously on or off both reels.

4. An overhead transportation system wherein a loop of the track rope passes around a sheave at the outer end of the track and the ends are wound on separate reels of a hauling mechanism, which mechanism has provision by which the line may be wound or unwound simultaneously on or off both reels or may be simultaneously wound off one reel and wound on the other.

5. A transportation system wherein the opposite ends of the track rope are coiled on separate reels of a hauling mechanism located adjacent one end of the track and therefrom the ropes run parallel with one another to the other end of the track, an anchored sheave in the loop at the further end of the track, means for rotating the track rope reels to simultaneously pay out the line from one reel and wind it on the other reel, and means for reversing the direction of rotation of the reels.

6. An overhead transportation system wherein the opposite ends of the track rope are coiled on separate reels of a hauling mechanism located adjacent one end of the track line, and therefrom the ropes run parallel with one another to the other or outer end of the same, an anchored sheave in the loop of the line at the other end of the track, means for rotating the track rope reels to simultaneously draw in the track rope equally on each, and means for rotating the reels to pay out simultaneously from one reel and wind in on the other, and means for reversing the direction of rotation of the reels.

7. A transportation system wherein the opposite ends of the track rope are coiled on separate reels of a hauling mechanism located adjacent one end of the track, an anchored sheave in the loop of the track rope at the other end of the track, an engine rotating the reels through suitable mechanism to simultaneously haul in the rope on both reels, means for rotating one reel to pay out the rope while the other reel is winding it in, and means for reversing the rotation of the engine shaft to reverse the direction of rotation of the reels in either case.

8. A transportation system wherein the opposite ends of the track rope are coiled on separate reels of a hauling mechanism located adjacent one end of the track, an anchored sheave in the loop of the track rope at the other end of the track, a steam engine rotating the reels of the hauling mechanism, means for reversing the direction of rotation of the engine shaft, means for controlling the admission of steam to the engine, and means co-operative with the reversing means of the engine whereby the steam is cut off from the engine while it is being reversed and is re-admitted when reversal is effected.

In testimony whereof I affix my signature.

WILLIAM L. BARTON.