No. 759,901. PATENTED MAY 17, 1904.

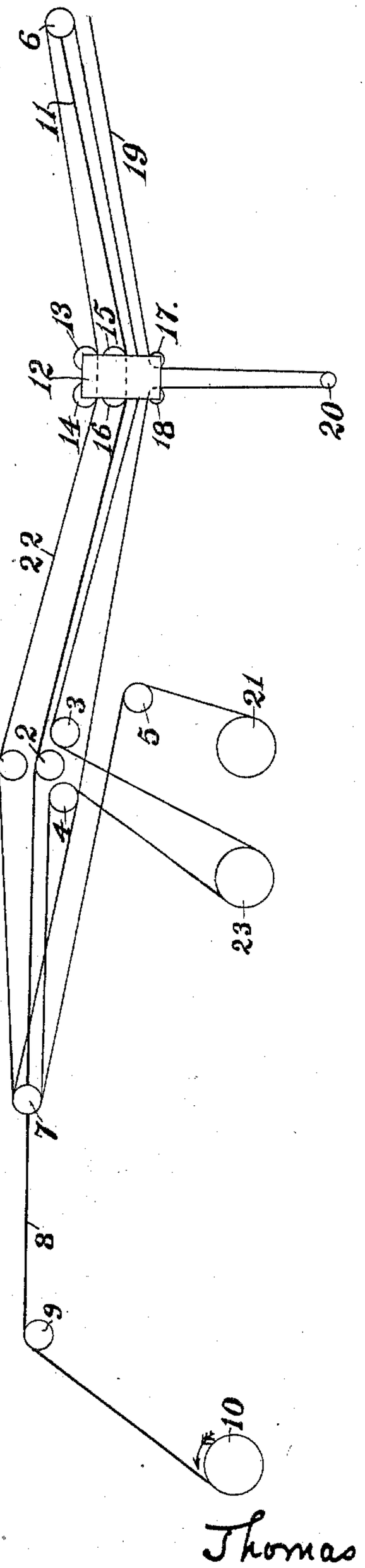
T. S. MILLER.

CABLEWAY.

APPLICATION FILED DEC. 7, 1901.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2

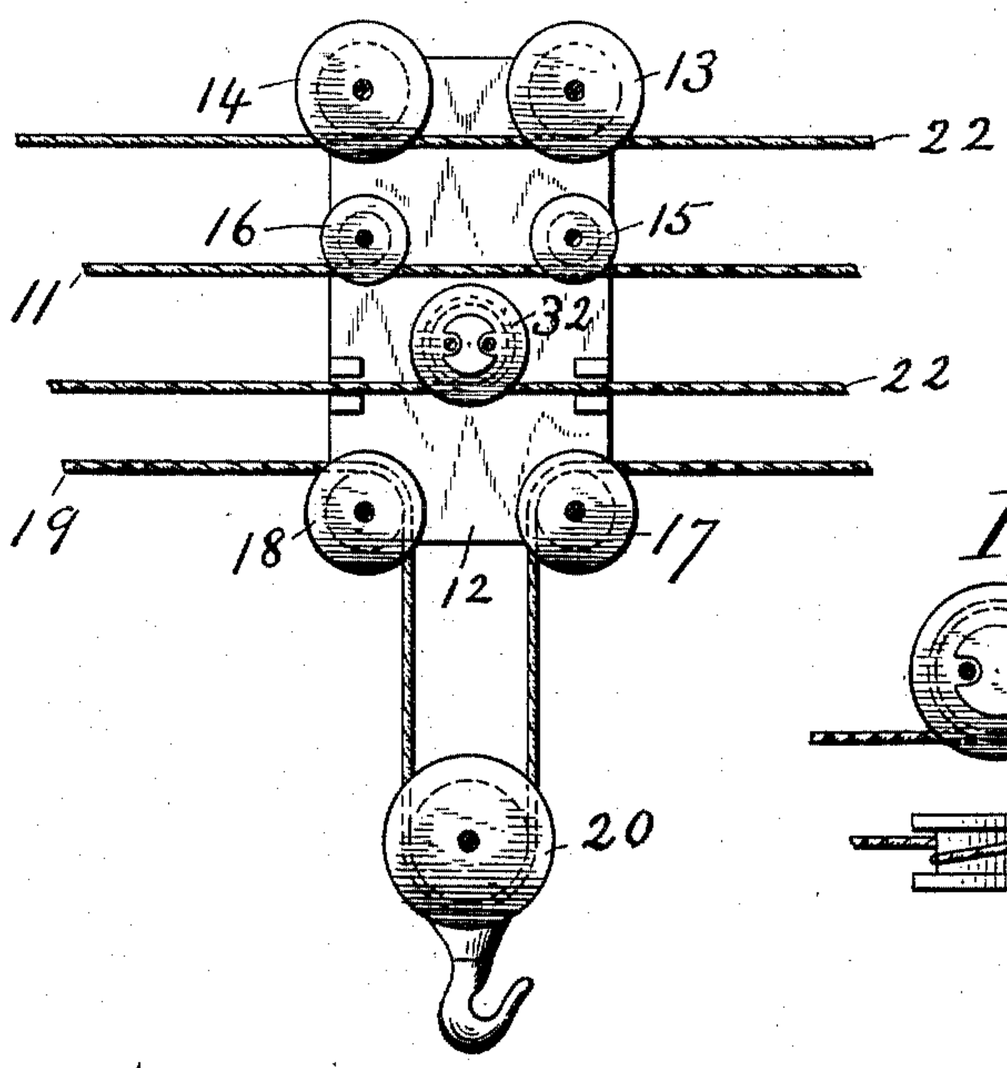


Fig. 3.

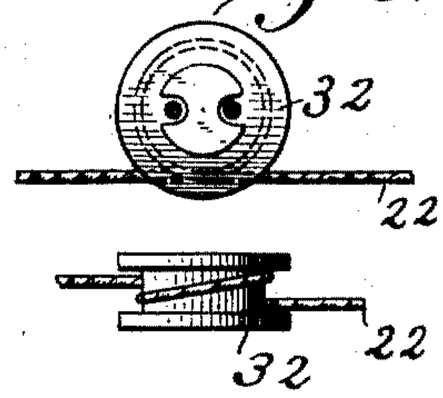
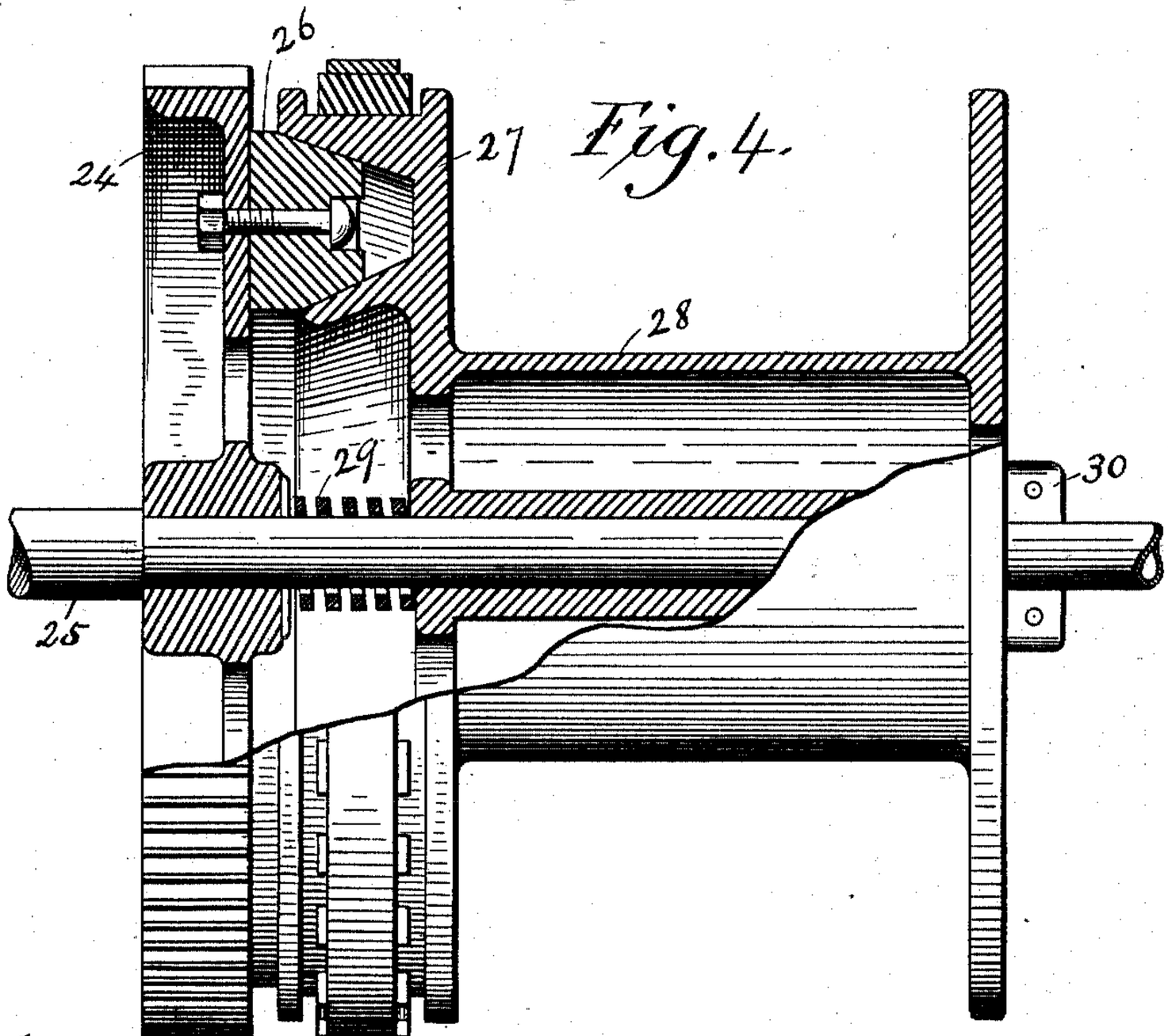


Fig. 4.



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No. 759,901. Patented May 17, 1904.

UNITED STATES PATENT OFFICE.

THOMAS SPENCER MILLER, OF SOUTH ORANGE, NEW JERSEY.

CABLEWAY.

SPECIFICATION forming part of Letters Patent No. 759,901, dated May 17, 1904.

Original application filed June 18, 1898, Serial No. 683,843. Divided and this application filed December 7, 1901. Serial No. 85,056. (No model.)

To all whom it may concern:

Be it known that I, THOMAS SPENCER MILLER, a citizen of the United States, and a resident of South Orange, Essex county, and State of New Jersey, have invented a new and Improved Cableway, of which the following is a specification.

This application is filed as a division of application Serial No. 683,843, filed June 18, 1898, and the subject-matter of this application is shown and generically claimed therein.

In the accompanying drawings, Figure 1 is diagrammatic representation of an apparatus embodying my present invention in side elevation. Fig. 2 is a detail showing the engagement of the various ropes with the load-carriage. Fig. 3 is a further detail of the engagement of the traction-rope with the load-carriage. Fig. 4 is a detail of the rope-drum 10.

1, 2, 3, 4, and 5 are stationary sheaves mounted on the head-support of the cableway.

6 is a stationary sheave mounted on the tail-support of the cableway.

7 is a series of sheaves which may be mounted in the same block and which block is fixed to the end of the rope 8, which passes over the stationary sheave 9 and is secured to the friction rope-drum 10, driven by any suitable engine. A suitable construction for this friction rope-drum is shown in Fig. 4, in which 24 is a driven spur-wheel fixed to the shaft 25 and carrying the friction-ring 26, which engages with a corresponding recess in the flange 27 of the rope-drum 28, which is loose on the shaft and is pressed toward the spur-wheel in opposition to the coil-spring 29 by the cross-pin 30.

31 is a band-brake operating on the periphery of the drum-flange 27.

11 is a supporting rope or cable having one end fixed to the tail-support and extending thence over the sheave 2 on the head-support and having its other end fixed to the block of sheaves 7.

12 is a load-carriage on which are mounted the sheaves 13, 14, 15, 16, 17, and 18. The sheaves 15 and 16 run on the supporting-rope 11.

19 is a hoisting-rope secured at one end to the tail-support and extending thence over the load-carriage sheave 17 down and around the fall-block sheave 20, up and over the load-carriage sheave 18, around one of the series of sheaves 7, over the sheave 5 to the friction rope-drum 21, to which it is secured and which is driven by any suitable engine.

22 is a traction-rope which is preferably endless. It is actuated from a suitable engine through the friction rope-drum 23, around which it is wrapped or to which both its ends are secured. One run of it extends from the rope-drum 23 over the sheave 3 through a device on the load-carriage, which may be adapted to form a yielding engagement therewith, and around the sheave 6. The other run of the traction-rope 22 extends from the sheave 6 under the load-carriage sheaves 13 and 14, over the sheave 1, around one of the series of sheaves 7, over the sheave 4 to the rope-drum 23.

A suitable form of yielding engagement between the load-carriage and the rope 22 is shown in Figs. 2 and 3. It consists of a stud 32, which is in the form of a sheave, but instead of being capable of rotation is fixed to the frame of the load-carriage 12. The traction-rope 22 makes one or more turns around this stud, and thereby exercises sufficient friction upon it to cause the carriage to travel under ordinary conditions, but to slip in case the carriage encounters an obstruction.

In operation the friction actuating the rope-drum 10 is run in the direction of the arrow, so that its slip exerts a constant tension upon the cableway, the power of which tension is under the control of the operator by the adjustment of the friction. This tension can thus be regulated so as to prevent the possibility of any overstraining of the ropes of the cableway, as they can never be strained beyond the yielding point of this tension. For example, if the weight upon the fall-rope should be greater than could be safely raised by the apparatus as the hoisting-drum 21 was operated the drum 10 would act as a pay-out device to temporarily prevent the load from being raised, giving the operator time to stop the drum 21. In other words, the adjustment

of the friction on the drum 10 enables it to act as a detector and safety appliance to warn the operator by its slipping when the load is too great for the apparatus and also to pay out rope to sufficiently arrest the lifting of the load for safety. The support of the load-carriage is shared by the two runs of the traction-rope 22 and the supporting-rope 11, the sag of each of which is controlled by the tension of the rope 8. The burden of supporting the fall-block 20 is distributed between the tail-support and the tension-rope 8, and when the fall-block 20 is hoisted up into contact with the load-carriage the support of the load-carriage may be shared also by the hoisting-rope during the transit of the load-carriage from end to end of the cableway. With the load-carriage at any point of the cableway—as, for example, that shown in the drawings—the paying out of the rope-drum 21 lowers the fall-block to any elevation required for taking on a load. The winding in of the rope-drum 21 then hoists the load up to the carriage and the rope-drum 21 may then remain stationary as the carriage is moved along the cableway. Subsequently the rope-drum 21 may be paid out for lowering the load. The movements of the carriage along the cableway are accomplished by the rope-drum 23, which also, as already stated, participates in the support of the load-carriage, and thus enables a much smaller supporting-cable 11 to be used than would otherwise be required. The fall-rope 19 does not substantially impede the free movement of the load-carriage along the cableway because of the running engagement between the rope 19 and the load-carriage afforded by the sheaves 17 and 18.

By the adjustment of the power of friction exerted on the tension rope-drum 10 the extent of sag at which the cableway is operated may be controlled for any given weight of load and by paying out the rope-drum 10 the cableway may be permitted to sag, so as to lower the load-carriage, if desired, to the point required for taking on or depositing a load without lowering on the hoisting-rope 19.

The friction rope-drums 10, 21, and 23 may be severally constructed as shown in the Beekman patent, No. 541,308 dated June 18, 1895, and each driven by an ordinary reversible link-motion engine.

Although the apparatus described is primarily intended to be mounted upon stationary head and tail supports, it may be combined with head and tail supports having relative to-and-fro movement. Thus the drums 10, 21, and 23 may be mounted on the deck of one vessel and the sheaves 1, 2, 3, 4, and 5 mounted on a mast of the same vessel, while the sheave 6 and the tail end attachment of the rope 19 is mounted on a mast of another vessel, the relative to-and-fro motions of the head and tail supports being produced by the action of the waves. When thus combined with two vessels, one of which is towing the other, the apparatus may be employed for coaling at sea.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a ropeway, in combination, a traction-rope having an outward and an inward run, an actuator for the said rope, a tension device for said rope, a carriage provided with a wheel resting on one of the runs of said traction-rope and with means engaging the other run thereof and a hoisting-rope extending to said carriage.

2. In a ropeway, in combination, the head and tail supports, a traction-rope extending from one of said supports to the other and back again, a load-carriage through which said traction-rope extends, a member mounted on said carriage with which said rope engages, a hoisting-rope extending to said carriage and means whereby the slack of both of said ropes may be taken up.

3. In a ropeway, in combination, a load-carriage, a supporting-rope, a traction-rope and a hoisting-rope and unitary means for controlling the tension on all of said ropes.

4. In a ropeway, in combination, a supporting-rope a load-carriage running on said rope, a traction-rope having two runs extending across the span and engaging with the carriage to assist in supporting it, a tension device acting upon said traction-rope and a hoisting-rope.

5. In a ropeway, in combination, a traction-rope, a hoisting-rope, means for actuating the same and unitary means for controlling the tension on the same.

6. In a ropeway, in combination, a traction-rope, a load-carriage resting thereon and actuated thereby, a hoisting-rope and unitary means for controlling the tension on both of said ropes.

7. In a ropeway, in combination, a supporting-rope, a hoisting-rope and unitary means for controlling the tension on both of said ropes.

8. In a ropeway, in combination, a load-carriage, a hoisting-rope extending across the space and forming a loop beneath the carriage, a fall-block in said loop, means for actuating said hoisting-rope and a pay-out device connected with said hoisting-rope whereby its hoisting power is controlled.

9. In combination, a load-carriage adapted to run on a ropeway, a hoisting-rope, a ropeway whereby said load-carriage is supported and on which it runs, means for actuating the hoisting-rope and a tension device consisting of a friction-controlled rope-drum whereby the deflection of said ropeway is controlled.

10. In a ropeway, in combination, a supporting-rope, a traction-rope, unitary means for controlling the tension of both of said ropes and a hoisting-rope.

11. In a ropeway, in combination, a hoist-

ing-rope, means for actuating the same, a movable sheave in a loop of the same, a pay-out rope connected with said movable sheave and a pay-out device whereby the hoisting power may be controlled.

12. In a ropeway in combination two supports having relative to-and-fro movement, a supporting-rope extending between said supports, a load-carriage, a traction-rope, a hoisting-rope and unitary means for controlling the tension on all of said ropes.

13. In a ropeway in combination two relatively movable supports, a traction-rope extending between said supports, a load-carriage resting upon said traction-rope, a hoisting-rope, and a unitary tension-controlling means for both ropes.

14. In a ropeway in combination, two relatively movable supports, a supporting-rope extending between said supports, a hoisting-rope and unitary means for controlling the tension on both ropes.

15. In a ropeway in combination, two relatively movable supports, a load-carriage, a hoisting-rope extending between said supports and forming a loop beneath the carriage, a fall-block in said loop, means for actuating said hoisting-rope and a tension device connected with said hoisting-rope whereby its hoisting power is controlled.

16. In a ropeway in combination two relatively movable supports, a trackway or supporting-rope, a load-carriage, a hoisting-rope, means for actuating said hoisting-rope and a tension device whereby its hoisting power is controlled.

17. In a ropeway in combination, two relatively movable supports, a supporting-rope extending between said supports, a traction-rope, unitary means for controlling the tension on both of said ropes, and a hoisting-rope.

18. In a ropeway, in combination, a load-carriage, traction, hoisting and supporting ropes therefor and a tension device; the said supporting-rope connecting said tension device with said traction and hoisting ropes whereby the tension is transmitted through said supporting-rope to said traction and hoisting ropes.

19. In a ropeway, in combination, a traction-rope, a load-carriage having a running supporting engagement with one run of said traction-rope, and a traction engagement with the other run thereof, means whereby the deflection of said traction-rope is controlled, a hoisting-rope having a running engagement with said carriage and extending thence toward the head and tail of the ropeway and means whereby said hoisting-rope is actuated.

20. In a cableway, in combination, a load-carriage, a traction-rope participating in the support thereof, a movable pulley in a loop of said traction-rope, means whereby the position of said movable pulley may be controlled to vary the deflection of said traction-rope and a hoisting-rope, the deflection of which is also controlled by the position of said movable pulley.

21. In a ropeway, in combination, a load-carriage, a supporting-rope, a traction-rope, a hoisting-rope and a movable pulley whereby the deflection of all of said ropes is controlled.

22. In a ropeway, in combination, a load-carriage, a traction-rope, a hoisting-rope forming a loop below said carriage and extending therefrom toward the head and tail supports and a unitary means whereby the deflection of said traction-rope and hoisting-rope is controlled.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

THOMAS SPENCER MILLER.

Witnesses:

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H. L. REYNOLDS.