J. T. HORTON & E. H. DELINE.

FALL ROPE CARRIER.

APPLICATION FILED MAY 9, 1911.

1,003,261. Patented Sept. 12, 1911.

Fig. 2.

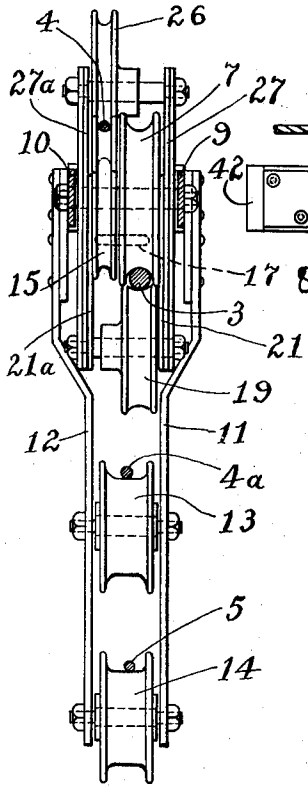


Fig. 1.

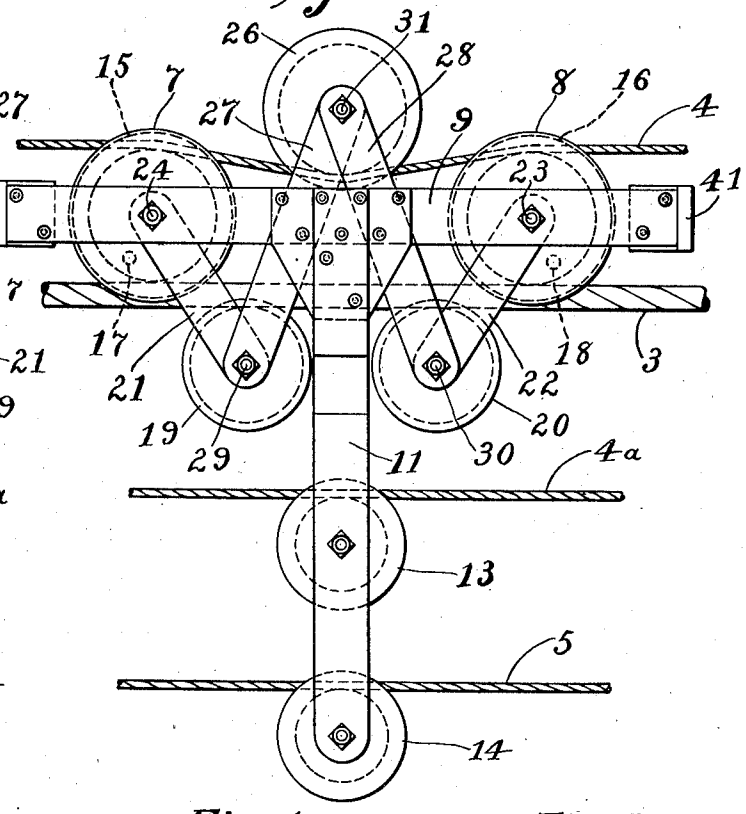


Fig. 3.

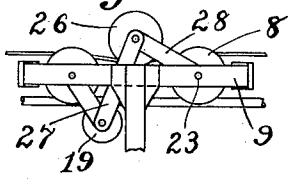


Fig. 4.

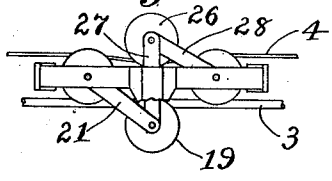


Fig. 5.

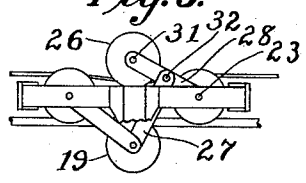


Fig. 6.

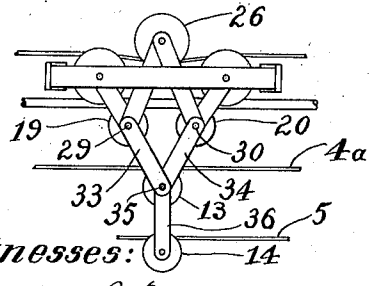
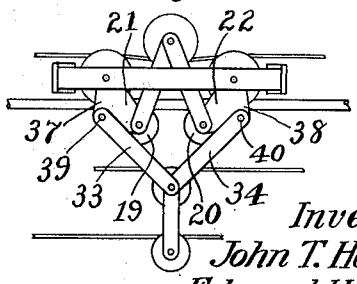


Fig. 7.



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UNITED STATES PATENT OFFICE.

JOHN T. HORTON AND EDWARD H. DELINE, OF NEW YORK, N. Y.

FALL-ROPE CARRIER.

1,003,261. Specification of Letters Patent. Patented Sept. 12, 1911.

Application filed May 9, 1911. Serial No. 626,004.

To all whom it may concern:

Be it known that we, JOHN T. HORTON and EDWARD H. DELINE, citizens of the United States, and residents of New York, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fall-Rope Carriers, of which the following is a specification.

This invention relates to fall rope carriers for cableways.

The object of our improvements is to provide means simple in construction and reliable in operation for supporting the operating ropes of overhead cableways. With these objects in view the preferred form of our improvements is illustrated in the accompanying drawings wherein—

Figure 1 is a side elevation of our fall rope carrier and Fig. 2 is a corresponding end elevation partly in section. Figs. 3 to 7 inclusive are diagrammatic side elevations to a reduced scale illustrating modifications of our improvements.

As the general function of fall rope carriers is well known it is deemed unnecessary to illustrate the present device in connection with the other parts of a cableway.

Our improved device differs from the devices of the prior art of which we have knowledge in its increased simplicity of construction and efficiency of operation. In simplicity of construction in that its framework is constructed of flat bars of commerce without other machine work than shearing to length and drilling. In efficiency of operation in that the supporting cable is gripped with a pressure in excess of that exerted by the grip actuating means, said pressure being increased by leverage due to the peculiar arrangement of the parts of our device.

Referring now particularly to Figs. 1 and 2, 3 is the usual supporting cable, 4 the driving or traction line, 4^a the return run thereof and 5 is the hoisting or fall rope. Two cable traverse wheels 7, 8 are revolubly mounted on fixed axes supported between horizontal side frames 9, 10. For stability said side frames may be secured to end blocks 41, 42. Depending side arms 11, 12 are fixed at their upper ends midway the length of side frames 9, 10 and have rotatably mounted therein wheels 13, 14 for supporting the return run 4^a of traction line 4 and hoisting or fall rope 5. Mounted coaxially with and fixed to cable traverse wheels 7, 8, as by pins 17, 18, are drive wheels 15, 16 respectively. These drive wheels are illustrated as of the same diameter as traverse wheels 7, 8 which will cause the device to traverse cableway 3 at half the speed of drive line 4. If it is desired to have said fall rope carrier travel faster or slower than half the speed of drive line 4, drive wheels 15, 16 or traverse wheels 7, 8, or all four must be changed in diameter to correspond with the desired speed, according to well-known practice. It will be observed that, to cause the fall rope carrier to travel at half the speed of drive line 4, said line could equally well engage the upper sides respectively of traverse wheels 7, 8, and tension wheel 26 shifted to the right on its axis 31, Fig. 2, to correspond, thus dispensing with drive wheels 15, 16. To cause traverse wheels 7, 8 to grip cable 3 and travel in rolling contact thereon we provide one or more gripper wheels as 19, 20 for engagement with the underside of said cable. These gripper wheels are rotatably mounted in the free ends respectively of arms as 21 to wheel 19 and 22 to wheel 20. Said arms are pivotally mounted at their upper ends in convenient positions in side frames 9, 10 on pivots 23, 24, said pivots preferably being concentric with wheels 7, 8 all respectively. Arms 21, 22 are preferably double arms as 21, 21^a on each side of wheel 19. To cause wheels as 19, 20 to grip the underside of cable 3 we provide tension wheel 26 for engagement with the upper side of traction line 4 preferably between wheels 15, 16. Said tension wheel 26 is rotatably mounted at 31 in the upper ends respectively of links 27, 28, the lower ends of said links being pivotally attached to arms 21, 22, preferably at 29, 30 coaxial with gripper wheels 19, 20 respectively.

Said links 27, 28 are also preferably double as links 27, 27ª on each side of wheel 26. The length of links 27, 28 is such that the lower edge of wheel 26 is below the horizontal plane passing through the upper edges of wheels 15, 16 whereby traction line 4 is more or less deflected downwardly between said wheels 15, 16. By this arrangement tension on said line 4 tends to force upwardly wheel 26 whereby through links 27, 28 gripper wheels 19, 20 are swung upwardly and toward each other in the free ends of arms 21, 22 respectively and are caused to grip cable 3. Also the arrangement of said links 27, 28 and arms 21, 22 is such that the upward movement of either wheel 19 or 20 is less than the upward movement of wheel 26 whereby the gripping power applied by said wheels 19, 20 is greater than the power applied by line 4 to lift wheel 26. It will therefore be observed that the greater the tension on traction line 4 the greater will be the gripping effect of wheels 19, 20 on the under side of said cable 3 and on the upper side thereof by wheels 7, 8. By this arrangement any increase in power required to move the load carriage and fall block as for instance up the incline toward one of the supporting towers not shown will cause an additional tension on traction line 4 and a corresponding increase in the gripping ability, on main cable 3, of our improved fall rope carrier.

In the arrangement illustrated in Fig. 3 but one gripper wheel 19 is shown and link 28 of tension wheel 26 is therefore pivoted at its lower end to frame 9 preferably at 23 concentric with wheel 8.

In Fig. 4 a similar arrangement to that of Fig. 3 is shown, differing therefrom only in the length of arm 27 which length is increased to bring wheels 26 and 19 in substantially the same vertical plane whereby the upward pull exerted by line 4 on wheel 26 is the same as that transmitted through wheel 19 to cable 3.

In Fig. 5 link 27 is connected to link 28 at 32 between the ends 31 and 23 thereof, whereby an increased leverage between wheels 26 and 19 is had.

In Fig. 6 side arms 11, 12 are omitted and wheel 13 is suspended from pivots 29, 30 of wheels 19, 20 by links 33, 34 respectively. Wheel 14 may be suspended from pivot 35 of wheel 13 by short links as 36. In this arrangement the downward pull of lines 4ª and 5 tend to slightly counteract the upward pull of wheel 26. To reverse this tendency we proceed according to the showing of Fig. 7 wherein links 21, 22 have oppositely extending ears 37, 38 wherein are pivoted at 39, 40 the upper ends of links 33, 34 respectively. By this arrangement downward pull on links 33, 34 tends to force wheels 19, 20 upwardly.

We claim:—

1. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of a swinging arm and a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm, the free ends of the gripper wheel and tension wheel arms being linked together.

2. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of a swinging arm the other end of which is rotatably mounted on an axis fixed relatively to the cable traverse wheels and a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm, the free ends of the gripper wheel and tension wheel arms being linked together.

3. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of an arm the other end of which is rotatably mounted coaxially with one of said traverse wheels and a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm, the free ends of the gripper wheel and tension wheel arms being linked together.

4. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, two gripper wheels for engagement with the under side of the supporting cable and each rotatably mounted in the free end of an arm the other end of which is rotatably secured coaxially with its adjacent

traverse wheel and a tension wheel for engagement with the upper side of said driving line and rotatably mounted on an axis which is linked to each of the axes of the gripper wheels.

5. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of a swinging arm the other end of which is rotatably mounted on an axis fixed relatively to the cable traverse wheels, a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm, the free ends of the gripper wheel and tension wheel arms being linked together, and means for supporting the fall rope.

6. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, two gripper wheels for engagement with the under side of the supporting cable and each rotatably mounted in the free end of an arm the other end of which is rotatably secured coaxially with its adjacent traverse wheel, a tension wheel for engagement with the upper side of said driving line and rotatably mounted on an axis which is linked to each of the axes of the gripper wheels and means linked to the axes of said gripper wheels for supporting the fall rope.

7. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of an arm the other end of which is rotatably mounted on an axis fixed relatively to the cable traverse wheels, a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm and means connecting said gripper wheel and tension wheel to cause upward movement of the tension wheel to impart upward movement to said gripper wheel.

8. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of an arm the other end of which is rotatably mounted on an axis fixed relatively to the cable traverse wheels, a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm and means connecting said gripper wheel and tension wheel to cause upward movement of the tension wheel to impart upward movement of less amount to said gripper wheel.

9. A fall rope carrier including in combination, two supoprting cable traverse wheels rotatably mounted in fixed relation to each other for engaging the upper side of the supporting cable, a wheel mounted coaxially with and fixed to each cable traverse wheel for engagement with the lower side of the driving line, two gripper wheels for engagement with the under side of the supporting cable and each rotatably mounted in the free end of an arm the other end of which is rotatably secured coaxially with its adjacent traverse wheel, a tension wheel for engagement with the upper side of said driving line and rotatably mounted on an axis which is linked to each of the axes of the gripper wheels and means linked to the arms of the gripper wheels for supporting the fall rope, and for urging said gripper wheels to engagement with the supporting cable.

10. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of a swinging arm and a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm the free ends of the gripper wheel and tension wheel arms being linked together.

11. A fall rope carrier including in combination, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, a gripper wheel for engagement with the under side of the supporting cable and rotatably mounted in the free end of a swinging arm the other end of which is rotatably mounted on an axis fixed relatively to the cable traverse wheels and a tension wheel for engagement with the upper side of said driving line and rotatably mounted in the upper end of a second swinging arm, the free ends of the gripper wheel and tension wheel arms being linked together.

12. A fall rope carrier including in combi-

nation, two supporting cable traverse wheels rotatably mounted in fixed relation to each other, two gripper wheels for engagement with the under side of the supporting cable and each rotatably mounted in the free end of an arm the other end of which is rotatably secured coaxially with its adjacent traverse wheel and a tension wheel for engagement with the upper side of said driving line and rotatably mounted on an axis which is linked to each of the axes of the gripper wheels.

Signed this 8th day of May 1911 before two subscribing witnesses.

JOHN T. HORTON.
EDWARD H. DELINE.

Witnesses:
CHAS. W. LERUE,
LOUIS B. TISCHLER.