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AERIAL TRANSPORTATION.

APPLICATION FILED MAY 25, 1908.

952,539.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.

Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

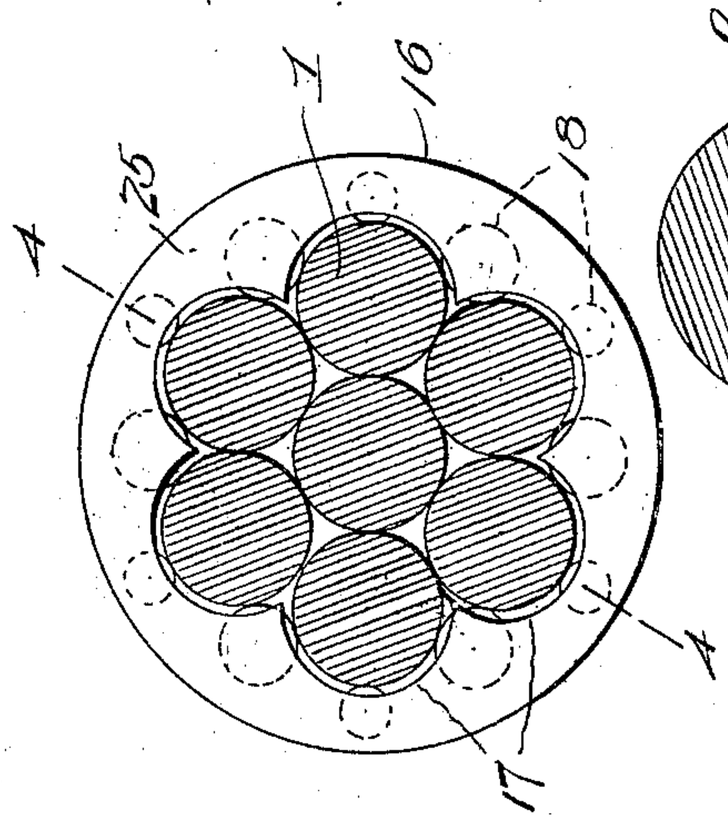


Fig. 5.

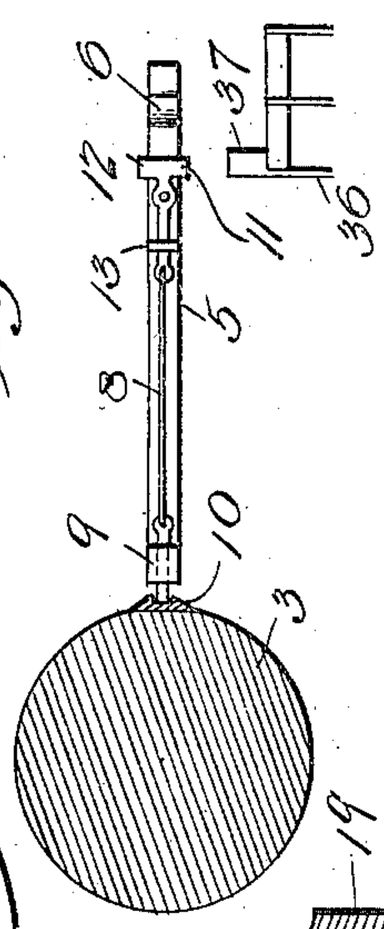
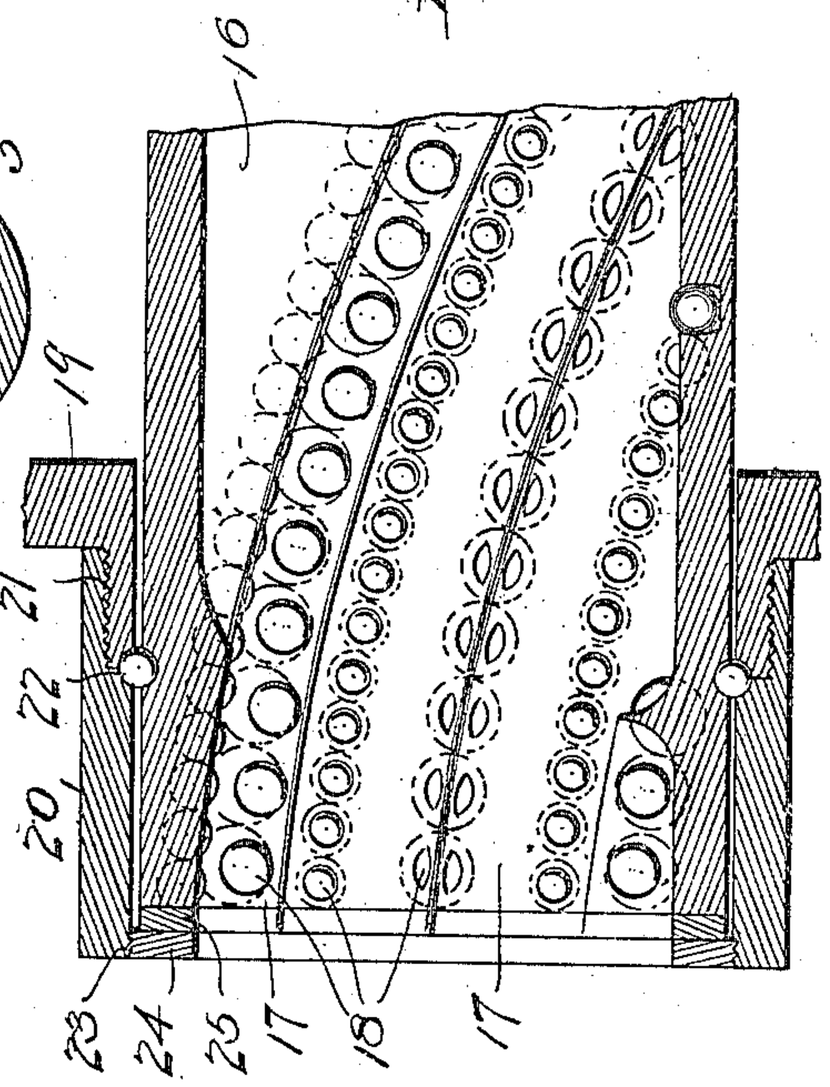


Fig. 4.



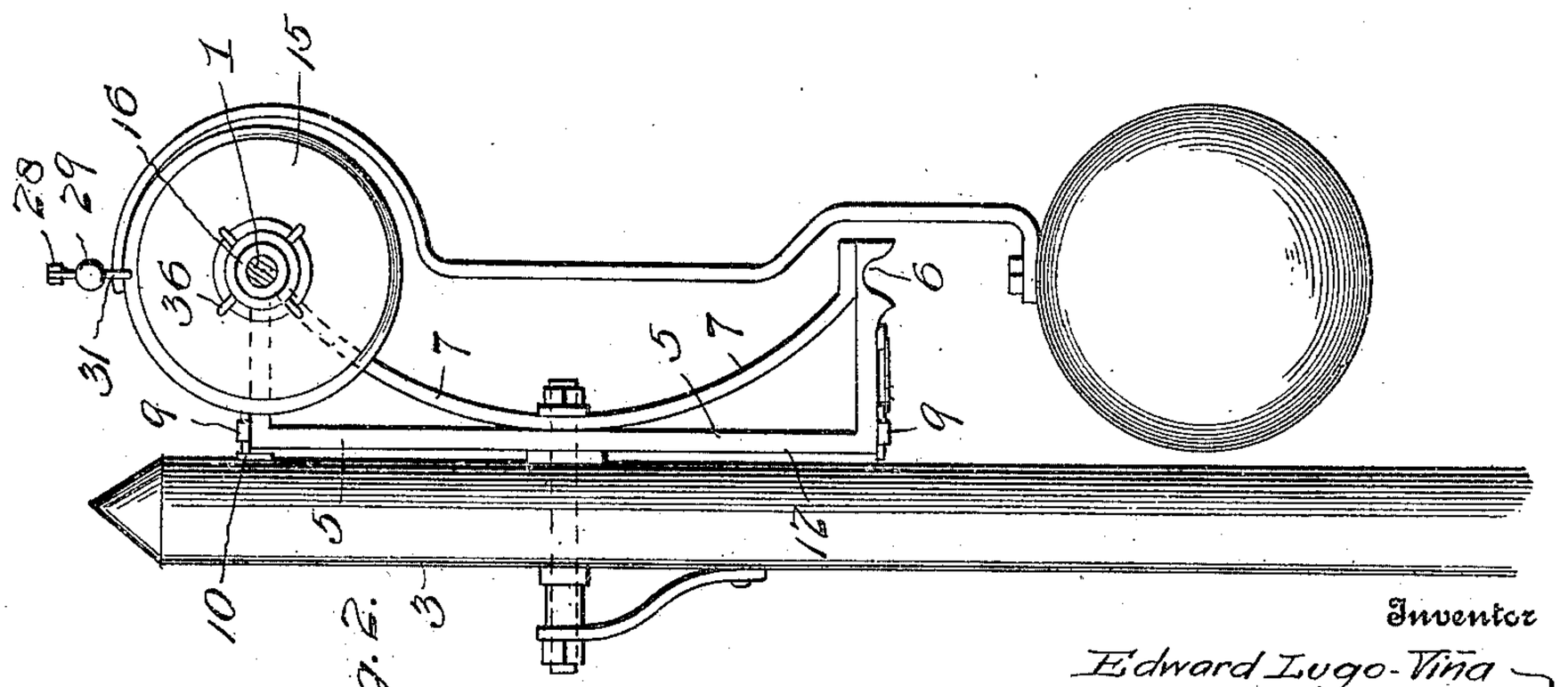


Fig. 2.

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AERIAL TRANSPORTATION.

952,539. Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed May 25, 1908. Serial No. 434,985.

To all whom it may concern:

Be it known that I, EDWARD LUGO-VIÑA, a citizen of Porto Rico, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Aerial Transportation, of which the following is a specification.

The present invention relates to aerial transportation in which an overhead cable or track has a motor car suspended therefrom, and one of the principal objects of the invention is to provide for automatically increasing the power of the motor when the same is climbing an upgrade portion of the cable or track so that there will be no decrease in speed thereof.

Another prominent feature of the invention is in the mounting of the motor on the cable or support whereby the maximum of traction is obtained, and which mounting is so constructed as to prevent any coasting of the motor when on a down grade.

In connection with the above generally stated objects, the invention also contemplates the employment of a novel form of supporting means for the cable or track with which coöperates means carried by the motor to facilitate the passage of the motor past such support.

With the above and many other objects in view the invention in its entirety contemplates the employment of an overhead cable or track which is supported by rotatable arms carried by the usual posts, said cable or track being provided with a spiral outer surface, combined with a motor mounted on said cable or track and provided with a hollow shaft the interior of which is of the same configuration as the outer surface of the cable or track, said motor carrying means for engagement with said rotatable supporting arms whereby they are moved out of the path of movement of the motor, and also provided with automatically actuated power controlling means adapted to increase the power of the motor when the same is on an upgrade, decrease the power when on a down grade, and preserve the power at the normal when running on the level.

The invention is susceptible of many and wide variations in structural arrangements and details of parts, but a preferred and practical embodiment of the same is shown in the accompanying drawings, in which—

Figure 1 is a view in elevation showing the overhead supporting cable or track, one of its rotatable supports, and a motor mounted on the cable or track. Fig. 2 is an end view of the same. Fig. 3 is a detail view of one end of the motor shaft. Fig. 4 is a sectional view taken on the line 4—4 of Fig. 3. Fig. 5 is a top plan view of the locking means for the rotatable supporting arms. Fig. 6 is a diagrammatic view of the power controlling mechanism of the motor.

Like characters of reference designate corresponding parts.

In the practical example of the invention shown in the accompanying drawings, the overhead support 1 has been shown as of wire cable, the strands of which it is formed giving its outer surface the spiral contour as is usual in cables. And while it has been conclusively established that a spirally wound cable possesses valuable properties in connection with the present invention, it is to be understood that the invention is not necessarily limited to such, for it will be obvious that a rod, or track, having a spiral outer surface will subserve the same functions as the wire cable.

A supporting wheel 2 is rotatably mounted on a post 3 which may also support a feed wire 4. Said supporting wheel is provided with a plurality of radiating arms 5, the ends of which are outturned and provided with cable seats or rests 6. To provide a strong structure, each of the arms are preferably provided with braces 7. The normal position of said supporting arms is as shown in Fig. 1 of the accompanying drawings, and by reference to said figure it will be observed that one arm only is used for supporting the overhead cable, and to normally retain said arm in such position, the outturned portion thereof carries a sliding rod 8, one end of which has a spring latch 9 adapted to enter a keeper 10 carried by the post 3. The other end of the sliding rod 8 is provided with a pivoted tripping lever having outstanding crank arms 11—12. Said outturned portion of the arms also carries guides 13 for the pivoted tripping lever.

A motor 15 is provided with a hollow power shaft 16 mounted on said cable, the interior surface of said hollow power shaft being spirally grooved as at 17 to correspond with the spiral outer surface of the said cable. The construction of the hollow power shaft 16 is shown in detail in Figs. 3 and 4

of the accompanying drawings, and by referring to said figures it will be observed that each of the spirally arranged grooves in said shaft carry antifriction rollers 18, which in addition to reducing the friction between the shaft and the cable, also serve to increase the traction between such parts, as said bearings are so positioned in said grooves that they enter the grooves in the cable. It will be understood that said shaft 16 is rotated in the usual manner by the motor, and the same is held in rotative relation to the motor casing 19 through a sleeve 20 having a threaded engagement with a similarly threaded portion 21 of said casing, a ball race 22 being interposed between the junction of said sleeve, motor casing, and the shaft to overcome any friction. The outer end of said sleeve 20 has an interiorly threaded portion 23 which is engaged by a threaded ring 24. A ring 25 being secured to the end of the shaft 16 is adapted to retain the antifriction balls 18 in position.

The top of the motor casing 19 carries a vertically arranged supporting standard 27 upon which a centrally pivoted, horizontally arranged lever 28 is mounted, to each end of which weights 29—30 are connected which serve to always retain said lever in a horizontal position irrespective of the position of the motor. A rod 31 depends from the weight 29 and has its lower end extended into the motor casing 19 and connected with one end of a bell crank lever 32 which in turn is connected with a contact lever 33 in circuit with a rheostat 34 of the motor 15. Said rheostat is provided with a plurality of contacts 35. It will thus be seen that through the mounting of the horizontal lever on the motor casing and its described connection with the contact lever 33, when the motor is ascending an upgrade, the said lever will be operated to increase the power of the motor; on a down grade the power of the motor will be decreased, and when running on the level the power will be normal, as is well understood and which is not thought necessary to described in detail here.

Each end of the motor casing carries an outstanding frame 36 from which projects a latch tripping lug 37 adapted to engage with one of the crank arms 11 or 12 of the rotatable supporting arms to unlatch the same from its keeper in the supporting post. The operation of this important feature of the invention is as follows:—As heretofore stated, the cable is supported by one arm only, and assuming the parts to be in the position shown in Fig. 1 of the drawings, it will be seen that the latch tripping lug is in a position to throw the cranks to a position to withdraw the latch from its keeper, after which the frame contacts with the arm and moves it from engagement with the cable, such movement being permitted owing to the rotatable mounting of said arms on their supporting post. The supporting arms are so positioned that there is ample space between them to permit of the motor passing the post before the next arm is brought to its cable supporting position, so that it will be seen that as soon as one arm has been pushed away from its supporting position, the next arm follows closely behind the rear end of the motor and engages with the cable, it being retained in such position by its spring latch which springs into engagement with the keeper in the supporting post.

From the foregoing description it will be understood that the transportation system embodied in this invention may be used for various purposes, and as the same is one that can be readily installed it possesses valuable properties for the quick handling of freight and the like.

I claim as my invention:—

1. An aerial transportation system comprising an overhead cable or track, a motor mounted thereon, a rheostat controlling said motor, a counterbalanced lever carried by said motor and adapted to be retained in a horizontal position, and connections between said lever and said rheostat whereby the power of said motor is automatically increased or decreased.

2. An aerial transportation system comprising an overhead cable or track, a motor mounted thereon, a rheostat controlling said motor, a counter-balanced lever mounted on said motor, means for retaining said lever in a horizontal position relatively to said motor, and lever connections between said counter-balanced lever and said rheostat whereby the power of the motor is automatically regulated when the same assumes an incline relatively to said counter-balanced lever.

3. An aerial transportation system comprising an overhead cable or track, a motor mounted thereon, a rheostat carried by said motor, a counterbalanced lever mounted on said motor and retained in a horizontal position relatively thereto, and a connection between one end of said counter-balanced lever and said rheostat whereby the power of the motor is automatically regulated to compensate for an up grade or a down grade.

4. An aerial transportation system comprising an overhead track or cable having a spirally arranged outer surface, a motor mounted on said cable or track and provided with a hollow power shaft the interior of which has the same configuration as the outer surface of said cable or track, means carried by said shaft for engaging said cable or track, and means for automatically regulating the power of said motor.

5. An aerial transportation system comprising an overhead track or cable having a spiral outer surface, a motor mounted on

said cable or track and provided with a hollow power shaft the interior of which is grooved spirally, antifriction rollers carried by said shaft and adapted to grip the said cable or track, and means for automatically regulating the power of said motor.

6. An aerial transportation system comprising an overhead track or cable, a motor mounted thereon and provided with a hollow power shaft adapted to grip said cable or track, and means for automatically increasing or decreasing the power of said motor.

7. An aerial transportation system comprising an overhead cable or track having a spiral outer surface, a motor mounted on said cable or track and provided with a hollow power shaft the interior of which is spirally grooved to correspond with the outer surface of said cable or track, antifriction rollers mounted in said grooves and adapted to grip the said cable or track, and means automatically regulating the power of said motor.

8. An aerial transportation system comprising an overhead cable or track having a spiral outer surface, a motor provided with hollow power shaft which is mounted on said cable or track, said hollow shaft being spirally grooved to correspond with the spiral outer surface of said cable or track, antifriction rollers mounted on each side of the grooves in said shaft and adapted to grip the said cable or track, and means for automatically regulating the power of said motor.

9. In a transportation system the combination with a cable or track having a spiral outer surface, of a motor provided with a hollow power shaft having a grooved interior adapted to engage with and travel upon said cable or track.

10. In an aerial transportation system the combination with an overhead cable or track having a spiral outer surface, of a motor mounted on said cable or track and provided with a power shaft the interior of which is grooved similar to said cable or track and provided with gripping antifriction rollers.

11. An aerial transportation system comprising an overhead cable or track, a support therefor comprising a plurality of rotatable arms adapted to singly support said cable or track, and a motor traveling on said cable or support and adapted to contact with and rotate said arms to cause them to selectively engage with the cable or track.

12. An aerial transportation system comprising an overhead cable or track, a rotatable support therefor comprising a plurality of arms adapted to singly engage and support said cable or track, and a motor traveling on said cable or track adapted to contact with and disengage the supporting arm and cause another arm to swing to a cable supporting position.

13. An aerial transportation system comprising an overhead cable or track, a rotatable support therefor comprising a plurality of arms adapted to singly engage with and support said cable or track, means for normally retaining one of said arms in a supporting position, and a motor adapted to disengage said supporting arm and rotate another arm to the supporting position vacated by the first mentioned arm.

14. An aerial transportation system comprising an overhead cable or track, a rotatable support therefor comprising a plurality of radiating arms adapted to singly support said cable or track, means for locking the supporting arm in its supporting position, and a motor provided with an abutment adapted to contact with said supporting arm to unlock the same and move it from its cable or track supporting position and at the same time cause another arm to support the cable or track.

15. An aerial transportation system comprising an overhead cable or track, a support therefor comprising a wheel provided with radiating arms carrying seats for said cable or support, said arms being arranged so that but one of the same will be in engagement with the cable or track, locking means for normally retaining said arm in its supporting position, and a motor carrying an abutment adapted to first unlock said arm and then rotate said wheel to bring another arm in a cable or track supporting position.

16. In an aerial transportation system, the combination with an overhead cable or track, a rotatable support therefor comprising radiating arms carrying rests or seats for the cable or track, means for locking said arms in a supporting position, and a motor carrying offstanding abutment adapted to first unlock said arms and then rotate the same whereby the motor may have an unobstructed passage past said support.

17. An aerial transportation system comprising an overhead cable or track, a rotatable support provided with a plurality of radiating arms adapted to singly support said cable or track, means for normally retaining said arm in a supporting position, and a motor adapted to first unlock said arm and then rotate the entire support to bring another arm to a cable or track supporting position.

In testimony whereof I affix my signature in presence of two witnesses.

E. LUGO-VIÑA.

Witnesses:

H. P. HOWARD, Jr.,

E. O. CROCKER.