

(No Model.)

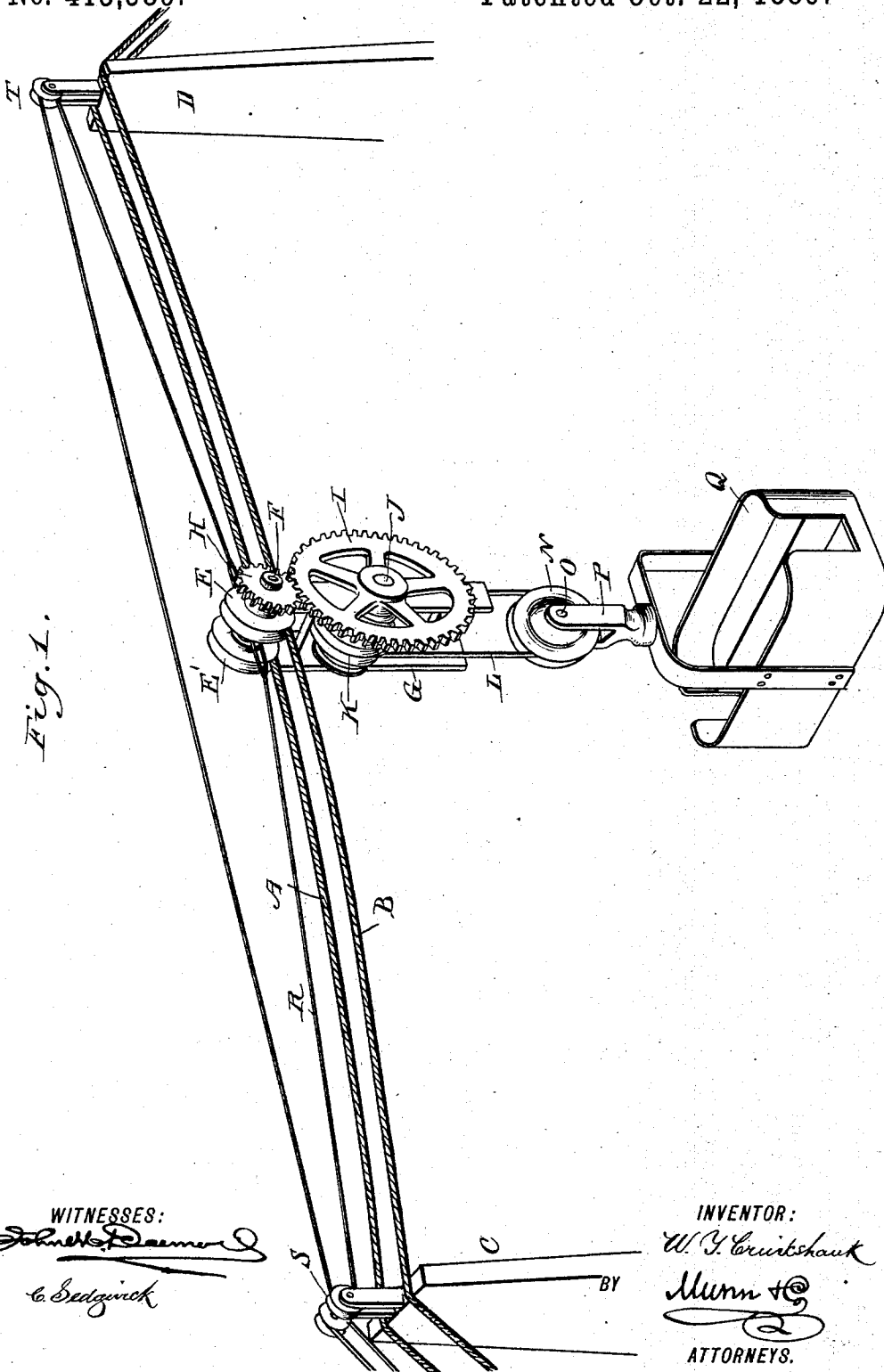
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W. Y. CRUIKSHANK.

CARRIAGE ADAPTED TO RUN ON WIRE CABLES.

No. 413,389.

Patented Oct. 22, 1889.



WITNESSES:
John D. Deane
C. Sedgwick

INVENTOR:
W. Y. Cruikshank
BY *Munn & Co.*
ATTORNEYS.

(No Model.)

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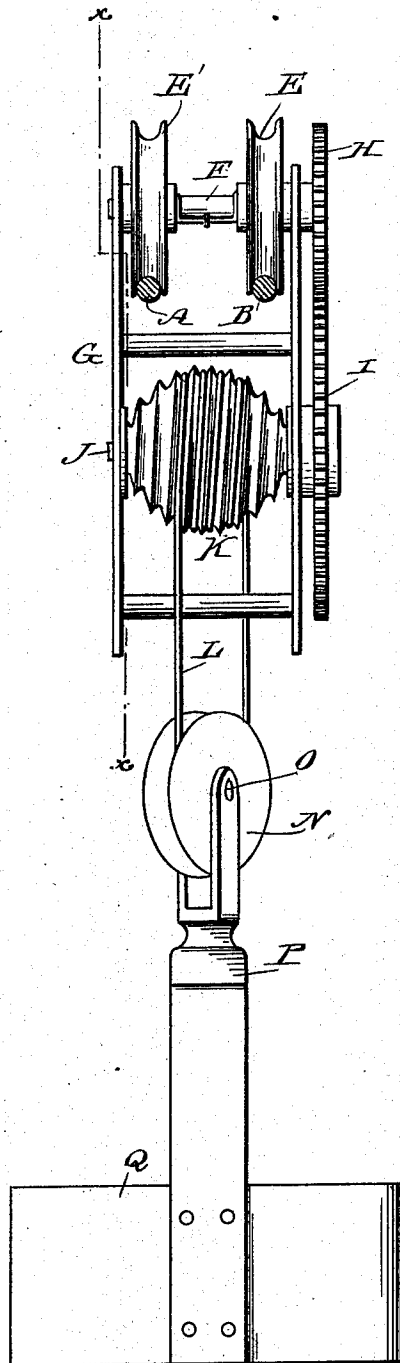
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Fig. 2.



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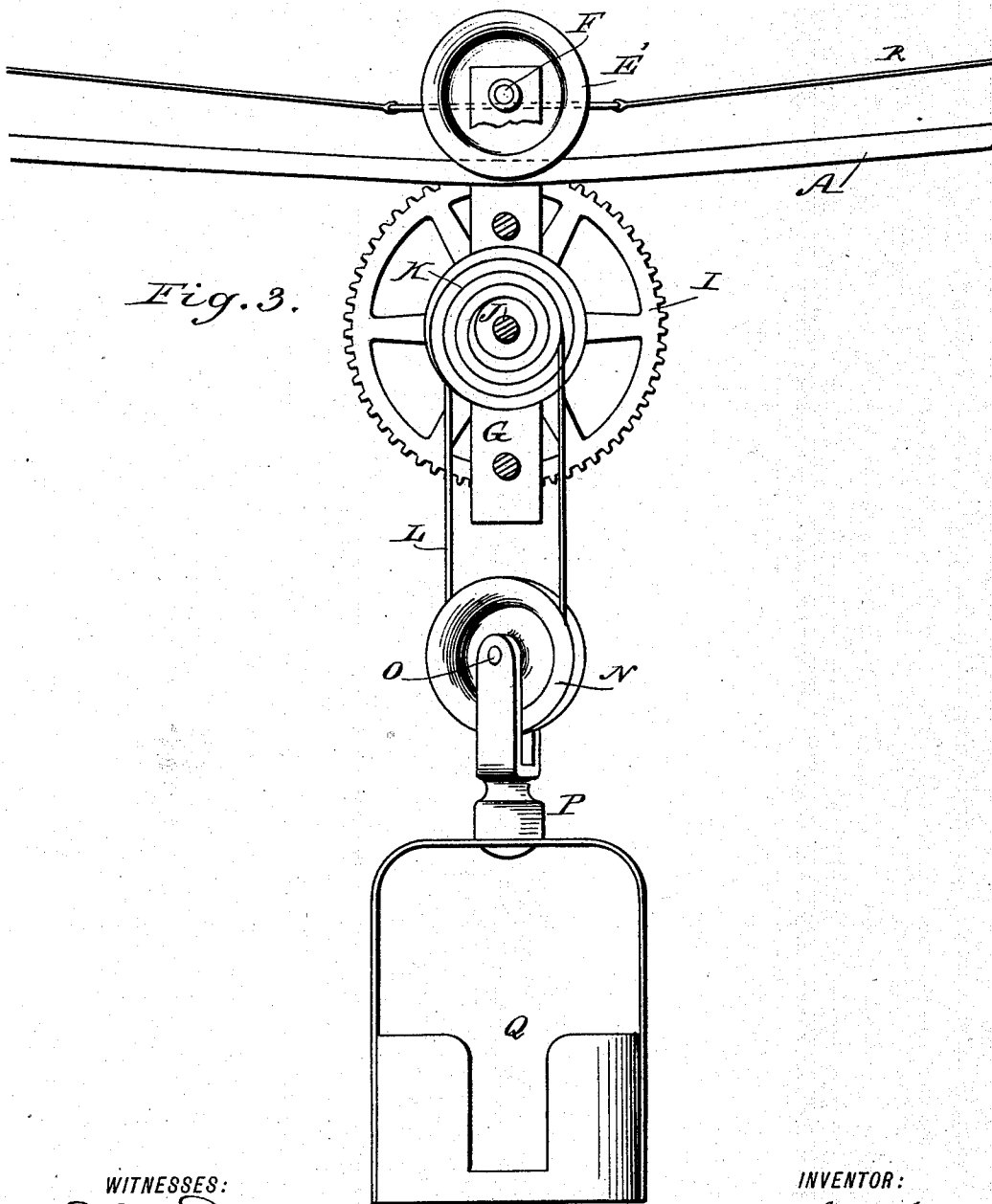
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UNITED STATES PATENT OFFICE.

WILLIAM Y. CRUIKSHANK, OF DANVILLE, PENNSYLVANIA.

CARRIAGE ADAPTED TO RUN ON WIRE CABLES.

SPECIFICATION forming part of Letters Patent No. 413,389, dated October 22, 1889.

Application filed January 12, 1889. Serial No. 296,128. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM Y. CRUIKSHANK, of Danville, in the county of Montour and State of Pennsylvania, have invented a new and Improved Carriage Adapted to Run on Wire Cables, of which the following is a full, clear, and exact description.

The invention relates to carriages for transporting passengers and freight, and traveling on wire cables stretched between two elevated points.

The object of the invention is to provide a new and improved carriage which travels in a horizontal plane and acts as a brake on the downgrade of the cables and as power on the ascending grade to assist in the forward motion.

The invention consists of a double conical drum supporting, by a rope or chain, the basket or car, and deriving a rotary motion from the pulley or pulleys traveling on the cable or cables.

The invention also consists in certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the improvement as applied. Fig. 2 is an enlarged end elevation of the same, and Fig. 3 is a sectional side elevation of the same on the line *xx* of Fig. 2.

The wire cables A and B are stretched in the usual manner over the towers or posts C and D and anchored. The cables sag in the middle more or less, according to the span and the weight of the cables. On the latter are held to travel the grooved pulleys E and E', secured on a transverse shaft F, mounted to rotate in suitable bearings in the carriage-frame G, of any approved construction. On one outer end of the shaft F is secured a pinion H, meshing into a gear-wheel I, fastened on one outer end of a transverse shaft J, mounted to turn in suitable bearings in the frame G, and located directly below the shaft F and below the cables A and B. On the shaft J, between the sides of the frame G, is secured a double conical drum, having its

largest diameter in the middle and decreasing equally toward both sides. The drum K is preferably spirally grooved, as illustrated in the drawings, and on it winds the endless rope or chain L, extending downward and passing under a pulley N, secured on a transverse spindle O, mounted to turn in suitable bearings formed in the bracket P, supporting the basket or car Q, of any approved construction. It is understood that the shaft F supports the frame G, and the spindle O supports the basket or car Q.

Suitable means are employed to cause the carriage to travel forward and backward on the cables A and B. As illustrated in the drawings, a rope R is loosely connected by its ends to the shaft F, and is passed over the pulleys S and T, held on the tops of the towers C and D. One of the pulleys is rotated by any suitable means, so as to impart a forward and backward traveling motion to the carriage suspended from the cables. The endless rope or chain L is wound around the drum K in such a manner as to cover one-half of the spiral grooves, and when the entire carriage is midway between the towers C and D—that is, on the lowest point of the cables A and B—then the rope or chain is on the greatest diameter and equally on either side, as is plainly shown in Fig. 2. Both downward-extending strands of the rope L are then equally distant from the middle of the drum, and are consequently balanced. When the carriage now ascends toward either tower C or D, then the motion of the pulleys E and E' causes the shaft F to turn, and the latter, by the pinion H, turns the gear-wheel I, whereby the shaft J and the drum K are rotated. The endless rope or chain L now unwinds on one strand toward the drum's greatest diameter and on its other strand winds up toward the smallest diameter of the drum. As the carriage ascends the constantly-increasing grade toward either tower, the purchase power is, in the same ratio, increasing in favor of the strand which is unwinding toward the drum's greatest diameter on account of its increasing leverage in moving farther from the center of the drum, and thereby assisting in driving the carriage up the grade to the terminus. The power developed by the drum is transmitted by its gear-wheel I and the pinion H

to the shaft F, carrying the pulleys E and E'. When the carriage is returning toward the center or lowest point of the cables A and B, the grade is constantly decreasing, and the rope L on the drum K is, in the same ratio, acting as a brake by winding one strand of the endless rope from the drum's greatest diameter toward its smallest diameter. When the carriage now reaches the middle of the span at the lowest point of the cables A and B, then the endless rope is again on the drum's greatest diameter and equally on either side of it, and consequently is balanced, as before described. It is understood that the amount of power developed on the upgrade, as well as the friction on the drum on the downgrade, depends on the weight carried by the basket or car Q. The greater the weight in the latter the more power on the upgrade and the more friction on the downgrade is developed. It will be noticed that the power on the upgrade increases as the grade increases, and is greatest on the steepest point in the grade, and in a like manner the friction or brake on the drum is greatest on the downward motion at the highest point in the grade, and it decreases in the same ratio as the grade decreases. The drum in its action is thus compensating whether the carriage moves up or down the grade. The winding and unwinding of the rope L also causes the basket or car Q to travel in a horizontal plane instead of following the curve of the cables A and B. This movement is obtained by the double conical drum K taking on larger quantities of the endless rope L as it nears the lowest point of the cables in its downward motion, so that the basket or car Q is raised. When the carriage travels from the middle of the cables toward either terminus, then more rope is paid out from the drum than taken on, in consequence of which the basket or car Q is lowered. This difference in the paying out or taking on of the rope on the drum K compensates for the grade of the cables, so that the basket or car travels in a horizontal plane from terminus to terminus.

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

1. In a carriage adapted to run on wire cables, a double conical and spirally-grooved drum, and a cord for supporting a basket, substantially as described.

2. In a carriage adapted to run on wire cables, the combination, with a compensating-drum, of an endless rope wound on the said drum and supporting the basket, substantially as shown and described.

3. In a carriage adapted to run on wire cables, the combination, with a spirally-grooved compensating-drum, of an endless rope wound on the said drum and a basket supported on the said endless rope, substantially as shown and described.

4. In a carriage adapted to run on wire cables, the combination, with the pulley traveling on the cable, of a spirally-grooved compensating-drum rotated from the said pulley, an endless rope wound upon the said drum, and a basket supported on the said endless rope, substantially as shown and described.

5. The combination, with a wire cable stretched between two elevated points, of a pulley traveling on the said cable, a frame supported on the said pulley, a spirally-grooved compensating-drum mounted to turn in the said frame and geared with the said pulley, an endless rope wound upon the said drum, and a basket supported on the said endless rope, substantially as shown and described.

6. The combination, with a wire cable stretched between two elevated points, of a pulley traveling on the said cable, a frame supported on the said pulley, a spirally-grooved compensating-drum mounted to turn in the said frame and geared with the said pulley, an endless rope wound upon the said drum, a basket supported on the said endless rope, and means for moving the said frame forward and backward on the said cable, substantially as shown and described.

WILLIAM Y. CRUIKSHANK.

Witnesses:

ROBERT ADAMS,
ALEX. H. GOUR.