(No Model.) 2 Sheets—Sheet 1.

A. L. ELTONHEAD.

CABLE RAILWAY.

No. 329,826. Patented Nov. 3, 1885.

FIG. 1.

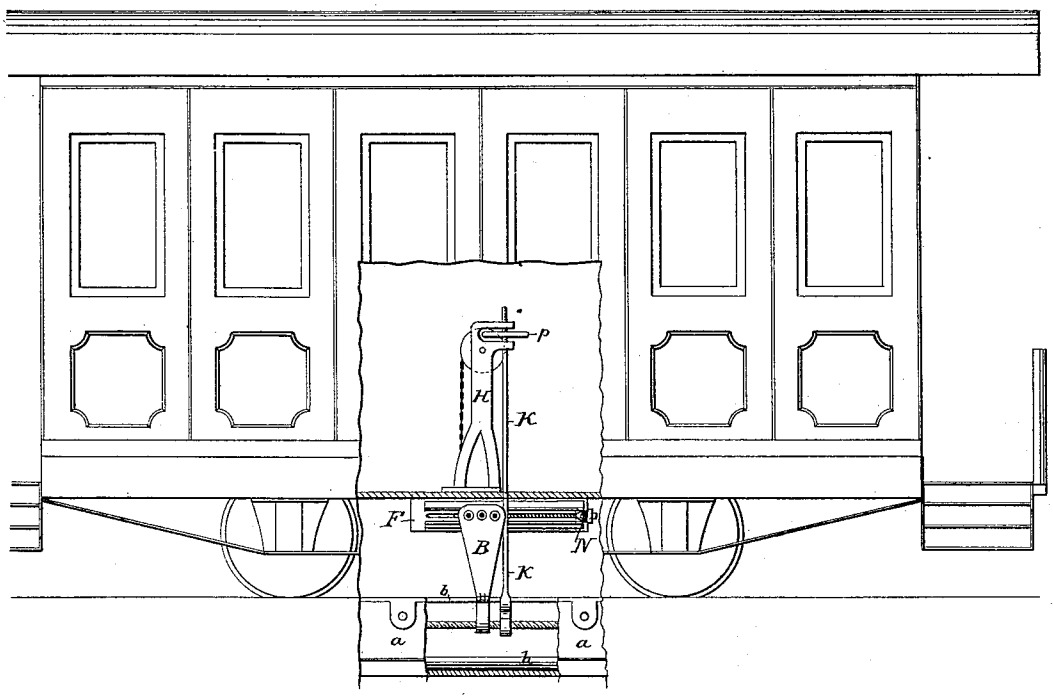
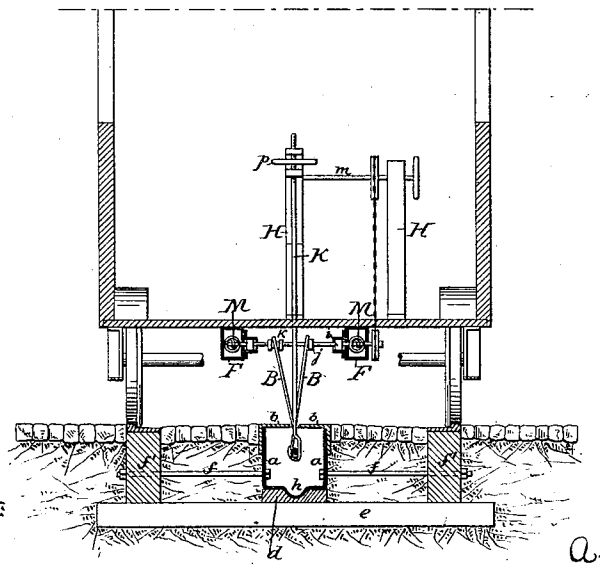


FIG. 2.



Witnesses:
Henry Bossert.
Harry Drury

Inventor:
A. L. Eltonhead
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N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

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CABLE RAILWAY.

No. 329,826. Patented Nov. 3, 1885.

FIG. 3.

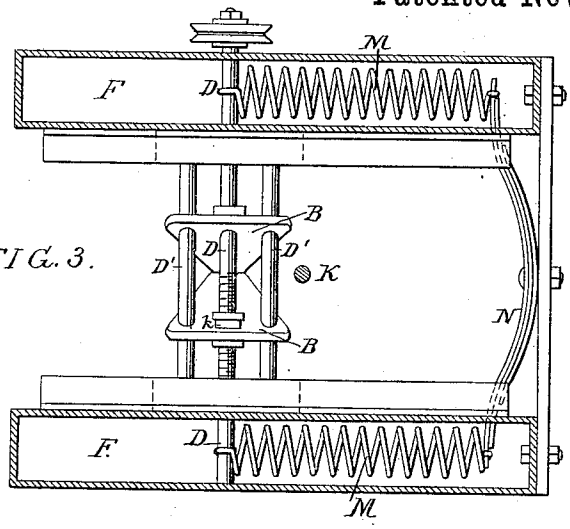


FIG. 4.

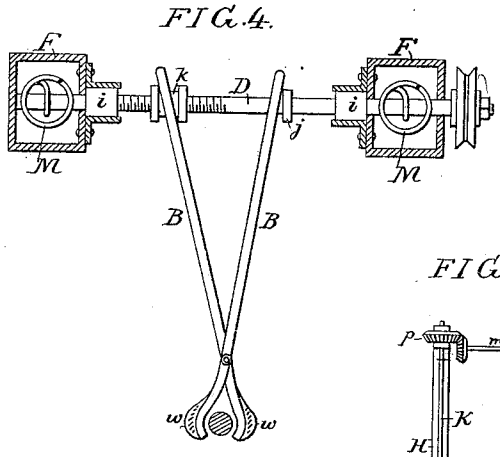


FIG. 7.

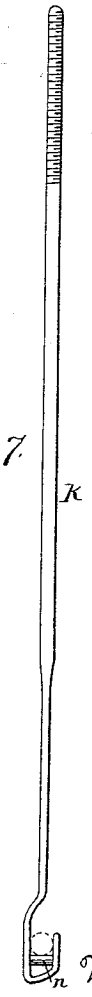


FIG. 8.

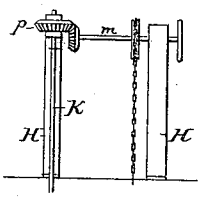
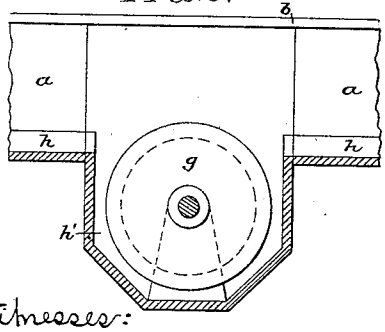


FIG. 5.



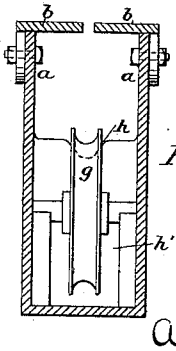


FIG. 6.

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UNITED STATES PATENT OFFICE.

ALFRED L. ELTONHEAD, OF DENVER, COLORADO.

CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 329,826, dated November 3, 1885.

Application filed February 24, 1885. Serial No. 156,861. (No model.)

To all whom it may concern:

Be it known that I, ALFRED L. ELTONHEAD, a citizen of the United States, and a resident of Denver, Arapahoe county, Colorado, have invented certain Improvements in Cable Railways, of which the following is a specification.

The object of my invention is to provide the car with simple gripping devices which will prevent the wear of the cable caused by that class of grips which slide upon the cable before securely clutching the same.

In the accompanying drawings, Figure 1 is a side view of a cable-car with my improved gripping mechanism, part of the car and part of the conduit being broken away to show the gripping mechanism; Fig. 2, a transverse section of the same; Fig. 3, a plan view, on a larger scale, of the gripping devices; Fig. 4, a sectional view of the same, partly in elevation; Figs. 5 and 6, sections of the conduit; Fig. 7, an enlarged view of the lifting-rod, and Fig. 8 a view showing a modification.

The conduit consists of a channel-bar, *a*, and bars *b b*, bolted thereto and overlapping the upper edges of the same, these bars *b* being of such width as to leave the desired slot between the inner edges, and being preferably roughened in order to afford a foothold for horses. The bars may also, if desired, be furnished with adjustable plates for increasing or diminishing the width of the slot, as the expansion and contraction of the conduit may require. The conduit rests upon a bed, *d*, of concrete or other suitable material, or upon longitudinal stringers supported by the transverse stringers *e* of the road-bed, and the opposite sides of the conduit are secured by transverse stay-bolts *f* to the sills *f'*, which support the rails of the track. In the bottom of the conduit is a longitudinal groove, *h*, which provides a drainage-channel and serves to direct water to the chambers *h'*, in which are the pulleys *g* for supporting the cable, these chambers being connected by pipes or passages with any convenient culvert or sewer.

The device for gripping the cable consists of a pair of hinged levers, B B, the lower or short arms of which form the gripping-jaws, the long arms being hung to transverse shafts D D' D', which are carried by blocks *i*, guided longitudinally on boxes F on the under side of the car-frame, these boxes containing springs G, which are connected to the projecting ends of the central shaft, D, and have a tendency to draw the same rearward, the connection being such as not to interfere with the rotation of said shaft D. The long arm of one lever B bears against a suitable collar, *j*, on the shaft D, and the long arm of the other lever embraces a recessed nut, *k*, adapted to a threaded portion of the said shaft, so that as the latter is rotated in one direction the levers will be moved toward each other and caused to grip the cable, the rotation of the shaft in the opposite direction causing the separation of the levers and the release of the cable.

The operation of the shaft D is effected by chain-belt and pulleys from a shaft, *m*, adapted to suitable bearings in brackets or standards H in the car, this shaft *m* being turned by a suitable hand-wheel under control of the gripman.

In order to raise the cable into the jaws of the grip, there is adjacent to the gripping-levers a lifting-bar, K, the lower end of which is hooked, in order to catch the cable, and is provided with an anti-friction roller, *n*, (see Fig. 7,) so as to prevent wear upon the cable. The upper end of the lifting-bar K is threaded for adaptation to the threaded hub of a hand-wheel, *p*, which can turn, but cannot move vertically, in a bearing at the upper end of one of the brackets H, so that in order to connect the car to the cable the gripman has first to elevate the lifting-rod so as to bring the cable within the jaws of the grip and then to close the latter by turning the shaft *m*. If desired, the shaft *m* may be geared to the wheel *p*—as shown in Fig. 8, for instance—so that both the grip and the lifting-bar will be operated by rotating the shaft *m*, the parts being so constructed that the cable will be lifted into the jaws of the grip before the latter are closed to the extent necessary to clutch the cable. As the grip-jaws are closed upon the cable, the grip is moved forward at full speed; hence the necessity of the elastic connection between the car-body and the shaft D, this elastic connection serving to absorb the shock due to the sudden start. The form of connection which I prefer for this purpose is that shown in Fig. 3, and consists of a pair of coiled

springs, M, each connected at one end to the shaft D and at the opposite end to an elliptic spring, N, secured to a suitable transverse bar of the car-frame. By this means the first portion of the movement of the grip is taken up by the elastic coil-springs, and the movement is then transmitted to the more rigid elliptic spring.

In order to avoid the necessity of releasing the grip from the cable when the car is turning a curve, I provide the outer edges of the grip-jaws with cushions *w*, Fig. 4, of rubber or other elastic material, these cushions striking the horizontal pulleys which guide the cable, and serving to prevent injury either to said pulleys or to the grip due to the contact.

I do not claim in this application the conduit shown and described; nor do I claim, broadly, the interposition of an elastic medium between the car and grip; but

I claim as my invention—

1. The combination of the pivoted grip-levers, the threaded shaft D, adapted to bearings beneath the car, and having a nut controlling one of the grip-levers, and gearing whereby said shaft can be rotated from the body of the car, as specified.

2. The combination of the pivoted grip-levers, the threaded shaft D, controlling the same, and adapted to bearings in which it is free to slide longitudinally, and a spring-connection between said shaft and the body of the car, as set forth.

3. The combination of the pivoted grip-levers, the threaded shaft D, controlling the same, the guided supporting-shafts D′, and the spring-connection between the grip mechanism and the car, as set forth.

4. The combination of the gripping-levers and their operating-shaft with a spring-connection between said levers and the body of the car, said connection comprising an elliptic spring, N, and coiled springs M, as set forth.

5. The combination of the cable and pulleys of a traction-railway with grip-levers having cushions *w*, as specified.

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

ALFRED L. ELTONHEAD.

Witnesses:

W. J. SWIFT,

GEO. L. CANNON, Jr.