

(No Model.)

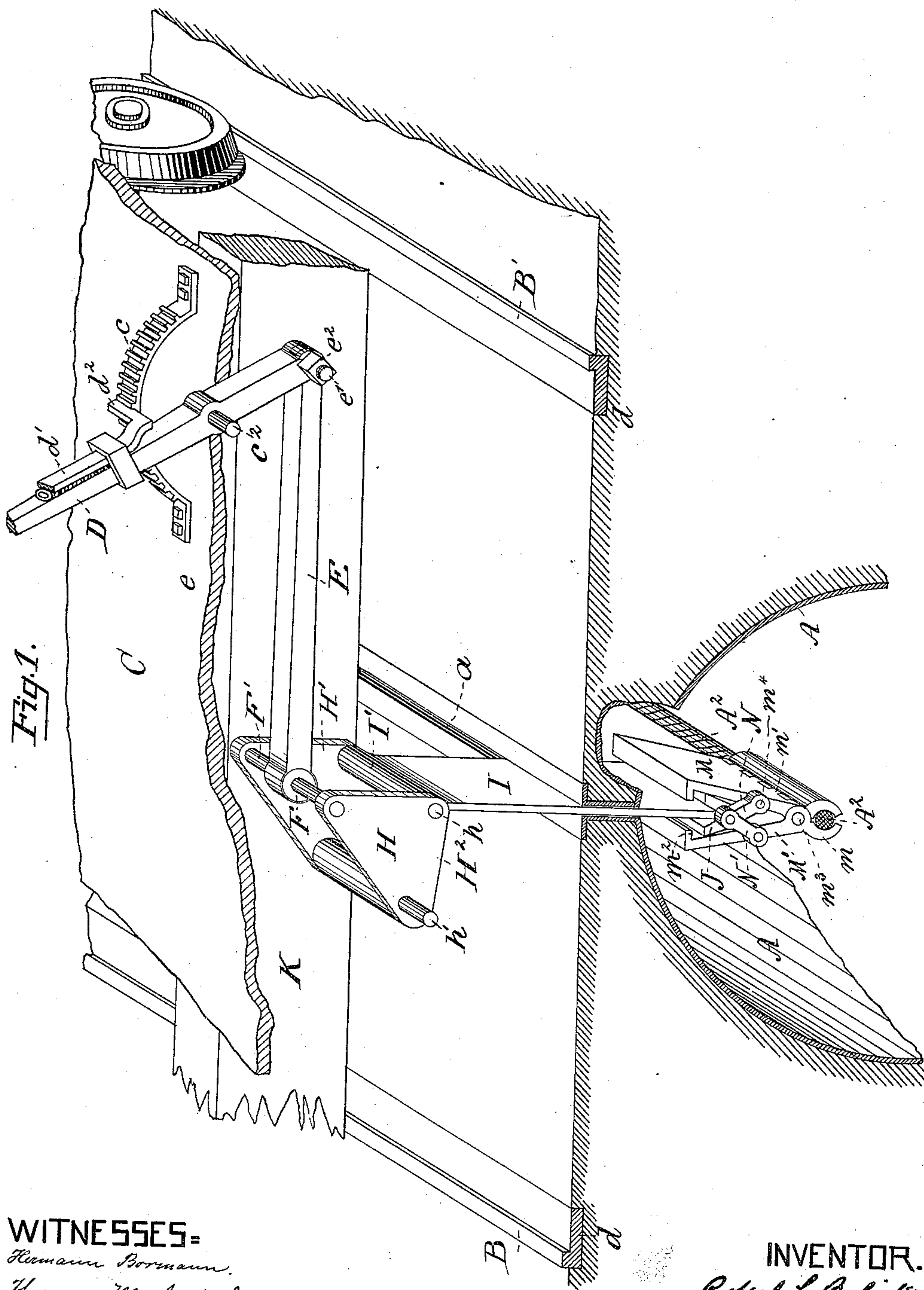
R. S. BELISLE.

2 Sheets—Sheet 1.

GRIP FOR CABLE RAILWAYS.

No. 361,608.

Patented Apr. 19, 1887.



WITNESSES=

*Hermann Bornmann.*  
*Thomas M. Smith.*

INVENTOR.

*Robert S. Belisle,*  
*by J. Walter Douglass*  
*Atty.*

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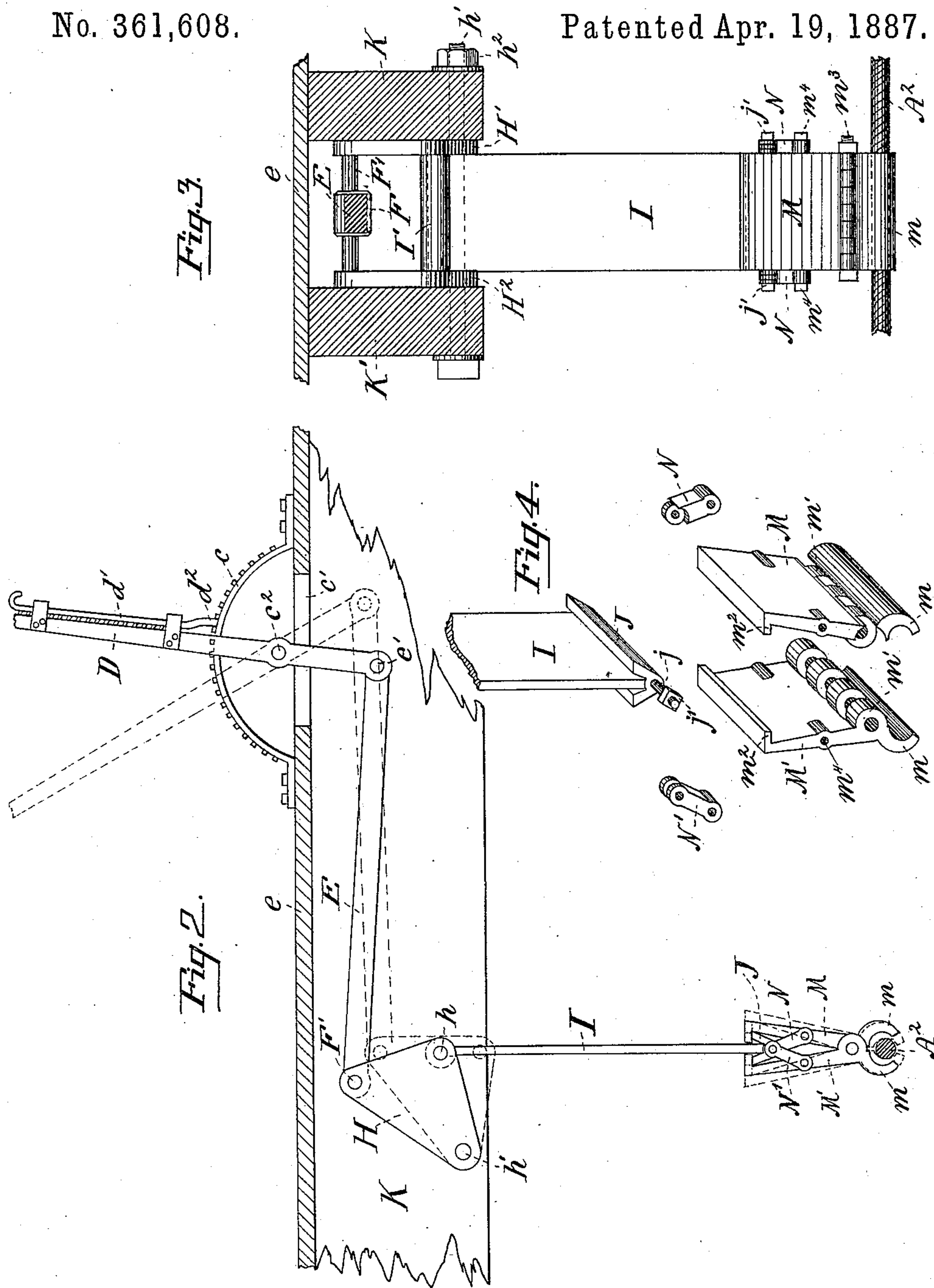
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# UNITED STATES PATENT OFFICE.

ROBERT S. BELISLE, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF  
THREE-FOURTHS TO EDWARD Z. COLLINGS, WILLIAM H. McGRATH,  
AND LEWIS H. TAYLOR, JR., ALL OF SAME PLACE.

## GRIP FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 361,608, dated April 19, 1887.

Application filed February 9, 1887. Serial No. 226,996. (No model.)

*To all whom it may concern:*

Be it known that I, ROBERT S. BELISLE, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain  
5 new and useful Improvements in Grips for Cable Railways, of which the following is a specification.

My invention relates to certain novel features in the construction of gripping devices  
10 and mechanism for operating the same, applicable to cable railways; and the object of the invention is to provide a gripping device of simple construction, which at the same time will be strong, durable, and held positively by  
15 friction to the cable, so that when released the respective jaws of the gripping device will be entirely free from the same, and, moreover, a device susceptible of being elevated a sufficient distance above the cable to allow the  
20 gripman in charge of the car to readily pass over cross-cables, thereby obviating the constant and rapid wearing out and many other objectionable features attending the use of cable-grips as heretofore constructed; and, fur-  
25 thermore, instead of having to replace a grip after one or more round trips with another, as is now the common practice, I am enabled to use the same gripping device for a considerable time, for the reason that the grip is not  
30 in frictional contact with the cable, save when propelling the car, so that little or no wear is occasioned in its use.

The novel features in my invention will be appreciated from the further description  
35 thereof, more particularly with respect to its mode of operation in connection with the cable, and by reference to the accompanying drawings, wherein I have shown my invention in a form which has been found practi-  
40 cally efficient, and in which—

Figure 1 is a perspective view of so much of a car and an underground conduit as will serve to illustrate the application of my im-  
45 proved grip and mechanism for operating the same, with a cable held firmly thereto in the conduit, and the manner of operating and regulating the grip from the car. Fig. 2 is a cross-section of a car with my improved grip and mechanism for operating the same ap-

plied thereto, and showing the guide-plates 50 and the levers and gripping-jaws in their respective positions both when in frictional contact with the cable and when released therefrom. Fig. 3 is a side elevation of my improved gripping device, and in Fig. 4 is shown 55 in perspective the detached parts comprising said gripping device.

Referring now to the drawings for a further description of my invention, A is an underground metallic conduit, provided in the top 60 thereof with a narrow channel or slot, *a*, for the vertical plate to travel through, coupled to the gripping device by means of toggle-levers or other suitable mechanism within the conduit A, to be presently fully described. 65

B and B' are two rails forming the track, suitably secured to a road-bed, *d*.

C represents so much of a car as will serve to illustrate the application of my invention thereto for propelling the same over the rails 70 B and B'. To the front platform, *e*, of the car C is rigidly secured a circular rack, *c*, and in the platform, in a line parallel with the rack *c*, is provided an oblong slot, *c'*, for the reception of the vertical operating-lever D, pivoted to 75 the rack *c* or to the platform by means of a bolt, *c''*, and so arranged that a free backward and forward movement of the same may be obtained within the oblong slot *c'*. To this operating-lever D is attached a locking device, 80 *d'*, having a dog, *d''*, which engages between the respective teeth of the rack *c*, and arranged so that it may be readily released therefrom and the lever D moved into any position de- 85 sired.

A horizontal link or bar, E, is hinged to the operating-lever D beneath the platform *e* of the car C by means of a bolt, *e'*, and nut *e''*, and these parts D and E are preferably so constructed and hinged together as to form a knee- 90 joint. The other extremity of this link E is provided with a sleeve, F, attached rigidly to a shaft, F', held in bearings in the triangular-shaped plates H' and H'', forming a bell-crank lever H. These plates form bearings for a 95 shaft, *h*, around which is fitted the sleeve I' of the vertical plate I, having upon its depending opposite extremity a V-shaped plunger, J.



Rigidly to the under side of the car-floor *e*, in any suitable manner, is secured two stout metallic guide-plates, *K* and *K'*, to which, by means of a stout bolt, *h'*, and nut *h''*, is fulcrumed the bell-crank lever *H*, as shown in Fig. 3, thereby affording sufficient leverage to the vertical plate *I* and horizontal link *E* to allow the gripping device to readily grip the cable *A*<sup>2</sup> by the backward movement of the operating-lever *D*, as shown in dotted lines in Fig. 2, and, furthermore, to release the grip from its frictional contact with the cable *A*<sup>2</sup> by the forward movement of the operating-lever *D*, as shown in full lines in Fig. 2.

The vertical projecting plate *I* is provided with a sleeve, *I'*, which is fitted to the shaft *h*, held in bearings in the triangular-shaped plates *H'* and *H''*, forming the bell-crank lever *H*, and the opposite extremity of the plate *I* is provided with a V-shaped plunger, *J*, which plays freely upward and downward between the upper portions of the two sections *M* and *M'* of the gripping device, as shown in Figs. 1 and 2. This gripping device consists of two sections, *M* and *M'*, which may be designated as "right" and "left" sections, each section being provided with a curved jaw, *m*, eyes *m'*, Fig. 4, and a horizontal projecting flanged top, *m''*, forming a support for the V-shaped plunger *J*. The two sections *M* and *M'* are hinged together by means of a stout bolt, *m'''*, which passes through the eyes *m'* of the respective sections, and the bolt is held to place therein by means of a nut or otherwise. The sections *M* and *M'* being hinged together, the plunger-head *J* is placed in position between them, and the toggle-levers *N* and *N'* secured, respectively, to the plunger-head *J* by means of a stout bolt, *j*, passing entirely through the head and held to place by means of a nut, *j'*. The opposite extremities of the toggle-levers *N* and *N'* are secured to the respective sides of the gripping device by means of bolts *m''''*, or in any other manner that may be found best for giving the greatest strength and ease of movement. These toggle-levers *N* and *N'* open and close the sections *M* and *M'* of the gripping device operating the curved jaws for embracing the cable *A*<sup>2</sup>, and also regulate the extent of movement of the plunger upward and downward between the right and left sections *M* and *M'* of the gripping device when the cable is released therefrom.

While I have shown and described the best form of apparatus known to me at the present time for advantageously accomplishing my

object, yet, nevertheless, it is manifestly obvious that the parts thereof may be varied or modified somewhat, and hence I do not wish to be understood as limiting myself to the precise arrangement hereinbefore set forth and shown in the drawings, but crave the right to modify the same in such manner as may be deemed best for better carrying out the invention, without, however, departing from the real spirit thereof.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A gripping device consisting of two metallic sections suitably hinged together, having jaws actuated by a plunger, with toggle-levers respectively carried by said plunger and sections, and means for operating said grip, substantially as and for the purposes set forth.

2. A gripping device for cable railways, consisting of two metallic sections suitably hinged to each other and having curved jaws for encircling a cable, actuated by a V-shaped plunger carried by a vertical plate, and with toggle-levers attached, respectively, to said plunger and sections, and means, substantially such as described, for operating said device, for the purposes set forth.

3. A gripping device for cable railways, consisting of two sections hinged to each other and having curved jaws for gripping a cable, actuated by a V-shaped plunger carried by a vertical plate, and to which plunger and sections are respectively attached toggle-levers, said vertical plate being journaled to a bell-crank lever fulcrumed in two guide-plates held rigidly to a car, and with levers for actuating said gripping device, substantially as and for the purposes set forth.

4. The combination, with a conduit, a cable, a gripping device, and a vertical plate having a V-shaped plunger, and toggle-levers secured, respectively, to said plunger and gripping device, the opposite extremity of said plate having a sleeve carried upon a shaft held in bearings in two triangular plates, of a bell-crank lever pivotally supported in guide-plates, two depending guide-plates, and levers for operating said gripping device, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ROBERT S. BELISLE.

Witnesses:

HERMANN BORMANN,  
CHARLES F. ZIEGLER.