

E. R. GUERRA.
CABLE GRIP.

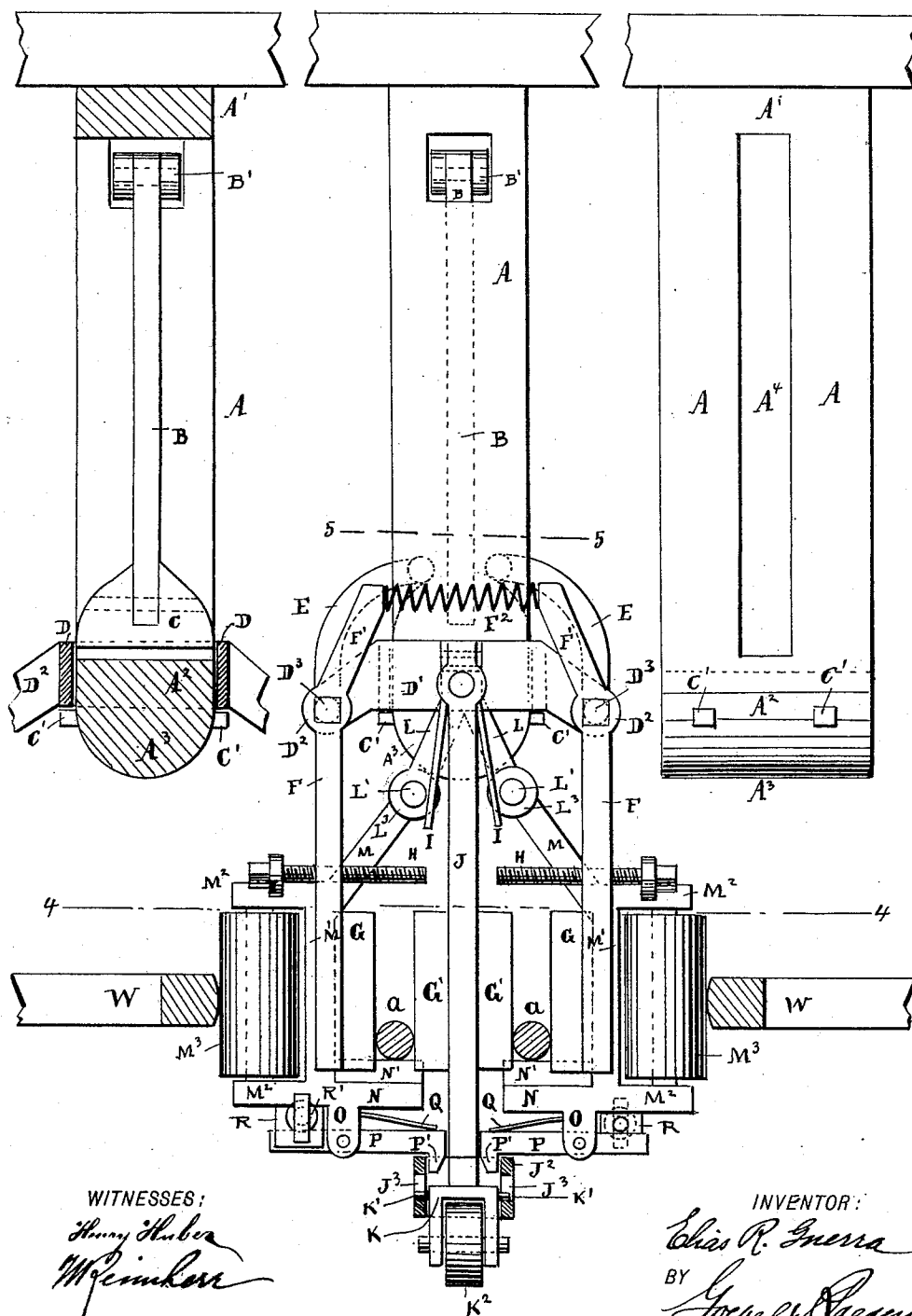
No. 437,110.

Patented Sept. 23, 1890.

Fig: 6.

Fig: 1.

Fig: 7.



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INVENTOR:

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(No Model.)

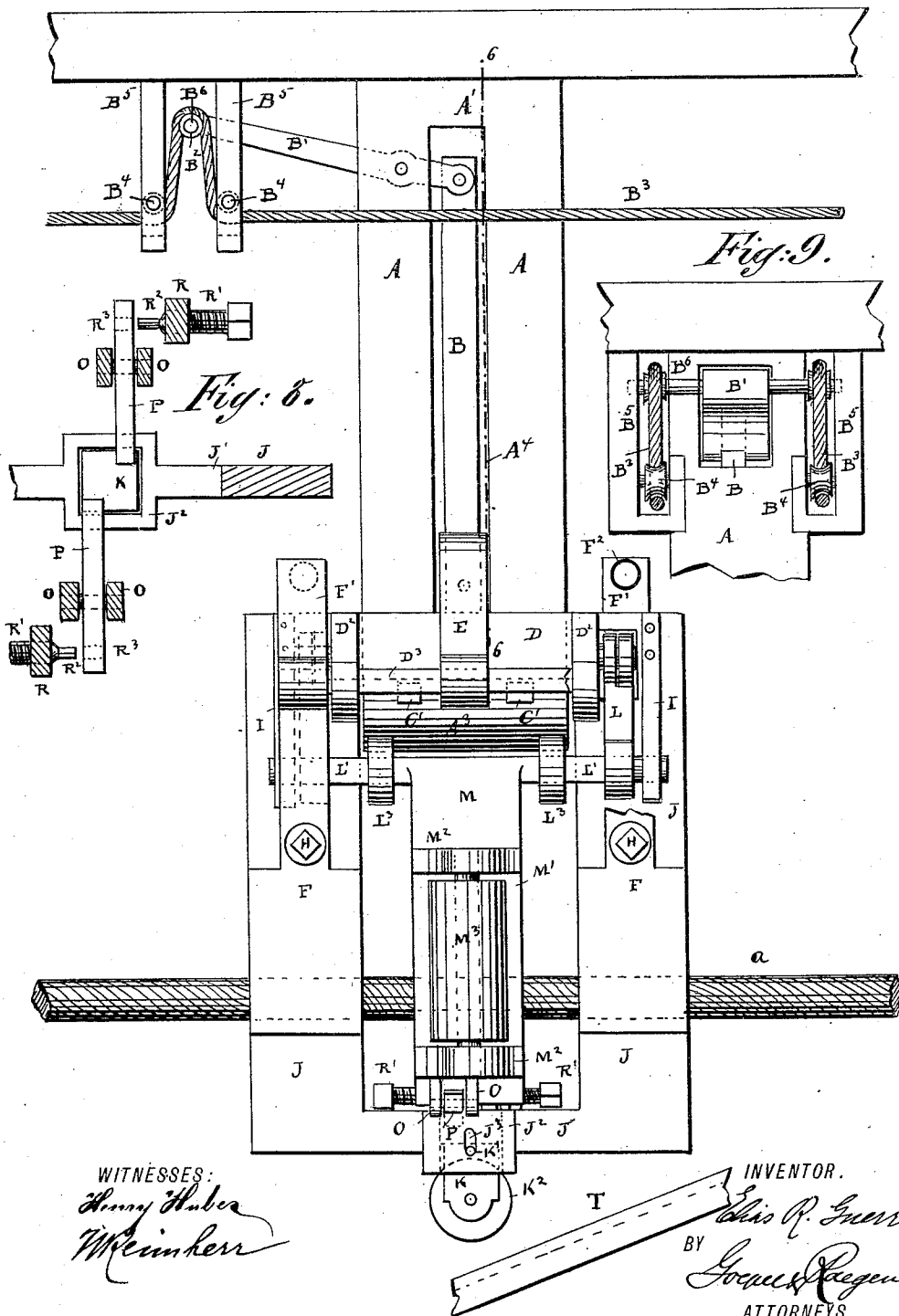
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Fig: 2.



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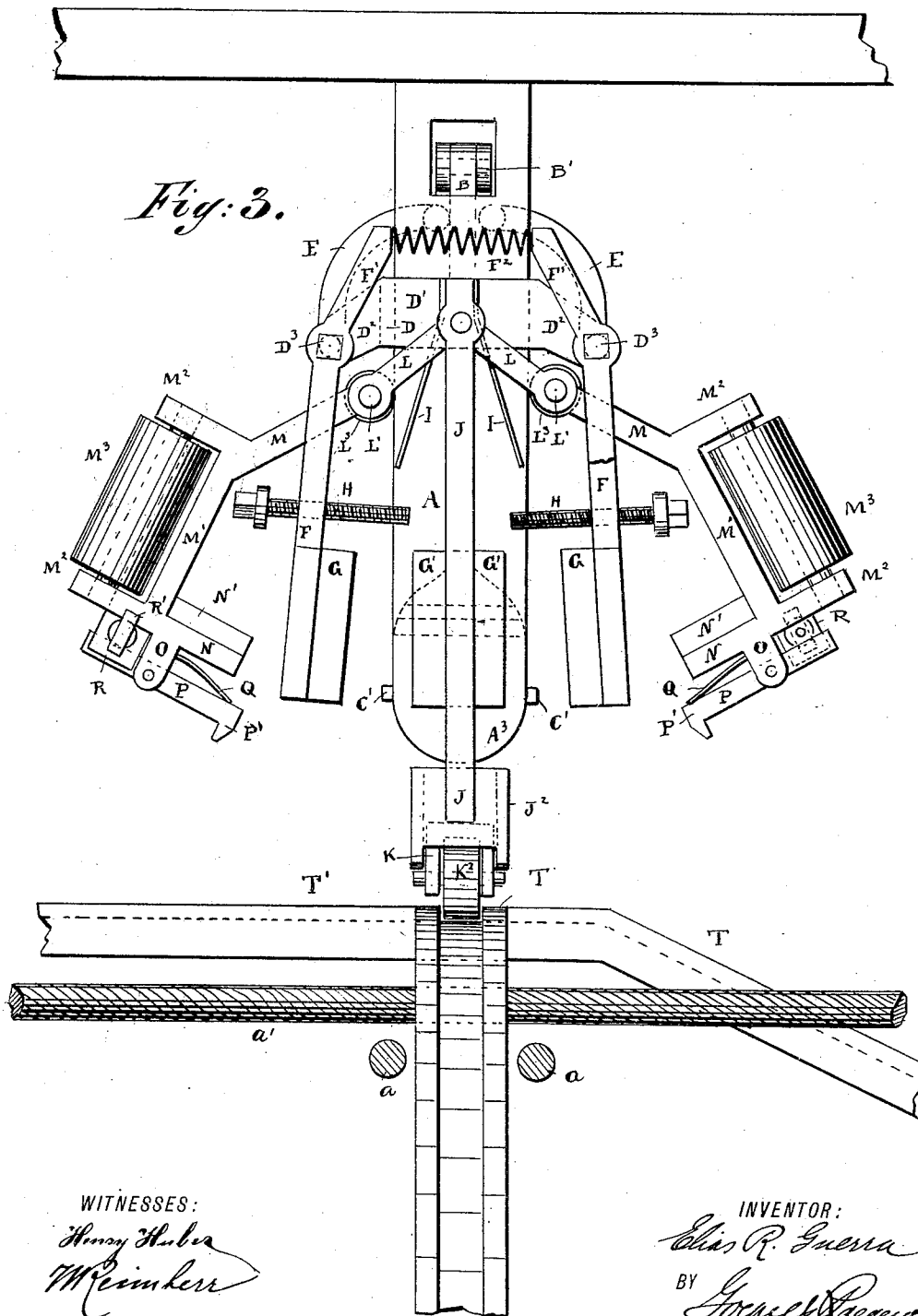
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Fig: 4.

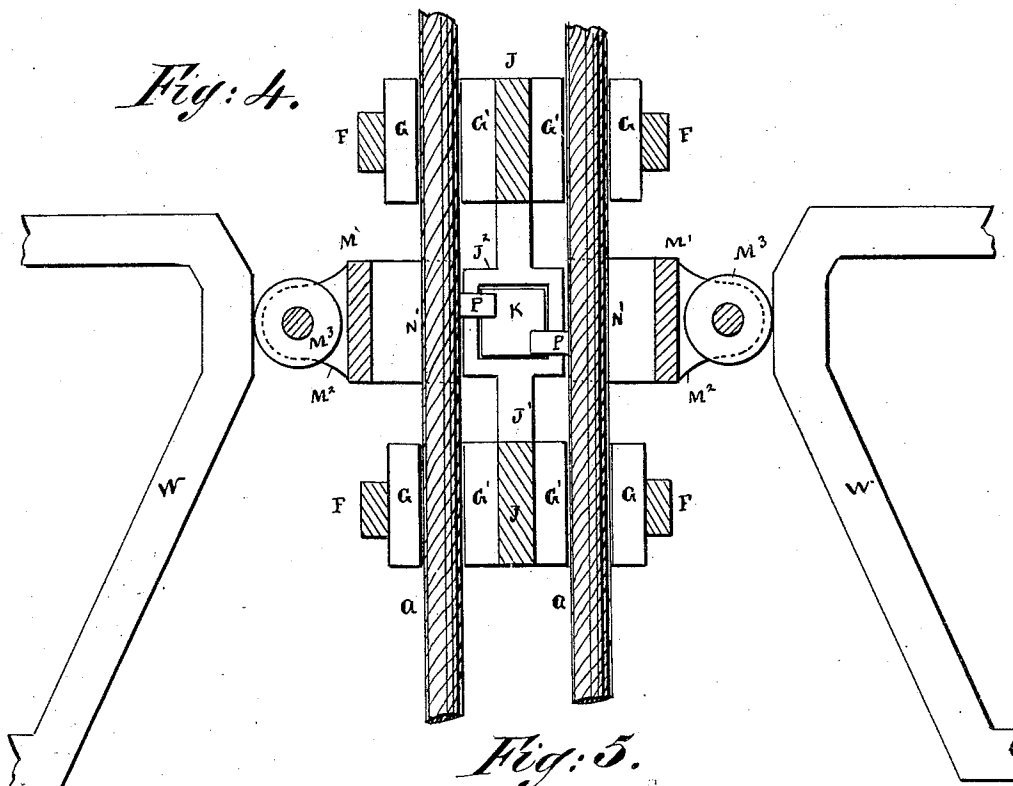
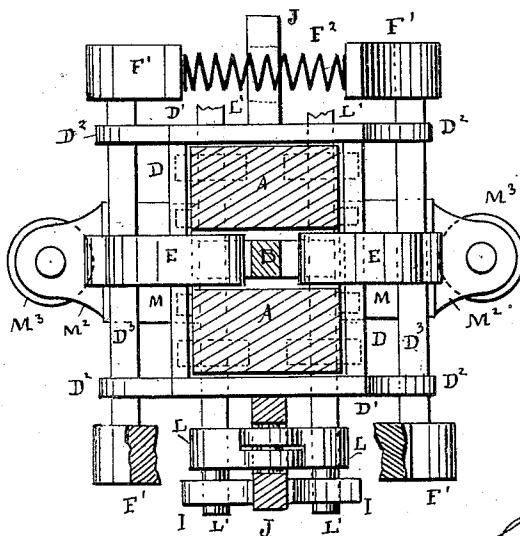


Fig: 5.



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UNITED STATES PATENT OFFICE.

ELIAS R. GUERRA, OF HACIENDA DE SAN MATIAS, JALISCO, MEXICO.

CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 437,110, dated September 23, 1890.

Application filed June 26, 1890. Serial No. 356,757. (No model.)

To all whom it may concern:

Be it known that I, ELIAS R. GUERRA, of Hacienda de San Matias, in the State of Jalisco, in the Republic of Mexico, a citizen of Mexico, at present residing in the city of New York, county and State of New York, United States of America, have invented certain new and useful Improvements in Cable-Grips, of which the following is a specification.

10 This invention relates to improvements in cable-grips; and the object of my invention is to provide a new and improved grip which can be used for gripping one or two cables, as may be desired, and which grip is simple
15 in construction, strong and durable, and can be opened or closed readily, and which opens automatically when the crossing cable is encountered, so as to clear said crossing cable.

20 The invention consists in the construction and combination of parts and details, as will be fully described hereinafter, and finally pointed out in the claims.

In the accompanying drawings, Figure 1 is an end elevation of my improved cable-grip, parts being in section, and the guide-tracks for closing the grip being also shown in section, and the grip being shown closed. Fig. 2 is a side elevation of my improved grip, the same being closed, and part of the inclined
30 guide-track for opening the grip being shown. Fig. 3 is an end elevation of my improved grip open to clear a crossing, the tracks for raising and opening the grip before it arrives at the crossing being shown, and the crossing
35 cables being shown in section. Fig. 4 is a horizontal sectional view of my improved grip, on an enlarged scale, on the line 4 4 of Fig. 1. Fig. 5 is a horizontal sectional view of my improved grip, on an enlarged scale, on the line 5 5 of Fig. 1, parts being broken out. Fig. 6 is a vertical transverse sectional view through the main frame of the grip on the line 6 6 of Fig. 2, and Fig. 7 is a side elevation of the main frame of the grip.

45 Similar letters of reference indicate corresponding parts.

The main frame of the grip is composed of two vertical bars A, secured to and projecting from the under side of the car, the upper
50 ends of said bars A being united by a cross-piece A' and the lower ends united by a

cross-piece A², having its bottom surface rounded to form the cam-head A³. Between the bars A A, which are separated a short distance from each other, a vertical slot A⁴ is
55 formed in the frame, which slot extends from one side face of the frame to the other. In said slot A⁴ a bar B is mounted to move vertically, the upper end of which bar B is pivoted to the forked shorter end of a lever B',
60 passed through a slot or aperture in the upper end of one of the bars A. In that end of the lever B' opposite the one connected with the upper end of the bar B a cross-bar B⁶ is secured, carrying a roller B² on each end,
65 over which rollers the ropes or chains B³ pass, that also pass over rollers B⁴, secured to the bars B⁵, projecting downward from the car-bottom. The said chains or ropes B³ are connected with a suitable hand-wheel or other
70 manipulating device on the car-platform.

On the lower end of the bar B a cam-head C is fixed, the upper surfaces of which are rounded. From each side of the bottom cross-piece A², uniting the lower ends of the bars
75 A, two lugs C' project, and upon the same plates D rest, which extend in the direction of the length of the conduit. The ends of the plates D are secured to cross-plates D', having downwardly-inclined arms D², said
80 plates D', with the plates D, forming a rectangular frame that is adapted to slide vertically on the outside of the main frame formed by the bars A. In the ends of the arms D², at each side of the main frame, a
85 shaft D³ is mounted to rock, and from each shaft D³ a curved arm E projects upward between the corresponding arms D², the rounded upper ends of said arms E resting upon the curved top surfaces of the cam-head C at short
90 distances from the sides of the bar B when the grip is in closed position, as shown in Fig. 1. Outside of each arm D² a gripping-lever F is fixed on the end of each shaft D³ and projects downward, each lever being provided
95 above the shaft D³ with an upwardly and inwardly inclined arm F', and between the upper ends of the arms F' at each end of the main frame a powerful helical spring F² is arranged, which draws the upper ends of the
100 arms F' toward each other, thereby pressing the lower ends of the gripping-levers F from

each other. To the inner surface of each gripping-lever F a gripping shoe or plate G is fastened at the lower end. Directly above each shoe G a screw H is passed through each gripping-lever F, and is provided at its outer end with a suitable head to permit of applying an implement for turning it. From the center of each end bar D' of the sliding frame D D' on the main frame A a bar J projects downward, which bars J are connected at their lower ends by a bar J', extending in the direction of the length of the conduit. In the said bar J' a rectangular box J² is formed, open at the bottom and top and having the vertical slots J³ in its sides. In said frame J² a vertically-sliding forked frame K is arranged to project from the bottom of said box J², and laterally-projecting pins K' on the side of the forked frame K project into the vertical slots J³ in the sides of the box J², whereby said frame is guided and controlled in its movements. A roller K² is pivoted in the forked frame K, its pivot projecting beyond the sides of the fork, so as to strike against the bottom of the box or frame J², for a purpose that will be set forth hereinafter. To the opposite sides of the bars J the four cable-clamping plates or shoes G' are secured opposite the clamping plates or shoes G, as shown in Fig. 4. Said plates G and G' may be made of iron, lead, copper, or any other suitable material used in grips for the purpose of clamping the cable without injuring the same.

On each end piece D' of the sliding frame D D' two links L are hung to project downward and outward in opposite directions, the lower ends of the links on the same sides of the frame being united by a shaft L', rigidly secured to said links, the ends of the shafts L' projecting beyond the links, as shown in Fig. 2. Each shaft L' carries two rollers L³, resting against the rounded bottom surface of the cam-head A³, and from each shaft L' an arm M rigidly secured thereto, projects downward and outward at an inclination, and is provided with a straight extension M', from the top and bottom of which the jaws M² project outward. Between each two jaws M² a roller M³ is pivoted. At the bottom of each extension M' an inwardly-projecting arm N is formed, which carries on its upper surface a plate N', of lead, copper, or other metal.

When the parts of the grip are in the position shown in Fig. 1, the cables *a* rest upon the lining or plates N' on the arms N. From the under side of each arm N two jaws O project at the inner end of said arm, and between each two jaws O a latch P is pivoted, provided at the inner end with a hook P'. A spring Q, suitably secured to the under side of the arm N, presses the hook P' of each latch P downward. In a lug R at the bottom of the extension M' on the arm M a screw R' is mounted, which is provided at the inner end with a smooth projection R². To each end piece D' of the sliding frame D D'

two stiff and powerful straight springs I are secured, the free ends of which bear against the ends of the shafts L' and tend to press said shafts outward and from each other. In the conduit an inclined rail T is arranged at the crossing cables, which rail leads to a horizontal rail T', extending across the crossing cables *a'*, as shown in Fig. 3. Beyond the crossing two horizontal guide rails W are arranged, the edges of which are inclined toward each other, as shown in Fig. 4, for the purpose of closing the grip.

The operation is as follows: Fig. 1 shows the grip closed. When the grip arrives at a crossing cable, the roller K² strikes the inclined rail T in advance of the crossing cable and runs up the same, whereby the roller K² and the forked frame K, in which the roller is mounted, are moved upward, and the top of the forked frame strikes the hook ends P' of the latches P, thereby disengaging the said hook ends from the box J² and permitting the springs I, which bear on the ends of the shafts L', to throw said shafts L', the link L, the arms M, the extensions M', and the rollers M³ on said extensions outward. As the roller K² continues to travel upward on the inclined rail T, the ends of the pivots of the roller K² strike the bottom of the box J², and said box, the bar J', and the bars J are moved upward, and as the bars J are connected with the frame D D', sliding on the bars A, said frame D D' is moved upward on the frame-bars A. As the rollers L³ on the shafts L' run on the rounded cam-head A³ on the lower ends of the bars A, the links L and arms M M' are thrown outward still farther until they are spread, as shown in Fig. 3, and while in this position move upward with the frame D D'. At the same time the rounded ends of the arms E travel up the rounded top surface of the head C, and the springs F² draw the upper ends of the arms F toward each other, thereby separating the lower ends of the gripping-levers F and thus releasing the cables. As the frame D D' moves upward the rounded upper ends of the arms E slide along the side surfaces of the bar B, as shown in Fig. 3. Thereby the entire grip device is spread and raised sufficiently to permit of passing unobstructed over the crossing cable. A short distance beyond the crossing cable the rail T' terminates and the entire grip mechanism drops. As the rounded ends of the arms E strike the upper rounded surface of the cam-head C they are separated more or less, whereby the lower ends of the cable-gripping levers F are moved toward each other, and whereby the cables are pressed between the gripping-plates G G'. The link L and arms M M' also swing toward each other as the rollers L³ slide down the sides of the bars A and the rounded cam-head. A short distance beyond the crossing cable the horizontal guides W are arranged, and, acting on the rollers M³, press the arms M and their extensions M' toward each other, whereby the beveled ends of

the hooks P' of the latches P are pressed against the sides of the box J² and snap over the edges of the same into the position shown in Fig. 1, thereby locking the arms M M' in place.

In case only one cable is to be gripped, the corresponding screws H are so adjusted that before the gripping-plates G of the corresponding gripping-levers F can come in contact with the cable the inner ends of the screws H strike against the plates J. At the same side of the grip the latch P must be so adjusted that it cannot engage the box J². This is accomplished by setting the corresponding screw R' in such a manner that its projecting pin R² passes into an aperture R³ in the outer end of the corresponding latch P, thus preventing the hook end P' of the said latch from snapping over the edge of the box J² and becoming engaged therewith. In case the gripman wishes to stop the car, the ropes or chains B³ are slackened to permit the bar B and head C to descend. The springs F² then draw the upper ends of the arms F' together, whereby the lower ends of the gripping-levers F are moved from each other slightly—sufficient to release the cables. The links L and arms M M', however, retain their position, as they merely serve as a support for the cable and do not grip the same. When the car is to be started again, the ropes or chains B² are drawn taut, whereby the bar B is pulled upward, and the head C on the lower end of the same, acting on the rounded upper ends of the arms E, presses the upper ends of said arms outward, whereby the lower ends of the gripping-levers F are pressed toward each other, and the gripping plates or shoes G are pressed against the cables, and the cables pressed against the other gripping plates or shoes G', and the cables are held securely.

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

1. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, independent gripping and cable-supporting levers pivoted on said sliding frame, and independent springs acting on the cable-gripping and cable-supporting levers, substantially as set forth.

2. In a cable-grip, the combination, with a vertical frame having a cam-head on its lower end, of a sliding frame on the vertical frame, cable-supporting levers pivoted on the sliding frame, and rollers connected with said cable-supporting levers, on which levers the cam-head can act, substantially as set forth.

3. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, cable-supporting levers pivoted on the sliding frame, and latches for locking the cable-supporting levers in place, substantially as set forth.

4. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, ca-

ble-supporting levers pivoted on the sliding frame, latches for locking the cable-supporting levers in place, and a vertically-movable roller for disengaging said latches, substantially as set forth.

5. In a cable-grip, the combination, with a vertical frame, of a frame sliding thereon, cable-supporting levers pivoted on the sliding frame, latches for locking the cable-supporting levers in place, a box which said latch can engage, a forked piece sliding in said box and adapted to disengage the latches from the box, and a roller pivoted in said forked piece, substantially as set forth.

6. In a cable-grip, the combination, with a vertical frame, of a sliding frame on the same, cable-supporting levers pivoted to the sliding frame, latches for locking the cable-supporting levers in place, and screws for locking said latches in inoperative position, substantially as set forth.

7. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, cable-supporting levers pivoted to the sliding frame, rollers mounted on said cable-supporting levers, latches for locking the cable-supporting levers in place, and guide-tracks adapted to act on the rollers on the cable-supporting levers, substantially as set forth.

8. In a cable-grip, the combination, with a vertical frame having a cam-head on its lower end, of a sliding frame on said vertical frame, links pivoted to the sliding frame, shafts rigidly secured to links on the same side of the frame, arms rigidly secured to said shafts, rollers on said arms, latches on said arms for locking the arms in place, cable-supporting projections on said arms, and springs secured to the sliding frame and acting on the shafts connected with the links and arms, substantially as set forth.

9. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, cable-gripping levers mounted on the sliding frame, arms connected with said cable-gripping levers, and a sliding cam-head in the vertical frame, which cam-head is adapted to act on the arms of the cable-gripping levers, substantially as set forth.

10. In a cable-grip, the combination, with a vertical frame, of a sliding bar in the same, means for operating said bar, a cam-head on the lower end of the bar, a sliding frame on the vertical frame, pivoted cable-gripping levers on the sliding frame, and arms connected with the cable-gripping levers, on which arms the sliding cam-head can act, substantially as set forth.

11. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, side bars projecting downward from the sliding frame, cable-gripping plates or shoes on said side bars, cable-gripping levers pivoted on the vertically-sliding frame, cable-gripping shoes or plates on said levers, arms connected with said cable-gripping levers, and a vertically-movable cam-head in the vertical frame,

which cam-head can act on the arms connected with the cable-gripping levers, substantially as set forth.

12. In a cable-grip, the combination, with a
5 vertical frame, of a sliding frame thereon, cable-gripping levers pivoted on the sliding frame, springs for moving the cable-gripping levers from each other, arms connected with the cable-gripping levers, and a sliding cam-
10 head in the vertical frame, which sliding cam-head is adapted to act on the arms connected with the cable-gripping levers, substantially as set forth.

13. In a cable-grip, the combination, with a
15 vertical frame, of a sliding frame thereon, cable-gripping levers pivoted to the sliding frame, a sliding cam-head in the vertical frame for pressing the cable-gripping levers toward each other, and an adjustable stop device on said cable-gripping levers, substantially
20 as set forth.

14. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, side bars projecting downward from the sliding
25 frame, cable-gripping levers pivoted to

the sliding frame, means for pressing the cable-gripping levers toward each other, and a screw in each cable-gripping lever, the inner ends of which screws are adapted to rest against the side bars projecting downward
30 from the sliding frame, substantially as set forth.

15. In a cable-grip, the combination, with a vertical frame, of a sliding frame thereon, side bars projecting downward from the sliding
35 frame and united at their lower ends with a cross-bar, a box formed in said cross-bar, cable-supporting levers pivoted to the sliding frame, and latches on said cable-supporting levers, which latches are adapted to engage
40 the box in the cross-bars, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ELIAS R. GUERRA.

Witnesses:

OSCAR F. GUNZ,
A. C. ATRISTAIN.