

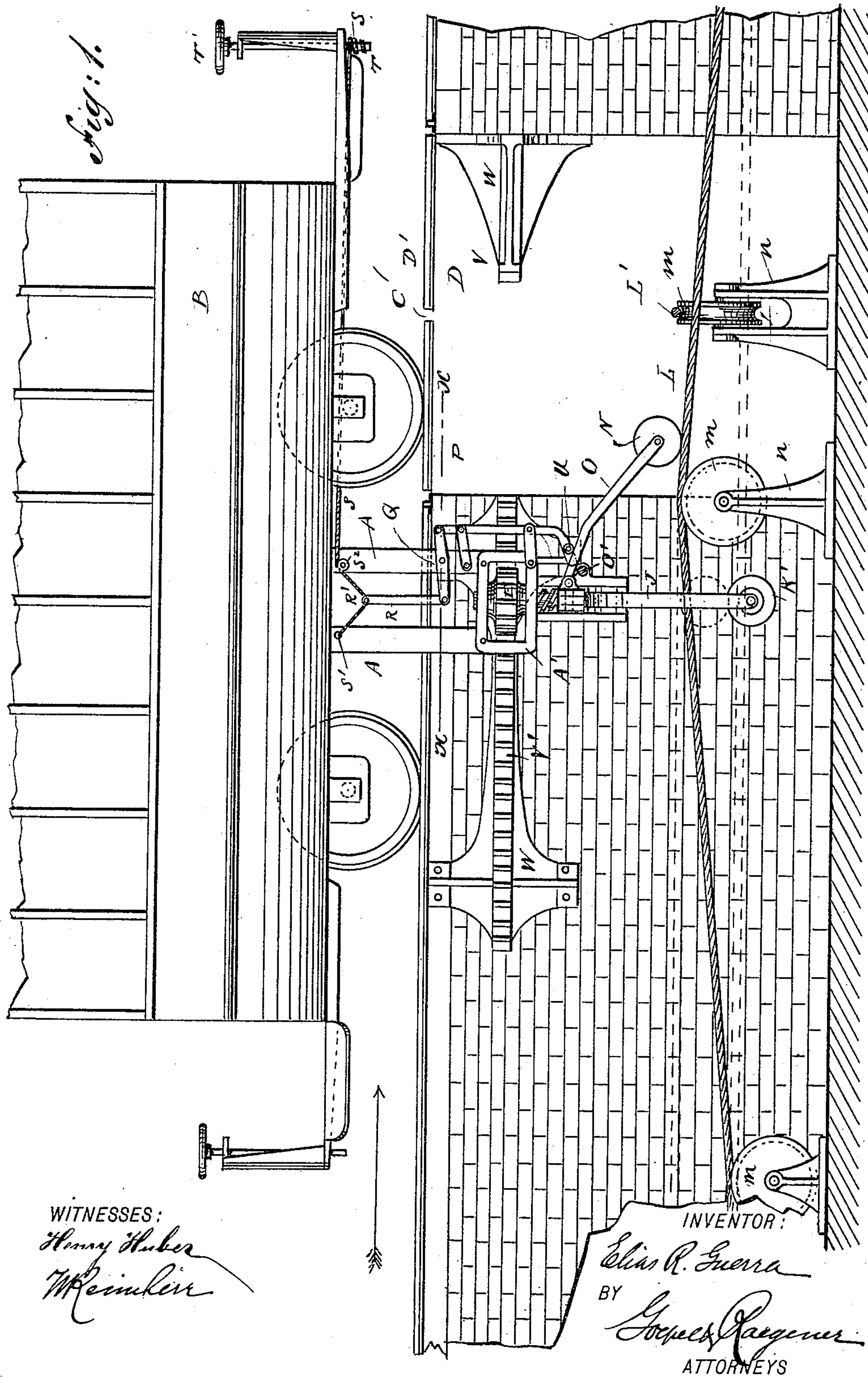
(No Model.)

3 Sheets—Sheet 1.

E. R. GUERRA.  
CABLE GRIP.

No. 426,799.

Patented Apr. 29, 1890.



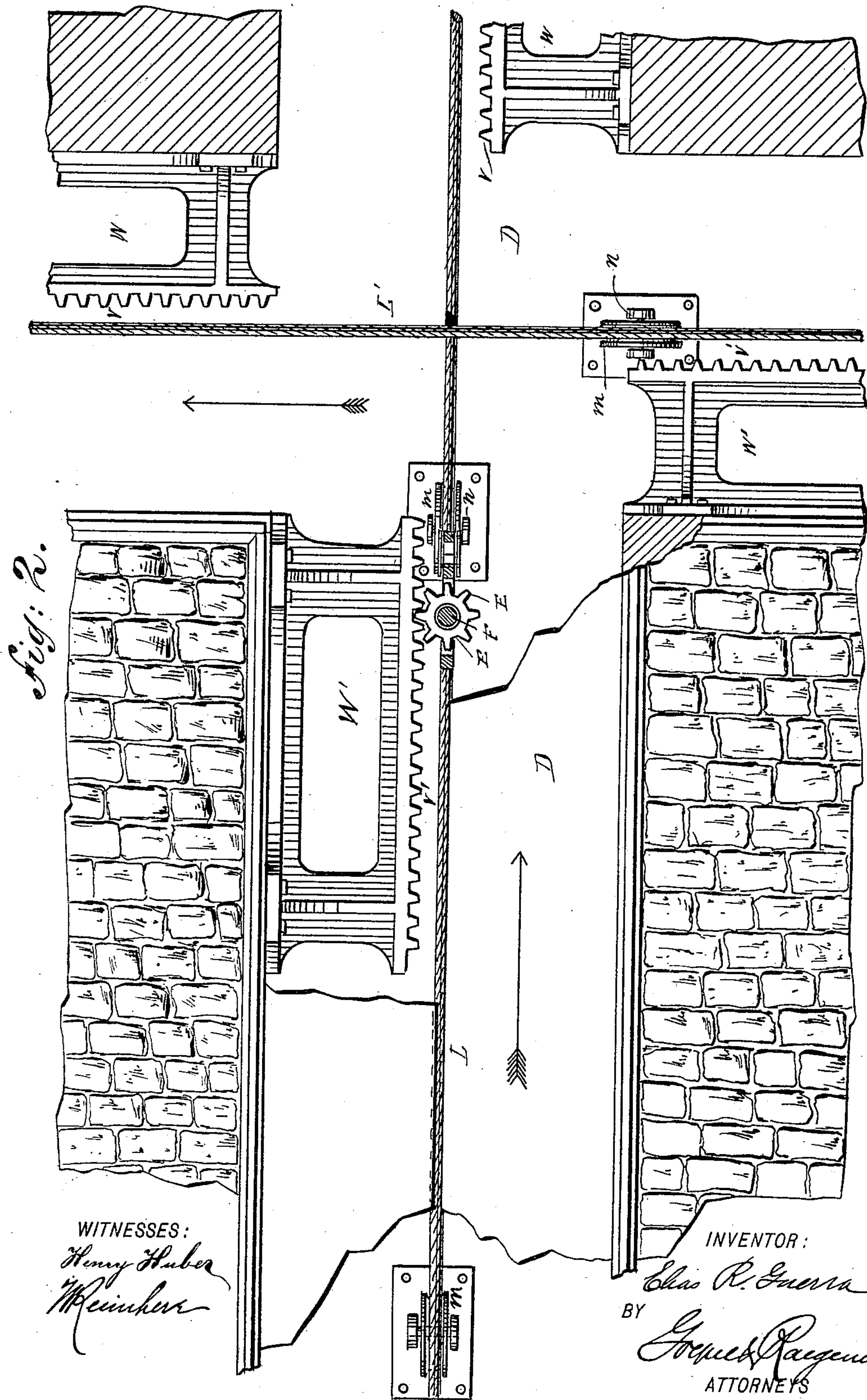
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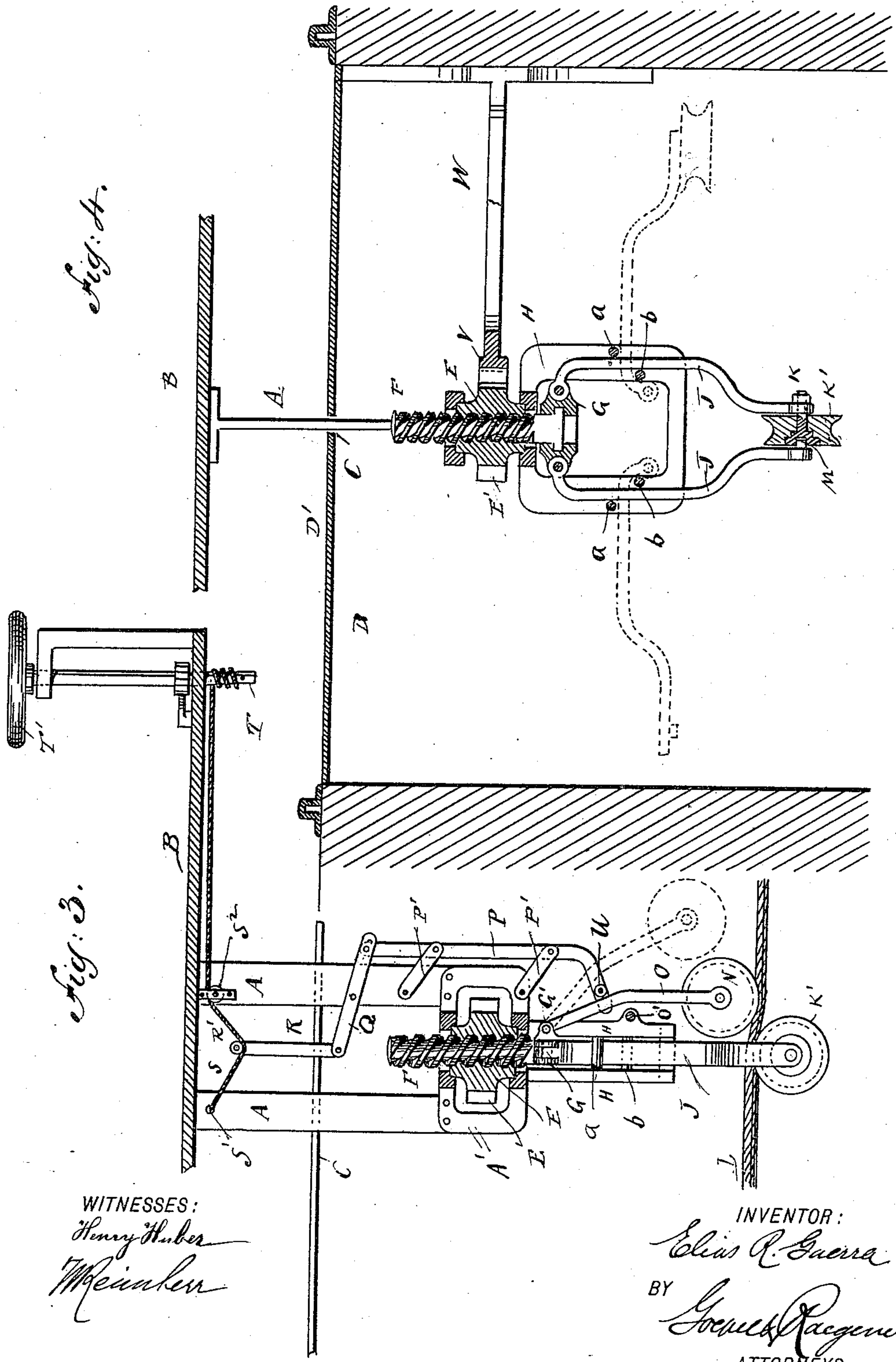
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WITNESSES:  
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INVENTOR:  
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ATTORNEYS.



# UNITED STATES PATENT OFFICE.

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

## CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 426,799, dated April 29, 1890.

Application filed February 27, 1890. Serial No. 341,908. (No model.)

*To all whom it may concern:*

Be it known that I, ELIAS R. GUERRA, of Hacienda de San Matias, State of Jalisco, Mexico, a citizen of the Republic of Mexico, have invented certain new and useful Improvements in Cable-Grips, of which the following is a specification.

The object of my invention is to provide a new and improved cable-grip for cables running in underground conduits, which grip is so constructed and arranged as to automatically release the cable when a crossing cable is encountered and to pass over said crossing cable, and then to automatically grip the cable on which it was applied before the crossing was reached.

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

In the accompanying drawings, Figure 1 is a side view of a car provided with my improved cable-grip and a longitudinal sectional view of a cable-conduit at a crossing. Fig. 2 is a plan view of the conduits at a crossing, parts being shown in sectional view on the line *xx*, Fig. 1. Fig. 3 is a vertical longitudinal sectional view of my improved grip. Fig. 4 is a cross-sectional view of the same.

Similar letters of reference indicate corresponding parts.

The grip-frame bars *A A* are secured to the under side of the car *B* and pass through the slot *C* in the top plate *D'* of the cable-conduit *D*.

In the bottom cross-pieces *A'* of the grip a nut *E* is mounted, which is provided with cogs *E'* on its rim. Through said nut a screw-spindle *F* is passed, the lower end of which is mounted to turn in a head *G*, which is mounted to move vertically between the side bars *H* of the grip-frame. At two opposite points of said head *G* the two levers *J J* are pivoted to the same in such a manner that they can swing toward and from each other. One of said levers *J* is provided in its lower end with a pin *K*, carrying a grooved roller *K'* for supporting the cable *L*, and the other arm *J* is provided with a pin *M*, that fits into a recess in one face of the roller *K'*. Each arm *J* passes down between two pins *a* and *b* on each side bar *H* of the frame, the pins *a*

being above the pins *b*, and said pins *a* being at the outer edges of said bars *H*, whereas the pins *b* are arranged at or near the inner edges. A gripping-roller *N* is pivoted to the lower end of an arm *O*, pivoted to the head *G* at *G'*. A presser-bar *P* is connected by links *P'* with the grip-frame, and the upper end of said presser-bar is pivoted to a lever *Q*, pivoted at or near its center to one of the grip-frame bars *A*, and that end of the lever *Q* opposite the one connected with the bar *P* is pivotally connected with a bar *R*, the upper end of which carries a roller *R'*, that rests on a cable or chain *S*, fastened at *S'* to one of the bars *A* and passing over a roller *S<sup>2</sup>* on the other bar *A*. Said chain or wire rope *S* is secured to and adapted to be wound upon a vertical shaft *T* on the car, which shaft is provided at its upper end with a suitable hand-wheel *T'*. A pin *U* projects laterally from the lower end of the presser-bar *P*, and is adapted to act on the lever *O*, carrying the grip-roller *N*. On one side wall of the conduit a bracket *W* is secured at one side of the crossing, and on the opposite side wall of the conduit a like bracket *W'* is secured at the other side of the crossing, as shown in plan view in Fig. 2. On the outer ends of said brackets racks *V* and *V'* are formed, that are adapted to engage the teeth or cogs on the nuts *E* of the grips. The cable *L* rests throughout the entire length of the conduit on the supporting-rolls *m*; but at the crossing said rolls are mounted on higher standards *n*, so that the cables are raised at the crossing, as shown in Fig. 1.

Fig. 3 shows the positions of the parts when the cable is gripped. When a car arrives at the crossing, the teeth *E'* of the nut *E* engage the rack *V* or *V'* at that side of the crossing conduit from which the car arrives, and thereby the nut *E* is turned in such a manner as to screw the screw-spindle *F* downward, whereby the head *G* is also moved downward. The pins *a* and *b* on the side arms *H H* cause the arms *J J* to swing outward and upward and from each other, as shown in dotted lines in Fig. 4, whereby the cable is released and the arms are swung up so high as to pass over the crossing cable without interfering with the same. After the car has crossed the crossing cable *L'* the teeth *E'* of the nut are engaged with the rack *V* or *V'* at the other side



of the crossing and at the opposite side of the conduit, whereby the nut E is turned in the reverse direction and the screw-spindle F is screwed upward, whereby the arms J are swung downward and toward each other by sliding on the pins *a b*, the lower ends of said arms swinging below the cable, which is raised, as stated, at the crossing. At the same time that the head G is moved downward the gripping-roller N is swung upward as its supporting arm or lever O strikes against the transverse pin O' of the frame, as shown in Fig. 1. As the head G is moved upward again the arm O is swung down, and the gripping-roller N presses against the cable, as shown in Fig. 3.

In case the car is to be stopped at any time, the chain or cable S is loosened, so that the pin U does not exert any pressure on the supporting arm or lever O of the gripping-roller N, thus permitting the cable to pass freely between the rollers K' and N. When the car is to be started again, the trainman turns the shaft T, so as to wind the chain or rope S on the same, whereby the bar P is forced down and the pin U, acting on the bar or lever O of the roller N, presses said roller downward, whereby the cable is clamped securely between the rollers N and K', and the car is pulled along by the cable. As shown in Fig. 2, the same arrangement of racks is provided in both conduits that cross each other.

The advantages of my improved grip are, that the cable is released automatically at a crossing and automatically gripped again after the crossing has been passed. There is no need of depending upon the trainman to release or open the grip before arriving at a crossing, and thus serious accidents can be avoided.

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

1. The combination, with a cable car and conduit, of a grip mechanism on the car, a

screw for operating said grip mechanism, a nut through which said screw passes, and racks in the conduit for engaging said nut, and thereby opening or closing the grip, substantially as set forth.

2. The combination, with a grip-frame, of a nut mounted to turn in the same, a screw passed through said nut, jaws or levers connected pivotally with the lower end of said screw, and guide-pins on the grip-frame between which pins the said jaws or levers pass, substantially as set forth.

3. The combination, with a grip-frame, of a nut mounted to turn in the same, a screw-spindle passed through said nut, jaws or levers connected pivotally with the lower end of said screw, guide-pins on the grip-frame between which guide-pins the said levers or jaws pass, and a roller pivoted on the lower end of one of said jaws or levers, as set forth.

4. The combination, with a grip-frame, of a nut mounted to turn in the same, a screw-spindle passed through said nut, grip-jaws or levers connected pivotally with the lower end of said spindle, a gripping-lever also pivotally connected with the lower end of said spindle, and a separate bar acting on said gripping-lever, and means for pressing down said bar, substantially as set forth.

5. The combination, with a grip-frame, of a nut mounted to turn in the same, a screw-spindle passed through said nut, and levers or jaws pivotally connected with the lower end of the spindle, two of said jaws or levers being mounted to swing in the same plane in opposite directions and the third being adapted to swing in a plane at right angles to the plane in which the other two swing, 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 P. GUNZ,  
WILLIAM HAY.