

(No Model.)

3 Sheets—Sheet 1.

E. D. HAVEN.

CABLE RAILWAY.

No. 327,083.

Patented Sept. 29, 1885.

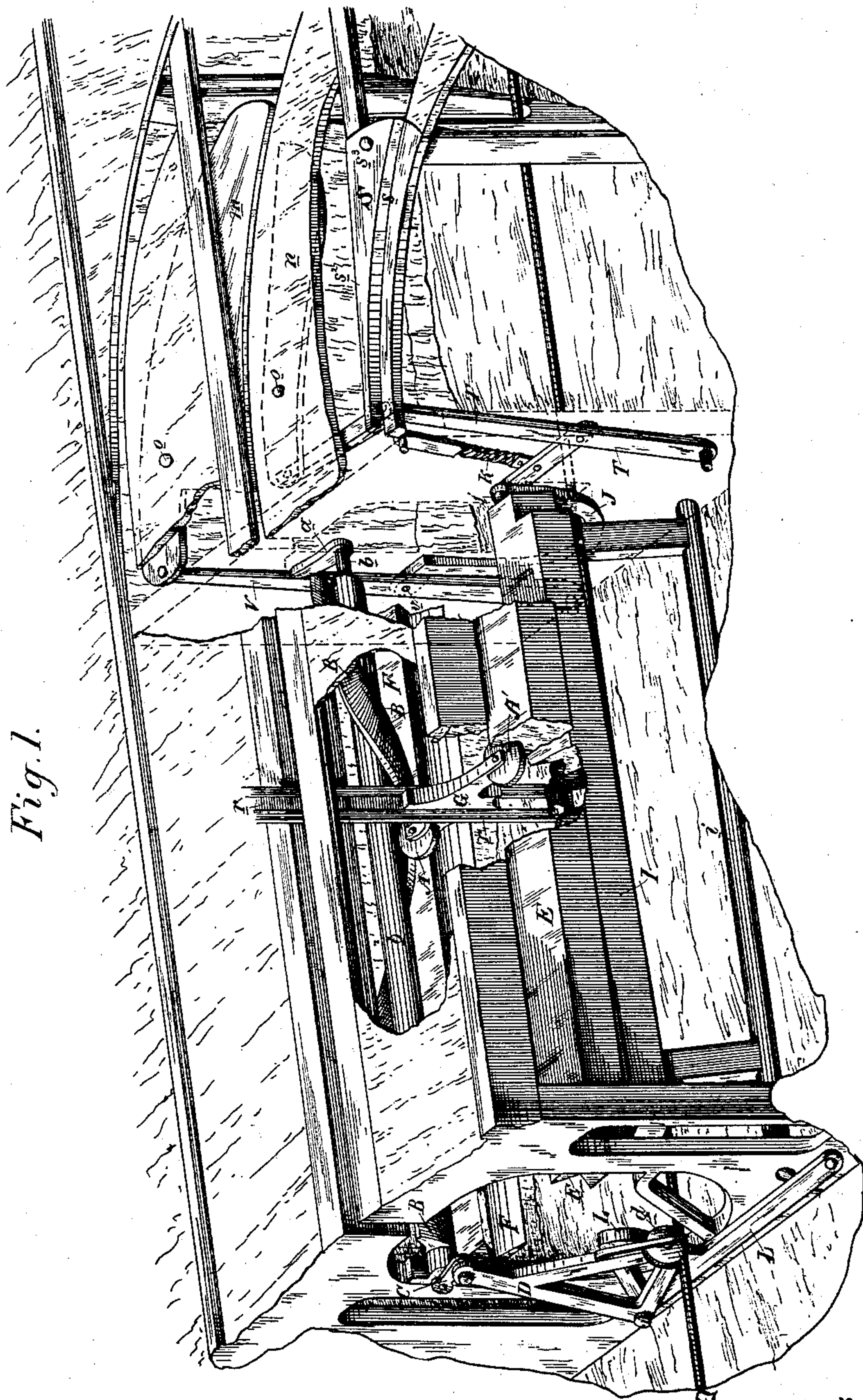


Fig. 1.

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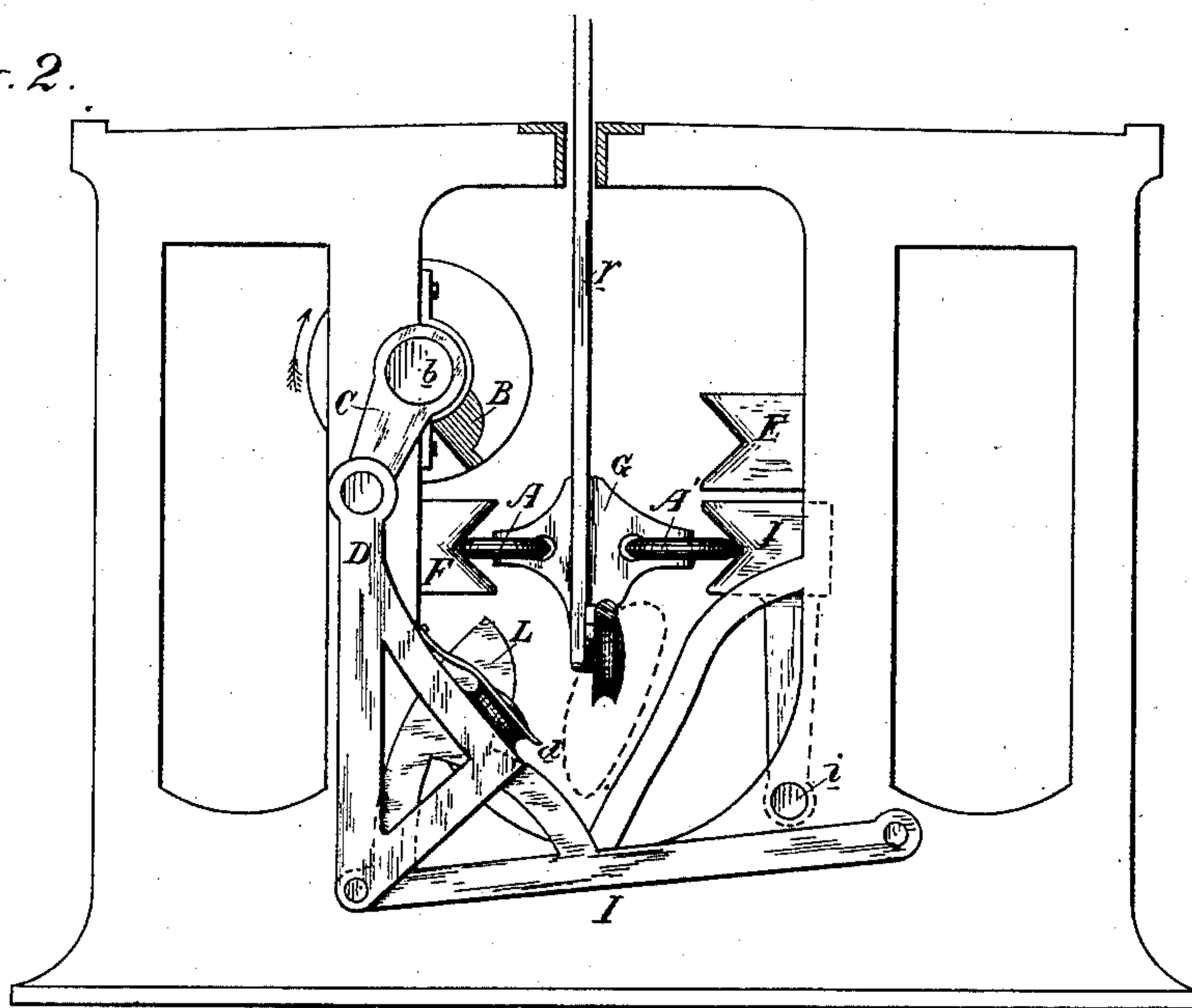
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Fig. 2.



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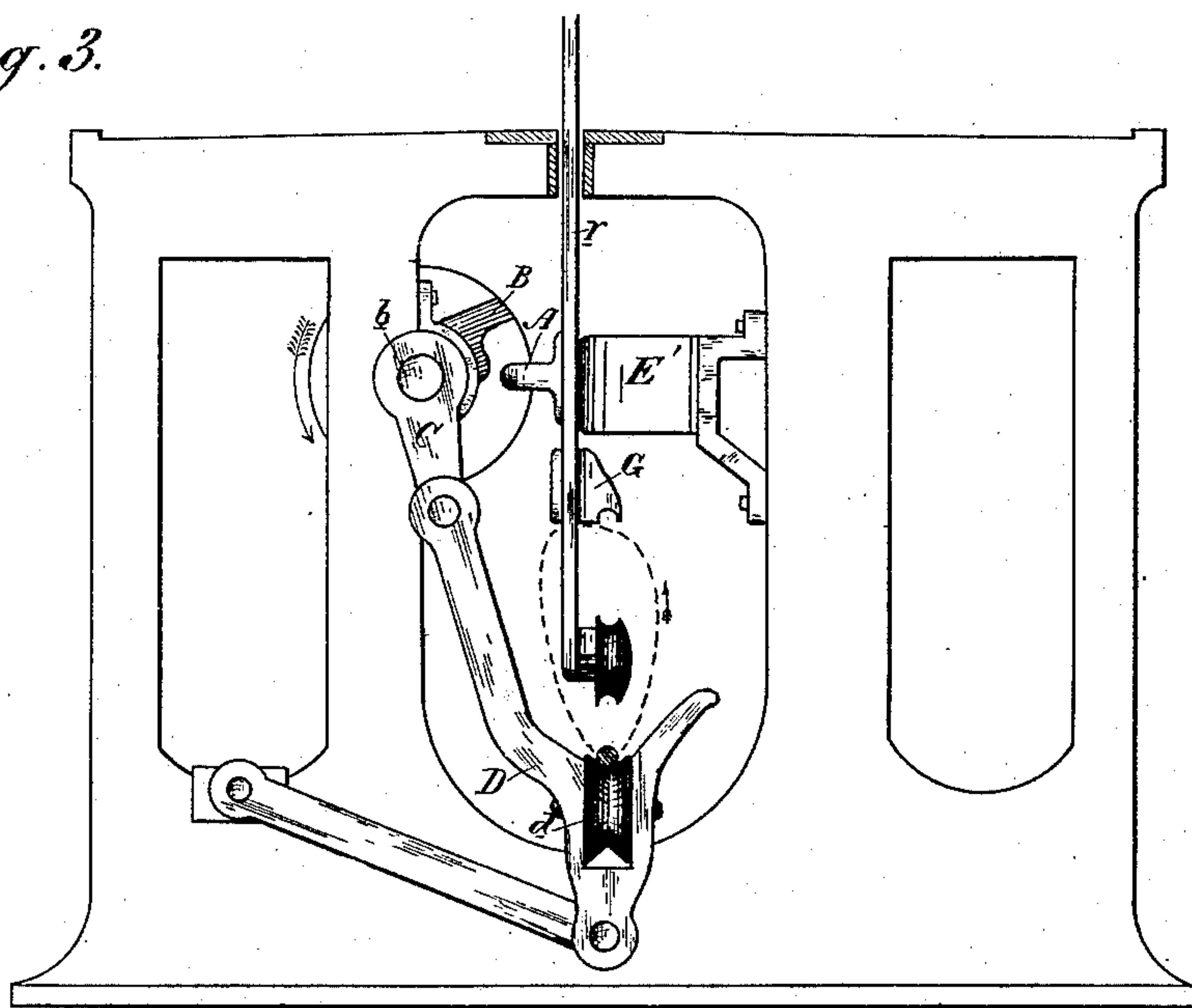
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Fig. 3.



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UNITED STATES PATENT OFFICE.

EGBERT D. HAVEN, OF SAN FRANCISCO, CALIFORNIA.

CABLE RAILWAY.

SPECIFICATION forming part of Letters Patent No. 327,083, dated September 29, 1885.

Application filed February 9, 1885. (No model.)

To all whom it may concern:

Be it known that I, EGBERT D. HAVEN, of the city and county of San Francisco, State of California, have invented an improvement in Cable Railways; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to certain improvements in cable railways, the object of the same being to provide a device by which the gripman can drop and pick up the cable and pass over switches and crossings without the aid of switchmen and without any dips in the grade of the street or bends of the cable.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is a perspective view of the whole device. Fig. 2 is a vertical cross-section showing the device for throwing the cable off the grip preparatory to switching the car to another track. Fig. 3 is a cross-section showing a modification adapted to drop and pick up the cable at any point, as when two cables cross and are intended to act independent of any switch attachment.

A A', Fig. 2, are projecting shoes or rollers secured one on each side of the sliding part of the grip and move up and down according as the grip is opened or closed.

E and F are grooved guides secured to the frame and extending a certain distance parallel with the cable and adapted to receive the projections A A'. The guide F is placed in such position to the rear of the grip as to receive A' when the grip is closed, and the guide E is placed in such position on the face side of the grip as to receive A' when the grip is open. These guides are beveled at the approach ends, so that the grip as it enters is forced into one, E, or the other, F, of the two guides, and will thus either be entirely closed or thrown wide open.

Opposite the guide F is a grooved horizontal lever, I, adapted to receive one of the projections, A, when the other enters F. This lever I is mounted upon an axis, *i*, on which it tips slightly toward and away from F. The line of this axis *i* is parallel with the cable; but the lever I is secured to it diagonally, or in a line not parallel with it, so that it inclines slightly toward F as it approaches the farther or switch end. By this construction

the grip in passing between F and I crowds the lever I outward, and in so doing moves the switch-rail, as hereinafter shown.

Above the guide F, and parallel with it, extends a horizontal shaft or cylinder, *b*, having suitable bearing to permit its revolving freely. Secured to said shaft is a grooved spiral, B, winding from the lower side toward the grip and making a little more than one full turn around the shaft. Said spiral B is so constructed that in revolving, each part as it comes to its lowest point presents a grooved face exactly opposite the guide E, and together with E is adapted to receive the projecting shoes or rollers A A' when the grip is open, so that the grip in passing between B and E compels the shaft *b* to make one revolution.

Secured to the end of the shaft *b*, and revolving with it, is a crank, C. The object of the crank is twofold—first, to throw the cable off and convey it under the grip, as shown in Fig. 2; or, second, to pick it up and place it on the grip, as shown in Fig. 5. When the object is to throw the cable off the grip, the lever D, Fig. 2, has its upper end pivoted to said crank C, and its lower end is pivoted to the angle of the lever L. The extreme outer end of the horizontal arm of the lever L is pivoted to the frame at such a point as will permit the other upwardly-extending arm of L to rise with each revolution of the crank C and to throw the cable off the grip by the following device: The lever D is triangular in shape, and at its third angle is provided with a hook or sheave, *d*, adapted to pass over the cable when it is thrown off the grip and force it down under the grip, if it does not fall of its own weight. To prevent the cable when thrown off the grip from passing beyond reach of the sheave or hook *d*, a guard is so secured upon the opposite side of the cable-tube as to clear the passing grip, and so shaped as to conform to the line described by the descending sheave or hook *d*, Fig. 2.

When the object is to pick up the cable and place it upon the grip, the crank C with its spiral shaft may be made to revolve in the opposite direction, and the lever D with its attachments are placed under and adapted to raise the cable, as shown in Fig. 5. This portion of the device may be used where cars

come from a side line upon the main line, and may be independent of any mechanism for moving the switch. In this case the projection A may be fixed to that part of the grip-frame which does not move up and down.

I would have it understood that I do not limit myself to the precise arrangement of parts shown and described. For instance, the spiral shaft B may be placed on the face side instead of on the back side of the grip, especially when the object is to pick up the cable. Again, instead of placing the device for picking up and throwing off the cable at the near or approach end of the spiral shaft B, it may be placed at either end of the spiral shaft B. Again, when it is desired to employ this device for lifting or dropping the cable independent of the switch attachment, as at crossings, &c., the guide F and the lever I (shown in Figs. 1 and 2) and all switch attachments are omitted; and instead of the projecting shoes or rollers A A', secured to the sliding part of the grip, one single shoe, A, Fig. 3, is secured to the fixed part of the standard r of the grip, and on one side only. On the opposite side, and close to the grip-shank, is a guide, E', against which the shank bears, and is prevented from being pressed to that side by the mechanism acting upon the opposite side.

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

1. In a cable railway, a means for removing the cable from the grip mechanism after the latter has been opened, consisting of a lever pivoted to a stationary portion of the tube or frame and connected with a crank or eccentric arm, in combination with a mechanism which is actuated by the passing grip so as to raise the lever and cause it to engage and lift the cable, substantially as herein described.

2. In a cable railway, a means for disengaging the cable from the grip-jaws after the latter have been opened, consisting of a lever pivoted to the stationary part of the tube or frame and connected with a crank or eccentric, together with a spirally-grooved shaft, to

which the crank is connected, and lugs or projections upon the grip which are adapted to enter the groove and to rotate the shaft as the grip passes, substantially as herein described.

3. In a cable railway, a means for removing the cable from the grip-jaws after the latter have been opened and to depress it below the grip, consisting of a lever having one end pivoted to a stationary portion of the frame or tube and connected with a crank or eccentric by which it is caused to move around its fulcrum, in combination with a connecting arm or lever having a groove or guide upon one side to engage with the cable after it is removed from the grip-jaws and carry it downward upon the completion of the rotation of the crank, substantially as herein described.

4. In a cable railway, a means for replacing the cable within the jaws of the horizontally-traveling gripping device, consisting of an arm or lever having one end hinged or pivoted to a stationary portion of the frame or tube, in combination with a secondary arm or lever connected with the first lever and a crank which is caused to make a complete rotation by the passage of the grip, said secondary-lever having a guide or pulley which will engage the cable upon its upward movement to raise it with relation to the grip-jaws, substantially as herein described.

5. In a cable railway, horizontal guides placed opposite each other, a single fixed guide above one of them upon one side, and a horizontal spirally-grooved flange or cylinder placed opposite to this second guide, in combination with a horizontally-moving grip having lugs or pulleys fixed upon its opposite sides to engage with the primary guides when the grip is closed, and which will engage with the secondary guide and spiral when they are raised by the opening of the grip-jaws, substantially as herein described.

In witness whereof I have hereunto set my hand.

EGBERT D. HAVEN.

Witnesses:

EDWD. CHATTIN,
H. J. LANG.