

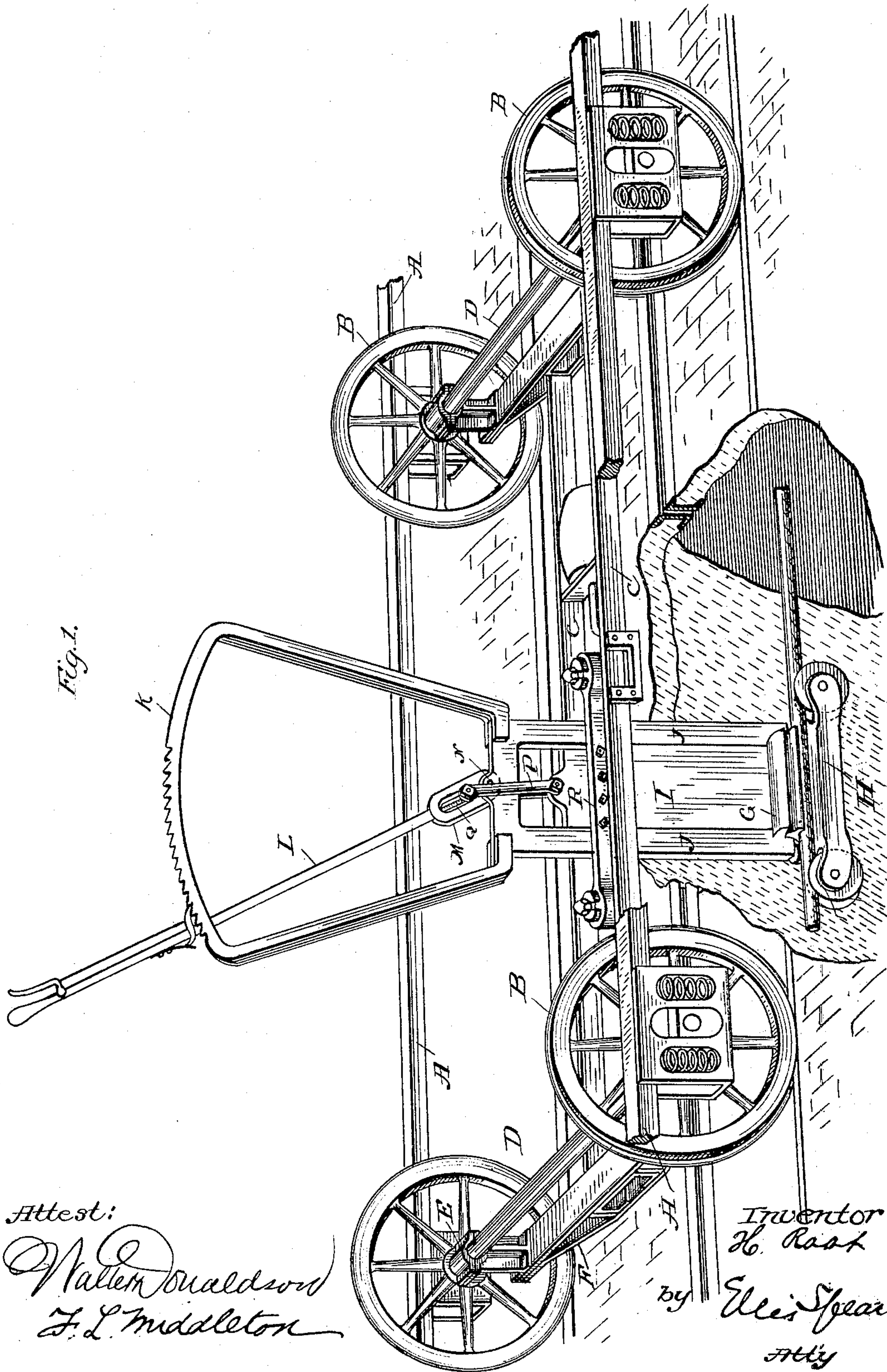
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4 Sheets—Sheet 1.

H. ROOT.

GRIPPING AND CARRYING APPARATUS FOR CABLE RAILROADS.
No. 286,163.

Patented Oct. 2, 1883.



Attest:
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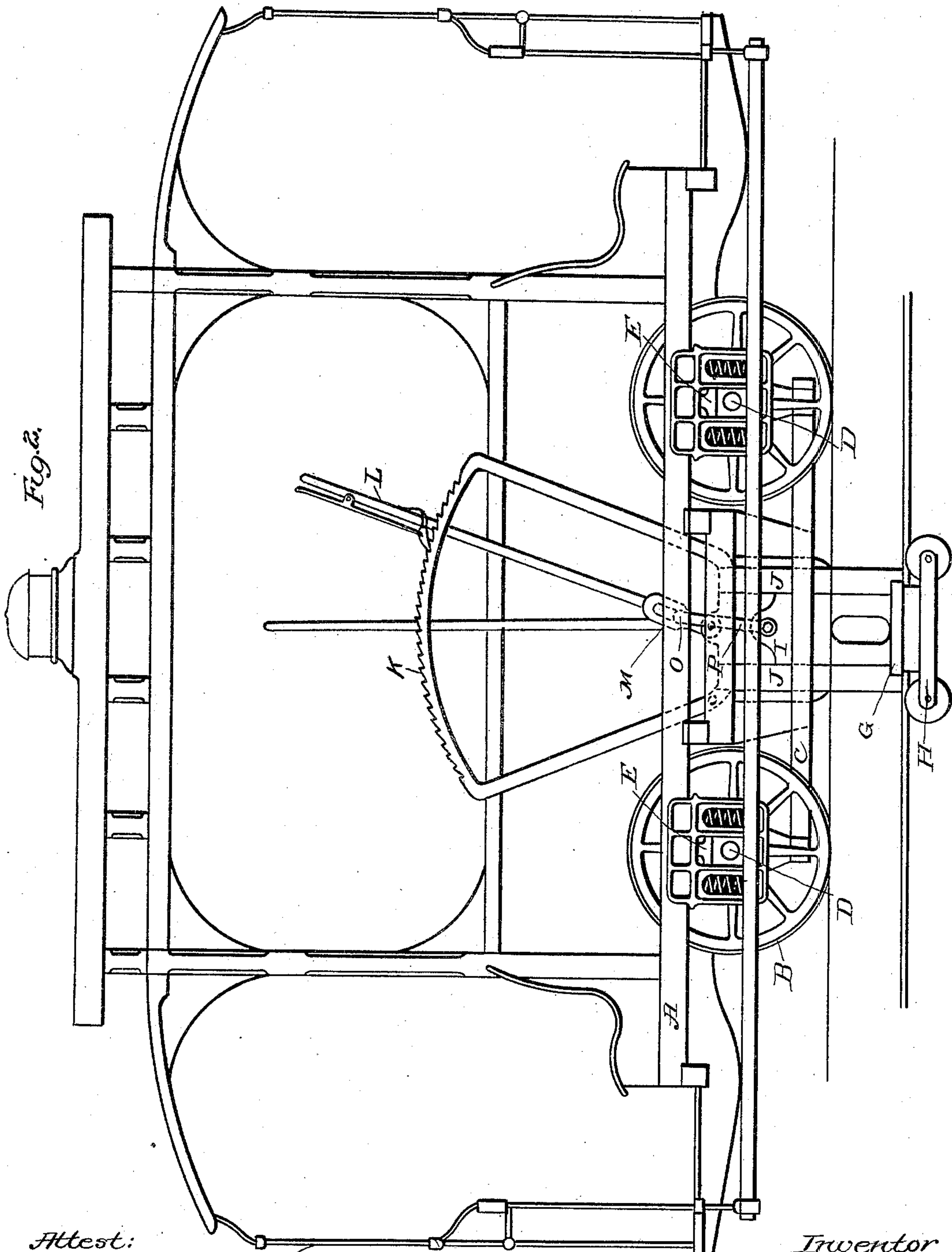
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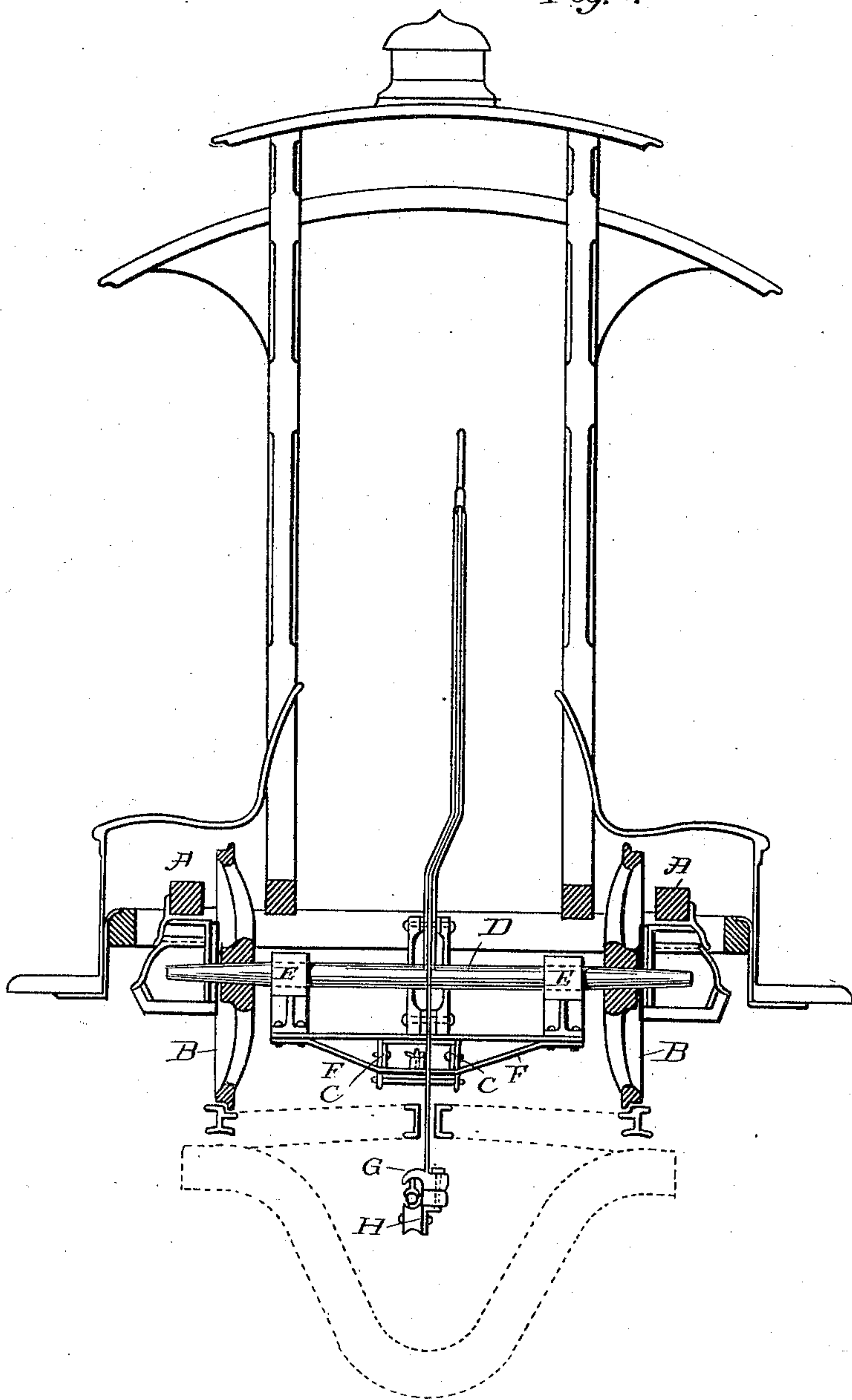
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Fig. 3.



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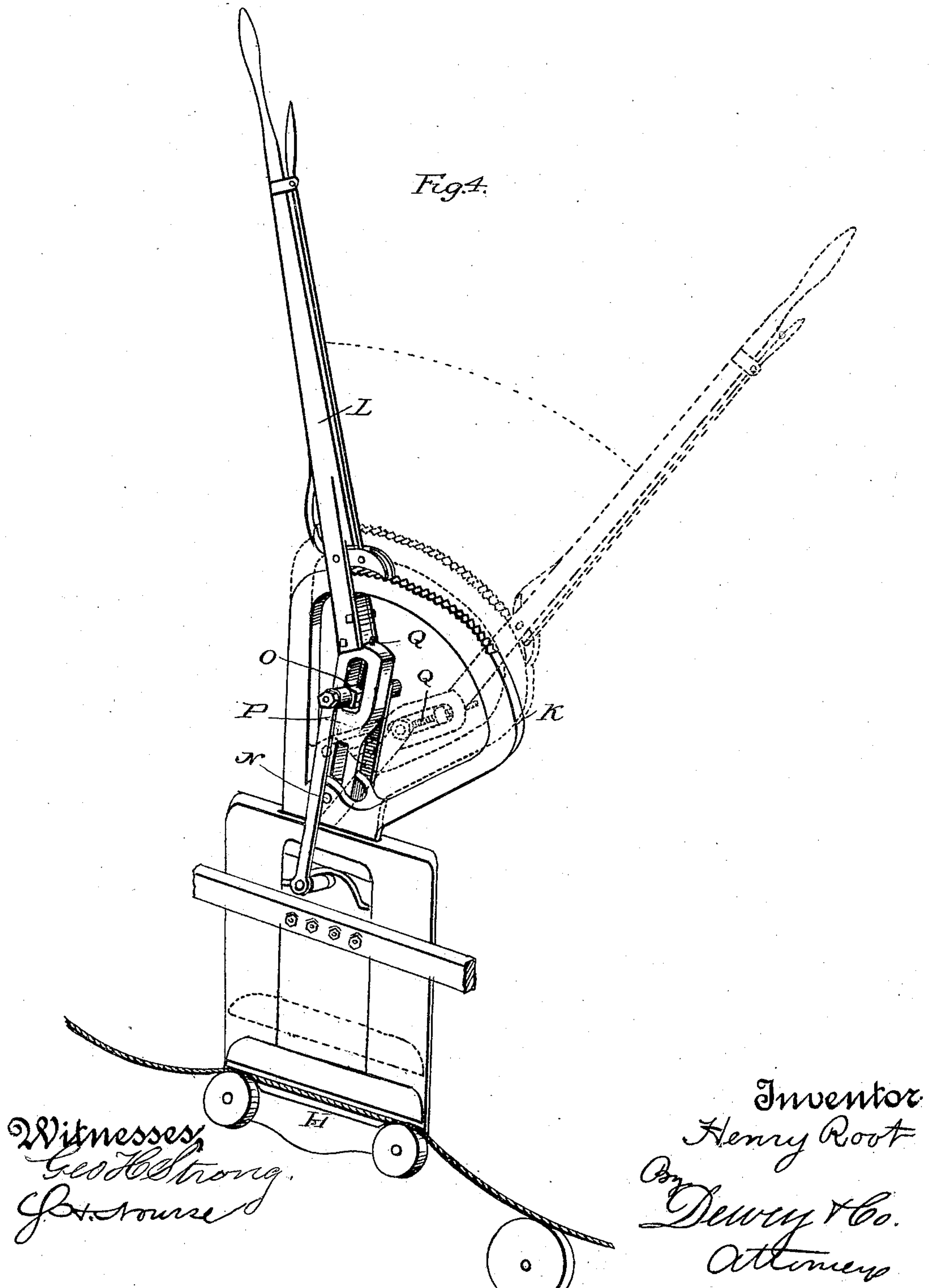
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UNITED STATES PATENT OFFICE.

HENRY ROOT, OF SAN FRANCISCO, CALIFORNIA.

GRIPPING AND CARRYING APPARATUS FOR CABLE RAILROADS.

SPECIFICATION forming part of Letters Patent No. 286,163, dated October 2, 1883.

Application filed February 13, 1882. (No model.)

To all whom it may concern:

Be it known that I, HENRY ROOT, of the city and county of San Francisco, State of California, have invented a Gripping and Carrying
5 Apparatus for Wire-Rope Railways; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to improvements in gripping devices and their attachments for use
10 on cable railways, or where cars are moved by means of an endless rope or cable traveling in an underground slotted tube or tunnel; and it is especially useful on roads where cars are moved over some portions of their route by
15 power other than that of the cable, and where any of the common kinds of street-cars can be used for carrying passengers, and may be coupled to a grip-car or dummy, so as to be hauled by it over that portion of the road
20 traversed by the cable, these cars being continued beyond the terminus of the cable by horse or other power, while the dummy or grip-car is transferred to the opposite track for the return trip without any turning around.

25 In this class of roads it is necessary to have a gripping apparatus simple in construction, with as much as possible of its mechanism above ground, so as to be accessible at all times, and to be carried at a uniform depth
30 below the slot, so as to always maintain its position relative to the slot. For this reason a car mounted upon springs, as ordinarily constructed, would not furnish the rigid support required, and when the dummy or grip-car is
35 constructed without springs, as is ordinarily done, it is disagreeable to ride upon.

In gripping devices heretofore used and operated by a lever the entire frame has been formed of one piece of metal, which was secured by bolts to the grip-bar of the dummy.
40 At the lower ends of this metal frame was suspended the gripping-jaws, with the rollers or dies and all the operating mechanism, including the operating-lever, which extended upward through the slot in the tube and to a sufficient height to be operated conveniently by a man on the dummy. By this arrangement all of the parts likely to get out of order
45 were below the slot and within the tube, and were inaccessible, except at a few points where
50 large openings in the street were made and

deep pits provided for the purpose of making the necessary examination and oiling the moving parts. One object of my invention is to overcome this difficulty and to make a grip-
55 ping apparatus the mechanism of which is within reach of the operator during the entire trip. This I do by forming it of two frames, one sliding outside the other. The inner one is secured to the grip-bar of the
60 dummy by bolts and carries the lower jaw, while the outer frame, which slides up and down upon the inner one, carries the upper jaw, the quadrant, the operating-lever, and adjusting mechanism, and is held in place by
65 guide-plates extending across the stationary inside frame, and between which it slides. The inside frame, which carries the bottom jaw, may pass from the slot directly down alongside the cable without offset. The grip-
70 bar upon which these operating parts are mounted is secured to and supported by a frame, which is connected with boxes upon the axles of the dummy or grip-car between the wheels and independent of the boxes and pedestals
75 upon which the body of the car is supported, so that the latter may be mounted upon springs in the usual way.

Referring to the accompanying drawings for more complete explanation of my inven-
80 tion, Figure 1 is a perspective view; Fig. 2, a side elevation; Fig. 3 a cross-section through the centers of one pair of supporting-wheels, and Fig. 4 is a detached and enlarged view of the gripping mechanism, in perspective.
85

A A are the principal sills of a car, supported upon four wheels, B. This car is technically known as the "dummy" or "grip-car," because it is intended primarily for the support and connection of the grip; but it has
90 been found desirable to also place seats upon the sides and ends for the accommodation of a certain proportion of passengers, who may thus ride upon the dummy as well as within the regular passenger-car which it hauls. In
95 my present construction the body of this grip-car is supported upon springs in the usual or any suitable manner, so as to make it comfortable and easy for passengers to ride upon. An opening is made through the floor of the
100 car in the center and above the slot in the tube in which the endless cable moves, and

below this opening are the bars C C, which support the grip mechanism. These bars C C are supported directly from the axle D of the car-wheels by being connected with boxes E, which are fitted to these axles between the wheels, so that the axles turn within the boxes, and the grip-bar is supported rigidly from these boxes.

In some cases a single long box may be placed centrally upon each axle, and the bars extend from one to the other, having suitable connections; but when the work is heavy and it is desirable to lower the point of attachment as much as possible, and also to bring the bearings near the wheels, so as to avoid the spring of the axles, which might occur with a central box, I employ two boxes upon each axle, as shown. These boxes are extended downward below the axle for a considerable distance, and a truss, F, connects each pair of boxes upon one axle, this truss being carried as low and near to the slot as possible. These bars C C are bolted to the centers of the trusses at each end, extending longitudinally between them, thus forming a rigid support for the grip, and independent of the movements of the car-body upon its springs.

G is the upper and H the lower jaw of the grip, which may be of any especial or well-known construction. In the present case I have shown the lower jaw as supported by the inner frame, I, of the grip mechanism, which is secured to the grip-bar by bolts. The outer frame, J, which carries the upper jaw, and is made to move in guides which are attached to the inner frame, with the quadrant K, the operative lever L, and mechanism M, by which an adjustment is made to compensate for the wear of the dies, are all made to move up and down. The mechanism by which this is accomplished is made as follows: The lower end of the lever L is pivoted at the point N. A sliding block, O, is made to move in a slot in the enlarged lower portion of the lever-arm, and this block is connected with the inner frame, I, by a link, P. The block O is adjusted up or down and held in place by an adjusting-screw Q. The explanation of this portion of the device is then as follows: The link P connects the lower part of the lever L with a fixed point, while the end of the lever, below its point of connection with the link, is pivoted to the frame J, so that when the lever is thrown in one direction it will lift the frame J and the upper jaw

of the grip, and when thrown in the opposite direction it will force the jaw down, and thus grip the rope. As this jaw, or the die within it, becomes worn by use, the parts are adjusted to compensate this wear by means of the screw Q, acting upon the sliding block.

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

1. A grip-car for cable railways, consisting, essentially, of a body mounted on supporting-wheels, a grip bar or frame supported by the axle independently of the body, a stationary frame connected to the said grip-bar and carrying one of the gripping jaws or dies, and a vertically-adjustable frame carrying the other jaw or die, and operative mechanism carried by the car.

2. A gripping apparatus consisting of a stationary and a movable jaw secured to corresponding frames, one of which is stationary and the other moves upon it, in combination with the adjusting-block O and screw Q, and the link P, or an equivalent device, to compensate for the wear in the jaw, substantially as herein described.

3. A gripping apparatus for underground cable railways, having a stationary and a movable frame, the stationary frame being secured to a grip bar or bars carried by the axle independently of the car-body, gripping jaws or dies secured to such frames, and an operative mechanism above the top of the track-bed for operating the movable frame and jaw, substantially as described.

4. A grip car consisting of a body having seats for passengers, and mounted by means of intermediate springs upon supporting-wheels, in combination with a truss-frame supported by boxes upon the axle of the carrying-wheels independent of the car-body, and carrying the gripping apparatus.

5. The combination of the car-body, the supporting wheels and axles, the boxes E upon said axles, the truss F, and the longitudinal bar C, forming a supporting-frame for the gripping devices.

In witness whereof I have hereunto set my hand.

HENRY ROOT.

Witnesses:

S. H. NOURSE,
G. W. EMERSON.