

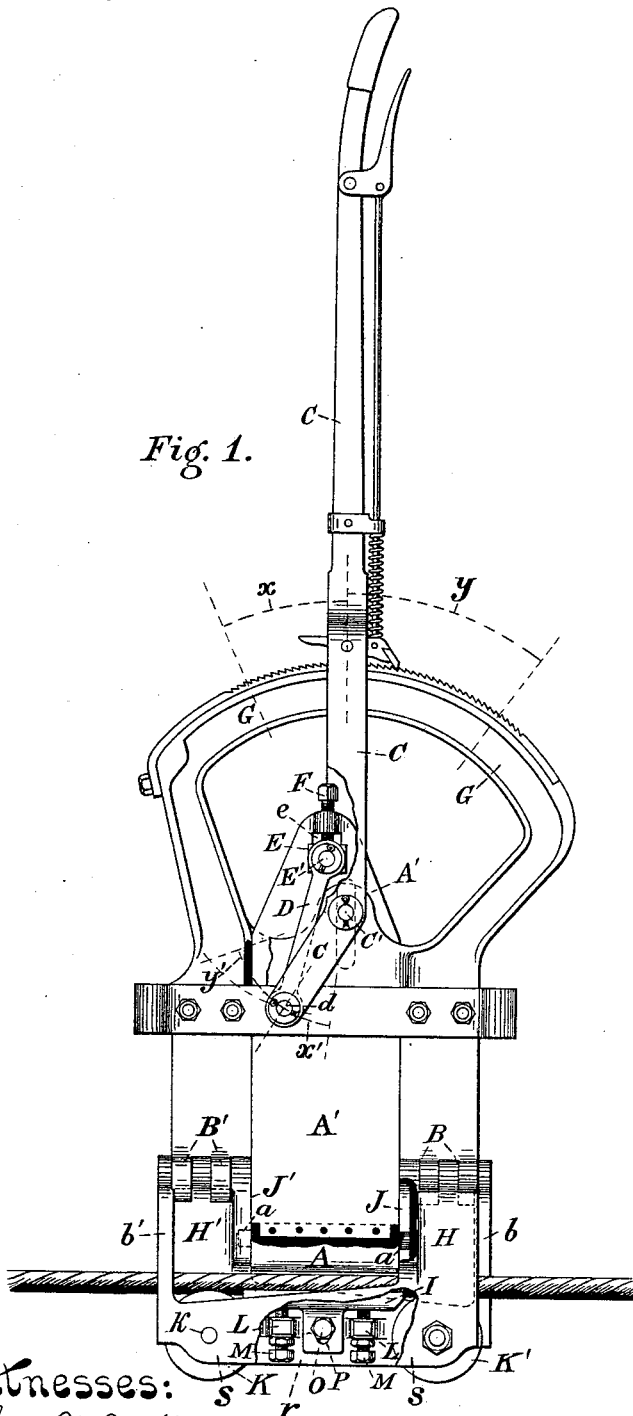
(No Model.)

G. P. CATER.  
CABLE RAILROAD GRIP.

No. 386,737.

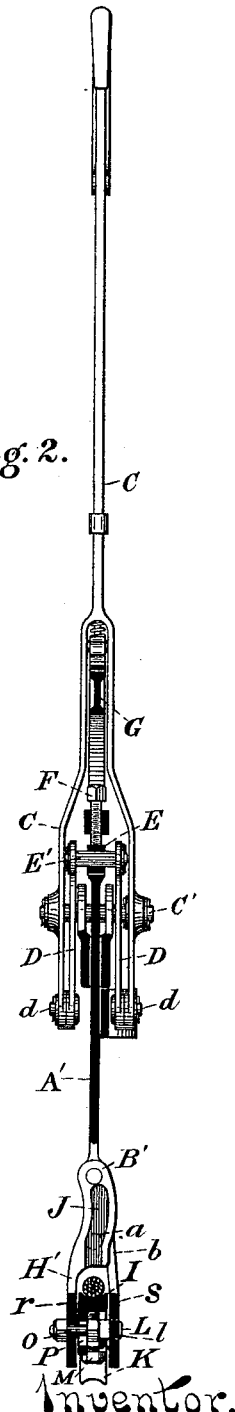
Patented July 24, 1888.

Fig. 1.



Witnesses:  
Geo. W. Weffinger.  
*Atty.*

Fig. 2.



Inventor.  
George P. Cater  
By his  
Atty. W. H. Smith

# UNITED STATES PATENT OFFICE.

GEORGE P. CATER, OF SAN FRANCISCO, CALIFORNIA.

## CABLE-RAILROAD GRIP.

SPECIFICATION forming part of Letters Patent No. 386,737, dated July 24, 1888.

Application filed November 18, 1887. Serial No. 255,553. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE P. CATER, a citizen of the United States, residing in the city and county of San Francisco, and State of California, have invented a new and useful Cable-Railroad Grip; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to improvements in that class of cable-railroad grips in which the rope is gripped between an upper and lower gripping-block, the upper block having vertical motion and being operated by a lever in the car.

The objects of my invention are, first, to provide a grip of simple construction, by means of which the rope can be instantly dropped or picked up; second, to so arrange it that when the grip is in the position for dropping the rope the lowermost point shall be at a less distance below the slot or surface than when it is in the position of holding the rope, in order that a crossing rope may be better avoided. I accomplish these objects by means of the device illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation with portions broken away to more clearly illustrate my invention. Fig. 2 is an end elevation with portions broken away to more clearly show its working.

A is the upper gripping-block; A', sliding plate; *a*, pin or stud; B B', hinge-joint; *b b'*, supporting-rods; C, operating-lever; C', operating-lever pivot; D, link; *d*, pin; E, adjustable sliding block; E', pin in adjustable sliding block; *e*, elongated hole in the upper end of block A; F, adjusting-screw; G, segment; H H', hinged frames; I, lower gripping-block; J, curved groove or cam; K K', supporting-rollers; *k*, hole in *s* for the reception of free end of roller-stud; L L, lugs or bosses for supporting lower grip-block; *l*, hole in *s* for the reception of end of L; M, adjusting-screws of lower grip-block; O, steadying-screw; P, slotted hole; *r*, horizontal extension of lower part of H'; *s y*, arcs described by upper end of lever C to the left and right, respectively, of a vertical line; *x' y'*, arcs described by lower end of lever C.

The operation of my device is as follows: The backward and forward motion of the operating-lever C, which is pivoted at C', raises and lowers the sliding plate A' by means of the link D. The complete range of motion of the operating-lever, and consequently the motion of the sliding plate A' and gripping-block A, may, for convenience of description, be divided into two parts, the dividing or neutral point being preferably the vertical position of the lever, the motions being through the arc *x* and arc *y* of the lever C, which correspond to the arcs *x'* and *y'*, indicated at the lower end of the lever. The function of the motion through the arc *x* is to operate the grip to grasp and release the rope, while it still remains between the grip-blocks supported on the carrying-pulleys K K'. The object of the motion through the arc *y* is to open and close the sides of the grip, which are hinged at B B', thereby dropping the rope entirely out of the grip or picking it up. When the operating-lever is in what I have termed its "neutral" position, which I have arranged to be its vertical position, though this is not essential, the gripping-blocks A and I are separated to a suitable distance apart to allow the rope to run freely through the grip, the supporting-pulleys being in position to carry the rope. A movement of the lever through the arc *x* causes the lower end of the link to describe the arc *x'*, thereby drawing down the sliding plate A', to which the link is attached at E. This downward motion of the sliding plate, with its attached block A, grips the rope between the upper and lower blocks, A and I. The motion of the operating-lever through the arc *y* raises the lower end of the link D through the arc *y'*, thereby raising the sliding plate and its attached block A considerably above the neutral position. This motion of the block A causes the sides of the grip-frame to be forced apart by means of the pin or stud *a* on each end of the block A, which slides in cam-grooves J J'. These cam-grooves being located on the inner edge of H and H' below the hinge joint B B', the cam-groove being suitably formed to cause an outward movement of the lower ends of H and H', which are loosely pivoted at the hinge joint B as the pin *a* is raised above the neutral position, and the cam-grooves J J' being

curved in opposite directions, cause the sides to move apart. The cam-groove is continued below the neutral position of block A; but this lower extension is merely a straight groove, which simply serves to lock the sides, but causes no motion of the sides H H' while the block A is being operated to grip the rope. The pin or stud E', by which the upper end of the link D is connected to the sliding plate A', is secured to an adjustable sliding block, E, which can be moved in an elongated hole in the plate A', for the purpose of adjusting the plate A' as the gripping-blocks wear. The screw F secures the block E in its adjustment. The lower part, s, of the frames H' is extended horizontally, and to it is attached the lower gripping-block, I, which is provided with suitable adjusting devices. The carrying-rollers are attached to r, a similar extension of H. To r is attached the gripping-block and its adjusting device. s is also provided with holes suitable in size and location for the reception of the free ends of pulley-studs K and blocks L L, through which pass the adjusting set-screws M. A suitable toothed segment is provided for the securing of the operating-lever in any desired position by means of a pawl suitably attached to the lever.

It is evident that the operating-pins a a may be attached to the sides of sliding plate A' instead of to the grip-block, though I consider the latter the more suitable place.

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

1. In a cable-railroad grip, a gripping block the ends of which are furnished with a projecting pin or stud, in combination with the hinged frames H H', provided with cam-grooves on their inner edges, substantially as described.

2. In a cable-railroad grip, a vertically slid-

ing plate, in the upper end of which is an elongated hole, in which is fitted an adjustable block, the lower end of said plate being furnished with a gripping-block having a pin or stud projecting from each end, in combination with the hinged frames H H', provided with cam-grooves on their inner sides, in which the projecting pins slide to operate the hinged frames H H', substantially as described.

3. In a cable-railroad grip, the combination of the hinged side frames, H H', the inner edges of which are provided with cam-grooves, and a vertically sliding plate, to the lower edge of which is attached a gripping block provided with pins or studs projecting from its ends suitably located to slide in the cam-grooves on the inner edges of the hinged frames H H', substantially as described.

4. In a cable railroad grip, the combination of the sliding plate A', having attached to its lower edge the block A, the ends of which are provided with pins or studs adapted to slide in the cam-grooves J J', the upper end of said plate having an elongated hole, C, and an adjustable block, E, and pin E', the hinged frames H H' and their extensions r s, carrying the adjustable gripping-block I and pulleys K K', and provided with holes k l, for the reception of the free ends of the adjusting-screw blocks L L and the roller-carrying pins, the rods b b', for supporting the free ends of r s, the bent operating-lever C, pivoted to the frame of the grip at C', having a suitable pawl for securing it in any desired position, the link D, and toothed segment G, all arranged and operating substantially as described.

GEORGE P. CATER.

Witnesses:

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