

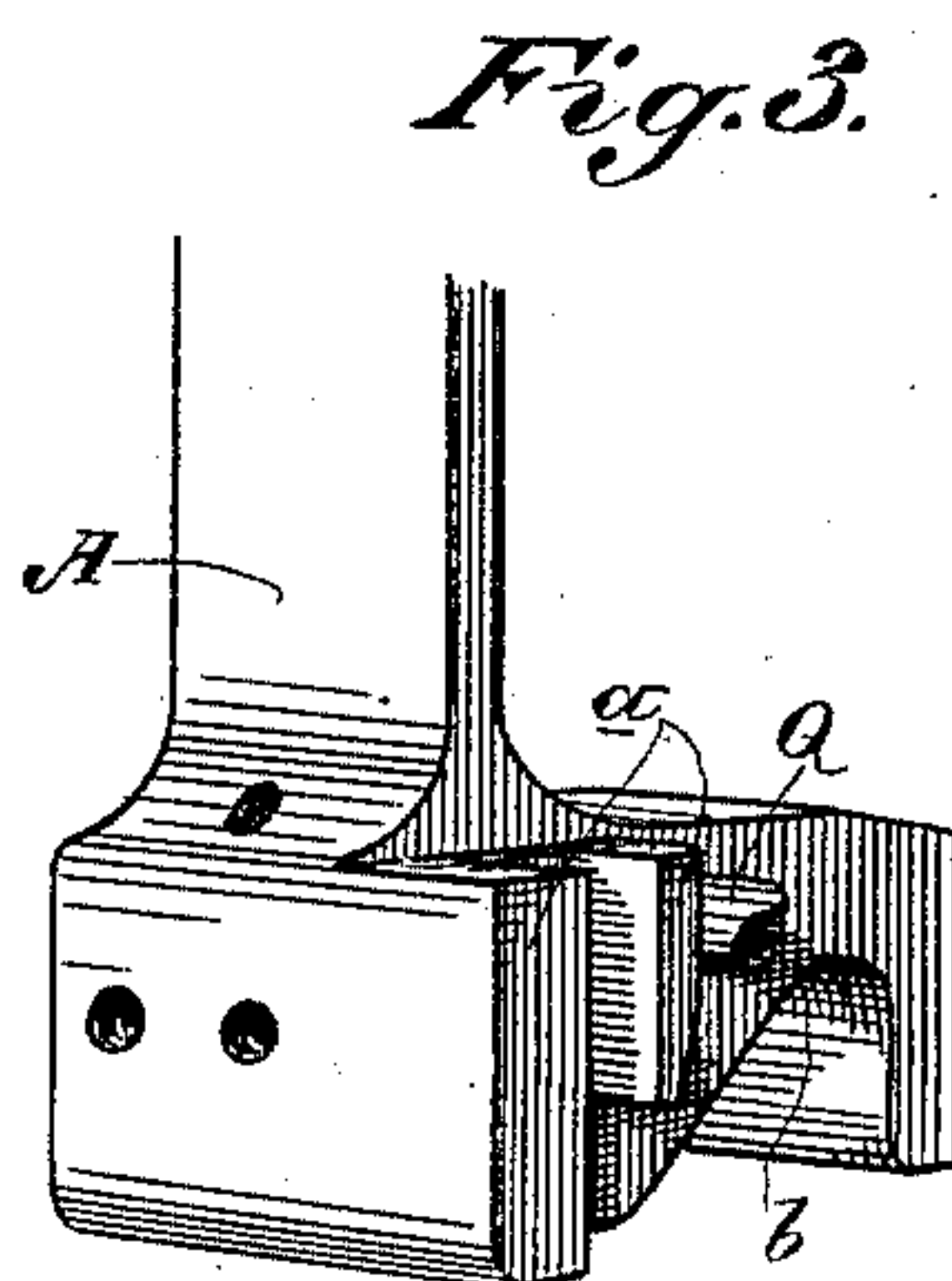
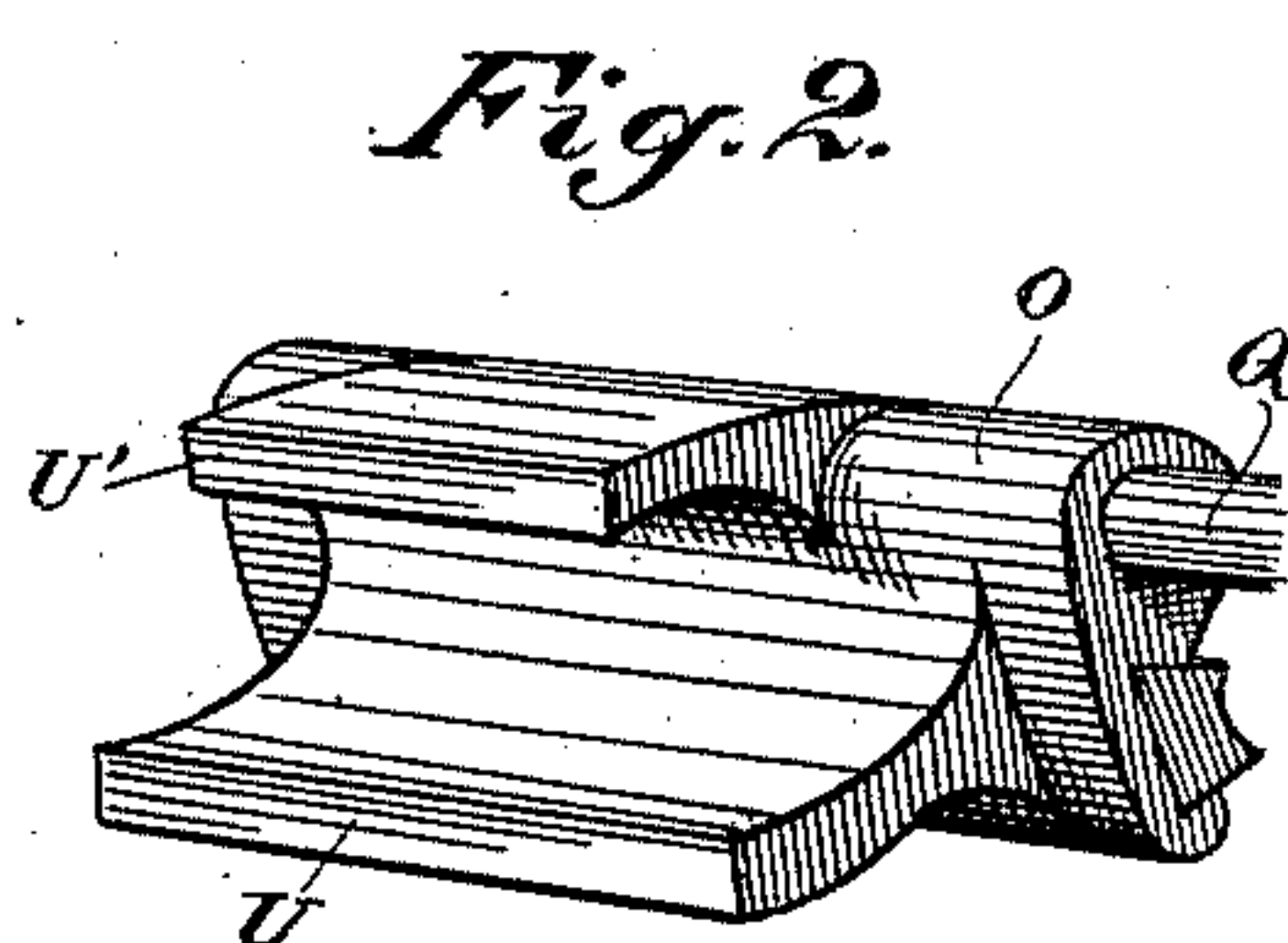
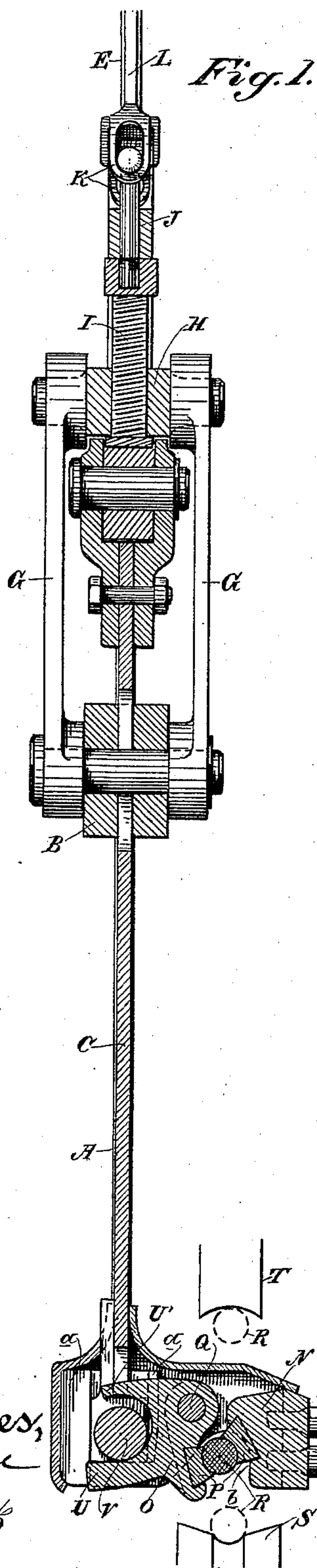
(No Model.)

2 Sheets—Sheet 1.

J. C. H. STUT.
CABLE RAILWAY GRIP.

No. 474,875.

Patented May 17, 1892.



Witnesses,
P. H. House
J. F. Aschbeck

Inventor,
John C. H. Stut
By Dewey & Co.
attys

(No Model.)

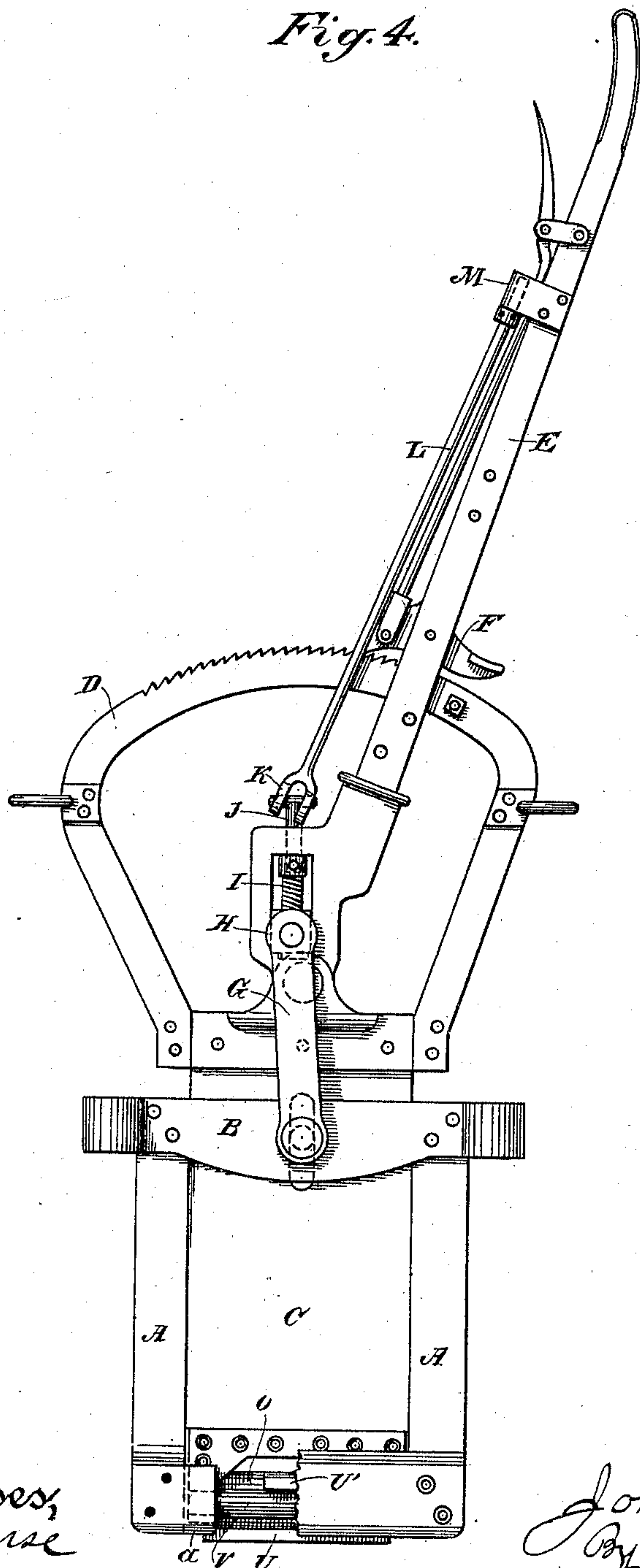
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Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN C. H. STUT, OF SAN FRANCISCO, CALIFORNIA.

CABLE-RAILWAY GRIP.

SPECIFICATION forming part of Letters Patent No. 474,875, dated May 17, 1892.

Application filed September 18, 1891. Serial No. 406,149. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. H. STUT, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Cable-Railway Grips; 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-railway grips.

It consists in certain details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a vertical section through my grip. Fig. 2 is a detail view of the movable jaw. Fig. 3 is a detail view of one end of the crotch. Fig. 4 is a side elevation of the grip.

The object of my present invention is to provide a grip having one fixed and one movable jaw and a means for operating the movable jaw, these jaws being so arranged with relation to each other and the cable as to allow the latter to be set a considerable distance to one side of the vertical plane passing through the slot and parallel with the top of the cable-tube.

A is the crotch-frame, preferably made of forged steel and having the top bars B, by which it is secured to the car which carries the grip mechanism. It is made, as shown plainly in Fig. 3, with two flanges *a*, projecting downward on each side, between which the movable center plate is guided as it slides up or down, and these crotch ends have, also, a deep concave channel *b* made in the bottom corresponding with the line of travel of the cable and with the line of the gripping-dies, which greatly reduces the vertical depth necessary for the operation of the grip.

C is the center plate, adapted to slide in guides on the frame A, this being also made of forged steel, and D is the quadrant, which is secured to the upper end of this center plate.

E is the operating-lever, which is fulcrumed in the lower part of the quadrant-frame, and is provided with the customary handle at the upper end and the spring-actuated pawl F, which engages the teeth upon the upper arc of the quadrant for the purpose of retaining

the lever in position when the grip has been closed.

G G are links extending up on each side of the quadrant-frame. Their upper ends are connected with the ends of the cross-head H, and their lower ends are fulcrumed upon the top bars B of the frame A, as shown. The cross-head is situated to one side and above the fulcrum-point of the lever, so that as the lever is moved the cross-head and the upper ends of the links are moved about the center of motion of the lever and the lower ends of the links, and thus the center plate, which actuates the movable jaw of the grip, is moved up and down.

I is a screw passing through the cross-head, the lower end resting and turning upon a support below the cross-head, so that by turning this screw the cross-head and with it the center plate C are raised or depressed and the relative position of the parts which are connected by the links is changed to take up for the wear of the gripping-dies. The upper end or head of the screw has a square socket, within which fits the lower correspondingly-shaped end of a pin J, which extends up through the top of the slot in the lower end of the lever in which the cross-head moves and is guided. The upper end of this pin has a transverse T-shaped head, which is engaged by the fork K of the rod L. This rod extends up alongside the lever and has its upper end journaled in a support M, fixed to the lever, and the head of the rod or shaft has holes in it for the introduction of a pin or bar by which it may be turned. The forked lower end is slotted, so that as it meets the T-head of the screw-actuating pin at an angle the ends of this head are allowed to slide up and down in the slots of the fork when the rod is turned to move the screw.

The grip consists of a stationary jaw N and a movable jaw O. These jaws have dovetailed slots made in their adjacent faces to receive the gripping-dies P. The jaw O is pivoted or fulcrumed, as shown at Q, and is movable about this fulcrum-shaft, so as to approach to or recede from the stationary jaw. The stationary jaw is rigidly supported from the frame A and at a considerable distance to one side of the vertical plane through

which said frame enters the slot in the top of the cable tube or tunnel, as shown. The cable R is usually supported upon the carrying-pulleys S, and the depression-pulleys T are journaled in a plane above the carrying-pulleys at points where the cable makes an upward turn, as in the ascent of a hill. The space between a plane through the tops of the carrying-pulleys and a plane through the bottoms of the depression-pulleys is sufficient to allow the grip to pass between the two, and by reason of its comparative shallowness in vertical depth this space may be made very much smaller than could be employed with a vertically-actuating grip. The movable jaw O has a curved channel or groove formed in it at one side of the fulcrum-shaft by the projecting portions U and U', one below and one above and approximately in vertical line with the sliding center plate C.

V is a roller journaled in a horizontal line at the lower end of the center plate, so that it lies within the slot or channel of the grip-jaw just previously described. The curvature of the lower projection U approximates that of a logarithmic spiral, so that as the sliding center plate is moved down by the action of the grip-lever the roller will be pressed upon this surface and cause the jaw to turn about its fulcrum-shaft, thus forcing the die supported by this jaw toward the die supported by the fixed jaw. The angle of curvature of the lower part of this channel is such that the roller presses upon it at the same radial point from its center from the beginning of the movement to the end.

When it is desired to release the cable, the sliding plate C is drawn upward by the movement of the lever and the roller strikes the upper lug U' of the channel, thus causing the grip-jaw to rotate in the opposite direction about its fulcrum-shaft and separate the gripping-dies. By this construction I provide a positive opening and closing movement of the grip-jaw. The action is a side or horizontal one, and the stationary jaw may be set as far to one side of the vertical line of the tube-slot as may be desired, so as to carry it entirely out of reach of dirt which may fall through the slot.

The leverage upon the grip-jaw is increased in closing, because when the grip commences to close the actuating-roller is at its nearest point to the fulcrum-shaft of the movable grip-jaw; but as the jaw completes its closing movement the roller presses upon the lug U at a greater distance from the fulcrum-shaft and with a correspondingly-greater leverage and power at the instant of final closing of the grip, and during this movement of the roller against the movable jaw one of the sides of the flanges α will serve as a thrust-bearing for the center plate.

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

1. In a cable-grip, the combination of a stationary jaw, a movable jaw fulcrumed at one side thereof and having a grooved surface in one side, and a rolling contact engaging the grooved portion to close the movable jaw in a horizontal plane and with increasing pressure, substantially as herein described.

2. In a cable-railway grip, a fixed or stationary jaw, a movable jaw hinged at its upper end at one side thereof in an approximately horizontal plane, and a mechanism comprising a rolling contact and a cam-groove in the jaw for connecting said jaw with the grip-lever, whereby the movable jaw may be turned about its fulcrum-shaft to open or close with relation to the stationary jaw, substantially as herein described.

3. In a cable-railway grip, a fixed or stationary jaw, the movable jaw having a fulcrum-shaft at one side of the stationary jaw, a groove or channel formed in the opposite side of the movable jaw from the gripping-surface, a vertically-sliding plate connected with the grip-lever, whereby it is moved up and down, and a roller journaled in said plate and extending through the groove or channel in the movable jaw, whereby the latter is moved about its fulcrum-shaft by the movements of the roller, substantially as herein described.

4. In a cable-railway grip, the stationary jaw, the movable jaw turning about a fulcrum-shaft at one side of the stationary jaw, a horizontal groove or channel formed in the side of the movable jaw opposite to the gripping-surface, and a roller connected with the vertically-sliding plate and the actuating-lever and extending through said channel so that pressure is exerted upon the bottom lug of the channel in the same radial line during the full movement of closing the jaws, substantially as herein described.

5. In a cable-railway grip, the crotch-frame having guiding-channels for the center plate made in the bottom of its opposite sides, one of the sides of said channels serving as a thrust-bearing for the center plate and roller in its action upon the movable jaw of the grip, substantially as herein described.

6. In a cable-railway grip, the crotch-frame with guiding-channels for the center plate made in the lower ends of its opposite sides, and concave channels in the projecting sides thereof in the vertical plane of travel of the cable and of the meeting faces of the grip-jaws, substantially as herein described.

7. In a cable-railway grip, the stationary crotch-frame, the fixed jaw, a hinged jaw movable in an approximately horizontal plane with reference thereto, a center plate sliding vertically with relation to the crotch-frame, and an intermediate mechanism by which the movable grip-jaw is actuated therefrom, a lever fulcrumed to the top of the center plate, a cross-head movable in a slot in the lower part of the lever, links connecting the cross-

head with the stationary frame, a T-headed
screw turning in screw-threads in the cross-
head, a shaft extending along the lever-han-
dle, having its lower end forked, and vertical
5 slots made in each arm of the fork, into which
the ends of the T-head of the screw extend, so
that the screw may be turned and a change
of direction of motion is effected between the

screw and the turning rod, substantially as
herein described.

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In witness whereof I have hereunto set my
hand.

JOHN C. H. STUT.

Witnesses:

S. H. NOURSE,
H. F. ASCHECK.