

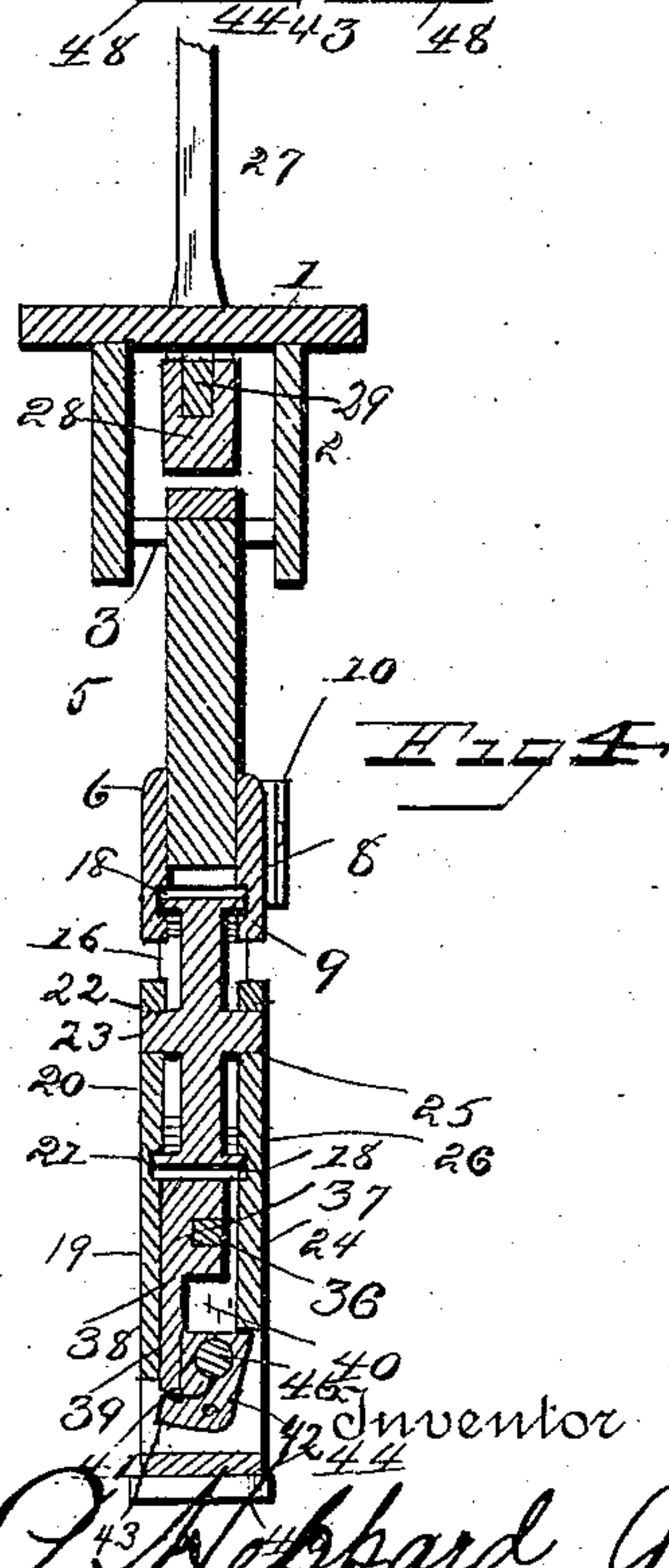
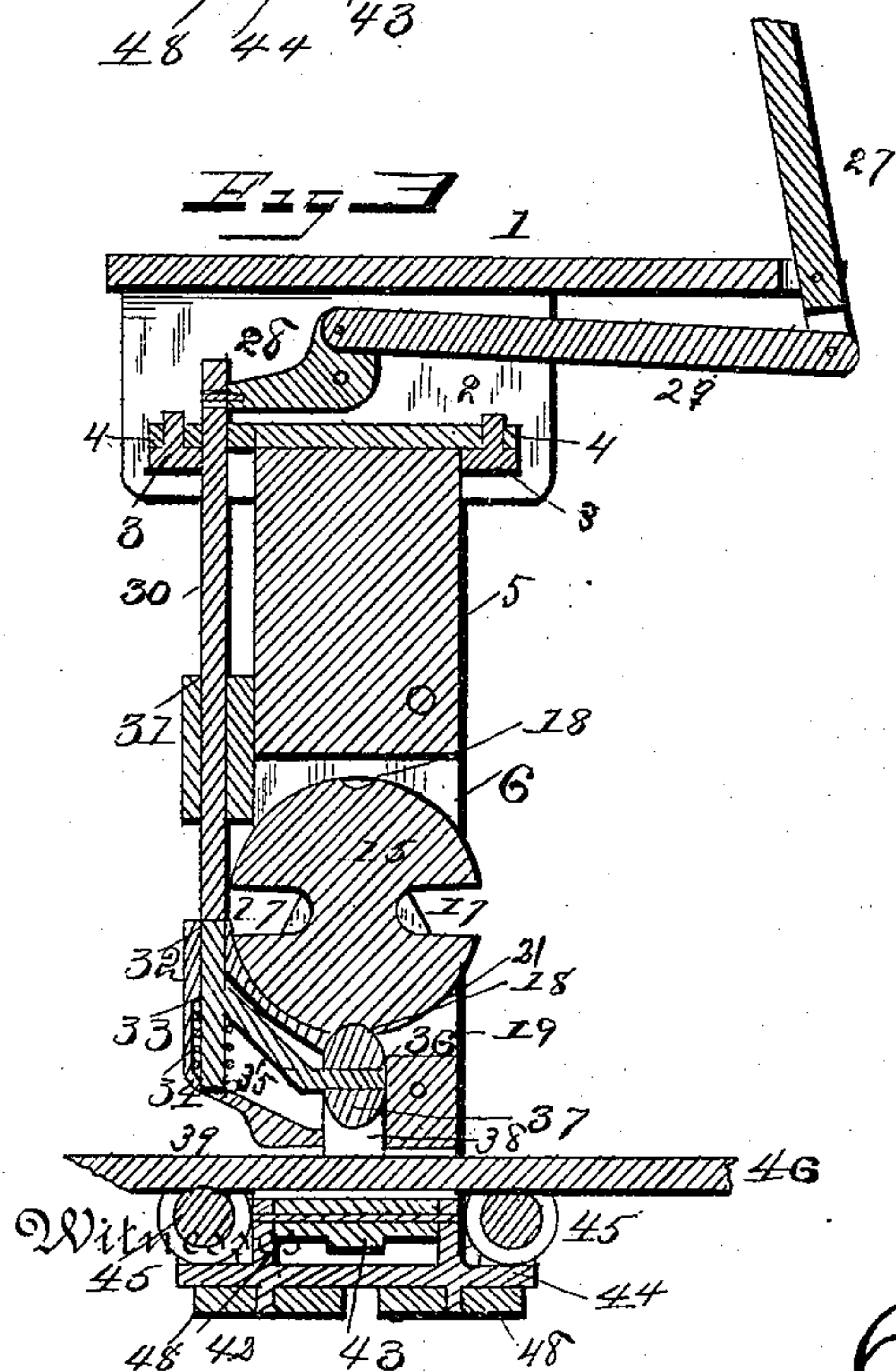
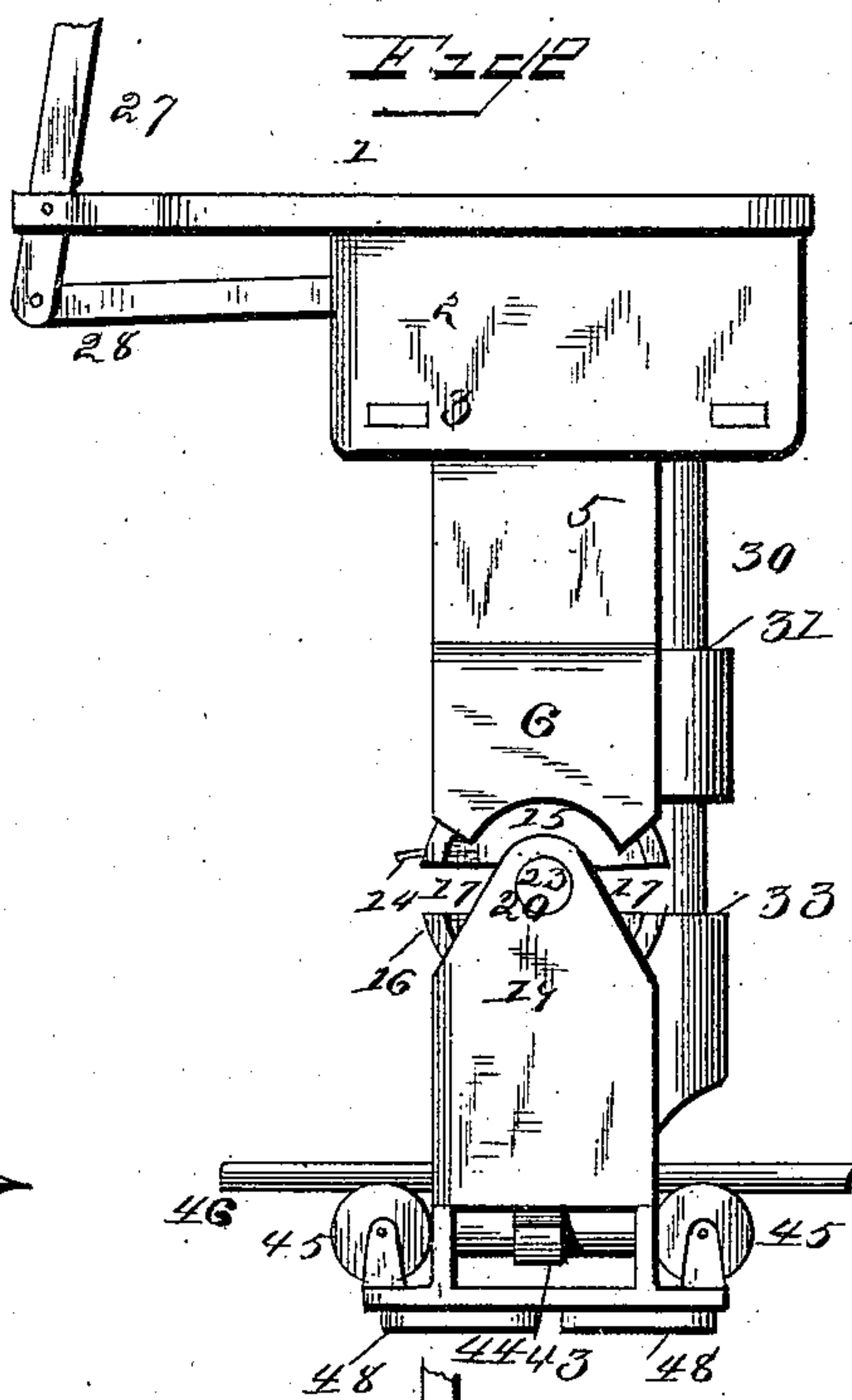
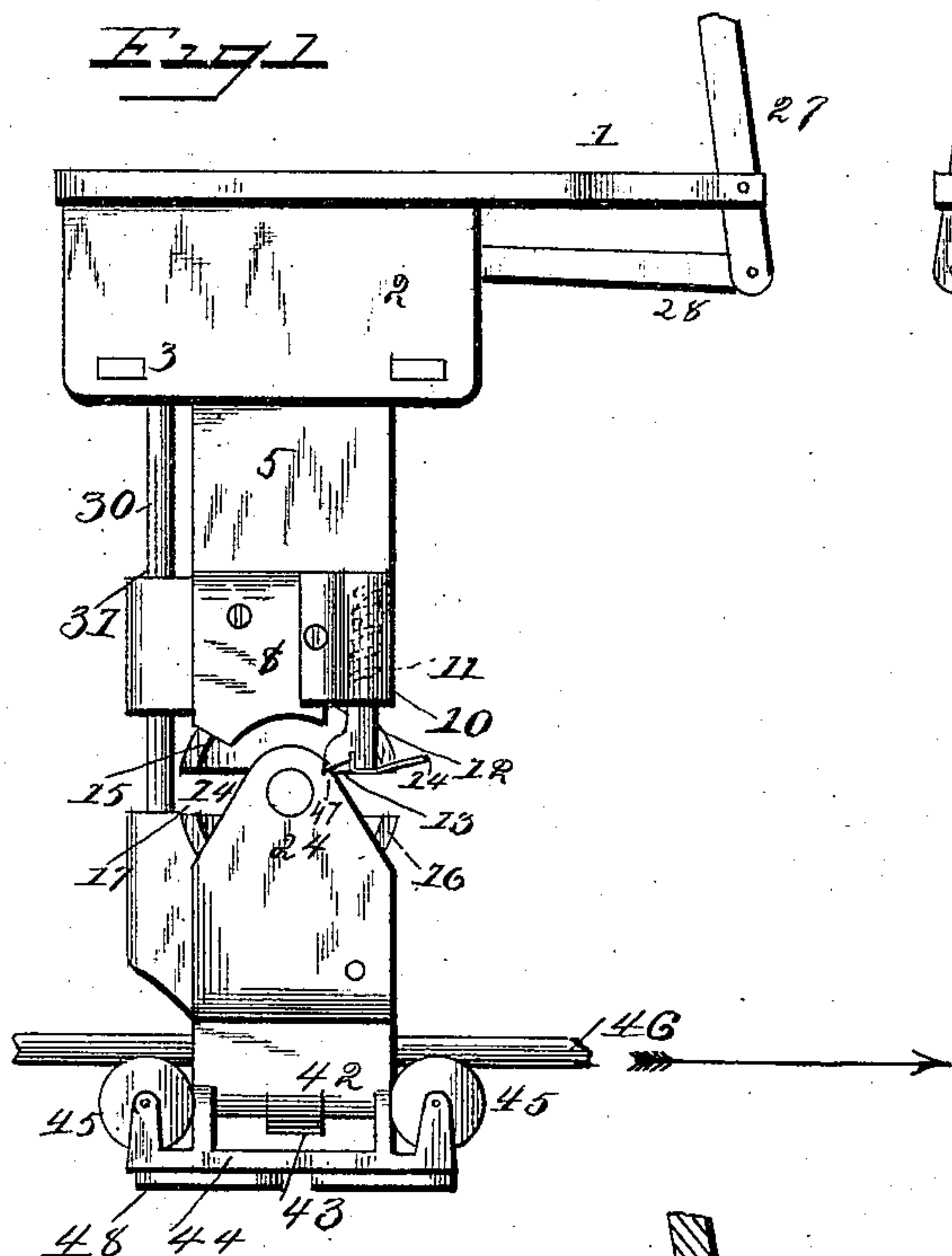
(No Model.)

E. P. HEPPARD, Jr.

CABLE GRIP.

No. 376,885.

Patented Jan. 24, 1888.



Witness  
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# UNITED STATES PATENT OFFICE.

ELWOOD P. HEPPARD, JR., OF WOODBURY, NEW JERSEY.

## CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 376,885, dated January 24, 1888.

Application filed August 1, 1887. Serial No. 245,820. (No model.)

*To all whom it may concern:*

Be it known that I, ELWOOD P. HEPPARD, Jr., a citizen of the United States, and a resident of Woodbury, in the county of Gloucester and State of New Jersey, have invented certain new and useful Improvements in Cable-Grips; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side view of my improved grip for cable-cars. Fig. 2 is a similar view seen from the other side. Fig. 3 is a longitudinal vertical sectional view of the grip, and Fig. 4 is a transverse vertical sectional view.

Similar numerals of reference indicate corresponding parts in all the figures.

My invention has relation to grips for cable-cars; and it consists in the improved construction and combination of parts of a grip, which will allow the clamp to hold and engage the cable while crossing another cable, as herein-after more fully described and claimed.

In the accompanying drawings, the numeral 1 indicates a plate secured to the platform of the car and provided with two downwardly-projecting longitudinal flanges, 2, having cross-pieces 3 secured in them near the lower edges, to which cross-pieces the forwardly and rearwardly projecting lips 4 of the flat bar 5 of the grip are secured. This bar slides in the slot in the cable-trench, and is formed with a downwardly-extending lip, 6, at one side of its lower end, the inner side of which lip is provided with a segmental groove, 7, concentric with the segmental and concave lower edge of the lip. A plate, 8, having a similar segmental lower edge provided with a segmental groove, 9, upon the inner side, is secured to the side of the lower end of the flat bar corresponding to and registering with the lip upon the other side, and this plate is provided at the forward edge with a vertical spring case or cylinder, 10, within which is inclosed a spring, 11, which bears with its lower end against a rod, 12, having a beveled pawl or catch, 13, at its lower end, and provided with a forwardly-projecting slightly-inclined fender-bar, 14. A cir-

cular disk, 15, having a laterally-extending flange, 16, at its periphery, projecting to both sides, revolves with these flanges in the grooves between the lip and plate, and is held between the same, and this disk is formed with two radiating recesses or slots, 17, extending at diametrically-opposite points from the periphery, and with two notches, 18, at points at right angles to the slots.

A block or casting, 19, has an upwardly-projecting lip, 20, at one side, which lip is formed with a segmental groove, 21, upon its inner side, for the reception of one of the flanges of the disk, and with a bearing, 22, at its upper end for one trunnion, 23, of the disk. A plate, 24, having a corresponding bearing, 25, and a segmental groove, 26, is secured to the other face of the block, so that the disk is journaled with its trunnions between the lip and the plate and has its flanges fitting in the grooves.

A lever, 27, is fulcrumed at one end of the supporting-plate of the grip, passing through or below the platform of the car with its lower end, and an L-shaped lever, 28, is fulcrumed at its bend between the flanges of the supporting-plate, and has a connecting-rod, 29, pivoted to the upper end of its short arm and to the lower end of the lever.

A rod, 30, slides in a vertical bearing, 31, upon the rear edge of the flat bar, and has its upper end movably connected to the rear end of the L-shaped lever, and the lower end of this rod projects below the bearings for the slotted disk.

A rod, 32, slides in a vertical bearing, 33, upon the rear edge of the block or casting, and has a coiled spring, 34, forcing it upward, and an arm, 35, projects downward inclined from this rod in a suitable groove or recess within the casting, and has its inner end inserted in a transverse recess or groove, 36, in an elliptical head, 37, of a bar, 38, which slides within a vertical bearing, 39, in the lower portion of the casting, the upper rounded end of the head engaging the notches in the disk.

The lower portion of the casting or block is formed with a transverse recess, 40, at one side, within which recess is secured a grooved block, 41, and a correspondingly-grooved block, 42, is hinged at its lower edge at the lower edge



of the recess, and is provided with a laterally-projecting arm, 43, at the lower edge, against which arm the lower end of the headed bar 38 bears.

5 A frame, 44, is secured to the lower end of the block, and has two rollers, 48, journaled horizontally upon the under side, forming wall fenders or rollers for traveling against the sides of the trench, and two vertical and  
10 grooved rollers or pulleys, 45, are journaled at the ends of the frame and serve as supports for the cable 46, which passes between the grooves in the recessed portion of the casting and in the hinged block.

15 The spring-pawl, sliding in the vertical bearing in the plate of the upper flat bar, engages a notch, 47, in the edge of the plate upon the lower casting, and this pawl serves to hold the lower portion of the grip, which is pivoted by  
20 the flanged disk in the lower end of the upper portion, from tilting under the pressure of the draft of the cable, while it may be raised by a crossing cable striking the guide-bar and raising the pawl out of engagement.

25 It will be seen that when the lever at the platform is tilted forward the long arm of the L-shaped lever will be tilted down and the vertically-sliding rod will be forced down, bringing the lower end of this rod to bear  
30 against the upper end of the spring-actuated rod in the lower casting, forcing this rod down against the spring. This rod will force the vertically-sliding bar down by its oblique arm, and the lower end of this bar will bear against  
35 the arm of the hinged clamping-block, causing the latter to bind against the cable, and to thus grip the same firmly.

When the grip arrives at a place where another cable crosses the cable engaged by the  
40 grip, the said cable will first raise the spring-pawl by the guide-bar, whereupon the cable will slip into one of the radiating slots of the disk, which may revolve as the head of the vertically-sliding bar in the lower casting is  
45 forced down and out of engagement with the notch in the disk.

The disk, revolving, will bring the cable up over the inclined portions of the block 19 and plate 24 to the other edge of the grip, and the  
50 vertically-sliding rod may now be raised by the hand-lever, causing the head of the vertically-sliding bar to bear against the periphery of the disk and to engage the notch in the same when this is brought to register with the head,  
55 and the cable may now slip freely out at the other side of the grip, which in this manner has crossed the cable without having to be either raised or separated.

Having thus described my invention, I claim  
60 and desire to secure by Letters Patent of the United States—

1. In a grip for cable-cars, the combination of the upper flat bar secured to the car and having a downwardly-extending lip at one  
65 side of its lower end formed with a concave segmental lower edge and with a segmental groove concentric with the edge, a plate hav-

ing a similar edge and groove and secured to the other side of the bar, a lower block or casting having the clamping mechanism and formed  
70 with an upwardly-extending lip formed with a bearing at the upper end and with a segmental groove in its inner face, a plate secured to the other side of the casting and formed with a similar bearing and groove, a circular disk having  
75 flanges projecting laterally from the periphery and fitting and turning in the grooves, and having trunnions journaled in the bearings, and provided with diametrically-opposite radiating slots extending from the periphery,  
80 and with notches at right angles to the slots, and a catch for engaging the notches in the disk and for holding the slots horizontally, as and for the purpose shown and set forth.

2. In a grip for cable-cars, the combination  
85 of the clamping portion having suitable guide-rollers and fender-rollers at the lower end, and having a block formed with a groove in one side of the lower end, a block hinged at its lower edge at the lower edge of the recess,  
90 fitting into the recess, and having a groove registering with the other groove, and provided with a laterally-projecting arm at the lower edge, a rod sliding in a vertical bearing and having a spring forcing it upward, and having  
95 a downwardly-inclined arm, a vertically-sliding bar having its lower end bearing against the arm of the clamping-block and having the arm of the sliding rod engaging its upper end, a vertically-sliding rod having its lower  
100 end engaging the spring-actuated rod, an L-shaped lever pivoted under the car and having the upper end of the vertically-sliding rod movably connected to its long arm, and a lever pivoted in the platform of the car and  
105 having a connecting-rod pivoted to its lower end and to the upper end of the short arm of the L-shaped lever, as and for the purpose shown and set forth.

3. In a grip for cable-cars, the combination  
110 of the upper flat bar having the lip formed with the segmental groove and the vertical bearing, the plate secured to the face of the bar formed with the groove and having a spring-pawl sliding in a vertical casing, the  
115 lower casting formed with the lip having the bearing and groove, and having the vertical spring-casing at its rear end and the recess in its lower end formed with the groove, the plate secured to the casting having the bearing, the  
120 groove and the notch for the pawl, the circular disk journaled in the bearings and having the diametrically-opposite slots radiating from the periphery, and having the notches at right angles to the slots, the clamping-block hinged  
125 at the lower end of the casting in the recess and having the groove and the arm, the vertically-sliding bar formed with the head engaging the notches of the disk and having its lower end bearing against the arm of the clamping-block, the vertically-sliding rod having  
130 the spring in the spring-casing forcing it upward and having the downwardly-inclined arm engaging a groove in the head of the ver-



5 tically-sliding bar, the vertically-sliding rod in the bearing of the upper flat bar bearing with its lower end against the spring-actuated rod below it, an L-shaped lever pivoted at its bend under the car and having its long arm movably connected to the vertically-sliding rod, a hand-lever pivoted in the platform of the car, and a connecting-rod pivoted to the lower end of the hand-lever and to the upper

end of the short arm of the L-shaped lever, as to and for the purpose shown and set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ELWOOD P. HEPPARD, JR.

Witnesses:

W. HARRISON LIVERMORE,  
JOSEPH L. FRANKLIN.