

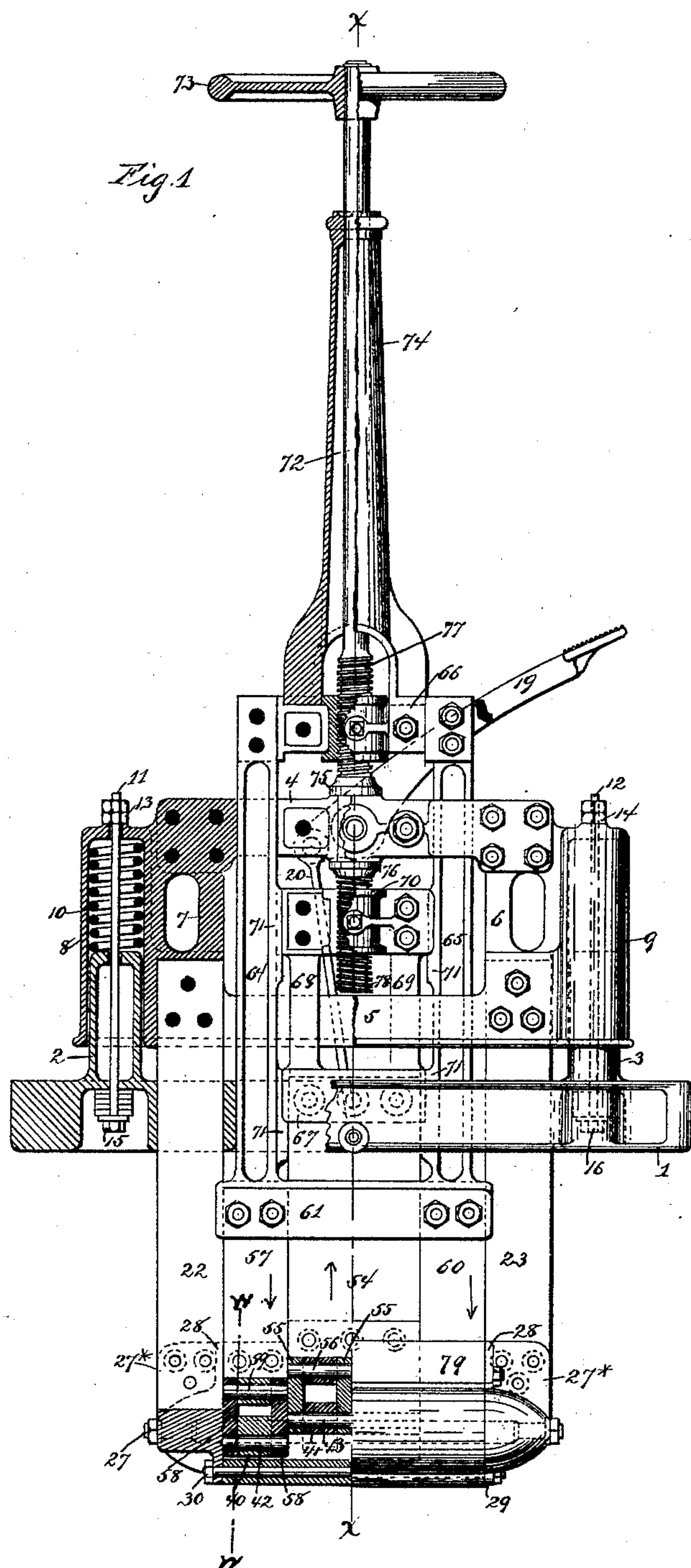
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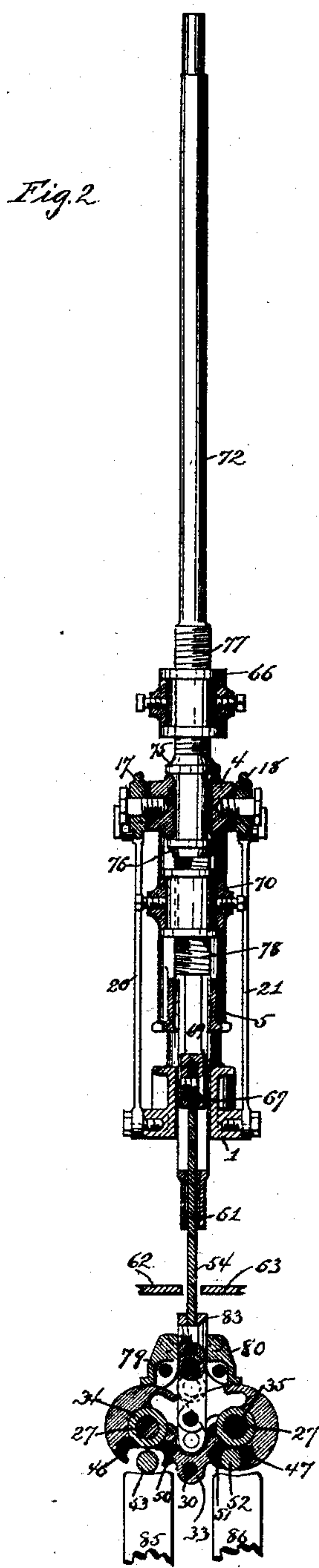
C. VOGEL.  
GRIP FOR CABLE RAILWAYS.

No. 483,775.

Patented Oct. 4, 1892.



Witnesses  
V. P. Wilson  
Fred Skemp

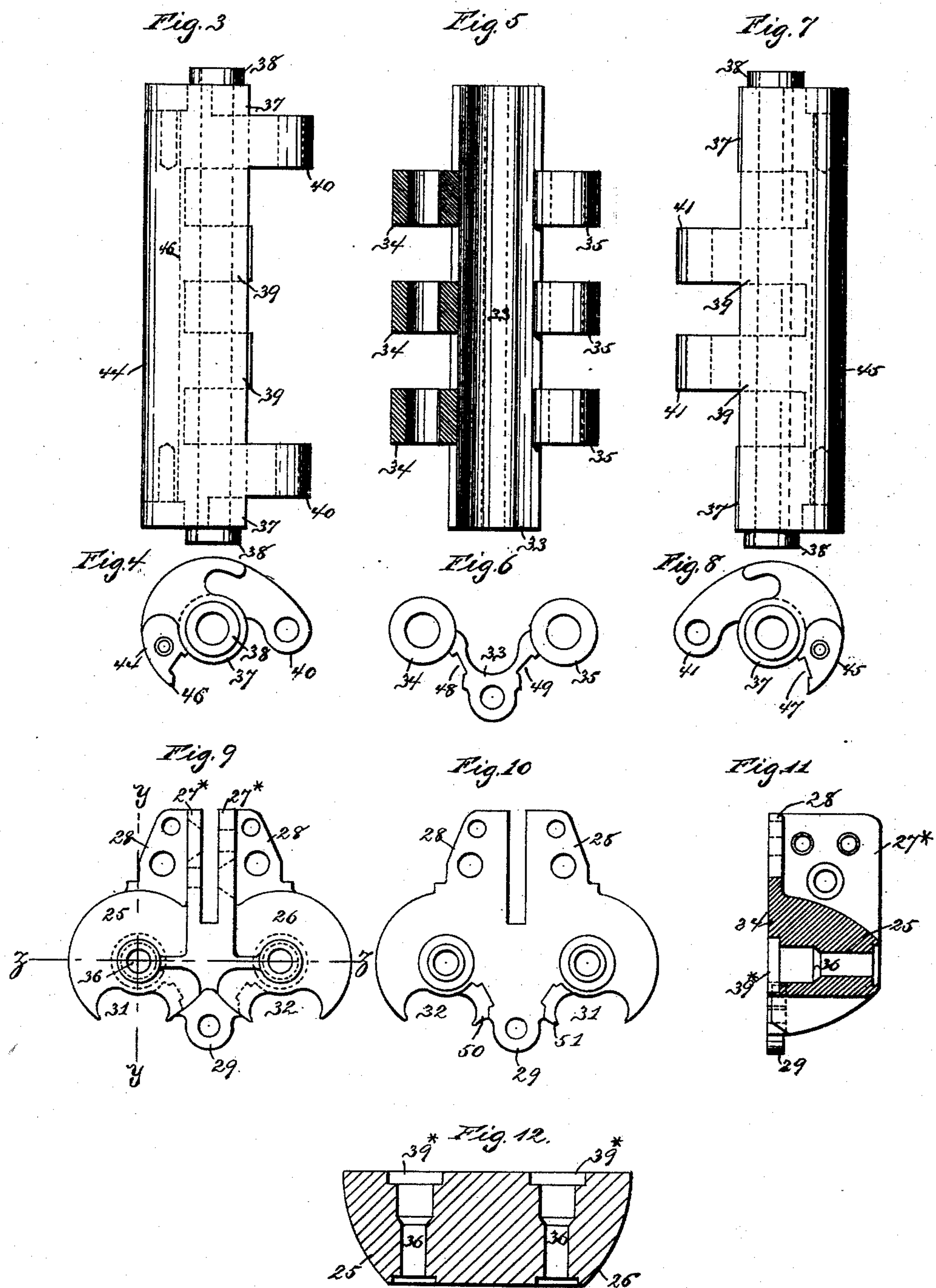


Inventor  
Charles Vogel  
By his Attorneys  
Gifford & Saw

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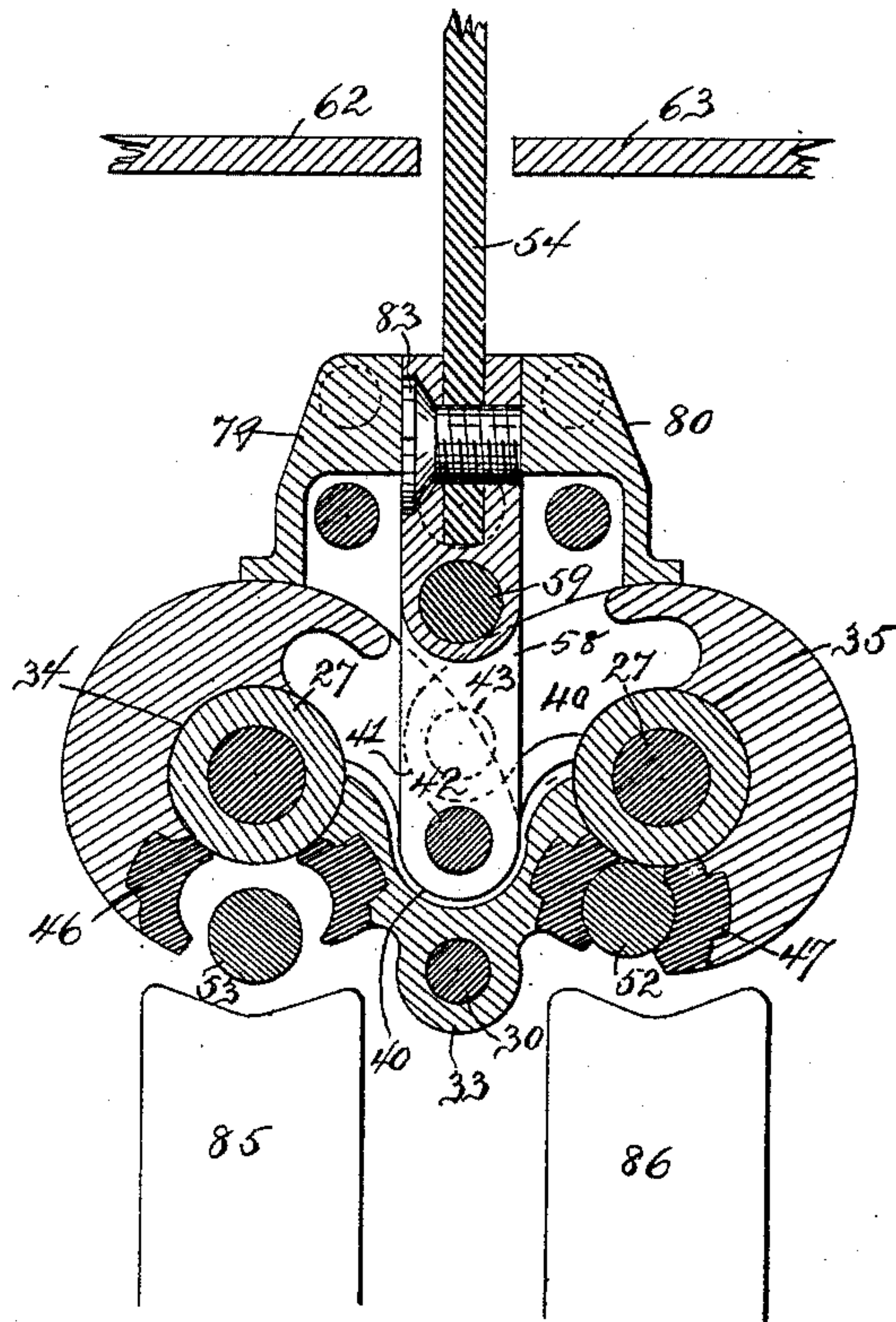
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Fig. 13



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# UNITED STATES PATENT OFFICE.

CHARLES VOGEL, OF SAN ANSELMO, CALIFORNIA.

## GRIP FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 483,775, dated October 4, 1892.

Application filed October 24, 1891. Serial No. 409,709. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES VOGEL, of San Anselmo, in the State of California, have invented a new and useful Improvement in Grips for Cable Railways, of which the following is a specification.

In Letters Patent of the United States No. 359,053, dated March 18, 1887, I have described a single grip; and the principal object of my present invention is to adapt the principles embodied in said single grip to a duplex grip suitable to be used with two cables.

In the accompanying drawings, Figure 1 is an elevation of my grip, partly in section. Fig. 2 is a vertical section of the same through the line  $x x$  of Fig. 1, looking toward the left. Figs. 3 and 4 are a plan and end view of the left jaw detached. Figs. 5 and 6 are a plan, partly in section, and end view of what I have termed a "bridge-piece" detached. Figs. 7 and 8 are a plan and end view of the right-hand jaw detached. Fig. 9 is an outside end view of one of the end pieces detached. Fig. 10 is an inside end view of the same. Fig. 11 is a vertical section of the same on the line  $y y$  of Fig. 9, and Fig. 12 is a horizontal section of the same on the line  $z z$  of Fig. 9. Fig. 13 is a vertical cross-section through the jaws on the line  $w w$ , Fig. 1, looking toward the left.

1 is a horizontal iron frame, which is supported by or secured to the running-gear of the car.

2 and 3 are plungers extending upwardly from opposite ends of the frame 1, and between these two plungers the frame 1 is provided with vertical openings for the passage of the hangers and connecting-rods herein-after referred to.

4 5 6 7 is a vertical rectangular frame, to which are attached on either side the spring-sockets 8 9, adapted to fit over the plungers 2 and 3. A coil-spring, as 10, is interposed between the top of each plunger and the top of each socket, so that the weight of the frame 4 5 6 7 and the mechanism carried by it is supported through the coil-springs upon the plungers of the frame 1. Rods 11 and 12 extend vertically and loosely through the sockets 8 9 and the plungers 2 3, so as to admit of the compression of the spring; but these rods are provided at top and bottom with nuts 13, 14, 15, and 16, which act as stops to limit the up-

ward movement of the spring-sockets. The branches 17 18 of the foot-lever 19 are pivoted on opposite sides of the cross-piece 4 in the middle, and to the extremities of these branches are pivoted the rods 20 21, which at their opposite ends are pivoted each side to the frame 1 at the middle thereof. The pivotal connections with the rods 20 and 21 serve as a fulcrum for the forked foot-lever 19, so that the depression of the same causes a corresponding depression of the frame 4 5 6 7 in antagonism to the coil-springs, as 10. From near each end of this frame extend downwardly the hangers 22 23, to the lower end of each of which is secured the part shown in Fig. 9, (outside end view,) Fig. 10, (inside end view,) Fig. 11, (vertical section,) and Fig. 12, (horizontal section.) This part is a casting presenting a flat inner surface 24 and twin cones 25 26 on the outside. From the junction of these two cones extends upward at each side of the hanger 22 an arm of L-section composed of a longitudinal web 27\* (bolted one onto each side of the hanger) and a transverse web 28. From the junction of the two cones extends downwardly the transverse flange 29, perforated so as to receive the rod 30. The longitudinal recesses 31 32 are cut one in the bottom of each cone, through which, when in use, the cable extends. Between the two end twin cone-pieces extends the stationary piece, (shown in Figs. 5 and 6,) consisting of the bridge portion 33, bored longitudinally at the middle to receive the bar 30 and the two series of lugs 34 34 34 and 35 35 35, one series at each extremity of the bridge bored longitudinally to receive the shafts 27 27. Each cone is bored longitudinally, as shown at 36, Fig. 11, to receive an end of one of these shafts. When the two end twin cones, with the bridge-piece between them, are combined by the rod 30 and the shafts 27 27 and are respectively secured to the hangers 22 23, the whole constitutes a firm frame for carrying the movable jaws, which are of the forms shown in Figs. 3 4 and 7 8. Each of these movable jaws consists of bosses 37, bored longitudinally to receive the shaft 27, and from each end of each jaw projects a circular flange 38, adapted to enter the counterbore 39\* in the end twin cone-piece, and thus act as a journal for the oscillating jaw. Lugs 39 project from each jaw between the



bosses, leaving sufficient space between to receive the lugs 34 and 35, respectively, and the lugs 39 are bored to admit the shafts 27. The left-hand jaw shown in Figs. 3 and 4 is provided with the arms 40, projecting one from each boss, and the right-hand jaw is provided with the arms 41. The arms 40 are bored to receive the pivots 42 and the arms 41 are bored to receive the pivots 43.

On the opposite side of the center of each shaft 27 from the arms 40 and 41 are the jaws proper 44 and 45, which are respectively faced by die-pieces 46 and 47. The stationary jaws are formed on the bridge-piece at 48 and 49, and are also provided with die-pieces 50 and 51, as shown. The latter die-pieces project beyond the ends of the bridge-piece and are dovetailed into the end conical pieces, and thereby add further solidity to the structure. When the movable jaws are combined with the bridge and end conical pieces, as shown in Figs. 1 and 2, by moving the arms 40 or 41 up or down either movable jaw may be made to oscillate around its shaft 27 to or from its stationary jaw, and since it is necessary to grasp one cable 52 after releasing the other 53 it is necessary that the movable jaws should oscillate inversely, and it remains to provide the necessary mechanism for that purpose.

54 is a vertically-reciprocating connecting-plate, which is connected with links 55 by the pivot 56, and these links are in turn connected with the arms 41 of the right-hand jaw by the pivot 43.

57 is a vertically-reciprocating plate, which is connected with links 58 by the pivot 59, and these links are in turn connected with one of the arms 40 of the left-hand jaw. The other arm 40 is connected by a similar arrangement with the vertically-reciprocating plate 60. The connecting-plates 57 and 60 move in unison and inversely to the plate 54. The connecting-plates 57 and 60 are secured to the head 61, which is slotted between their points of attachment to admit of the passage of the connecting-plate 54, and which head 61 is above the level of the slot-irons 62 63 of the conduit. This head 61 forms the lower cross-piece of a rectangular frame, also containing the side pieces 64 65 and the upper cross-piece 66. The connecting-plate 54 is connected above the head 61 with a head 67, which forms the lower cross-piece of a rectangular frame, also containing the side pieces 68 69 and the upper cross-piece 70.

71 are guideways on the inner sides of the side pieces 64 and 65, on which the cross-pieces 67 and 70 run.

79 and 80 are pieces secured by bolts between the flanges 28, leaving a slotted space between them for the passage of the heads, as 83, at the lower ends of the connecting-plates, which heads are thus guided and steadied.

72 is a vertical shaft provided at the top

with a hand device 73, steadied near its top by a frame 74, mounted on the cross-piece 66 and having a bearing in the cross-piece 4, wherein it is prevented from longitudinal movement by the collars 75 and 76. This shaft extends through the cross-pieces 66 and 70, with one of which it engages by a right-hand screw-thread 77 and with the other of which it engages by a left-hand screw-thread 78.

The operation is as follows: Suppose the right-hand jaws to be gripping the cable, as shown in Fig. 2. If it be desired to release from both cables, the shaft 72 will be turned so as to open the right-hand movable jaw. This will necessarily partially close the left-hand movable jaw, but by stopping the movement about midway neither jaw will grip its cable. By continuing the movement the left-hand jaw may be made to grip. These are all the motions necessary when the operation is performed where the cable rests upon the supporting-pulleys, but between the pulleys an additional operation is necessary. This consists in thrusting the jaw-carrying frame 4 6 7 downward by the foot-lever 19 in antagonism to the springs 10 to the extent required, the spring returning the frame to its normal position upon the release of the foot-lever. It is stopped from farther upward movement by the bolts 11 and 12. By this arrangement both pairs of jaws are always substantially in position by simply closing to grip either cable desired. Neither pair can possibly grip its cable until the other pair has released its grip, and it is always within the power of the operator to thrust the jaws downward for the purpose of gripping a sagging cable or for any other purpose without affecting the operation of the mechanism for opening or closing the grips. The two pairs of twin cones, one pair at each end of the jaws, by their inclined surfaces prevent any abrupt collision such as might result if the square ends of the jaws were to come in contact with an obstruction.

The normal level of the jaws with respect to the cable-pulley supports 85 and 86 is shown in Fig. 2, and it will be observed that as the cable 53 rests in the groove on the periphery of the pulley the edges or lips of the jaw die-pieces protrude in a downwardly-inclined position and the edge of the movable jaw is slightly farther from the center of the shaft 27 than is the end of the horizontal diameter of the cable. The acting surface of the movable jaw, moreover, is concave, so that as soon as it strikes the lower part of the cable the circular form of the cable and the circular concave form of the jaw co-operate as two inclines to lift the cable. When the jaws have closed, therefore, the cable will be lifted clear of the pulley-support, as shown in Fig. 2.

In the above description and the drawings the form of construction has one member of each pair of jaws stationary; but I do not desire to limit myself to this construction, because I have embodied the invention in an-



other form, in which this feature is absent and which (although I intend to make it the subject of another application) I desire to be comprehended within the scope of this application.

I claim—

1. A grip for cable railways, consisting, essentially, of two side-by-side pairs of gripping-jaws having pivotal opening and closing movements, said jaws being set at a level which will permit them to grasp the cable as it rests upon its pulley-supports, substantially as described.

2. A grip for cable railways, consisting, essentially, of two side-by-side pairs of gripping-jaws having pivotal opening and closing movements, said jaws being set at a level which will permit them to grasp the cable as it rests upon its pulley-supports, and the acting faces of said jaws being constructed substantially as described, whereby the closing of the grip lifts the cable slightly above its pulley-support, substantially as described.

3. A grip for cable railways, consisting, essentially, of two side-by-side pairs of gripping-jaws having pivotal opening and closing movements, said jaws being set at a level which will permit the lower edge of each movable jaw to strike the periphery of the cable below its horizontal diameter, whereby the act of closing the jaw lifts the cable slightly from its support, substantially as described.

4. In combination, two side-by-side pulley-cable supports, the periphery of each of which is depressed toward the middle, and two pairs of gripping-jaws having pivotal opening and closing movements, and the edges of each pair of jaws protruding downward to facilitate the gripping of the cable as it lies in the depression of the pulley periphery, substantially as described.

5. In combination, two pairs of jaws and two cables arranged substantially as described, whereby when either pair of jaws grips its cable the other pair is at such a level as will permit it to grip its cable as the cable rests upon the pulley-supports, substantially as described.

6. In combination, the two pairs of gripping-jaws side by side and having a circumferential opening and closing movement, and two pairs of twin cones located one pair at each end of the jaws, whereby the jaws are guided by obstructions, substantially as described.

7. In combination, a vertically-reciprocating connecting-plate, two jaw-shafts located one on either side of the line of movement of the same, the two pairs of jaws, and means whereby said jaw-shafts are supported, substantially as described.

8. In combination, two pairs of gripping-jaws arranged side by side, two end pieces, one extending across both jaws at each end, two shafts extending from one end piece to the other, upon which the movable jaws are mounted, two connecting-plates for operating

said jaws, and a guide connected with said end pieces below the level of the slot-irons, whereby the alignment of said connecting-plates in the slot is maintained, substantially as described.

9. In combination, two pairs of gripping-jaws, two vertically-reciprocating connecting-plates, and two links whereby the said connecting-plates are secured to the arms of the jaws, respectively, substantially as described.

10. In combination, two side-by-side pairs of gripping-jaws, two vertically-reciprocating plates arranged in a plane extending between said pairs of jaws, and connections between each plate and the movable jaw of one pair, substantially as described.

11. In combination, two jaw-shafts, a support for the same at each end, a bridge-piece embracing both of said shafts, a rod engaging said bridge-piece at its middle, and end pieces whereby the ends of said rod are connected with the shaft-supports, substantially as described.

12. In combination, two side-by-side pairs of jaws, a connecting-plate for each arranged in a plane extending between said jaws, and mechanism whereby said connecting-plates are operated inversely, substantially as described.

13. In combination, two side-by-side pairs of jaws, means whereby the inner member of each pair is secured in a fixed position, means whereby the outer member of each pair is pivotally secured, two vertically-reciprocating plates, and means whereby one of said plates is secured to each of said pivoted jaw members, substantially as described.

14. In a railway-car, in combination, a spring-mounted frame, two pairs of jaws carried by said frame, two moving frames mounted upon said first-named frame, and mechanism whereby the motions of said moving frames are respectively communicated to said jaws, substantially as described.

15. In a railway-car, a spring-mounted frame, two pairs of jaws carried by the same, two moving frames mounted upon said first-named frame, mechanism whereby the motions of said moving frames are respectively communicated to said jaws, and mechanism whereby said first-named frame may be thrust downward in antagonism to its spring-support, substantially as described.

16. In a railway-car, a frame supported on the car, two pairs of jaws carried by said frame, two moving frames carried by said first-named frame, mechanism whereby the motions of said moving frames are communicated to the jaws, and mechanism having a bearing on said first-named frame, whereby said moving frames are moved inversely, substantially as described.

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