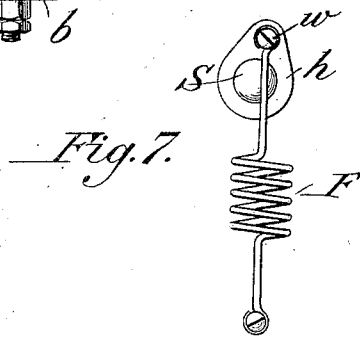
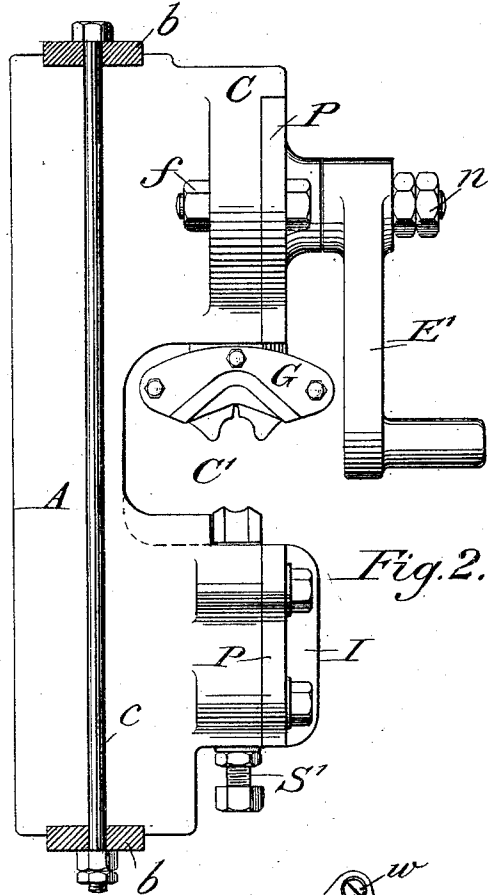
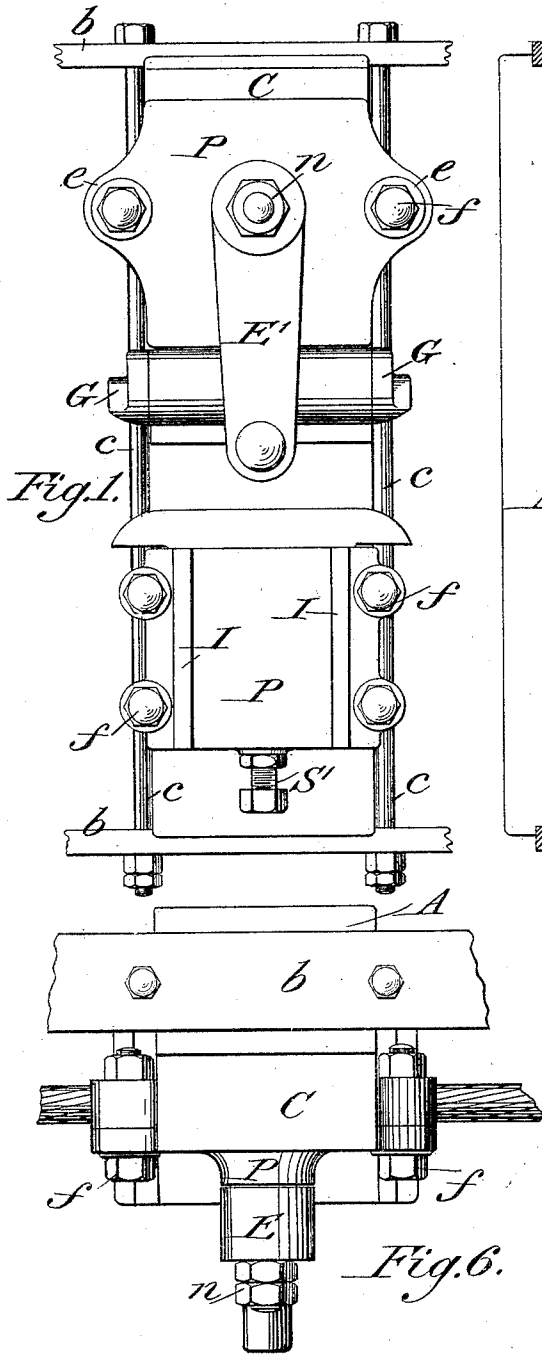


W. HEWITT.
GRIP MECHANISM FOR CABLE WAYS.

No. 474,249.

Patented May 3, 1892.



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Fig. 3.

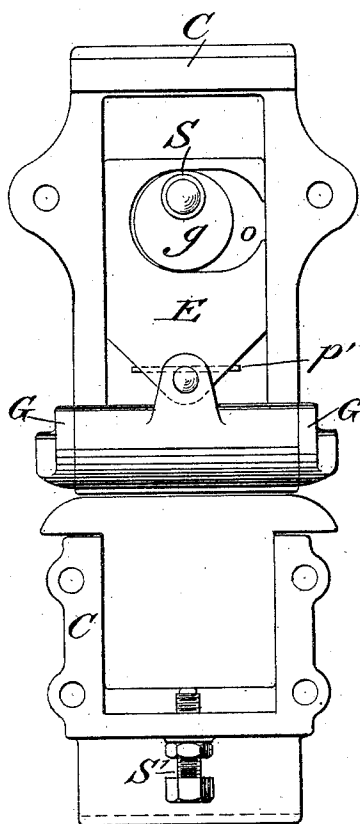


Fig. 4.

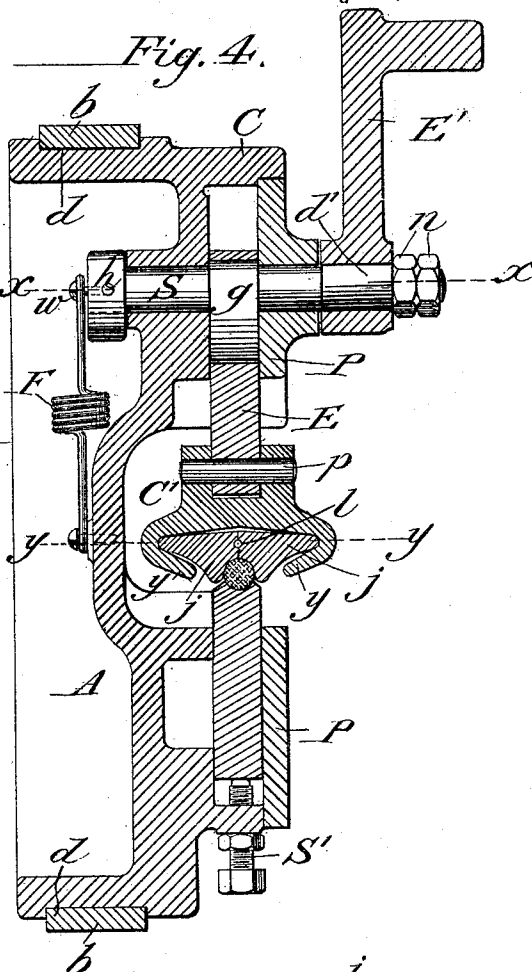


Fig. 5.

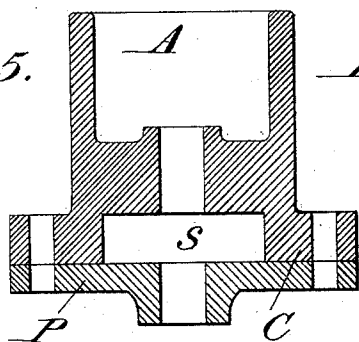
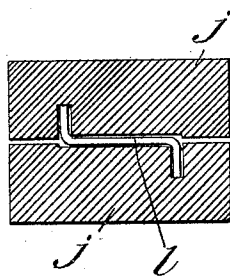


Fig. 8.



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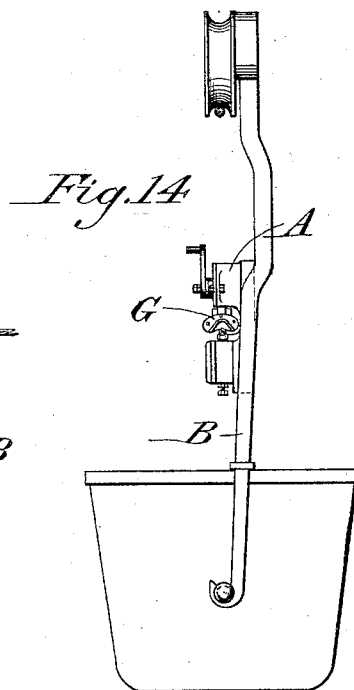
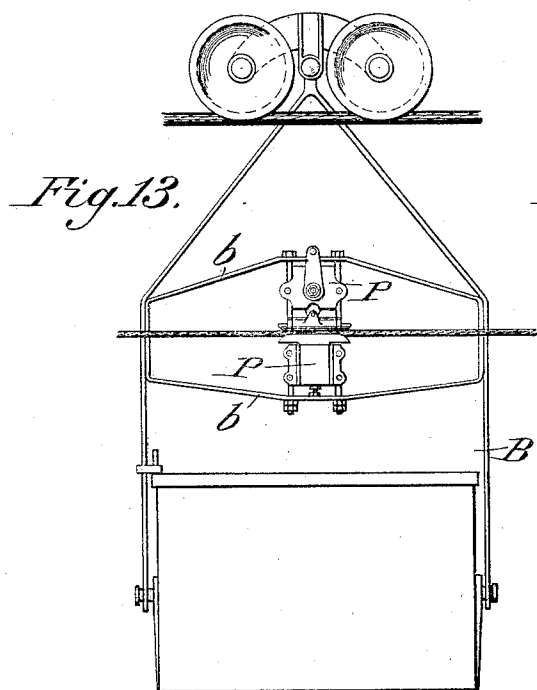
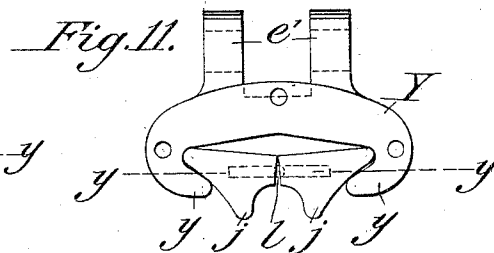
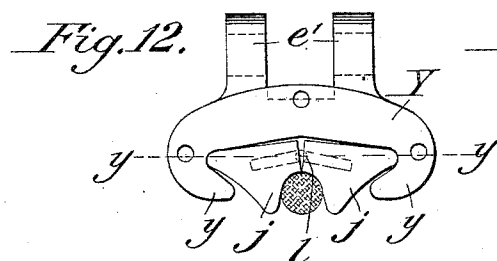
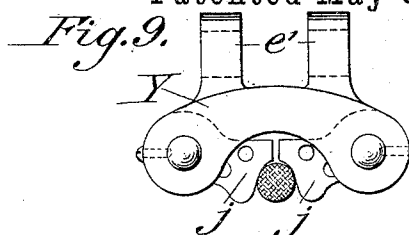
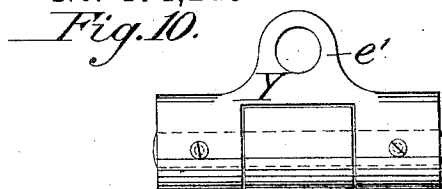
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GRIP MECHANISM FOR CABLE WAYS.

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UNITED STATES PATENT OFFICE.

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IRON COMPANY, OF SAME PLACE.

GRIP MECHANISM FOR CABLE-WAYS.

SPECIFICATION forming part of Letters Patent No. 474,249, dated May 3, 1892.

Application filed October 2, 1891. Serial No. 407,558. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HEWITT, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Grip Mechanism for Cable-Ways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cable-operated rail or tram ways for the transportation of passengers, merchandise, or raw materials, and has special reference to the mechanism carried by the car or receptacle for gripping and releasing the traction-cable.

In the drawings I have shown the invention and in this specification I will describe it in connection with a one-rail elevated suspension-tramway for carrying merchandise or other commodities from one point or station to another. It will be obvious, however, that the invention is applicable to double-rail tramways and to elevated passenger-railways and to surface roads as well.

Referring to the drawings, Figure 1 is a front elevation of the grip-casting; Fig. 2, a side elevation thereof; Fig. 3, a front elevation with the face-plates removed; Fig. 4, a transverse central vertical section; Fig. 5, a horizontal section on the line xx of Fig. 4; Fig. 6, a top plan view; Fig. 7, a detail of the grip-closing spring, and Fig. 8 a horizontal section of the gripping-jaws on the line yy in Figs. 4, 11, and 12. Fig. 9 is a detail front elevation, and Fig. 10 a detail side elevation, of the yoke, illustrating a modification thereof. Figs. 11 and 12 are enlarged side views of the yoke shown in Fig. 4. Fig. 13 is a front elevation, and Fig. 14 is a side elevation, of the complete apparatus.

The grip frame or casting A is of the general form and construction shown in the several views; but the particular shape or construction is not material to the invention. This casting is fixed in a frame B, rigid with the ear, or from which the latter is hung in the case of suspension-tramways such as illustrated in the attached drawings. I have shown it rigidly mounted in the frame B by means

of a substantially rectangular supplemental frame b , to or between the upper and lower horizontal members of which it is firmly clamped by the vertical through-bolts c , the upper and lower ends of the casting being preferably recessed or grooved to receive the frame-pieces, as represented at d , Fig. 4.

On the front side of the grip-casting are projecting boxes C, one at each end. These boxes project laterally far enough from the main body of the casting to leave a space C' sufficient for the free play of the gripper-jaws and the cable. In the upper one of these boxes a suitable slideway s is provided for the reception of the plate carrying the gripper-jaws, and the lower boss is constructed in a similar manner to receive and form a seat for the opposing adjustable gripper-block. Each of the bosses is furnished with a detachable face-plate or cover P, permitting the removal of the parts inclosed within the recesses or bearings. Suitable ears e are formed on the sides of the bosses for the reception of the bolts f , securing the face-plates in position.

E is a plate of substantially rectangular shape, but preferably rounded or pointed at its lower end. This plate is fitted to move up and down snugly in the slideway s in the upper boss and carries at its lower end the gripper-jaws, to be presently described. In the upper part of the plate a transverse oblong opening o is cut, as shown in Fig. 3.

S denotes a shaft passing transversely through the slideway and turning in bearings in the box and the removable face-plate. Upon this shaft and within the slideway is an eccentric g or its equivalent, and the eccentric is arranged to fit into the transverse opening in the sliding plate, so as to raise and lower the latter as the shaft is turned. The eccentric, it will be noted, is not located centrally in the transverse opening, but is arranged somewhat to one side of the center, so that in the extremes of its movement it will abut against the nearest side of the opening, and so form a stop to limit the movement of the eccentric and plate in each direction, allowing the eccentric something over half a revolution.

The outer end of the shaft S is squared, as shown at d' in Fig. 4, and upon this squared

portion is fitted the squared hub of the operating or trip arm E' , the hub being held in place on the shaft by jam-nuts n . The opposite end of the shaft is provided with a disk or head h , carrying a wrist-pin w , as shown in Figs. 4 and 7.

F is a spring fastened at one end to the casting below the shaft and secured at its opposite end to the wrist-pin. This pin is fixed in the head h on a radial angle of about ninety degrees from that of the eccentric g and midway between the eccentric and the trip-arm E' , so that when the eccentric is in its lowest position the wrist will be about half-way down on one side of the shaft and the arm E' will project vertically upward and when the eccentric is in its highest position the wrist will be about half-way down on the other side of the shaft, with the arm E' projecting vertically downward. It will thus be seen that the spring acts to hold the eccentric and the jaw-carrying plate E in each of its positions of gripping or releasing the cable.

The mechanism just described constitutes the means for carrying and actuating the movable gripper-jaws, the construction of which is clearly shown in Figs. 9 to 12 and is as follows: Y denotes a yoke or hanger having upwardly-projecting ears e' , straddling the lower end of the plate E , and carrying the pintle p , by means of which the yoke is pivotally suspended from the plate E . The object of the pointed or rounded end of the plate is to permit a slight rocking movement of the yoke to accommodate itself and the jaws to the varying positions of the traveling cable. The pintle p is held in place by a dowel-pin p' or other means permitting its removal and replacement when desired.

I have shown two forms of the yoke in the drawings, one form being represented in Figs. 9 and 10 and another being shown in the remaining figures and being the preferred form of the device.

Referring to Figs. 4, 11, and 12, the yoke is shown as an arch-shaped casting having its ends y turned inwardly toward each other and bent slightly downward. Mounted in the yoke are the companion jaws j , shaped in cross-section as shown in Fig. 4 and of a length about equal to that of the yoke, so as to secure the longest practical bearing-surface on the cable. These jaws are connected together, as best shown in Fig. 8, wherein l is a piece of spring-wire having its ends bent at right angles to the body of the wire and in opposite directions. Recesses are formed in the jaws to receive the bent ends of the wires, the body portion lying lengthwise between the jaws, preferably in shallow grooves cut in their adjacent faces, as shown in Figs. 4 and 8. Thus connected the companion jaws are slid endwise into the open end of the arch-shaped yoke. End pieces G are then screwed or bolted in place on the ends of the yoke, as shown in Figs. 1, 2, and 14, to retain the jaws in the yoke, the end pieces being preferably

provided with upwardly-flaring lips or mouths to allow free play of the cable on ascending grades, &c. The normal position of the jaws, (that is, when not gripping the cable) is shown in Fig. 11, the biting-surfaces being held apart or flaring from each other, so as to facilitate the entrance of the cable between them. The jaws are maintained in this position by the spring l , which performs the double function of pintle and opening-spring.

Referring to Figs. 9 and 10, the general appearance and shape of the yoke is much the same; but the construction and manner of mounting the jaws are different. In this form of the yoke the inwardly-turned ends y are dispensed with and a pintle is fixed longitudinally in each side of the yoke-frame, the pintles being held removably in place by dowels or screws, as shown. Centrally of its length the sides of the yoke are recessed or cut out, as denoted in Fig. 10, and the hubs of the jaws work in these recesses, being journaled on the pintles. There is no spring or pintle connection between the jaws, as in the other arrangement, and their weight is relied upon to keep them normally open.

In the lower one of the bosses C the fixed adjustable gripper-block or anvil is mounted, as before explained. The block is rectangular in form and arranged to fit snugly in the slideway or seat in the box. The upper face of the block has a semicircular groove in it to co-operate with the grooved gripper-jaws in grasping and holding the cable, and the ends of the block overhang the upper edges of the box and are flared downwardly, as shown, to allow free play of the cable on descending grades, &c.

S' denotes an adjusting or jack screw (of which there may be two or more) having a bearing in the bottom of the box and forming the bed or seat proper for the gripper-block. This screw is held in any desired position by jam-nuts and is for the purpose of accurately setting and resetting the gripper-block as its upper surface is worn away.

Referring to Figs. 1 and 2, II denote vertical guard ribs or flanges on the detachable cover-plate P of the lower boss. These flanges project beyond the heads of the bolts or screws f , which hold the cover in position, and are for the purpose of preventing the cable from coming in contact therewith. They are preferably rounded on their ends, as shown, to permit the cable to pass over easily.

The operation of the invention is, briefly, as follows: Assuming the gripping mechanism to be released and the parts in the position shown in Fig. 2 and it being desired to start the car or receptacle, the tripping-arm E' is moved from its lowest position upward through about one-quarter of a revolution, or until the wrist-pin has been carried past the dead-center. The spring, pulling upon the pin on the opposite side of the shaft, will then continue the movement of the arm and cause the eccentric to complete the half-revolution nec-

essary to carry the yoke down and cause the gripping-jaws to catch and grip the cable and force and hold it down on the grip-block or anvil beneath. It will be noted that these jaws are in effect toggle-levers and act upon the principle of the well-known toggle-joint, thereby securing a firm tight grip on the cable with a minimum expenditure of force in applying the grip. To release the grip on the cable and stop the car, it is only necessary to reverse the above operation—that is, to push the trip-arm down about one-fourth of a revolution—when the spring, the wrist-pin having been carried past the center, acts to complete the movement of the eccentric and to hold the plate in its elevated position.

Although, as hereinbefore stated, this mechanism is applicable to traction-cable passenger-railways, it is particularly adapted for tramways for carrying merchandise or other commodities by reason more especially of the construction of the peculiar toggle-lever gripping-jaws, in connection with the arrangement of the tripping-arm and spring for carrying and holding the jaw-carrying yoke in either of its positions. In applying the invention to such systems it will be understood that in connecting the car, basket, or other receptacle with the traveling cable the trip-arm must be started by hand, as before explained. When the car reaches the proper station, however, the trip-arm is struck and tripped by any of the usual detaching devices, causing the release of the gripping-jaws and allowing the car to be stopped on the main rail or switched off onto a side rail for unloading, as may be desired.

I do not intend to be restricted to the specific form or arrangement of parts shown and described, as many modifications in the details of construction are contemplated by my invention. Although I have shown but two forms of gripping-jaws, I wish it understood that any other construction may be used so long as the toggle-joint principle is preserved. The spring for holding the jaws apart may also be dispensed with, as the weight of the jaws may be so disposed as to suffice to keep them normally open.

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

1. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a jaw-carrying yoke pivoted to the plate, and companion gripping-jaws mounted in the yoke, the jaws being pivoted at the outer sides of the yoke and projecting inwardly toward each other and having the gripping-surfaces at their inner ends, substantially as described.

2. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a jaw-carrying yoke pivoted to the plate, companion gripping-jaws mounted

in the yoke, and an opposing adjustable gripper-block or anvil between which and the companion jaws the cable is gripped, substantially as described.

3. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a transverse shaft journaled in the casting and carrying an eccentric working in a transverse slot in the plate, a jaw-carrying yoke or hanger pivoted to the plate, companion gripping-jaws pivotally mounted in the yoke, an opposing adjustable gripper-block or anvil between which and the companion jaws the cable is gripped, and means for raising and lowering the plate, substantially as described.

4. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a stationary gripper-block or anvil mounted in a slot or slideway therein, means for adjusting the position of the block, and a cover-plate for the slideway, having ribs projecting from its face and serving to protect the screw or bolt heads holding the cover in position from injury by the cable, substantially as described.

5. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a jaw-carrying yoke pivoted to the plate, companion grip-jaws pivotally mounted in the yoke, and an opposing stationary adjustable grip-block or anvil, between which and the companion jaws the cable is gripped, the jaw-operating plate and the gripper-block being mounted in suitable slideways in the grip-casting and having removable cover-plates, whereby access may be had to the interior for cleaning or removing of the parts, substantially as described.

6. In a gripping mechanism for traction-cable ways, the combination of the grip frame or casting, a jaw-operating plate sliding in ways therein, a transverse shaft journaled in the casting and carrying an eccentric working in a transverse slot or opening in the plate, a jaw-carrying yoke or hanger pivoted to the plate, companion gripping-jaws pivotally mounted in the yoke, an opposing stationary gripper-block or anvil, between which and the companion jaws the cable is gripped, the plate-operating shaft having on one end a trip-arm projecting from the side opposite to the eccentric, a wrist-pin on the other end of the shaft, and a spring connected at one end to the pin and at the other to the frame for holding the shaft in either of its extreme positions, substantially as described.

7. In a gripping mechanism for traction-cable ways, the combination of a yoke or hanger having its side edges standing inwardly toward each other, substantially as shown, and companion gripping-jaws mounted in the yoke so that their outer ends shall pivot in the angle formed by the instanding sides, said jaws projecting toward each other and the

center of the yoke and having their inner ends connected together by a spring tending to hold the gripping-surfaces in the ends of the jaws normally apart, substantially as described.

- 5
10
15
8. In a gripping mechanism for traction-cable ways, the combination of a horizontally-arranged yoke or hanger having open-ended pintle-bearings and horizontal companion jaws mounted therein, said jaws being pivotally connected to the sides of the yoke at their outer ends by pintles integral with the jaws and projecting inwardly toward each other and having the gripping-surfaces on their inner ends, the yoke being provided with end plates to hold the jaws in place, substantially as described.

9. In a gripping mechanism for traction-cable ways, the combination of a yoke, companion gripping-jaws mounted therein, said jaws being pivoted at their outer ends at the sides of the yoke and projecting inwardly toward each other and meeting at or near the center of the yoke, and the spring *l*, lying in a groove lengthwise of the jaws, having its ends bent in opposite directions, and projecting into recesses in the jaws, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HEWITT.

Witnesses:

J. A. GOLDSBOROUGH,
PERCY B. HILLS.