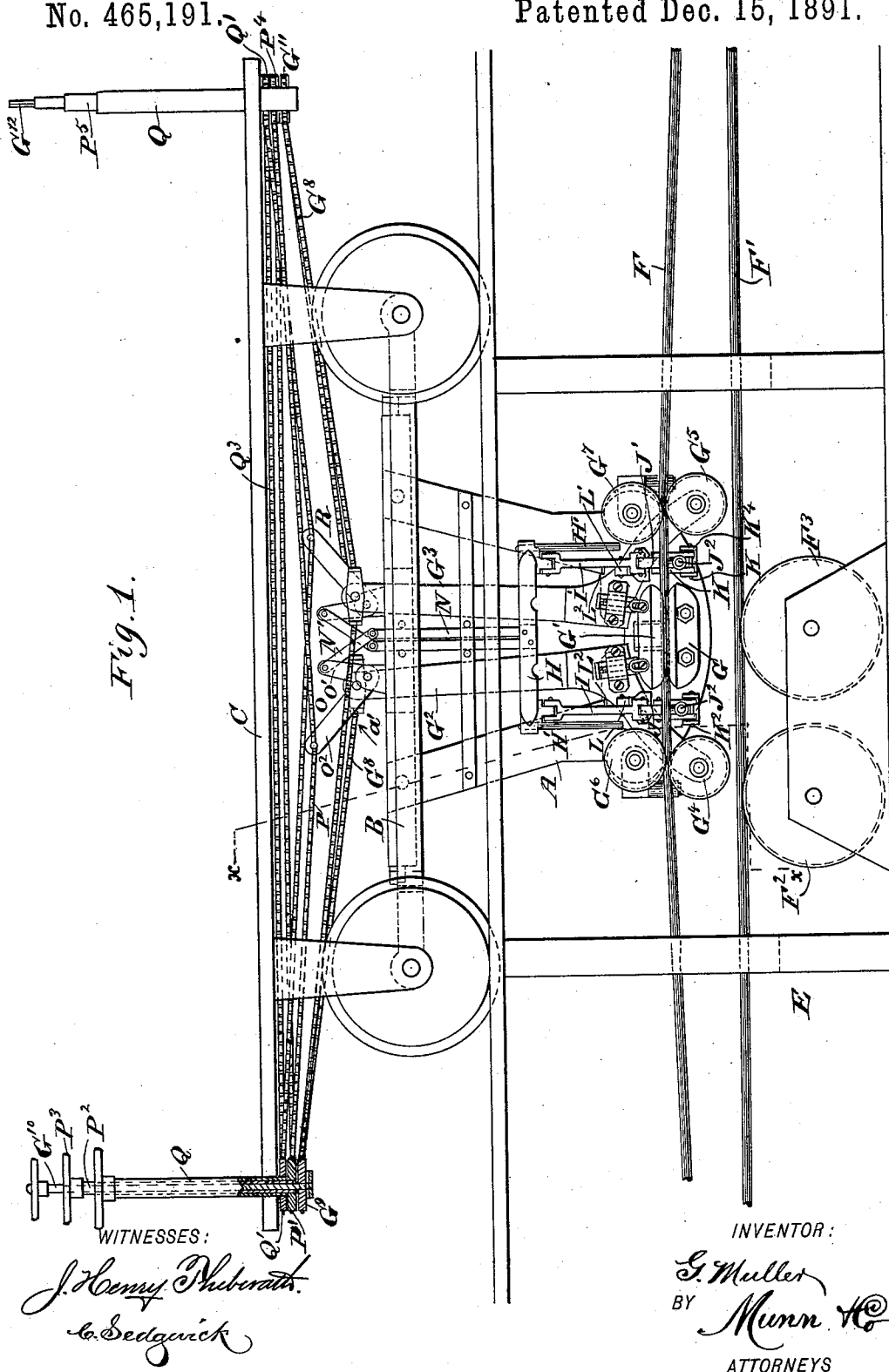


3 Sheets—Sheet 1.

PICK-UP AND THROW-OFF MECHANISM FOR CABLES.

Patented Dec. 15, 1891.



(No Model.)

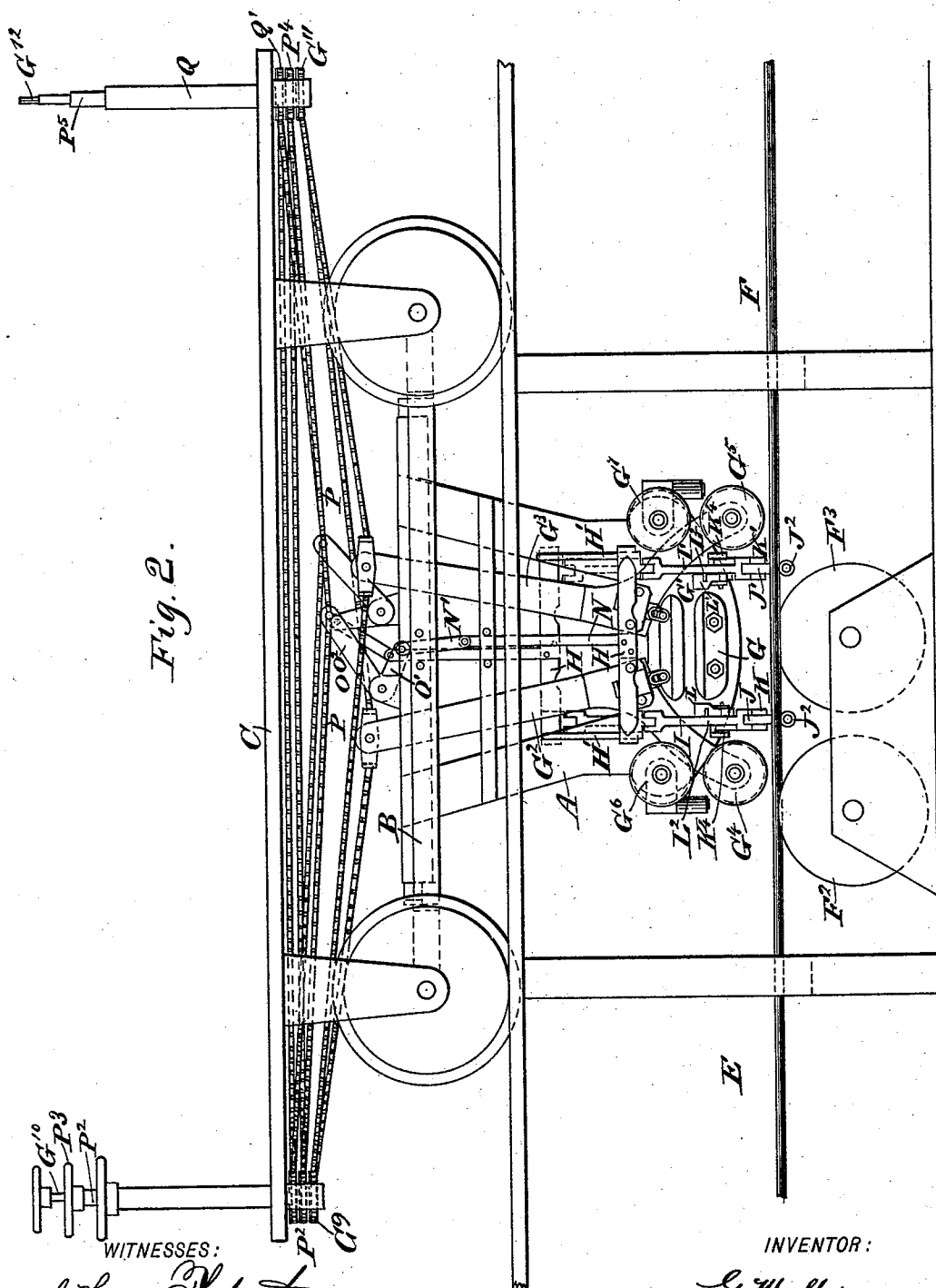
3 Sheets—Sheet 2.

G. MULLER.

PICK-UP AND THROW-OFF MECHANISM FOR CABLES.

No. 465,191.

Patented Dec. 15, 1891.



WITNESSES:

INVENTOR:

G. Muller
BY Munn & Co
ATTORNEYS

(No Model.)

3 Sheets—Sheet 3.

G. MULLER.

PICK-UP AND THROW-OFF MECHANISM FOR CABLES.

No. 465,191.

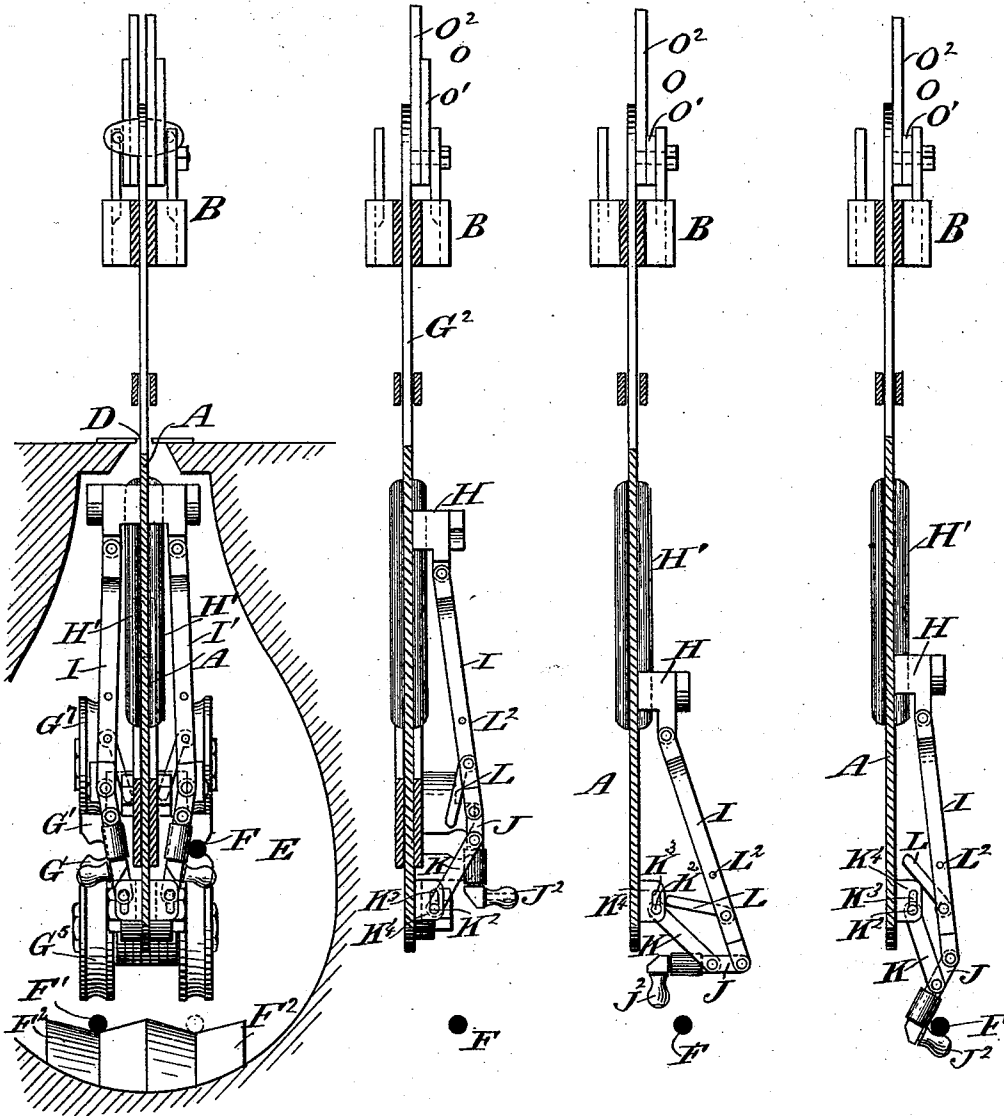
Patented Dec. 15, 1891.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE.

GEORGE MULLER, OF HOBOKEN, NEW JERSEY.

PICK-UP AND THROW-OFF MECHANISM FOR CABLES.

SPECIFICATION forming part of Letters Patent No. 465,191, dated December 15, 1891.

Application filed March 24, 1891. Serial No. 386,212. (No model.)

To all whom it may concern:

Be it known that I, GEORGE MULLER, of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and improved Pick-Up and Throw-Off Mechanism for Cables, of which the following is a full, clear, and exact description.

The invention relates to cable roads having a traveling single or double cable for propelling the cars, the latter being adapted to be fastened to the cable by a grip, which may be of any approved construction, preferably, however, of the construction shown and described in Letters Patent of the United States No. 352,255, granted to me November 9, 1886.

The object of the invention is to provide a new and improved mechanism specially designed to enable the operator in charge of the car to quickly and conveniently throw off the cable after the latter is released by the gripping-jaws, or to pick up this or a second cable traveling in the same or in a different direction or at a different rate of speed, the operator being enabled to place the picked-up cable between the gripping-jaws of the grip.

The invention consists of an angular arm or arms, each connected with a pivoted guiding-arm, and a link pivotally connected with a sliding bar.

The invention also consists of certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement as arranged for two cables, one of the cables being held in the grip on the car. Fig. 2 is a like view of the same with the cables thrown off and the device in the position for picking up one of the cables. Fig. 3 is a transverse section of the same on the line x of Fig. 1; and Figs. 4, 5, and 6 are like views of the device as arranged for a single cable and in different position, illustrating the several steps in picking up or throwing off the cable.

The improved pick-up and throw-off mechanism is arranged on the grip-frame A, supported by suitable beams B, held on the car C. The grip-frame A extends downward through

the usual slot D into the channel E, in which is placed the cable or cables F F', passing over the usual supporting-pulleys F² F³, respectively. As illustrated in Figs. 1, 2, and 3, the channel E contains two cables running in the same direction, of which one may be an auxiliary cable adapted to be used in case of accident to the other cable, or the second cable may be traveling in a different direction and at a different rate of speed, so that the operator in charge of the car is enabled to run the car in different directions and at different rates of speed, as desired.

On the gripping-frame A is arranged a suitable grip, which may be single or double, according to the number of cables in the channel E. If only one cable is used, the grip is single, and if two cables are used a grip is arranged on each side of the frame, so as to grip either of the two cables. The grip may be of any approved construction. I prefer, however, the construction shown, which is identical with the construction of my previous patent above referred to. This grip consists, principally, of a fixed jaw G and a movable jaw G', pivotally connected with two levers G² and G³, carrying the gripping-pulleys G⁴ and G⁵, above which are arranged pulleys G⁶ and G⁷, mounted to turn on fixed spindles secured to the frame A. The upper ends of the levers G² and G³ are connected with the ends of a chain G⁸, which passes first around the pulley G⁹, held on a staff G¹⁰, arranged on one end of the car C, the chain also passing over a pulley G¹¹, arranged on the opposite end of the car and secured to a staff G¹², as is plainly shown in Figs. 1 and 2. By turning either of the staffs G¹⁰ or G¹² the two levers G² and G³ are simultaneously actuated, so that the gripping-pulleys G⁴ and G⁵ are simultaneously moved toward or from the fixed pulleys G⁶ and G⁷, respectively, so as to grip the respective cable passed between the two pulleys of each set. At the same time the levers G² and G³ actuate the movable jaw G', so that finally the cable is firmly gripped between the two jaws G and G'. In order to release the cable from the grip, the staff G¹⁰ or G¹² is turned in an opposite direction, so as to cause the upper ends of the lever G² or G³ to swing away from each other, thereby opening the sets of jaws and pulleys.

The pick-up and throw-off device is ar-

ranged between the sets of pulleys and the jaws, as is plainly shown in Figs. 1 and 2. This mechanism is either single and only on one side of the frame A or double, being on both sides of the frame, the two parts being, however, independent of each other and serving to pick up or throw off either the first or the second cable F or F'. As the pick-up and throw-off devices are alike in construction, it suffices to describe only one.

A bar H is arranged longitudinally on the frame A and fitted to slide vertically in suitable guideways H', secured on the frame A. The under side of the bar H is pivotally connected at or near its ends with the links I and I', extending downward and pivotally connected with angular arms J and J', respectively, pivotally connected with guiding-arms K and K', respectively, each of which has its pivot-pin K² engaged in a vertical slot K³ formed in a bearing K⁴, fastened to the frame A. Each of the angular arms J and J' is formed at its lower end with a pulley or guide-wheel J², adapted to engage the cable F. The vertical slots K³ permit the pivoted pins K² a free but limited up-and-down motion to prevent binding of the arms K K' and to permit the angular arms J J' to swing upward on the links I I' in case the pulleys or guide-wheel J² should strike against the cable when moving rearward into position for picking up the cable, as will be understood by reference to Fig. 5.

In order to hold the links I and I' in proper position, pawls L and L' are pivoted on the said links I and I', respectively, the said pawls being adapted to travel at their inner ends over the bearings K⁴, so as to hold the links I I' and the angular arms J J' in the proper position, as illustrated in Fig. 5. A pin L² on each of the links I and I' permits the upward swinging motion of the respective pawl L or L'. When the bar H is moved suddenly into a lowermost position, (see Fig. 6,) the pawls L and L' are liable to swing forward, but are prevented from passing too far by the stop-pins L².

The bar H is connected with an upwardly-extending rod N, pivotally connected by a link N' with an arm O' of the bell-crank lever O, mounted on suitable tracks arranged on one of the beams B. The other arm O² of the bell-crank lever O is connected with the ends of a chain P, which is passed over a pulley P', held on the staff P², arranged on one end of the car, preferably on the outside of the staff G¹⁰, previously mentioned. The staff P² is formed with a hand-wheel P³ for conveniently turning the pulley P' so as to actuate the chain P. The latter also passes over a pulley P⁴, arranged on the other end of the car on a staff P⁵, provided with a hand-wheel for conveniently turning the said staff, and pulley P⁴ to enable the operator to actuate the chain P from this end of the car.

The operation is as follows: When the cable F is engaged by the grip, as illustrated in

Figs. 1 and 3, and the operator desires to throw off the said cable F for any purpose, he first actuates the grip, as above described, to release the cable from the sets of pulleys G⁴ G⁶ and G⁵ G⁷ and also from the jaws G and G'. The pick-up and throw-off mechanism is at this time in its uppermost position, and as soon as the gripping-pulleys G⁴ and G⁵ swing downward the cable passes upon the friction rollers or wheels J² on the angular arms J and J'. The operator now turns the hand-wheel P³ so that the arm O² of the bell-crank lever O swings in the direction of the arrow a', whereby the bar H is caused to slide downward, so that the links I and I' swing outward, causing the angular arms J and J' to move the cable from the fixed jaw G and the pulleys G⁴ and G⁵, the cable then resting only on the rollers J². By a further movement of the bell-crank lever O in the direction previously mentioned, the bar H slides farther downward, so that the links I move in the same direction, the pawls L and L' finally engaging with their inner ends the bearings K⁴. At this time a further downward motion of the bar H causes the links I and I' to press on the front ends of the angular arms J and J', so that their lower ends, carrying the friction-rollers J², swing rearward and upward, thereby disengaging the cable, the latter dropping down on the pulley F². The cable has thus been thrown off the car. Now when the operator desires to pick up the cable again the bell-crank lever O is caused to swing into its lowermost position, as illustrated in Fig. 5, the friction-rollers J² then being in the rear of the cable and having their pivots standing almost in a vertical position. The operator now reverses the movement of the bell-crank lever O, so that the bar H commences to slide upward, drawing up the links I and I', so that the pawls L L' glide at their rear ends over the bearings K⁴, thus permitting the links I and I' to assume a nearly-vertical position. (See Fig. 6.) This movement of the links I and I' causes the angular arms J and J' to swing, with their friction-rollers J², downward and forward and under and to the rear of the cable, as is plainly indicated in Figs. 2 and 6. The angular arms J and J' are caused to swing transversely, and at the same time their pivoted ends are moved up and down, so as to properly engage the cable and support the same for transmission to the grip. It is understood that the transverse as well as the up-and-down movement is controlled by the guiding-arms K K' and the pawls L L'. If the operator now causes a further movement of the bell-crank lever O in the direction of the arrow a', the cable F is lifted upward on the friction-rollers J² of the angular arms J and J' until the cable is finally lifted over the pulleys G⁴ and G⁵ and upon the top or gripping surfaces of the jaws G G'. The operator now actuates the grip again, so as to close the sets of pulleys and the jaws to firmly grip the cable. Should the angular arms J

and J', with their friction-rollers, come at any time in contact with any of the cable-supporting pulleys F² F³, they will slightly swing inward and upward to a position similar to the one shown in Fig. 6, thereby easily riding over the supporting-pulleys without losing their proper position relative to the cable.

It will be understood that when the operator desires to pick up a second cable after the first cable has been thrown off, he actuates the pick-up and throw-off device on the other side of the frame A in the same direction as above described, the said second mechanism being actuated from staffs Q, corresponding pulleys Q', and the chain Q², connected with the bell-crank lever R of the second device in the same manner as the chain P is connected with its bell-crank lever O.

It will be seen that this pick-up and throw-off mechanism enables the gripman to take up a cable at will whenever desired, and to throw it off at the crossings or at the end of a section of a cable road or at the powerhouse. It will also be seen that by this arrangement in case of accident to the cable, the gripman can throw off the injured cable and pick up the other cable in the manner described.

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

1. In a pick-up and throw-off mechanism for cables, the combination, with a bar mounted to slide vertically, of links pivotally connected with the said bar, and transversely-guided angular arms pivotally connected with the said links, substantially as shown and described.

2. In a pick-up and throw-off mechanism for cables, the combination, with a bar mounted to slide vertically, of links pivotally connected with the said bar, angular arms pivotally connected with said links, and guiding-arms pivotally connected with said angular arms, substantially as shown and described.

3. In a pick-up and throw-off mechanism for cables, the combination, with a bar mounted to slide vertically, and means, substantially as described, for imparting a vertical movement to the said bar, of links pivotally connected with the said bar, angular arms pivotally connected with the said links, each angular arm being provided with a friction-pulley to engage the cable, and pivoted guide-arms pivotally connected with the said angular arms and having their pivot-pins fitted to slide vertically, substantially as shown and described.

4. In a pick-up and throw-off mechanism for cables, the combination, with a bar mounted to slide vertically and means, substantially as described, for imparting a vertical movement to the said bar, of links pivotally connected with the said bar, angular arms pivotally connected with the said links, each angular arm being provided with a friction-pul-

ley to engage the cable, pivoted guide-arms pivotally connected with the said angular arms and having their pivot-pins fitted to slide vertically, and pawls pivoted on the said links and adapted to engage the bearings carrying the pivot-pins of the said guiding-arms, substantially as shown and described.

5. In a pick-up and throw-off mechanism for cables, the combination, with a bar mounted to slide vertically and means, substantially as described, for imparting a vertical movement to the said bar, of links pivotally connected with the said bar, angular arms pivotally connected with the said links, each angular arm being provided with a friction-pulley to engage the cable, pivoted guide-arms pivotally connected with the said angular arms and having their pivot-pins fitted to slide vertically, pawls pivoted on the said links and adapted to engage the bearings carrying the pivot-pins of the said guiding-arms, and a stop-pin on each of the said links to limit the movement of the said pawls, substantially as shown and described.

6. In a pick-up and throw-off mechanism for cables, the combination, with a frame, of a bar fitted to slide on the said frame, links pivotally connected with the said bar, angular arms pivotally connected with the said links and each having a friction-roller adapted to engage the cable, and guiding-arms pivotally connected with the said angular arms and pivoted on the said frame, substantially as shown and described.

7. In a pick-up and throw-off mechanism for cables, the combination, with a frame, of a bar fitted to slide on the said frame, links pivotally connected with the said bar, angular arms pivotally connected with the said links and each having a friction-roller adapted to engage the cable, guiding-arms pivotally connected with the said angular arms and pivoted on the said frame, and bearings secured on the said frame and having vertical slots engaged by the pivots of the said guiding-arms, substantially as shown and described.

8. In a pick-up and throw-off mechanism for cables, the combination, with a frame, of a bar fitted to slide on the said frame, links pivotally connected with the said bar, angular arms pivotally connected with the said links and each having a friction-roller adapted to engage the cable, guiding-arms pivotally connected with the said angular arms and pivoted on the said frame, bearings secured on the said frame and having vertical slots engaged by the pivots of the said guiding-arms, and a pawl pivoted on each of the said links and adapted to engage with its free end the bearing for the corresponding guiding-arm, substantially as shown and described.

GEORGE MULLER:

Witnesses:

THEO. G. HOSTER,
E. M. CLARK.