(No Model.)

J. S. PATTEN.

CABLE GRIP.

No. 493,514. Patented Mar. 14, 1893.

Fig. 1.

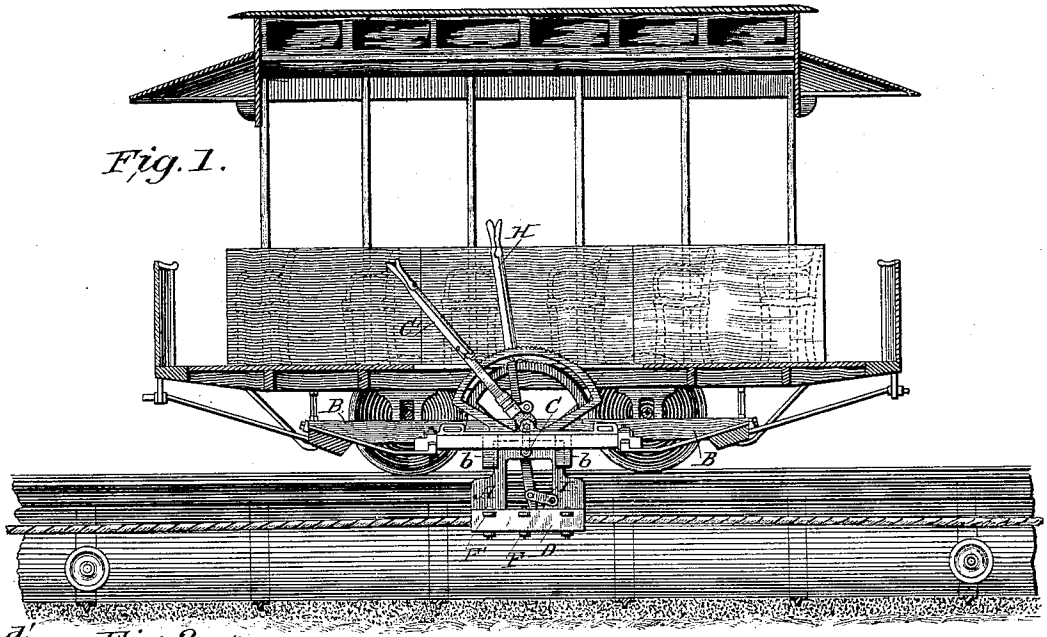


Fig. 2.

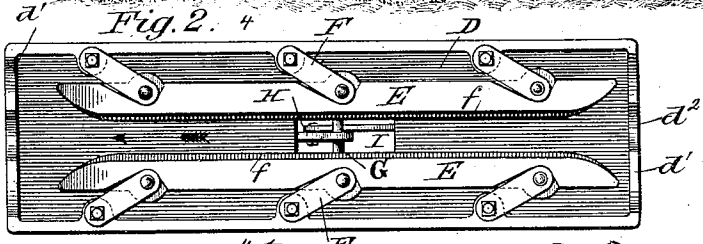


Fig. 3.

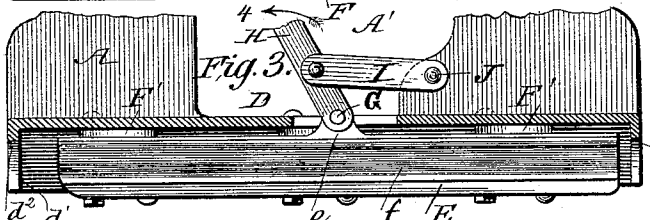


Fig. 4.

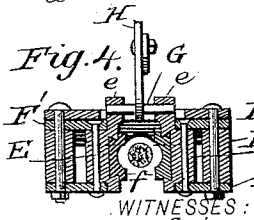


Fig. 5.

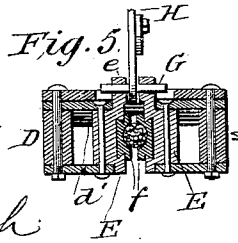


Fig. 7.

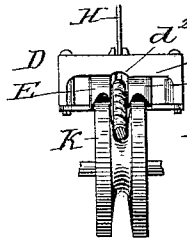
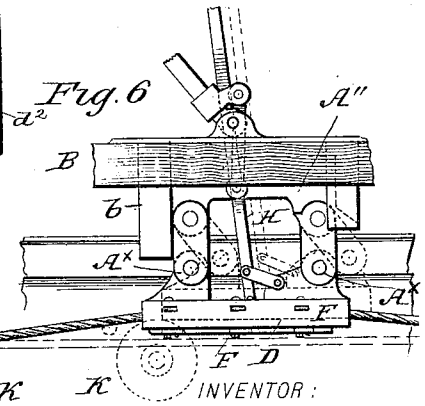


Fig. 6



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UNITED STATES PATENT OFFICE.

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CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 493,514, dated March 14, 1893.

Application filed August 5, 1892. Serial No. 442,229. (No model.)

To all whom it may concern:

Be it known that I, JAMES S. PATTEN, residing in the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Cable-Grips, of which the following is a specification.

My invention is a grip device for cable traction railways, and it relates more particularly to that class of grip devices in which the cable is clamped between movable jaws, which are adapted to be spread apart and which are capable of vertical movement relatively to the cable, whereby the jaw supports may be raised to elevate the grippers from contact with such cable, or lowered to again engage the same when it is desired to again grip such cable. In the employment of this class of grippers, the cable is usually clamped by vertical pressure, *i. e.* one or both jaws are movable vertically against such cable. In the use of such grips the cable is released from the grip jaws, when spread apart, by side swing of the grip—or other means, which forces the cable laterally out of such jaws. This method of releasing the cable is objectionable, in that it is unreliable, necessitates the use of what is termed a "gypsy" or similar lever, for lifting the cable back into the gripper jaws; it also requires specially constructed mechanism for throwing out the cable from the grip when crossing a transverse cable. To avoid these objectionable features in cable grips, and to provide a gripper simple in construction, easy to manipulate and effective in its operation, which is especially adapted to grip the cable by lateral pressure and drop it vertically when released therefrom, and which can be quickly adjusted to again pick it up without the aid of lifting levers or other additional means, is the main object of my invention.

A further object is to provide a grip which is also adapted to be automatically operated to release its cable, when it reaches a cross cable, which will ride bodily over such cable, and which will again drop into a proper position to embrace its own cable after passing over the cross cable, the mere application of the gripman's lever being necessary to close the jaws onto the cable.

It has also for its object to provide a gripper having clamp jaws incapable of slipping or loosening their bite on the cable after they are applied, whereby the usual unnecessary frictional wear upon the cable incident to long jaw grips is avoided.

With other minor objects in view all of which will hereinafter be fully set out, my invention consists in the novel construction and arrangement of parts fully described in the specification and pointed out in the claims, reference being had to the accompanying drawings in which

Figure 1 is a view illustrating my improved grip devices as in use. Fig. 2 is an inverted plan view of the grip the jaws being in their open or spread position. Fig. 3 is a longitudinal section of the lever or jaw portion. Fig. 4 is a transverse section of the same on line 4—4 Fig. 2. Fig. 5 is a similar view with the jaws closed in against the cable. Fig. 6 is an elevation of a modified arrangement of the grip devices especially adapted for use on roads having cross cables. Fig. 7 is a detail end view of the same hereinafter more especially referred to.

In the use of my improved grip devices, on cable roads having no cross cables, I arrange them as illustrated in Figs. 1 to 5 inclusive. In this construction, the grip shank A proper may be of the form as shown most clearly in Fig. 1, it being guided in the depending guide members *b* secured upon the grip supporting beam B mounted upon the car axles in the usual manner, and such shank is capable of vertical adjustment in such guide, the usual elevating lever mechanism C C′ being employed as clearly shown in Fig. 1 of the drawings, the shank A being centrally cut out as at A′ Fig. 3 to accommodate the lower or shank portion of the grip lever presently referred to. Upon the lower end of the shank A, is secured or cast integral, an elongated casing D, closed at its sides and formed with end portions, such portions being in the nature of shallow cross members *d′* as most clearly shown in Figs. 2 and 3. By reference to such figures it will be noticed that the clamp jaws, consist of a pair of toggle clamps, each of which is formed of a bar E pivotally connected at its rear face to the links F F′ pivoted to the sides of the casing D (see Fig. 4.) It will

also be noticed that the ends of such jaws E are in a plane below the cross members d', while their lower edges are approximately in the same plane with the side walls of the casing D, and such bars have removable friction blocks $f\,f$, which engage the cable, when such bars are closed inward as shown in Fig. 5.

It will be seen by reference to Fig. 2 that the bars E are pivoted to close inward in the direction indicated by the arrow, such in practice, being the direction of the moving cable. Each of the bars has an upwardly projecting apertured portion e in which projects the ends of a shifting pin G fitted transversely in the lower end of the gripman's lever H, which is pivoted a short distance above the pin G to a link arm I pivotally connected with the lower end of the shank A as at J.

So far as described it will be observed, to apply the grip, the jaws are opened to the position shown in Fig. 2, and the shank lowered, until the casing seats upon the cable, the shallow cross members d', being formed with central grooved portions d^2, which engage the cable and form guides for adjusting the casing so the jaws will close in against the cable; they also preventing, as it were, upward displacement of the cable. After the casing is set on the cable, the lever is moved slightly in the direction indicated by the arrow in Fig. 3, and the jaws thrown forward and inward against the cable; and so soon as they come in frictional contact therewith they will be drawn tightly against it and held thereagainst, by its forward pull. By this arrangement the jaws are always in a tight frictional contact with the cable, irrespective of the gripman's attention to the lever, and consequently all danger of slipping avoided.

In stopping the car the jaws need be held apart only a sufficient distance to remove the lateral clamp bearing of same, to permit the cable to pass through the same, but when it is desired to drop the cable the jaws are spread sufficiently to let the cable drop to its lower position.

It is manifest, that, by arranging the gripper jaws, so their front ends project at a plane below the front end of the casing, such jaws can be held to engage any suitable "safety" or stop, located at such points in the conduit where it is absolutely necessary to release the cable from the grip, providing thereby, means for automatically releasing the grip jaws from the cable, in case of negligence of the gripman, or at times when the jaws should refuse to operate promptly. It is also obvious, when used at such points, and the grip shank elevating lever is released from its locked position, such shank will be forced upward in its guides as the jaws engage such "safety" or stop.

When my improved grip is employed upon roads where cross cables are in use the grip shank is formed of sections joined to allow the lower section to be swung rearward.

In Figs. 6 and 7 I have shown my improved grip especially adapted for use where cross cables are to be encounted. In this case the shank has its lower section $A^{\times}$ pivotally hung upon the upper section A'', and is capable for movement rearward, but not forward. When this form of shank is used, a cable sheave K, having flanges of much more than the ordinary diameter is placed in the main cable conduit just in advance of the cross cable, the upper end of such flange being preferably in about the same horizontal plane as the cross cable (see Fig. 6).

In the construction just described, as the car reaches the cross cable, the lever H is released from its rack and the grip is adjusted so its jaws will contact with the upper edge of the pulley K, which serves to force the jaws rearward, spreading them apart, and thereby releasing the main cable. As seen in dotted lines in Fig. 6 the lower portion of the grip body is by such contact swung rearward, and as the car passes forward is drawn up over the pulley K, its front end being thereby elevated to clear the cross cable, the front ends of the jaws E are slightly tapered to facilitate such operation. After the cross cable is passed the grip shank drops down to its normal position, over the cable, after which the jaws are closed in as before described.

I desire it understood that I do not limit myself to the exact constructions shown, especially so as relates to the divided grip shank, as such may be varied without departing from my invention.

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

1. A cable grip comprising a vertically movable shank formed with a casing on its lower end, having an open bottom, toggle grip jaws horizontally pivoted on the underside of such casing, and arranged to grip the cable laterally when moved inward, the front ends of such jaws projected down, below the end portions of the casing, whereby they will be forced rearward to release the cable when meeting an obstruction in the conduit, substantially as and for the purposes described.

2. A cable grip comprising a vertically movable shank, having a longitudinally and laterally extended open bottom casing, the end walls terminating at a point near the top of such casing, whereby such casing is adapted to seat over the cable, and horizontally arranged toggle jaws pivoted to the side walls of such casing and inclosed thereby, said jaws adapted to engage the cable laterally from opposite sides, and having their front ends at a plane below the ends of the casing, all substantially as and for the purposes described.

3. In a cable grip, the combination with a vertically movable grip shank having a cut out portion A', and a laterally extending open bottom casing on its lower end, and the grip jaws mounted in such casing, of an operating lever connected to such grip jaws, pivotally connected near its lower end to the shank A,

and extended upward to a point above the conduit slot within the cut out portion of the shank, and then projected up to the outside of such shank, substantially as and for the purposes described.

4. An improved cable grip comprising a vertically movable grip shank, an open bottom casing hinged to the lower end of such shank, for a rearwardly swinging movement, a pair of horizontally movable toggle jaws adapted to engage the cable laterally from opposite sides, said jaws having their front ends projected to a point below the end walls of the casing, and lever mechanism for operating such jaws, all arranged substantially as described, whereby the jaws will engage a cross cable or other obstruction in the conduit and be forced rearward to release the cable and swing the jaws holding casing rearward and upward while the shank proper remains stationary as and for the purposes set forth.

5. The combination with the shank A, having a casing portion D, on its lower end, said casing formed with end cable guides d' d^2, of the jaws E, the pivoted links F F', connecting such jaws to the casing, the lever H the link I connecting such lever with the shank A, and a movable connection G between the jaws E and the lower end of the said lever H all arranged substantially as shown and for the purpose described.

JAMES S. PATTEN.

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