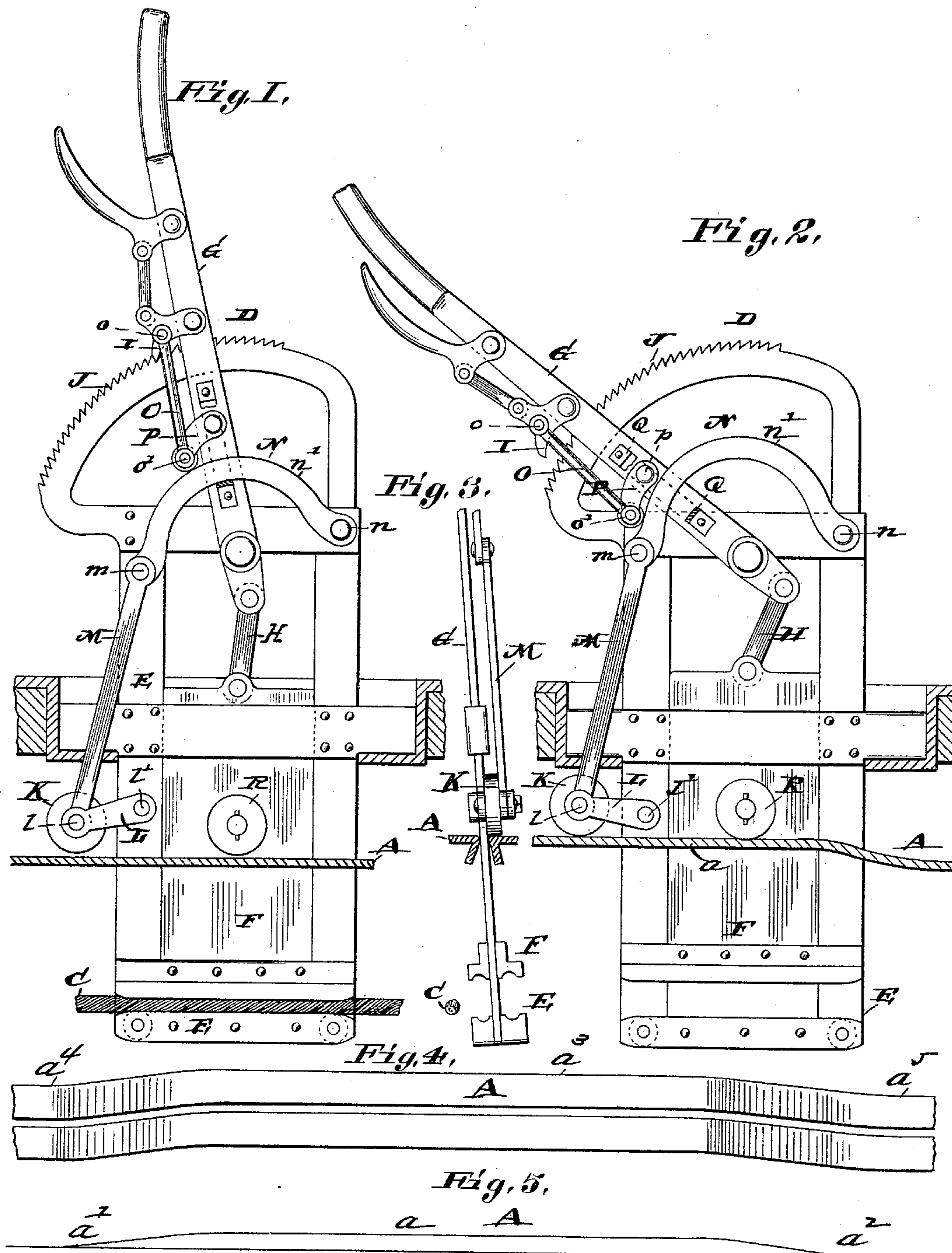


(No Model.)

H. C. GRAWE.  
CABLE GRIP DETACHER.

No. 386,196.

Patented July 17, 1888.



Attest:  
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att'y



# UNITED STATES PATENT OFFICE.

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## CABLE-GRIP DETACHER.

SPECIFICATION forming part of Letters Patent No. 386,196, dated July 17, 1888.

Application filed January 7, 1888. Serial No. 260,077. (No model.)

*To all whom it may concern:*

Be it known that I, HERMAN C. GRAWE, of St. Louis, Missouri, have made a new and useful Improvement in Cable-Grip Detachers, of which the following is a full, clear, and exact description.

In cable-railway practice it is occasionally necessary to extend one line of cable across another line of cable, in which case the second cable is carried, in the form of a loop, beneath and past the first cable. In forming the loop the cable is carried around three pulleys, two of which are located at the sides, respectively, of the gap containing the loop and the third one above the bight of the loop at the bottom of the gap. At such a crossing the grip of the car using the second or looped cable must be entirely detached from the cable, partly to prevent interference with the first cable and partly to prevent interference with the pulleys at the sides of the gap, and after passing the crossing the grip is attached to its cable before it drops to the level of the general series of pulleys used in supporting the cable, for the two pulleys mentioned as being at the sides of the gap are arranged at a higher level than that of the general series of pulleys and at about the level of the cable when upheld by the grip, and to provide for passing those two pulleys the cable-tube slot at the crossing is bent to one side sufficiently to cause the grip-lever to be slanted to the side of the cable and pulleys, and thereby to clear the pulleys. The grip is supposed also to be released from the cable as the crossing is approached in order that no lateral strain shall be exerted upon the cable or pulleys. Difficulty, however, is experienced in this respect. The person in charge of the grip, from inattention or other cause, sometimes fails to loosen the grip-lever pawl, or the pawl and grip, or the grip, and the grip in consequence retains its hold upon the cable even when it is swung to one side, as described, and the undesired interference or strain occurs, and generally with disastrous results.

To provide so that the grip shall of itself become detached from the cable in the position named is the aim of the present improvement, which consists, substantially, as follows: The cable-tube slot at the crossing is not only bent

laterally, as described, but is also elevated. The elevated portion in length conforms to the width of the crossing, and it may be said to agree with the lateral offset or bend in the slot—that is, the elevated portion corresponds in length with the offset, and the vertical inclines at the ends, respectively, of the elevated portion correspond in position substantially with the lateral inclinations at the ends, respectively, of the offset. Coacting with such an elevated portion of the slot is a part connected with and movable vertically upon the car-grip or grip-frame, and in such movement acting either directly or indirectly upon the grip-lever pawl and so as to effect the disengagement of the pawl from its ratchet as the crossing is approached, to keep it disengaged until the crossing is passed and to effect the re-engagement of the pawl immediately afterward.

An additional feature of the improvement is a part connected more especially with the movable jaw of the grip, which also is elevated by coming in contact with the elevated portion of the slot, and thereby made to effect the opening of the movable jaw, so that not only shall the grip-lever pawl be made free from the ratchet, in order that the grip itself may be opened, but also that the grip may be automatically detached from the cable, and after the crossing is passed to allow the movable jaw to close again upon the cable.

The most desirable mode of carrying out the improvement is shown in the annexed drawings, making part of this specification, in which—

Figure 1 is a vertical longitudinal section taken through the cable-tube slot at the general level thereof, the grip being shown and as attached to the cable. Fig. 2 is a view analogous to that of Fig. 1, but showing the grip at the elevated portion of the slot, and the parts adjusted as when the grip is opened and detached from the cable; Fig. 3, a front edge view of the grip detached, the cable-tube slot being shown in vertical cross-section; Fig. 4, a plan of the cable-tube slot at the crossing, and Fig. 5 a side elevation of the part shown in Fig. 4.

The same letters of reference denote the same parts.

A represents the section of the cable-tube



slot used at the crossing referred to above. Its elevated portion is shown at  $a$ , and the vertical inclines are shown at  $a' a^2$ , respectively. The elevated portion is substantially coextensive with the offset  $a^3$ , Fig. 4, and the vertical inclines  $a' a^2$  with the lateral inclines  $a^4 a^5$  respectively.

C represents the cable, which is carried under the other or first cable, which is not shown.

D represents the grip, which, saving as it is supplemented or modified by the improvement under consideration, is of any of the customary forms.

E represents the fixed jaw; F, the movable jaw; G, the grip-lever; H, the link which joins the movable jaw and grip-lever; I, the grip-lever pawl; and J, the segment with which the pawl coacts, all which parts, as stated, are of the usual construction.

K represents a roller journaled in the outer end,  $l$ , of an arm, L, which at  $l'$  is in turn journaled to the frame of the fixed jaw E. A rod, M, journaled at its lower end to the arm L, extends upward and is jointed at  $m$  to a curved lever, N, which in turn is pivoted to the grip-frame at  $n$ . The curve  $n'$  of the lever N is parallel with that of the segment J—that is, the lever is shaped and arranged to occupy the arc of a circle whose center is the fulcrum of the grip-lever. A rod, O, pivoted at  $o$  to the pawl I, extends thence downward, and at  $o'$  is pivoted to an arm, P. This last-named arm is journaled at  $p$  to the grip-lever, and at its outer end it is provided with a roller, which rides upon the curved lever N. As long as the car is off the crossing the roller K (the curved lever N being upheld by some suitable stop, say, the keeper Q) does not encounter the tube-slot; but on approaching the crossing the roller K encounters the incline  $a^2$  and rides upward upon and along the elevated portion  $a$ . This effects the raising of the parts L M N O P and the pawl I. The grip-lever and movable grip-jaw are now free to be moved, and their movement is effected, preferably, by means of the roller R, which is journaled upon the movable jaw. The roller R encounters the elevated portion  $a$  after the roller K has been lifted, and the movable jaw is thereby raised, so that the cable is free to be drawn sidewise therefrom, as indicated in Fig. 3. The movable jaw communicates its movement to the grip-lever, and the parts assume the position shown substantially in Fig. 2. The rollers K R successively pass down the incline  $a'$ , whereupon they, with the parts respectively thereto attached, drop by gravity and the cable falls again into the grip, which closes upon the cable. The entire operation therefore is provided for irrespective of the assistance of the person in charge of the grip. I desire not to be limited to the means shown for transmitting the movement of the rollers K R to the pawl and grip-lever, as described, although I prefer the means exhibited. The rod M might, for instance, be

connected with the roller R, to be lifted thereby. The curve of the lever N conforms to that of the segment, to suit the grip-lever when turned. The keeper Q is a strap attached at its ends to the grip-lever and between its ends bent outward to admit the lever N, which, when at its lowest level, rests upon the keeper at the lower end thereof, as shown, and when raised can move upward between the keeper and grip-lever.

I claim—

1. The elevated and bent cable-tube slot, in combination with a vertically-movable part upon the car-grip, as and for the purpose described.

2. A cable-tube slot having an elevated and bent portion, as and for the purpose described.

3. The combination of a tube-slot elevated and bent, as described, with the movable jaw of the grip, said movable jaw having a roller or other projection for encountering said elevated and bent tube-slot, as and for the purpose described.

4. The combination of a tube-slot elevated and bent as described with a car-grip having two rollers or projections, said rollers or projections being adapted to encounter said elevated and bent tube-slot successively, and being respectively and either directly or indirectly connected with the grip-lever pawl, and the movable jaw of the grip, substantially as described.

5. The combination, in a car-grip, of the segment, the grip-lever and pawl, the curved and pivoted lever N, the rod O, and arm P, substantially as described.

6. The combination of the elevated tube-slot, the car-grip having the grip-lever and pawl, the roller K, the arm L, the arm M, the curved and pivoted lever N, the rod O, and the arm P, substantially as described.

7. The combination of the elevated and bent tube-slot, the car-grip having the movable jaw, the grip-lever and pawl, the rollers K R, the arm L, the rod M, the curved and pivoted lever N, the rod O, and the arm P, substantially as described.

8. The combination of the grip, the grip-lever, the keeper, the curved lever, the rod M, the arm L, and the roller K, substantially as described.

9. In a cable-grip, the bent lever N, pivoted to the frame-work of the grip and combined with the grip-lever, said lever N being shaped and arranged to occupy the arc of a circle whose center is the fulcrum of the grip-lever, substantially as described.

10. In a cable-grip, the bent lever N, pivoted at one end, to be moved as described, said lever being shaped and arranged to occupy the arc of a circle whose center is the fulcrum of the grip-lever, and being combined with and operated by a part leading downward therefrom to encounter an elevation in the tube-slot, substantially as described.

11. In a cable-grip, the bent lever N, piv-



oted to the frame-work of the grip, having a  
segment, and combined with and engaging on  
its convex surface the extension of the pawl,  
and having connected with it a part leading  
5 downward therefrom, operated by an eleva-  
tion in the road-bed, whereby in operation  
the pawl is disconnected with the segment and

the grip-lever is released, substantially as de-  
scribed.

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Witnesses:

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FRED. SCHUSS, Jr.