(No Model.)

C. VOGEL.

CABLE RAILWAY GRIP.

No. 478,773. Patented July 12, 1892.

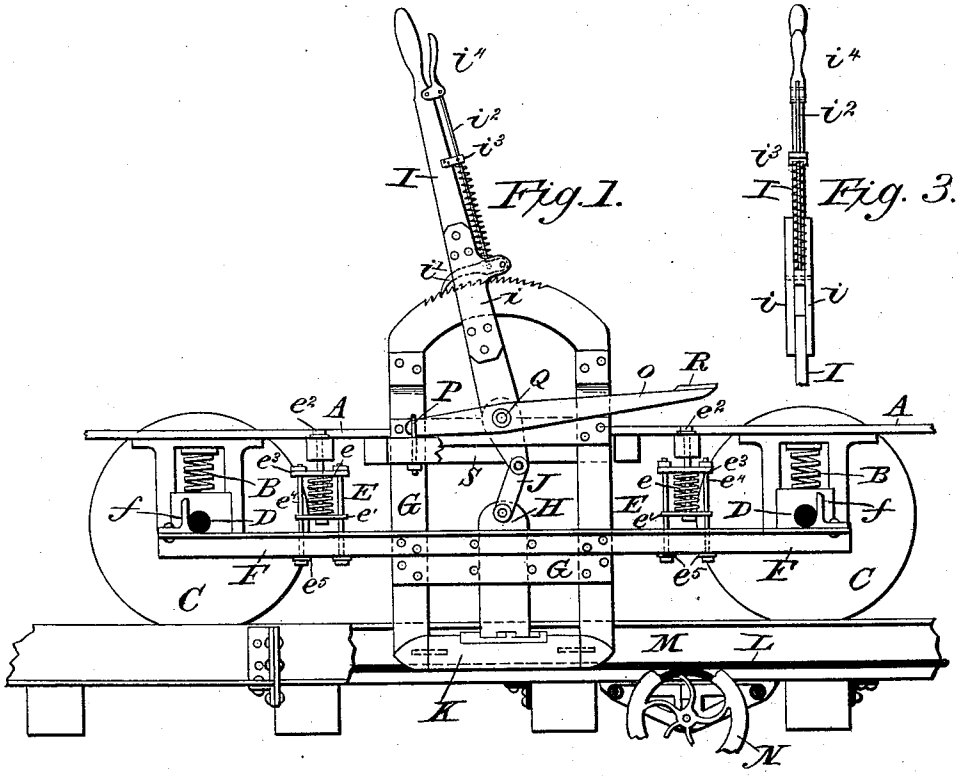
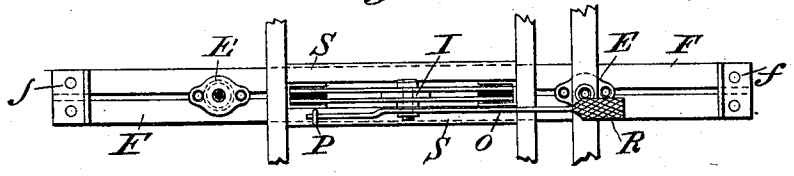


Fig. 1.

Fig. 3.

Fig. 2.



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UNITED STATES PATENT OFFICE.

CHARLES VOGEL, OF SAN FRANCISCO, CALIFORNIA.

CABLE-RAILWAY GRIP.

SPECIFICATION forming part of Letters Patent No. 478,773, dated July 12, 1892.

Application filed May 27, 1887. Renewed February 18, 1891. Serial No. 381,811. (No model.) Patented in England September 29, 1887, No. 13,194.

To all whom it may concern:

Be it known that I, CHARLES VOGEL, of the city and county of San Francisco, State of California, have invented a new and Improved Means for Operating Grips of Cable-Railway Cars, (for which Letters Patent of Great Britain, No. 13,194, dated September 29, 1887, were granted me,) of which the following is a specification.

This invention relates to those cable-grips which operate in subways, one part, however, being equally applicable to the corresponding device which in an electric railway operates in a subway to make connection with the conductor, as will be hereinafter pointed out.

This invention constitutes an improvement on the invention described in Letters Patent of the United States granted to myself and Whelan, No. 359,043, dated March 8, 1887, in which patent is shown a peculiar grip, in which the jaws, pivoted together, are set at a level which will permit them to grasp the cable as it rests upon its pulley-supports, said jaws being shown therein as carried upon hangers rigidly secured to the car-body and as being operated by a vertically-moving grip-shank.

The object of my present invention is to give the jaws of said patent a vertical movement, so that while in their normal position they are at or nearly at a level which will permit them to grasp the cable as it rests upon its supporting-pulleys, yet they are susceptible of being thrust farther downward to a level which will permit them to grasp the cable where it may sag between the pulley-supports or to escape contact with an overhanging depression-pulley and the like. To this end the hangers supporting the jaws are made to constitute part of a vertically-movable frame supported by springs which normally hold it up against a stop connected with the running-gear—such, for instance, as the car-axles D—so that, while the springs permit of the jaws being thrust downward to any extent required, the stop determines the highest position of the jaws, so that the springs cannot lift them above the level or near the level necessary for grasping the cable as it rests on the pulley-supports. This position, being measured from a stop on the running-gear, is unaffected by the motions of the car-body. The vertically-moving frame carrying the jaws is also made to carry the mechanism by which the jaws are opened and closed, so that the opening and closing of the jaws are substantially independent of the vertical movements of the jaws. Mechanism is also provided whereby the operator may thrust the frame downward, when desired, in antagonism to the springs, which mechanism should be of such a character as to admit of the jaws returning to their normal position upon receiving any powerful upward thrust, so that if the jaws should be thrust downward to grasp the sagging cable between the pulleys they may be automatically raised by the upward thrust of the cable as it approaches the pulley-support to prevent any jamming action at that point. The downward thrust of the jaws is therefore a yielding thrust, such as the pressure of a lever actuated by the attendant's foot.

In the accompanying drawings, forming part of this specification, Figure 1 is a sectional elevation of a portion of a car and subway sufficient to illustrate the application of my invention. Fig. 2 is a plan of the details of my invention detached from the car. Fig. 3 is an edge view of the hand-lever.

In all the figures the same letters of reference are used to indicate the same parts.

A is the car-floor; B B, the springs over the axle-boxes, upon which the car-body rests. C C are the wheels, and D D the axles. These parts are not in any way changed. In the drawings, however, for convenience of illustration I have shown the axle-boxes, pedestals, and supporting-springs arranged inside the wheels, as usual in dummies or grip-cars, instead of outside, as more commonly found.

E E are a couple of elastic hangers, each comprising a spiral spring e, supported on a plate e', which rests on the head of the central bolt e^2, hanging from the car-floor above. On the top of these springs there will rest the plates e^3, from which there will depend the bolts e^4, which, passing down between the side bars of the equalizing-frame F, support the same on broad washers e^5, resting upon their lower heads. This equalizing-frame F

is composed of two longitudinal bars of angle-iron set a distance apart equal to the thickness of the upright portions G of the grip-frame, which pass between the bars and to which they are riveted. The space between the angle-irons also constitutes a passage-way for the grip-shank, which lies between the upright portions G. The angle-irons are also a little longer than from center to center of the axles, under which they bear with a constant upward pressure. On each end of these bars there are fastened short pieces of the same-shaped iron *f*. These bear snugly against the sides of the axle and cause the whole frame to act as a draw-bar to move the car in either direction.

G is the stationary part of the grip-frame, terminating at the top in the usual notched quadrant. This frame is fastened by rivets or bolts to the equalizing-frame only.

The stationary part G and the equalizing-frame F, considered together, may be said to constitute the grip-frame, and when thus considered the grip-frame is vertically movable; but otherwise the frame G is stationary.

H is the moving shank of the grip, which is raised and lowered by the hand-lever I and intermediate link J to open and close the grip-jaws K. The lower portion of lever I and the link J may be said to constitute toggle-links.

L is the cable.

M is the subway.

N is one of the carrying-pulleys.

O is a foot-lever of the second order, having its fulcrum at one end in the crotch of the stirrup-bolt P, which is bolted to the floor-timbers. It is pivoted on the pin Q of the hand-lever and has a foot-plate R at the opposite end. When the foot is pressed down upon this lever, the entire frame of the grip is carried down with it, though immediately the foot is released the grip will return to its normal position. With the lever O arranged, as described, to depress the grip-frame, which also supports the jaws, the downward pressure of the lever will be in a line equidistant between the springs E, whereby the jaws may be thrust vertically downward.

S S are small parallel timbers framed into the cross-timbers of the car-floor. They act as a sort of guide for the grip-frame and are set just far enough apart to accommodate it.

The hand-lever I is formed of two pieces—the handle end and the fulcrum end—these being separated a distance apart sufficient to accommodate the pawl and quadrant between, the two pieces being joined together by side plates *i i*, riveted to them, as shown. The fulcrum-pin of the pawl *i'* is at the extreme end opposite its point, the lifting-rod i^2 being connected between. (See Fig. 1.) An ordinary spiral spring wound around the rod i^2 expands between the head of the pawl and a projecting stop i^3, fastened to the lever. The rod i^2 is fastened, as usual, to the releasing-lever i^4, which is pivoted to the main lever on the opposite side to that which receives the applied power in gripping the cable.

The grip illustrated in the drawings need not be described in further detail, the one here used for illustration being what is shown in the Vogel and Whelan grip, patented March 8, 1887, No. 359,043.

In the above grip-lever because the pawl-releasing latch is arranged on the opposite edge to that receiving the applied hand-power it is much more convenient to handle when tightening the grip on the cable.

It will be observed that under the construction described the grip-jaws have their ends normally above the lower face of the cable when grasping the cable. It will also be observed that the lower part of the vertically-movable frame has tapered extremities, which bound the jaws at each end and lie normally above the lower face of the cable when the jaws grasp the cable.

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

1. The means of securing the grip to the car of an underground cable railway, consisting, essentially, of the equalizing-frame F, extending under and bearing upward against the axles D D and to which the grip-frame is secured, and the elastic hangers E E, from which the equalizing-frame is suspended from any convenient timbers of the car above, substantially as and for the purpose described.

2. The means of lowering the grip of an underground railway below its normal height when necessary, consisting, essentially, of a suitable elastic connection between the grip-frame and the car to which it is secured and a lever O, having a fixed fulcrum upon the car-frame at one end and engaging with the grip-frame by being pivoted thereto or otherwise at about the middle of said frame, substantially as and for the purpose herein described.

3. In combination, the cable, the jaws having their ends normally above the lower face of the cable when grasping the same and adapted to be lifted by the cable into position to pass over the pulleys, the vertically-movable supporting-frame, and the tapering pieces at the ends of the jaws, substantially as described.

4. In combination, the grip-jaws and the vertically-movable frame containing horizontally-tapered extremities which bound the jaws at each end and lie normally above the lower face of the cable, by the inclined action of which the jaws and frame may be raised over obstructions, substantially as described.

5. In combination, the jaws having their ends normally above the lower face of the cable when grasping the same and adapted to be lifted by the cable into position to pass over the pulleys and mechanism whereby they may be shoved downward into position to grip a sagging cable between the pulleys, substantially as described.

6. In combination, the cable, the jaws hav-

ing their ends normally above the lower face of the cable when grasping the same and adapted to be lifted by the cable into position to pass over the pulleys, and mechanism whereby they may be shoved downward into position to grip a sagging cable between pulleys, said last-named mechanism being adapted to automatically yield to the upward pressure of the cable, substantially as described.

7. In combination, the cable, the jaws having their ends normally above the lower face of the cable when grasping the same and adapted to be lifted by the cable into position to pass over the pulleys, mechanism whereby they may be shoved downward into position to grip a sagging cable, a stop limiting their upward movement, and a spring-support holding them up against the stop, substantially as described.

8. In combination, the cable, the vertically-moving jaws lying in their normal position substantially above the level of the lower face of the cable, which will permit them to grasp the cable as it rests upon its supporting-pulleys, a stop whereby said normal position is fixed, and mechanism whereby the jaws may be thrust downward to grasp a sagging cable, substantially as described.

9. A traction-cable-railway car having a grip in which the jaws, when open, are normally in or near the position to grasp the cable as it rests in the supporting-pulleys and provided with mechanism for opening and closing the same and mechanism whereby said jaws may be thrust downward in position to grasp a sagging cable, substantially as described.

10. In combination, the cable, the cable-supports, the vertically-movable gripping-jaws lying normally at or nearly at a level which will permit them to grasp the cable as it rests upon its support, a spring-support for said jaws, in antagonism to which the jaws may be thrust below the level for grasping the cable as it rests on the pulley-supports, and a stop whereby the upward movement of said jaws is stayed at or near said level, substantially as described.

11. In a railway-car, in combination, the grip-supporting frame, a lever fulcrumed on the car, and a grip-operating lever fulcrumed to said first-named lever, substantially as described.

12. In combination, the grip-jaws, the vertically-movable frame containing side uprights, between the lower extremities of which the jaws are supported, and an upper cross-piece, an upright lever pivoted intermediate the cross-piece and the jaws, and jaw-closing mechanism interposed between said lever and the jaws, substantially as described.

13. In combination, the grip-jaws, the vertically-movable frame containing side uprights, between the lower extremities of which the jaws are supported, and an upper quadrant-shaped member, an upright lever pivoted intermediate the quadrant and the jaws, a pawl mounted on the lever and engaging the quadrant, and jaw-closing mechanism interposed between said lever and jaws, substantially as described.

14. In combination, the grip-jaws, the vertically-movable frame containing side uprights, between the lower extremities of which the jaws are supported, and an upper cross-piece, an upright lever embracing said cross-piece and restrained in its movements thereby and pivoted intermediate the same and the jaws, and jaw-closing mechanism interposed between said lever and the jaws, substantially as described.

15. In combination, the grip-jaws, the vertically-movable frame containing side uprights, between the lower extremities of which the jaws are supported, and an upper cross-piece, and jaw-closing mechanism having a bearing on said cross-piece above the space between said uprights, substantially as described.

16. In combination, the grip-jaws and the vertically-movable portion carrying the same, said portion being secured to a member bearing against the running-gear and extending upward through an opening in the car-body and consisting of side uprights, a top cross-piece, and another cross-piece a short distance above the cable-conduit, substantially as described.

17. In combination, the grip-jaws, the vertically-movable portion carrying the same, said portion being secured to a member bearing against the running-gear and extending upward through an opening in the car-body, a vertically-reciprocating grip-shank, and guideways for said grip-shank, substantially as described.

18. In a railway-car, in combination, the gripping-jaws, the grip-shank vertically movable independently of its supporting-frame, mechanism for actuating said shank, and a vertically-movable frame supporting said jaws and said shank, and actuating mechanism whereby said frame can be moved vertically without changing the relative position of the parts for moving said shank, substantially as described.

19. In a railway-car, in combination, jaws moving about a pivot, a vertically-moving grip-shank, toggle-links whereby said shank is moved, and a vertically-movable frame which carries both the pivot of said toggle-links and the pivot of said jaws, substantially as described.

20. In a railway-car, in combination, the jaws, a hand device for operating the same as a portion of said device is depressed, a vertically-movable frame wherein said jaws are mounted, and a foot device whereby said frame may be thrust downward, substantially as described.

21. In a railway-car, in combination, the gripping-jaws, mechanism whereby said jaws are actuated to grip as a portion of said mechanism is depressed, a vertically-moving frame supporting said mechanism and said jaws, a

spring supporting said frame, and mechanism connected with the car whereby said frame may be moved in antagonism to said spring, substantially as described.

22. In a railway-car, in combination, gripping-jaws, a vertically-moving grip-shank actuating said jaws, mechanism for actuating the grip-shank, a vertically-movable frame connecting said actuating mechanism with said jaws, and a spring whereon said vertically-movable frame is supported, substantially as described.

23. In combination, the grip-jaws, the vertically-movable frame containing side uprights, between the lower extremities of which the jaws are mounted, a stop whereby the normal position of the frame is determined, and a spring-support whereby the frame is held in contact with the stop, substantially as described.

24. In combination, the grip-jaws, the vertically-movable frame containing side uprights, between the lower extremities of which the jaws are mounted, a stop whereby the normal position of the frame is determined, a spring-support whereby the frame is held in contact with the stop, and mechanism whereby the frame may be shoved downward, substantially as described.

25. In a railway-car, in combination, the grip-supporting frame, a spring whereby the same is supported, and a stop connected with the running-gear of the car, whereby the highest position of the grip is determined independently of the car-body, substantially as described.

26. In a traction-cable-railway car, in combination, the jaws, mechanism whereby said jaws are operated, a frame wherein said mechanism and said jaws are mounted, a spring whereby said frame is supported, and means whereby the tension of said spring may be regulated, substantially as described.

27. In a traction-cable-railway car, in combination, the jaws, the frame supporting said jaws, a spring supporting each side of frame, and mechanism adapted to exert a downward pressure in a line substantially equidistant between said springs, whereby said jaws may be thrust vertically downward, substantially as described.

28. In a railway-car, in combination, the horizontal piece F, bearing against the running-gear, provided with an opening for the passage of the grip-shank and also provided on either side of said opening with a bearing adapted to receive a spring, substantially as described.

29. In a traction-cable-railway car, in combination with the running-gear, a horizontal piece F, provided with a passage-way for the grip-shank and on either side thereof with a passage-way for the vertically-moving jaw-supporting frame, substantially as described.

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