(No Model.)

# C. VOGEL & C. McINTOSH.

## GRIP FOR CABLE RAILWAYS.

No. 483,774. Patented Oct. 4, 1892.

Fig. 6

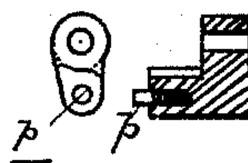


Fig. 6^A

Fig. 3

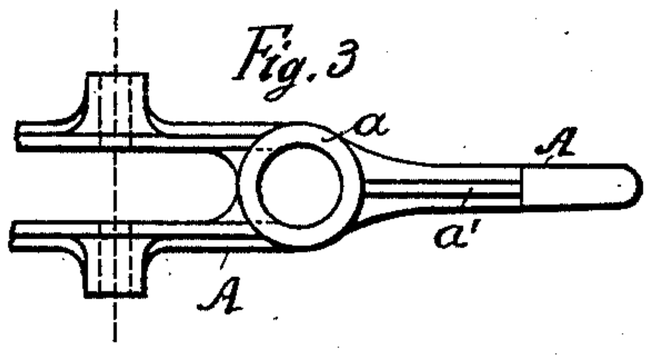


Fig. 4.

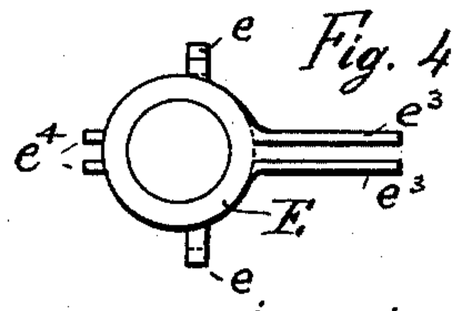


Fig. 1




Fig. 2.

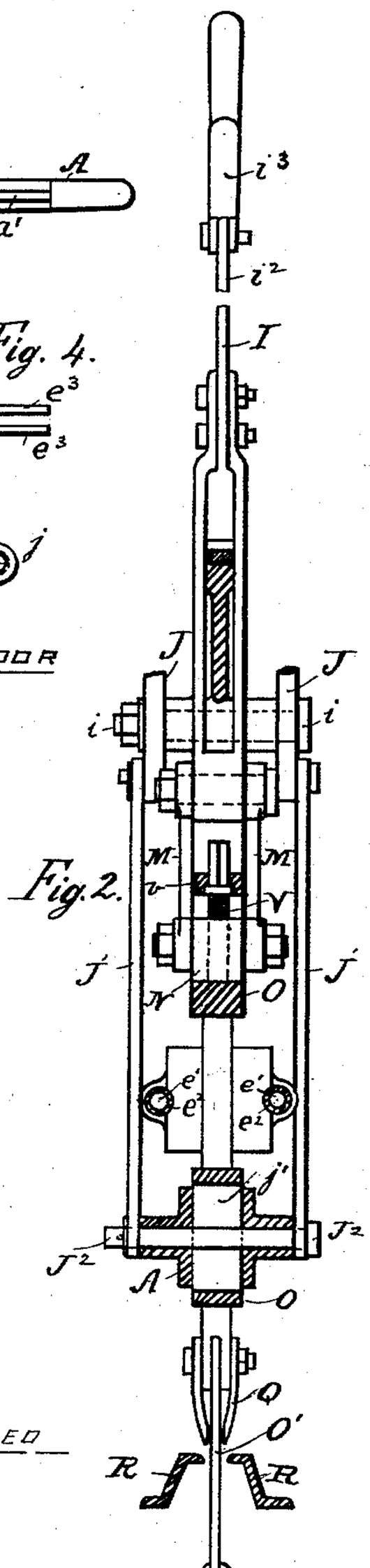


Fig. 5




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# UNITED STATES PATENT OFFICE.

CHARLES VOGEL, OF SAN ANSELMO, CALIFORNIA, AND COLIN McINTOSH, OF TACOMA, WASHINGTON, ASSIGNORS TO THE VOGEL CABLE CONSTRUCTION COMPANY, OF COLORADO.

## GRIP FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 483,774, dated October 4, 1892.

Application filed February 26, 1889. Serial No. 301,290. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES VOGEL, of San Anselmo, Marin county, State of California, and COLIN MCINTOSH, of Tacoma, Pierce county, Washington, have jointly invented certain new and useful Improvements in Grips for Cable Street-Railways, of which the following is a specification.

This invention relates to improvements in the construction and operation of the grip patented to Vogel and Whelan March 8, 1887, No. 359,043, and additional improvements thereon by Charles Vogel, whose application for a patent therefor was filed May 27, 1887, Serial No. 239,588, the present improvements consisting in the arrangement and construction of the parts of the grip, as herein set forth, whereby it is made more effective and durable in its operation and available as a brake to arrest the motion of the car.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation, partly in section, of the grip and brake shown detached from its car. Fig. 2 is a transverse section taken upon the center line of Fig. 1. Fig. 3 is a plan, one end being broken away, of the carrying-beam. Fig. 4 is a plan of one of the parts of the grip-frame. Fig. 5 is an end view of grip-jaws, the head being removed. Figs. 6 and $6^A$ are respectively an end and side elevation, one-half in section, of one of the toggle-levers.

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

The grip is the same as the Vogel and Whelan grip above mentioned as far as the principles of construction and operation of the jaws are concerned. The frame, however, is improved, so as to enable the jaws to be raised or lowered, as occasion requires, while maintaining thorough rigidity under normal conditions—that is to say, while the height of the grip-jaws is made capable of nice adjustment at any time with relation to the cable and also while the jaws are made capable of being forced down to below their normal height to pick up the cable when it may have sagged down between pulley-supports, still the grip-frame and its working parts are so held and supported as to be firm and rigid in their ordinary operation. There is also added a simple and effective brake attachment hereinafter described.

In the drawings, A is the carrying-beam which supports the grip and all its parts. It rests upon timbers B of, say, the truck-frame if the car-body rests on trucks, or on some timbers solidly supported on the wheel-axles, so as thus to be on the running-gear independent of and unaffected by the rise and fall of the car-body upon its springs. It is not required to fasten this beam to the timbers, saving that it may be checked into them or otherwise prevented from moving sidewise. In this beam there are screwed through the sockets *a* two upright columns C, closed on top and open on the bottom, a check nut or collar *c* being provided to lock them in place and prevent them from turning.

D D are two similar pipe-like columns, which slide over the columns C C and screw into the socket-pieces E E, which are bolted or riveted to and project inwardly from the side bars F F, check-nuts *d d*, being supplied, as for the columns C. These socket-pieces, which are shown in plan, Fig. 4, have side lugs *e*, through which long bolts *e'* pass, having pipe-like sockets $e^2$ between lugs, so that the opposing socket-pieces may be firmly braced together. Each socket-piece has also parallel flanges $e^3$, which receive between them the upright bars F F.

$e^5$ indicates the rivets fastening the bars F and sockets E together. Small flanges $e^4$ inclasp the edges of the vertically-moving grip-shank, acting as guides therefor. The side bars F pass through the slots *a'*, Fig. 3, in the carrying-beam and are bolted to and between the upright flanges *g* of the grip-heads G.

H is an arch-piece, upon which the notched quadrant *h* is fastened and which has sockets *h' h'* at each end, into which the columns D D are screwed, check-nuts *d' d'* again being provided, as before. The parts H and D form an inverted-U-shaped frame. In the center of the arch-piece is the fulcrum-bolt *i* of the operating-lever I, which also forms the fulcrum-bolt for the foot-lever J. As shown in Fig. 1, bolts K connect the head of each column C with the head of the sockets in the

arch-piece, a spiral spring L being introduced between them, the expansion of which forces the entire grip up as far as the bolts K will permit and no farther, which will be the normal height of the grip, though the grip may be depressed by the action of the foot-lever. The bolts K should fit into square holes in the heads of the columns C to prevent them from turning when being screwed up in the act of adjusting the height of the grip by manipulating the nuts *k*. The operating-lever I is bifurcated to straddle the quadrant and arch-piece, but is formed of a single piece at the handle end, the usual spring-pawl *i'*, with its rod $i^2$ and latch $i^3$, being provided. The lower part of the lever I is connected by a couple of links M to the journals of the cross-head N, which is carried in the fork of the head-piece O of the draw-bar or grip-shank.

The grip-shank is composed of the cast-metal head O, sheet-metal plate O', and cast-metal hinge-piece $O^2$, which connects by a pivot $O^3$ with the toggle-levers P. The cast head-piece O and hinge-piece $O^2$ are bolted to the plate O' by the bolts *o o*. The lower ends of the head-piece O at *o'* overlap and inclasp the side bars, and are thus prevented from moving sidewise.

The foot-lever J, or rather pair of foot-levers, for there is one on each side of the arch-piece, which are connected by transverse socket-bolts *j*, which serve as a foot-tread, is fulcrumed on the bolt *i* and is connected by the rods J' with the bolt $J^2$, running through the center of the carrying-beam and the slotted hole *j'* in the head of the grip-shank. By thus arranging the lever J it is given a bearing upon the frame equidistant from the springs supporting the frame, and at the same time its fulcrum is connected with the car equidistant from the same springs.

With the same bolts that fasten the plate O' to the head O there are fastened two brake-shoes Q, designed to be pushed down between the slot-irons R R when it is desired to stop the car.

The jaws S are like those of the Vogel and Whelan grip before mentioned, being formed of two segments cut, as it were, from a solid round bar, hinged together in the center, and vibrated around this center and within their own circumference, spaces being left between their radial edges to permit the movement. In the lower space so left the cable is received, and in the upper space the operating toggle-levers, which connect above with the grip-shank. When the grip-shank is pressed down, the toggle-levers open apart, acting against the jaws and causing them to tightly grip the cable T. When the grip-shank is drawn up, the toggle-levers draw together and the two pins *p*, which pass through the wearing-plates S' and tap into the toggle-levers, operate to open the jaws and release the cable. U are dies fitted by dovetailing them into the grip-jaws. They may be replaced when worn.

The wearing-plates S' can be "set up" from time to time as they become worn, by loosening the bolts and putting a shim of metal between each plate and the grip-jaw, and also when much worn they can be entirely replaced, while the grip-jaws are saved for use indefinitely.

To prevent the dust and dirt getting in the joint between the heads of the grip and the face of the wearing-plates S', there is provided on the heads small projecting flanges *g' g'*, which cover the joints at this point.

V is an adjusting-screw, which, passing through the cap *v* of the cast head O and the cross-head N, serves to raise and lower this cross-head, and thus regulates the opening of the grip-jaws independent of the movement of the hand-lever I, so that when the grip-jaws become worn the slack may be taken up by manipulating this adjusting-screw. Adjusting-screws of this character are commonly used for the purpose; but the method of application somewhat varies in the present case from what has heretofore been practiced, the movable cross-head which the screw raises and lowers in the act of adjusting being accommodated in a recess in the grip-shank instead of a similar recess in the hand-lever, a change which greatly simplifies construction in the present instance.

The spindle W upon which the grip-jaws are hinged is of steel. It passes entirely through the interlocked hinges of the jaws and the conical heads, as shown, a nut *w* being provided on each end to be screwed up tightly, and thus prevent the heads G from spreading apart.

The operation is as follows: The grip being placed upon its supporting-timbers, a final accurate adjustment of the height of the jaws with relation to the cable is effected by screwing the nuts *k* up or down. The proper position for the operating hand-lever to occupy when the gripping-jaws are fully opened or fully closed is varied or adjusted by manipulating the screw V. The grip-jaws are opened or closed upon the cable by swinging the lever I back and forth similarly as other grips of this kind are operated. When in the act of closing the jaws upon the cable, the cable is found to have sagged down below its normal height, so that the jaws do not grasp it. Then the operator puts his foot on the tread of the lever J, and thus depresses the whole grip until the cable is caught up, when the operator releases his foot and the grip resumes its position. When it is desired to stop the car, the jaws are first thrown open to release the cable from the grip, and then the operator bears his weight upon the tread of the foot-lever J until the brake-shoes Q are driven more or less tightly between the slot-irons.

As herein stated, our claim to invention will be confined to the improvements which the construction herein shown contains over the patent and application before referred to.

Nor do we broadly claim the adjusting-screw for regulating the distance apart of the jaws as they become worn apart from the method we adopt in applying it. Neither do we claim the slot-brake independent of the method of adapting the grip itself to receive and operate it; but

What we do claim as our invention, and desire to secure by Letters Patent, is as follows:

1. In combination with the cable-gripping jaws and their operating mechanism, the improved carrying-frame herein shown and described, consisting, essentially, of the beam A, with columns C projecting therefrom, side bars F, carrying grip-heads G on lower and socket-pieces E at upper ends, columns D, projecting out of sockets E and sliding upon the columns C, arch-piece H, with its notched quadrant *h* secured upon ends of columns D, springs L, with their bolts K arranged to support the entire grip upon the ends of columns C, and the depressing-lever J, the whole arranged and operating substantially as and for the purpose set forth and described.

2. In combination with a grip for cable railways, adapted to be elevated and depressed within the slot of the subway, the brake-shoes Q, secured to a vertically-moving part of said grip, whereby the act of depressing said grip will cause the shoes to wedge themselves between the slot-irons and act as a brake to stop the motion of the car, as herein set forth.

3. In a cable-railway grip, in combination with the frame, jaws, and working levers, the improved grip-shank herein described, consisting, essentially, of a cast-metal head-piece O, connected with the working levers, plate-metal body-piece O′, secured to lower end of said head-piece, and hinge-piece $O^2$, secured to lower end of body-piece and connecting with the toggle-levers operating the grip-jaws, substantially as and for the purpose described.

4. In a railway-car, in combination, grip-jaws, mechanism whereby the same are actuated, a frame in which said mechanism and said grip-jaws are mounted, and mechanism whereby said frame is moved vertically, and a support for all of said parts mounted upon the running-gear of the car independently of the body of the car, substantially as described.

5. In a railway-car, in combination, the jaws, mechanism whereby the same are actuated, a frame supporting said jaws and said mechanism, and a support for said frame upon the running-gear of the car independent of the body of the car, substantially as described.

6. In a railway-car, in combination, the jaws, the mechanism whereby the same are actuated, a frame wherein said jaws and said mechanism are mounted, and a spring whereby said frame is supported upon the running-gear of the car, substantially as described.

7. In combination with the running-gear of a railway-car, the jaws, mechanism whereby said jaws are actuated, a frame combining said jaws and said mechanism, a spring supporting said frame upon said running-gear, and a lever fulcrumed on said running-gear, whereby said frame may be thrust downward, substantially as described.

8. In a railway-car, in combination, the jaws, a frame carrying the jaws and movable vertically, a spring supporting each side of said frame, and a lever having its bearing upon said frame equidistant from said springs and also having its fulcrum connected with the car equidistant from said springs, substantially as described.

9. In a railway-car, an inverted-U-shaped frame provided with the gripping-jaws supported between the extremities of said frame, spring-sockets provided on opposite sides of said frame, and a bearing for the jaw-actuating mechanism provided at the cross-piece of said frame, substantially as described.

10. In a railway-car, in combination, the horizontal piece A, bearing upon the car, the inverted-U-shaped or arch frame, the gripping-jaws mounted between the extremities of said frame, the spring-support interposed between said frame and said piece A, a bearing for the jaw-actuating mechanism at the cross-piece of said frame, and means whereby power may be applied to the cross-piece of said frame to force the same downward in antagonism to said spring-support, substantially as described.

11. In a railway-car, in combination, the cross-piece A, formed with an opening for portions of the grip-supporting frame and also for the grip-shank, upright posts supported upon said cross-piece and having a portion of the grip-supporting frame moving thereon, and actuating-levers carried by said grip-supporting frame, substantially as described.

12. In a railway-car, in combination, the upright posts supported upon a stationary cross-piece, upright portions of a movable grip-supporting frame sliding upon said upright posts, springs interposed between the upright posts and the sliding portions of the grip-supporting frame, and means connecting the opposite upright sliding portions of the grip-supporting frame, substantially as described.

13. In a railway-car, in combination, the cross-piece A, having openings for the passage of a portion of the grip-supporting frame and also for the grip-shank, upright posts supported upon said cross-piece, sliding collars encircling said upright posts and formed on one side with flanges to form guideways for the grip-shank and on the other side with flanges to have secured thereto portions of the grip-supporting frame, and a grip-shank moving between the flanges, constituting a guide therefor, substantially as described.

14. In a railway-car, in combination, the cross-piece A, having openings for portions of the grip-supporting frame and also for the grip-shank, upright posts supported upon said cross-piece, sliding collars encircling said upright posts and constituting a portion of the

grip-supporting frame, and transverse bars connecting one of said collars with the other to brace the same, substantially as described.

15. In a railway-car, in combination, the transverse piece A, having openings for the passage of the grip-shank and portions of the grip-supporting frame, upright posts fitting into sockets of said cross-piece and locked therein, columns sliding upon said upright posts, collars or socket-pieces having said columns secured thereto, upright portions of the grip-supporting frame secured to flanges projecting from said collars, and a grip-shank moving with said grip-supporting frame, substantially as described.

16. In a railway-car, in combination, the movable grip-supporting frame and springs located above the car-truck timbers for sustaining said grip-supporting frame, substantially as described.

17. In a railway-car, in combination, the grip-shank and the grip-supporting frame affording guides for the grip-shank both above and below the car-truck timbers, substantially as described.

18. In a railway-car, in combination, the grip-supporting frame and actuating mechanism for said frame having its fulcrum connected with a part secured to the car-truck timbers, substantially as described.

19. In a railway-car, in combination, the grip-shank, the cross-piece formed with the guide for the grip-shank, and the grip-supporting frame provided with guideways for the grip-shank, substantially as described.

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