

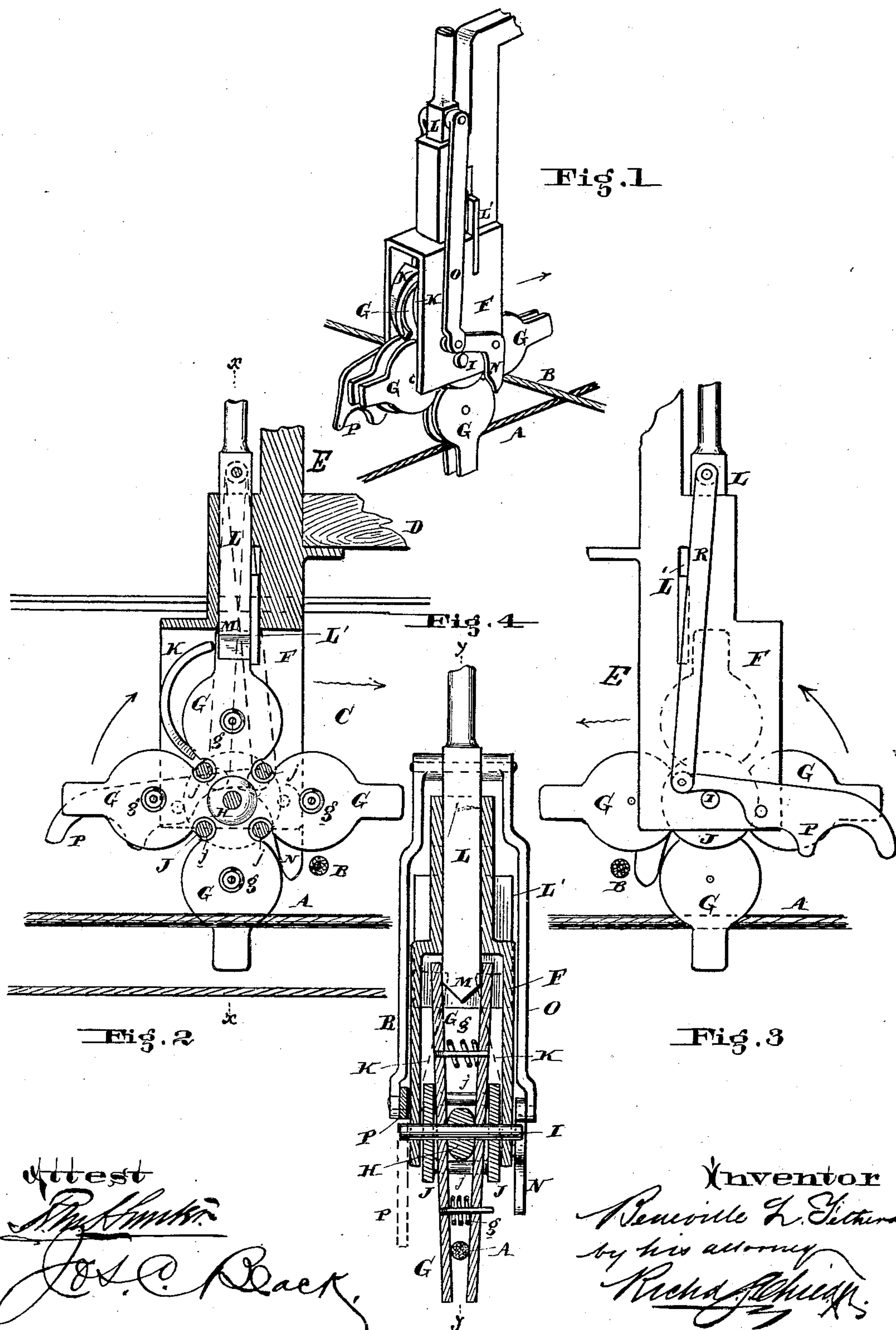
(No Model.)

B. L. FETHEROLF.

GRIPPING DEVICE FOR CABLE RAILWAYS.

No. 318,098.

Patented May 19, 1885.



UNITED STATES PATENT OFFICE.

BENEVILLE L. FETHEROLF, OF TAMAQUA, PENNSYLVANIA.

GRIPPING DEVICE FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 318,098, dated May 19, 1885.

Application filed March 18, 1885. (No model.)

To all whom it may concern:

Be it known that I, BENEVILLE L. FETHEROLF, a citizen of the United States, residing at Tamaqua, in the county of Schuylkill, State of Pennsylvania, have invented a new and useful Improvement in Gripping Devices for Cable Railways, of which the following is a specification.

My invention has reference to cable railways, but more particularly to the gripping devices therefor; and it consists in certain improvements by which the gripping device of a car moving in one direction is enabled to cross a cable running in another direction, all of which are fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

In the drawings, Figure 1 is a perspective view of a gripping device embodying my improvements. Fig. 2 is a sectional elevation of same on line *y y*. Fig. 3 is a side elevation of same, and Fig. 4 is a sectional elevation on line *x x*, Fig. 2.

A and B represent two cables crossing each other—for instance, as at the crossing of two streets.

C is the conduit.

D is the portion of the car, and E represents a gripping apparatus carried thereby.

The gripping device consists of the following parts combined and adapted to operate as hereinafter set forth.

F is a double frame, of any suitable construction, depending from the car and extending down into the conduit, by which the gripping-jaws pivoted thereto directly operate to grip the cable.

G G are two star or radial gripping-jaws arranged side by side and loosely pivoted upon a pin or axle, I, and carried by said frame F, and are kept separated by a double-convex washer, H, interposed between them, and also carried upon the axle I. Four pairs of jaws are shown, though any desired number may be employed, and these jaws are pressed apart by small springs *g* interposed between them.

J is a skeleton hub loosely journaled upon these shafts I, and having cross-bars *j*, which are interposed between each pair of the jaws G of the grip, by which both the star-wheels

forming the grip are held relatively in the proper positions and rotated synchronously.

K are cams, preferably curved and secured to the frame F and arranged in the path of a pair of the jaws G, so that when said jaws are caused to pass from a horizontal to a vertical plane the cams press them toward each other, thereby opening the pair of jaws which are diametrically opposite or upon the lower side of the grip and which hold the cable, thus freeing the latter. As the jaws pass beyond the cam K they spring outward, and the wedge-shaped bar M is thrust down automatically and passes between them, causing them to be pressed apart, as indicated in Fig. 4, which action causes the lower or diametrically-opposite jaws to be forced together, clamping the cable. The wedge-shaped portion M is secured to the lower part of a vertical reciprocating bar, L, which is guided in the frame and provided with a guide-plate, L', which, while it guides the bar, also extends sufficiently below the said bar and in the rear of the wedge-shaped portion M, so as to act as a stop for the rotating gripping-jaws, and lock them between the rear extension of the cams and the said plate.

N is a bell-crank or lever pivoted to one side of the frame F and in front of the axle I, one arm of which extends down, so as to strike the cross-cable B, and the other arm of which is connected by a lever, O, with the vertical reciprocating bar L, by which, when the bell-crank N strikes the cable B, the wedge M and stop-plate L' are automatically raised, thus freeing the gripping-jaws, allowing the forward pair of horizontal jaws to step over the said cable B. The jaws being swung around by contact with the cross-cable B against the lowermost pair of jaws are brought in contact, and this rotation through the agency of cams K causes the descending pair of jaws which have stepped over the cross-cable B to open and take in the cable A once more.

It is obvious that a rod or bar might be placed in a position immediately adjacent to the running cross-cable to act as an obstruction similar to the cable itself to the passing grip, said bar receiving the impact of the levers N and P, and so sparing the cross-cable so much wear

and tear. The cable B strikes the bell-crank P at the rear end of the frame F, causing it to be oscillated, which, through the agency of lever R, forces down the bar L and the wedge M between the two jaws diametrically opposite to those inclosing the cable A, and causing the latter to tightly grip the said cable, thereby enabling a car to move continuously and automatically over a cross-cable with facility.

The grip may be operated by hand when it is desired to stop or start the car by simply raising or lowering the bar L, which has no tendency to rotate or change the jaw in closing upon the cable.

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

1. A cable-gripping device, which consists of an arm depending from the car combined with rotary gripping-jaws arranged in two or more pairs, substantially as and for the purpose specified.

2. A cable-gripping device, which consists of an arm depending from the car combined with rotary gripping-jaws arranged in two or more pairs and a lock to secure any pair of said jaws in gripping position, substantially as and for the purpose specified.

3. A cable-gripping device, which consists of an arm depending from the car combined with rotary gripping-jaws arranged in two or more pairs and a cam or wedge mechanism to cause the lowermost jaws to grip the cable, substantially as and for the purpose specified.

4. A cable-gripping device, which consists of an arm depending from the car combined with two or more pairs of gripping-jaws, a lock to secure any pair of said jaws in gripping position, and automatic lever mechanism actuated by contact with a crossing cable or obstruction to unlock said jaws, allowing one of the raised pairs of jaws to step or turn down and over the said cross-cable or obstruction into gripping position on its own cable, substantially as and for the purpose specified.

5. A cable-gripping device, which consists of an arm depending from the car combined with two or more pairs of gripping-jaws, a

lock to secure any pair of said jaws in gripping position, and automatic lever mechanism actuated by contact with a crossing cable or obstruction to unlock said jaws, allowing one of the raised pair of jaws to step or turn down and over said cross-cable or obstruction into gripping position on its own cable, and automatic lever mechanism to lock said descending pair of jaws in their new position, substantially as and for the purpose specified.

6. The combination of frame F with axle I, star or radial gripping-jaws G, and springs g, substantially as and for the purpose specified.

7. The combination of frame F with axle I, star or radial gripping-jaws G, springs g, skeleton hub J, and washer H, substantially as and for the purposes specified,

8. The combination of frame F with axle I, star or radial gripping-jaws G, and springs g, skeleton hub J, washer H, and wedge M, substantially as and for the purpose specified.

9. The combination of frame F with axle I, star or radial gripping-jaws G, springs g, skeleton hub J, washer H, wedge M, and cams K, substantially as and for the purpose specified.

10. The combination of frame F, having cams K, with star or radial gripping-jaws G, arranged in pairs and pivoted to the frame F, bar L, having wedge M, levers N P, and bars R and O, substantially as and for the purpose specified.

11. The combination of frame F, having cams K, with star or radial gripping-jaws G, arranged in pairs and pivoted to the frame F, washer H, springs g, bar L, having wedge M, levers N P, and bars R and O, substantially as and for the purpose specified.

12. The combination of frame F, having cams K, with star or radial gripping-jaws G, arranged in pairs and pivoted to the frame F, bar L, having wedge M, and stop-plate L', levers N P, and bars R and O, substantially as and for the purpose specified.

BENEVILLE L. FETHEROLF.

Witnesses:

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W. G. SOUDER.