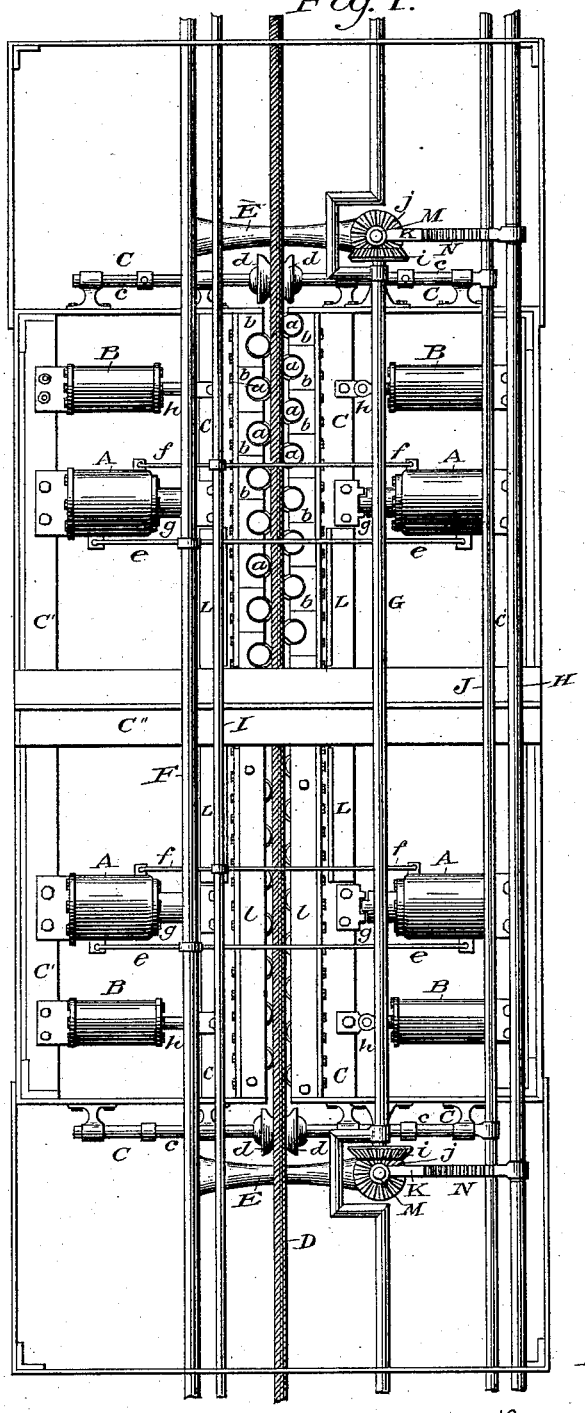
(No Model.) 3 Sheets—Sheet 1.

G. A. POLHEMEUS.

COMBINATION CABLE GRIP.

No. 305,107. Patented Sept. 16, 1884.

Fig. 1.



Witnesses:

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Edwin B. Lippitt

Inventor:

Garret A. Polhemeus

(No Model.) 3 Sheets—Sheet 2.

G. A. POLHEMEUS.

COMBINATION CABLE GRIP.

No. 305,107. Patented Sept. 16, 1884.

Fig. 2.

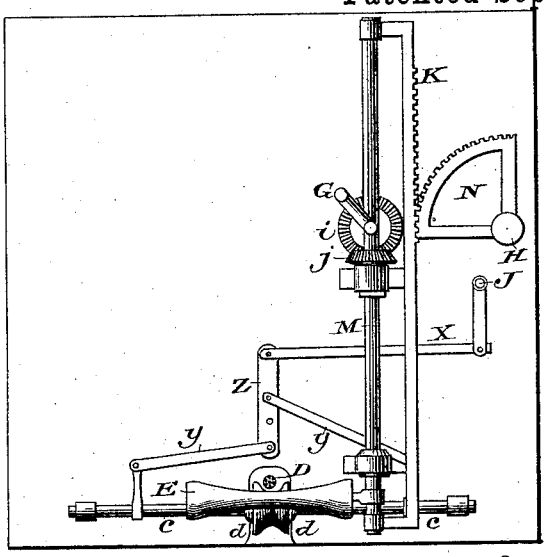


Fig. 3.

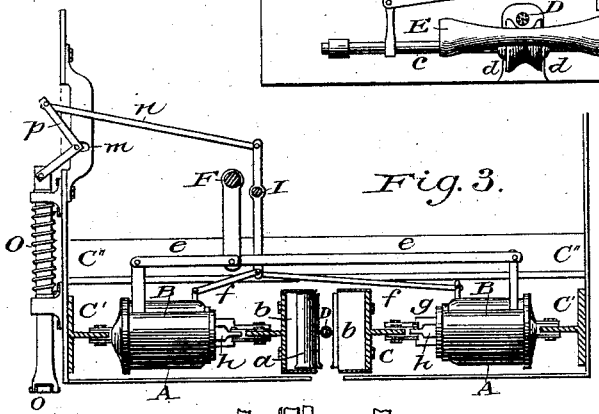
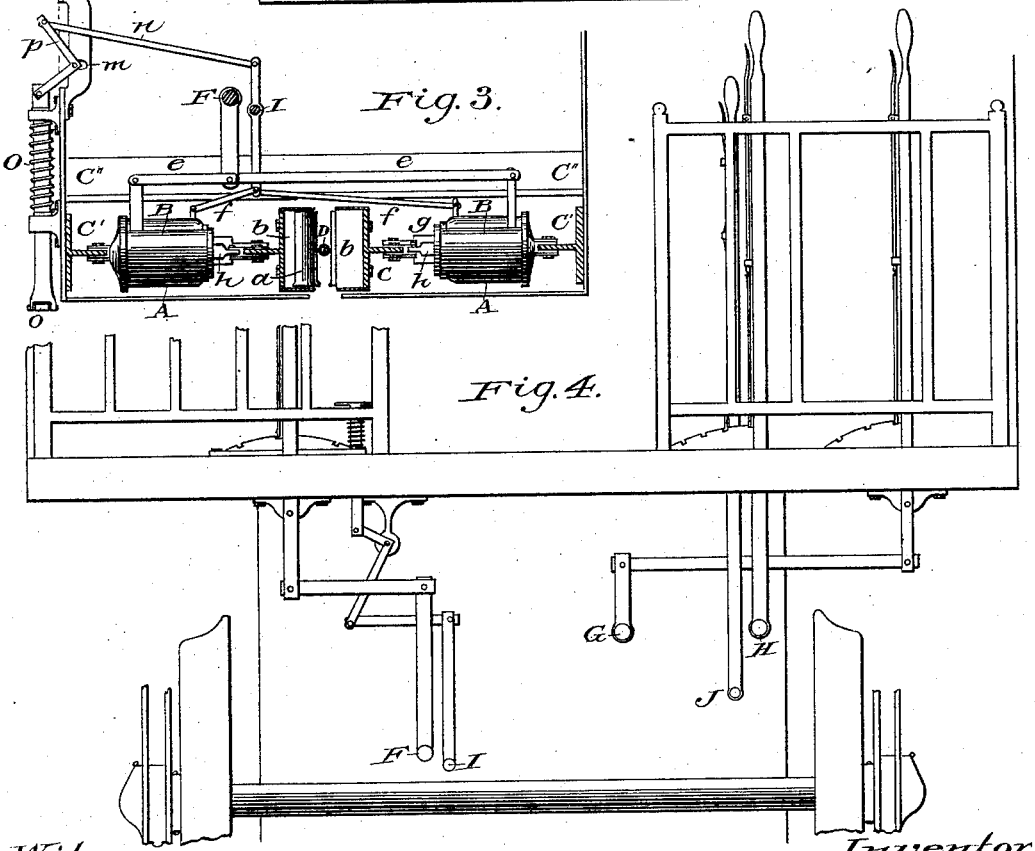


Fig. 4.



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(No Model.) 3 Sheets—Sheet 3.

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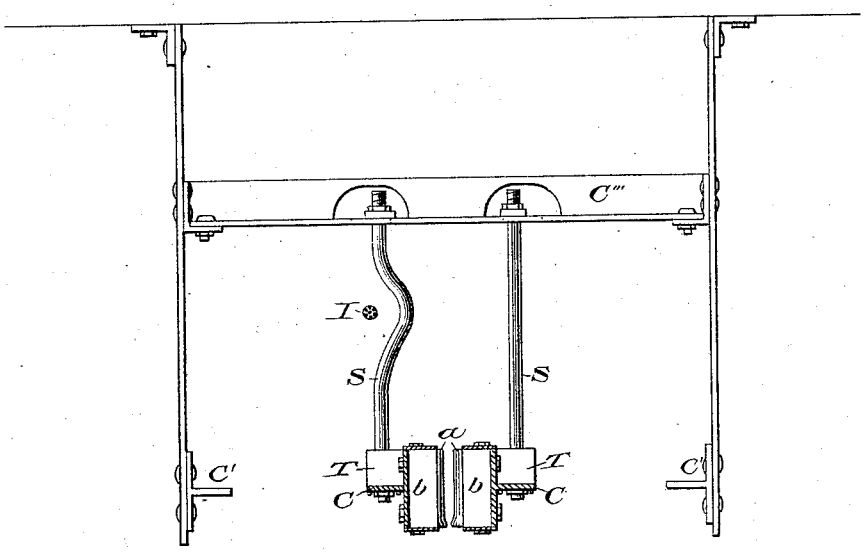
COMBINATION CABLE GRIP.

No. 305,107. Patented Sept. 16, 1884.

Fig. 5.



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UNITED STATES PATENT OFFICE.

GARRET A. POLHEMEUS, OF NYACK, NEW YORK.

COMBINATION CABLE-GRIP.

SPECIFICATION forming part of Letters Patent No. 305,107, dated September 16, 1884.

Application filed July 1, 1884. (No model.)

To all whom it may concern:

Be it known that I, GARRET A. POLHEMEUS, a citizen of the United States, residing at Nyack, in the county of Rockland and State of New York, have invented a new and useful grip for the attachment of cars to a cable and the movement thereof upon a cable railroad, of which the following is a specification.

My invention relates to the application of hydraulic or pneumatic power to roller-grips, to the picking up and receiving and releasing of a cable, and the operation of the same automatically; and the objects of my invention are, first, to quickly and accurately pick up and receive a cable; second, to hold the same securely without injury to the cable or undue strain to the car, dummy, or carriage upon which the grip is carried; and, third, to release the cable instantly when desired. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view of the machine with the plates covering the roller-sockets removed for one-half of their length. Fig. 2 is an end view of the grip-box. Fig. 3 is a horizontal view of the machine from a point represented by the dotted line 1 2, Fig. 1, showing a roller in section and the cylinders in profile, also the attachment and operation of the automatic "throw-off." Fig. 4 shows the system of levers and attachments for working the grip from the platform of a car. Fig. 5 shows the method of suspension of the roller-frames.

Similar letters refer to similar parts throughout the several views.

The metal rollers *a a*, revolving without pinions in sockets in the socket-boxes *b b*, which boxes are each bolted into the T-plates C on each side, constitute the grip proper. The sockets and rollers are covered above by the iron plates *l l*, each plate covering one-fourth of the grip. The lower side of each socket-box is covered by a plate bolted thereto, which may be removed independently, that any roller may be taken out without interference with others.

The T-plates C′ are riveted to the outer shell and re-enforced by angle-irons at the corners. The T-plate C″ is bolted across above the grip, as shown in Figs. 1 and 2, and the angle-plates L L, riveted to the plates C C, bear against its edge, to prevent oscillation of the roller-frames.

The cylinders A A are bolted to the plate C′ with a hinge-joint. The power, either hydraulic or pneumatic, is applied in these cylinders to the head of the pistons *g g*, which are coupled by a hinge-joint to the plates C. The two roller-frames consisting of the plates C, and the sockets *b b*, containing the rollers *a a*, are suspended at each end on steel bars S S, Fig. 5, which, at their upper ends, pass through slots in the T-plate C‴, which rests upon and is bolted to angle-irons riveted to the sides of the box. The bars S S have a screw-thread upon each end to admit of being shortened or lengthened, as occasion requires, and bear at the upper ends upon a washer, which slides upon the plate C‴. At their lower ends they pass through a casting, T T, bolted to the plate C, whose object is to hold the bars S S perpendicular. The bar S at the left in Fig. 5 is bent to avoid interference with the shaft I. The power applied in the cylinders A A forces the pistons *g g*, carrying the roller-frames, against the cable D with any pressure required. The shaft F works the arms *e e*, which are attached to pump-levers if hydraulic power is used, or operates valves if pneumatic. The shaft I, in like manner, works the arms *f f*, which are attached to the escape-valves of the cylinders A.

The cylinders B B contain heavy spiral springs, which, by the closing of the grip and the consequent pressure exerted upon them by the pistons *h h*, attached to the plates C C, are compressed. When the pressure in the cylinders A A is taken off, these springs draw the roller-frames apart and liberate the cable.

The method of opening the grip automatically is shown in Fig. 3, where O represents a square steel bar, carrying at its base a roller, *o*, and sliding in brackets, between which it carries a strong spiral spring. At any point where it is desirable that the grip should be opened an inclined block is bolted to the ties. The roller *o*, striking this, lifts the bar O and the right-angled arm *p*, whose pivot slides in the slot *m*, and thus operates the bar *n*, at-

tached to an arm upon the shaft I, opening the escape-valve, thus removing the pressure upon the cable and allowing it to run freely between the grip-rollers upon the divided roller *d d*, enabling the car or dummy to be stopped by ordinary brakes without dropping the cable to the track. Precisely the same mechanism is applied to the shaft J, and placed upon the opposite side of the grip-box. At the end of a section, where it is necessary to drop the cable, the divided roller *d d* will be opened simultaneously with the grip, and the cable fall through to the track. The shafts *c c*, (shown in Figs. 1 and 2,) carrying the divided roller *d d*, are moved laterally by the system of bars extending to the shaft J, and the roller *d d* separates sufficiently to allow the passage of the cable. The roller E, attached to the lower end of the upright shaft M, is operated by means of the cog-wheels *j*, attached to M, and *i* attached to the horizontal shaft G, and has a motion of one-quarter of a revolution to a position at right angles to that shown in the drawings. The cog quadrant-wheel N, attached to the shaft H, works against the ratchet-bar K, which it raises or lowers as required. When the grip is open, the upright shaft M, having been lowered by the rotation of the wheel N, is given a quarter-revolution by the cog-gear *i j* from the shaft G, and the roller E stands out at right angles. The divided roller *d d* is separated as above. In picking up the cable the roller E is moved under it by the rotation of the shaft M and lifted, carrying the cable by the rotation of the quadrant-wheel N. The roller E carries the cable above the line of the divided roller *d d*, which is then closed by the system of levers attached thereto and to the shaft J. The grip being applied, the roller *d d* remains closed, and the roller E is swung out parallel to the cable.

When applied to a dummy, the system of connections shown in Fig. 4 will not be used, as direct-acting levers rising from the center of each shaft F, G, H, I, and J will be employed.

I claim as my invention and desire to secure by Letters Patent—

1. In a cable-grip, the combination, with the grip-plate provided with a socket, of a free roller in said socket, whereby the friction upon said cable is reduced, and is principally brought upon the walls of the socket, thus increasing the power of the grip, substantially as set forth.

2. The grip-plates arranged to slide horizontally, combined with hydraulic or pneumatic cylinders, said plates being pivotally connected to the plungers of said cylinders, substantially as described.

3. In combination with a cable-grip, a rising and falling and horizontally-swinging arm, mechanism to impart thereto the said motions, and the split roller mounted upon the shell, substantially as set forth.

4. The combination of the sliding bar O with the roller *o* and the arms *p* and *n*, acting on the shafts I to control the valves and drop the cable automatically, substantially as shown and described.

5. The divided roller *d d*, attached to the shafts *c c*, combined with links *x y*, lever *z*, and rock-shaft J, substantially as set forth.

GARRET A. POLHEMEUS.

Witnesses:
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E. B. SIPPELL.