(No Model.) 2 Sheets—Sheet 1.

N. BARNEY.

GRIP FOR CABLE TRACTION RAILWAYS.

No. 304,488. Patented Sept. 2, 1884.

Fig. 1.

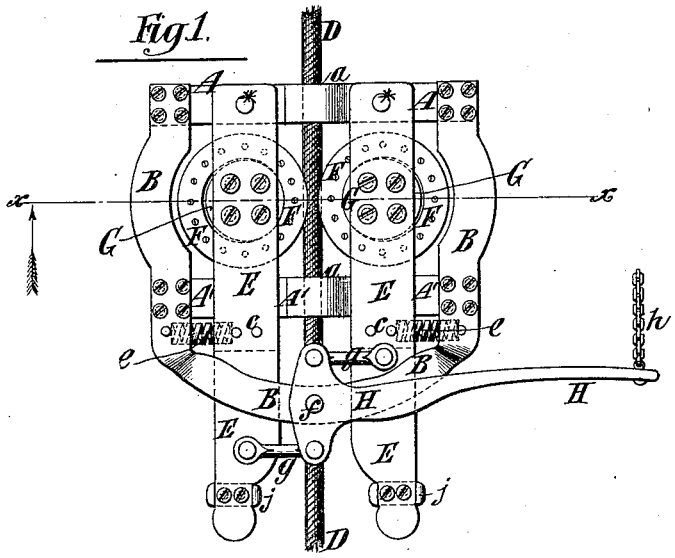


Fig. 2.

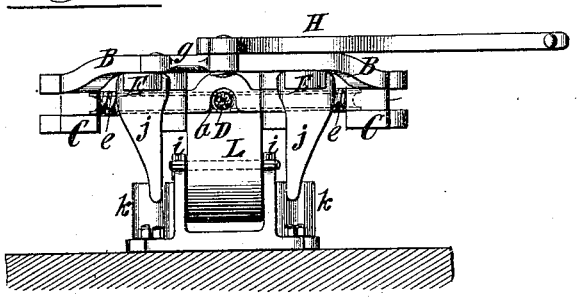


Fig. 3.

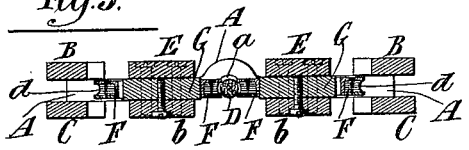
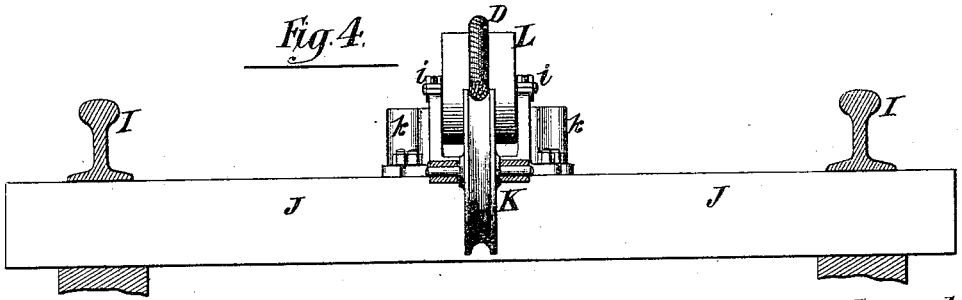


Fig. 4.



Witnesses:-
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C. L. Sundgren

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Brown & Hall

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

N. BARNEY.

GRIP FOR CABLE TRACTION RAILWAYS.

No. 304,488. Patented Sept. 2, 1884.

Fig. 5.

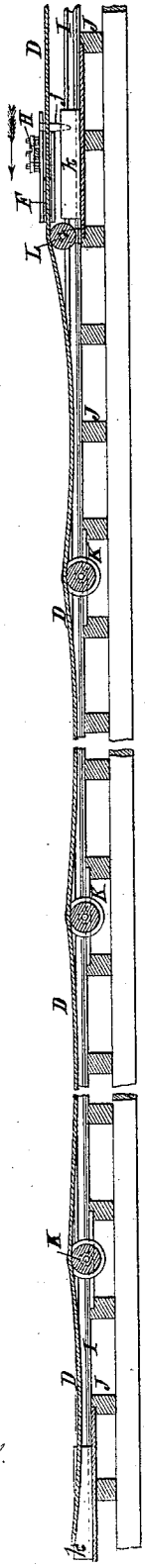
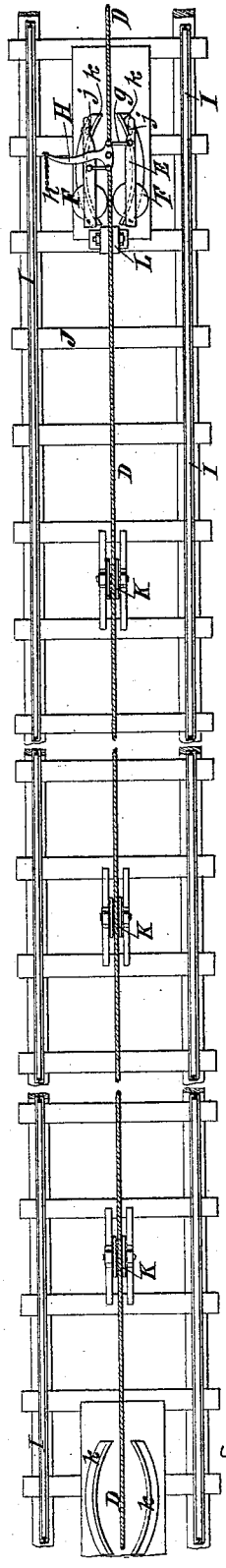


Fig. 6.



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UNITED STATES PATENT OFFICE.

NATHAN BARNEY, OF BROOKLYN, NEW YORK.

GRIP FOR CABLE TRACTION RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 304,488, dated September 2, 1884.

Application filed May 21, 1884. (No model.)

To all whom it may concern:

Be it known that I, NATHAN BARNEY, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Grips for Cable Traction Railways, of which the following is a specification.

My invention relates to that class of grips or grip devices in which the cable is grasped between two rotary wheels or grip-rings, which may rotate freely by the movement of the cable, and which are gradually checked in their rotation by the application of brakes. As the brakes are applied the decreasing rotation of the wheels or rims is compensated for by the gradually-increasing movement of the car until a speed of the car is acquired which equals the speed of movement of the cable, at which time the wheels or rims cease to have any rotary motion, and are fixed relatively to the moving cable.

My invention consists in a novel combination, with a grip-frame to be attached to a car, levers pivoted to said frame, and devices connected with the levers for forcing or drawing them together, of grip rings or rims grooved to embrace a cable between them, and circular brakes secured fast to said levers, and upon which said rings or rims are capable of rotating. The frictional resistance between the grip rings or rims and the circular brakes offers a resistance to the rotation of said rings or rims by reason of the pull of the cable upon them, and the more tightly or strongly the said levers are forced or drawn toward each other to more tightly grip the cable, the greater will be such frictional resistance to the rotation of said rings or rims.

The invention also consists in constructing the grip-frame with guides, which receive the cable and hold it against lateral movement at the time of the engagement of the grip rings or rims with it.

The invention also consists in novel combinations of parts whereby the grip rings or rims are caused to automatically drop one section of moving cable and to take hold of or close on an adjacent or advance section of moving cable, as all more fully hereinafter described.

In the accompanying drawings, Figure 1 is a plan view of a grip embodying my invention, including a portion of cable. Fig. 2 is an end view thereof, also including a cable-supporting pulley. Fig. 3 is a vertical section on the dotted line *x x*, Fig. 1. Fig. 4 is a transverse section of a railway-track and cable-supporting wheels or pulleys. Fig. 5 is a longitudinal section of a track, a cable, and a portion of the grip upon a smaller scale; and Fig. 6 is a plan on the same scale as Fig. 5, illustrating the track, cable, cable-supporting wheels, grip, and grip releasing or attaching devices.

Similar letters of reference designate corresponding parts in all the figures.

The frame of the grip may be of any suitable construction and secured to the car in any suitable manner. As here shown the frame is composed of the cross-pieces A A′, a top piece or portion, B, which is continued around the front of the frame, and bottom pieces C C. The pieces A A′ extend across from side to side of the frame, and their ends are secured by bolts or rivets between the top and bottom pieces B C. In the pieces A A′ are upward offsets forming recesses *a*, open on the under side, as shown in Fig. 2, and adapted to receive the cable D when the latter is raised to their level. These recesses form guides to receive the cable and prevent lateral movement thereof.

E designates levers, which are pivoted at one end, *, to the frame-piece A, and are free to move toward and from each other at their other ends. Each lever consists of a top piece, E, which forms the full length of the lever, and a shorter bottom piece, *b*, which is separated therefrom by a distance equal to the thicknesses of the pieces A A′. The piece *b* of each lever is secured below the cross-piece A by the pivot *, and is riveted or otherwise secured at the other end, *c*, to the levers proper, E. Each lever E and its bottom piece, *b*, receive the cross-piece A′ between them, and thus the levers are properly guided by the cross-piece A′ in their movements toward and from each other.

F designates grip rings or rims, and G designates circular brakes on which said rings or rims are free to rotate. The grip rings or rims may consist of rings or metal plates secured together, and holding and confining between them a filling of rawhide, *d*, or other

suitable material, as shown in Fig. 3. They are grooved peripherically to fit the cable D. The circular brakes G are of wood or metal, and are securely bolted to the levers E, as best shown in Figs. 1 and 3. When the levers E are drawn together or toward each other with but little force—as, for example, by springs *e*, applied as shown in Fig. 1, or otherwise—the grip rings or rims F rotate on the brakes G with but little resistance, and their peripherical velocity will equal the speed of the moving cable D. When the levers E are drawn together more forcibly by a brake-applying lever, H, fulcrumed at *f* to the part B of the frame and connected by links *g* with the brake-levers E, the frictional resistance opposed by the circular brakes G to the rotation of the grip rings or rims will cause the car to move, and as the car moves the speed of rotation of the grip rings or rims will gradually decrease until the car acquires the full speed of the moving cable and the grip rings or rims cease to rotate. When the interior of the grip rings or rims and the exterior of the circular brakes become so worn as to render them useless they can be renewed at small cost; but I prefer to make the circular brakes of a material which will wear more rapidly than the rings or rims, and the latter will then not require frequent renewal.

The brake-applying lever H is operated by a chain, *h*, and the ordinary brake-spindle on a car to apply the brakes forcibly.

I designates the track-rails, and J the track-ties which support the rails.

Between the points where it is desired to engage the grip with and disengage it from the cable D the latter is supported by ordinary grooved cable-supporting wheels, K, which support the cable before and behind the grip, and over which the grip passes. At the point where it is desired to engage the grip with or disengage it from the cable I arrange wheels L, supported in fixed bearings *i*, and having smooth or straight peripheries. The wheels L support the cable D at the level of the grip rings or rims.

Upon the free ends of the levers E are downwardly-projecting toes *j*, and on the track at the points where it is desired to release and grip the cable, and adjacent to the wheels L, are cams or cam-like projections *k*, curved in opposite directions, as shown in Fig. 6. Before the car reaches the point for gripping, the chain *h* has been relaxed by turning the usual brake-spindle, and as the toes *j* come against the cams or cam-like projections *k* the levers E are spread apart, thus separating the grip rings or rims F, and allowing the cable D to rise between them. As the toes *j* pass the points of greatest projection of the cams *k* the levers come together, and the grip rings or rims are closed on the cable by the springs *e*, after which the brakes G are forcibly applied by pull upon the chain *h*. As the cars leave the cable after the grip is released, they may run up an incline and then down another incline, to give them momentum to pass the cams *k* and grasp the moving cable. Two grip rings or rims must always be employed; but, if desired, two or more pairs of such rings or rims might be used.

I am aware that it is not new to employ in a grip or grip device two pivoted levers which are capable of being drawn toward each other, and two grip wheels or rollers carried by said levers and adapted to grasp a rope or cable between them, in connection with two other pivoted levers capable of movement toward each other, and each carrying a segmental brake-shoe, which is fitted to an internal circular seat or flange formed on a grip-wheel near its periphery. I do not claim such a combination of parts as of my invention. In my grip I dispense with the supplemental brake-carrying levers heretofore used, and the simple bringing together of the levers carrying the grip-rims first causes the rims to grasp the cable and then applies the circular brakes.

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

1. The combination, with a grip-frame to be attached to a car, levers pivoted to said frame, and devices connected with said levers for forcing or drawing them together, of grip rings or rims grooved to embrace a cable between them, and circular brakes secured fast to said levers, and upon which said rings or rims are capable of rotating, substantially as herein described.

2. The combination, with a grip-frame to be attached to a car, and levers pivoted to said frame, of grip rings or rims grooved to embrace a cable between them, circular brakes secured fast to said levers, and on which said rings or rims are capable of turning, springs applied to said levers for holding said rings or rims upon the cable, and a lever and connections for drawing the levers together to press said rings or rims forcibly upon the cable, and thereby to apply the brakes, substantially as herein described.

3. The combination of the grip-frame, the levers E, pivoted thereto at *, the grip rings or rims F, the circular brakes G, secured fast to said levers, and on which said rings or rims may turn, the springs *e*, and the brake-applying lever H and links *g g*, all substantially as herein described.

4. The combination, with a grip-frame to be attached to a car, and constructed with guides to receive a cable and hold it against lateral movement, levers pivoted to said frame, and devices connected with said levers for drawing or forcing them together, of grip rings or rims grooved to embrace a cable between them, and circular brakes secured fast to said levers, and upon which said rings or rims are capable of rotating, substantially as herein described.

5. The combination, with a grip-frame, pivoted levers, grip rings or rims, and circular brakes upon said levers, and on which said

rings or rims rotate, all organized as herein described, of a railway-track provided with cable-supporting wheels and a cable, cam-like projections upon the track for acting upon the grip-levers to spread the grip rings or rims and then allow them to come together, and an elevated cable-supporting wheel adjacent to said projections, and by which the cable is there held in a position to be grasped by the grip rings or rims on their coming together, substantially as herein described.

N. BARNEY.

Witnesses:
C. HALL,
FREDK. HAYNES.