

(No Model.)

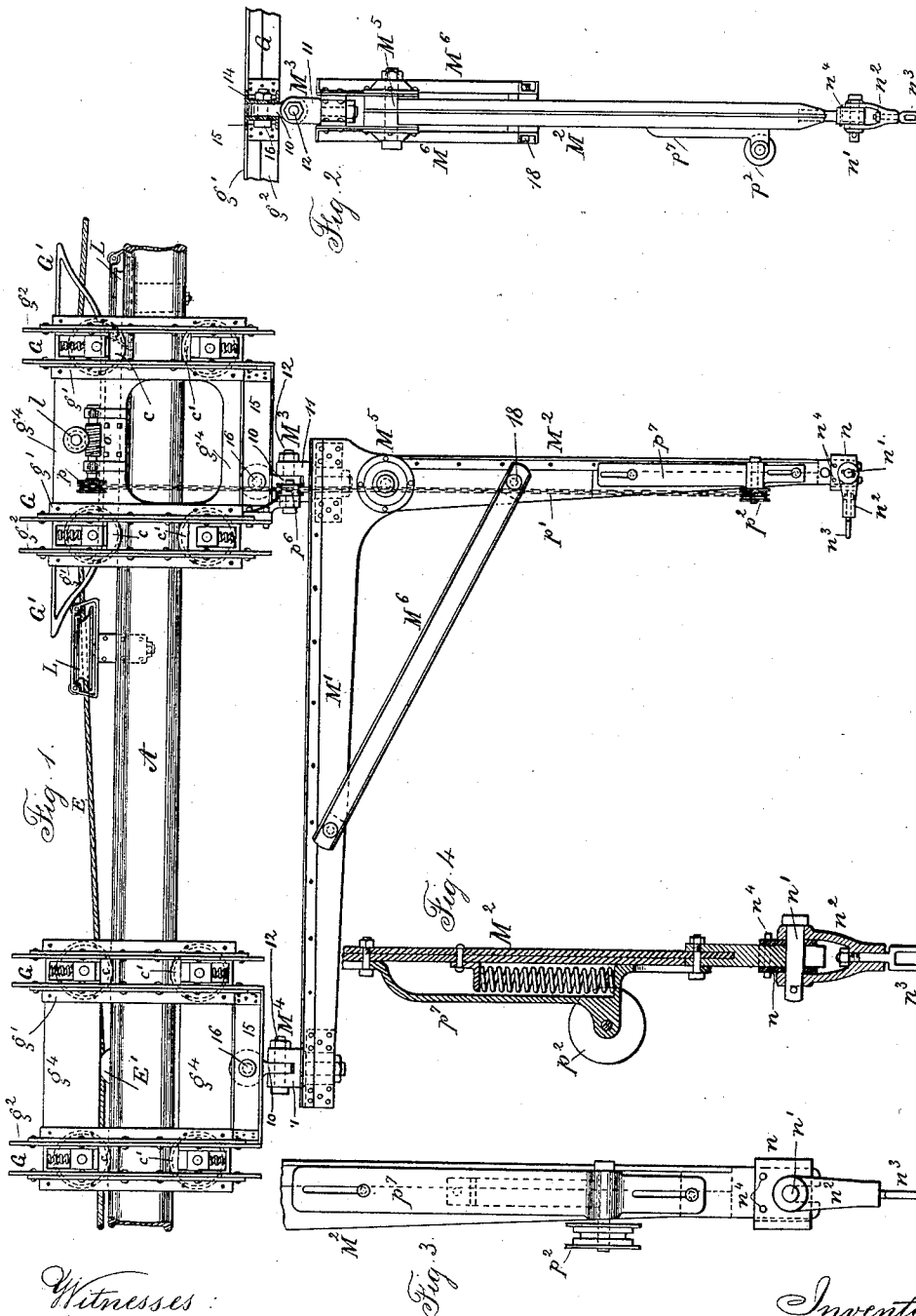
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J. H. PENDLETON.

TRACTION DEVICE FOR CABLE RAILWAYS.

No. 341,501.

Patented May 11, 1886.



Witnesses:
S. Stail
Chas. H. Smith

Inventor
John H. Pendleton
per Lemuel W. Perrell atty

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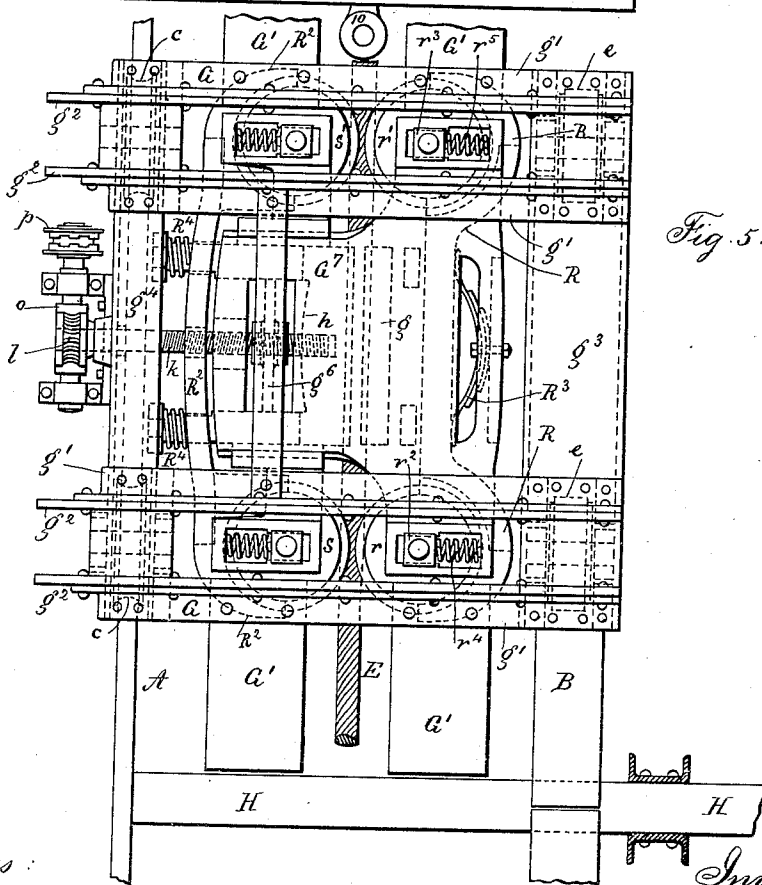
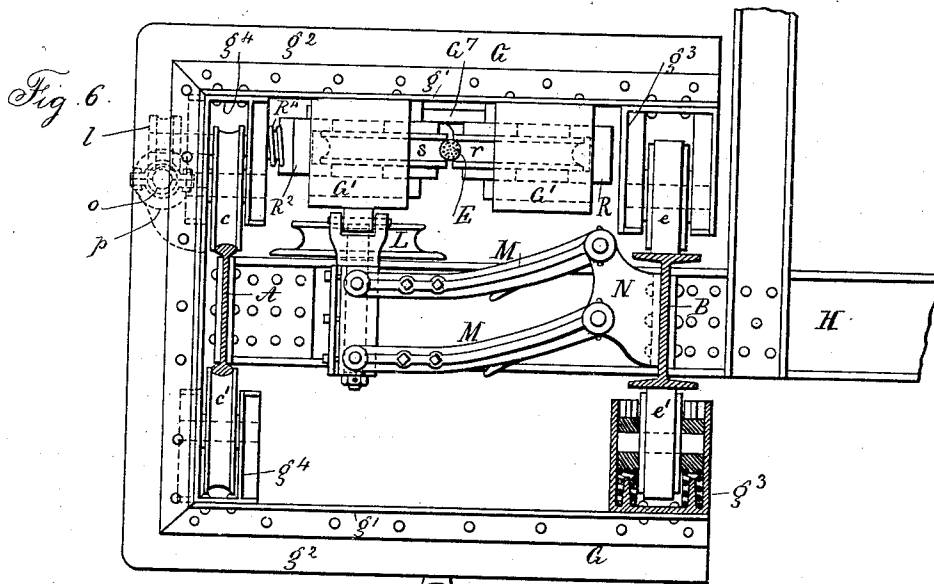
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3 Sheets—Sheet 3.

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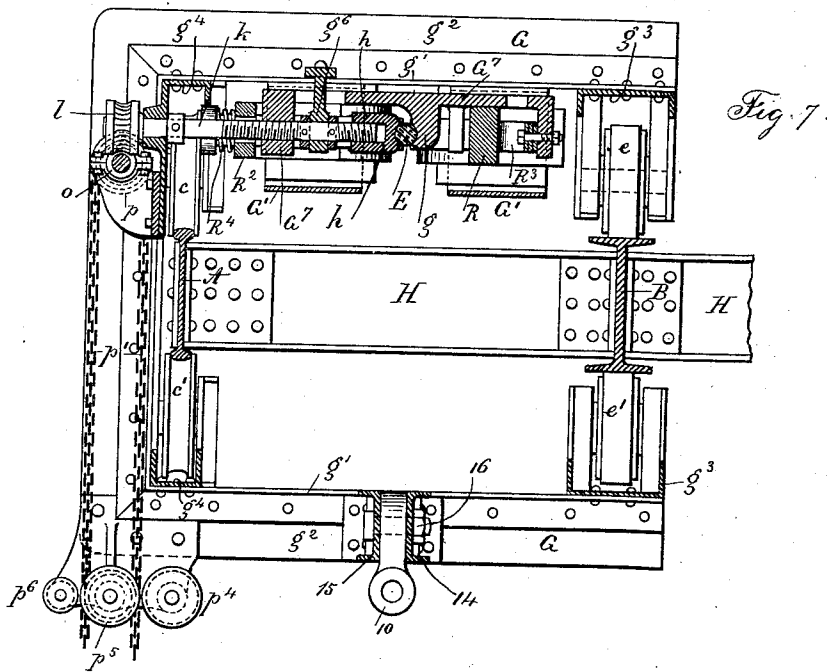


Fig. 11.

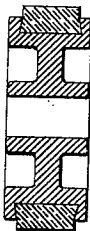


Fig. 10.

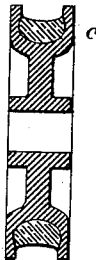
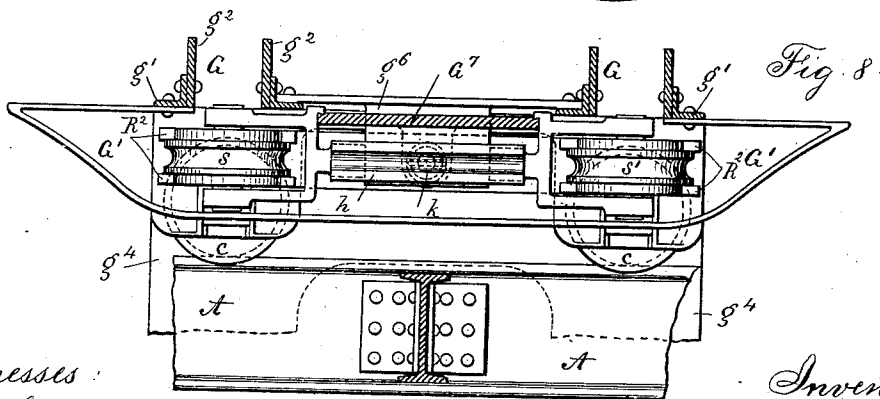
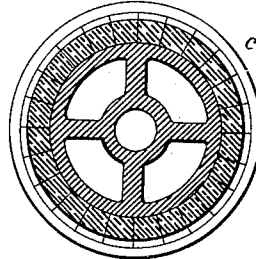


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN H. PENDLETON, OF BROOKLYN, NEW YORK, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO HIMSELF, AND CORNELIUS TIERS, ALEXANDER H. TIERS, ROBERT I. SLOAN, AND LINCOLN MOSS, ALL OF NEW YORK, N. Y., AND THOMAS NAST, OF MORRISTOWN, NEW JERSEY.

TRACTION DEVICE FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 341,501, dated May 11, 1886.

Application filed August 6, 1885. Serial No. 173,676. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. PENDLETON, of Brooklyn, E. D., county of Kings, and State of New York, have invented an Improvement in Traction Devices for Cable Railways, of which the following is a specification.

This invention is an improvement upon that set forth in my Patents Nos. 311,045 and 312,009; and the said improvement relates especially to the devices for grasping the cable, and to the carriage that is drawn along upon the elevated track, and to the pendent arm that is connected to the car at the surface of the street.

In the drawings, Figure 1 is an elevation of a portion of the track and of the carriages upon said track and the pendent arm below the carriages. Fig. 2 is a front elevation of the pendent arm. Fig. 3 is an elevation in larger size, and Fig. 4 a section representing the connection devices at the lower end of the pendent arm. Fig. 5 is a plan of the carriage and the clamp or gripping devices. Fig. 6 is an elevation of the said carriage and track, one of the journal-boxes being in section. Fig. 7 is a cross-section of the carriage through the gripping device. Fig. 8 is a longitudinal section of the carriage at the gripping and clamping devices. Figs. 9, 10, and 11 are sections of the wheels of the carriage.

The elevated track-rails A B are supported at their ends by the cross-bearers H, there being angle-irons riveted at the intersections. The elevated structure, however, does not form a necessary part of this invention, and in a separate application of even date herewith the elevated structure is more fully set forth.

The traction-cable E is propelled by any suitable power, and it is supported by and runs upon wheels E' upon horizontal axes, and where the cable passes around a curve guide-wheels L on vertical axles are made use of. The frame or carriage supporting the wheel L is connected to the track by parallel bars M and stock N. These wheels L are pressed downwardly by the runners G' upon the carriage G. These features, however, do not form a necessary element of the present invention,

and are more fully described and shown in another application of like date herewith.

The frame G is made of two principal parts similar to the three sides of a square, as seen in Figs. 6 and 7, there being flanges g' and strengthening-ribs g'' upon the bars that compose these frames, and there are longitudinal angle-irons $g^3 g^4$, that connect the frames G together, and there are grooved wheels $c c'$, that run on top and bottom of the track-bars A, and cylindrical wheels $e e'$, that run upon the top and bottom of the track-bars B. The journal-boxes of these respective wheels are in slideways affixed to the frame G, as seen in Figs. 1 and 6, and in order that the respective wheels may be kept firmly into contact with the surfaces of the track-bars A B, helical springs are introduced to press the journal-boxes and wheels toward the track-bars.

Upon reference to Fig. 1 it will be seen that I make use of two carriages, each one of which is constructed in the manner before described, and the horizontal portion M' on the pendent arm M² extends from one carriage to the other, and there are universal joints at M³ M⁴, to connect the pendent arm to the respective carriages, so that the said pendent arm will be drawn along by and with the carriages; but each carriage is free to swivel and follow the track-bars, whether the same are curved or straight, and the pendent arm hangs from these universal joints and may remain vertical, or it may be swung into an inclined position, to accommodate the cars upon the surface-railway in respect to the elevated tracks.

I prefer to make each universal joint with links 10 11, that are also formed as parts of the joint, through which the bolt 12 passes to allow the pendent arm to swing laterally upon these bolts 12, and the upper link, 10, is received between the bars 14 and 15 of the carriage G, and held thereto by the bolt 16. (See Figs. 1 and 7.) The lower end of the link 11 is formed as a bolt, that passes vertically through a block upon the upper portion, M', of the pendent arm, and upon these bolts the respective parts swivel when the carriages are passing upon a curved track.

It is often important to move the pendent arm M^2 out of the way. This is especially the case at terminal stations when the cars upon the surface-tracks are being switched across from one track to the other, and the pendent arms and their carriages are disconnected from the cars. To accomplish this object, I introduce a joint, M^5 , between the horizontal portion M' and the vertical portion M^2 of the pendent arm, and I apply a diagonal brace, M^6 , between the said part M' and M^2 , to render the angle rigid; but when the bolt or pin 18 is withdrawn the vertical arm M^2 can be swung on the joint M^5 against the horizontal part M' of the pendent arm. The lower end of the pendent arm M^2 is to be connected to the draft-head of the car upon the track, and I prefer to use a connection that will fall off should the car run off the track, thereby preventing the risk of the pendent arm being injured by the weight of the car upon the same, and preventing the carriage that runs overhead becoming displaced. With this object in view I make the lower end of the pendent arm M^2 an open jaw, and there is a strap, n , surrounding this jaw, and a bolt, n' , passing through the strap and across in the open jaw, and this bolt n' also goes through eyes at the ends of the shackle n^2 , to which the car is connected by a link-bolt, n^3 , hooked upon the draft-hook of the car or other suitable device. The strap end fits around the lower end of the pendent arm M^2 sufficiently loose to fall off easily, were it not for wooden pins n^4 , passed into holes through the strap and through the pendent arm; and the size of these wooden pins is to be such that it is easily sheared off or broken by a downward strain upon the strap n ; but the power to propel the car does not come upon these wooden pins, but it comes upon the jaw at the bottom of the pendent arm M^2 and the bolt that passes across through said jaw.

As in my aforesaid patent the clamping or gripping devices are actuated by a chain passing up the pendent arm, I have shown such chain at p' as passing over the chain-wheel p and giving motion to the screw-pinion o and wheel l . It is, however, necessary to guide this chain p' , and to prevent the same slipping off the respective chain-wheels. With this object in view I make use of the three guide-wheels, p^4 p^5 p^6 , upon a pendent plate below the frame G , between which wheels the parts of such endless chain p' pass, and there is a pulley, p^2 , beneath which the chain p' descends. This pulley p^2 is upon a hollow slide-bar, p^7 , at one side of the pendent arm M^2 , and within this hollow slide p^7 is an expansion-spring, by which a tension is applied to the chain p' ; and to allow for the endwise movement of the hollow bar p^7 the same is slotted for the bolts by which it is attached to the pendent arm M^2 . As in my aforesaid patent, the wheel l is upon the end of a screw, k , that gives motion to the clamping-jaw h , to press

the cable against the stationary jaw g ; but the groove-wheels at the opposite sides of the cable E are horizontal.

The wheels r r' are provided with journals that are in the sliding boxes r^2 r^3 , and there are springs r^4 r^5 , that tend to press the wheels r r' toward the cable E , and there is a brake-bar, R , having semicircular ends that are grooved for the reception of the grooved peripheries of the wheels r r' ; but the semicircular ends of such brake-bar rest upon the cylindrical portions of the wheels r r' , that are at each side of the projecting peripheral groove; hence the semicircular ends of the brake-bar bear upon portions of the wheels r r' that are of less diameter than those portions of said wheels r r' that bear upon the traction-cable E ; hence when pressure is applied to the brake-bar R to force the wheels r r' against the cable the wheels will revolve and roll upon the cable by the frictional contact therewith, and the sliding motion will be of the cylindrical portions of the wheels r r' against the brake-bar R , thus lessening the wear upon the cable. The gripping-wheels s s' are similarly constructed and mounted to the wheels r r' , and the brake-bar R^2 is similar to the brake-bar R . The bow-spring R^3 acts against the brake-bar R to press the same toward the wheels r r' , and the helical springs R^4 act to press the brake-bar R^2 to the wheels s s' . These springs R^4 are upon arms that extend horizontally and laterally from the ends of the clamping-jaw h , there being heads at the ends of the arms to act upon the springs. The screw k is allowed to rotate freely, but is held in position endwise by passing through the stationary part g^6 of frame G ; and at opposite sides of such part g^6 there are washers secured to the screw by pins, as seen in Fig. 7. The screw-thread upon the screw k that passes into the clamp h is inclined in one direction, and the other portion of the screw k , that passes through a nut forming a part of the frame G^7 , is inclined in the opposite direction; hence when the screw k is rotated to press the clamp h toward the cable E the frame G^7 and the clamp g are moved in the other direction, and the wheels r r' and brake-bar R are brought toward one side of the cable E , and the springs R^3 and brake-bar R tend to stop the rotation of the wheels r r' . Simultaneously with this movement the headed studs, around which are the springs R^4 , are moved by and with the clamping-jaw h , and the springs R^4 act upon the brake-bar R^2 , to cause the same to press upon the wheels s s' , and the wheels grip the cable before the clamping-jaws g h come up closely into contact with the cable E ; hence there will be but little wear upon the cable, because of the rolling action of the wheels r r' s s' , and the friction upon them by the respective brake-bars checks the rotations of the wheels, and causes the car to move with a rapidity nearly equal to that of the traction-cable, and then the jaws g h , grasping said

cable firmly, insure the movement of the car at the same speed as the cable.

The wheel *c'* may be made, as represented in Fig. 11, with a band of leather or other material filling the grooved periphery and projecting slightly, so as to lessen the rumbling sound, and the wheels *c c'* may be made sectionally, as shown in Figs. 9, 10, with deep peripheral grooves containing bands of leather or similar material for the aforesaid purpose.

I claim as my invention—

1. The traveling carriages *G G*, formed of the flanged bars, in combination with the wheels *c c' e e'* and the tracks *A B*, said frame extending above and below the tracks, and being united together by the bars *g³ g⁴*, substantially as set forth.

2. The combination, with the carriages *G G* and their wheels, of the pendent arms *M' M²* and the universal joints connecting the same to the carriages, substantially as set forth.

3. In combination with the elevated railway and the carriages upon the same, the pendent arm composed of two parts, *M' M²*, a joint to connect the said parts, and a brace, substantially as set forth.

4. The combination, with the pendent traction-arm having a jaw at its lower end, of the strap *n*, a shackle or link adapted to be secured to the draft-hook of the car, and pins of wood or similar material for holding the strap *n* in its place, substantially as set forth.

5. The combination, with the pendent arm, the endless chain *p'*, and the chain-wheel *p p²*, of the guide-wheels *p⁴ p⁵ p⁶*, and the hollow bar *p⁷*, and spring, substantially as set forth.

6. The combination, with the screw *k* and the right and left handed threads, of the clamping-jaws *g h*, the horizontal wheels *r r' s s'*, the brake-bars *R R²*, having curved or semicircular ends to press upon the respective wheels, and the springs *R³ R⁴*, substantially as specified.

7. The combination, with an elevated track, of a traction-carriage frame, four plain wheels—two above the inner track and two below such track—and two grooved wheels above the outer track and two grooved wheels below the track, and springs and boxes, substantially as set forth.

8. The combination, with an elevated track, of a traction-carriage having wheels above and below the tracks, a suspended draw-bar, and pivots to connect the same to the carriage, and upon which the bar may swing laterally, substantially as specified.

9. The combination, with an elevated track, of two traction-carriages having wheels above and below the tracks, hanging draw-bar, and joints upon which the draw-bar can be made to swing laterally, and upon which the truck can swivel in turning curves, substantially as specified.

10. The combination, with an elevated track, of two traction-carriages having wheels above and below the tracks, a hanging draw-bar, and joint-connections between the traction-carriages and the hanging draw-bar, substantially as specified.

11. The hanging draw-bar having a vertical arm that is hinged near one end of the horizontal arm and a movable brace between the horizontal and vertical portions, substantially as specified.

12. The combination, with the elevated track-rails, of a traction-carriage and wheels for the same, having yielding bearing-surfaces composed of leather or other similar material, substantially as set forth.

Signed by me this 3d day of August, A. D. 1885.

J. H. PENDLETON.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.