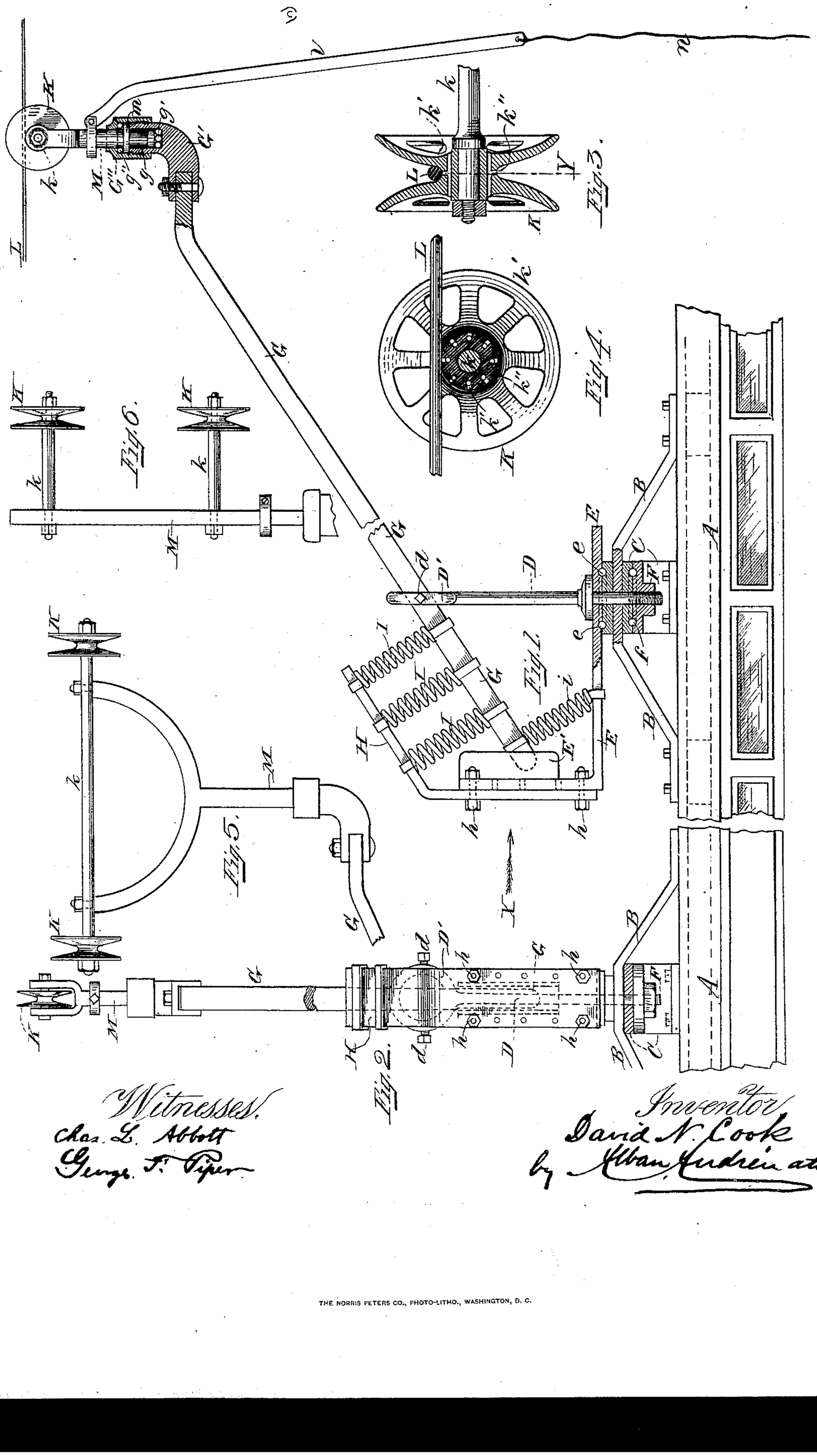
(No Model.)

D. N. COOK.

TROLLEY DEVICE FOR ELECTRIC RAILWAYS.

No. 452,542. Patented May 19, 1891.



Witnesses.
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UNITED STATES PATENT OFFICE.

DAVID N. COOK, OF SALEM, MASSACHUSETTS.

TROLLEY DEVICE FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 452,542, dated May 19, 1891.

Application filed July 18, 1890. Serial No. 359,121. (No model.)

To all whom it may concern:

Be it known that I, DAVID N. COOK, a citizen of the United States, and a resident of Salem, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Trolley Devices, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in trolley devices for electric cars; and it is carried out as follows, reference being had to the accompanying drawings, wherein—

Figure 1 represents a side elevation of the invention, parts of which are shown in section. Fig. 2 represents an end view of the same as seen from X in Fig. 1. Fig. 3 represents a central longitudinal section of the trolley-roller, and Fig. 4 represents a cross-section of the same on the line Y Y, shown in Fig. 3. Fig. 5 represents a modification of the device, showing two rollers for wires arranged side by side; and Fig. 6 represents a similar modification, showing two rollers for wires arranged one above the other, according to the electric systems used for the propulsion of the cars.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A represents the upper portion of a car, as usual, to which are secured the brackets B C in a vertical perforation, in which the post D is journaled. The said post is secured to the horizontal portion of the right-angled plate or bracket E.

e e are anti-friction balls or rollers located in annular grooves on the under side of the bracket E and upper side of the bearing B or a plate secured to the top of the latter, as shown in Fig. 1. Similar anti-friction balls or rollers *f* are located in annular grooves on the under side of the bearing C and upper side of the nut F, that is screwed onto the lower screw-threaded end of the post D, as shown in Fig. 1, and by the use of this anti-friction-roller device the bracket E and post D can be turned around the axis of said post with a minimum of fractional resistance.

The upper end of the post D has an eye or ring D′, adapted to receive the trolley arm or lever G, which is pivoted to such eye, preferably by means of suitable pins or screws *d d*, as shown in Figs. 1 and 2.

On the inside of the vertical portion of the bracket E are ears and flanges E′ E′, between which is guided the lower end of the trolley lever or arm G, as shown in Fig. 1. To the outside of the vertical portion of the bracket E is secured, preferably in an adjustable manner, a bracket H, and between the upper portion of the latter and the lower end of the trolley-arm G is arranged a number of pressure-springs I I I for the purpose of holding the trolley roller or wheel K with a proper tension or pressure against the overhead wire L. If so desired, I may add another spring or springs *i* between the lower end of the arm G and horizontal portion of the bracket E, as shown in Fig. 1.

Any desired pressure may be exerted upon the lower end of the arm G by adjusting the bracket H relative to the bracket E, and for this purpose a number of perforations are made in said parts adapted to receive the fastening-bolts *h h*, as shown.

To the upper end of the arm G is secured or made in one piece with it a bearing-piece G′, having an internal cylindrical bore *g*, in which is anti-frictionally journaled the trolley-spindle M, as shown in Fig. 1.

In the lower end of the cylindrical bore or recess *g* I locate a series of anti-friction balls or rollers *g′ g′*, upon which rests the lower end of the spindle M, as shown.

G″ is a screw-threaded cap or gland screwed into the upper end of the bearing-piece G′, said cap having a central perforation through which the spindle M passes freely. *m* is a flange or collar secured in a suitable manner to the spindle M, and between the upper side of the same and the under side of the cap G″ is located a series of anti-friction balls or rollers *g″ g″*, as shown in Fig. 1. The trolley-roller K is loosely journaled on the pin or shaft *k*, preferably secured in a suitable manner to the upper end or forked portion of the spindle M. It will thus be seen that the trolley-spindle M is free to turn around its axis with a minimum of fractional resistance, by which arrangement the trolley-roller is free

to adjust itself automatically relative to the wire L, which is of great importance, particularly when the car is driven around curves. For the purpose of preventing the trolley-roller from getting heated during its rapid revolution on its pin or bolt R, I make through its hub a series of longitudinal perforations *k' k'* and leading from the same a series of radial conduits *k'' k''*, as shown in Figs. 3 and 4, by which arrangement a free circulation of air is caused through such perforated trolley-roller during its rapid revolution, thus preventing it from getting heated.

In practice I prefer to pivot or otherwise connect to the trolley-spindle M a rod or link V, depending from said spindle, as shown in Fig. 1, to enable the man in charge to take hold of when adjusting the trolley-roller relative to the wire L, by which arrangement valuable time is saved in connecting or disconnecting the trolley-roller to and from the said wire. The rod or link V may be provided with a cord *n*, if so desired, as shown in Fig. 1.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—

1. In a trolley device, the combination, with the trolley-lever G, of the bearing-piece G', having in its upper end a vertical cylindrical bore *g*, containing anti-friction balls or rollers *g'*, the vertical axially-rotating trolley-spindle M, arranged in said bore, resting on the balls or rollers and provided with the rotating trolley-roller, and the cap G'', engaging the bearing-piece and retaining the trolley-spindle in position, substantially as described.

2. In a trolley device, the stationary bearings B C and the vertical post D, journaled therein and having secured to it the bracket E, combined with the trolley-lever G, pivoted to the post D, the adjustable bracket H, and springs I I I, arranged between said bracket and upper side of the trolley-lever, substantially as and for the purpose set forth.

3. In a trolley device, the combination of the stationary bearings B and C, the post D, journaled in the brackets, the nut F, engaging the lower end of the post and provided with anti-friction balls or rollers *f* between it and the stationary bearings, the angular plate E, secured to the post above the bearings and provided with interposed anti-friction balls or rollers *e*, the trolley-lever G, pivoted to the post and having the trolley-roller K, and springs connected with the angular plate and trolley-lever, substantially as described.

4. A trolley-wheel having a series of longitudinal and radial air-passages through its hub portion, substantially as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 14th day of July, A. D. 1890.

DAVID N. COOK.

Witnesses:
ALBAN ANDRÉN,
ALBERT F. JONES.