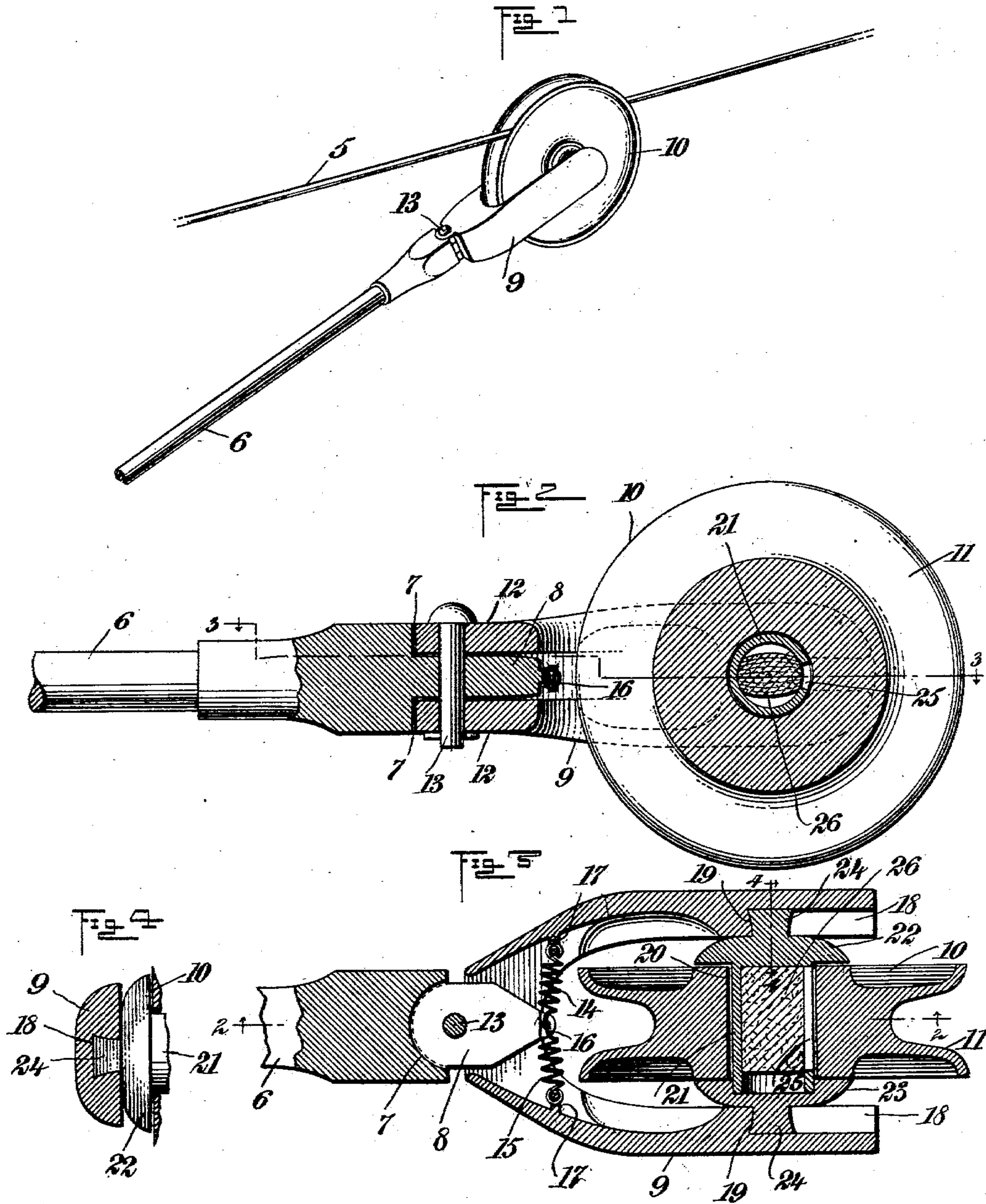


No. 720,879.

PATENTED FEB. 17, 1903.

J. J. BOUCHARD.  
OVERHEAD TROLLEY.  
APPLICATION FILED NOV. 15, 1902.

NO MODEL.



WITNESSES:  
*[Signature]*  
*[Signature]*

INVENTOR  
*John J. Bouchard*  
BY *[Signature]*  
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# UNITED STATES PATENT OFFICE.

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## OVERHEAD TROLLEY.

SPECIFICATION forming part of Letters Patent No. 720,879, dated February 17, 1903.

Application filed November 15, 1902. Serial No. 131,516. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN J. BOUCHARD, a citizen of the United States, and a resident of Bradford, in the county of McKean and State of Pennsylvania, have invented a new and Improved Overhead Trolley, of which the following is a full, clear, and exact description.

My invention relates to improvements in overhead trolleys, especially adapted for use in connection with electric-railway cars.

One purpose of this invention is to mount the wheel-carrying fork on the trolley-pole in a novel way, so as to enable the wheel to change its position when passing around curves and in crossovers in the line of the overhead conductor, thereby minimizing the tendency of the wheel to leave or "jump" said conductor. I also aim to provide means for lubricating the trolley-wheel, said lubricating means being reversible in and removable from the fork and adapted to be charged with a liquid lubricant or with a solid lubricant.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view illustrating my improvements applied to an ordinary trolley-pole and in operative relation to an overhead conductor. Fig. 2 is a longitudinal sectional elevation, on an enlarged scale, and taken in the plane of the dotted line 2 2 of Fig. 3 looking in the direction of the arrows. Fig. 3 is a sectional view on the line 3 3 of Fig. 2, and Fig. 4 is a detail transverse sectional elevation on the line 4 4 of Fig. 3.

5 designates a portion of an overhead conductor, and 6 is the upper portion of a trolley-pole. The upper extremity of the pole 6 is recessed on its opposite sides, as indicated at 7, in a way to form a central tongue 8, the latter projecting beyond the pole and disposed in coaxial relation thereto.

The fork 9 is connected pivotally with the trolley-pole and is adapted to carry the trolley-wheel 10, the latter being provided with a grooved periphery 11, which is adapted to have underrunning contact with the over-

head conductor 5. This fork is made and cast in a single piece of metal of the desired shape and dimensions, substantially as indicated by the drawings, and at the lower closed end of the fork it is provided with a pair of integral lugs 12. Said lugs are spaced and disposed in parallel relation, so as to embrace or fit closely to opposite sides of the tongue 8, and the end edges of these lugs are curved in order to fit snugly within the recesses 7 of the pole. The fork is connected pivotally with the pole by means of the bolt or pin 13, which passes through coincident openings in the lugs 12 and the tongue 8, said pin being removable in order that the fork may be disconnected when desired. The pivotal attachment of the fork to the pole permits the fork and the wheel carried thereby to assume different angular positions relative to the axis of the pole, and this is advantageous, because it enables the trolley-wheel and the fork to readily follow changes in the line of the overhead conductor, particularly when passing around curves or in engaging with overhead crossovers.

To keep the fork and the trolley-wheel normally in alined relation to the pole, I employ a tension device, which is compactly disposed within the fork, so as to be protected thereby, said tension device being shown more clearly by Figs. 2 and 3 of the drawings. The tension device is in the form of a spring, having two coiled members 14 15 united by an intermediate loop 16. The members of the spring are attached loosely to lugs 17, which are provided on the inner opposing sides of the fork, as shown more particularly by Fig. 3, and the intermediate loop 16 of this spring is attached to the upper portion of the tongue 8, the latter being extended well into the lower hollow part of the fork 9. The members of the spring are thus attached to opposite sides of the fork and to the central tongue, and said members serve to maintain the fork and the trolley-wheel in the desired alined relation to the pole. When the fork and the wheel are shifted in one direction, one spring member is compressed and the other member of the spring is distended; but the engagement of the trolley-wheel with a straight conductor permits the members of the spring to return the fork and the wheel to their proper positions.



The fork is provided with longitudinal guideways 18 in the opposing faces of its arms, said guideways being coincident and parallel and each guideway being of the dovetailed shape in cross-section. (Shown more clearly by Fig. 4.) The guideways 18 are preferably in the form of grooves, and they open through the end portions of the arms forming the fork, the inner ends of the guideways terminating in shoulders 19. (See Fig. 3.)

The grooved trolley-wheel 10 is provided with an enlarged opening 20 in the hub thereof, and through this opening passes a thimble or bushing 21. The bushing is provided at one end with a head 22, the same being made large enough to partly close one end of the opening 20 in the hub of the trolley-wheel. The other open end of the bushing is adapted to be closed by a removable head 23, the latter having a recess in which is received the free projecting end of the bushing. The heads 22 23 lie between the arms of the fork and the outside end portions of the hub, and these heads are provided with angular tenons 24, said tenons being integral with the respective heads 22 23. The tenons are dovetailed in shape, as shown by Fig. 4, to fit snugly in the dovetailed guideways 18 of the fork, and the tenon of the head 22 serves to hold the bushing against rotation, while the tenon of the other head 23 holds it against turning. The bushing and the heads thereof are mounted in the fork to remain stationary therein, and the tenons 24 engage with the shoulders 19, the latter limiting the adjustment of the bushing in the fork and determining the proper position of the trolley-wheel. It is evident that the trolley-wheel, the bushing, and the heads may easily be removed from the fork by drawing the parts outwardly in a way to make the tenons 24 travel in the guideways 18, thus enabling access to be obtained easily to the bushing. The several parts can be replaced with the same facility as they are removed.

The bushing 21, which serves as a journal for the trolley-wheel, is adapted to sustain or carry a charge of lubricant, which may be either a lubricating-oil or a solid lubricant. The bushing is provided in one side with a longitudinal slot 25, through which the lubricant may escape from the chamber of the bushing in order to pass into the hub of the wheel. In using a solid lubricant the charge is placed in the bushing, the latter inserted in the opening 20 of the wheel, and the head 23 is applied to the open end of the bushing, after which the wheel and the bushing are placed in the fork, so that the slotted side 25 of the bushing is on the under side thereof. The heat generated by the friction of the wheel 10 when it rotates on the bushing is sufficient to liquefy the lubricant, which is free to pass through the slot 25 into the wheel-hub, thus lubricating the latter.

When it is desired to use a liquid lubricant, the bushing and wheel are removed from the

fork, and a fibrous wick 26 is placed in the chamber of the bushing along with the charge of liquid lubricant. In replacing the bushing and the trolley-wheel in the fork care should be taken to adjust the bushing in a way to bring the slot 25 uppermost, whereby the wick 26 is adapted by capillary attraction to supply the liquid lubricant to the slot of the bushing, through which slot the liquid passes into the hub of the wheel.

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

1. The combination with a trolley-pole, of a fork pivoted thereto and adapted to carry a trolley-wheel, and a tension-spring having members fastened to opposite sides of the fork and connected at an intermediate point of its length to the pole.
2. The combination with a trolley-pole, of a fork pivoted thereto, and a single tension-spring attached to opposite sides of the fork and connected with the pole.
3. The combination of a trolley-pole having a projection, a fork pivoted to said projection, and a single tension-spring fastened to the projection and attached to opposite sides of the fork.
4. The combination of a fork having guideways, a journal provided with means which engage slidably with said guideways of the fork and serve to hold said journal against rotation, and a wheel mounted on said journal to rotate freely thereon.
5. The combination of a fork having guideways, a non-revoluble bushing, heads closing the ends of said bushing and provided with projections which fit slidably in the guideways of the fork, and a wheel mounted on said bushing.
6. The combination of a fork, a wheel, and a non-revoluble bushing fitted in said wheel and having angular projections occupying the guideways of the fork and removable therefrom by a slidable adjustment.
7. The combination of a fork provided with guideways, a bushing provided at one end with an integral head having a projection to fit one guideway of the fork, a removable head fitted to the other end of the bushing and having a projection to fit the other guideway of the fork, and a wheel loosely mounted on the bushing between the heads thereof.
8. The combination of a fork having guideways, a non-revoluble and reversible bushing provided with a slot in one side, and heads fitted to the ends of the bushing and provided with projections arranged to occupy the guideways of the fork.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN J. BOUCHARD.

Witnesses:

JOHN P. MEHIN,  
EARLE C. EMERY.