No. 680,437. Patented Aug. 13, 1901.

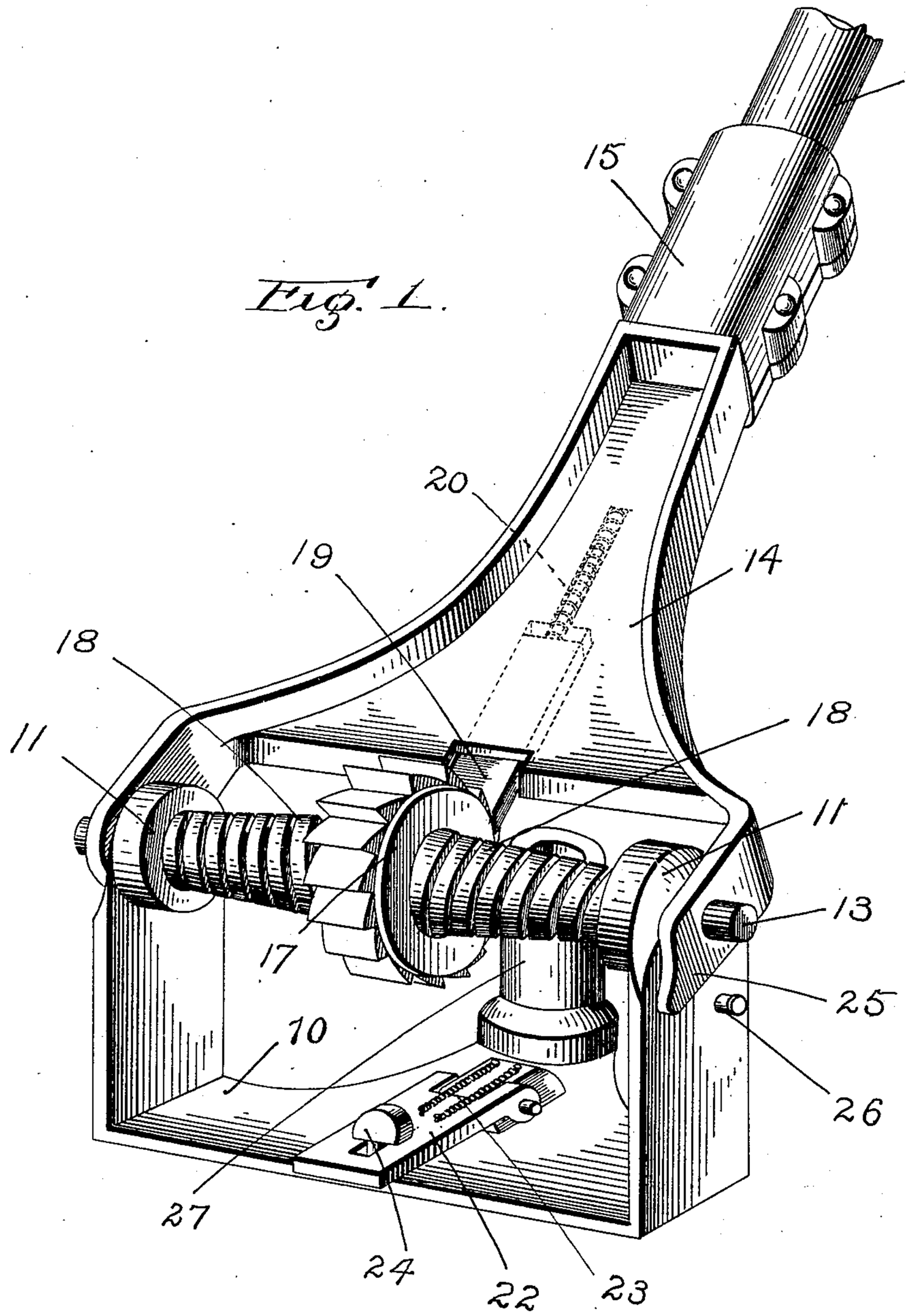
E. J. PARKER.

TROLLEY STAND.

(Application filed Jan. 31, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses.
C. F. Wesson.
M. E. Regan.

Inventor.
E. J. Parker.
By
Southgate & Southgate.
Attorneys.

No. 680,437. Patented Aug. 13, 1901.

E. J. PARKER.

TROLLEY STAND.

(Application filed Jan. 31, 1901.)

(No Model.) 2 Sheets—Sheet 2.

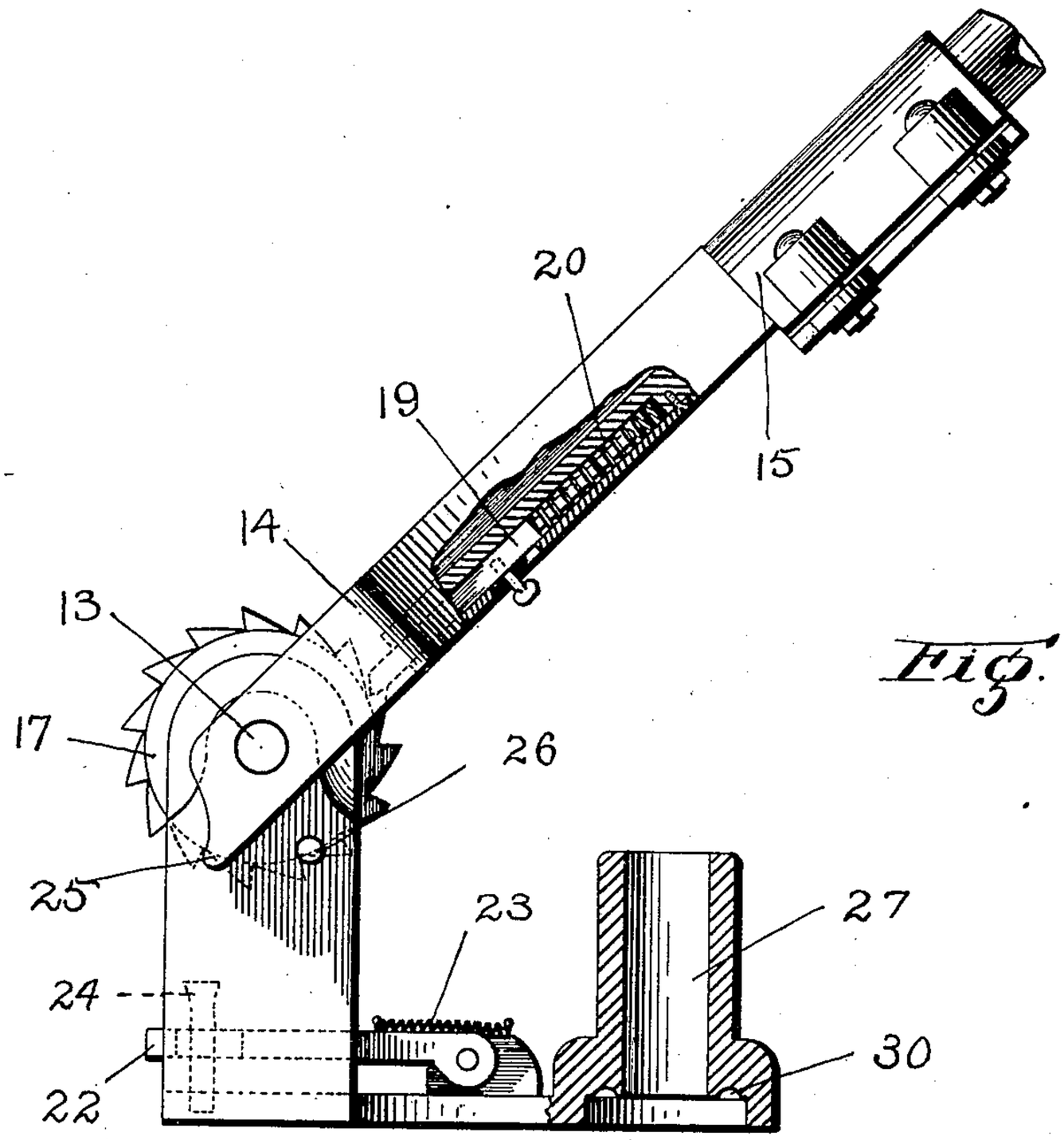


Fig. 2.

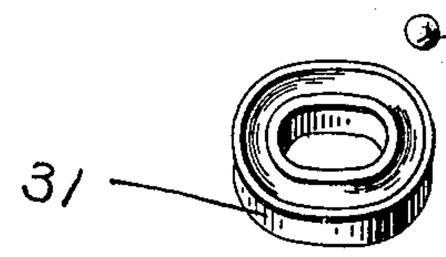


Fig. 3.

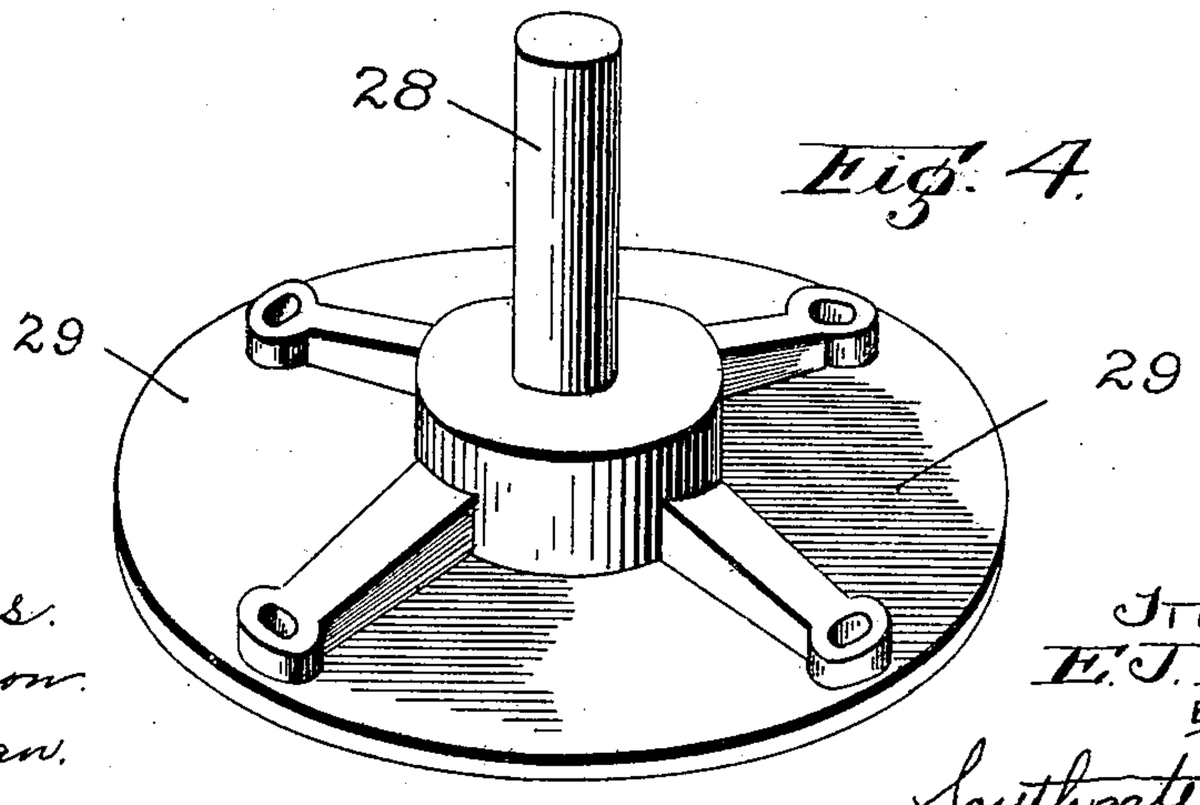


Fig. 4.

Witnesses:
C. F. Wesson.
M. C. Regan.

Inventor:
E. J. Parker.
By
Southgate & Southgate
Attorneys.

UNITED STATES PATENT OFFICE.

EUGENE J. PARKER, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO HIMSELF, AND ALEXANDER S. PATON, OF LEOMINSTER, MASSACHUSETTS.

TROLLEY-STAND.

SPECIFICATION forming part of Letters Patent No. 680,437, dated August 13, 1901.

Application filed January 31, 1901. Serial No. 45,439. (No model.)

To all whom it may concern:

Be it known that I, EUGENE J. PARKER, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Trolley-Stand, of which the following is a specification.

This invention relates to an improved construction of trolley for electric railways; and the especial objects of this invention are to provide a trolley construction for electric railways in which the parts are more perfectly balanced than in constructions which have heretofore been employed, to provide an arrangement of springs for the trolley-arm which is more reliable and durable than the arrangement of springs which has heretofore been employed, and to provide a simple and efficient means for adjusting the tension of such springs without the use of special tools or appliances.

To these ends this invention consists of the trolley construction for electric railways and of the combinations of parts therein, as hereinafter described, and more particularly pointed out in the claims at the end of this specification.

In the accompanying two sheets of drawings, Figure 1 is a perspective view of the trolley-frame and of the springs for supporting the trolley-arm. Fig. 2 is a side view of the same, partially broken away. Fig. 3 is a perspective view of one of the ball casings or ways which may be employed when the trolley-frame is to be mounted on bearing-balls, and Fig. 4 is a perspective view of the trolley-stand on which the frame is pivoted.

In trolley constructions which are now most widely employed on electric railways the trolley-arm is lifted or actuated by tensile or pulling springs connected by straps or other flexible connections to the harp or casting of the trolley-arm. In order to give the trolley-arm the requisite degree of flexibility and operate the same with comparatively uniform pressures, it has been found necessary to employ comparatively long springs where the springs are arranged to be drawn or pulled longitudinally, and in practice I have found that the life of these springs is comparatively short under the varying tensions which are placed thereon by the trolley-arm and that such springs speedily become stretched out, so as to be no longer capable of exerting a uniform pull. To overcome this objection in a trolley constructed according to my invention, I preferably employ torsional springs which are coiled or wound spirally upon the axis of the trolley-arm, as I have found in practice that springs of this character can be relied upon to produce a more flexible action and have a longer life than the extensible springs which have heretofore been employed. The springs in order to have maximum strength are preferably coiled or formed from square spring-wire, the outer ends of the springs being connected with or resting against abutments on the trolley-frame and the inner ends of the springs being connected to a movable piece or ratchet-wheel. In order to provide a simple and efficient means for adjusting the tension of the springs without the use of special tools, I employ an arrangement of pawls for setting and adjusting the position of the spring-actuated ratchet-wheel and for connecting the ratchet-wheel to the trolley-arm.

The trolley-frame is pivoted on an upright or shaft extending up from a trolley-stand, and the pivotal support of the trolley-frame is preferably located at the rear of the hinged connection of the trolley-arm, so that the trolley-arm extending back of the pivot of the frame, so that the weight of the frame will act on one side of the frame-pivot, while the trolley-pressure will act on the other side of the frame-pivot, provides a more nearly balanced construction than in the ordinary forms of trolleys.

Referring to the accompanying drawings and in detail, a trolley construction as herein illustrated comprises a trolley frame or casting 10, having upwardly-extending arms carrying the inwardly-facing bosses or sockets 11. Extending through the sockets or bosses 11 is a shaft 13, and pivoted on the shaft 13 is a yoke or casting 14, which is connected by a clamp 15 to the trolley-arm 16. Coiled around the shaft 13 are the torsional springs 18. The torsional springs 18 are preferably of a tapering form and are coiled from square spring-steel wire, the ends of said springs being secured or resting against abutments or projections in the bosses 11 and in a central ratchet-wheel or adjustable piece 17. Mount-

ed in the yoke 14 is a pawl or slide 19, which is pressed down by a spring 20 to engage the teeth of the ratchet-wheel 17, so that by means of this construction the tension of the torsional springs 18 will be exerted to lift the trolley-arm 16.

To provide means for adjusting the tension of the torsional springs 18 without the use of special tools or appliances, I provide a holding pawl or latch 22, which is pivoted in the frame 10 and provided with springs 23 for throwing its end up into engagement with the teeth of the ratchet-wheel 17. A turn-button or lock 24 may be employed for holding the pawl 22 down out of engagement with the ratchet-wheel. When the pawl 22 is released from the button 24, its springs 23 will carry the same up into engagement with the ratchet-wheel 17, so that by then turning or moving the trolley-arm up and down the pawls 19 and 22 will turn or rotate the ratchet-wheel 17 to increase the tension of the torsional springs 18, or, if desired, the tension of said springs may be reduced, as will be well understood.

To limit the motion of the trolley-arm 16 and prevent the trolley-arm from being thrown completely over the center of motion if the trolley-wheel should happen to leave the trolley-wire, the yoke 14 may be provided with a finger 25 for engaging a pin or stud 26.

The construction employed for mounting and pivoting the trolley-arm is most clearly illustrated in the second sheet of drawings.

As shown in Fig. 2, the trolley-frame is provided near its rear end with a bearing or socket 27 for engaging a stud or shaft 28, extending up from a trolley-stand 29. The frame 10 may be provided, if desired, with a groove or way 30 for receiving bearing-balls, as 32, which are confined between the groove or way 30 and a removable ball casing or cup 31. If desired, two removable ball caps or ways can be used instead of forming the way or track directly in the metal of the frame 10.

I am aware that numerous changes may be made in the construction of my trolley for electric railways by those who are skilled in the art without departing from the scope of my invention as expressed in the claims. I do not wish, therefore, to be limited to the construction which I have herein shown and described; but

What I do claim, and desire to secure by Letters Patent of the United States, is—

1. In a trolley construction for electric railways, the combination of a frame, a trolley-arm pivoted therein, a loose piece or wheel pivotally mounted on the axis of the trolley-arm, a torsional spring arranged concentrically with the axis of the trolley-arm and having one end connected to a fixed point, and its other end connected to the loose piece or wheel, and means for adjustably connecting the loose piece or wheel with the trolley-arm for varying the tension of the spring, substantially as described.

2. In a trolley construction for electric railways, the combination of a pivoted frame, a horizontal shaft mounted therein, a fork carrying the trolley-arm and pivotally mounted on the horizontal shaft, two torsional springs coiled about said shaft, the ends of said springs being connected to an adjustable piece or ratchet-wheel, and means for adjustably connecting the trolley-arm fork with said ratchet-wheel, substantially as described.

3. In a trolley construction for electric railways, the combination of a pivoted frame, a horizontal shaft mounted therein, a trolley-arm pivoted on the horizontal shaft, two torsional springs coiled about said horizontal shaft, a ratchet-wheel connected to the inner ends of the springs, a pawl connecting the ratchet-wheel and trolley-arm, and a holding-pawl coöperating with said parts when it is desired to adjust the tension of the torsional springs, substantially as described.

4. In a trolley construction for electric railways, the combination of a pivoted frame, a trolley-arm pivoted therein, two torsional springs coiled about the pivotal line of the trolley-arm, a ratchet-wheel connected to the inner ends of said springs, a pawl connecting the ratchet-wheel and trolley-arm, a holding-pawl, and means for locking said holding-pawl out of engagement with the ratchet-wheel except when it is desired to adjust the tension of said torsional springs, substantially as described.

5. In a trolley construction for electric railways, the combination of a pivoted frame, a vertically-movable trolley-arm pivotally mounted therein, two tapering or conical square wire torsional springs coiled about the pivotal line of the trolley-arm, a ratchet-wheel connected to the inner ends of said torsional springs, a pawl connecting the ratchet-wheel and trolley-arm, and a holding-pawl for cooperating with said parts when it is desired to adjust the tension of the springs, substantially as described.

6. In a trolley construction for electric railways, the combination of a trolley-stand having an upright shaft or stud, a trolley-frame pivotally mounted on said stud, a trolley-arm pivoted in the frame in front of the upright stud, and extending to the rear thereof, so that the weight of the trolley-frame and the trolley-pressure will tend to balance each other, two torsional springs coiled about the line of the pivot of the trolley-arm, a ratchet-wheel connected to the inner ends of the torsional springs, and a pawl adjustably connecting the trolley-arm with the ratchet-wheel, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EUGENE J. PARKER.

Witnesses:
LOUIS W. SOUTHGATE,
M. E. REGAN.