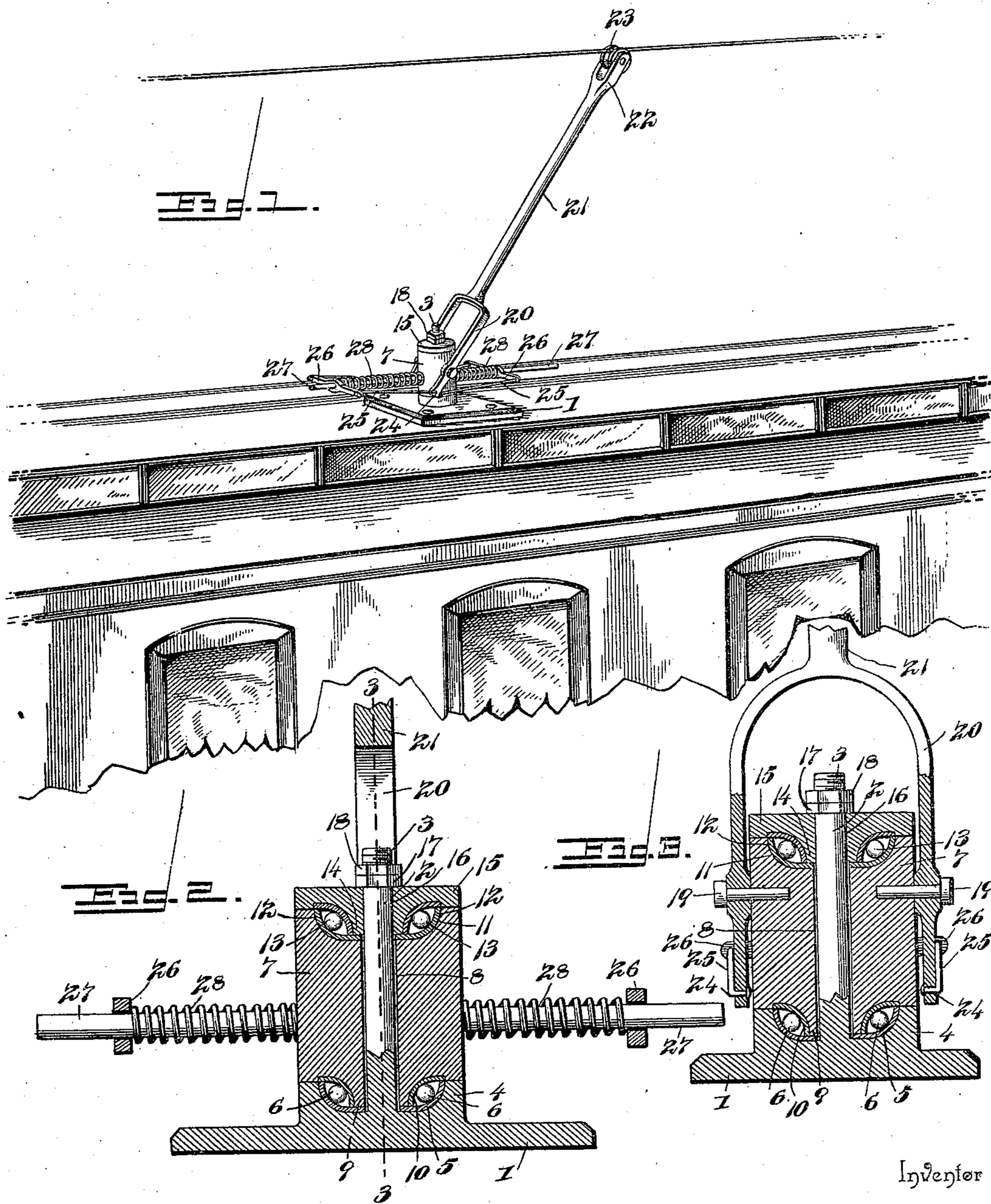


(No Model.)

J. E. BISHOP.  
TROLLEY STAND.

No. 575,099.

Patented Jan. 12, 1897.



Inventor

*John E. Bishop*

Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN E. BISHOP, OF INDIANAPOLIS, INDIANA, ASSIGNOR OF TWO-THIRDS  
TO WILL A. Y. BISHOP AND WILL H. SMITH, OF MUNCIE, INDIANA.

## TROLLEY-STAND.

SPECIFICATION forming part of Letters Patent No. 575,099, dated January 12, 1897.

Application filed August 22, 1896. Serial No. 603,629. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. BISHOP, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Trolley-Stand, of which the following is a specification.

This invention relates to trolley-stands for electric cars; and it has for its object to provide a new and useful attachment of this character which will obviate the trolley jumping from the wire in turning curves, running onto switches, or going around the loop of the system, which is a very common occurrence in connection with the trolleys of electric-motor cars.

The invention also contemplates a construction of trolley-stand providing a ball-bearing swivel-support for the trolley-pole to insure as little friction as possible at this point, while at the same time permitting the trolley-pole to evenly and gently accommodate itself to the motions of the car and thereby obviating a breaking or straining of the wire or a straining of the trolley itself.

With these and other objects in view, which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated, and claimed.

In the drawings, Figure 1 is a perspective view of a trolley-stand constructed in accordance with this invention. Fig. 2 is a central vertical sectional view of the trolley-stand. Fig. 3 is a similar view on the line 3 3 of Fig. 2.

Referring to the accompanying drawings, 1 designates the base-plate of a trolley-stand adapted to be bolted or otherwise suitably fastened on top of an electric car in the usual position. Said base-plate 1 has projected upwardly therefrom a vertically-disposed pivot-post 2, having a threaded upper end 3. Arranged on the base-plate 1 at the lower end of the vertical pivot-post 2 is a bottom bearing-cup 4, having a steel wear-bushing 5, annularly bored around the post 2 to form a bearing-seat for a circular series of bearing-balls 6, which support for rotation thereon the cylindrical swivel-head 7. The cylin-

drical swivel-head 7 is provided with a central longitudinal opening 8, loosely receiving the vertical pivot-post 2, and at the lower end of its opening 8 the swivel-head 7 is provided with a depending bearing-cone 9, faced with a steel wear-bushing 10 and turning inside of the circle of bearing-balls 6 to complete the ball-bearing support for the lower end of the swivel-head. The said swivel-head 7 is further provided at its upper end with an annular rounded recess 11, surrounding the pivot-post 2 and forming a ball-cup having a steel wear-bushing 12 and adapted to receive therein a circular series of bearing-balls 13, which receive within the circle thereof the steel-bushed bearing-cone 14, projected centrally from the under side of the circular cap-plate 15, having a central opening 16, fitting over the pivot-post above the upper end of the swivel-head. The cap-plate 15 incloses the ball-cup in the upper end of the swivel-head and may be adjusted to take up wear at any time by means of the adjusting-nut 17, engaging the threaded upper end 3 of the pivot-post above the cap-plate and held tight in its adjusted position by an ordinary jam-nut 18, arranged thereabove.

The ball-bearing swivel-head 7 is provided at diametrically opposite sides with pivot studs or pins 19, on which are pivotally mounted the opposite side portions of the U-shaped yoke 20, formed at the lower end of the trolley-pole 21, having the usual bifurcated upper end 22, in which is journaled the trolley-wheel 23, which is designed to travel on the trolley-wire in the usual manner. The lower extremities of the yoke 20, below the pivot-studs 19, have loosely connected thereto, as at 24, the inner ends of the oppositely-arranged pairs of connecting wires or rods 25, the outer ends of which wires or rods are connected to the opposite extremities of the sliding cross-bars 26. The sliding cross-bars 26 are respectively arranged beyond diametrically opposite sides of the swivel-head 7 and loosely work on the fixed guide-rods 27, projected from opposite sides of the swivel-head at right angles to the pivot-studs 19. Trolley-adjusting springs 28 are coiled on the guide-rods 27 between the sliding cross-bars 26 and the swivel-head and normally exert a tension to

move the trolley-pole to a vertical position, thereby holding the trolley-wheel firmly in contact with the trolley-wire at all times, while at the same time allowing the trolley-pole to  
 5 gently raise and lower to accommodate itself to the height of the wire, as will be readily understood. The ball-bearings swivel-support of the trolley-pole permits the latter to freely adjust itself to lateral motions of the car with-  
 10 out exerting any material strain on the trolley-wire or the support itself.

The many advantages of the herein-described trolley-stand will be readily apparent to those skilled in the art, and it will be un-  
 15 derstood that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

20 Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

A trolley-stand for electric cars comprising a base-plate having a vertically-disposed  
 25 pivot-post, and an integral annularly-bored bearing-cup disposed at the lower end of and

surroundingsaid post, bearing-balls arranged in said cup, a swivel-head longitudinally bored to loosely fit the pivot-post and provided at its lower end with an integral de- 30 pending bearing-cone turning inside of the circle of the lower set of bearing-balls, and at its upper end provided with an annular rounded recess forming a ball-cup, bearing-balls arranged in the ball-cup of the swivel-head, a 35 cap-plate adjustably fitted on the upper end of the pivot-post and provided with a central depending bearing-cone working inside of the circle of the upper set of balls, wear-bushings facing the ball-cups and bearing-cones, a trol- 40 ley-pole having a yoke pivotally embracing the swivel-head, and oppositely-arranged spring-adjusted bars carried by the swivel-head and having connections with the yoke, substantially as set forth. 45

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOHN E. BISHOP.

Witnesses:

L. G. AKIN,  
 ALLAN VESTAL.