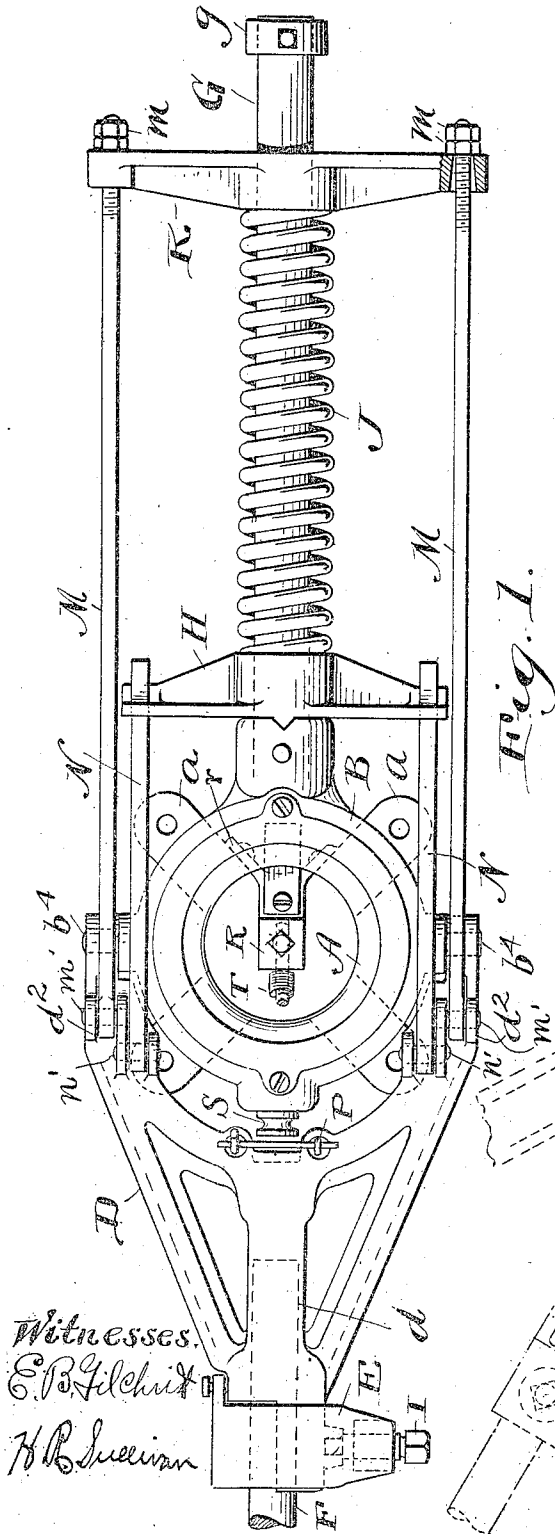


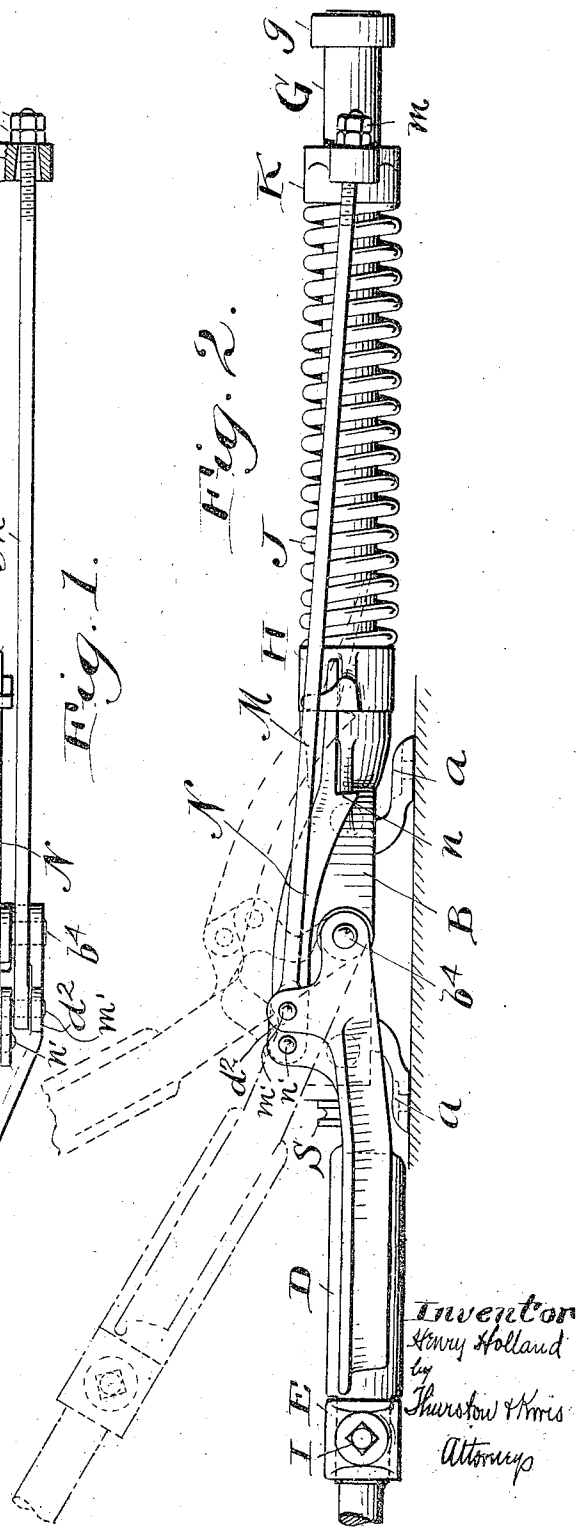
1,052,586.

Patented Feb. 11, 1913.

2 SHEETS—SHEET 1.



Witnesses.
E. B. Gilchrist
H. B. Sullivan

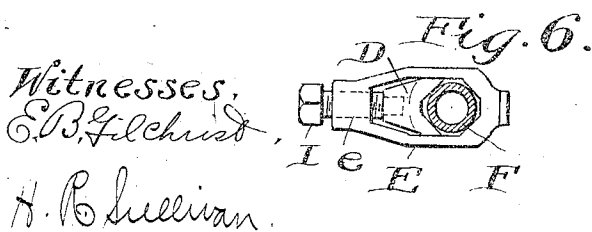
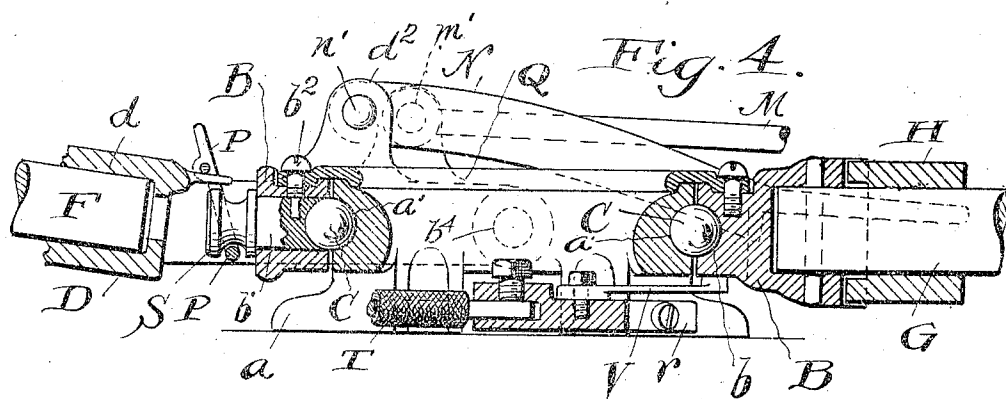
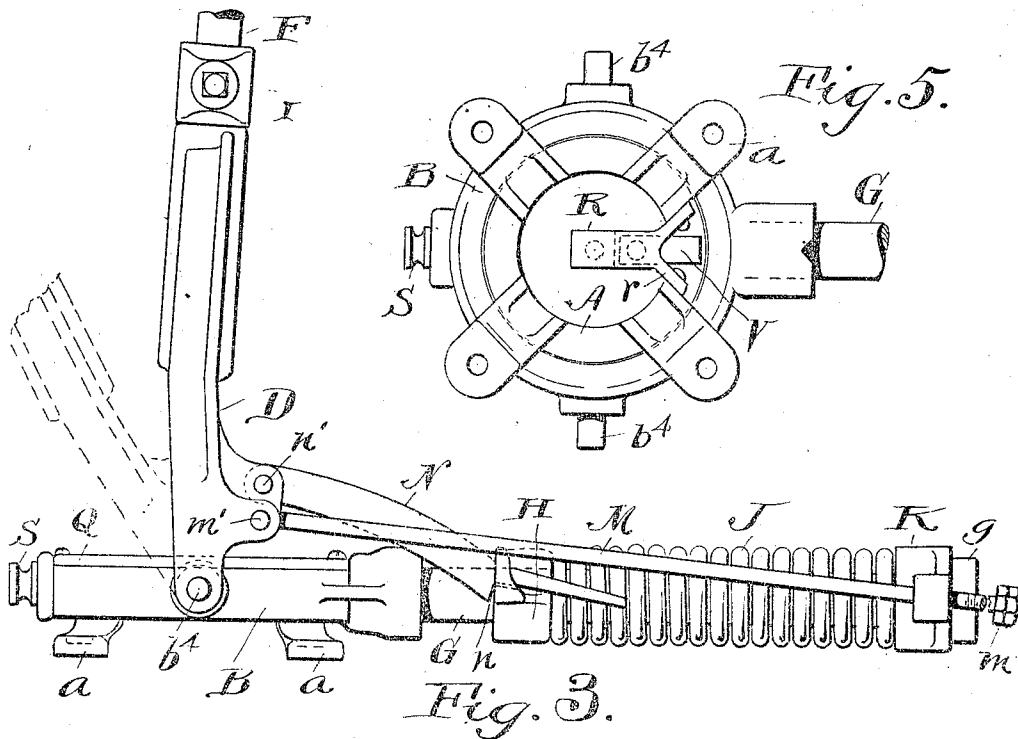


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1,052,586.

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2 SHEETS-SHEET 2.



Witnesses,
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UNITED STATES PATENT OFFICE

HENRY HOLLAND, OF CLEVELAND, OHIO, ASSIGNOR TO THE HOLLAND TROLLEY SUPPLY COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

TROLLEY-STAND.

1,052,586.

Specification of Letters Patent.

Patented Feb. 11, 1913.

Application filed December 19, 1910. Serial No. 598,000.

To all whom it may concern:

Be it known that I, HENRY HOLLAND, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Trolley-Stands, of which the following is a full, clear, and exact description.

The principal object of the invention is to produce a thoroughly practical trolley stand adapted for use under all of the conditions which are commonly met with in use, and particularly which will not project much above the car, and will allow the trolley pole to be forced down very close to the car by the overhead conductor, whereby the trolley without breaking its operative connection with said overhead conductor, may pass beneath bridges and other overhead structures which are so placed that little clearance is left between them and the top of the car.

The trolley stand in which the present invention is embodied operates easily so as to allow the trolley pole to maintain its engagement with the overhead conductor in rounding curves. It is provided with means for holding the trolley pole socket down in a convenient position for taking out and putting in the trolley pole; and it is also so constructed that if the trolley leaves the overhead conductor so that the pole is swung violently upward, this spring-induced movement of said trolley pole will be checked by the same spring which produces said movement, and thereby injury to the device will be prevented.

The invention embodied in the best form known to me is shown in the accompanying drawings, and is hereinafter described, and the novel combinations of parts which impart the qualities and characteristics above referred to are definitely pointed out in the appended claims.

In the drawing, Figure 1 is a plan view of a trolley stand embodying the invention. Fig. 2 is a side elevation of the same, the latter figure showing the positions of the parts when the trolley pole is pulled down as far as it will go. Fig. 3 is a side elevation which shows in full lines the trolley pole in a substantially vertical position and the other occupying the positions they will occupy under such conditions. Fig. 4 is a

sectional side elevation of the trolley stand 55 showing the pole held down in its lowest position. Fig. 5 is a bottom plan view of the two relatively rotatable parts of said stand; and Fig. 6 is a sectional view of the outer end of the pole socket showing the 60 clamp employed to hold the pole in place.

Referring to the parts by letters, A represents the ring shaped fixed base member of the trolley stand, said ring having short legs *a*, by means of which it may be attached 65 to the top of a car. B represents the rotatable base member which is also a ring which fits outside of the ring A, and is held in proper relation thereto, and allowed to rotate around the ring A with little friction, by means of anti-friction balls interposed between these two rings. The ring A has in its outer cylindrical periphery an annular groove *a'* which in vertical section is approximately semi-cylindrical in shape. 75 In the inner cylindrical periphery of the ring B there is also an annular groove *b* which in vertical section is approximately semi-cylindrical in shape. When these two rings are placed in operative position, the 80 one within the other, as shown, there is between them an annular tubular raceway into which balls *C* are fitted. There is a hole through the ring B through which the balls may pass into this tubular raceway, 85 and when a sufficient number of balls have been put into the raceway, this hole is filled with a plug *b'*, fashioned on its inner end to form a continuation of the groove *b*. This plug is held in proper position by a 90 set screw *b²* which screws down through the top of ring B and into a hole provided to receive it in the plug *b'*.

The yoke D straddles, and is pivoted to the ring B at diametrically opposite 95 points,—the pivots being represented by *b⁴*. The outer end of this yoke has a socket *d* for the reception of the trolley pole F. The outer end of this socket is cut away on one side, and its place supplied by a laterally 100 movable ring clamp E. A screw stud passing through a hole in a tail piece *e* on this ring clamp screws into the yoke member, and prevents the removal of the clamp while permitting its lateral movement. A 105 set screw I screwing through the opposite side of the ring clamp bears against the side of the pole socket, and thereby the ring

clamp is moved laterally to firmly clamp the pole between itself and the opposite side of the pole socket.

Fixed to the ring B and extending horizontally therefrom in a direction at right angles to the axis of the yoke D is a rod G. Two bars H and K are movably mounted on this post and project on both sides thereof, and a spring J surrounding the rod G is compressed between them. This spring is normally held in compression by means of rods M which are respectively pivoted to ears d^2 on the yoke D on opposite sides thereof, and the outer ends of these rods pass loosely through holes near the ends of the bar K. These ends of the rods are threaded, and nuts m screw onto them and thereby regulate the tension of the spring. A shoulder g of some sort is provided on the outer end of the rod G for engagement, under certain circumstances to be explained, with the bar K. Two links N are pivotally connected with the yoke D near opposite sides thereof, said pivots being parallel with the axis upon which the yoke swings. Each of these links passes through a hole in the bar H; and each link is provided with a shoulder n for engagement with said bar, so as to limit the distance which said links may pass into said holes.

From the foregoing description, it will be seen that the spring exerts continuous tension upon the yoke, tending to swing it upward, even though the yoke is swung down to the position shown by full lines in Fig. 2, where it practically touches the top of the car roof. Under these conditions the highest point of the entire structure will be the ears on the yoke to which the rods M are pivoted, a distance of not more than about five inches above the top of the car. The spring then continues to act effectively until the pole reaches a position about such as is shown by the dotted lines in Fig. 3, in which it is nearly vertical. This is the position in which the pole will normally come to rest, because when in this position the shoulders n on the links N engage with the bar H, and thereby further movement upward of the yoke is resisted by the spring. If, however, when the trolley is in some working position the trolley should jump from the wire, the spring will immediately swing the yoke and pole upward. Its momentum will, of course, carry the yoke beyond the position in which it would normally come to rest; but, as the yoke moves beyond this position, it will move links N, and they in turn will move the bar H, which movement will, however, be resisted by the spring which thrusts against the spring plate K, and the rearward movement of said spring plate will be checked by its engagement with the shoulder g . In other words, the same spring which is utilized to hold the trolley

in the working position checks its movement when it flies from the overhead wire, and thereby the possibilities of injury to the apparatus under such conditions is minimized.

Among the adjunctive features to which attention may be called which add to the practical value of the device are the following: A loop P is pivoted to the yoke in such position that when the yoke is pulled down into horizontal position, this yoke may be swung underneath a stud S fixed to and projecting out from the ring B. Thereby the yoke may be held down whenever it is desired to have it held down.

The parting between the rings A and B is on the top and bottom surfaces of these rings. To protect the ball bearings from dust a dust plate Q is fastened to the ring A overhanging this cylindrical parting line.

The conductor T for electrically connecting this trolley stand with the motor on the car may be secured in a hole in a connector R having wings r by which it is removably secured to two of the legs a . A contact spring V is fixed to this connector R in such wise that it has a rubbing engagement with the lower surface of the ring B.

The trolley stand above described is shown with one spring only, but it is not intended that the appended claims shall exclude trolley stands which employ two or more of such springs.

Attention is called to the fact that the pivots m' and n' by which the rods M and links N are connected with the yoke D are different distances from the axis of the pivot b^4 around which said yoke swings. Now, under certain circumstances which may come about in practice, as for example, when the nuts m have been screwed upon rods M quite a distance, in order to apply the required tension to spring J, the mere passing of the yoke D forward over the center will involve the movement toward each other of the plates H and K,—and this movement will be resisted by the spring whereby the forward swinging of yoke D is checked. This action will take place under the stated conditions, even if plate K does not contact shoulder g . Under such conditions,—which may, of course, be made the universal conditions of the device, the shoulder g is unnecessary.

Having described my invention, I claim:

1. In a trolley stand, a movable base member adapted to be mounted upon a car and to turn about a vertical axis, a forwardly projecting rod fixed to said member, bars movable along said rod, and a spring-compressed between said bars, combined with a trolley yoke pivoted to said base member, rods pivotally connected with said yoke above the pivotal point of the yoke and passing loosely through holes in the front bar

and having adjustable nuts on their front ends, and two links which are pivoted to said yoke above the pivotal point of the yoke and at points which are farther from the axis of the yoke than are the pivots of the rods mentioned, said links passing loosely through holes in the rear bar and having shoulders behind said bar and adapted to engage with it.

2. In a trolley stand, a ring-shaped base member adapted to be fixed to a car and being provided in the outer peripheral surface thereof with an annular groove which forms half a ball-race, a movable ring-shaped member which embraces the ring-shaped base and has in its inner peripheral surface an annular groove which forms the other half of said ball-race, balls in said raceway, a projecting portion carried by the last mentioned movable ring-shaped member, an opening in said projecting portion, a rod secured in said opening, a front and rear bar slidably mounted upon said rod, a stop member upon the end of the rod, a yoke pivoted upon the sides of the outer ring, rods pivoted upon said yoke above the axis of the yoke and engaging with the front bar and projecting through openings therein, nuts upon the front ends of said rods, a second pair of rods pivoted upon the yoke

above the axis of the yoke and farther from the axis of the yoke than the pivotal point of the rods first mentioned, said rods passing through openings in the rear bar and provided with shoulders adapted to engage the rear bar.

3. In a trolley stand, a movable base member adapted to be mounted upon a car and to turn about a vertical axis, a forwardly projecting rod affixed to said member, bars movable along said rod, a spring pushing said bars apart, a trolley yoke pivoted upon said base member, rods pivotally connected with the yoke above the axis of the yoke and adapted to engage the bar upon the rod remote from the yoke, two links pivoted upon the yoke above the axis of the yoke and passing loosely through openings in the bar upon the rod nearest the yoke, said links being pivoted farther away from the axis of the yoke than the said rods, and being provided with shoulders which engage with the said bar, substantially as described.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

HENRY HOLLAND.

Witnesses:

E. L. THURSTON,
H. R. SULLIVAN.