

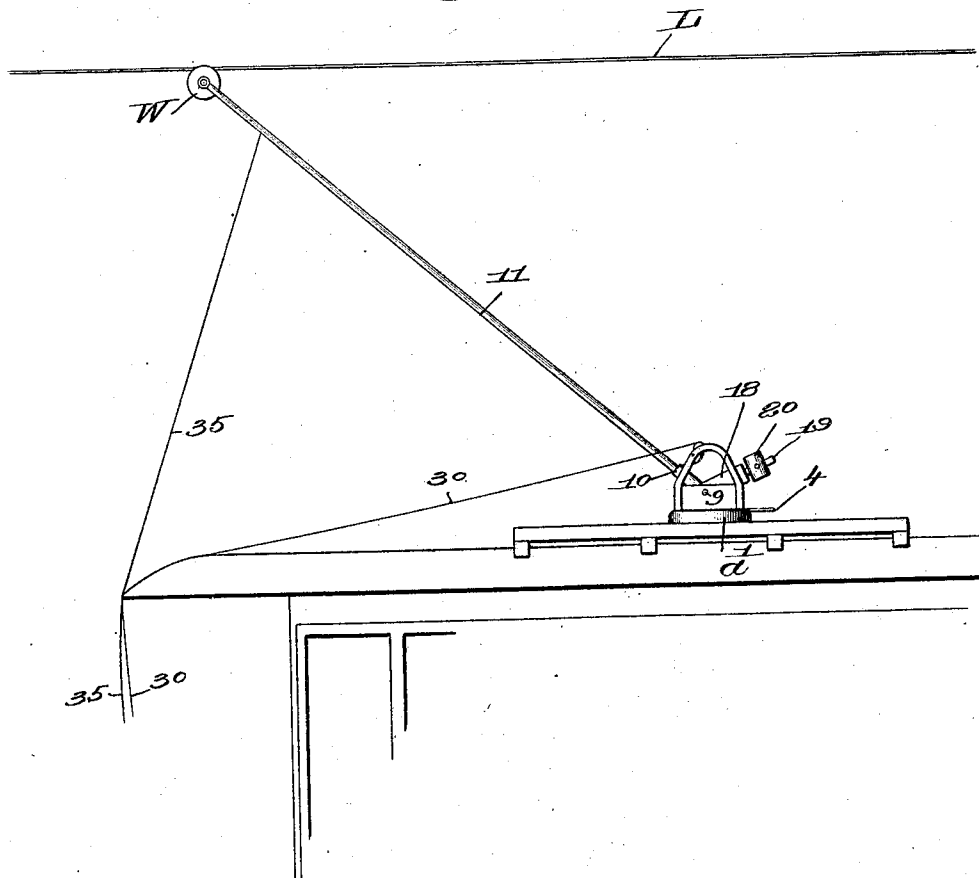
No. 879,943.

PATENTED FEB. 25, 1908.

J. L. CHASE.
TROLLEY POLE SUPPORT.
APPLICATION FILED AUG. 23, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



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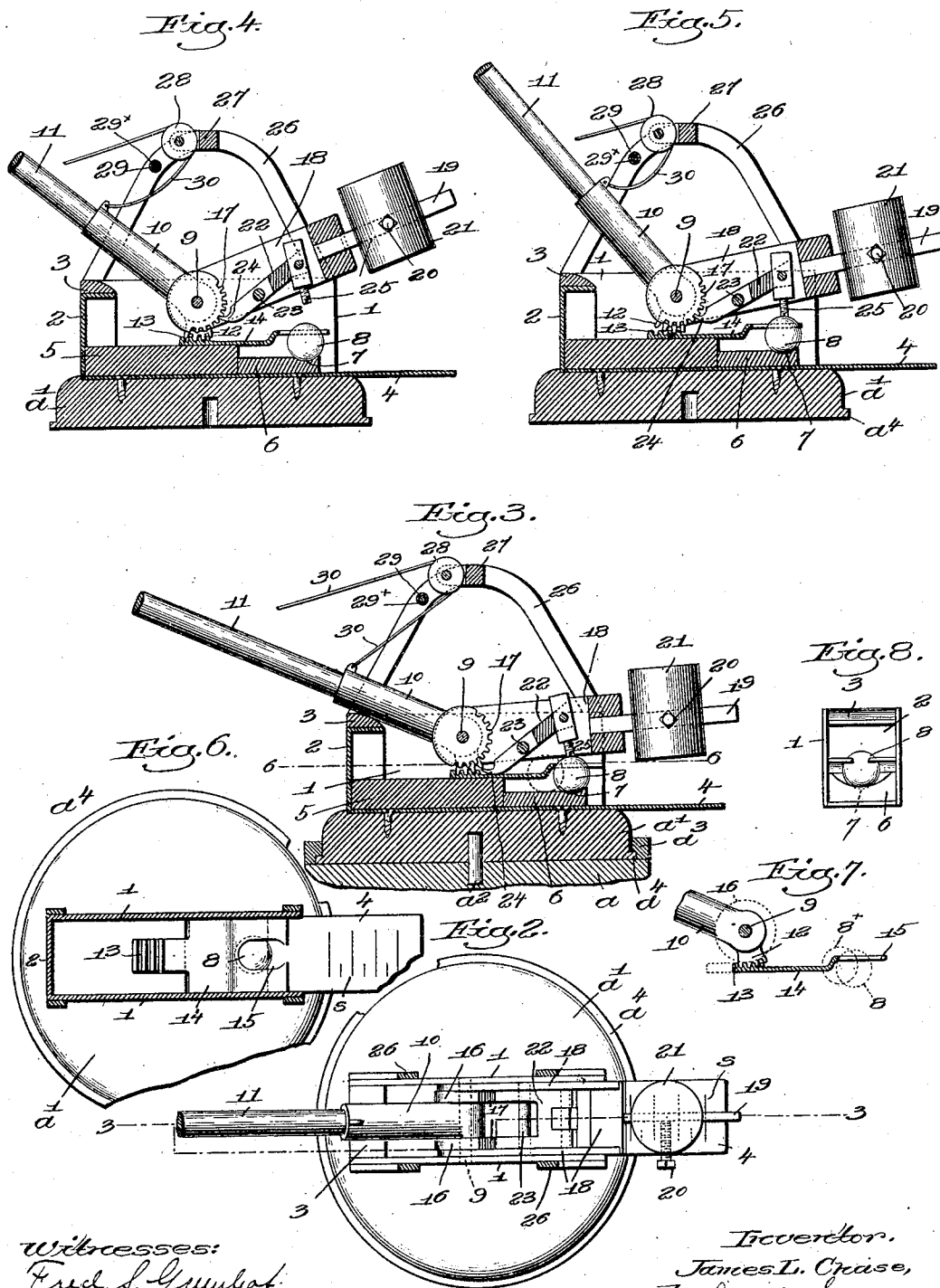
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

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TROLLEY-POLE SUPPORT.

No. 879,943.

Specification of Letters Patent.

Patented Feb. 25, 1908.

Application filed August 23, 1907. Serial No. 389,833.

To all whom it may concern:

Be it known that I, JAMES L. CHASE, a citizen of the United States, and resident of Ayer, county of Middlesex, State of Massachusetts, have invented an Improvement in Trolley-Pole Supports, of which the following description, in connection with the accompanying drawing, is a specification, like letters on the drawing representing like parts.

This invention has for its object the production of a novel and efficient trolley-pole support for use on electric railway cars or vehicles, the construction and arrangement being such that the use of springs is obviated, the pressure upon the pole and trolley wheel maintained substantially uniform, and the smashing of trolley-poles and cross-wires prevented. It is well known that the springs commonly employed on apparatus of this character are a source of annoyance and expense, for being under tension almost all the time and exposed to wind and weather the springs rapidly deteriorate, and it is a matter of the greatest difficulty to maintain even an approximate uniform tension. Again, when the trolley wheel leaves the wire the springs throw the pole with greater violence against the cross-wires, and breakage of the latter or of the pole is a matter of frequent occurrence.

I have so constructed my trolley-pole support that the act of moving the pole into position to effect coöperation of the trolley-wheel and the wire effects automatically the coöperation of the pole and a tension means, whereby the wheel is maintained in engagement with the wire. Such engagement is effected without the use of springs and the tension is practically uniform. Should the wheel leave the wire the pole is thereupon immediately released from the control of the tension means and at once descends to a position of rest with the trolley-wheel out of range of the cross-wires or other supports, preventing breakage or injury to the parts.

The various novel features of my invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a side elevation of a trolley-pole support embodying one form of my invention, shown as mounted upon a car, and with the trolley-wheel in engagement with the wire, the parts being in operative position; Fig. 2 is an enlarged top plan view of

the trolley-pole support, the pole being broken off to save space; Fig. 3 is a longitudinal, vertical section on the line 3—3, Fig. 2, showing the pole released from the control of the tension means; Fig. 4 is a similar view but showing the pole under control of the tension means and held in position to maintain coöperative engagement of the trolley-wheel and wire; Fig. 5 shows in vertical section the same parts, but with the pole just about to be released from control of the tension means; Fig. 6 is a horizontal sectional view on the line 6—6, Fig. 3, showing a portion of the device whereby the connection between pole and tension means is effected and released; Fig. 7 is a detail to be referred to, at the foot of the pole; Fig. 8 is a right hand end elevation of some of the mechanism shown in Fig. 3, to be described.

In the present embodiment of my invention I mount the trolley-pole support, as a whole, upon any usual or suitable turn-table device, on the top of the car, such for instance as the lower or fixed member a and the rotatable member a' pivoted thereon at a^2 and held in place by an overhanging lip a^3 above an annular flange a^4 on the rotatable member a' . Upon said member I rigidly secure a metallic frame comprising parallel sides 1 connected at one end at 2, said connection having upon its top a cushion 3 of rubber, leather or other suitable material, a longitudinally - extended base 4 being attached to the member a' between the sides 1. A thick bottom piece 5 is secured to or forms a part of the base, as may be most convenient, and a thinner extension 6 is located between the sides near their open end, said extension being transversely concave and having a socket 7, Figs. 3, 4 and 5, for a trip or releasing member, herein shown as a ball 8, preferably made of steel.

Upon a transverse pivot 9 held in the sides 1 of the frame I pivotally mount the socket-like foot 10 of the trolley-pole 11, the end of the foot having a toothed segment which engages rack-teeth 13 on a trip controller 14 slidably mounted on the bottom piece 5 and having an elongated opening 15, see Fig. 6, in its free end, to loosely embrace the trip 8.

When the pole is lowered and resting upon the cushion 3, as in Fig. 3, the trip-controller will position the trip 8 in the socket 7, but

when the pole is swung upward into about the position shown in Fig. 4, the outer ends of the slot 15 will act upon the controller and temporarily move it into dotted line position, Fig. 3, or as shown at 8^x, Fig. 7, for a purpose to be described. At each side of the segment 12 circular cheek-pieces 16 are secured to the foot 10 of the pole, said cheek-pieces having a portion of their peripheries toothed, as at 17. The tension means I have herein shown as a yoke 18 having its sides fulcrumed on the pin 9 between the cheek-pieces 16 and the sides 1 of the frame, as shown in Fig. 2, the yoke extending between said sides at their open ends and being provided with a rigid bar 19 upon which is adjustably mounted, as by a set screw 20, a weight or tension member 21. A bifurcated pawl-carrier 22 is fulcrumed at 23 on the yoke 18 between its sides, and is provided with toothed extensions or pawls 24, one for each of the toothed cheek-pieces 16, the pawls moving into or out of locking engagement with the teeth 17 as the outer end of the pawl-carrier is lowered or raised, respectively.

The enlarged or heavy outer end of the pawl-carrier is provided with a preferably adjustable, depending stud 25 which is adapted to at times coöperate with the trip 8. Upon the sides 1 of the frame I have shown upright arches 26 connected at their tops by a cross-bar 27 which carries a sheave or pulley 28, and a stop-bar 29 is extended from one to the other arch between the sheave and the pole 11. A rope or cord 30 is attached to the foot 10 of the pole, led over the sheave or pulley 28 and thence to the end of the car roof, and down to the platform. Supposing the car to be at rest, with the parts in the position shown in Figs. 2 and 3, the pole being lowered and the foot 10 resting upon the cushion 3. At such time the stud 25 abuts against the trip 8, lifting the outer end of the pawl-carrier and withholding the pawls 24 from engagement with the teeth 17, so that there is no connection between the trolley-pole and the tension means.

To bring the trolley-wheel W, Fig. 1, into coöperation with the wire L the conductor grasps the rope or cord 30 and by it swings the pole upward on its fulcrum 9 until the trolley-wheel engages and pushes up the wire temporarily above normal position, such swinging movement of the pole acting through the segment 13 to draw the trip-controller 14 to the left, viewing Fig. 3, and thereby moving the trip 8 into dotted line position. This releases the pawl-carrier and its heavier upper end descends and causes the pawls 24 to at once engage and lock with the toothed portions 17 of the cheek-pieces 16, and the action of the weight 21 serves to firmly maintain such engagement. The weight of the wire acting upon the trolley wheel serves to thereafter depress the pole

to normal running position. The trolley-pole and the tension means are now securely locked together and move in unison about the fulcrum pin 9, the weight 21 serving to maintain the wheel W in engagement with the wire L, Fig. 1, the weight rising and falling as the height of the wire above the car decreases or increases. It will be manifest that the tension means thus maintains a practically constant and uniform pressure of the trolley-wheel upon the wire, while at the same time the variations in height of the wire, or varying degrees of slackness thereof, are compensated for. The slight lost motion as the pawls take hold of the toothed cheek pieces permits a sufficient return movement of the trip-controller to replace the trip 8 in its normal position, in the socket 7, as in Fig. 4. If the trolley-wheel runs off the wire, or the latter breaks, the tension means at once acts to swing the pole toward an upright position, considerably beyond normal position, as in Fig. 5, but the descent of the yoke 18 brings the stud 25 against the trip 8, (this having just taken place in Fig. 5) and the pawl-carrier 22 is tilted on its fulcrum 23. Thereby the pawls 24 are instantly withdrawn or unlocked from the teeth 17, the pole is thereby released or disconnected from the tension means, and the pole and its foot 10 drop into inoperative position as shown in Fig. 3, the cushion 3 taking up any shock and preventing damage to the parts. The mechanism is now restored to the position shown in Fig. 3, and the trolley-wheel will be so lowered that neither it nor the pole 11 can strike against the main wire or any of the cross-wires or supports, absolutely doing away with smashes or breakage from such causes.

By moving the weight 21 in or out along the bar 19 the pressure of the wheel W upon the wire L can be regulated as desired, and if convenient the top of the extension 4 may be provided with a scale *s*, Figs. 2 and 6, to indicate at a glance the pressure corresponding to a given position of the weight. To guard against any possible damage to the pole by a rebound against the guard-rod 29 the latter may be covered with rubber or other suitable material, as at 29^x.

By my improved trolley-pole support I obviate the use of springs, render unnecessary the so-called "retrievers" now in very general use, prevent smashes by engagement of the trolley-wheel or pole with the cross-wires or supports, reduce the weight of the apparatus, and decrease the wear and tear. The entire supporting mechanism for the pole is rotatable on the turn-table, so that the pole can be turned toward either end of the car, when the direction of travel of the latter is reversed.

In order that the conductor may have a convenient means of drawing down the pole

to disengage the wheel and the wire I may provide the pole with a pull-down cord or rope 35, as in Fig. 1.

Modifications or changes in details of arrangement and construction may be made without departing from the spirit and scope of my invention, as expressed in the appended claims.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a trolley-pole support, a pole provided with a trolley-wheel, a fixed horizontal fulcrum upon which the pole is pivotally mounted, and tension means, including a weighted yoke pivoted on the fixed pole fulcrum, combined with means to lock the pole and yoke together to rock in unison on the fulcrum, whereby the pole is maintained elevated by said tension means, and a device independent of the yoke and pole to unlock the pole and yoke automatically when the pole is elevated abnormally, to thereby permit the pole to swing down about its fixed fulcrum and lower the trolley-wheel to inoperative position.

2. In a trolley-pole support, a pole provided with a trolley-wheel, a weighted tension member, a horizontal fulcrum on which said member and the pole are pivotally mounted at opposite sides thereof, means to lock said pole and the tension member together to rock in unison and maintain the pole elevated with the trolley-wheel in engagement with the wire, a tripping device sustained independently of the tension member and the pole to unlock said member and the pole when the latter is elevated abnormally, and a cushion mounted independently of the tension member and pole to take up shock and engage and support the pole when unlocked.

3. In a trolley-pole support, a pole provided with a trolley-wheel, a weighted tension member, a horizontal fulcrum on which said member and the pole are pivotally mounted at opposite sides thereof and upon which they may swing in unison or relatively to each other, locking pawls and teeth connected with the tension member and pole respectively, to cooperate automatically when the pole is elevated to slightly above operative position, to effect unison movement of the pole and tension member about their common fulcrum, means independent of the tension member to trip the pawls and disengage them wholly from the teeth when the pole is elevated abnormally, to thereby unlock the pole from the tension member, and means to manually elevate the pole independently of the tension member.

4. In a trolley-pole support, in combina-

tion, a turn-table, a pole pivotally mounted thereon and provided with a trolley-wheel, a swinging yoke fulcrumed on the pole pivot, an adjustable weight on said yoke, means on the yoke to lock the yoke and pole to swing in unison, a trip to act upon and render said means inoperative, and a trip-controller to temporarily withdraw the trip from operative position by or through manual elevation of the pole to slightly above operative position.

5. In a trolley-pole support, in combination, a turn-table, a common horizontal fulcrum on the turn-table, a pole provided with a trolley-wheel pivotally mounted on said fulcrum, tension means also pivotally mounted thereon, a locking device to connect the pole and tension means when the pole is manually elevated to slightly above operative position, a trip to act upon the locking device and disconnect the pole and tension means when the trolley-wheel leaves the wire, and means to temporarily retract the trip to inoperative position when the pole is elevated manually.

6. In a trolley-pole support, a turn-table, a frame upon it, a pole fulcrumed in the frame and provided with a trolley-wheel, a yoke fulcrumed co-axially with the pole, an adjustable weight on the yoke, a locking pawl pivoted on the yoke and adapted to at times lock the yoke and pole to rock in unison, a trip for the pawl, a trip-controller operatively connected with the pole, manual elevation of the pole to slightly above operative position causing the controller to temporarily withdraw the trip from cooperation with the pawl, whereby the latter locks the pole and yoke together, descent of the yoke by abnormal elevation of the pole causing the trip to act upon the pawl and unlock the pole and yoke.

7. In a trolley-pole support, a pole provided with a trolley-wheel, a horizontal fulcrum for the pole, tension means pivoted on said fulcrum, means to lock the said tension means and the pole together to rock in unison, a trip to act upon the locking means and disengage the pole and tension means when the trolley wheel leaves the wire, a cushioned support for the released pole, and means to render the trip inoperative temporarily when the pole is elevated manually to effect cooperation of the trolley-wheel and wire.

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

JAMES L. CHASE.

Witnesses:

GEO. W. SANDERSON,
HENRY G. TURNER.