

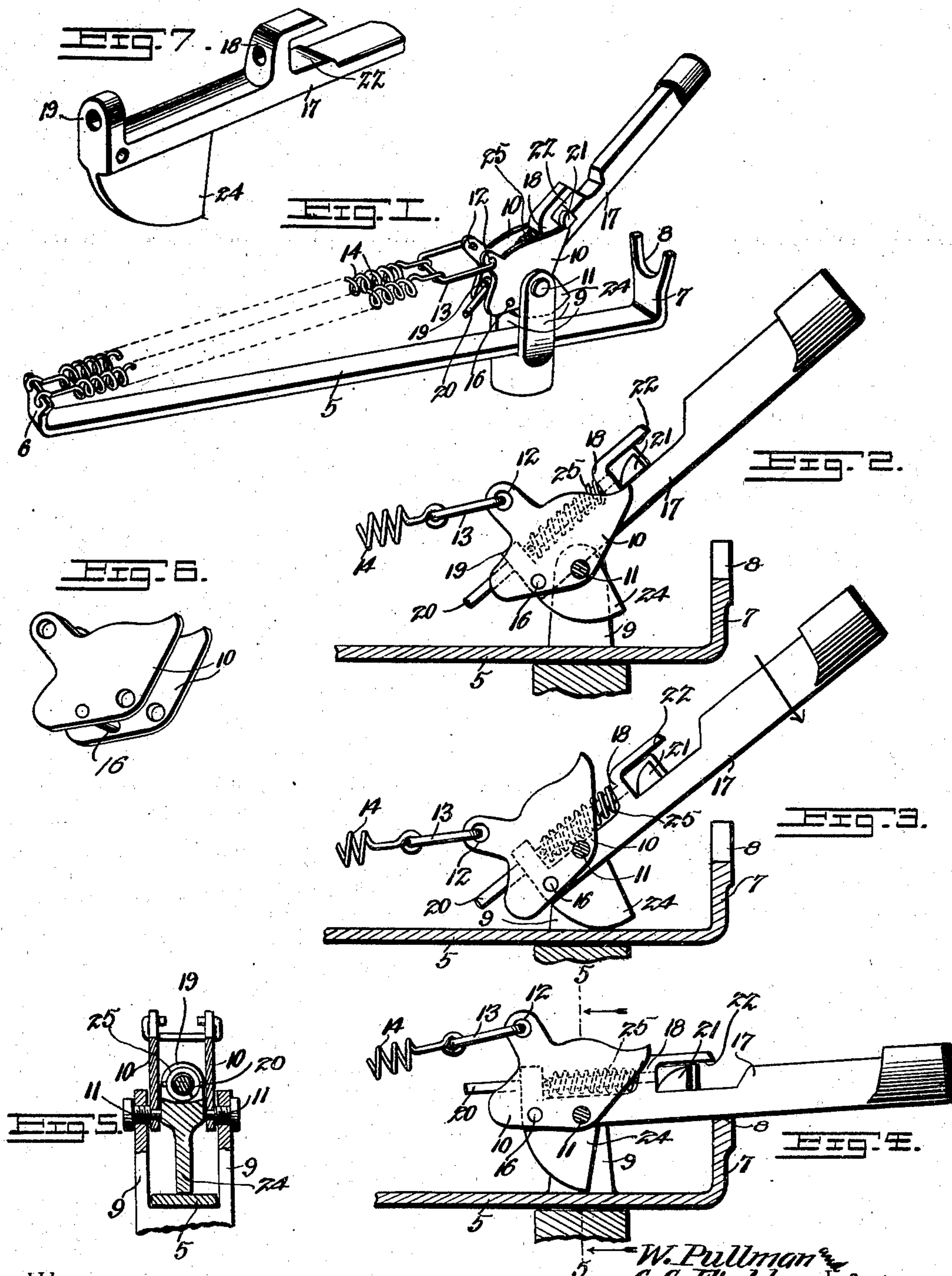
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Patented Sept. 16, 1902.

W. PULLMAN & C. C. FIELD  
TROLLEY POLE.

(Application filed Dec. 16, 1901.)

(No Model.)



Witnesses  
*E. J. Stewart*  
*John E. Parker*

W. Pullman &  
C. C. Field, Inventors  
by *C. A. Snow*  
Attorneys



# UNITED STATES PATENT OFFICE.

WILLIAM PULLMAN AND CHARLES C. FIELD, OF SODUS, NEW YORK.

## TROLLEY-POLE.

SPECIFICATION forming part of Letters Patent No. 709,113, dated September 16, 1902.

Application filed December 16, 1901. Serial No. 86,178. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM PULLMAN and CHARLES C. FIELD, citizens of the United States, residing at Sodus, in the county of Wayne and State of New York, have invented a new and useful Trolley-Pole, of which the following is a specification.

This invention relates to certain improvements in trolley-poles and trolley-pole supports of that general class forming the subject of an application for Letters Patent of the United States filed by us on October 11, 1901, under Serial No. 78,366.

The principal object of our invention is to so construct the pole and its supporting mechanism as to check or retard the falling of the pole to horizontal position after being disconnected from the supports; and a further object is to improve and simplify the construction of the mechanism for readjusting the parts to operative position after each releasing movement.

With these and other objects in view the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a trolley-pole and its supporting devices constructed and arranged in accordance with our invention. Fig. 2 is a longitudinal sectional elevation illustrating the position of the parts when the trolley is in contact with the conducting-wire. Figs. 3 and 4 are views similar to Fig. 2, illustrating the various parts in different positions. Fig. 5 is a transverse sectional elevation of the device on the line 5-5 of Fig. 4. Fig. 6 is a perspective view of the pole-carrying frame detached. Fig. 7 is a detail perspective view of the lower portion of the trolley-pole.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

5 designates the base of the structure, said base being preferably in the form of an elongated plate having at one end a vertically-disposed spring-attaching flange 6 and at the op-

posite end a vertically-disposed flange 7, having a recess 8, in which the pole may be seated when in inoperative position or when being adjusted to connect said pole to its carrying-frame. The base is of any required size and shape and is mounted in any suitable manner on the trolley-car.

On each side of the base-plate are formed ears or standards 9, between which is pivoted a pole-carrier formed of two plates 10 of corresponding shape and size, one plate being united to each of the ears or standards by suitable pins or screws 11, forming the fulcrum-points thereof. In the forward edge of the plate are openings 12 for the reception of the ends of a suitable yoke or link 13, which serves as a means for connecting the tension spring or springs 14 to the carrier, although said springs may be connected directly to the plates, if desired. The plates are connected near their lower forward edges by a pivot-pin 16, on which is swiveled the lower end of a trolley-pole 17, the latter being provided at its upper end with any ordinary form of trolley-wheel for contact with the current-conducting wire. On the forward face of the trolley-pole are formed two lugs 18 and 19, having alining openings in which is guided a bolt 20, the upper end of said bolt being provided with laterally-projecting carrier-engaging dogs 21, which are guided in a suitable slot 22 at the upper or rear portion of the lug 18. The forward face of each dog is slightly rounded and the upper rear edges of the carrier-plates are also rounded, so that the dogs may freely pass the plates when the parts are being moved into engaging position. The lower end of the pin or bolt 20 is adapted for engagement with the base-plate 5 and when so engaged will release the locking-dogs from engagement with the carrier-plates.

Secured to or formed integral with the under side of the lower end of the trolley-pole is a cam 24, adapted for contact with the upper surface of the base-plate and having its curved lower surface eccentric to the pivot-pin 16, which connects the trolley-pole to the carrier-plate.

When the trolley-wheel is in engagement



with the current-conducting wire, the parts will be held in a position such as indicated in Figs. 1 and 2, the springs acting to hold the wheel in contact with the wire and tending to draw the trolley-pole forwardly. If the trolley-wheel jumps the wire, the pole and its carrier are immediately drawn toward the springs, causing the end of the bolt 20 to come into contact with the base-plate 5. The bolt is moved upwardly against the action of a coiled compression-spring 25, which surrounds said bolt, and the locking-dogs 21 are moved out of engagement with the carrier-plate 10. The pole will then fall by gravity until its cam 24 strikes against the base-plate 5, the parts then assuming the position illustrated in Fig. 3. The continued downward movement of the pole, due to its weight, will cause the pole to swing on the pivot-pin 16 and owing to the contact of the cam 24 with the upper face of the base-plate will cause an upward movement on said pivot-pin, the carrier-plates turning on the pivot-pins 11, which connect them to the standards 9, and this movement of the plates being resisted by the tension-springs 14 to an extent sufficient to retard or fully check the downward movement of said pole. By this means the pole is prevented from falling into contact with the surface of the roof of the car or from violent contact with the recess portion of the flange 7, and any sudden jar or shock, such as might tend to break any of the connected parts, is prevented.

To adjust the parts to an operative position, the pole is drawn downwardly in the direction of the arrow in Fig. 3, this movement being effected by the usual pulling rope or cord attached to the upper portion of the trolley-pole. The rounded surface of the cam 24 slides over the upper surface of the base 5 and gradually forces the carrier-plates upwardly and rearwardly against the action of the tension-spring until the parts have assumed a position such as indicated in Fig. 4, at which time the cam has reached the limit of its operative movement with relation to the base-plate, and the lower face of the pole is seated in the recess or socket 8. The recess or socket then acts as a fulcrum for the pole during the remainder of the movement, which continues until the curved rear ends of the carrier-plates engage with the curved faces of the dogs 21 and force such dogs to the rear until the front edges of the plates have passed beyond the dogs, the latter being then moved to the initial position by the spring 25. The carrier-plates being locked to the pole are allowed with the pole to re-assume the normal position, the strain on the pulling cord or chain being gradually released until the trolley-wheel is again in contact with the conducting-wires.

The construction is such that the weight of the pole will not ordinarily be sufficient to

wholly seat the trolley-pole in the recess or socket, and when it is desired to move and lock the pole in inoperative position it is drawn down until the socket is reached and then locked in position either by tying the pulling-cord or by other suitable means.

Although the structure herein described and illustrated is the preferred form of the device, it is obvious that many changes may be made in the form, proportions, size, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In some cases we may employ two or more cams in place of the one herein shown.

Having thus described our invention, what we claim is—

1. The combination of the trolley-pole having a cam adapted for contact with a fixed base, a pivoted support carrying said pole, a locking-bolt for holding the trolley-pole in operative position, the lower portion of said bolt being adapted for contact with a fixed point to effect its movement to a releasing position.

2. The combination of the trolley-pole, a support to which said pole is pivotally connected, a cam carried by said pole and adapted for contact with a fixed plate or base, pivotal supports for said trolley-pole support, and means for locking the trolley-pole to said support.

3. The combination of the trolley-pole having a cam on its lower face adapted for contact with a fixed surface, a pivoted support to which said pole is fulcrumed, means for locking the pole and support, and means for disengaging the pole and support by any abnormal forward movement of the trolley-pole.

4. The combination of the carrier, a pivotal support for said carrier, a trolley-pole pivotally connected to said support at a point in advance of the pivot-points of the carrier, means for locking the pole to its support, a spring normally tending to hold the support and pole in operative position, and a cam carried by the pole and adapted to move the support when released therefrom to such a position as to connect the springs to the pole and check the falling movement thereof, substantially as specified.

5. The combination of the trolley-pole, a carrier adapted to be locked thereto and to be automatically released therefrom on any abnormal forward movement of the pole, a spring connected to the carrier and adapted to hold the carrier and pole in operative position, and means for operably connecting the pole to the carrier to exert the retractile force of the springs on the pole and check the falling movement of the latter when released from its carrier, substantially as specified.

6. The combination of the trolley-pole having at its lower end a cam adapted for operative contact with a fixed plate, a pivoted

carrier to which said pole is fulcrumed, means  
for locking the pole to the carrier, and a  
secondary fulcrum or socket with which the  
pole is adapted to engage after a partial move-  
5 ment by its cam toward the locking position,  
substantially as specified.

In testimony that we claim the foregoing as

our own we have hereto affixed our signatures  
in the presence of two witnesses.

WILLIAM PULLMAN.

CHARLES C. FIELD.

Witnesses:

G. D. HULETT,

WILLIS C. TEAL.