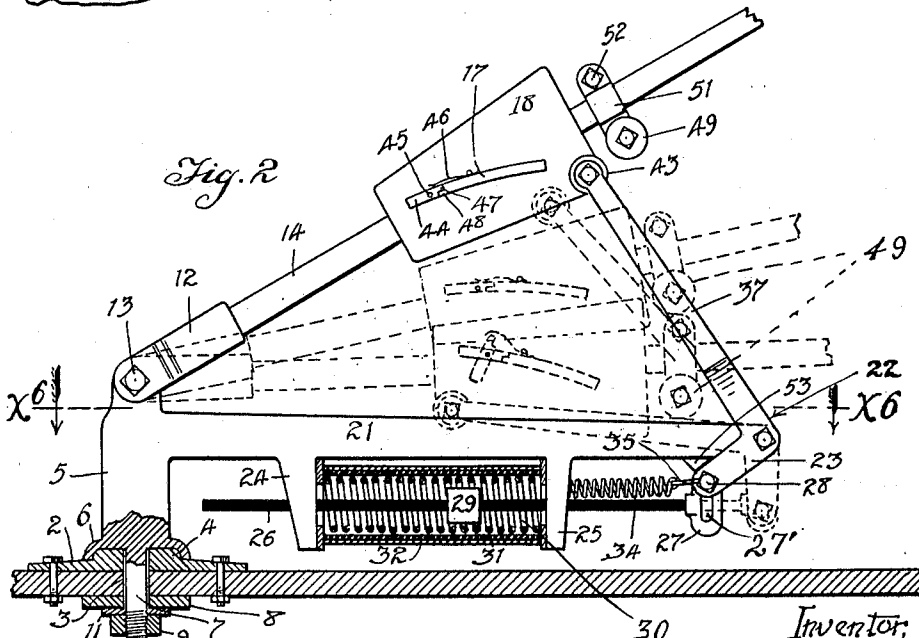
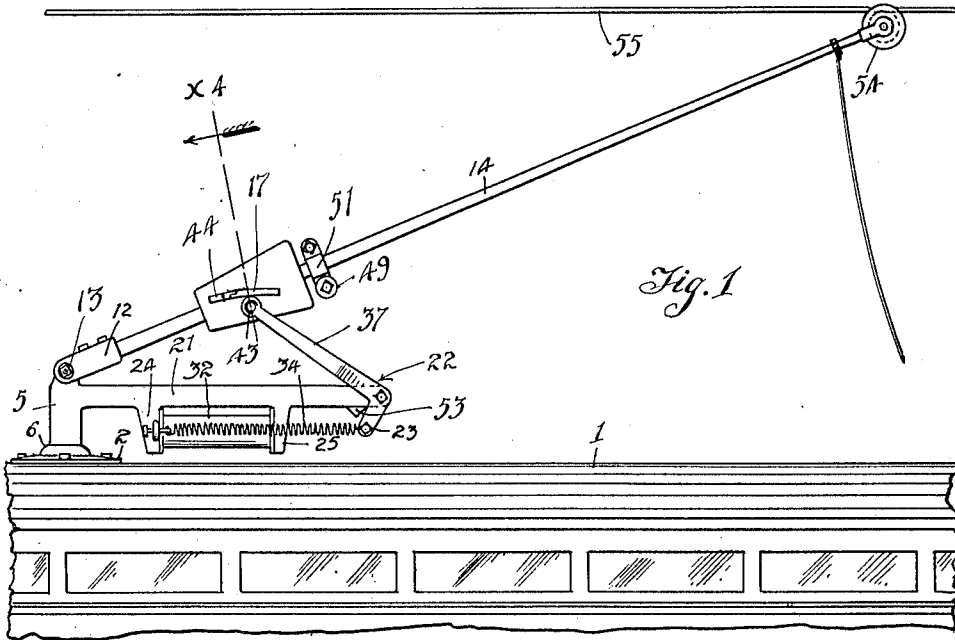


E. B. WINTRODE, DEC'D.
A. H. WINTRODE, ADMINISTRATOR.
TROLLEY POLE RETRIEVER.
APPLICATION FILED APR. 13, 1911.

1,039,346.

Patented Sept. 24, 1912.

2 SHEETS—SHEET 1.



Witnesses
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H. H. Hunt

Inventor;
Edward B. Wintrobe, deceased
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2 SHEETS—SHEET 2.

Fig. 3

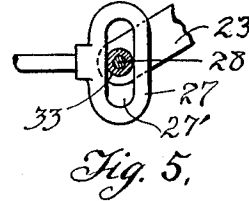
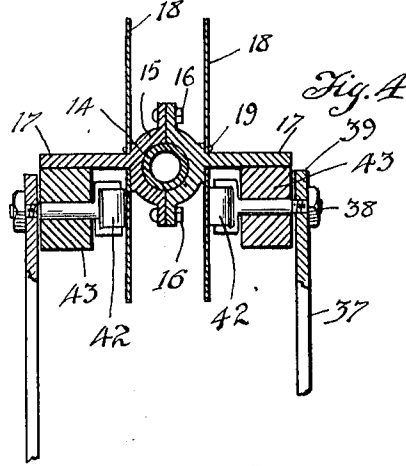
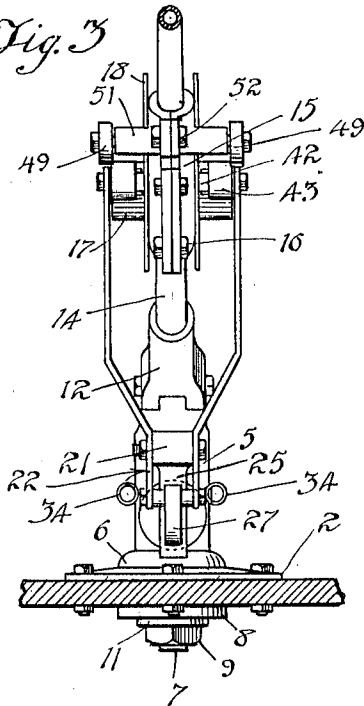
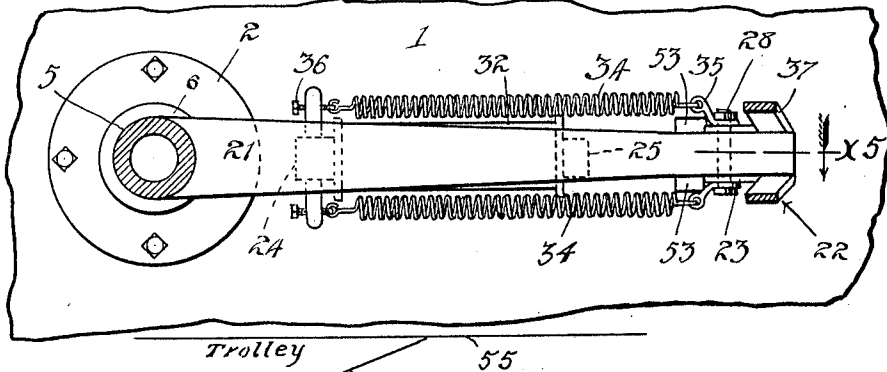


Fig. 6.



Witnesses
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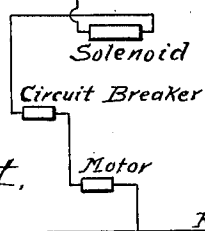


Fig. 7.

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UNITED STATES PATENT OFFICE.

EDWARD B. WINTRODE, DECEASED, LATE OF LOS ANGELES, CALIFORNIA, BY ALFRED H. WINTRODE, ADMINISTRATOR, OF LOS ANGELES, CALIFORNIA.

TROLLEY-POLE RETRIEVER.

1,039,346.

Specification of Letters Patent.

Patented Sept. 24, 1912.

Application filed April 13, 1911. Serial No. 620,887.

To all whom it may concern:

Be it known that EDWARD B. WINTRODE, deceased, late a citizen of the United States, and resident of Los Angeles, California, (ALFRED H. WINTRODE, administrator, a citizen of the United States, residing at Los Angeles, California,) did invent a new and useful Trolley-Pole Retriever, of which the following is a specification.

One of the leading objects of this invention is so to simplify the construction of trolley pole retrievers as to make it practicable for the same to be brought into commercial use.

A further object of this invention is to give maximum pressure of the trolley wheel upon the feed wire during the time the motor is consuming the greatest current, thus securing the surest contact between the trolley wheel and wire at the time when most needed.

Other objects and advantages may hereinafter appear.

Referring to the accompanying drawings, which illustrate the invention, Figure 1 is a side elevation showing the working parts of a trolley constructed in accordance with the principles of the invention; Fig. 2 is a broken side elevation showing the retrieving mechanism on an enlarged scale and in a different position from that shown in Fig. 1, namely the position after the trolley has left the wire and when the parts are moving to a position for allowing the pole to drop. Still other positions are shown in dotted lines; Fig. 3 is a rear view, the trolley pole and car top being sectioned; Fig. 4 is an enlarged cross-section on line x^4 of Fig. 1; Fig. 5 is a broken cross-section on line x^5 of Fig. 6; Fig. 6 is a transverse section on line x^6 of Fig. 2; Fig. 7 is a diagram of the electrical connections.

Referring in detail to the drawings, to the car top 1 is secured a base plate 2 having a bore 3 around which extends a circular rise 4. Upon said base plate is rotatably mounted a post 5 having at its lower end a friction plate 6 which embraces the rise 4 and forms a bearing thereover. Said post 5 is provided with a downwardly projecting central stem 7 which extends through the base plate 2 and car top 1, and is surrounded beneath the car top with a follower plate 8, the lower end of said stem being threaded and provided with a nut 9

and washer 11 to clamp the post 5 rotatably in place.

To the upper end of post 5 is pivoted the usual trolley pole socket 12 by means of bolt 13 and carries the trolley pole 14. To each side of the trolley pole is clamped a flanged yoke 15 by means of bolt 16, said yokes being provided with outwardly projecting rails 17. Over each rail 17 is fitted a side plate 18 which is secured to yoke 15 by means of screws 19. Returning again to post 5, from said post projects main frame 21 on the free end of which is pivotally mounted a double bell-crank 22 which swings in a vertical plane. Said bell-crank is provided with short actuating arm 23 to the lower end of which is secured actuating means hereinafter described.

Main frame 21 has downwardly depending arms 24 and 25. Through said arms slidably extends a horizontal solenoid rod 26 which is made of insulating material and carries at its outer end a vertically slotted head 27. Through the slot 27' of said head extends a bolt 28 which extends through and connects together the short arms 23. Said rod 26 has fixed thereto a laminated block 29 which, in conjunction with coil 30, forms an electro-magnet when the current is passing through said coil.

31 is an insulating sleeve and 32 is a protecting housing for said coil and sleeve. Said insulating sleeve 31 prevents leakage of the electric current from the turns of the coil. The bolt 28 is provided with an anti-friction sleeve 33 which prevents friction between said bolt and the inner sides of the slot 27'.

As best shown in Fig. 6, a coiled tension spring 34 is secured to each end of said bolt by means of a link 35. The other ends of said springs are adjustably connected to the arm 24 by means of tension bolts 36. The upper end of bell-crank 22 is provided with a pair of longer arms 37, each of said arms carrying an inwardly projecting trunnion bolt 38 (see Fig. 4) screwed into a thickened portion 39 at the end of each arm. The inner end of each bolt 38 carries a yoke between the arms of which is mounted an anti-friction roller 42 which travels on a side plate 18 already described. Each bolt 38 also carries a main anti-friction roller 43 which travels on the under side of the rails 17. At the forward end of each rail 17 is a

dog 44 which is pivoted on a bolt 45 and is normally held by a spring 46 in the position shown in full lines in Fig. 2, in which position said dog forms a continuation of the rail 17. Said dog may be provided with a tail-piece 47 which laps over upon a stop or ledge 48 at the front end of rail 17. Above the plates 18 a pair of resetting rollers 49 are secured to the trolley pole by means of the split casting 51 which is clamped to the pole by a bolt 52. Each of said rollers 49 is in a vertical alinement with one of the arms 37 so as to engage said arm when the trolley pole is pulled down. A stop block 53 (see Figs. 1 and 2) at the outer end of frame 21 limits the movement of the bell-crank 22 so that the arms 37 thereof will not move farther up than shown in Fig. 2. 54 is the usual trolley wheel and 55 the line wire.

In Fig. 7 the course of the trolley pole wire 56 is shown, said wire being led down into the rear end of the solenoid and then back thereover from the front end thereof (in order to follow frame 21 of Fig. 6) and thence down through the circuit breaker and motor to the rails.

The operation is as follows: Normally the parts are in the position shown in Fig. 1, the combined action of the springs 34 and electro-magnet holding the bell crank arms 37 upward with sufficient force to cause the pressure of rollers 43 against the under sides of rails 17 to maintain the trolley wheel 54 in contact with the line wire 55 under the desired degree of pressure. If, now, the trolley leaves the wire, the bell crank 22 forces the trolley pole farther up until the rollers 43 travel beyond the ends of the rails 17 and become disengaged therefrom, thereupon assuming the position shown in full lines in Fig. 2. The trolley pole then falls until the resetting rollers 49 carried thereby strike upon the crank arms 37. At this time, by reason of the electric current being cut off from the electro-magnet, the crank arms 37 are maintained in the upright position only by the action of the springs 34. Said springs 34 yield sufficiently to allow the rollers 49 to partially depress the crank arms 37, when the trolley pole falls and the rollers 49 strike them, said arms acting to cushion the fall of the trolley pole. At such time the roller 49 will occupy approximately the uppermost of the two dotted outlines thereof shown in Fig. 2. The conductor may now pull the trolley pole down, thereby farther depressing the crank arms 37 under the pressure of rollers 49, until the rollers 43 carried by said crank arms engage dogs 44 forwardly of their pivots and cause said dogs to trip into the position shown in Fig. 2 in the dotted lower position, until the rollers 43 pass beneath said dogs and springs 46 restore the dogs to their nor-

mal position, bringing said dogs above the rollers 43. Farther pulling down of the trolley pole causes the rollers 49 to force the arms 37 down to the lowest dotted position shown in Fig. 2. If, now, the conductor release his pull upon the trolley pole, thus relieving the pressure of the rollers 49 from the base portion of the arms 37, the springs 34 will bring the rollers 43 into engagement with the lower sides of the dogs 44 causing the rollers 43 to travel along the lower sides of the dogs and rails 17 and moving the trolley pole upward until the normal position of the parts, shown in Fig. 1, is again attained. As soon as the trolley wheel 54 again engages the line wire the electro-magnet is energized and the bell crank is given an additional tension, the trolley wheel being thereby held more forcibly in contact with the line wire. As the lever arm 37 approaches the position in which it is at right angles to the pole 14, the pole will be sustained by the exertion of a smaller force upon said lever due to the fact that almost all of the weight of the pole is taken up by the bolt with which the arm 37 is pivoted to the base. Therefore, this arrangement compensates for the lessened tension with which the spring 34 acts upon the lever arm 37, owing to the pivot of the arm 37, the part 23, and the point of engagement of the spring 34 to the frame being more nearly in alinement.

What is claimed is:

1. The combination, with a trolley pole, of a lifting member, means tending normally to raise said member, a track carried by said pole against which said member operates to lift said pole and over the end of which said member may pass to allow said pole to fall, a roller carried by said lifting member and traveling on said track, and a dog to permit said member to pass said track in returning to normal position, said dog forming a portion of said track.

2. The combination, with the trolley pole, of a track carried by said pole, said track being extended out from both sides of said pole, a pair of lifting arms pivoted to swing in unison in a vertical plane, said arms having inwardly projecting portions to engage said track on each side of said pole, and means to force said arms upwardly to cause said inwardly projecting portions thereof normally to bear against the under side of said track to lift said pole, said arms being movable across the end of said track to permit said pole to fall after an excessive upward movement thereof, said track having a pivoted portion to permit said arms to be brought therebeneath.

3. The combination, with the trolley pole, of a track carried by said pole, a lifting arm to lift said pole, a roller carried by the free end of said arm normally to press against

the lower side of said track, said arm and said pole normally being inclined in reverse directions to increase the lifting power of said arm and roller upon said track and pole 5 when the pole approaches the normal position, means tending to swing said arm upwardly, said arm and roller being adapted to escape from the end of said track upon an excessive upward movement of the pole, 10 and means to automatically restore said arm, roller and track to operative relations when the trolley pole is fully depressed.

4. In combination, a trolley pole, a track carried by said pole and extending in approximately the same direction therewith, a dog normally forming a continuation of the end of said track nearest the base of the trolley pole, said dog being adapted for downward deflection, means to automatically restore said dog to normal position, and lifting means to bear against and travel along the under side of said track to lift said pole, said lifting means freeing itself from the upper end of said track to permit 25 said pole to fall from an excessively elevated position, and means carried by said pole to force said lifting means down upon and under said dog when said pole is fully depressed.

5. In combination, a trolley pole, a track carried thereby and extending from each side thereof in the same general direction therewith, arms to bear against the under side of said track to maintain said pole normally in the elevated position, antifriction means carried by said arms to engage said track, and vertical plates carried by said pole to keep said arms in place on said track.

6. In combination, a trolley pole, a track 40 carried thereby, said track having a pivoted portion, a lifting member pivoted to swing in a vertical plane and normally engaging the under side of said track to lift said pole, said member when in the operative position 45 being inclined in the reverse direction to said pole, and a part carried by said pole above said track to engage and depress said member when the pole is depressed to bring said member into engagement with and force 50 the same beneath the pivoted portion of said track.

7. The combination, with the trolley pole, of a pair of yokes, means to clamp said yokes together astride said pole, flanges with which said yokes are provided to form rails, 55 and means normally engaging the under side of said rails to maintain said pole in the elevated position.

8. The combination with a trolley pole, of a track carried thereby, a swinging arm 60 that normally engages the under side of the track for holding the pole in a normal elevated position, said arm disengaging the track when the pole reaches an abnormally raised position, to permit the pole to drop, 65 a device carried by the pole and normally disengaged from the arm, said device engaging and depressing the arm when the pole drops, said track being provided with a separately movable portion to permit said arm 70 to reengage the under side of the track when the pole is lowered, and means other than said device for thus lowering the pole.

9. In combination, a trolley pole, a member pivoted to swing in a vertical plane to 75 sustain said pole, said member being normally inclined in the reverse direction to said pole, a track carried by the pole against the under side of which the free end of said member normally bears to hold the pole in 80 its normal operative position, said track extending lengthwise of the pole, a roller carried by the free end of said member to travel upon said track, said roller automatically disengaging said track to allow the pole to 85 drop when it reaches an abnormal position, and a spring to actuate said member, the tension of said spring upon said member becoming less direct as said member approaches a position at right angles to the 90 pole.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses at Los Angeles, in the county of Los Angeles and State of California, this 8th day of April, 1911.

ALFRED H. WINTRODE,
Administrator of the estate of Edward B. Wintrode, deceased.

Witnesses:

JOHN M. YORK,
ALBERT H. MERRILL.