No. 740,037. PATENTED SEPT. 29, 1903.

J. M. OLINGER.

TROLLEY.

APPLICATION FILED AUG. 1, 1903.

NO MODEL.

Fig. 1.

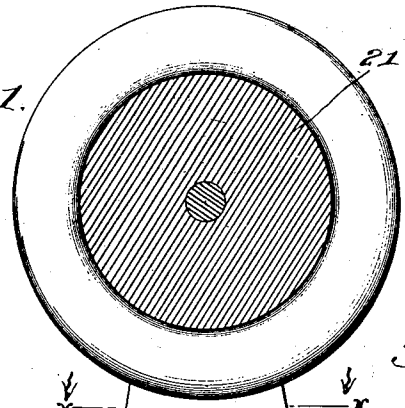



Fig. 3.

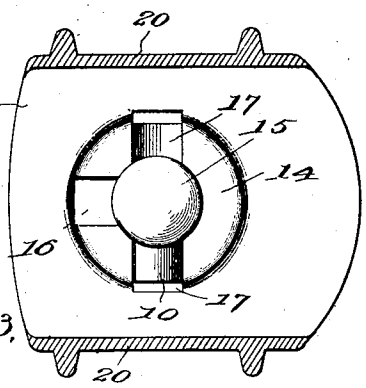



Fig. 2.

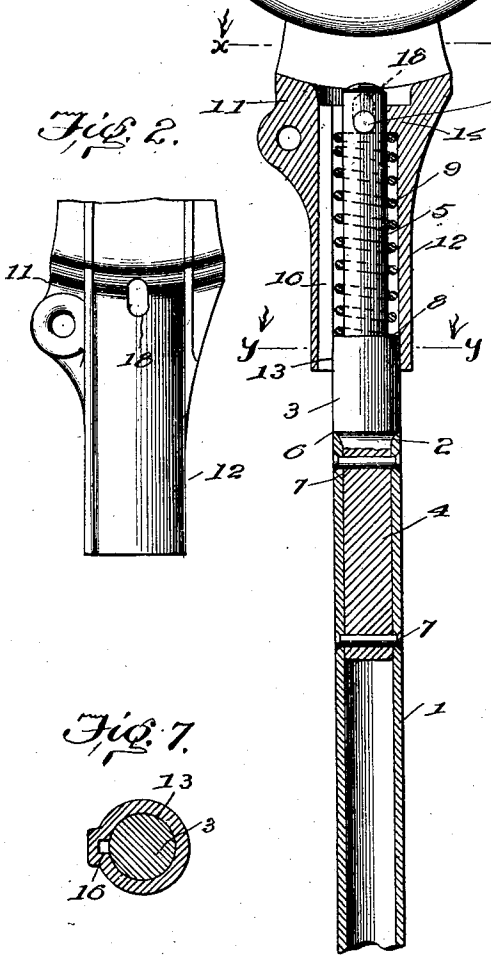



Fig. 4.

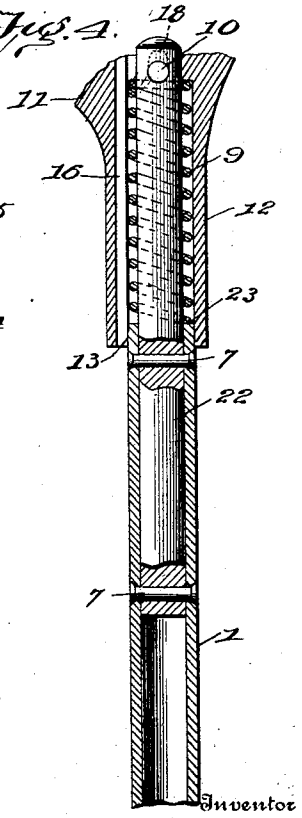



Fig. 5.

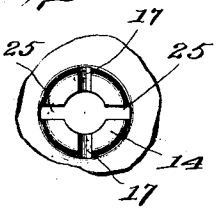



Fig. 6.

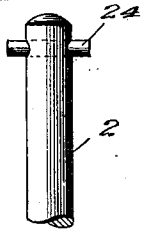



Fig. 7.




Witnesses

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THE NORRIS PETERS CO. PHOTO-LITHO. WASHINGTON, D. C.

No. 740,037. Patented September 29, 1903.

# UNITED STATES PATENT OFFICE.

JACOB M. OLINGER, OF VIENNA CROSSROADS, OHIO.

## TROLLEY.

SPECIFICATION forming part of Letters Patent No. 740,037, dated September 29, 1903.

Application filed August 1, 1903. Serial No. 167,812. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB M. OLINGER, a citizen of the United States, residing at Vienna Crossroads, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Trolleys, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to trolleys, and is in the nature of an improvement upon the construction set forth in Letters Patent No. 711,022, dated October 14, 1902.

The present invention has for its object to simplify the construction shown in said patent, so as to render the device more compact and less expensive, to render it less liable to become clogged or obstructed and more readily cleaned, and to permit the connection of the head to the pole in different angular relations.

To these and other ends my present invention consists in certain novel features which I will now proceed to describe and will then particularly point out in the claims.

In the accompanying drawings, Figure 1 is a central vertical section of a structure embodying my invention in one form. Fig. 2 is a side elevation of the head detached. Fig. 3 is an enlarged plan section taken on the line $x\ x$ of Fig. 1 and looking in the direction of the arrows. Fig. 4 is a partial sectional view similar to Fig. 1, illustrating a modified form of connection between the trolley-pole and its extension-pin. Fig. 5 is a detail plan view similar to Fig. 3, illustrating a modification. Fig. 6 is a view of the modified form of locking device coöperating with Fig. 5, and Fig. 7 is a detail plan section taken on the line $y\ y$ of Fig. 1 and looking in the direction of the arrows.

Referring first to the construction shown in Figs. 1, 2, 3, and 7, 1 indicates the trolley-pole, which is shown, as usual, hollow and is provided at its upper end with an extension-pin 2. In its preferred form this pin has a central enlargement or collar 3, a lower portion 4 of smaller diameter, fitting within the trolley-pole, and an upper portion 5, fitting within the head. The enlargement or collar 3 forms a shoulder 6, against which the end of the trolley-pole abuts, the pin being secured within the pole in any suitable manner—as, for instance, by headed pins or rivets 7. A shoulder 8 is formed at the junction of the portion 5 of the pin and the collar 3, which shoulder forms an abutment for the spring 9, which is coiled around the part 5 of the pin. Said pin is provided near its upper end with a locking projection 10, which also serves to keep the spring 9 in place on the pin. In the construction shown in Figs. 1 and 3 the locking projection 10 is formed by a pin or stud projecting from one side of the pin 2 only.

The head (indicated as a whole by the reference-numeral 11) consists of a tubular or sleeve-like portion 12, having an aperture 13 therein extending from its lower end almost to its upper end, said aperture being of a diameter sufficient to receive the extension 5 of the pin 2 and the spring 9 surrounding the same. At its upper end this sleeve-like portion is provided with an internal flange 14, which restricts the opening through the sleeve of the hub, forming a central aperture 15 of the same diameter as the reduced extension 5 of the pin. The under side of this flange 14 constitutes a shoulder or abutment against which the upper end of the spring 9 bears when the parts are assembled. The sleeve-like portion 12 of the head is provided with a vertical internal groove 16, which extends from the bottom of the sleeve up through the flange 14. The top of the flange 14 forms a bearing-surface on which the locking projection 10 may rest and travel after said locking projection has been forced up along the groove 16 past said flange and has been brought into engagement with the top of said flange by turning the head relatively to the pole. The upper surface of the flange 14 is provided with one or more locking-recesses 17, and in Fig. 3 I have shown two of these locking-recesses arranged diametrically opposite each other and at right angles to the groove 16. The side walls of the head are preferably provided with openings 18, communicating with the notches or seats 17. These openings serve to permit the inspection of the notches or seats, so that it may be readily seen whether they are obstructed or not and also whether the locking projection is properly seated and in which notch or recess it is seated. Said

opening also serves to prevent the accumulation of obstructive matter in said notches or recesses and to facilitate their cleaning out if obstructed.

The sleeve-like portion 12 of the head is provided at its upper end with the usual outwardly-flaring flange 19, from which the cheek-pieces or jaws 20 arise, carrying between them the trolley-wheel 21.

The general object of the invention is of course the same as in the case of the patent above referred to—namely, to permit the ready removal and replacement of the head. When the parts are assembled in the position shown in Figs. 1 and 3, with the locking projection in engagement with one of the recesses 17, the head is held firmly in position on the end of the pole by reason of this engagement and the pressure exerted by the spring 9. When it is desired to disconnect the head, it is pressed downward on the pole sufficiently to disengage the projection 10 from the notch 17 and is then turned until said projection comes opposite the groove 16, whereupon the spring will force the head upward, and it may be readily removed. A reversal of these operations permits the head to be replaced. The provision of a plurality of locking-seats is advantageous, for the reason that either by accident or from continued use the trolley-pole frequently becomes bent to such an extent that it is desirable to reverse it by disconnecting it at its lower end and turning it half-way around on its longitudinal axis and again connecting it. When this is done, the turning of the head through a half-revolution, so as to seat the locking projection 10 in the recesses 17 opposite the recess in which it was formerly seated, will bring the head at once into proper relation to the pole. A similar third notch lying opposite the groove 16 will permit the head to be adjusted to a quarter-turn on the pole, and the number and location of the notches or recesses may be varied as desired. It will be further noted that by locating the locking-notches at the upper end of the sleeve-like portion of the head I am enabled to materially shorten the head, making it no longer than the ordinary trolley-head, and am at the same time enabled to employ a spring of greater length. A still further advantage of the present construction is that the groove 16 extends straight through the sleeve-like portion of the head from end to end thereof and is therefore less liable to obstruction and more readily kept clean. The head is made smaller, lighter, more compact, and less expensive to manufacture, and the locking devices are located in the open spaces between the jaws at the upper end of the sleeve portion of the hub, where they are readily accessible and plainly visible.

Various modifications in the details of construction will readily suggest themselves. For instance, I have shown in Fig. 4 a construction in which the pin which constitutes an extension of the trolley-pole and which is here designated by the numeral 22 is not provided with any enlargement or collar, but is of the same diameter from end to end. In this case the upper end of the pole constitutes the abutment for the lower end of the spring 9, as indicated at 23. Again, the locking projection may be in duplicate, and in Figs. 5 and 6 I have shown a construction in which a pin 24 passes through the upper end of the extension-pin 2, projecting therefrom on each side, so as to form two locking projections. In this case two grooves 25 are formed in the head diametrically opposite each other instead of the single groove 16.

Various other modifications will readily suggest themselves, and I therefore do not wish to be understood as limiting myself to the precise details of construction hereinbefore described, and shown in the accompanying drawings.

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

1. In a trolley, the combination, with a trolley-pole provided with a locking projection, of a trolley-head having a sleeve portion provided with an inwardly-extending flange having a locking-seat on its upper surface and an internal groove extending along the wall of said sleeve portion and through the flange, and a spring located in said sleeve portion and bearing against the under side of the flange and against the trolley-pole, substantially as described.

2. In a trolley, the combination, with a trolley-pole provided with a locking projection, of a head having a sleeve portion terminating at its upper end in a bearing-surface having a locking-seat, said sleeve portion having a groove extending the entire length thereof, and a spring located in said sleeve portion and bearing against the pole and head, substantially as described.

3. In a trolley, the combination, with a trolley-pole provided with a locking projection, of a trolley-head having a sleeve to receive the end of the pole, said sleeve being provided with a groove for the locking projection and a plurality of locking-seats arranged at different points around the axis of the pole, and a spring interposed between the head and pole, substantially as described.

4. In a trolley, the combination, with a trolley-pole, of a trolley-head provided with a trolley-wheel, said pole and head being united by a bayonet-joint, comprising a slot or groove and a plurality of terminal locking-seats communicating with the same and located at different points around the axis of the pole, and a spring interposed between the head and pole, substantially as described.

5. In a trolley, the combination, with a trolley-pole having an abutment and a locking projection, of a head having a sleeve portion provided with an internal groove extending therethrough from end to end, and an in-

wardly-extending flange at the upper end of said sleeve portion, provided with a bearing-surface and a locking-seat on its upper side, and a spring inclosed within said sleeve portion and bearing against the under side of the flange of the sleeve and against the abutment of the trolley-pole, substantially as described.

6. In a trolley, the combination, with a trolley-pole having a locking projection, of a trolley-head having a sleeve portion to receive the end of the trolley-pole, a longitudinal groove, and a locking-seat at its upper end, said head being provided with an opening through its body communicating with the said locking-seat to permit cleaning and inspection thereof, substantially as described.

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

JACOB M. OLINGER.

Witnesses:
F. W. SCHAEFER,
GERTRUDE YOUNG.