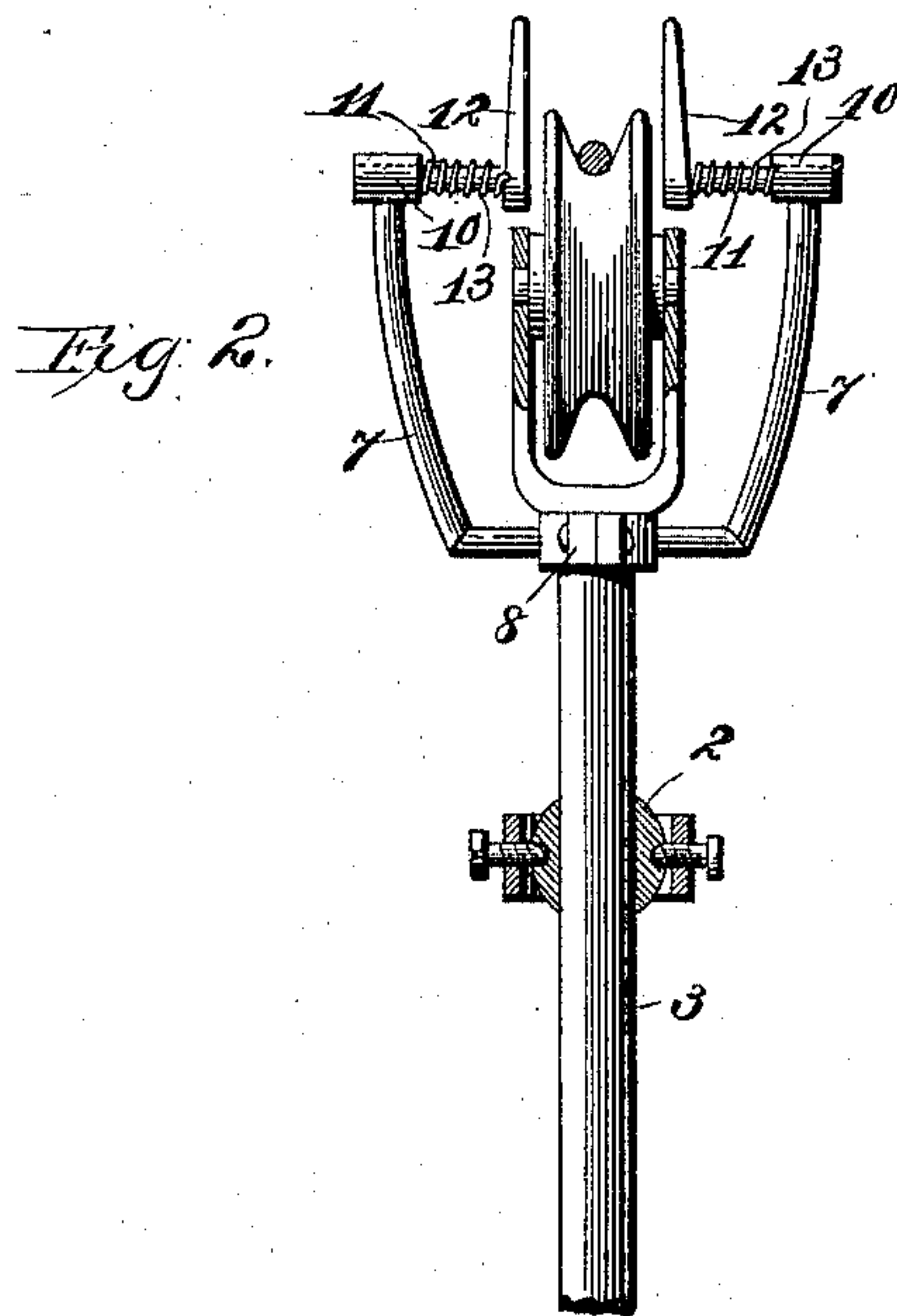
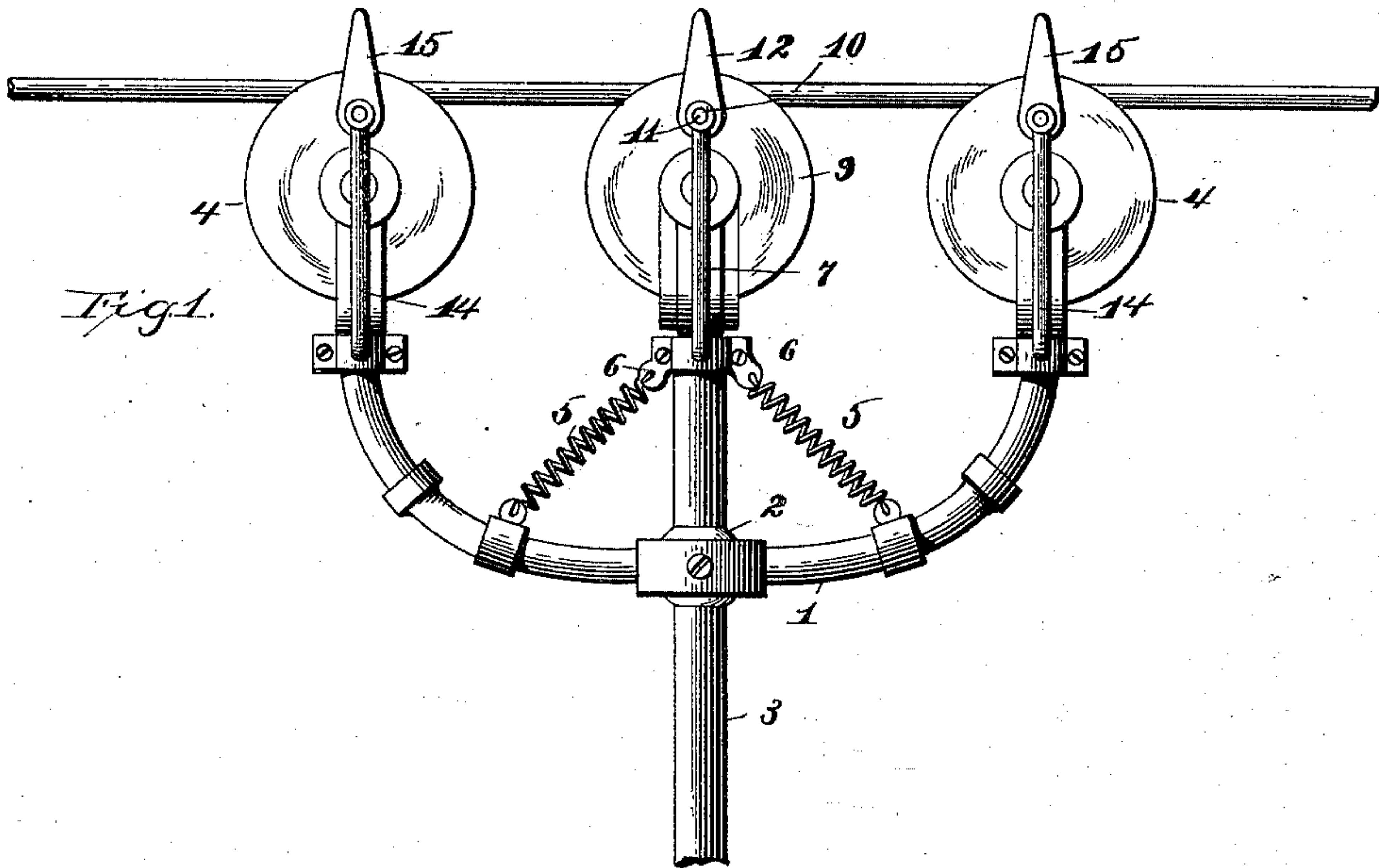


(No Model.)

F. S. BIRTH.  
TROLLEY GUARD.

No. 567,879.

Patented Sept. 15, 1896.



Witnesses  
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# UNITED STATES PATENT OFFICE.

FRED S. BIRTH, OF PHILADELPHIA, PENNSYLVANIA.

## TROLLEY-GUARD.

SPECIFICATION forming part of Letters Patent No. 567,879, dated September 15, 1896.

Application filed November 19, 1895. Serial No. 569,378. (No model.)

*To all whom it may concern:*

Be it known that I, FRED S. BIRTH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Trolley-Guards, of which the following is a full, clear, and exact specification.

My invention relates to a new and useful improvement in trolley-guards, and has for its object to provide a device which will prevent the displacement of the trolley-wheel from the feed-wire during its travel thereon, and especially when passing under cross-wires or switches.

With these ends in view the invention consists in the details of construction and combination of elements hereinafter set forth, and then specifically designated by the claims.

In order that those skilled in the art to which my invention appertains may understand how to make and use the same, I will describe its construction and operation in detail, referring by number to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of the upper portion of a trolley-pole having my improvement applied thereto, and Fig. 2 is a central vertical section thereof.

Similar numbers denote like parts in the views of the drawings.

Great difficulty has heretofore been experienced in maintaining contact and alinement between the trolley-wheel and feed-wire in electric propulsion on account of the oscillation of the car to which the trolley-pole is attached, as well as the necessity of the trolley-wheel passing under cross-wires, switches, and the like, and it has been found impossible to prevent a single trolley-wheel from jumping off its feed-wire when the car is moving at a rapid rate. To overcome this difficulty I provide a rock-arm 1, which is pivoted to a collar 2, secured upon the trolley-pole 3. In the upper ends of this rock-arm, which are forked, are journaled the secondary trolley-wheels 4.

5 are coiled springs attached to the rock-arm at either side of its pivot-point and connected at 6 to the trolley-pole, so as to main-

tain the rock-arm normally in a horizontal position or at right angles to the trolley-pole. 7 are bracket-arms secured by means of a clamp 8 to the pole just below the fork in which the primary trolley-wheel 9 is journaled and extending up both sides thereof, terminating in bearings 10, in which are fitted the shanks 11 of the fingers 12. These fingers are arranged in close proximity to the primary wheel, so as to leave less space therebetween than the thickness of the feed-wire, which will prevent the latter from crowding between said fingers and wheel.

13 are coiled springs so arranged around the shanks 11 as to impart a resilient movement to the fingers in order that when the trolley-wheel passes under a cross-wire the fingers, in coming in contact with said cross-wire, will be depressed and then spring upward to their normal position, thereby embracing the wire and preventing the wheel from side movement.

Secured to the rock-arm, just below each of the forks in which the secondary trolleys are journaled, are bracket-arms 14, similar in all respects to those described in connection with the primary trolley-wheel, and in the upper end of these bracket-arms are also pivoted fingers 15, constructed and operated in the same manner as the fingers 12, and for the same purpose, so that as the car passes along the track and the trolley-wheels 4 and 9 travel upon the feed-wire said trolley-wheels are prevented from sidewise displacement by means of the fingers, and when said fingers come in contact with a cross-wire the first pair are depressed and again resume their normal position before this primary pair come in contact with said cross-wire, and these latter fingers are likewise depressed and assume their normal position upon either side of feed-wire before the last fingers 15 come in contact therewith. By this arrangement it will be seen that at no time are the trolley-wheels free to jump sidewise off the feed-wire, and as the rock-arm may assume different angles relative to the trolley-pole, on account of the elasticity of the springs 5, said pole is adapted to travel upon the feed-wire, which varies in height from the car, without causing the trolley-wheels to lose their bearing upon said wire.



Another advantage of my improvement is that in crossing a break or cross main line one or the other of the three trolley-wheels will at all times be in contact with the live  
5 feed-wire of the line upon which they are traveling, and therefore the current to the car is never interrupted, as is the case with the constructions now in use.

I am aware that slight modifications might  
10 be made in the constructions shown and described without departing from the spirit of my invention, and I therefore do not wish to limit myself to this exact construction.

Having thus fully described my invention,  
15 what I claim as new is—

1. In a device of the character described, a trolley-arm, a primary trolley-wheel carried thereby, a rock-arm pivoted to said trolley-arm, two secondary trolley-wheels journaled  
20 in said rock-arm and springs for retaining the rock-arm in a normal position, as and for the purpose described.

2. The herein-described combination of a trolley-arm, a primary trolley-wheel carried  
25 thereby, a rock-arm pivoted to said trolley-

arm, two secondary trolley-wheels journaled in said rock-arm, springs for retaining said rock-arm in a normal position and permitting it to assume a number of angles relative to  
30 said pole, and spring-actuated fingers arranged upon either side of the trolley-wheels, whereby the latter are prevented from jumping off the feed-wire.

3. In a device of the character described, a trolley-arm, a trolley-wheel journaled in a  
35 fork on the end of said trolley-arm a rock-arm pivoted to the trolley-arm below the fork, springs connecting the two sides of the rock-arm to the trolley-arm, supplemental trolley-wheels journaled in forks on the ends to the  
40 rock-arm and spring-pressed fingers adapted to guard each trolley-wheel, as and for the purpose described.

In testimony whereof I have hereunto affixed my signature in the presence of two sub-  
45 scribing witnesses.

FRED S. BIRTH.

Witnesses:

S. S. WILLIAMSON,  
SAMUEL L. TAYLOR.