

No. 740,707

PATENTED OCT. 6, 1903.

B. STENVALL.  
TROLLEY.

APPLICATION FILED MAR. 21, 1903.

NO MODEL.

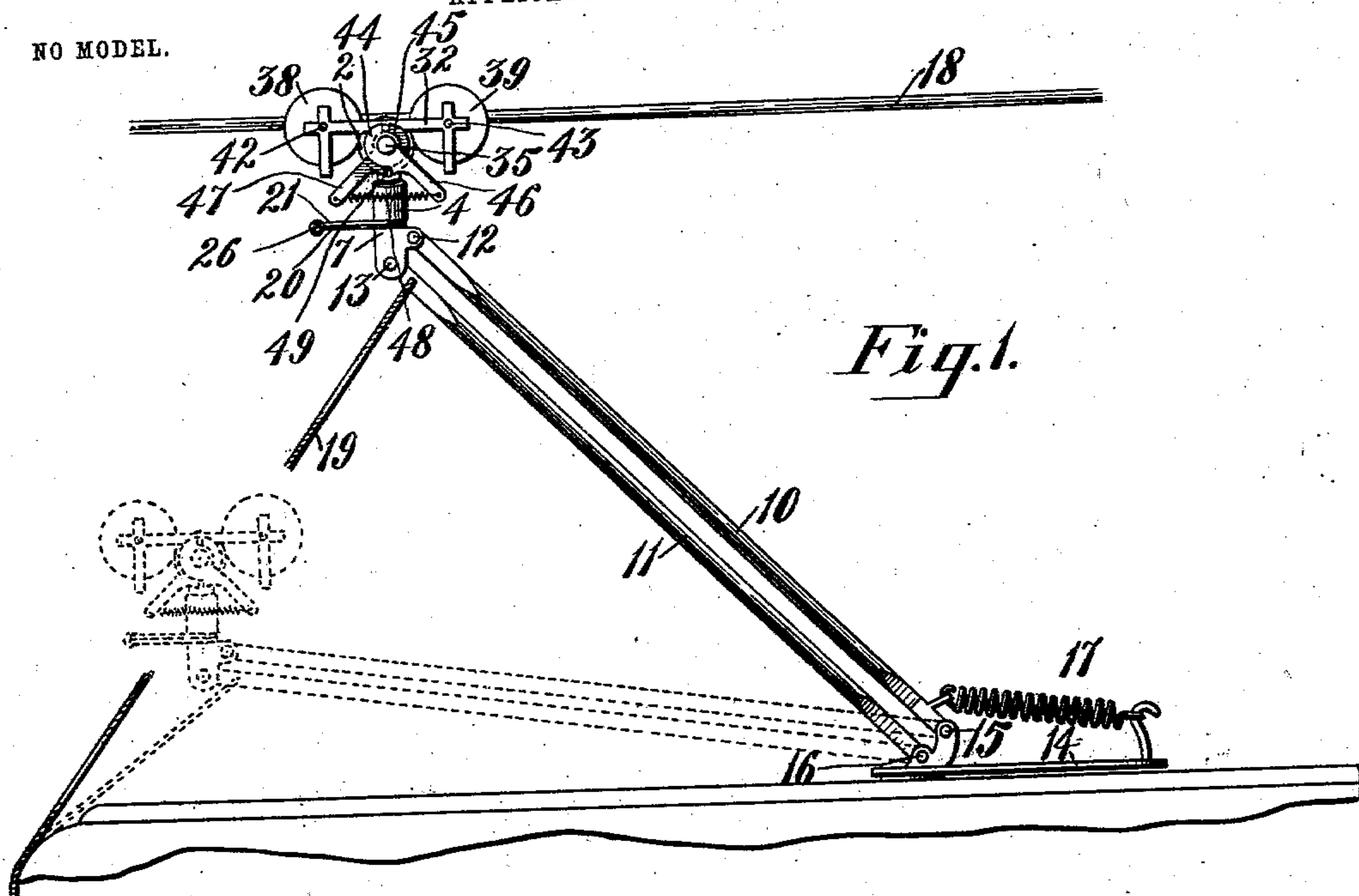


Fig. 1.

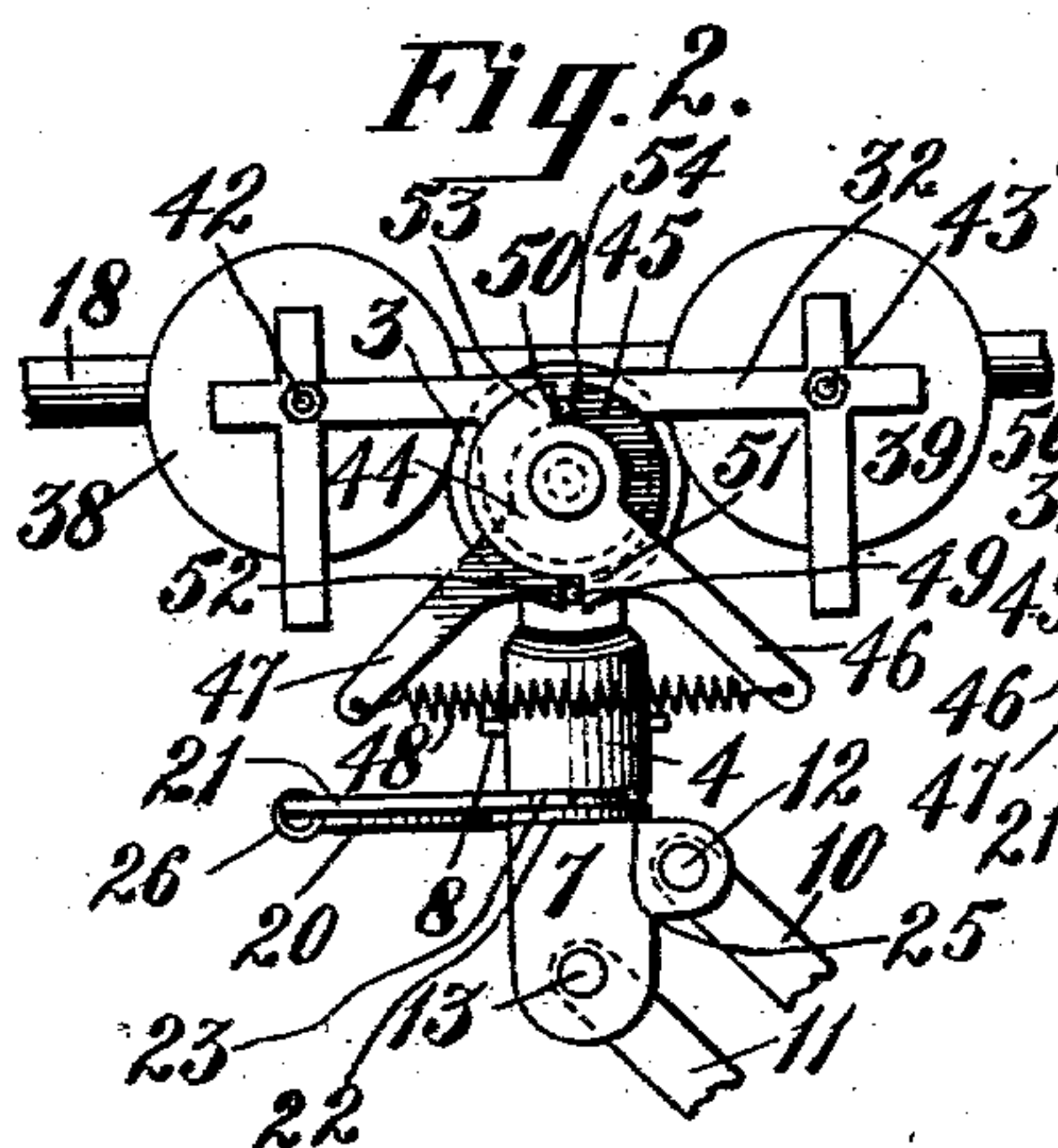


Fig. 2.

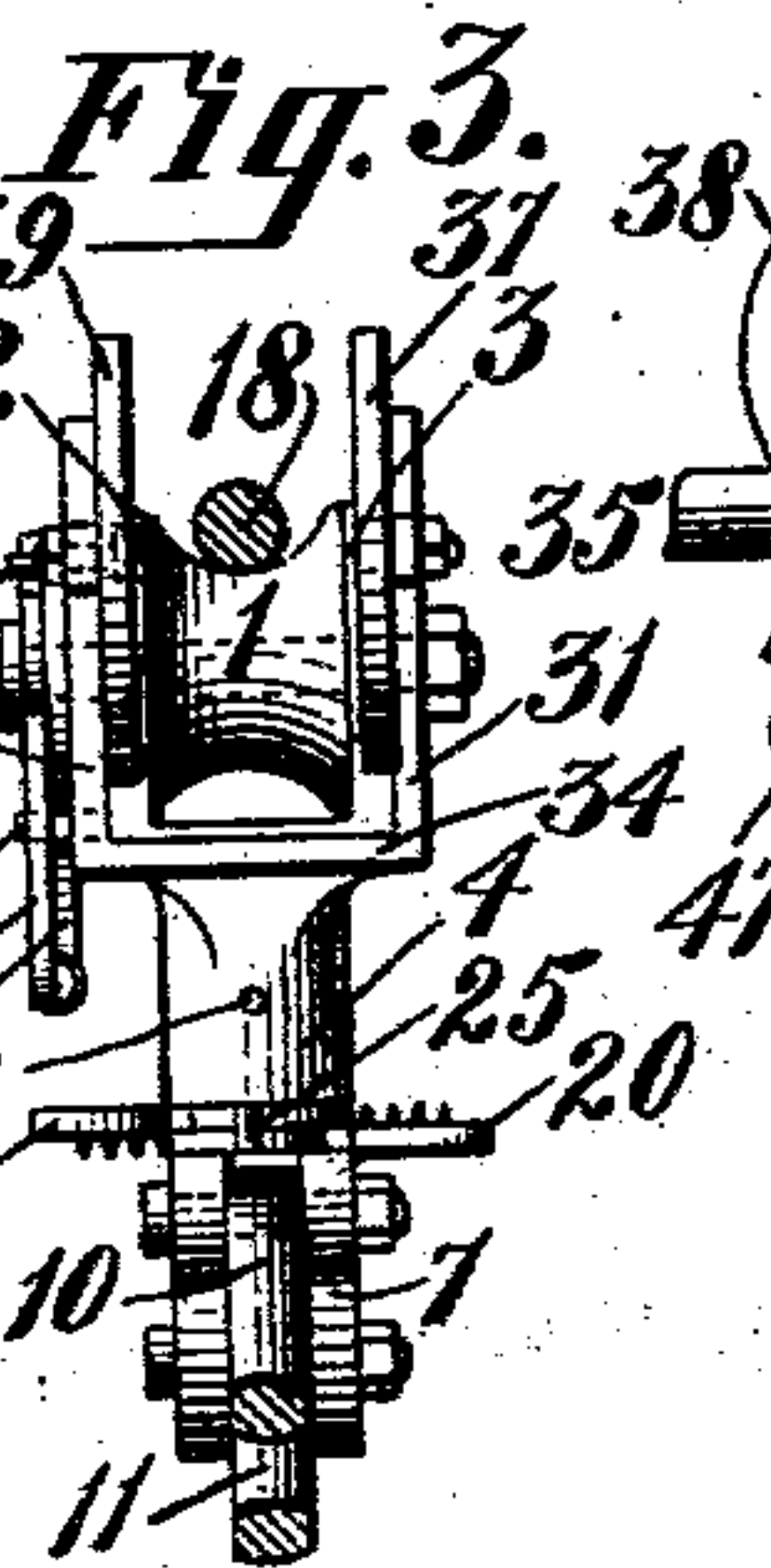


Fig. 3.

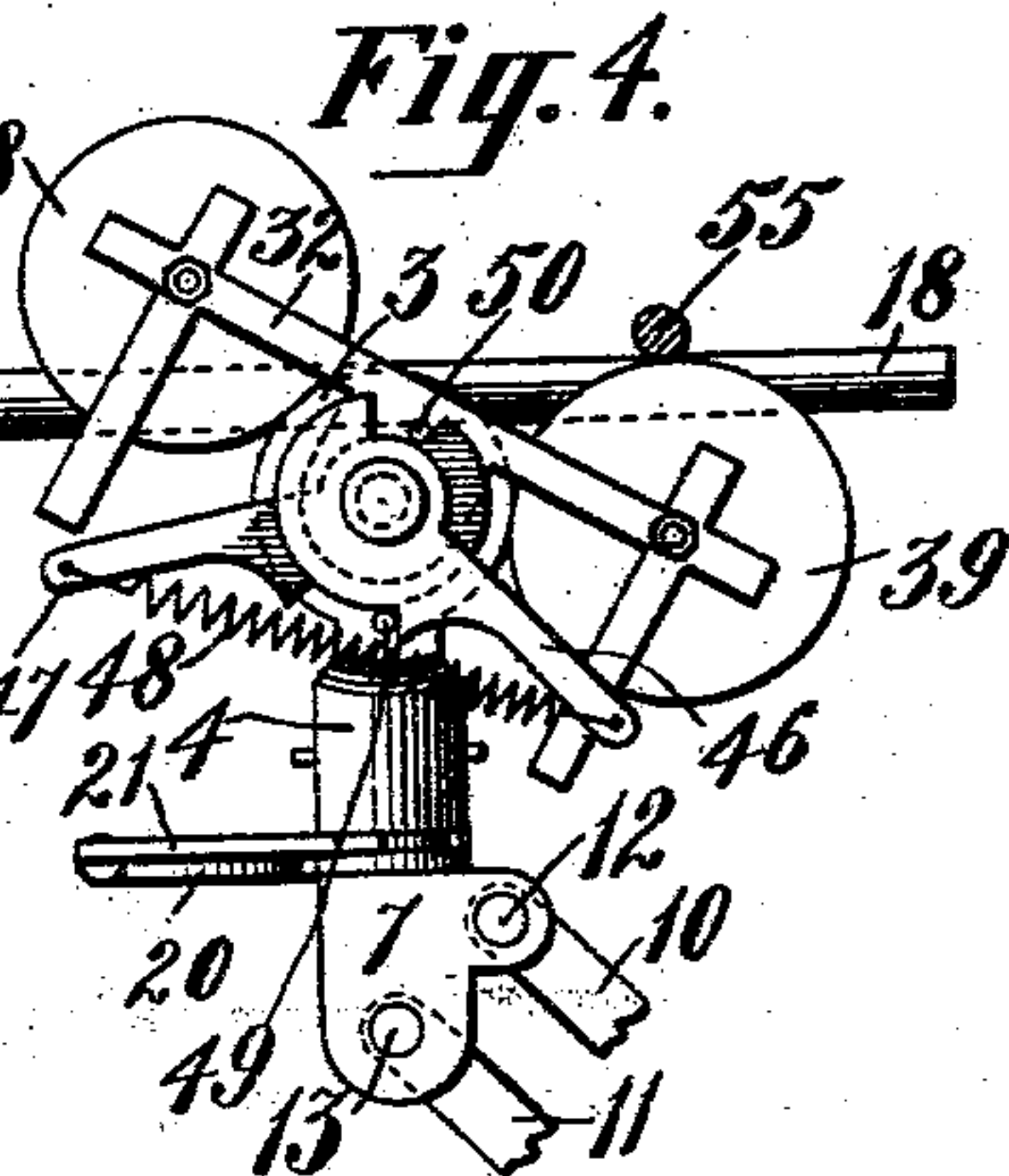


Fig. 4.

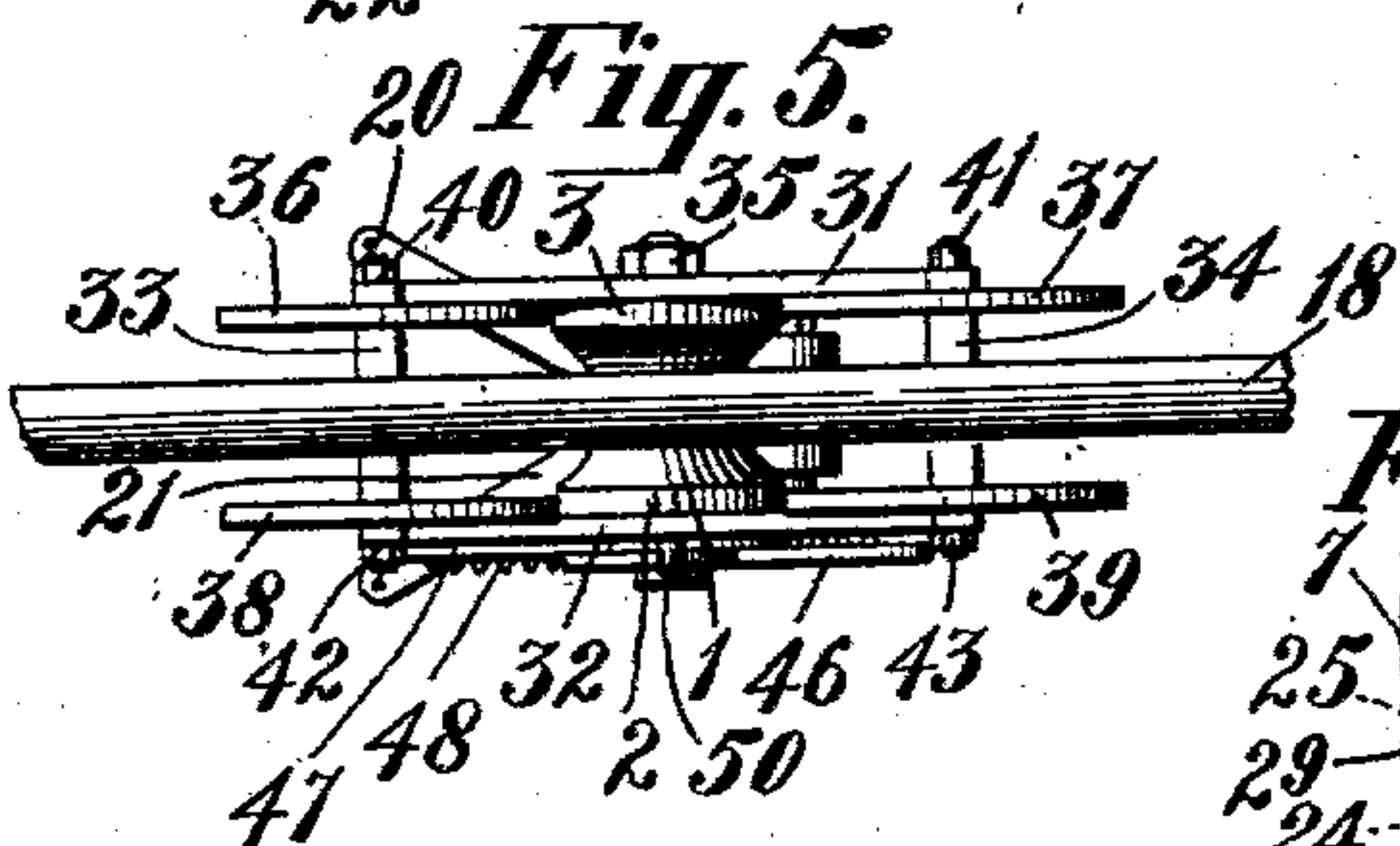


Fig. 5.

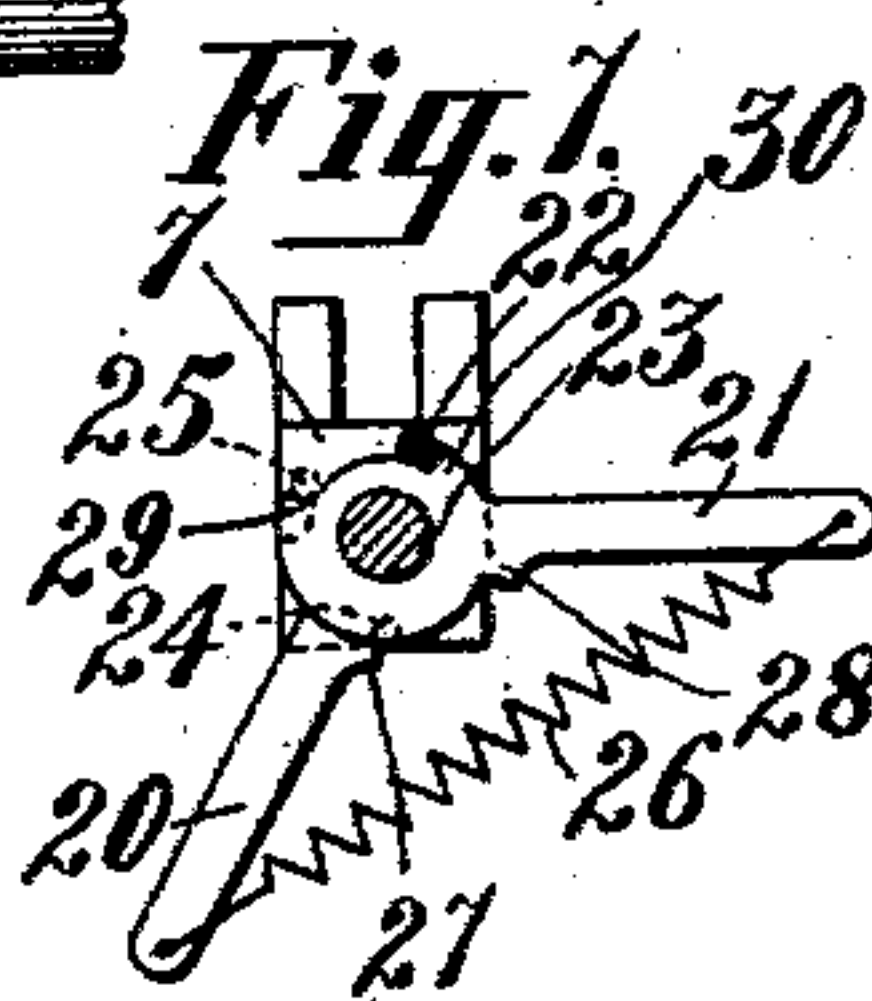


Fig. 6.

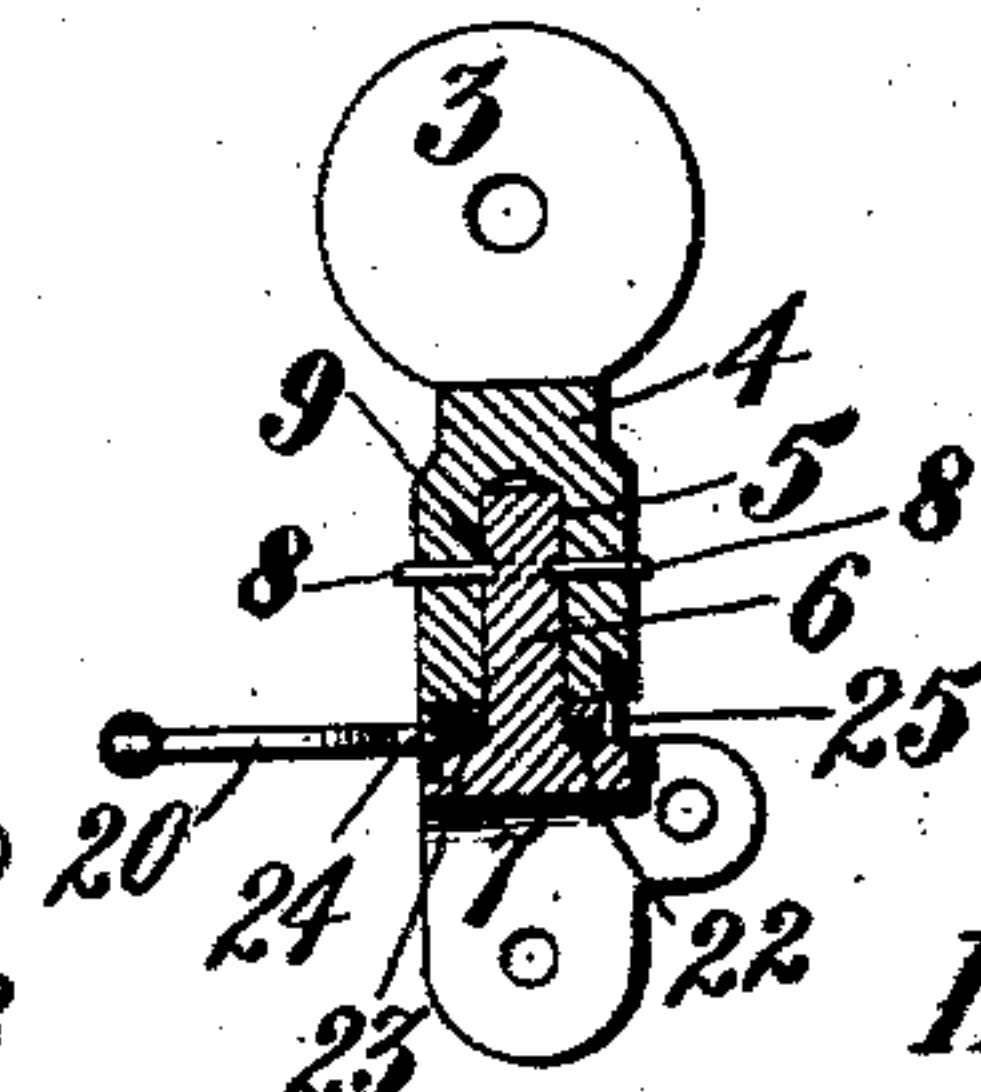


Fig. 7.

Witnesses:  
H. G. Mackenby  
Henry V. Kneale

Inventor:  
Bruno Stenvall  
by attorneys  
Brown & Leland



# UNITED STATES PATENT OFFICE.

BRUNO STENVALL, OF NEW YORK, N. Y.

## TROLLEY.

SPECIFICATION forming part of Letters Patent No. 740,707, dated October 6, 1903.

Application filed March 21, 1903. Serial No. 148,816. (No model.)

*To all whom it may concern:*

Be it known that I, BRUNO STENVALL, a citizen of the United States, and a resident of the borough of Bronx, in the city and State of New York, have invented a new and useful Improvement in Trolleys, of which the following is a specification.

My invention relates to an improvement in trolleys, and has more particularly for its object to provide certain improvements in the construction, form, and arrangement of the several parts whereby the trolley-wheel will be prevented from leaving the conducting-wire, means being also provided for permitting the trolley-wheel support to rock a limited distance horizontally, so as to keep the wheel at all times running smoothly along the said conducting-wire.

A further object is to provide a rocking guard for the trolley-wheel which is automatically returned to its normal position when depressed in either direction therefrom, thus permitting the guard to pass under a cross-wire without removing the trolley-wheel from its conducting-wire.

A practical embodiment of my invention is represented in the accompanying drawings, in which—

Figure 1 shows my improved trolley in side elevation, in one position in full lines and in another position in dotted lines. Fig. 2 is an enlarged side view of the trolley-wheel, its guard, and their adjacent parts, the guard being shown in its normal horizontal position. Fig. 3 is an end view of the same. Fig. 4 is a view similar to Fig. 2, showing one end of the guard depressed as the trolley passes under a cross-wire. Fig. 5 is a view in top plan of the parts represented in Fig. 2. Fig. 6 is a vertical central section through the trolley-wheel yoke and its supporting-bracket; and Fig. 7 is a transverse section through the trolley-wheel-supporting bracket, showing the spring for normally returning the trolley-wheel into its normal position in alignment with its arms.

The trolley-wheel itself is denoted by 1, and it is mounted in suitable bearings in the uprising branches 2 and 3 of the yoke 4. This yoke 4 is provided with a socket 5, within which is located the post 6 of the supporting-bracket 7, thus permitting the yoke to

turn horizontally on the bracket. The bracket 4 is held upon the post 6 against removal by means of one or more pins 8 passing through the socket 5 and entering a circumferential groove 9 in the post 6. Two trolley-arms 10 and 11 are hinged at their upper ends to the bracket 7 at 12 and 13 and at their lower ends to a platform 14, as shown at 15 and 16. These hinged connections 12 13 15 16 of the trolley-arms 10 11 are so arranged that the trolley-yoke 4 is at all times held in a vertical position irrespective of the angular position of the said trolley-arms. A suitable spring 17 extends between the platform 14 and one of the trolley-arms—in the present instance the trolley-arm 10—tending to hold the trolley-wheel 1 against the under side of its conducting-wire 18. A flexible connection 19 leads from the other trolley-arm 11 down into position to be grasped by the operator for positively removing the trolley-wheel from its conducting-wire.

To keep the axis of the trolley-wheel at all times at right angles to the direction of the conducting-wire, I permit the yoke to have a horizontal rocking motion on its supporting-bracket.

The means which I employ for returning the trolley-wheel into alignment with its arms is constructed as follows: Two levers 20 21 project outwardly from toothed disks 22 23, mounted on the post 6 of the bracket 7 below the socket 5 of the yoke 4. The bracket 7 is provided with a stud 24, projected upwardly into the plane of the two disks 22 23, and the yoke 4 is provided with a stud 25, projected downwardly into the plane of the two disks 22 23 at the opposite side of the post 6. A spring 26 connects the free ends of the levers 20 21, tending to pull them together. The disks 22 23 are provided with abutments 27 28, fitted to engage the stud 24 when the levers are in their normal position, and the said disks are also provided with abutments 29 30, arranged to be engaged by the stud 25 of the trolley-wheel yoke for swinging the levers apart as the stud is moved in one or the other direction away from its normal position.

The guard for retaining the trolley-wheel in engagement with its conducting-wire is constructed as follows: A suitable frame-



work, composed of side bars 31 32, connected at their opposite ends by U-shaped cross-bars 33 34, is hinged on the axle 35 of the trolley-wheel 1. Four rotary disks 36 37 38 39 are mounted on suitable studs 40 41 42 43 in the side bars 31 32 of the guard-frame in such an arrangement that the conducting-wire 18 is always retained between at least one pair of the disks irrespective of the position of the same. The guard is held normally in a horizontal position by the following arrangement, which is quite similar to the arrangement for holding the trolley-wheel in alinement with the conducting-wire: Two disks 44 45 are mounted on the trolley-wheel axle 35 exterior to one side of the guard-frame, which disks are provided with levers 46 47, the free ends of which are connected by a spring 48, tending to pull the levers together. A stud 49 projects outwardly from the yoke 4, and a stud 50 projects outwardly from the side bar 32 of the guard-frame. The disks 44 45 are provided with abutments 51 52, which engage the stud 49 when the guard is in its normal horizontal position. The disks 44 45 are further provided with abutments 53 54, which are engaged by the stud 50, carried by the guard-frame, so that when the guard-frame is rocked in one or the other direction it will force one of the levers away from the other lever.

In Fig. 4 I have shown the guard tilted into a position which will permit it to pass under a cross-wire 55. This illustrates the point that the guard is never entirely released from the conducting-wire 18, along which the trolley-wheel is traveling, even when the trolley-wheel is passing under a crossing.

It is evident that changes might be resorted to in the form, construction, and arrangement of the several parts without departing from the spirit and scope of my invention. Hence I do not wish to limit myself strictly to the structure herein set forth; but

What I claim is—

1. In a trolley, a supporting-bracket, a yoke mounted to turn horizontally thereon, a trolley-wheel carried by the yoke and means for

yieldingly holding the wheel and its yoke in their normal position comprising a stud carried by the bracket, a stud carried by the yoke, toothed disks located in the plane of the said studs, levers projecting from said disks and a spring connecting the free ends of the levers tending to draw them together.

2. In a trolley, a yoke, an axle, a trolley-wheel mounted on the axle, a vertically-swinging guard mounted on the axle, projecting to the front and rear of the trolley-wheel, said guard being free to be depressed from its normal horizontal position at the front and rear of the trolley-wheel and means for yieldingly holding the guard in its horizontal position.

3. In a trolley, a yoke, an axle, a trolley-wheel mounted thereon, a vertically-swinging guard mounted on the said axle and means for yieldingly holding the guard in its horizontal position comprising a stud projecting from the yoke, a stud projecting from the guard, two toothed disks mounted on the axle in the plane of the said studs, levers projecting from the disks and a spring tending to draw the levers together.

4. In a trolley, a yoke, a trolley-wheel mounted therein, a guard comprising a framework mounted to swing on the axle of the wheel and rotary disks mounted in the framework in position to receive between them a conducting-wire.

5. In a trolley, a supporting-bracket, a yoke mounted to turn horizontally thereon, a trolley-wheel carried by the yoke, means for yieldingly holding the wheel in its normal position in alinement with the bracket, a tilting guard mounted on the axis of the wheel and means for yieldingly holding the guard in a horizontal position.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 19th day of March, 1903.

BRUNO STENVALL.

Witnesses:

WILLIAM F. HIERS,  
W. Y. MCINTOSH.