

No. 768,245.

PATENTED AUG. 23, 1904.

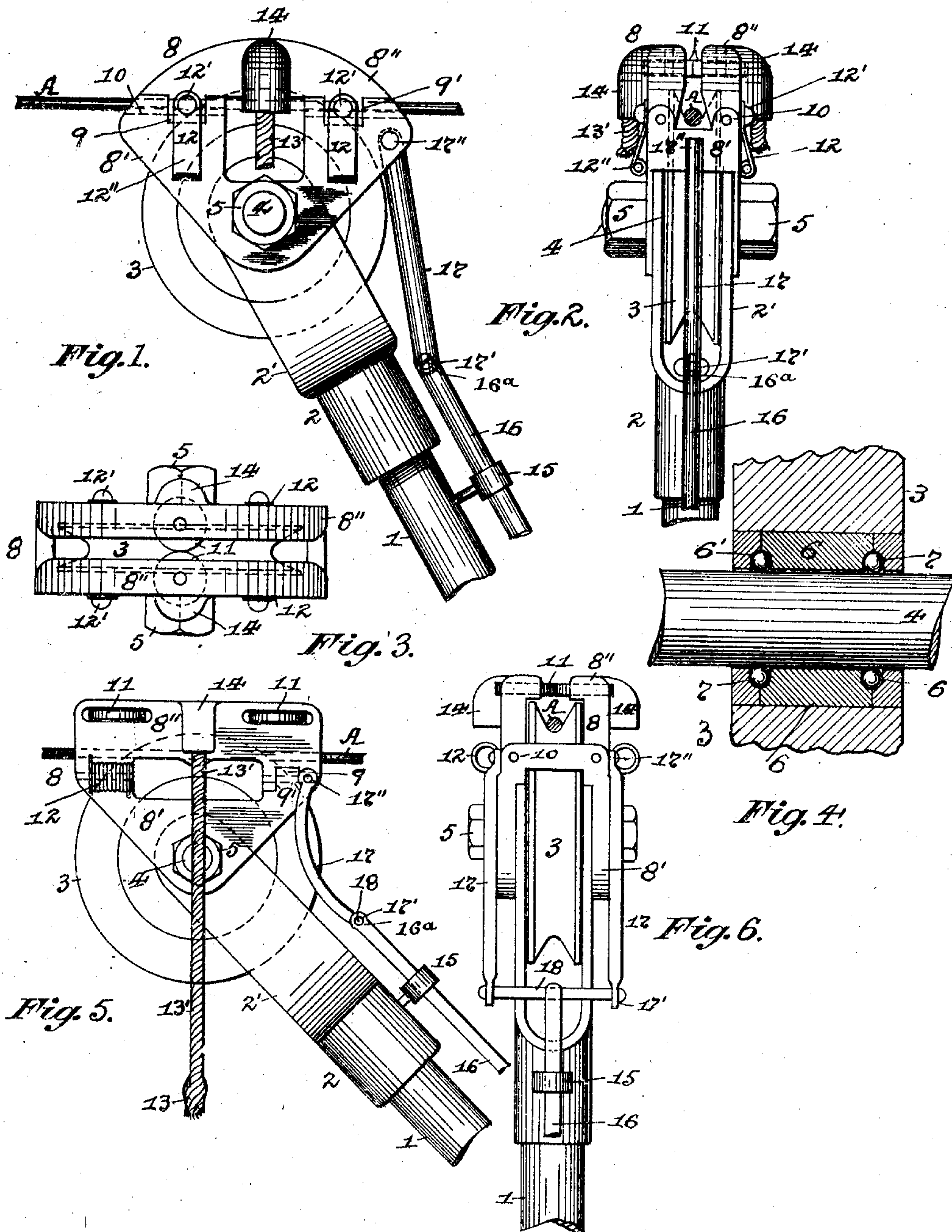
F. C. SULLIVAN & L. S. HARRIS.

TROLLEY.

APPLICATION FILED JULY 22, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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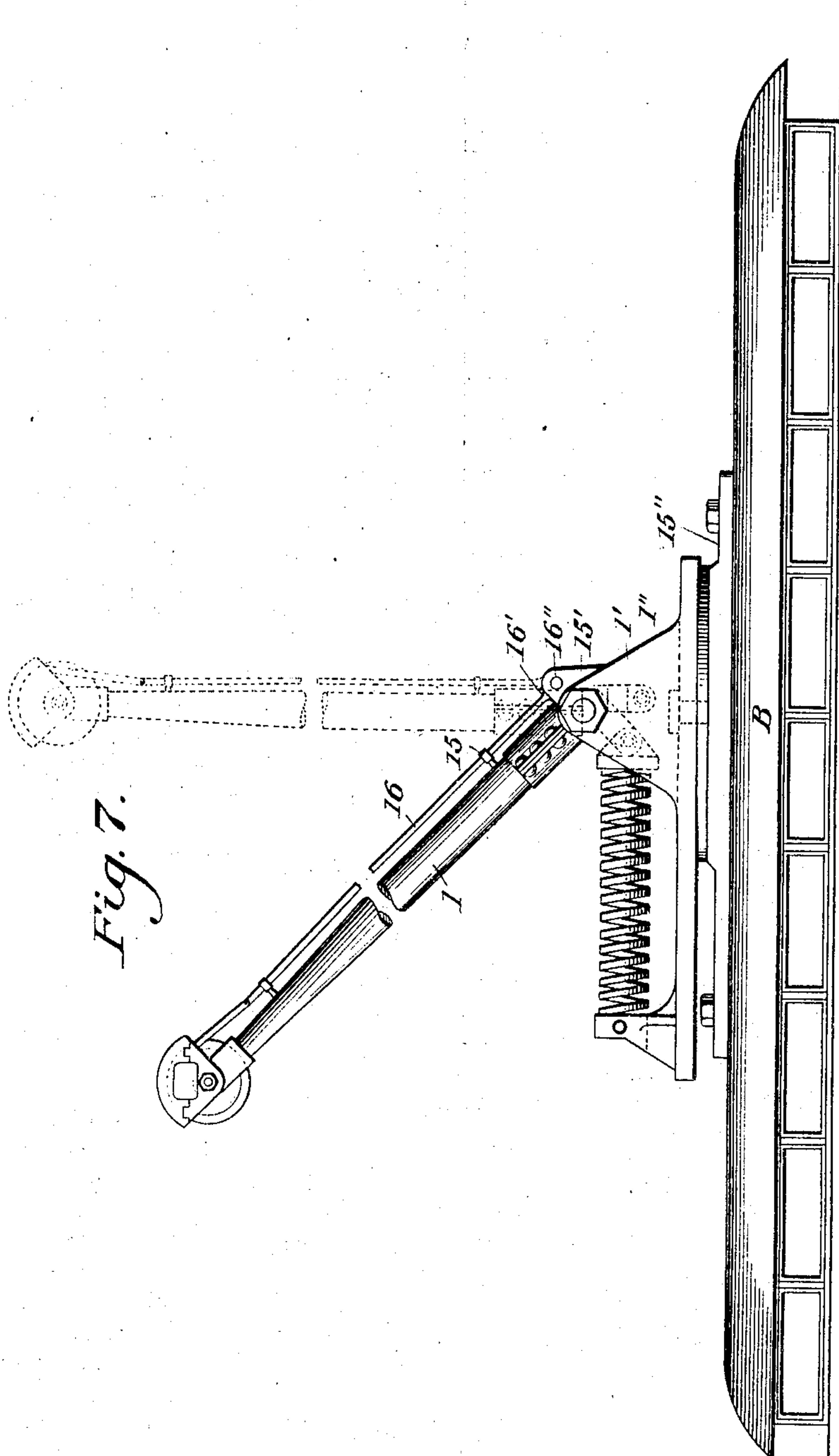
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2 SHEETS—SHEET 2.



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# UNITED STATES PATENT OFFICE.

FRANCIS CLYDE SULLIVAN, OF McKEESPORT, AND LOUIS S. HARRIS, OF  
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## TROLLEY.

SPECIFICATION forming part of Letters Patent No. 768,245, dated August 23, 1904.

Application filed July 22, 1903. Serial No. 166,524. (No model.)

*To all whom it may concern:*

Be it known that we, FRANCIS CLYDE SULLIVAN, a resident of McKeesport, and LOUIS S. HARRIS, a resident of Pittsburg, in the county of Allegheny, State of Pennsylvania, have invented a new and useful Improvement in Trolleys; and we do hereby declare the following to be a full, clear, and exact description thereof.

Our invention relates to trolleys, and has special reference to such trolleys as are used in electric railways.

The object of our invention is to provide such a form of trolley as will keep the same in continuous contact with the electrically-charged wire or cable, as well as one which cannot leave the wire or cable unless intentionally released by the person having it in charge.

Our invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which our invention appertains to construct and use the trolley, we will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 represents a side elevation of our improved trolley, showing the wire or cable supported and held therein. Fig. 2 is a front elevation of the same. Fig. 3 is a top view of the same. Fig. 4 is a sectional view of the trolley-wheel and bearing for the shaft. Fig. 5 is a side elevation showing another form of the trolley. Fig. 6 is front view of such form of trolley, and Fig. 7 is a detail view showing the pole connections to top of car.

Like symbols of reference herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, 1 represents the trolley-pole, which has connected and secured thereto the harp 2 for extending around and supporting the trolley-wheel 3. The wheel 3 is mounted on the shaft 4, which is

journaled in the forks 2' of the harp 2, and such shaft is held in place by the bolts 5 at each end thereof, while the wheel 3 is provided with a bushing 6 within the same and extending around the shaft 4 for containing the ball-bearings 7, which are held within seats 6' in said bushing and are adapted to bear against the shaft 4.

Fitting over and around the trolley-wheel 3 is the hood 8, the lower portion 8' of which extends down on each side of said wheel 3 and is loosely mounted around the shaft 4 between the forks 2' and the bolts 5, while the upper portions 8'' of said hood 8 is provided with the lugs 9 thereon, which fit within seats 9' in the lower portion thereof, so that pins 10 can pass through the said lower portion 8' and through the lugs 9 to enable said upper portions 8'' to be pivoted to the lower portion 8' of said hood 8, and thereby form hinges for said upper portions 8'', which hinges can be provided with any suitable form of stops thereon for limiting the movement of the portions 8'' toward each other. Wheels or rollers 11 are journaled in each of the upper portions 8'', so as to extend over the trolley-wheel 3, and flat springs 12 are secured by bolts 12' at one end to the lugs 9 on the upper portions 8'', and their lower ends 12'' are adapted to be bent or curved, so as to engage with the sides of the lower portion 8' of said hood 8, while the two branches 13' of the trolley-rope 13 are secured in the inverted cups 14, formed on each side of the upper portions 8''.

Secured upon the front of the trolley-pole 1 are the sleeves 15, through which loosely passes the rod 16, and this rod is pivotally attached at 16'' by its lower end 16' to a bearing 15', extending out beyond the standard 1' of the trolley-support 1' for the lower end of the trolley 1, which bearing 15' is formed as part of or connected to a standard 1', and a track 15'' is connected to the car-roof B for having the support 1' pivotally connected thereto in the ordinary manner. The upper end 16'' of said rod 16 has the lower end of an arm 17 pivoted thereto, as at 17', while the opposite



or upper end of said arm is pivoted to the lower portion 8' of said hood 8, as at 17'', for holding said hood in a horizontal position.

The use and operation of our improved trolley are as follows: The upper portions 8'' of the hood 8 and wheels 11 are held normally closed or together by the springs 12, and when it is desired to place the trolley on or off the wire or cable A, as required, all that is necessary is to pull upon the trolley-rope 13, which through the branches 13' will act to open or pull back the upper portions 8'' of the hood on their pivot-pins 10 and allow the wheels 11 to be held apart from each other for the removal or placing of the trolley upon the wire or cable A. After the rope 13 is released the springs 12 will throw the upper portions 8'' of the hood 8 forward on their pivot-pins 10, so as to bring the wheels 12 together again, and such wheels being closed over the wire or cable A the trolley cannot leave it on any account until released again, as before described. When the trolley is thus held in engagement with the wire or cable A, the hood 8 will always assume a horizontal position with said cable by reason of the arm 17 being pivoted to the lower portion 8' of said hood and to the rod 16 and such rod 16 being held and permitted to slide along the pole 1 through the sleeve 15 thereon.

In Figs. 5 and 6 two sets of wheels 11 are shown as being supported within and at each end of the upper portions 8'' of the hood 8, and the springs 12 are shown in spiral form instead of flat shape, in which case one end can be attached to the upper portions 8'' and the other end to the lower portion 8' of the hood 8. In this form two arms 17 can be used instead of one arm and the upper ends of said arms pivoted to the sides of the lower portion 8' of the hood 8, while the lower ends thereof can be pivoted to a cross-arm 18, pivoted to the rod 16 on the trolley-pole 1. These and various other modifications and changes in the arrangement, construction, and design of the various parts of our improved trolley may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

It will thus be seen that our improved trolley is cheap and simple in its construction and operation, and when in use it will be impossible for it to leave the wire or cable until released by the rope. The device is strong and durable, and the parts are so constructed as to enable the trolley to pass switches, frogs, guide-wires, &c. The wheels for holding the trolley on the wire or cable being journaled with the hood are not liable to injury or to be knocked off in usage and will act as rollers in passing different objects on the wire or cable.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In a trolley, the combination with the trolley-pole having the trolley-wheel mounted

in a shaft in said pole, of a hood supported on said wheel-shaft and extending around said trolley-wheel, wheels or rollers journaled in said hood and adapted to extend across said trolley-wheel, and means for permitting said hood and said wheels to be opened and closed over said trolley-wheel.

2. In a trolley, the combination with the trolley-pole having the trolley-wheel mounted on a shaft in said pole, of a hood supported on said wheel-shaft and extending around said trolley-wheel, wheels or rollers journaled in said hood and adapted to extend across said trolley-wheel, and spring-operated hinged portions on said hood for carrying said rollers and adapted to be moved toward and away from each other.

3. In a trolley, the combination with the trolley-pole having the trolley-wheel mounted on a shaft in said pole, of a hood supported on said wheel-shaft and extending around said trolley-wheel, wheels or rollers journaled in said hood and adapted to extend across said trolley-wheel, and spring-operated hinged portions on said hood for carrying said rollers and having the trolley-rope connected thereto for permitting said hinged portions and rollers to be opened and closed over said trolley-wheel.

4. In a trolley, the combination with the trolley-pole having the trolley-wheel mounted on a shaft in said pole, of a hood supported on said wheel-shaft and extending around said trolley-wheel, said hood having hinged or pivoted upper portions thereon, wheels or rollers journaled in said pivoted upper portions and adapted to extend across said trolley-wheel, springs connecting the upper and lower portions of said hood, and a trolley-rope connected to said upper portions for permitting the same and the rollers to be opened and closed over said trolley-wheel.

5. In a trolley, the combination with the trolley-pole having the trolley-wheel mounted on a shaft in said pole, of a hood supported loosely on said wheel-shaft and extending around said trolley-wheel, said hood having hinged or pivoted upper portions thereon, wheels or rollers journaled in said pivoted upper portions and adapted to extend across said trolley-wheel, and means connected to the lower portion of said hood for holding said hood in a horizontal position.

6. In a trolley, the combination with the trolley-pole having the trolley-wheel mounted on a shaft in said pole, of a hood supported loosely on said wheel-shaft and extending around said trolley-wheel, said hood having hinged or pivoted upper portions thereon, wheels or rollers journaled in said pivoted upper portions and adapted to extend across said trolley-wheel, and means connected to said pole and to the lower portion of said hood for holding said hood in a horizontal position.

7. In a trolley, the combination with the



trolley-pole having the trolley-wheel mounted on a shaft in said pole, of a hood supported loosely on said wheel-shaft and extending around said trolley-wheel, said hood having  
5 hinged or pivoted upper portions thereon, wheels or rollers journaled in said upper portions and adapted to extend across said trolley-wheel, a sleeve on said pole, a rod connected to said pole and adapted to slide in  
10 said sleeve, and an arm pivoted to said rod

and to the lower portion of said hood for holding said hood in a horizontal position.

In testimony whereof we, the said FRANCIS CLYDE SULLIVAN and LOUIS S. HARRIS, have hereunto set our hands.

FRANCIS CLYDE SULLIVAN.

LOUIS S. HARRIS.

Witnesses:

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