

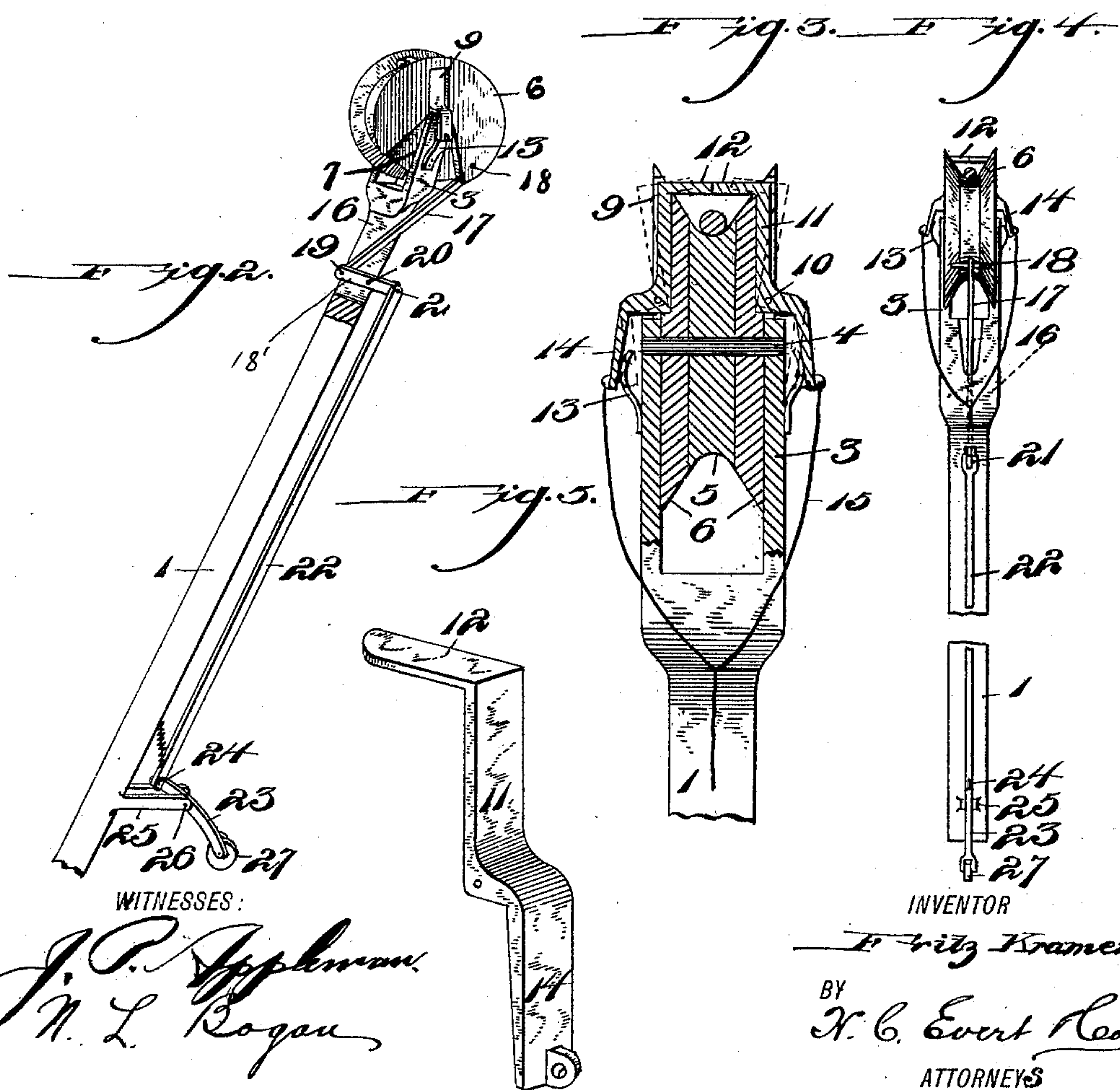
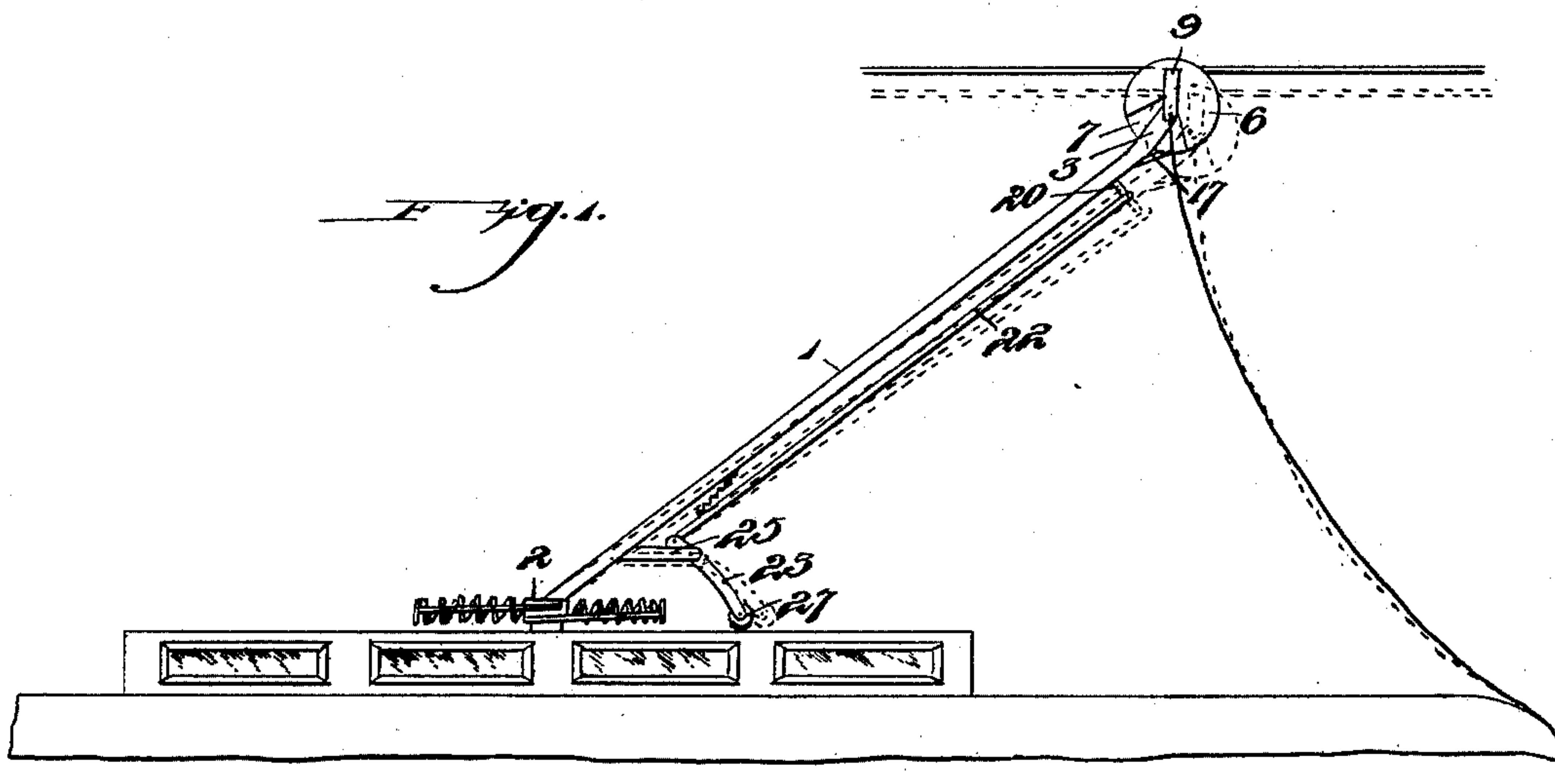
No. 619,080.

Patented Feb. 7, 1899.

F. KRAMER.
TROLLEY POLE AND WHEEL.

(Application filed May 11, 1898.)

(No Model.)



UNITED STATES PATENT OFFICE.

FRITZ KRAMER, OF BLYTHEDALE, PENNSYLVANIA.

TROLLEY POLE AND WHEEL.

SPECIFICATION forming part of Letters Patent No. 619,080, dated February 7, 1899.

Application filed May 11, 1898. Serial No. 680,350. (No model.)

To all whom it may concern:

Be it known that I, FRITZ KRAMER, a citizen of the United States of America, residing at Blythedale, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Trolley Poles and Wheels, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to certain new and useful improvements in trolleys, and has for its object to construct a trolley which will when placed in position on the wire be prevented from accidental displacement therefrom.

15 The principal features of my invention reside in the two abutting upper ends of the spring-actuated arms, which extend over the wire and trolley-wheel, being held away in one position, thereby preventing the wheel from leaving the wire, together with the novel means for retracting these arms to permit the removal of the trolley-wheel from the wire when it is so desired, and in the novel construction whereby the trolley-wheel is always held in contact with the wire whether the trolley-pole is in a depressed or elevated position.

20 The invention finally consists in the novel construction, combination, and arrangement of parts hereinafter specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claims.

25 In the drawings, Figure 1 is a side view illustrating my novel means for keeping the trolley-wheel in contact with the wire, showing the trolley-pole in a raised position. The dotted lines illustrate the trolley-pole in a depressed or lowered position. Fig. 2 is a perspective view of the lever-and-rod connections for keeping the trolley-wheel in contact with the wire. Fig. 3 is a vertical sectional view of the trolley-wheel, guides, and spring-actuated arms. Fig. 4 is an end view of the wheel and part of the lever-and-rod connections. Fig. 5 is a perspective view of one of the spring-actuated arms.

30 Like numerals of reference indicate corresponding parts throughout the several views of the drawings, in which—

1 indicates the trolley-pole, which is secured to the top of the car in the usual man-

ner, as at 2, and 3 denotes a harp formed on the upper end of the pole, having a shaft 4 suitably journaled therein. The shaft 4 has mounted thereon a trolley-wheel 5 and a pair of guides 6, which project above the trolley-wheel and are mounted on each side thereof. The guides 6 have a triangular cut-away portion 7 at their lower ends or sides, which allow the guides to adjust themselves on the harp of the trolley-pole when operated by the lever-and-rod connection, hereinafter described. Formed in the guides 6, above the triangular cut-away portion, is an oblong slot 9, and beneath the oblong slot is an oblong cavity, in which is pivotally mounted at their center, as at 10, the arms 11. The upper ends of the arms 11 have formed integral therewith projections 12, which are inserted through the oblong slot 9, and the ends of the same abut against each other and are adapted to prevent the trolley-wheel from leaving the wire when in such position.

35 Secured upon the outer side of the harp 3 are springs 13, the free ends of which engage the lower ends of the arms 11, as at 14, and are adapted to retain the arms 11 in position. Secured to the lower ends of the arms 11 is a wire or cord 15, which when pulled downwardly retracts the arms 11, and the trolley can be removed from the wire.

40 A hollow chamber 16 is formed in the trolley-pole beneath the harp 3 for the insertion therein of a rod 17, which connects at its upper end to a pin 18, secured in the guide 6, and at its opposite end connected, as at 19, to one end of a lever 18' and is pivotally connected to the trolley-pole at 20. Pivotally secured to the opposite end of the lever 18', as at 21, is a rod 22, which extends to near the lower end of the trolley-pole and is connected to a curved lever 23 at the end 24. The lever 23 is pivoted to the arms 25 at 26, and the arms 25 are suitably secured to the trolley-pole.

45 27 is a roller pivotally secured to the free end of the lever 23. The function of the roller 27, which is secured to the free end of the arm 23, is to allow for an easy and free adjustment of the lever-and-rod connections when the trolley is in an elevated or lowered position.

It will be observed that when the trolley is

depressed the roller 27, bearing on the roof of the car, acts upon the lever 23, thereby pulling the rod 22 downwardly, inclining the lever 18' upwardly, and forcing the bar 17 in
 5 an upward direction, which necessarily will keep the guides to which the spring-actuated arms are secured in an upright position and prevent the trolley from leaving the wire, and it will also be observed that when the
 10 trolley is elevated the lever-and-rod connection will operate in a reverse manner, yet will keep the guides to which the spring-actuated arms are connected in a vertical or upright position.

15 It will also be noted that various changes can be made in the details of construction without departing from the general spirit of my invention.

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

1. In a trolley, the combination of a harp having suitably journaled therein a trolley-wheel, guides journaled on each side of said
 25 trolley-wheel on the inner face of the harp, spring-actuated arms pivoted at their center to said guides which are adapted to retain the wheel in contact with the wire and a series of lever-and-rod connections connected
 30 to said guides for keeping the spring-actuated arms in a vertical position when the trolley is either depressed or elevated, substantially as shown and described.

35 2. In a trolley, the combination of a harp having a trolley-wheel suitably journaled therein, a pair of guides mounted on each

side of said wheel and on the inner face of the harp, arms pivotally secured to the said guides on the inner face thereof, springs secured to the outer face of the said guides
 40 adapted to keep the said arms in a closed position, and a series of lever-and-rod connections connected to the said guides for keeping the arms in a vertical position when the trolley is either elevated or depressed, substantially as shown and described. 45

3. In combination a trolley-pole having a harp on its free end and hollowed a suitable distance below said harp, a shaft journaled in said harp and having suitably mounted
 50 thereon a trolley-wheel, guides mounted on said shaft and on each side of said trolley-wheel, spring-actuated arms pivotally secured in said guides one end of the said arms adapted to keep the trolley-wheel into engagement
 55 with the wire, a rod operating in said hollowed portion of the trolley-pole, one end of said rod connected to said guides and the opposite end to a lever pivotally secured near the lower end of said hollowed portion, a rod
 60 connected to said lever at one end and at its opposite end to a curved lever pivotally connected to the trolley-pole near its lower end thereof and a wheel mounted in the free end of said curved lever, substantially as herein
 65 shown and described.

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

FRITZ KRAMER.

Witnesses:

JOHN NOLAND,
 ALBERT J. WALKER.