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J. W. BROWN & C. W. JENKINS.
TROLLEY SHIELD.

APPLICATION FILED APR. 29, 1905.

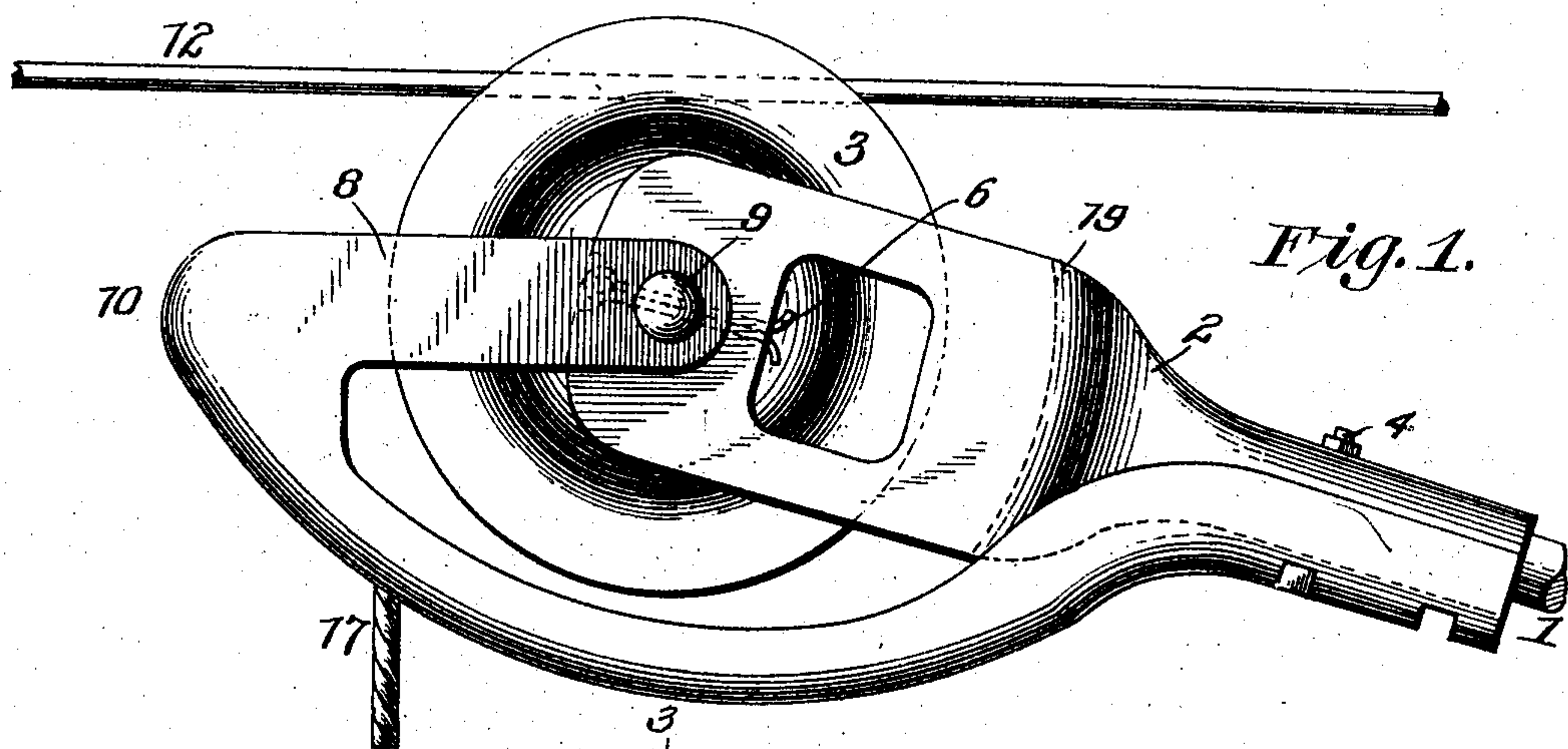


Fig. 1.

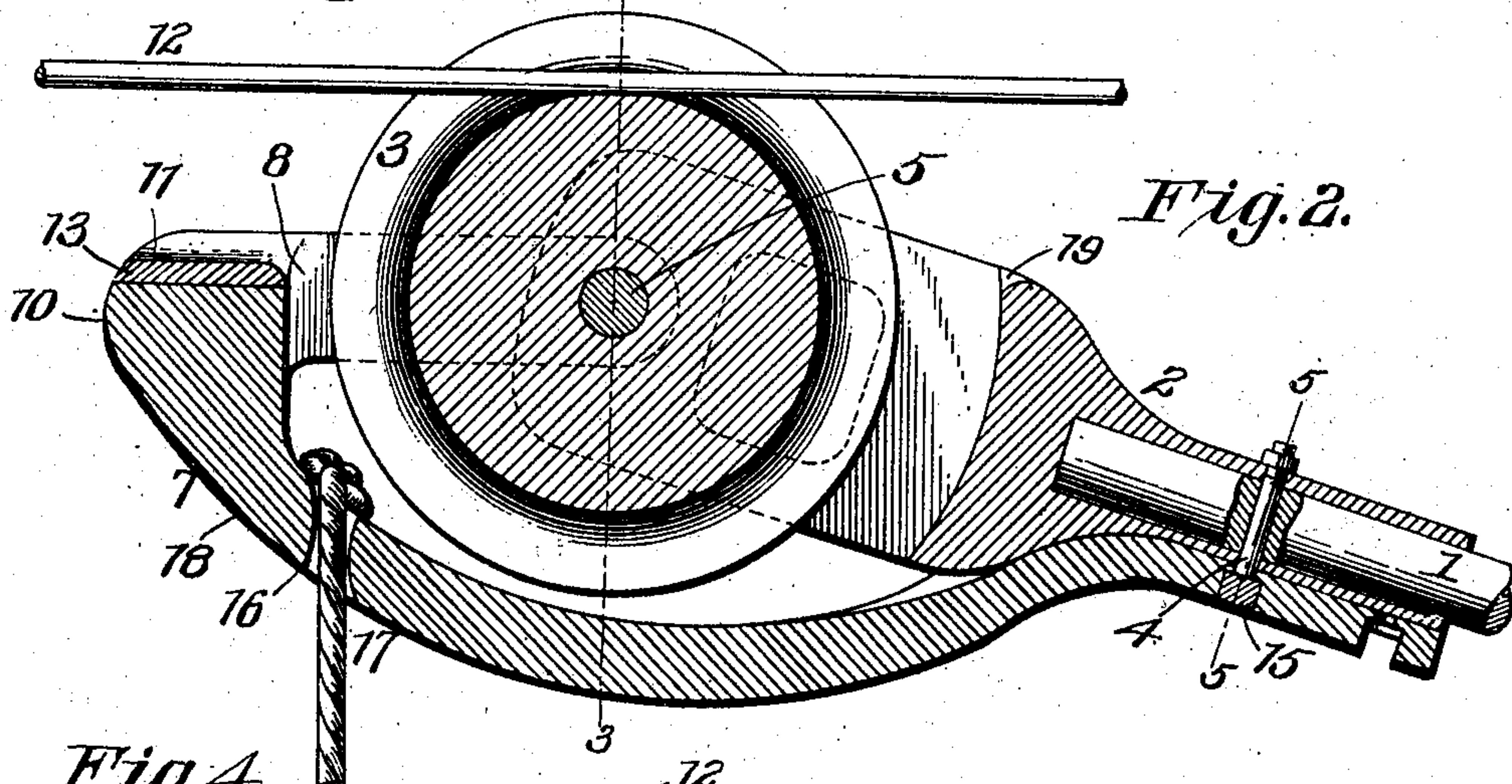


Fig. 2.

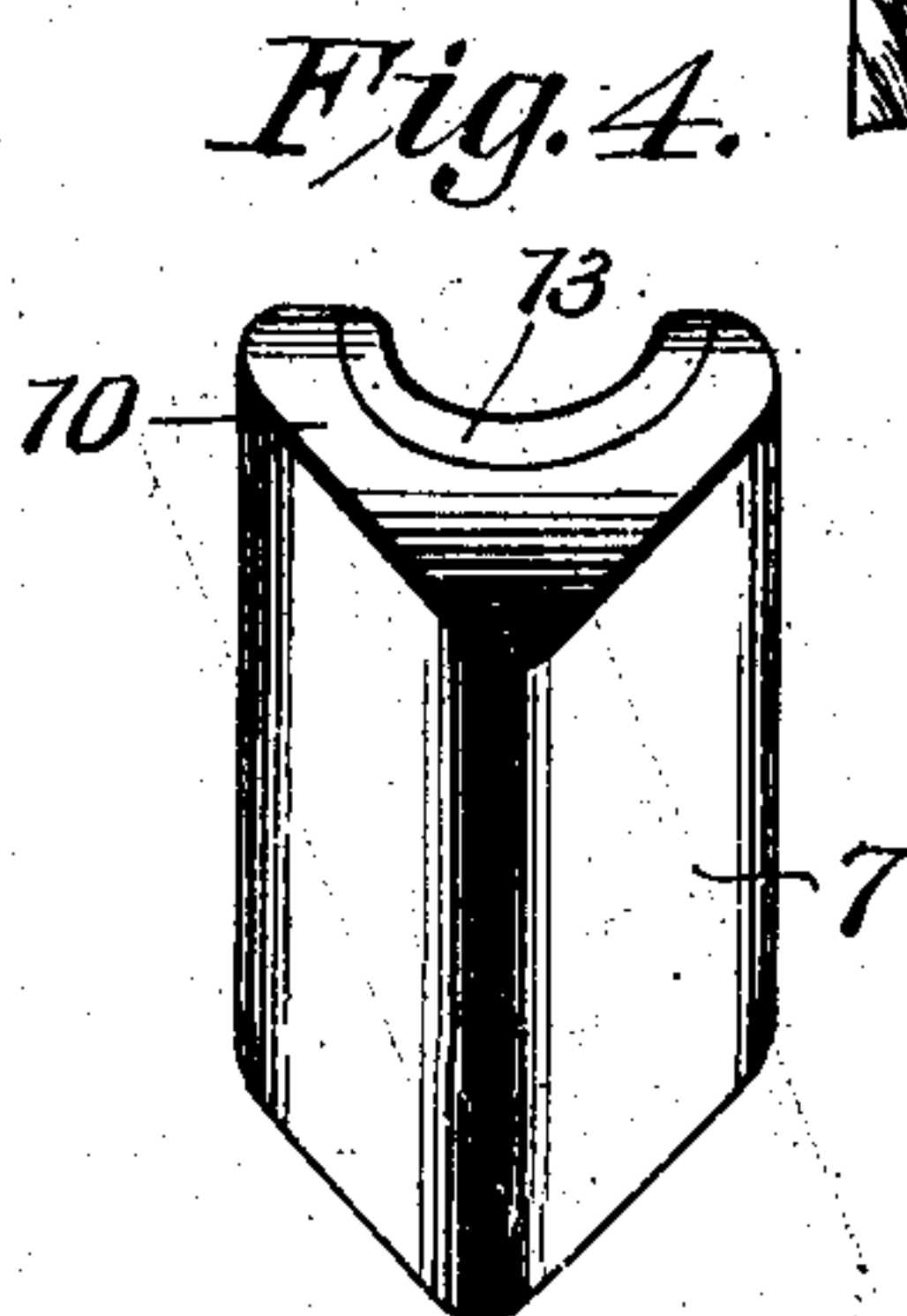


Fig. 4.

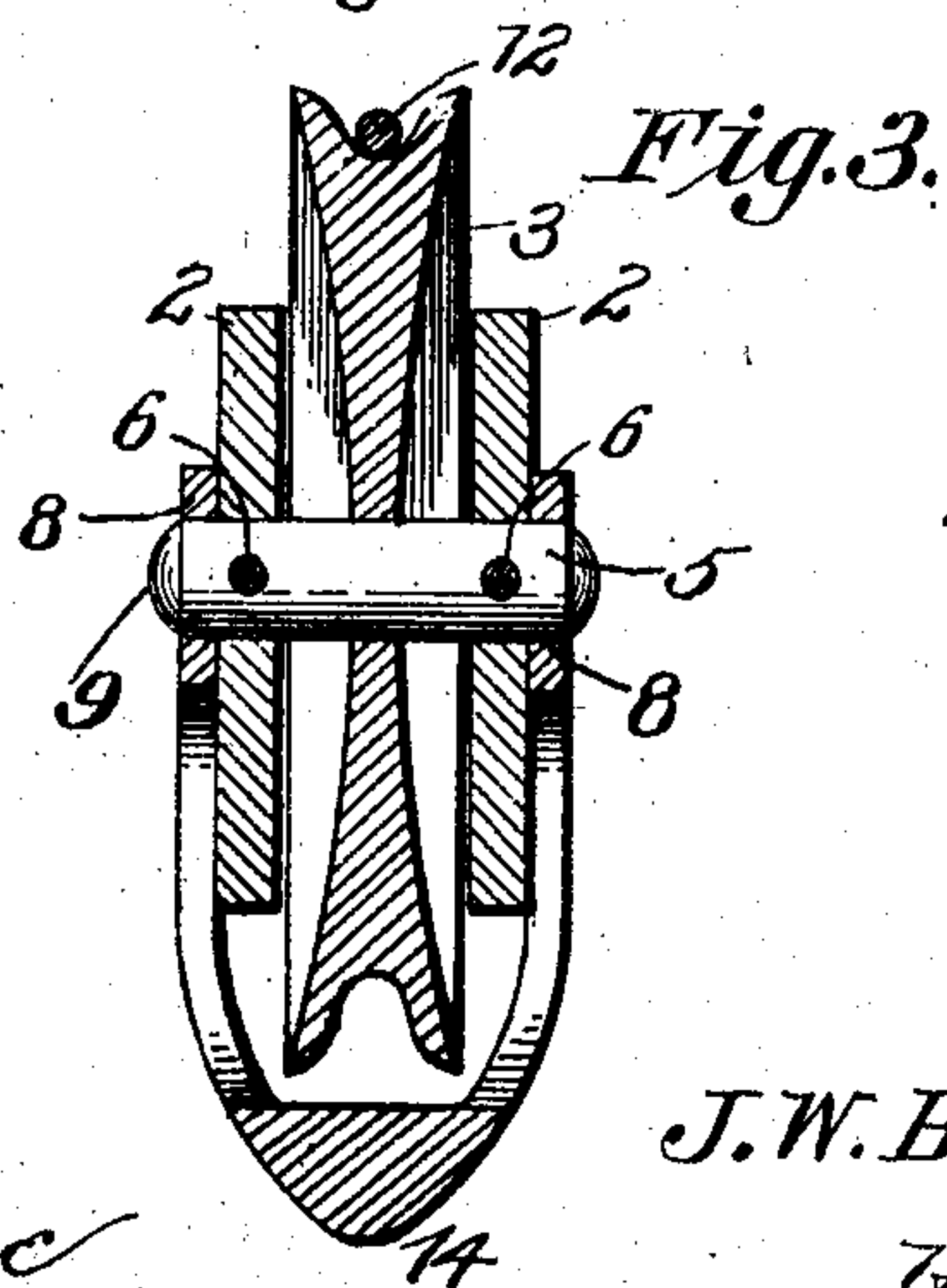


Fig. 3.

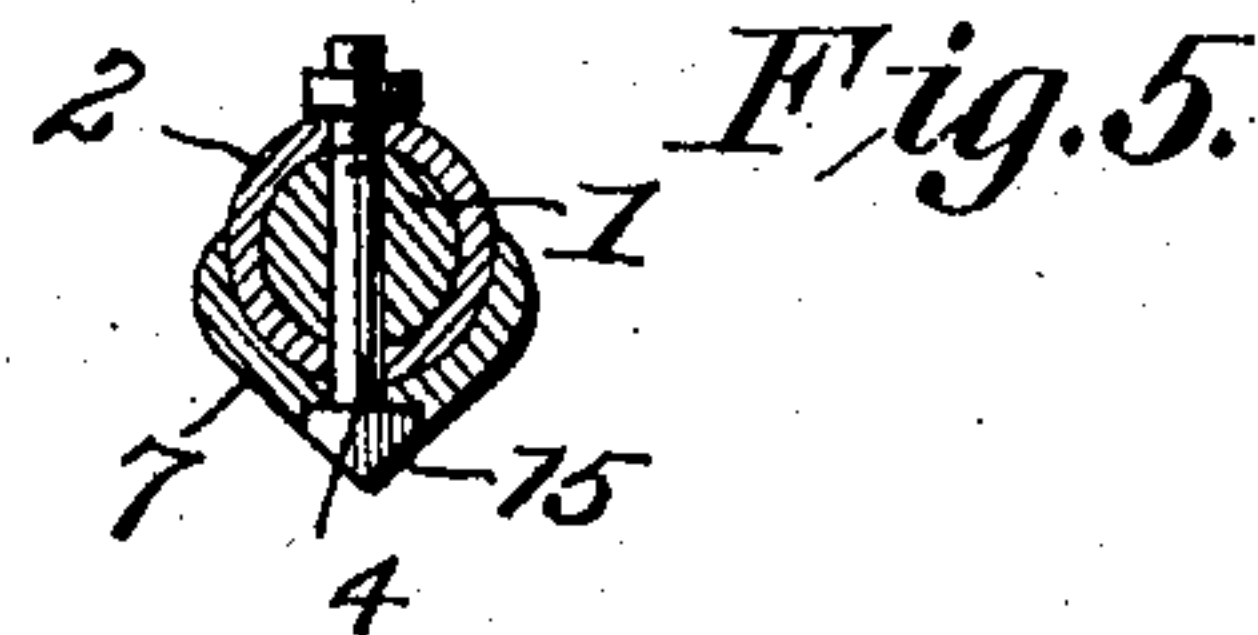


Fig. 5.

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UNITED STATES PATENT OFFICE

JOHN W. BROWN AND CHARLES W. JENKINS, OF WASHINGTON, DISTRICT OF COLUMBIA.

TROLLEY-SHIELD.

No. 816,148.

Specification of Letters Patent.

Patented March 27, 1906.

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To all whom it may concern:

Be it known that we, JOHN W. BROWN and CHARLES W. JENKINS, citizens of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Trolley-Shields, of which the following is a specification.

This invention relates to trolleys for overhead electric railways.

Means have been provided in various forms for guiding the trolley to cause it to engage under the wire, the trolley being upwardly actuated and held in engagement with the wire by means of springs having an upward tendency and of a strength to lift the trolley with considerable force and to a considerable distance above the wire. When the trolley is thus lifted, it must be pulled down to a position below the wire and then guided while impelled upward by the spring to cause it to again engage under the wire. Usually the trolley is drawn downward by hand by pulling upon a rope leading from the trolley or the pole near the trolley to a position within easy reach of the conductor or motorman; but there has also been provided a device known as a "retriever," which is secured upon the car and to which the rope is attached, such device being brought into action to automatically draw down or retrieve the trolley when the trolley slips off the wire and is carried above the wire by its spring. During the operation of retrieving, either manually or automatically, the lower edge of the trolley-wheel is liable to catch over the wire and ride thereon, with the result of catching the cross supporting-wires and breaking down the line.

It is the principal object of this invention to provide improved means for attachment to the trolley whereby such engagement of the trolley-wheel upon the top of the wire is rendered impossible and all liability of breaking down or otherwise damaging the line is entirely obviated.

It is well known that in winter when the wire and trolley-wheel become coated with ice perfect electrical contact is impossible. To remedy this, railway employees sometimes remove the wheel of the trolley, so as to cause a rubbing or scraping contact between the wire and the pivotal pin or shaft of the wheel and the throat of the yoke-space in the trolley-harp, whereby the ice is scraped

off the wire and two points of rubbing or scraping contact with the wire provided, thus overcoming to some extent this great difficulty. Even this makeshift does not always accomplish the object sought, and a further object of this invention is to improve upon this makeshift by providing means whereby three points of rubbing or scraping contact with the wire are secured and the possibility of success increased at least fifty per cent.

With these objects in view the invention consists in the improved construction, arrangement, and combination of parts hereinafter fully described, and afterward specifically pointed out in the appended claims.

In order to enable others skilled in the art to make and use the invention, its construction and operation will now be specifically described in connection with the accompanying drawings, in which—

Figure 1 is a view in side elevation of a trolley and part of the pole provided with our improvements, the trolley being represented in operative contact with the wire. Fig. 2 is a longitudinal vertical sectional view of the same, the wire and pole being shown in elevation. Fig. 3 is a vertical transverse sectional view on the plane indicated by the broken line 3 3 of Fig. 2. Fig. 4 is a view in elevation of the front end of the device as shown in Figs. 1 and 2, and Fig. 5 is a transverse sectional view on the plane indicated by broken lines 5 5 in Figs. 1 and 2.

Like reference-numerals indicate the same parts in all of the figures of the drawings.

Referring specifically to the drawings, 1 indicates the trolley-pole, upon the end of which is secured the trolley-harp 2, made in yoke form, in the end of which is placed the trolley-wheel 3, the harp having a tubular stem which is slipped upon the end of the pole 1 and secured thereon by means of a bolt or rivet 4 and the trolley-wheel being journaled upon a pin or shaft 5, which passes through the wheel and through the jaw of the harp and is secured in position by means of pins 6 passing through the shaft and wholly or partially through the jaws of the harp.

In carrying out our invention no change whatever is made in either the pole 1, harp 2, or wheel 3, and but very slight changes are made in the bolt or rivet 4 and pivot-pin or shaft 5, as will fully appear hereinafter.

7 indicates what we denominate a "shield,"

which may be cast of malleable or cast iron or forged or stamped up of wrought-iron in either bar or block form or in the form of heavy sheet-iron. The shield 7 comprises a pair of arms 8 8, which are secured upon the ends of the shaft 5, said shaft being made slightly longer than usual and having the usual rounded ends. At the outer or rear end of the shield 7 the arms 8 8 merge into a single piece or block, as at 10, a groove 11 being provided in the top thereof in line with the pole 1 and with the wire 12, which groove may, if desired, be lined with a steel bearing-plate, as at 13. The main body 14 of the shield is preferably triangular in cross-section and extends in a gradual sweep or curve forward under the wheel and harp until it reaches the under side of the tubular stem of the harp, to which and the pole it is secured by means of the bolt or rivet 4, which, as before explained, secures the harp upon the trolley-pole. From the point where the main body 14 strikes the harp to its forward end the shield is trough-shaped or grooved in its upper surface to partially embrace the stem of the harp, to which it is secured, as stated. The lower face of the main body 14 of the shield is V-shaped, and the only change made in the construction of the bolt or rivet 4 is to make its head 15 conform in shape with the shield, so as to avoid the presence of projecting square or sharp corners, such head being clearly illustrated in Figs. 1, 2, and 5. The outer edges of the triangular body 14 of the shield are preferably flush with the arms 8 8 and project outward far enough, as clearly shown in Figs. 1, 2, and 4, to extend slightly beyond the sides of the wheel. A hole is provided at 16 through the shield, through which passes the retrieving-rope 17, the rope being prevented from pulling through the hole 16 by a knot 18 in its upper end and its lower end being conducted either to a position within easy reach of the conductor or secured to the automatic retriever when one is used.

When the trolley is above the wire and is drawn downward, the only part which can strike the wire is the V-shaped body of the shield, which will cause the trolley to pass down at the side of the wire, the rounded ends 9 of the shaft of the trolley-wheel preventing the pin from catching on the wire, so that there is no possibility of the lower edge of the wheel catching on the top of the wire, and thus causing the breaking down of the line.

The relative position of the parts is such when the trolley-wheel is removed on account of ice that the groove 11 in the end of the shield, the wheel-shaft 5, and the throat of the harp at 19 are all in one line, as shown in Figs. 1 and 2, whereby three rubbing or scraping points of contact with the wire are provided, and the ice and snow are more thoroughly scraped off to afford the necessary

electrical contact, and no snow or ice can lodge in the shield on account of its open sides.

The shield may be provided with a plurality of holes to accommodate the bolt or rivet 4, one extra one being shown in Figs. 1 and 2.

By providing a slightly longer shaft 5 and a bolt or rivet 4 with a suitable head the shield may be readily and quickly secured in place upon either new trolleys or trolleys in use without any change whatever in the constructions of pole, harp, and wheel now in use.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. A trolley-shield comprising a main body which, when secured to the trolley, rests under the wheel, and means adapted to engage the ends of the trolley-wheel shaft whereby the body of the shield may be supported therefrom, substantially as described.

2. A trolley-shield comprising a main body adapted, when in position on the trolley, to rest under the wheel, suitable means for supporting the rear end of the shield, and means for securing the forward end of the shield to the pole, substantially as described.

3. A trolley-shield, comprising a curved triangular-shaped main body, adapted to rest below and extend beyond the lower edge of the wheel and partially embrace the stem of the harp and provided at its rear end with a pair of forwardly-extending arms to embrace the upper end of the harp, said body being provided with an opening to receive the bolt or rivet which secures the trolley-pole and harp together, and said arms being provided with openings to register with those of the wheel and harp to receive the shaft of the wheel, substantially as described.

4. The combination with a trolley-pole, a harp thereon and a trolley-wheel, of a trolley-shield located below the wheel and harp and secured by a bolt or rivet which secures the pole and harp together, said shield being further provided with arms embracing the outer end of the harp and secured in position by the pin or shaft of the wheel, substantially as described.

5. The combination with a trolley-pole, a harp thereon and a trolley-wheel, of a trolley-shield located below the wheel and harp and secured by a bolt or rivet which secures the pole and harp together, said shield being further provided with arms embracing the outer end of the harp and secured in position by the pin or shaft of the wheel, said shield having a V-shaped lower face and said bolt or rivet having a correspondingly-shaped head, and the wheel-shaft having rounded ends, substantially as described.

6. The combination with a trolley-pole, a harp, a wheel-shaft, and a trolley-wheel thereon, of a shield secured below the wheel

and harp and having a groove at its rear end in line with the wheel-shaft and the throat of the harp when the wheel is removed and the shaft is in contact with the wire, substantially as described.

7. The combination with a trolley-pole, a trolley-harp having a tubular stem engaged on the end of the pole, a trolley-wheel, a bolt or rivet securing the tubular stem of the harp upon the pole, and a shaft through the wheel and harp, of a trolley-shield comprising a pair of arms embracing the harp, secured upon the wheel-shaft, extended rearward and merged into a block, and a main body triangular-shaped in that part extending in a

curve from said block under and beyond the sides of the wheel and trough-shaped under the tubular stem of the harp and secured thereon by the said bolt or rivet, said triangular-shaped body being provided with a hole through which is passed the retrieving-rope, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN W. BROWN.
CHARLES W. JENKINS.

Witnesses:

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GEO. H. LUSCOMBE.