

(No Model.)

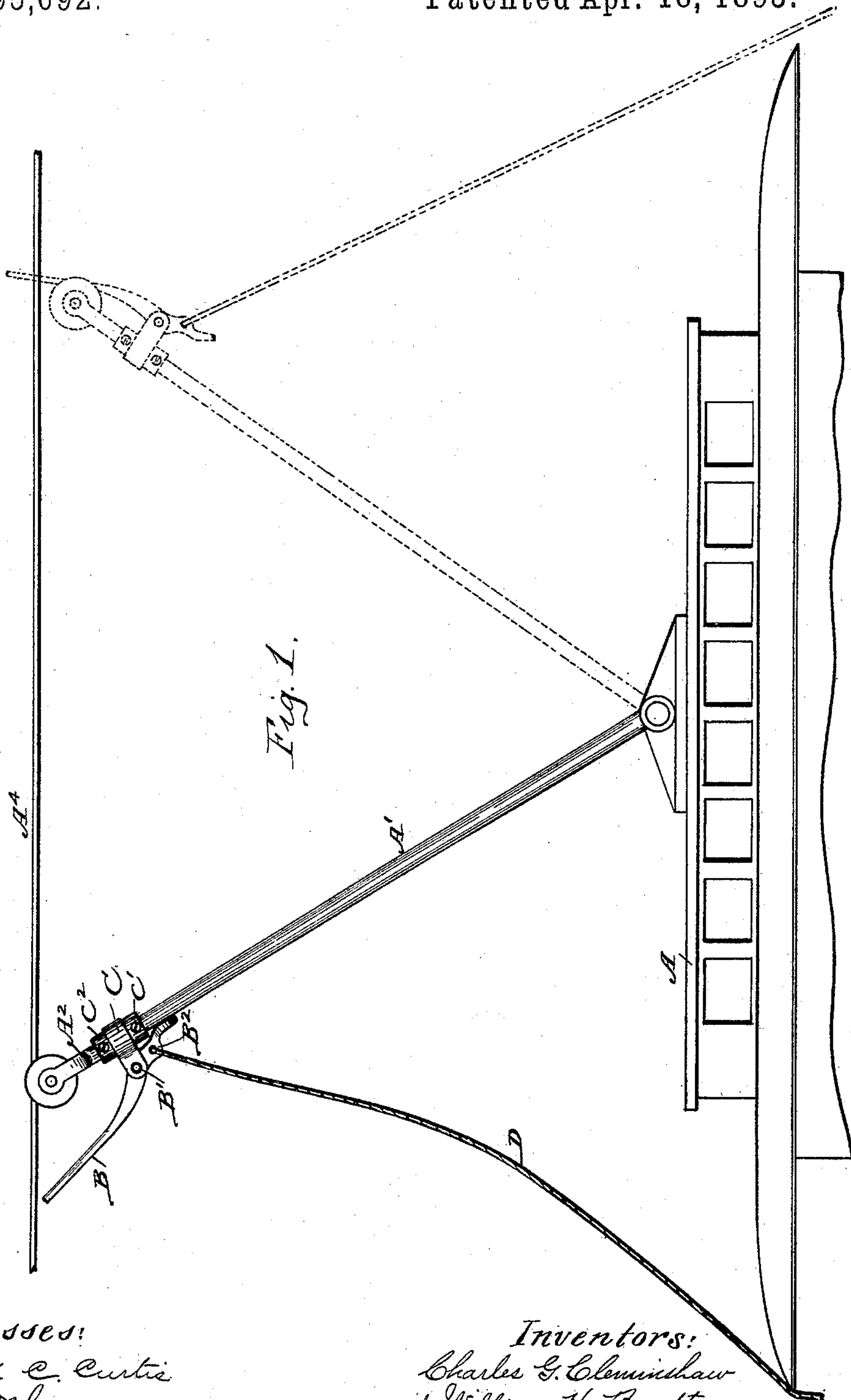
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C. G. CLEMINSHAW & W. H. BRADT.

TROLLEY WIRE FINDER.

No. 495,692.

Patented Apr. 18, 1893.



Witnesses:

Frank C. Curtis  
A. E. Delaney

Inventors:

Charles G. Clemmishaw  
and William H. Bradt

by Geo. A. Mosher  
att'y.

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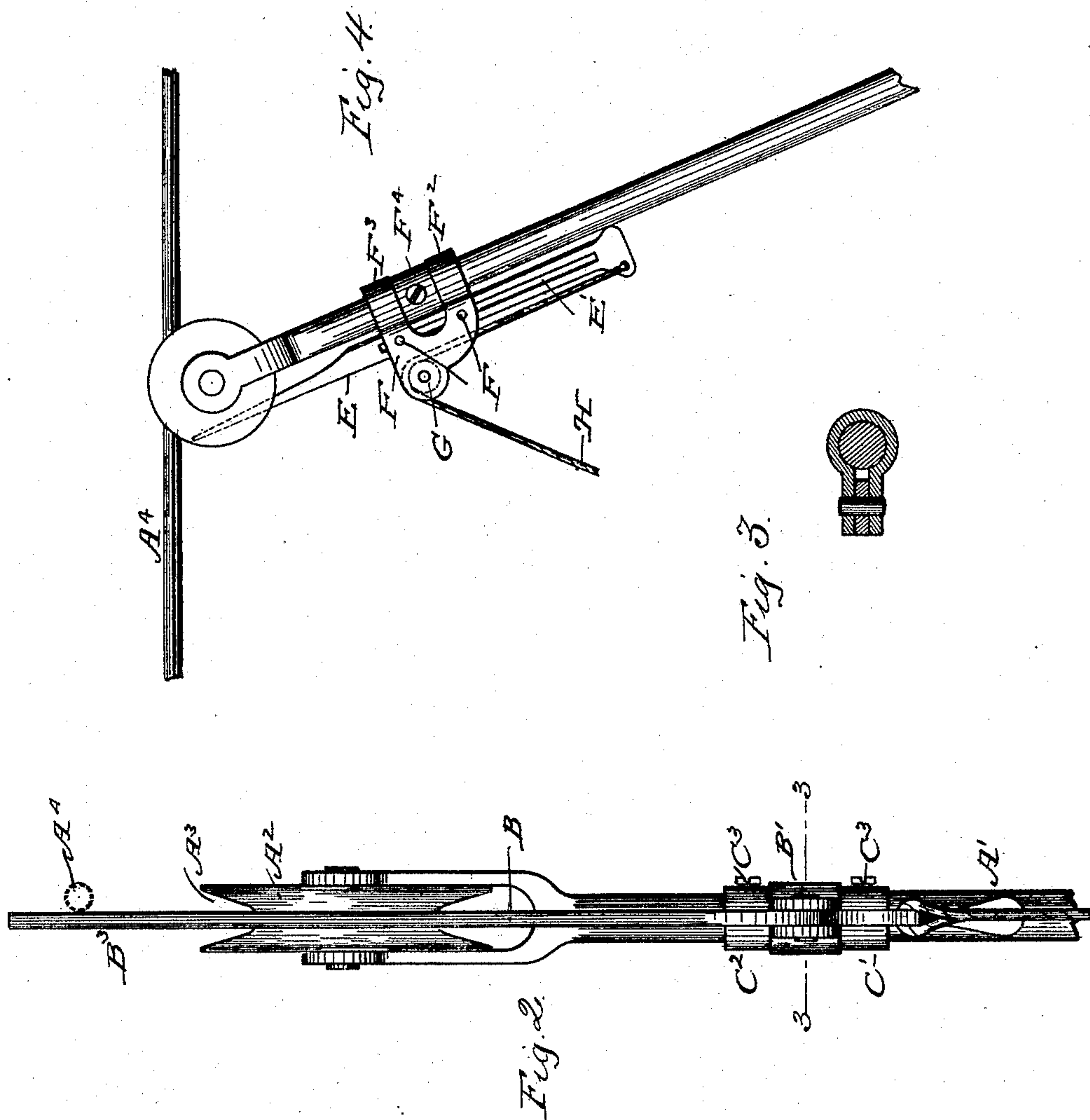
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by Geo. Moore Atty.



# UNITED STATES PATENT OFFICE.

CHARLES G. CLEMINSHAW AND WILLIAM H. BRADT, OF TROY, NEW YORK.

## TROLLEY-WIRE FINDER.

SPECIFICATION forming part of Letters Patent No. 495,692, dated April 18, 1893.

Application filed June 22, 1892. Serial No. 437,556. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES G. CLEMINSHAW and WILLIAM H. BRADT, citizens of the United States, residing at Troy, county of Rensselaer, and State of New York, have invented certain new and useful Improvements in Trolley-Wire Finders, of which the following is a specification.

Our invention relates to such improvements and consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the letters of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a view in side elevation of a portion of a trolley-car having our improved trolley-wire finder attached. Fig. 2 is a bottom plan view of a portion of the trolley-arm and trolley, with the finder attached. Fig. 3 is a transverse section taken on the broken line, 3—3, in Fig. 2, through the swivel support for the finder. Fig. 4 is a view in side elevation showing our invention in a modified form.

In the operation of electric street railways under the trolley system, the position of the oscillatory trolley arm is reversed at the end of each trip and frequently at other times, by means of a cord attached to the oscillatory end of such arm. The operation involves disengaging the trolley from the trolley-wire at one end of the car and bringing it into engagement again at the other end of the car. To find the wire with the trolley in effecting such engagement is frequently a difficult matter, especially on curves or in the night time.

The object of our invention is to facilitate finding the trolley-wire with the trolley and effect an engagement between them by seating the wire in the peripheral groove of the trolley; and our invention consists of a lever pivoted upon a support having a swivel connection with the oscillatory end of the trolley-arm, the upper end or finding finger of the lever being longer than the lower end and adapted to be projected beyond and above the trolley, and the lower shorter end being connected with the arm-controlling cord.

A—represents a portion of a trolley-car and A'—, the trolley-supporting arm connected

with the roof of the car in the usual well known manner, whereby its projecting end can be swung from one end of the car to the other.

A<sup>2</sup>—, is the trolley supported on the swinging end of the arm and provided with a peripheral groove, A<sup>3</sup>—, adapted to form a seat for the conductor or trolley-wire, A<sup>4</sup>. The trolley is forced up against the lower side of the wire by a spring (not shown) in the usual manner.

B— is our improved lever pivoted at B'—, upon the oscillatory end of the support, C, swiveled upon the trolley-arm. The support may be a simple band of metal bent around the arm to turn freely thereon between the collars, C', and C<sup>2</sup>—, which prevent the movement of the support longitudinally of the arm. The collars are adjustably secured to the arm by means of set-screws, C<sup>3</sup>—, whereby the support may be adjusted in any desired position on the arm. The lower short end of the lever is provided with an aperture, B<sup>2</sup>—, adapted to receive the cord, D—, by which the trolley arm is controlled in the hand of the operator. The upper end of the lever forms the wire-finding finger, B<sup>3</sup>—, and is of sufficient length to project beyond the trolley when brought into engagement with it. The direction of the finger is such that when brought into engagement with the trolley it rests in the peripheral groove of the latter, and when in use projects beyond and above the trolley. By a downward pull upon the cord the finger is thrown into engagement with the trolley ready for use. When the hold upon the cord is released the finger is disengaged from the trolley and falls by gravity until the short end of the lever engages with the trolley-arm or a suitable stop thereon, the weight of the finger being sufficient to overbalance the weight of the short end of the lever.

The operation of the device is as follows: When it is desired to reverse the trolley-arm, the arm is drawn downward by the cord until the trolley and finger, which is forced upward above the wire by the pull, are disengaged from the wire; the arm is then swung over to the other end of the car and the trolley drawn down beneath the wire by the cord, in the usual manner, the support, C—, making a half-revolution around the arm. The arm is



then swung by the cord laterally of the car until the upwardly projecting finger strikes the wire, when the cord is paid out until the trolley engages the wire, the wire sliding along the finger until it reaches its seat in the groove of the trolley. The finger is comparatively light and the arm-controlling springs are sufficiently strong to maintain the finger in an elevated position until the trolley engages its wire and the hold upon the cord is released or slackened. The operator will quickly learn to determine by the length of the cord the proper height of the arm to allow the trolley to pass under the wire while the finger is still projecting above the wire to find and engage the same as the arm is moved laterally.

The relative position of the parts when the trolley is in engagement with the wire and the finder idle, is shown by the solid lines at one end of the car in Fig. 1; and the relative position of the same parts when the trolley is disengaged and the finder engaged with the wire is shown by the dotted lines at the opposite end of the car in the same figure.

In the modified form of our invention shown in Fig. 4, the finder-finger, E—, is adapted to be given a longitudinal slide movement which projects its upper end beyond and above the trolley. The lower end of the finger is provided with the longitudinal slot, E'—, adapted to receive and form a slideway for the pins, F—, in the support, F'—. The support has two arms, F<sup>2</sup>—, and F<sup>3</sup>—, which swivel on the trolley-arm and are held in place by the intervening collar F<sup>4</sup>—. The support is also provided with a pulley, G, shown by dotted lines, adapted to receive the arm-controlling cord, H. The upper end of the cord is passed around this pulley and secured to the lower end of the finger, whereby a pull upon the cord causes the finger to slide upward until its upper end projects beyond and above the trolley. When the cord is released the finger is caused to slide back below the top of the pulley by gravity or any known

means, to the position shown in Fig. 4, which is its normal position.

By having the finder swiveled to the trolley arm, the arm can be swung in a vertical plane from one end of the car to the other, to alternately bring its opposite sides uppermost in the usual manner, and the swivel connection can be used with various forms of wire-finder. We prefer to employ a single finger, as shown, rather than a fork for the reason that a single finger is sure to find the wire and guide it into the trolley groove when the trolley-arm is swung laterally of the car. Where a fork is employed it must first be brought under the wire in precisely the same manner as a naked trolley. The only advantage of a fork is the increased probability of finding the wire by as much as the arms of the fork flare outwardly and present a wider span than the flanges of the trolley-groove.

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

1. The combination with the trolley and trolley-arm of an electric car; of a wire-finding finger supported by the trolley-arm in the plane of the trolley-groove and normally located below the top of the trolley; and means for projecting the finger above the trolley, substantially as described.

2. The combination with the trolley and trolley-arm of an electric car; of a lever pivoted upon the arm and provided with a finding-finger vibratory in the plane of the trolley-groove and normally located below the top of the trolley; and an operating cord secured to the lever, substantially as described.

In testimony whereof we have hereunto set our hands this 18th day of June, 1892.

CHARLES G. CLEMINSHAW.  
WILLIAM H. BRADT.

Witnesses:

A. E. DELANEY,  
FRANK C. CURTIS.