

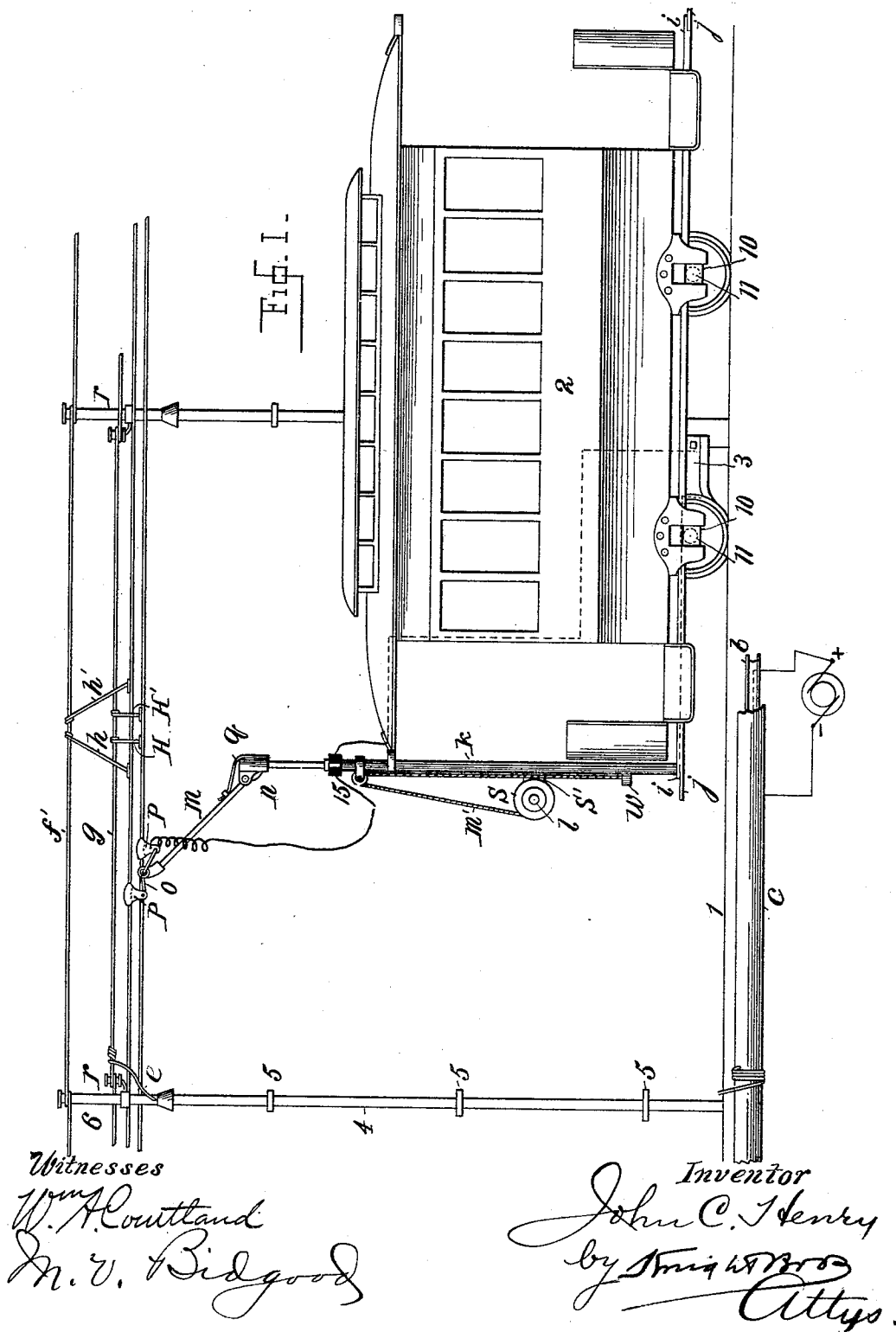
(No Model.)

2 Sheets—Sheet 1.

J. C. HENRY.
ELECTRIC RAILWAY TROLLEY.

No. 500,070.

Patented June 20, 1893.



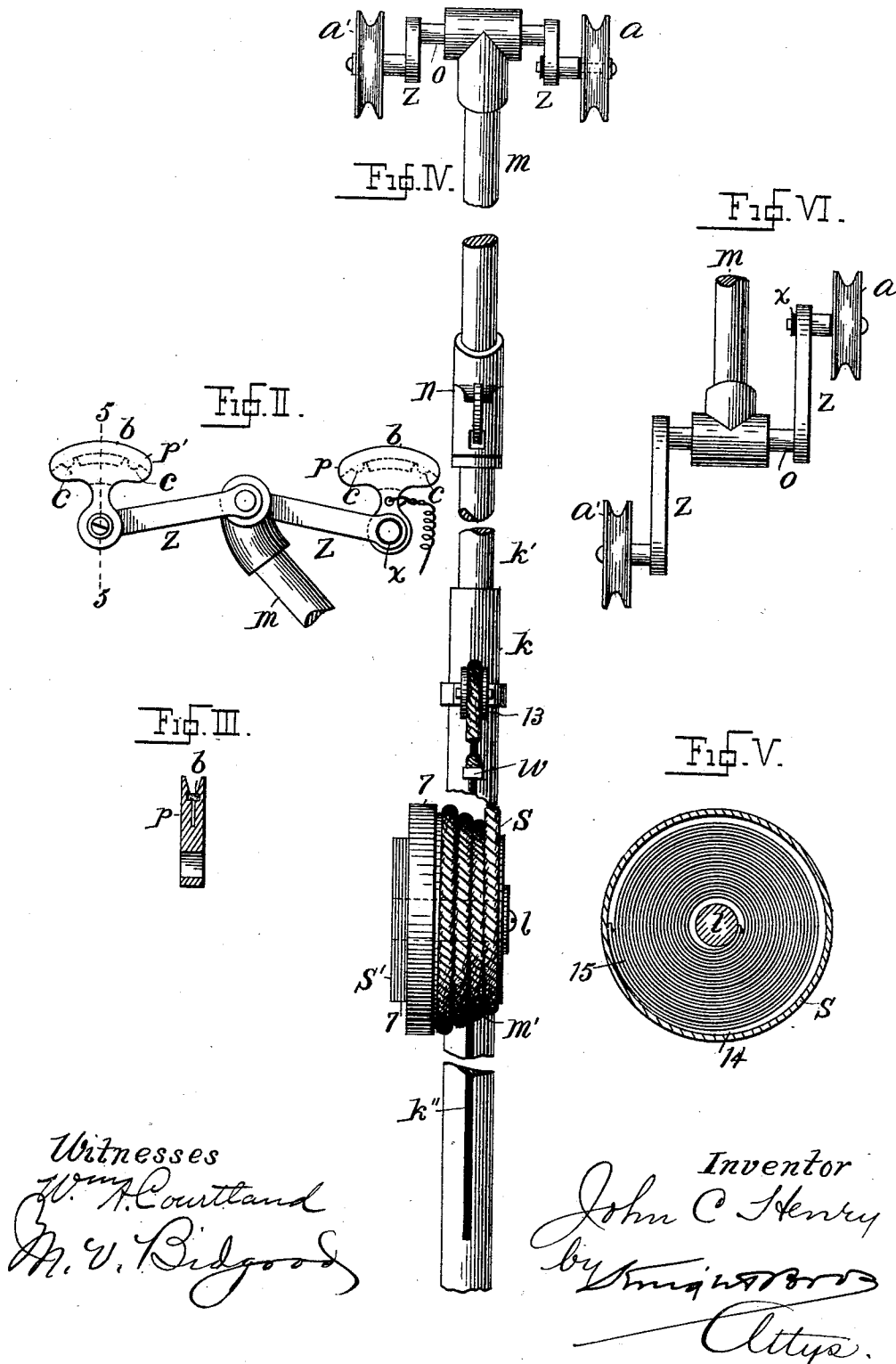
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Witnesses
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UNITED STATES PATENT OFFICE.

JOHN C. HENRY, OF WESTFIELD, NEW JERSEY.

ELECTRIC-RAILWAY TROLLEY.

SPECIFICATION forming part of Letters Patent No. 500,070, dated June 20, 1893.

Original application filed September 3, 1890, Serial No. 363,847. Divided and this application filed February 1, 1893. Serial No. 480,566. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HENRY, a citizen of the United States, residing at Westfield, county of Union, State of New Jersey, have invented certain new and useful Improvements in Collecting Devices for Electric Cars, of which the following is a specification.

This application is a division of my application, Serial No. 363,847, filed September 3, 1890.

My present invention relates to certain improvements in collecting devices especially intended for use in taking current from overhead working conductors of electric railways and conveying the same to car motors.

Referring to the accompanying drawings which form a part of this specification:—Figure I is an elevation of part of the electric railway system, including a motor car, illustrating my improvements. Fig. II is a side elevation of the upper end of my trailer-arm with the positive and negative contact-shoes and their supporting rocker. Fig. III is a section on the line 5—5, Fig. II. Fig. IV is a rear elevation of my improved trailer-arm, portions being broken away for the purposes of illustration, and rolling contacts being shown in lieu of shoes. Fig. V is a section on the line 7—7. Fig. VI shows the upper end of my trailer-arm viewed from above with its supported rocker and with rolling contacts.

My invention is here shown applied to an overhead line electric railway system which is more particularly described in my co-pending application above referred to.

In order that the means of sliding contact with the overhead conductors may be exempt from disturbances incident to oscillations of the car-body, I so construct said means as to be supported either directly by the track-wheel axles or by their journal-boxes.

Let 10, Fig. I represent any customary or suitable track wheel axles and let 11 represent journal-boxes thereof. Supported upon and firmly attached to the axle-boxes 11 is a perch, bar or frame *i* which extends longitudinally under the car-body and platforms and beyond and clear of both dash-boards. The extreme ends of this perch may have eyes *j* to enable the coupling to such motor car of a tow or train of one or more additional cars or in event of disablement of such motor-car,

the coupling of such car to another motor car. Firmly secured to either end of said perch, just outside the dash-board is the tubular standard, column or socket *k* that constitutes the lower and outer member of the telescopic support *k, k'* of my trailer-arm, *m* whose lower end is connected to the sliding member *k'* by means of a hinge *n*. A spring *q* tends to erect and thereby impart an upward stress to the said trailer-arm. The sliding member *k'* rests on a step *w* a portion of which projects outward through a slot *k'* in the socket-wall. From this step, a wire-cable *m'* (or a chain) is led upward and over sheave 13 and thence downward and around a fusee or conical drum *S* to which it is fastened. The said fusee is journaled upon a stud 1 that extends horizontally from a bracket-projection *S'* of the socket *k*. The said fusee is chambered as at 14 to hold a volute spring 15 of which one end is fastened to the fusee and the other end to the stud 1—see Fig. V. The dimensions of the spring 15 are preferably such that the variations of its play or tension incident to irregularities of line constitute only an inconsiderable fraction of what its entire play or range of action would be if free. It will be seen that the said wide range spring 15 operating through a small portion of its extreme range, through the fusee *S* and the cable *m'* tends to maintain the sliding member *m* at its highest position with a practically uniform up-pressure or tension. If, instead of the fusee, a cylindrical drum were used the up-stress of the member *m* at its most depressed position would be greatly in excess of what it is at its most elevated position and at such lowest position would have the double disadvantage of subjecting to an excessive strain both said spring and the sliding contact with the overhead wires. Such disparity of pressure is overcome or counteracted to any desired extent and a practically uniform up-stress of the member *m* secured by giving the periphery of the drum a conical or fusee form such as represented, the unwinding of the cable from the fusee, operating to shift its effective action to a point of greater radial distance from the stud 1 and operating to diminish to that extent the leverage or purchase of the spring and to thereby relieve the contact-pressure. The trailer-arm *m* is surmounted by a

rocking trolley which consists of an oscillating bracket or carrier Z in the form of a double crank which is secured to the top of said arm by a hinge or pivot o. The said oscillating bracket carries, at its extremities, two suitable contact-pieces which may be either sheaves as at *a, a'* in Figs. IV and VI or shoes as at *p, p'*, Figs. I, II and III. In either form of contact, the contact-piece which travels on the active conductor is electrically separated from while mechanically united with the carrier, by insulation *x*.

In the shoe form of contact-pieces *b* represents a filling of chilled cast iron, Babbitt-metal or other suitable metal for the rubbing contact with the conducting wires. *c* represents pockets for lubricating material. The connection of the shoes to the carrier is such that any severe traction operates to tip the shoe sufficiently to bring the body of the lubricant in contact with the wire so as to reduce the abrading action just enough for easy and economical travel without impairing the electrical communication. The post *k* may be located either at mid-width of the car or to the right or left of that line as may be most convenient on any particular route.

My described construction of sliding contact is believed to have several useful characteristics. Thus by supporting it directly from the running gear I avoid a number of very objectionable features of the ordinary trailer supported from the car-roof.

For obvious reasons, it has been the aim of the best constructors to make the car-roof as light as consistent with the requisite strength and this is made the more desirable from the fact that any oscillations of the car are exaggerated in proportion to their distance from the point of intersection with the ground level of a perpendicular through the car center. But an up-pressing trailer with its adjuncts, even of the lightest constructions, weighs several hundred pounds. The load and the strain upon the car-roof of its violent oscillations, of course necessitates a correspondingly substantial construction of the roof itself adding several hundred pounds more, which in turn calls for a corresponding strengthening of the entire car-body and its attachments to avoid being racked to pieces. The violent oscillations to which the trailer itself is subjected are also inimical to its efficiency and endurance. By supporting the trailer from the running gear these evils are avoided or reduced to a minimum by an appendage which also affords a convenient and suitable means of car-coupling.

The telescopic support with its wide range spring and its equalizing fusee make the apparatus available for use with great inequality of overhead conductors while the hinged trailer-arm and local spring overcome the effects of abrupt inequalities in the track itself. Finally, constant and equal up-bearing of the out and home-going traveling contacts is secured by mounting them at the remote ex-

tremities of the rocking trolley-frame or carrier.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In an electric railway having an overhead system of line conductors; and up-pressed traveling collector or trailer supported upon the running gear by a standard exterior to the car-body, substantially as set forth.

2. In an electric railway, the combination of a car, a motor thereupon, an up-pressed collector, and a supporting frame therefor which rests upon and is attached to the running gear and projects longitudinally beyond the car-body for the purpose set forth.

3. In an electric railway having overhead conductors; the combination with a motor-car, of an up-pressed traveling collector or trailer and a support therefor which rests upon and is secured to the running gear and is provided at its ends with means of coupling to other cars so as to discharge the functions of a drawbar.

4. In an electric railway having overhead conductors; the combination with a motor car of a collector and a fusee and spring by which it is pressed upward against the conductors with uniform pressure.

5. In an electric railway having overhead conductors; the combination with the collecting and discharging trolley of a motor car of an up-pressing wide range spring and a fusee; for the purpose explained.

6. In an electric railway having overhead conductors the combination with a car and a motor thereupon of the traveling duplex rocking trolley or collector, a support therefor having hinge and spring-connection with a sliding member of a telescopic post supported on the running gear and a wide range spring, a fusee and a cable supporting said sliding member and collector, substantially as set forth.

7. The combination in an electric railway; of overhead conductors, a car, a motor mounted thereon, a collector, a trailing arm therefor, a sliding support to which it is hinged and two up-pressing springs of which one acts directly on the hinged arm of the collector and the other of wider range lifts the sliding support bodily with substantially equal pressure against conductors of varying elevations; substantially as set forth.

8. In an electric railway having overhead conductors a car, a motor mounted thereon, traveling contacts, a supporting telescopic post therefor provided with a long range lifting spring and with a hinged arm operated by a separate spring; substantially as set forth.

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Witnesses:

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