

No. 756,757.

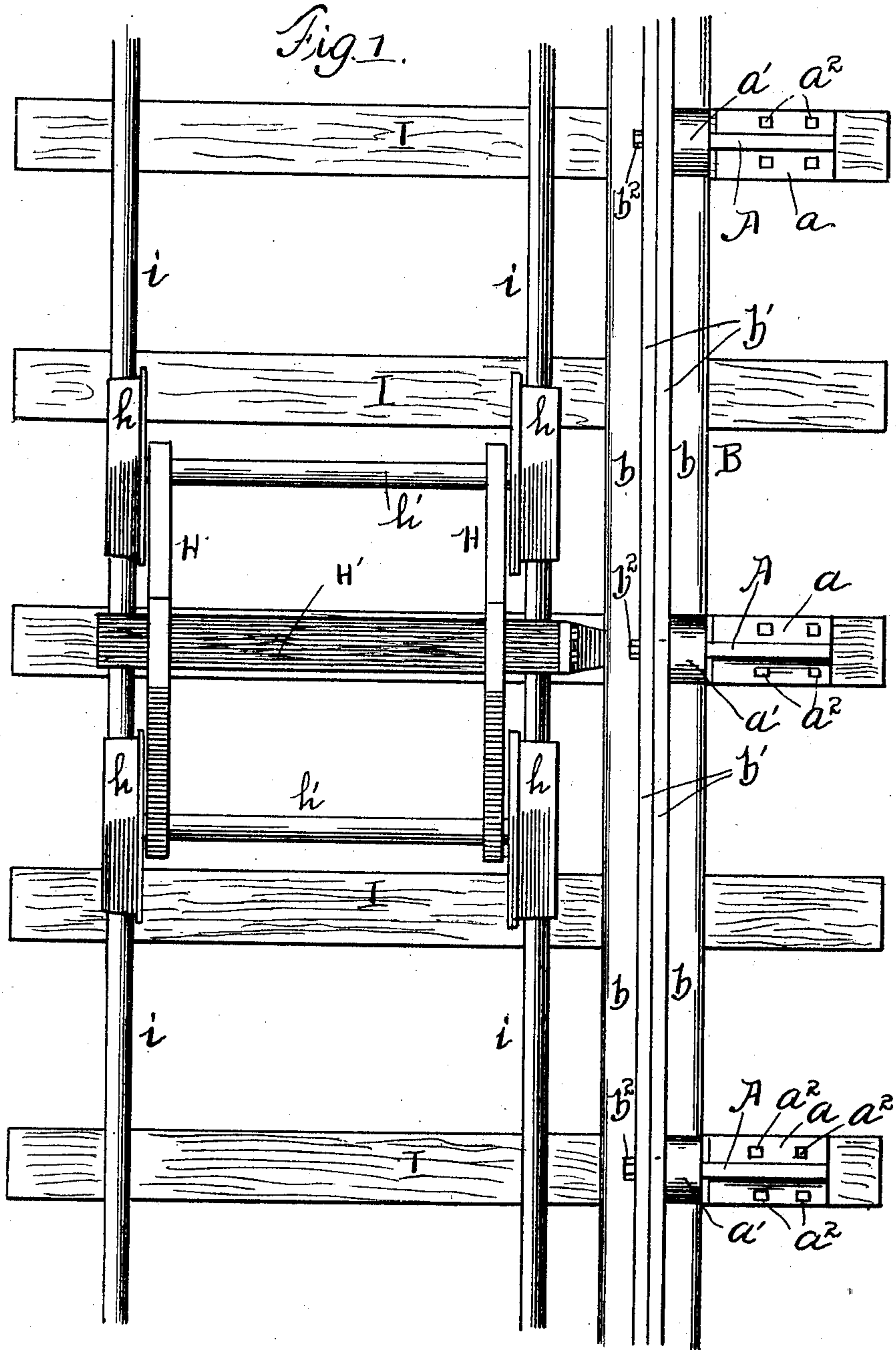
PATENTED APR. 5, 1904.

J. D. WILKENS.
THIRD RAIL ELECTRIC RAILWAY SYSTEM.

APPLICATION FILED JULY 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



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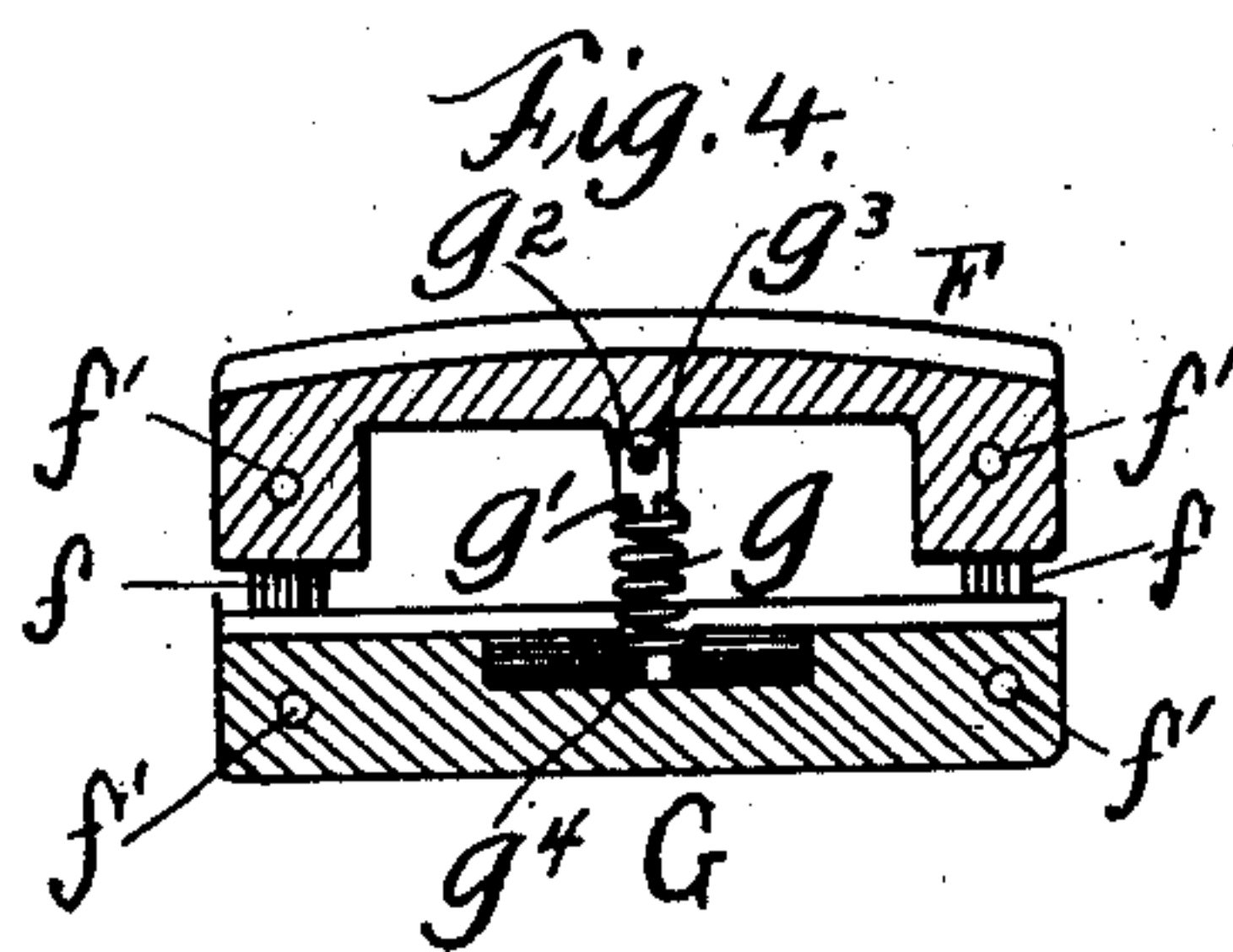
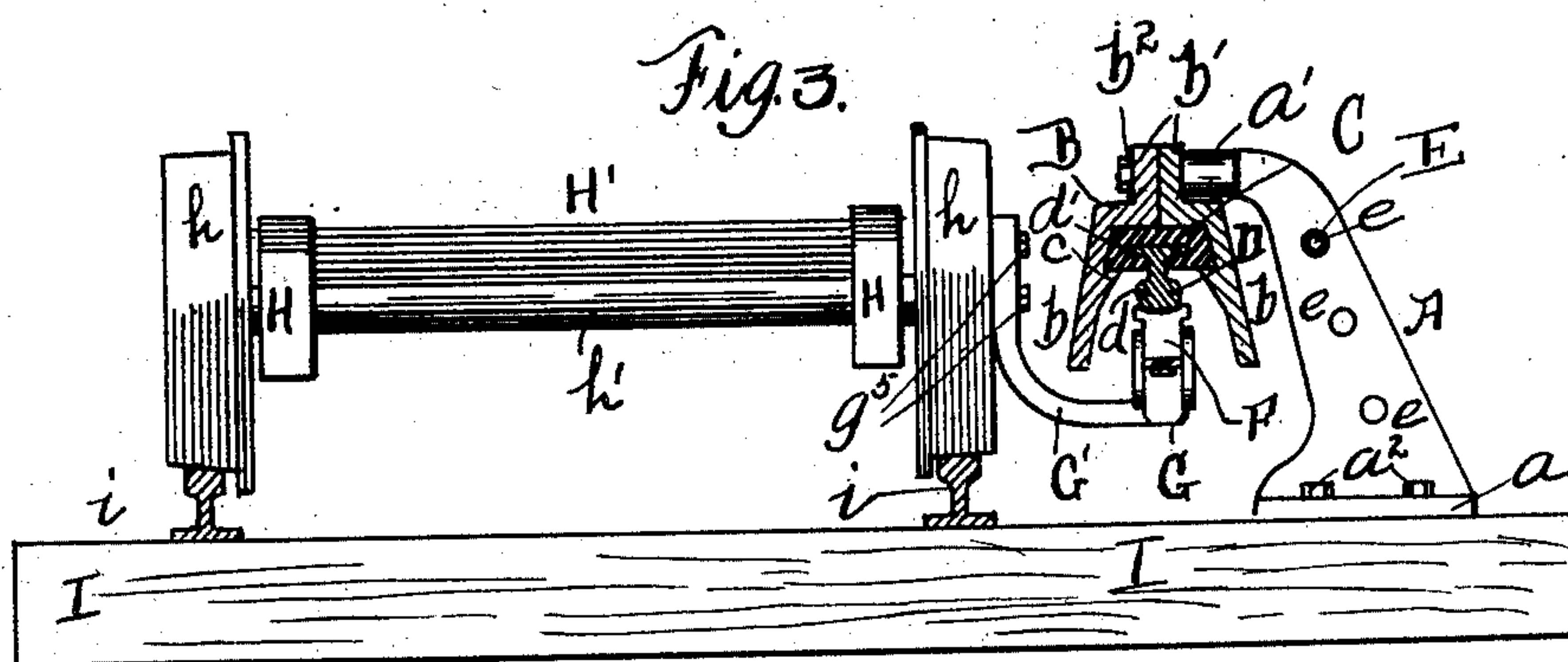
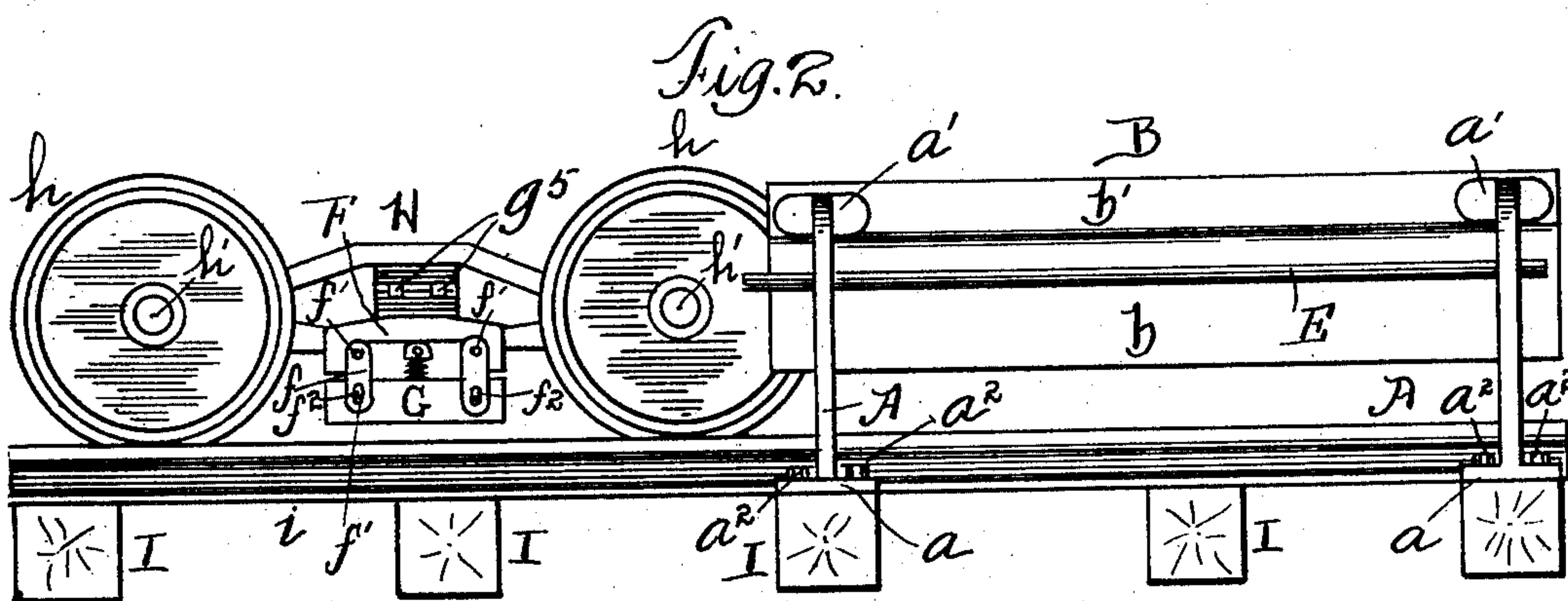
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UNITED STATES PATENT OFFICE.

JOHN D. WILKENS, OF CHICAGO, ILLINOIS.

THIRD-RAIL ELECTRIC-RAILWAY SYSTEM.

SPECIFICATION forming part of Letters Patent No. 756,757, dated April 5, 1904.

Application filed July 24, 1903. Serial No. 166,827. (No model.)

To all whom it may concern:

Be it known that I, JOHN D. WILKENS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Third-Rail Electric-Railway Systems, of which the following is a specification.

The invention relates to that type of electric-railway systems commonly termed "third rail," in which the current is taken from a suspended conductor or rail by a traveling contact or pick-up shoe and transmitted to the motor on the car.

The objects of the invention are to improve the construction of the housing or shell within which the rail or conductor is suspended, to improve the support for the housing or shell and the feed-wire for supplying the current to the rail or conductor, to improve the traveling contact or pick-up shoe, and to improve generally the construction and operation of the several appliances which enter into the system as a whole.

In the drawings, Figure 1 is a top or plan view showing the casing or conduit for the third rail or conductor, the rails of a railway, and a truck of a car; Fig. 2, a side elevation of the parts shown in Fig. 1 with the casing or conduit for the rail or conductor left out in front of the truck to show the traveling contact or pick-up shoe; Fig. 3, an end elevation with the casing or conduit, the insulating-block, and the rail or conductor in section; and Fig. 4, a sectional elevation of the traveling contact or pick-up shoe.

The casing or conduit within which is sustained the rail or conductor overhangs from standards A, which standards may be made of any suitable metal or material, and each standard has a base-plate a and a head a' , and the standards are firmly secured to the ties of the railway by bolts a^2 , passing through the base-plate a and entering the tie.

The casing, shell, or conduit B is constructed of any suitable metal or material and is made in two sections or halves, each section or half of a side plate b and an upper flange b' , and the two sections are united to form a complete whole by bolts b^2 , passing through the flanges b' and entering into the heads a'

of the standards, a bolt b^2 being provided to enter the head of each standard, and, if desired, intermediate bolts may be used, passing through the flanges b' in the length of the shell or conduit B between the standards.

At suitable lengths in the casing or conduit B is located insulating-blocks C, made of any suitable and insulating material—such as hard rubber, for instance—and these blocks are supported on lugs or steps c , formed on the inner face of the side plates b of the shell or conduit. The block C may be made in two halves or sections, or they may be made in a continuous piece, and each block is entered onto the base-flanges d' of the rail or conductor D, so that when the blocks are in the casing or shell the rail D will be suspended within the casing or conduit with its head d downward and in position to be engaged by the traveling contact or pick-up shoe for transmitting the current to the motor on the car. The current is supplied to the rail or conductor D at suitable points along the line by a feed-wire located in a tube E, which tube is supported by the standards A, for which purpose the standards are provided with one or more holes e for the passage of one or more tubes E, each tube containing an insulated feed-wire and each feed-wire being connected in any usual and well-known manner with the rail or conductor, such connection not being shown.

The standards A are to be located at such intervals apart as will furnish a support for the casing or conduit and hold the casing or conduit against sagging or bending between the standards. These standards also furnish a support for the feed-wires for supplying the current to the third rail or conductor, as well as a means for suspending the casing or conduit and the rail or conductor. The casing, conduit, or shell B, made in two sections or halves, in connection with the insulating-blocks, furnish a covering and support for the third rail or conductor that insures perfect protection against moisture from entering onto the rail or conductor, as the side walls or plates with their outward flare will shed rain and moisture, preventing the same from coming in contact with the rail or conductor, and the insu-

lating-blocks prevent the current on the rail or conductor from being transmitted to the casing or conduit, thus protecting the casing or conduit against becoming electrified and rendering the casing or conduit harmless in case of human beings or animals accidentally or otherwise coming in contact therewith, and this assurance of a perfect insulation for the shell or conduit is still further effected by reason of the space between the rail or conductor and the conduit on all sides of the rail or conductor, which space furnishes a safeguard against the current leaving the rail or conduit and electrifying the casing or shell. The casing or conduit is open at the bottom for access to the suspended rail or conductor, and by making this casing or conduit in companion sections or halves the assembling of the casing or conduit and the supporting therein of the rail or conductor is easily attained, it only being necessary to apply the insulating-blocks in proper position and then bring together the two sections or halves of the rail and attach them to the standards by the bolts b^2 , which overhangs the casing or conduit from the standards with the rail or conductor therein and suspended therefrom.

The traveling contact or pick-up shoe consists of a metal block F, having a contact-face cross-curved, preferably, to fit the curve of the head d of the rail, or approximately so, and furnish a contact under all circumstances by which the current will be taken from the rail or conductor by the block. The block F is connected with a block or head G, having a fixed relation, by links f , one end of each link being attached to the shoe or block F by pivots f'' and the other end of the links being attached to the fixed block or head G by pivots f' , so that the shoe or block F has a free endwise movement on the swinging links by which it is free to rise and fall to conform to the inequalities or irregularities in the third rail or conductor, so as to maintain a contact between the rail or conductor and the shoe or block F by which the current will be picked up by the shoe or block. The pick-up shoe or block F is held in its normally raised position by a coil-spring g , one end of which encircles a guide-pin on an ear or head g' , pivotally attached to an ear g^2 on the shoe or block F by a pin or pivot g^3 , and the other end of the spring encircles a stud g^4 on the base-block or head G. The spring g by its yielding and flexible nature allows the pick-up shoe or block F to be depressed, and when the point of depression has passed the spring acts and returns the shoe or block F to its normal or raised position, and the guide-pin on the ear G serves to prevent undue flexing or bending of the spring at the center in the depression of the shoe or block. The links f on each side of the shoe or block and at each end thereof furnish a swinging connection for the shoe or block, and in order to allow of the depression of the shoe or block

F without straining the links or bending or breaking the pivots each link f at its lower end has a slot f^2 , so as to allow of a limited play for the links in the rising-and-falling movement of the pick-up shoe or block. It will be seen that by means of the swinging links and the spring the pick-up shoe or block F is free to rise and fall to a limited extent, and this rising-and-falling movement enables the shoe to travel in continuous contact with the third rail or conductor, as any irregularity or depression in the rail or conductor is provided for by the yield of the pick-up shoe or block F, and at the same time the contact-face of the pick-up shoe or block is maintained, as the spring serves to hold the shoe or block in contact with the rail or conductor whether in its full-raised position or in its depressed position, the spring having sufficient force to maintain contact irrespective of the position of the shoe or block. This pick-up shoe or block by reason of its free mounting through the links and the support furnished by the spring makes an efficient pick-up shoe or traveling contact which will conform to the face of the rail or conductor, thus insuring the necessary contact for the pick-up shoe or block to receive and transmit the current. The fixed base-block or head G, as shown, is carried by an arm G' , attached to a cross-beam of the car-truck in the arrangement shown. The truck is not shown in detail, but has side beams H of a truss formation, as shown, with a cross-beam H', to the end of which the arm G' is attached by the bolts g^5 , so as to bring the pick-up shoe or traveling contact in alignment with the rail or conductor. The truck has wheels h on the ends of axles h' , and the wheels run on the rails i of the track, which rails are secured to cross-ties I in any usual and well-known manner.

The system of the present invention is one possessing simplicity of construction and efficiency in use. The standards furnish a support for the feed-wires and also carry overhanging from their upper ends the casing or conduit with the rail or conductor, making a very compact and strong support and mounting for the feed wire or wires and the casing or conduit with the third rail or conductor, by which the parts are readily accessible. The feed-wires can be reached for repairs or otherwise without disturbing the conduit and the rail or conductor, and the rail or conductor can be reached for repairs or otherwise without disturbing the feed-wires except of course shutting off the current, if necessary. The pivoted casing or conduit can be easily taken apart for access to the rail or conductor or for other purposes, it only being necessary to remove the retaining-bolts, and the removed section or half is readily replaced by again entering the bolts into the heads of the standards. The pick-up shoe or block furnishes a contact irrespective of any irregu-

larity or inequality occurring in the rail or conductor, and this pick-up shoe or block is free to rise and fall and in whatever position it assumes is maintained in engagement with the third rail. All of these features found in the construction of the devices of the present invention add materially to the operation and efficiency of the system as a whole.

What I regard as new, and desire to secure by Letters Patent, is—

1. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, and a rail or conductor suspended within the casing or conduit, substantially as described.

2. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, a rail or conductor suspended within the casing or conduit, and a tube mounted in the standards and receiving a feed-wire, substantially as described.

3. In an electric-railway system, the combination of supporting-standards, each standard having at its upper end a head, an overhanging casing or conduit carried by the standards and made of two companion sections or halves and attached to the heads of the standards, and a rail or conductor suspended within the casing or conduit, substantially as described.

4. In an electric-railway system, the combination of supporting-standards, each standard having at its upper end a head, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, each section or half consisting of a side wall or plate and a top flange, and the casing or conduit attached to the standards by its top flange, and a rail or conductor suspended within the casing or conduit, substantially as described.

5. In an electric-railway system, the combination of supporting-standards, each standard having at its upper end a head, an overhanging casing or conduit carried by the standards

and made of two companion sections or halves, each section or half consisting of a side wall or plate and a top flange, bolts passing through the flanges of the sections or halves and entering the ends of the standards, uniting the sections or halves of the casing or conduit to each other and to the standards, and a rail or conductor suspended within the casing or conduit, substantially as described.

6. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, insulating-blocks supported within the casing or conduit, and a rail or conductor suspended by the insulating-blocks within the casing or conduit, substantially as described.

7. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, insulating-blocks supported within the casing or conduit, a rail or conductor suspended by the insulating-blocks within the casing or conduit, and a tube mounted in the standards and receiving a feed-wire, substantially as described.

8. In an electric-railway system, the combination of supporting-standards, an overhanging casing or conduit carried by the standards and made of two companion sections or halves, each section or half consisting of a side wall or plate and a top flange, bolts passing through the flanges of the two sections or halves and entering the ends of the standard uniting the sections or halves of the casing or conduit to each other and to the standard, insulating-blocks within the casing or conduit, a rail or conductor suspended by the insulating-blocks within the casing or conduit, and a tube mounted in the standards and receiving a feed-wire, substantially as described.

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