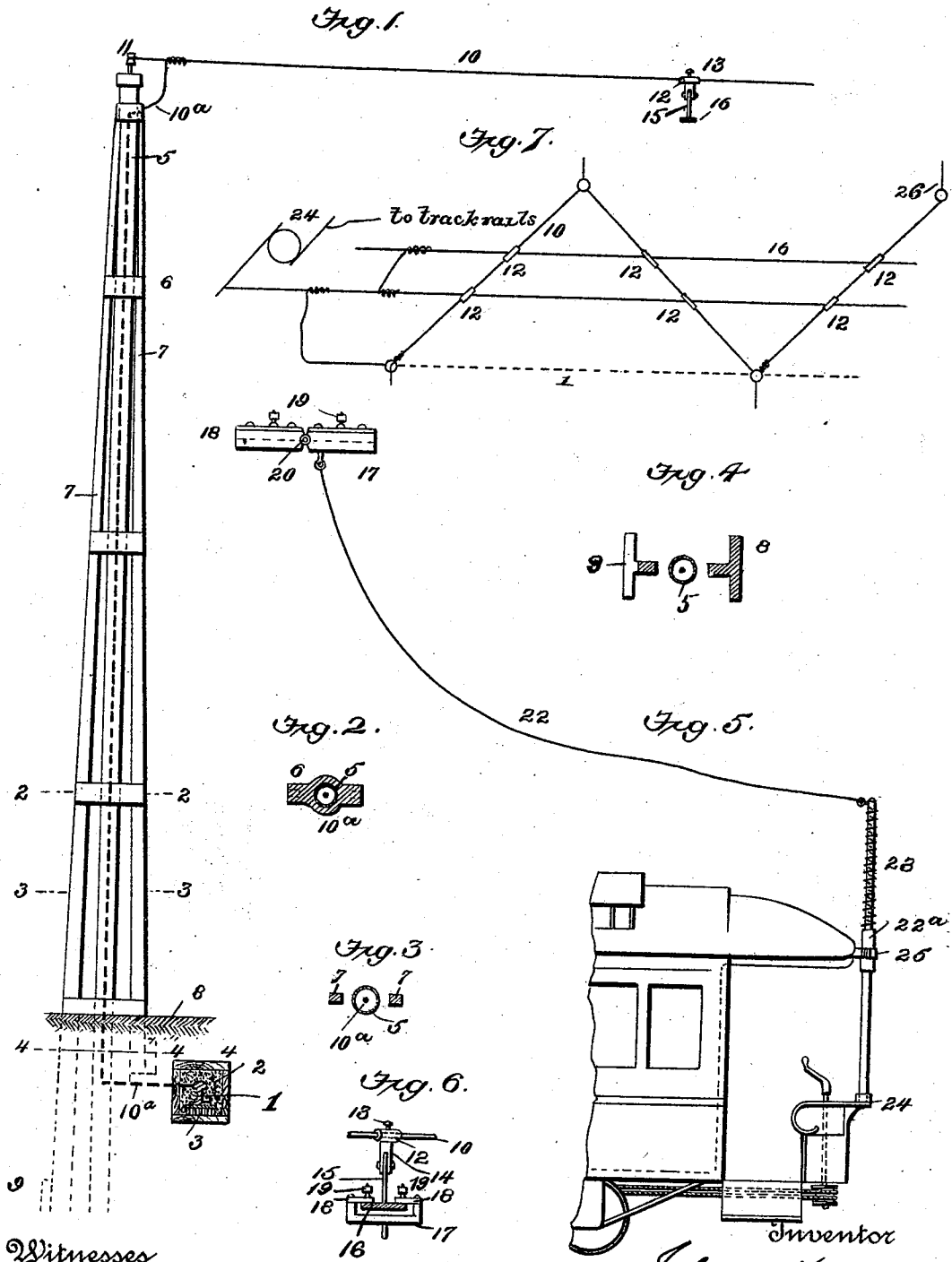


(No Model.)

J. C. HENRY.
OVERHEAD ELECTRIC RAILWAY.

No. 501,009.

Patented July 4, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

JOHN C. HENRY, OF WESTFIELD, NEW JERSEY.

OVERHEAD ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 501,009, dated July 4, 1893.

Application filed September 27, 1889. Serial No. 325,244. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HENRY, a citizen of the United States, formerly residing at New York, in the county and State of New York, but now a resident of Westfield, Union county, New Jersey, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

My invention comprises certain improvements in electric railway systems which I will first describe with reference to the accompanying drawings, in which—

Figure 1 is an elevation of one post and portion of guy-wire of my system. Fig. 2 is a horizontal sectional view of the post on the line 2—2, Fig. 1. Fig. 3 is a similar view on the line 3—3, Fig. 1. Fig. 4 is a similar view on the line 4—4, Fig. 1. Fig. 5 is a side view of one end of an electric car, and the traveling trolley or contact-device, attached thereto. Fig. 6 is a detached end view of a trolley, line-conductor and hanger. Fig. 7 is a plan view of a circuit.

In carrying my invention into practice, I bury in some convenient position, parallel with the track, a large continuous insulated conductor ("feeder") preferably of the form and in the position shown in Fig. 1. The conductor 1, here shown, is an old worn out railroad rail—a cheap material which can be obtained ready-made and which is of sufficient size to convey a large current. I surround it with asphaltum 2, or other insulating material, taking first the precaution to place under the conductor, glass or other hard insulating supports 3, to prevent the sinking of the conductor 1 in the asphaltum, and insure insulation below. The whole is inclosed in a wooden box 4. I thus provide a conductor of large carrying capacity, thoroughly insulated, at small expense. Posts or poles are arranged along the line of roadway to support the working conductor or conductors over the track. These posts I construct of light weight and calculated to withstand strain, transverse of the roadway, but without reference to strain longitudinal of the track. Thus the pole is made up of gas or other wrought iron pipe 5, on which are cast ribs 6 and braces 7, and when the post is set in the ground its braces

are as shown—placed transverse of the roadway. Flanges 8 and 9 of considerable area in the position shown on the front and rear of the post at and near its bottom, serve as "deadmen" or "splay-feet" to maintain the post upright.

The guy-wire (cross-wire, rod or cable from which the working conductors are suspended) is shown at 10, Fig. 1 supported at the sides of the street by insulators 11 at the top of the posts 5. On these guy-wires are supported adjustable and flexible hangers. Each hanger consists of a sleeve 12 through which the guy-wire passes and each is adapted to be fixed at any position on said guy-wire over the track by set screw 13. Pendent from the sleeve 12 is an arm 14 carrying two crimped sheet metal arms 15 which carry the working conductors 16. The working conductors are flat and, for a straight portion of the road, consist of horizontal ribbons of great tensile strength adapted to receive, and constitute an aerial track for, a trolley or contact-device of the construction shown in Fig. 6. Here 17 is the frame of the trolley which moves along under the working conductor and embraces its bottom and sides. This frame is supported from the working conductor by contact and wear plates 18.

Lubricators 19, 19 are supported on the contact-plates 18 to lubricate the sliding contact surface of said plates. This expedient increases the life, both of the contact plates and working conductor, but the contact-plates are, as shown, removable so that they may be replaced by fresh ones when worn. By keeping the working conductor constantly lubricated also and covered with oil, the adherence of moisture and ice thereto is prevented and a good contact is always assured. This matter is the subject of an application filed by me the 13th of August, 1890.

As seen in Fig. 5, the trolley is sectional, its two parts being hinged together at 20, so that the trolley of any desired length will more readily conform to the curves and undulations of the working conductor as it is pulled along the same. The trolley is connected to the car by flexible conductor 22 and mast 23. The latter is mounted in a socket 24 at bottom and has a spring clamp

25 at its mid-length, so that the mast may be readily moved from end to end of the car or to another car when it is necessary. The spring clamp 25 is in circuit with the motor, and automatically completes the circuit to the working conductor by contact with the terminal band 22^a of tow-line 22. To strengthen the mast the wire is wound around it from the top down to band 22^a.

Referring now to Figs. 1 and 7, it will be seen that the main feeding conductor 1 is connected at intervals to the guy-wire 10 by insulated branch feed conductors 10^a, passing up through the hollow posts 5. The posts are "staggered" on opposite sides of the street as shown in Fig. 7. A less number of posts may be used thus than in the ordinary way as each supports the working conductors at two points. The guy-wire 10 is continuous, passing around insulators 11 at the tops of posts 5 and is bent diagonally back and forth across the track. It supports from each "stretch" a pendent hanger for the working conductor or conductors and thus places the latter in electrical connection with the feeder 1 and one pole of dynamo 24. The other pole of the dynamo may be connected to the track-rails which may serve as the return conductors from the car motor or motors. By terming the guy-wire "continuous" I mean that it affords a continuous pathway for the electric current—without regard to the mechanical continuity of the wire—though it is obvious that the best result will be obtained ordinarily by using a continuous wire bent from post to post of one strip except for necessary splicing together of its lengths. By the diagrammatical view Fig. 7, it is seen that the dynamo current is divided between the working conductors, the overhead zig zag conductor and the underground feeding conductor. The zig zag wire thus forms one of the feeding conductors as well as affording branch conductors between the underground feeder and the working conductor. In Fig. 7 also, I have shown stay-wires 26 for supporting the tops of the posts 5 from adjacent buildings or structures. It will now be seen that the electric circuit is from the stationary dynamo or other source of electricity through main feeder 1 to the several branch feed wires 10^a, guy-wires 10, hangers 12, 14, 15, working conductor or conductors 16, trolley 18, 17 and tow-line 22 to the car-motor, whence it passes by the rails or the return conductors back to the dynamo.

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

1. In combination with a source of electricity, a railway track electrically connected to one pole thereof, a main feed conductor connected to the other pole thereof, posts arranged along the said track on opposite sides thereof, guy-wires supported on said posts across the track and electrically connected with said main feed conductor and working

conductors suspended over the track by said guy-wires and in electrical connection therewith, substantially as set forth.

2. In combination with a railway track, posts arranged along and on both sides of the same, and having insulators substantially as described, guy-wires supported from said posts by said insulators and feed and working conductors, both in electrical connection with said guy-wires.

3. The combination of guy-wires, one or more working conductors and hangers of conducting material, through which said guy-wires pass without break from side to side of the street for supporting said working conductor or conductors directly from said guy-wires without insulation, said hangers being adjustable on the guy-wires.

4. The combination of one or more traveling motors, an overhead working conductor or conductors electrically connected thereto, a series of posts "staggered" on opposite sides of said working conductor or conductors, and diagonal guy-wires supported on said posts and supporting said working conductor or conductors.

5. In an electric railway, the combination of a working conductor, posts "staggered" on opposite sides thereof, and a continuous guy-wire for said working conductor stretched diagonally back and forth from post to post.

6. In an electric railway system, the combination of a working conductor forming part of the electric circuit, posts "staggered" on opposite sides thereof, and an electrically continuous guy-wire for said working circuit connected thereto and forming part of the conducting circuit, and stretched back and forth from post to post substantially as set forth.

7. The combination of the working conductor of an electric railway, having guy-wire supports, of a series of guy-wire-supporting posts staggered on opposite sides of the track.

8. In an electric railway system the combination of a supply conductor supported from poles along the roadway, suspended working conductors over the track and branch conductors at intervals connecting the supply and working conductors.

9. In an electric railway system, the combination of the track a line of posts on each side thereof, and an overhead wire system comprising feed and guy or span wires carried by said posts and working conductors suspended from the span wires over the track, substantially as set forth.

10. In an electric railway system, the combination of the track, a line of hollow posts at each side thereof, span wires carried by said posts, working conductors suspended from said span wires, and extending along the way over the track, a buried feeding conductor and branch wires connecting at intervals the feeding and working conductors and

passing through said posts, substantially as set forth.

5 11. In an electric railway system, the combination of the track, hollow posts arranged along the same, span wires carried by said posts, working conductors extending along the way over the track suspended from said span wires and in electric connection there-

with, a buried feeding conductor, and branch wires connecting at intervals the feeding conductor to said span wires, and passing through said posts, substantially as set forth. 10

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