

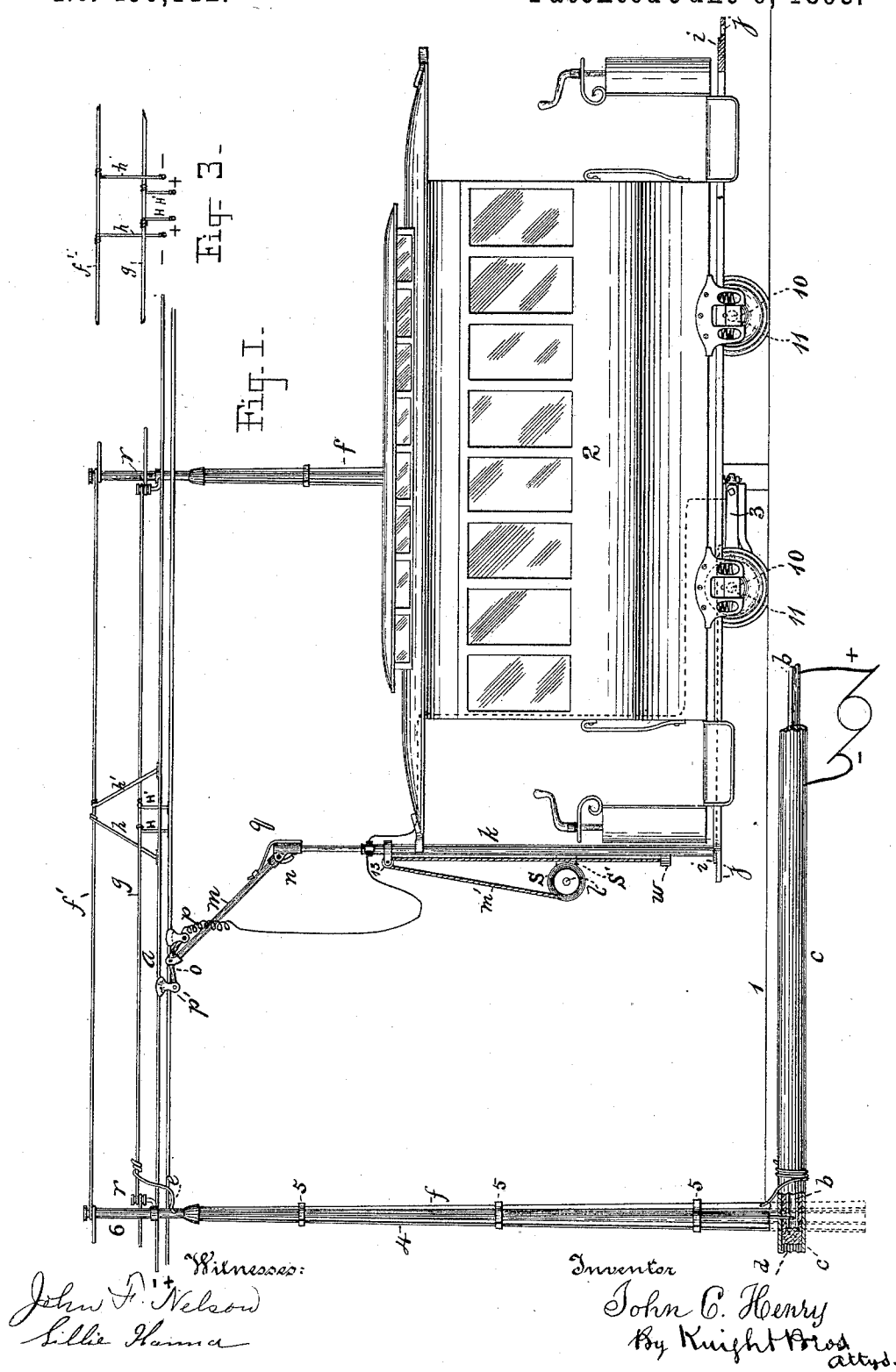
(No Model.)

3 Sheets—Sheet 1.

J. C. HENRY.
OVERHEAD ELECTRIC RAILWAY.

No. 499,112.

Patented June 6, 1893.



(No Model.)

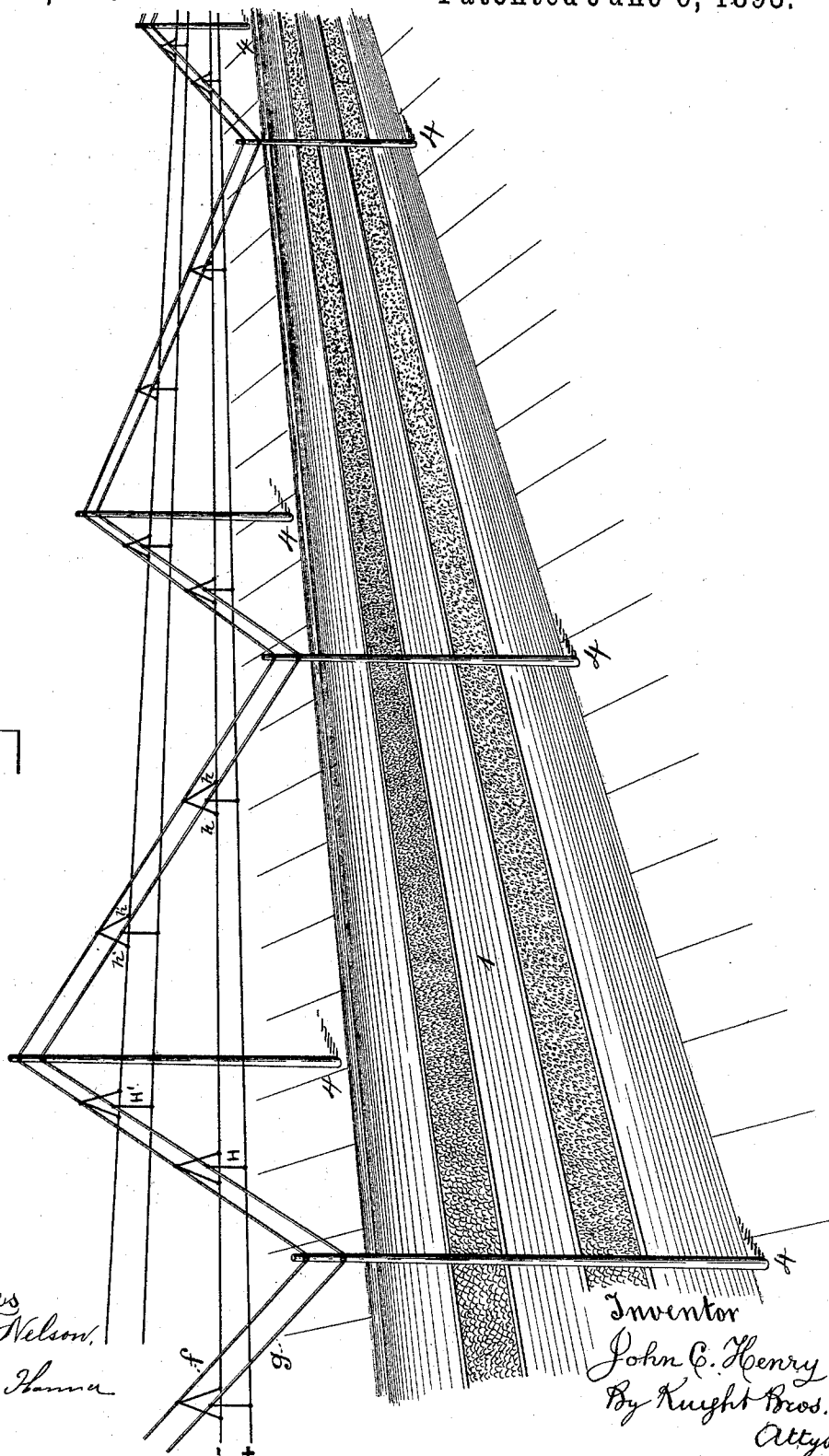
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Fig. 2.



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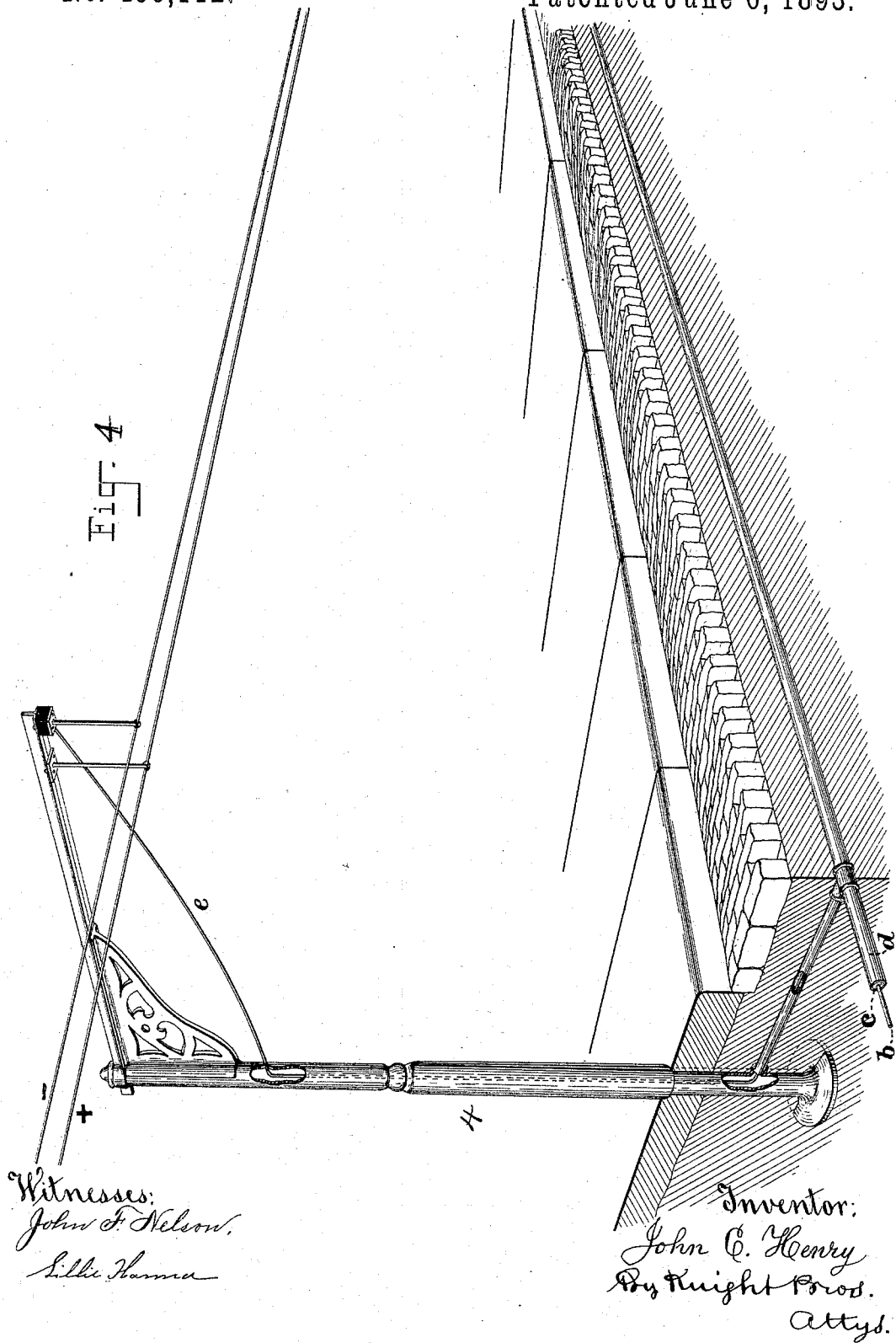
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UNITED STATES PATENT OFFICE.

JOHN C. HENRY, OF NEW YORK, N. Y.

OVERHEAD ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 499,112, dated June 6, 1893.

Application filed September 3, 1890. Serial No. 363,847. (No model.)

To all whom it may concern:

Be it known that I, JOHN C. HENRY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Electric Railways, of which the following is a specification.

Leading features of my invention consist in, first, an arrangement in which the positive conductor is protected by the negative or return conductor arranged vertically above it; second, a feeding main for the out-going current and communicating through the supporting posts with the positive wires of the overhead conductors said main consisting preferably of a cheap material of low resistance such as described in my application for patent filed September 27, 1889, Serial No. 325,244, said main being inclosed in a connected series of iron piping through which the current from the motor is either grounded or returned to the dynamo.

Other features of my invention will be found described in the sequel.

Referring to the accompanying drawings which form a part of this specification:—Figure 1 represents by side elevation a motor-car and a portion of an electric railway illustrating my improvements. Fig. 2 is a perspective view showing a portion of the overhead system of conductors. Fig. 3 is a view taken at right angles to the conductors showing two sets of wires for a double track line. Fig. 4 represents my buried compound main applied to a system of overhead conductors which are supported from bracket-projections of the ground-posts without the intervention of supporting cross-wires.

1 may represent the track-way of an electric railway. 2 may represent a car equipped with a suitable electric motor 3 which has separate positive and negative communication with the overhead conductors by means of traveling contacts to be presently described.

The outgoing and returning wires +, —, of my system of overhead conductors are, by means of hangers H, h, suspended from and have electrical connection with wires g, f' which are stretched diagonally or in zig-zag fashion across the track-way from the tops of ground-poles or posts f of which there is a line

of posts on each side of the track, the posts on one side being, for that purpose, placed opposite to the mid-distance between those on the other side. My preferred construction of these posts is substantially as represented in Fig. 1, that is to say, each post consists mainly of a tapering open and hollow frame composed of iron rods 4 bound at proper intervals by hoops 5 and terminating in suitable pillars 6 to which the cross-wire f' for the return current is directly attached and with which it is by said attachment placed in electrical communication, and upon which the cross-wire g for the active or out-going current is supported by means of insulating brackets 7. From the cross-wire g a wire e is insulated from and conducted down the interior of the post to a main b of low-resistance consisting preferably of a line of electrically joined discarded track-rails of which the terminal one has electrical communication with the positive brush of the dynamo. The said main being embedded in cement d or other suitable insulation, is inclosed in a line of iron piping c which connects with the negative brush of the dynamo.

Figs. 1, 2 and 3 represent my improvement adapted to a set of elevated conductors for a double track and with the wires—for the home-going or spent currents suspended at a slightly higher elevation than and so as to serve as guards or protectors to the wires + which convey the outgoing or working currents. In such track-arrangement, while the suspenders H, H' of the active wires hang perpendicularly the suspenders h, h' of the return-wires are spread obliquely so as to be out of contact with and to protect the former—see Fig. 2.

The above-described system for conveying electricity to a plurality of electrically propelled cars from a stationary source of current is thought to possess a number of advantages over existing devices for the same purpose.

For example: As to the buried main or service-conductor of low resistance and very cheap material connected at numerous intervals with the overhead wires, it enables a current of large ampérage and low voltage to be applied in multiple to all the cars on the line at the same

time and with substantially equal effect on each car. The said main being supported in a body of cement, itself protected and supported by the continuous line of external piping, is effectually protected from oxidation, current-leakage and from rupture such as might arise for instance, from settling of the foundation, while the large cross-section of the main affords a practically unobstructed passage for the supply-current equally to every part of the line. The external shell or piping being grounded throughout its length and effectually insulated from the main can be approached or handled with entire safety. As to the arrangement of spent or grounded current-wires above and with their suspenders straddling the line of active wires, the former operates to guard the latter against accidental contact of an arc-light or other high-voltage wire.

In the description and claims I have, for the sake of clearness, referred only to the negative wire as the grounded wire, but it is obviously unimportant and equally within my invention whether I ground the negative or positive wire or whether the negative or the positive wire is located above the other, providing that, as herein described, the two may be perfectly insulated from each other.

In an earlier application, serially numbered 325,244, filed on the 27th of September, 1889, I have shown and claimed an electric railway system comprising hollow posts "staggered" on each side of the track, diagonal guy wires stretched continuously from post to post and a buried feeding conductor; the said guy wires forming a part of the electric circuit and being connected to the working conductors suspended therefrom as well as to the buried feeder, the latter connection being made by branch conductors passing through the hollow posts. The object of the present application is to cover certain improvements on that system.

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, parallel aerial wires suspended over the roadway, said wires carrying current of different signs, one of said wires being located above and acting as a guard to protect the other.

2. In an electric railway system, the combination of a source of electricity and an electric circuit connected therewith and having both outgoing and return wires suspended over the railway, one of said wires being grounded and the other insulated from the ground and one being supported over the other, to protect it, substantially as set forth.

3. In an electric railway system, the combination of a source of electricity, an electric circuit connected therewith, and a motor or motors having means of connection with both outgoing and return wires thereof, one of said

wires being grounded and the other being insulated and the grounded wire being supported over the railway above the other, substantially as set forth.

4. In an electric railway system, the combination of a source of electricity, continuous main conductors extending along the said railway and connected to opposite poles of said source, working conductors, and metal posts arranged along the railway for supporting said working conductors and electrically connecting one of the same, with one of the main conductors, substantially as set forth.

5. In an electric railway system, in combination with an overhead working conductor, metal posts supporting the same and electrically connecting it to ground, substantially as set forth.

6. In an electric railway; the combination of exposed working conductors, buried feeding conductors, and a metal ground-post which incloses and protects the insulated intermediate positive conductor and which is itself in direct electrical communication above with the negative conductor and below with the negative main.

7. In an electric railway, the combination of overhead working conductors, feeders connected thereto through ground-posts and positive supporting wires, and negative supporting wires placed above and protecting said positive supporting wires; substantially as set forth.

8. In an electric railway, the combination of the negative cross-supporting wires and the straddling suspenders therefrom which support and connect therewith the negative line-wires at two points so as to protect the positive wires without liability to short circuit therewith, substantially as set forth.

9. In an electric railway; the combination with a stationary source of current and with collectors on the motor-cars, of the compound buried main, one or more lines of ground-posts and positive and negative line-wires supported therefrom and having through said posts numerous connections, the positive line-wire through insulated conductor with the supply-main and the negative line-wire directly through said posts with the return main; substantially as set forth.

10. In an electric railway, the combination with a stationary source of current and with collectors on the motor-cars, of a tubular grounded return-main, a non-conducting filling therein, a supply-main of low resistance embedded in said filling and having electrical connection with the positive pole of said current-source, a system of overhead electrically connected supporting wires for the out-going current, a system of overhead electrically connected supporting wires for the return-current insulated from said first system, numerous means of communication between said systems and said mains con-

sisting of metallic ground-posts which uphold said systems and which afford direct electrical communication from said second system to the grounded return-main and
5 which support and insulate intermediate conductors from said supply-main to said first system and positive and negative line-con-

ductors which are suspended from and are respectively electrically connected with said supporting systems; substantially as set forth. 10
JOHN C. HENRY.

Witnesses:

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