

(No Model.)

J. C. HENRY.
SUPPLY SYSTEM FOR ELECTRIC RAILWAYS.

No. 509,312.

Patented Nov. 21, 1893.

Fig. I.

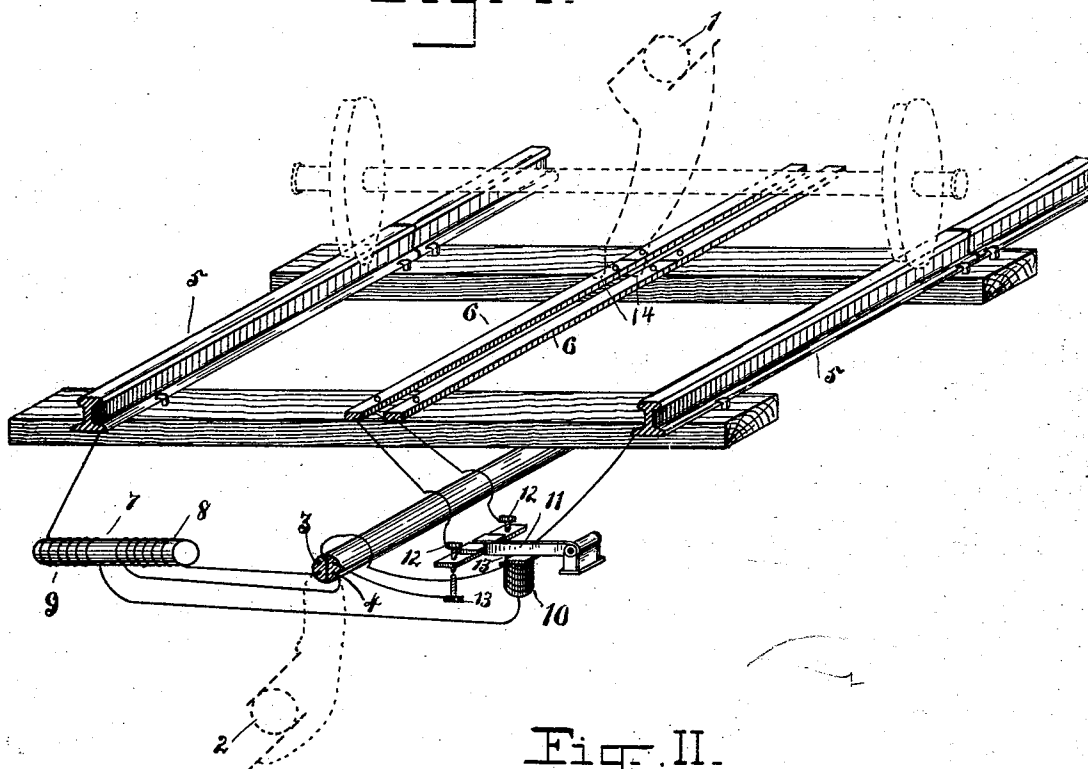
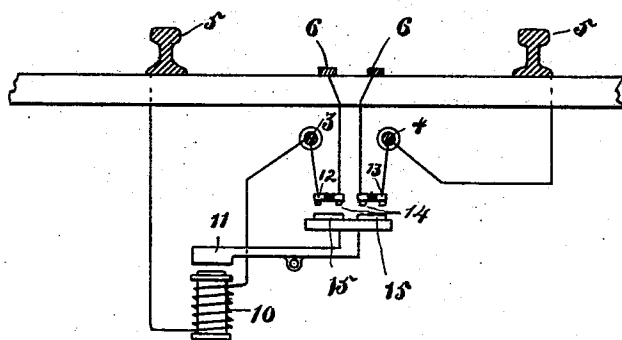


Fig. II.



Witnesses

Geo. H. Knight Jr.
Edward Brant

Inventor

John C. Henry
By Knight & Brant
Attys.

UNITED STATES PATENT OFFICE

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

SUPPLY SYSTEM FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 509,312, dated November 21, 1893.

Original application filed August 20, 1889, Serial No. 321,360. Divided and this application filed April 29, 1892. Serial No. 431,204.
(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.

This application is a division of my application, Serial No. 321,360, filed August 20, 1889.

The invention relates to certain improvements in electric railways which will first be fully described with reference to the accompanying drawings and then pointed out in the claims.

In said drawings, Figure I is a perspective view, partly diagrammatic of a portion of an electric railway embodying my improvements. Fig. II is a sectional view, illustrating a modification of the invention.

The current is preferably conveyed to the motor 1, from a stationary dynamo or other source 2 of electricity. Line wires 3, 4, which may be insulated and buried, are connected to opposite poles of the stationary dynamo and arranged along and parallel with the track rails 5. The latter are arranged in insulated sections. Parallel with and preferably arranged between the tracks are "working conductors" 6 divided into insulated sections. These conductors are arranged on the surface as shown or in a subsurface conduit, or overhead. Each section is about the length of a car-body (or train of cars).

Fig. I represents the arrangement used when an alternate current dynamo or generator is employed—while Fig. II is a suggestion of how the system can be made to operate with a continuous current dynamo.

Referring to Fig. I, 7 is an inductorium or converter having its primary helix 8 of high resistance with its ends connected to opposite line conductors 3, 4. The secondary helix 9 of the inductorium, which may be of low resistance is in circuit with the track rails and with helix 10 of a magnet or solenoid whose armature 11 carries two insulated contacts 12, 12, adapted to bear on fixed contacts 13, 13, which are connected to opposite line conductors 3, 4. When the car carrying and

driven by an alternate current motor, passes from one section of track to the next, circuit is completed through the car wheels and axle, the tracks, the secondary helix 9 of the inductorium and the helix 10 of the magnet or solenoid. It will be seen that the magnet or solenoid 10 will now draw down its armature and complete the circuit between the working conductors 6 and line conductors 3, 4, and accordingly pendent or supported contact brushes or devices 14 of ordinary construction—carried by the car and sliding on said working conductors, may convey current therefrom to the car motor 1. The sections of track and working conductors break joints and the contact brushes of the car are of any ordinary construction.

In Fig. II, the line conductors 3, 4, are shown normally in circuit with the sections of track 5, a magnet or solenoid 10 of very high resistance and insulated contacts 12, 13. The sectional working conductors 6 have insulated contacts 14, and the armature 11 of the electro-magnet carries two insulated metal plates 15, 15. The passage of a car from one section of track to the next closes the circuit through the wheels, axle, track, magnet or solenoid 10, line conductors and dynamo and the magnet draws down armature 11, so completing the low resistance circuit to the sectional working conductors, and short circuiting the circuit which includes the high resistance coil of magnet 10, so that but little leakage will occur. When the car leaves the section, the armature 11 resumes its normal position opening the circuit of conductors 6.

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, the combination of a track composed of insulated sections, continuous line conductors, branch circuits from said line conductors including the primaries of converters or inductoriums, and local circuits from the track sections including the secondaries of said converters or inductoriums and adapted to be completed on the passage of a car.

2. In an electric railway system, the combination of continuous main line conductors

extending along a railway and carrying an alternating current, a series of normally open circuits having exposed contact surfaces also extending along said railway, induction transformers, the primaries of which are in multiple are branches of the main line and the secondaries of which are connected each with two branches of said normally open circuits, and electric locomotives closing said normally open circuits and means for supplying the motors thereof with current from said main line, substantially as described.

3. In an electric railway system, the combination of continuous main line conductors extending along a railway and carrying an alternating current, a series of normally open circuits having exposed contact surfaces also extending along said railway, induction transformers, the primaries of which are in multiple are branches of the main line and the secondaries of which are connected each with two branches of said normally open circuits, and electric locomotives closing said normally open circuits and having alternate-current motors and means for supplying said motors with current from said main line, substantially as described.

4. The combination of a stationary source of electricity, continuous insulated line conductors, a sectional track, parallel therewith separate sectional working conductors also parallel therewith, a car traveling on said track and bearing a motor having means of electric connection with said working conductors, and an electric switch controlled by the car through connections to the insulated track sections for connecting or disconnecting the said line and working conductors, substantially as set forth.

5. The combination of a sectional track, sectional working conductors parallel therewith, a car traveling on said track and bearing a motor having means of electric connection with said working conductors, continuous line conductors connected with the poles of an alternate current generator, an inductorium having a primary helix of high resistance constantly in circuit with said line conductors and its secondary helix in circuit with the track rails and an electro-magnet or solenoid and movable contacts in circuit with the line conductors and working conductors and governed by the armature or core of said magnet or solenoid, substantially as set forth.

6. In electric railways, the combination of track rails, continuous insulated conductors, separate sectional working conductors and electrical means for connecting the continuous with the sectional working conductors through the medium of the track rails, car wheels and axles.

7. In electric railways, the combination of conductors carrying an alternate current, exposed working conductors, branch conductors, an inductorium and a circuit completing device including the car wheels and axles and actuated at intervals by current from the secondary coils of said inductorium.

8. In electric railways, the car wheels and axles, track rails in sections, continuous alternate current conductors, separate sectional working conductors, an inductorium, a solenoid or magnet, a switch and a branch circuit controlled by said switch for connecting the sectional with the working conductors when the car wheels are over their section.

9. In an electric railway, the combination of insulated track sections, continuous line conductors, a source of electricity connected with said line, branches from said line conductors including the primaries of converters, separate sectional working conductors, branches from the working conductors to said line conductors including switches and branch circuits from the track sections including magnets controlling said switches and the secondaries of said converters.

JOHN C. HENRY.

Witnesses:

GEO. H. KNIGHT, Jr.,

LILLIE HANNA.