(No Model.)

W. H. KNIGHT.

ELECTRIC RAILWAY.

No. 305,731. Patented Sept. 23, 1884.

FIG. I.

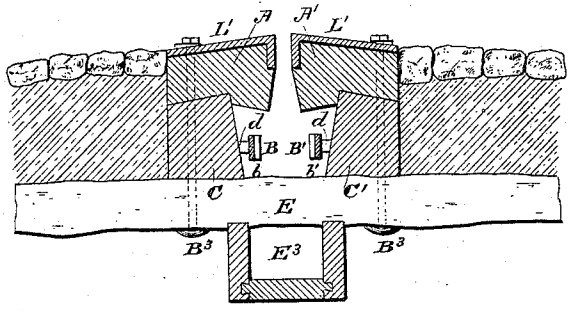


FIG. II.

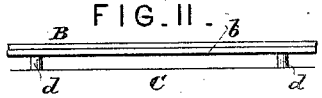


FIG. III.

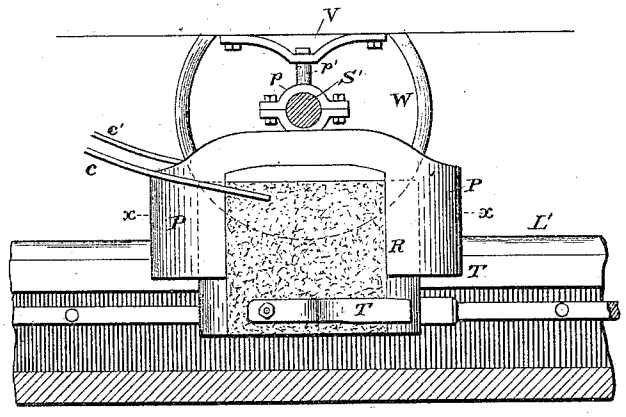
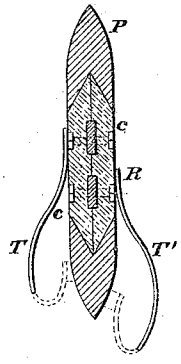


FIG. IV.



Attest.

Geo. T. Smallwood.

E. M. Hopkins.

Inventor:

Walter H. Knight

By Bartley & Knight

attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

WALTER H. KNIGHT, OF NEW YORK, N. Y.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 305,731, dated September 23, 1884.

Application filed December 22, 1883. (No model.)

To all whom it may concern:

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

My invention consists in a form of slotted conduit for containing the conductors of an electric railway and preserving their insulation, and also in devices for maintaining electric connection between said conductors and a passing locomotive or car.

In the accompanying drawings, Figure I is a section of the conduit. Fig. II shows the manner of supporting the conductors therein. Fig. III is a side view of the depending connector, and Fig. IV is a section of the same on line *x x*.

Fig. I shows the conduit, which is placed under ground, with its top and slot flush with the surface, and which is made up of the four timbers A A′ C C′, supported on cross-ties E over the supplementary draining-conduit E^3, and held by vertical bolts B^3. It will be seen that this form of conduit gives complete resistance to side-thrust of the earth, and the two top pieces, A A′, can be easily removed for repairing and inspecting the interior of the conduit. The timbers have the top plates of iron, L′ L′, which are bent down into the slot at their inner edges. The under surface of parts A A′, being inclined, will serve as a water-shed, so that the drippings will fall clear of the conductors. The joints can be tongued and grooved or made with inclined surfaces, as shown. Within the conduit, on opposite sides thereof, are the two conductors B B′, supported on a rail, *b*, which is held out from the surface of the conduit by wooden pins *d d*. If the face of the conduit and the pins be well oiled, this arrangement will still further prevent the moisture reaching the bare conductors B B′.

Figs. III and IV illustrate the connection between the moving car and the conductors in the conduit. Two very thin conducting-strips, *c c′*, are incased in a thin strip, R, of wood, leather, or other insulating material or carrier, which is supported in an iron frame or carrier, P. This frame just fits into the slot of the conduit, so as to slide easily therein, and has two grooves on the inner edge of its two depending ends, into which R slides and is fastened. It serves to protect and support the insulated conductors, and also takes up the wear from friction against the edge of the conduit. The strips *c c′* are at their lower end connected to springs T T′, which project on opposite sides and slide along conducting-bars B B′, and which may be bent up into elliptical shape, as shown in dotted lines, Fig. IV, so as to be movable in either direction, while at their upper ends *c c′* terminate in two flexible insulated conductors leading to the motor and switch on the cars. The frame P is preferably hung from axle S′ by a loose box, *p*, which allows a slight longitudinal play of P, to adapt it to inequalities in the slot. Any great swinging motion is prevented by a vertical projection, *p′*, which extends into a depending guide, V, from the body of the car, and has a free vertical and lateral play therein. The position of the springs with relation to conductors B B′ will therefore be independent of any unsteady springy motion of the body of the car.

I reserve for future application the method of regulating the motor herein shown.

I do not claim the suspension of the frame carrying the connecting conductors and brushes from the car-axle; but

What I do claim as my invention is—

1. The combination of a slotted conduit beneath the surface of an electric railway having bare conductors therein, a carrier suspended from the car and entering said slot, and an insulated conductor electrically independent of said carrier, but attached thereto and terminating at one end in contact-pieces bearing against said bare conductors, and at the other end in electric connection with the motor.

2. The combination of a conduit having a longitudinal slot, conductors depending from the car, insulation on each side of said conductors extending to the side of the slot, and protecting-pieces preventing wear of the insulation.

3. The combination of an insulated conductor projecting into the longitudinal slot of the conduit and a protecting-piece in line with said conductor.

4. The combination of a conduit having a narrow longitudinal slot and conductors de-

pending by a common frame from the car and entering said slot, said conductors having their breadth in the direction of the slot and placed one behind the other.

5. The combination of a slotted conduit having walls of insulating material with the bare conductors supported at intervals from said walls.

6. The combination, with the movable car, of the depending frame or carrier having an insulated conductor attached thereto, said frame or carrier being hung from the car on an axis at right angles to its direction of forward movement, and provided with stops in the path of its rotary movement, and extending into the slotted conduit.

7. The combination, with the movable car, of the depending frame or carrier having an insulated conductor attached thereto, which extends into the slotted conduit to make contact with fixed conductors therein, the said carrier being provided with bearings allowing freedom of lateral movement to accommodate it to inequalities in the slotted conduit.

WALTER H. KNIGHT.

Witnesses:

ALBERT E. LYNCH,

W. E. DONNELLY.