

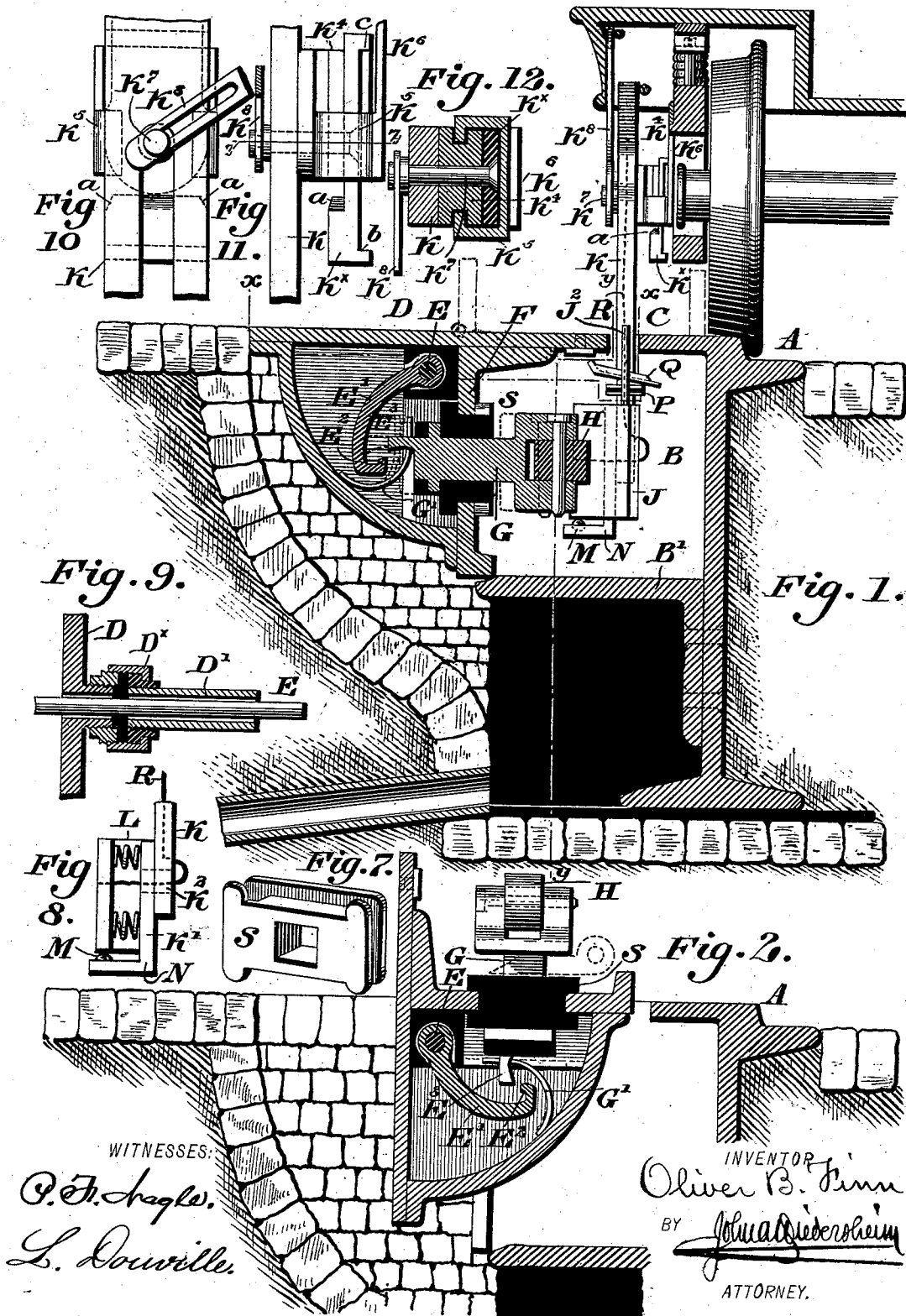
(No Model.)

2 Sheets—Sheet 1.

O. B. FINN.
CONDUIT ELECTRIC RAILWAY.

No. 527,601.

Patented Oct. 16, 1894.



WITNESSES:

O. F. Hagler.
L. Dowdell.

INVENTOR
Oliver B. Finn
BY *John A. Sidersheim*
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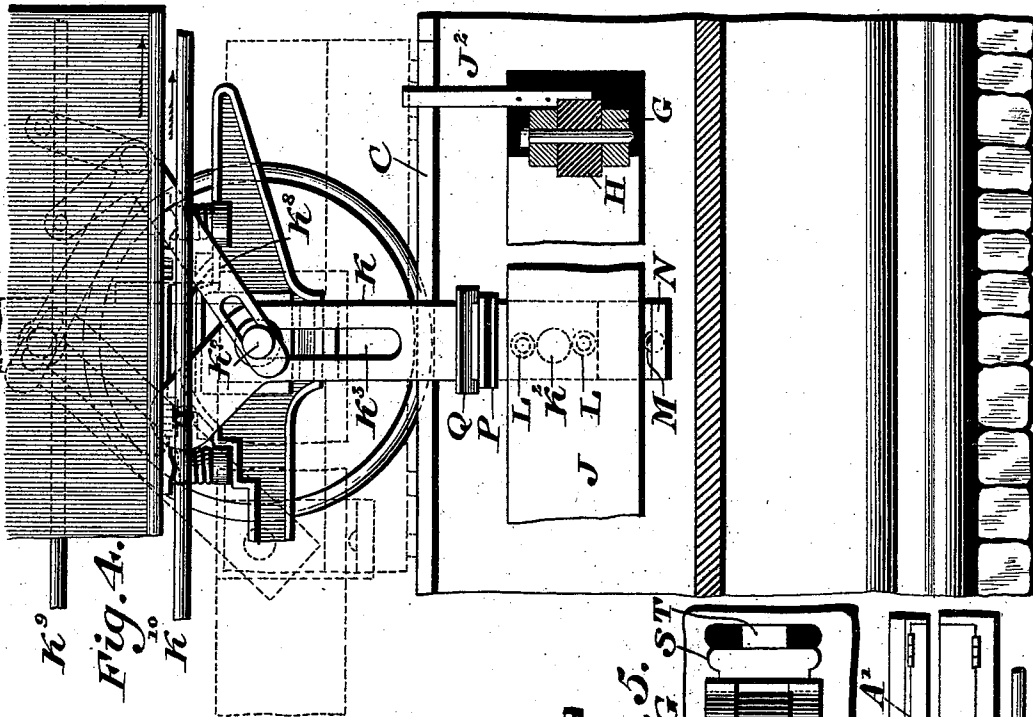
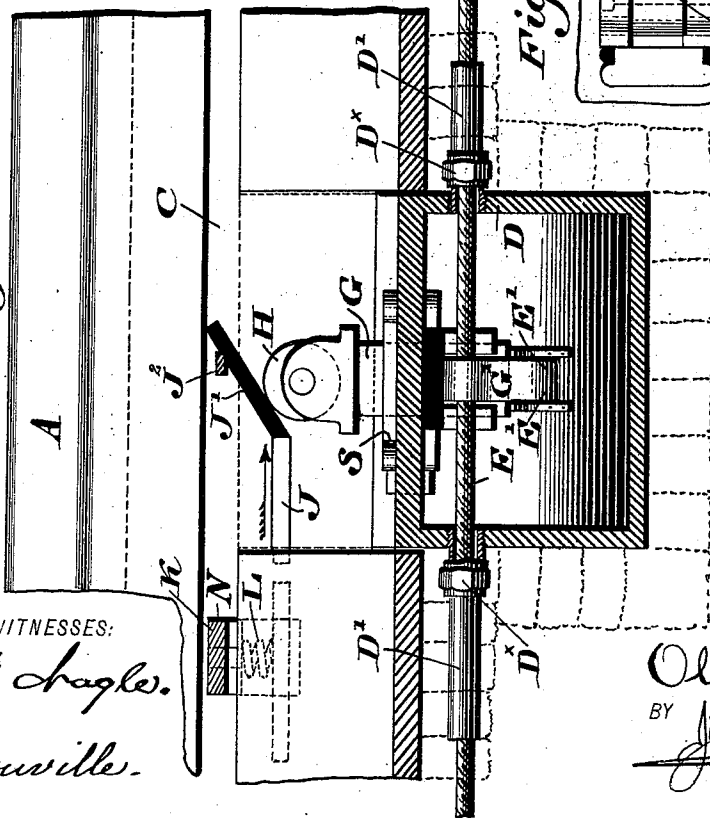


Fig. 3.



WITNESSES:

P. F. Hagler.
L. Douville.

Fig. 5. S^t

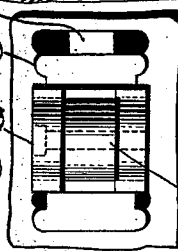
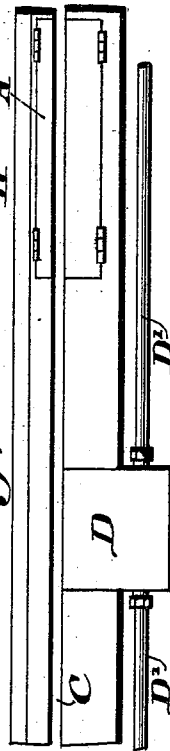


Fig. 6.



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UNITED STATES PATENT OFFICE.

OLIVER B. FINN, OF PHILADELPHIA, PENNSYLVANIA.

CONDUIT ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 527,601, dated October 16, 1894.

Application filed March 16, 1894. Serial No. 503,821. (No model.)

To all whom it may concern:

Be it known that I, OLIVER B. FINN, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Electric Railways, which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of an electric railway formed of a shoe which is connected with a car, so as to travel therewith, a movable stem with a roller which may be engaged by said shoe, an arm with which said stem may contact, and a feed wire carrying said arm, whereby a circuit may be formed and communicated from said wire to the motor of the car, as will be hereinafter more fully described.

It also consists of details of construction, as will be hereinafter set forth.

Figure 1 represents a partial transverse vertical section and partial side elevation of an electric railway embodying my invention. Fig. 2 represents a similar view of a portion, showing certain parts in different position from that in Fig. 1. Fig. 3 represents a longitudinal horizontal section on line *x, x*, Fig. 1. Fig. 4 represents a vertical section on line *y, y*, Fig. 1. Fig. 5 represents a face view of an insulating block that is employed for the roller stem. Fig. 6 represents a top view on a reduced scale. Fig. 7 represents a perspective view of the insulation Fig. 5. Fig. 8 represents a side elevation of the lower portion of the hanger and adjacent parts. Fig. 9 represents a vertical section of a portion of the conduit as coupled with a tube or pipe on the side thereof, showing also the feed wire passing through the same. Figs. 10 and 11 represent side elevations of the upper portion of the hanger. Fig. 12 represents a horizontal section on line *z, z*, Fig. 11, the scale of Figs. 10, 11, and 12 being different from those in the other figures.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to drawings: A designates a car rail, at the side of which is a conduit B, in the top wall whereof is a slot C. The floor of the said conduit B is formed of brackets B', located at intervals, the spaces between which permitting water or other foreign mat-

ter to fall into the gutter below the same, the latter being adapted to receive the water that may enter the conduit through the slot C, said gutter having a draining or discharging pipe which leads to a sewer or other suitable outlet. At the side of said conduit B is a box D, in which is supported the feed wire E to which is attached the arm E', whereby when the latter is forced back, the wire is subjected to torsion, and when the arm is afterward released said spring restores the arm to its normal position. The lower end of the arm E' has a hook E² thereon, the same being adapted to be engaged by the reduced end E³ of the stem G, so as to increase the contact surface of the stem with said arm, and also increase pressure at point of contact since the tendency of the hook E² is to rise when the stem G is forced in against it.

Interposed between the conduit B and box D is a wall F, in which is guided the supporting-stem G of a roller H, said stem being in horizontal position, and the roller having a vertical axis.

The box D has its sides coupled as at D^x with the lengths of pipe D', and hung thereon so that said box may be rotated, and thereby raised from the position shown in Fig. 1, to that shown in Fig. 2, whereby the roller H and adjacent parts are accessible for repairs or other purposes requiring the same. In this case, a plug shown in dotted lines Fig. 2, is inserted between the bearings of the roller H and the insulation S, so that the roller stem is prevented from being placed in contact with the live wire. Bearing against said stem G is a spring G', which is secured within the box D, and serves to return said stem to its normal position. Opposite to the roller is the shoe J, which latter is yieldingly supported on the hanger K, and has pressing against it the buffer-springs L, which are suitably connected with said hanger and shoe, thus permitting the vibration of the shoe, due to the motion of the car, it being noticed that the hanger is properly secured to the car, and moves through the slot C, it being also evident that the car will be provided with two opposite places.

The flaring ends of the shoe J, and the portion of the face adjacent thereto are made of

or covered with insulating material, so as to prevent any current from flowing until perfect contact has been established, when the roller first comes on the shoe, and to discontinue the flow of electricity before the contact is broken at the rear of the shoe, whereby sparking is prevented at the contact of the roller and roller stem as said roller is passed by.

The hanger has its lower portion K' connected with the main portion thereof, by means of pivot K², whereby said lower portion may vibrate on said pivot and turn when the shoe and hanger are being removed. The hanger has a grooved block K⁴ connected with the back thereof, said block being freely embraced by a sleeve K⁵ which is attached to the supplemental hanger K⁶. Interposed between the block K⁴ and the supplemental hanger K⁶ is a sliding filling piece K^x which has inclined shoulders *a* above its outer end, and stops *b* and *c* on its ends. A bolt K⁷ passes through said block K⁴, and the slot K³ of the hanger, and also through a link K⁸, the upper ends of the link and hanger having limbs thereon to which are attached respectively the ropes or rods K⁹ and K¹⁰, whereby when the rope K⁹ is drawn, the hanger with its connected parts may be raised, and when said rope K¹⁰ is drawn, the hanger receives angular motion, and so is withdrawn from the conduit, the latter having doors A' at intervals, to effect such removal. See Fig. 6. When the hanger rises, the block K⁴ clears the sleeve K⁵, and so may receive the aforesaid angular or lateral motion but when the hanger is lowered, the block engages with said sleeve K⁵ and is locked by the same with the supplemental hanger K⁶, which latter is fixed to a suitable part of a car, and thus the hanger proper is held rigid during operation.

When the hanger K is raised, and the link K⁸ lifts the bolt K⁷, the latter raises the sliding piece K^x, so that the shoulder *a* enters the sleeve K⁵ and thus holds said piece K^x fairly rigid in said sleeve. The upward motion of said piece is limited by the stop *b*, and the downward motion thereof is limited by the stop *c*, said stops being adapted to abut respectively against the lower and upper ends of the sleeve. When lateral motion is imparted to the hanger in the withdrawal of the same from the conduit, the block K⁴ turns on the piece K^x, the bolt K⁷ constituting the axis of said block.

Rising from the shoe J is a guide J², the same playing freely in the slot C.

A roller M is journaled in a recess in the upper face of the horizontal arm or base N of the hanger K, and bears against the lower side of the shoe J, whereby said shoe may be nicely sustained in its vibrations.

On the hanger K is an insulated joint P, whereby the current is prevented from leaking to that portion of the hanger that may come in contact with the sides of the slot. Above said joint is a deflector or shed Q for

directing water from the shoe, roller and adjacent parts.

R designates an insulated wire which is connected with the hanger K, and forms the electric communication of the motor of the car and shoe.

In the wall F of the conduit and box are insulating blocks S for the stem G of the roller H, said blocks being readily inserted in an opening in said wall and retained in position by the key T, said opening being of such dimensions that the roller and stem thereof may be readily placed in position and removed therefrom through said opening.

The ends of the shoe are flaring as at J', so that the same will contact with or strike the roller without abruptness.

It will be seen that when the shoe reaches the roller H, it presses the same, whereby the stem G is forced into contact with the arm E', and a circuit is accordingly formed, the current thus being transmitted through the feed wire, the arm, the stem and the roller, to the shoe J, and from thence through the wire R to the motor of the car, the effect of which is evident. When the shoe leaves the roller, the latter is returned to its normal position owing to the action of the spring G', the stem G being relieved of contact of the arm E' and thus the circuit is broken, it being however observed, that when the roller of the series employed, is about to leave the shoe, the roller ahead is about to contact with the forward end of the shoe, and thus there is always a roller on the shoe.

Insulation is applied to parts wherever required.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In an electric railway, a conduit, a box with an opening in its wall, a sliding stem in said opening having a roller thereon, an insulated wire in said box having an arm rigidly connected therewith, said arm having a hooked end adapted to be engaged by a tongue, on said stem, and a spring bearing against said stem, said parts being combined substantially as described.

2. In an electric railway, a shoe freely connected with a hanger of a car and movable therewith, a buffer for said shoe, a base on said hanger, and a roller which is mounted on the said base and bearing on the shoe, said parts being combined substantially as described.

3. In an electric railway, a feed wire and an arm connected therewith in combination with a stem and a shoe on a car for moving said stem in contact with said arm, said wire turning in a torsional manner so as to restore said arm to its normal position, substantially as described.

4. In an electric railway, the roller H and the stem G carrying the same, in combination with the arm E' on the feed wire E, said

arm having a hook thereon for engagement with said stem, substantially as described.

5. In an electric railway, a box adapted to contain the circuit-forming mechanism, mounted on bearings, whereby it may be turned upwardly, substantially as described.

6. In an electric railway, the box D having the feed wire passing through the same, the pipes D' supported on the sides of said box and receiving said wire, and a coupling D^x connecting said box with said pipes, permitting the upward rotation of said box, substantially as described.

7. In an electric railway, a hanger having a pivoted lower portion, a shoe having yielding connections with said lower portion and having flaring ends provided with faces having insulating material thereon, substantially as described.

8. In an electric railway, a feed wire, a movable arm connected therewith and adapted to impart torsion thereto, a sliding stem adapted to contact with said arm, and means on a car for operating said stem, the parts named being combined substantially as described.

9. In an electric railway, a hanger connected with a car, a shoe attached to said hanger, an insulated joint on said hanger, and a deflector on the hanger above said joint, substantially as described.

10. In an electric railway, a hanger having a jointed lower portion with a base, a shoe

connected with said portion and a roller between said shoe and base, said parts being combined substantially as described.

11. In an electric railway, the hanger K, the grooved block K⁴, the sleeve K⁵ and the supplemental hanger K⁶, which carries said sleeve, the parts being combined substantially as described.

12. In an electric railway, the hanger K, the block K⁴, the sleeve K⁵, the supplemental hanger which carries said sleeve, and the shouldered filling piece K^x intermediate of said block and hanger, substantially as described.

13. In an electric railway, a hanger for a shoe, having a grooved block connected with the back thereof, a supplemental hanger with a sleeve embracing said block, and a filling piece with inclined shoulders above its outer end, and stops on its ends, said parts being combined substantially as described.

14. In an electric railway, a hanger with a slot therein, a block connected with said hanger, by a bolt passing through said slot, a link connected with said bolt, and ropes connected with limbs of said hanger and link, said parts being combined substantially as described.

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Witnesses:

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R. H. GRAESER.