(No Model.) 2 Sheets—Sheet 1.

F. WHEELER.

SYSTEM OF ELECTRIC LOCOMOTION.

No. 431,092. Patented July 1, 1890.

Fig. 1.

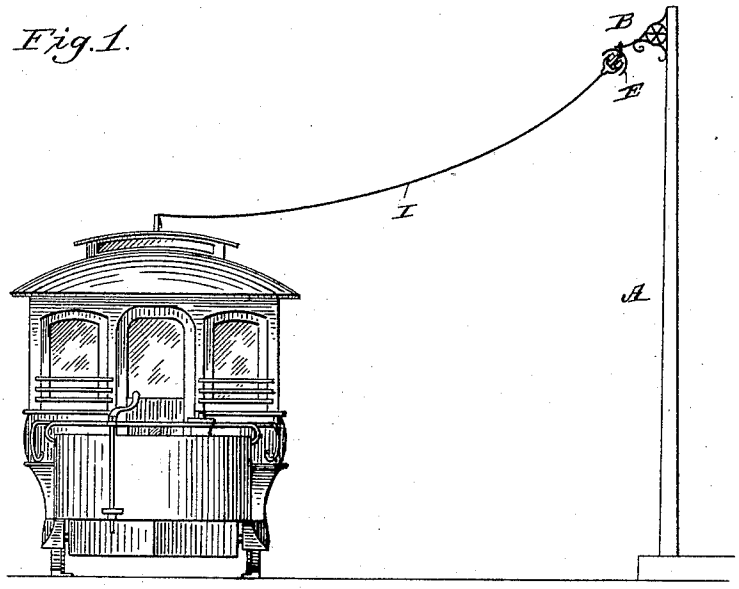


Fig. 2.

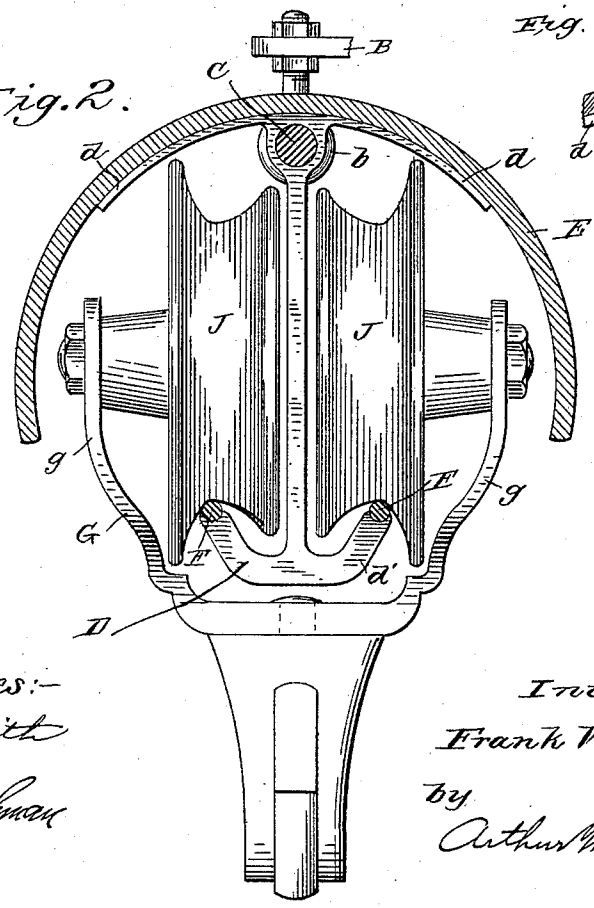


Fig. 6

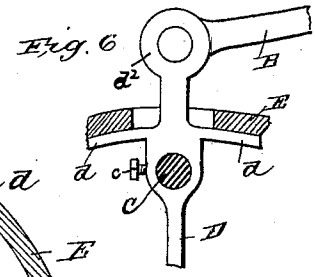
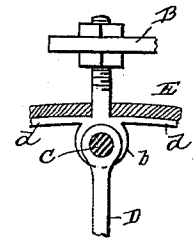


Fig. 7.



Witnesses:-
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A. V. Buckman

Inventor:-
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by
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his Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

F. WHEELER.

SYSTEM OF ELECTRIC LOCOMOTION.

No. 431,092. Patented July 1, 1890.

Fig. 3.

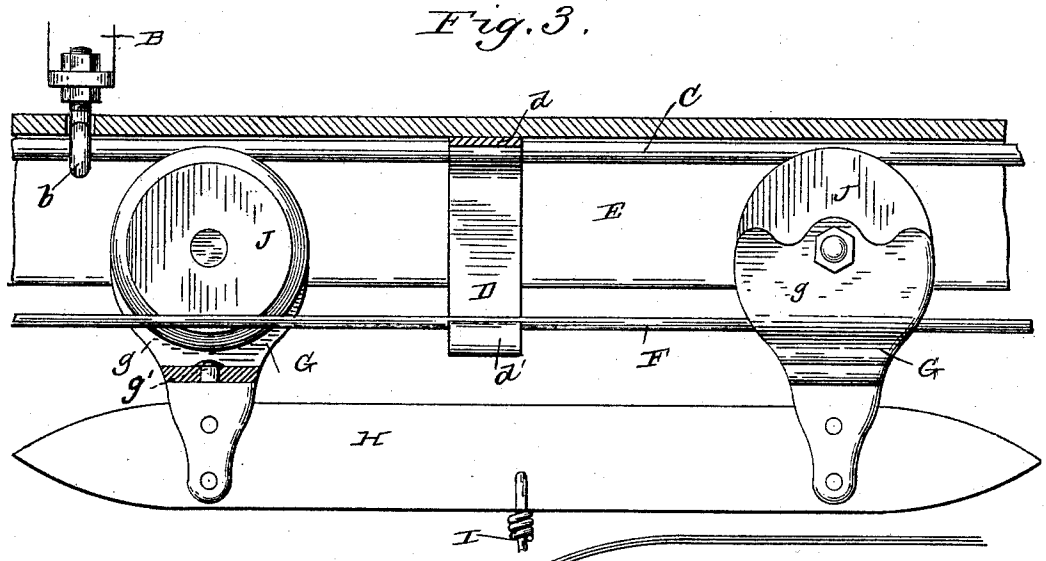


Fig. 4.

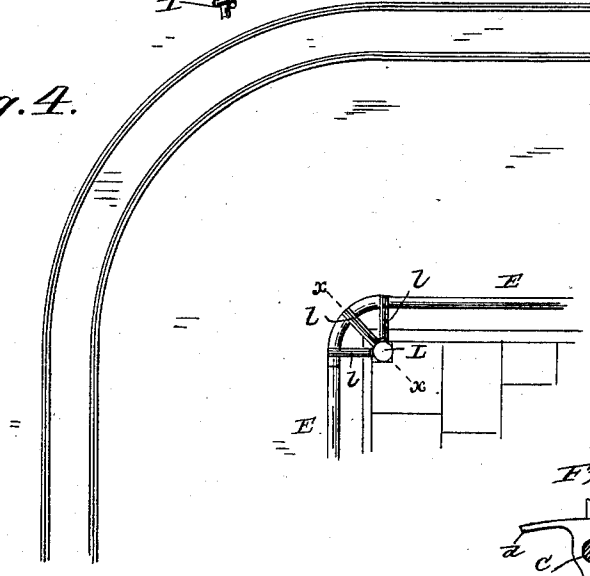


Fig. 8.

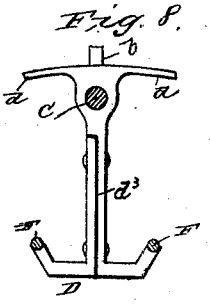
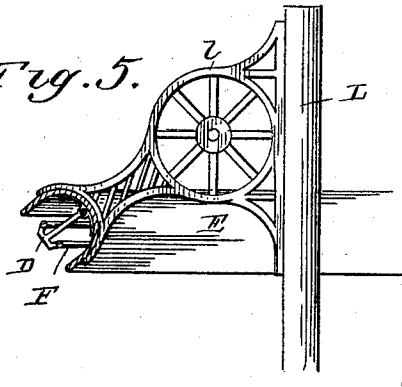


Fig. 5.



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his Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

FRANK WHEELER, OF MERIDEN, CONNECTICUT.

SYSTEM OF ELECTRIC LOCOMOTION.

SPECIFICATION forming part of Letters Patent No. 431,092, dated July 1, 1890.

Application filed March 2, 1889. Serial No. 301,777. (No model.)

To all whom it may concern:

Be it known that I, FRANK WHEELER, of Meriden, in the county of New Haven and State of Connecticut, have invented new and useful Improvements in Systems of Electric Locomotion; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in systems of electric locomotion in which an overhead conductor or conductors for the electric current is employed; and the objects of my improvements are to produce constructions and arrangements whereby thoroughly insulated or protected conductors may be arranged at the side of the roadway, while the cars and their motors may travel the middle of the roadway.

It is well known that many objections are made to the erection and use of overhead conductors in the center of a street or roadway. Among the objections are unsightliness of the arrangement, whether the conductors be supported by a line of centrally-placed poles or poles on opposite sides of the street with transverse wires for supporting centrally-arranged hangers for the conductors, and also the interference of such centrally-suspended conductors with the duties of firemen, and also the danger to animal life in case of the crossing or short-circuiting by the contact of another wire, such as telegraph or telephone. In many cities and towns these objections are so strenuous as to prevent much-needed accommodations to the public, particularly where it is deemed inexpedient to resort to the underground or conduit system or to the storage-battery systems, owing to the greater expense of said systems; but it is often conceded that a practical arrangement of overhead conductors at the side of the street, with such conductors free from the danger of contact with other wires, would be liable to little or no objections, while still remaining the most inexpensive system yet known for the propulsion of cars by electricity.

With the object of producing such a system I have made the invention, which consists in the construction and combination of parts, as hereinafter described, and pointed out in the claims.

In the drawings which accompany and form a part of this specification, Figure 1 is a view showing a pole at one side of a street and a car supposed to be on a track at or near the center thereof. Fig. 2 is a transverse sectional view of the wires and insulating or protecting hood or shield, showing also an end view of the trolley, the whole being of or about full size. Fig. 3 is a side elevation view of the same, partly in section, as hereinafter described. Fig. 4 is a plan view showing the means of supporting the conductor at a street-corner. Fig. 5 is a sectional view on line $x\,x$ of Fig. 4. Figs. 6, 7, and 8 are detail views of modifications.

At A is represented one of a series of poles placed at or near one side of a street, having brackets, preferably ornamental, as shown at B, for supporting at suitable intervals, such as by means of strong screw-eyes b, the main conducting-wire C, which may, if desired, be made in sections connected by couplings, for convenience, in erecting or for taking up slack.

Upon the main conductor C (or, as it may be properly termed, the "backbone," inasmuch as it supports and strengthens the parts connected with it, as well as being the conductor for the supply-current) are placed at suitable intervals and so as to freely turn thereon a series of somewhat anchor-shaped hangers D, the upper curved arms d of which support and hold, as by rivets, the arched hood or shield E, of wood fiber or other suitable insulating material. The lower arms d' of hangers D support the trolley-wires F, which are preferably brazed, to the ends of said arms d'.

It is to be understood that although I have described and shown the hangers with the shields swinging on the main conductor or backbone C, I may rigidly secure them thereto and arrange the eyes b to have a swinging connection with the pole-brackets, as shown in Fig. 6, in which a set-screw c is shown for securing the hanger to the backbone, and an upward extension of the hanger has an eye d^2 for pivotal connection with the bracket B; or I may omit the arms d of the hangers and apply them to the eyes b, thus making the backbone and the shields stationary, and al-

lowing the hangers and wires F only to swing, as shown in Fig. 7. In this latter case I would make the shield larger or spread more to allow the trolley to swing without contact with the shield.

The trolley, as shown, consists of two bifurcated frames G G, connected and united by a bar H, and to the lower portion of one of the frames G G or to the bar H may be connected the flexible connection and conductor I to the car and motor. One or both of the frames G is swiveled, as at g', to the said bar H, thus forming a yielding connection between the two frames to facilitate the moving of the trolley around a curve.

The bifurcated arms g g of the frames G G carry bearings or axles for the contact-trolley wheels J, which run on the wires F. This construction is clearly shown in Figs. 2 and 3, in the latter of which the frame G at the right is shown in side elevation, while at the left the other frame is shown in section.

As illustrated, this system supposes the use of the car-track rails for the return-current; but it is obvious that by providing for the proper division and insulation of the hangers D and the trolley I may use one of the wires F for the return-current, one form of which is shown in Fig. 8, in which the hanger is shown as made in two parts, having insulating material placed between them at d^3 and the parts secured by suitable bolts, rivets, or screws; or the details of construction of the hanger to provide for proper insulation may be as shown in my application filed January 14, 1889, Serial No. 296,301. In all cases, however, it is desirable to provide for the swinging of the parts which support the trolley to enable the latter to run freely when its path is much to one side of the car-track and above the ground.

As shown in Figs. 4 and 5, when a street corner is to be turned, I provide a post L, having a series of radiating brackets l, to which is secured a curved section of main conductor, shield, and trolley-tracks F, the whole section being permanently secured in an outwardly-turned direction toward the car-track, if desired, although such outward inclination is not necessary, for the reason that the ordinary length of the connection I is such that the trolley would not reach the curve until the car has reached such position on its curve that the direction of draft on the trolley would be about tangential to the curve of the trolley-track.

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

1. In a system of electric locomotion, the combination of the main or supply wire, an arched insulating cover or shield supported by said main wire, and a series of hangers depending from said main wire and carrying at their lower ends two trolley-track wires, substantially as described.

2. In a system of electric locomotion, the combination of the main or supply wire, an arched insulating cover or shield supported by said main wire, hangers depending from said wire and each carrying at its lower end a trolley-track, substantially as described.

3. A trolley for systems of electric locomotion, consisting of two bifurcated frames having a yielding connection between them, the upper ends of the bifurcations having inwardly-projecting axles and contact-rollers on such axles, substantially as described.

4. In combination with the main conductor, a shield, the hangers having arms for supporting the shield and swinging on the main conductor, and having, also, arms for supporting the trolley-track, substantially as described.

5. In a system of electric locomotion, a post having radial brackets and a curved section of main conductor, insulating-shield, and trolley-track supported by said arms, substantially as described.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

FRANK WHEELER.

Witnesses:
C. S. PERKINS,
D. N. WILLIAMS.