(No Model.)

C. H. VEEDER.

TROLLEY MECHANISM FOR ELECTRICALLY PROPELLED VEHICLES.

No. 511,824. Patented Jan. 2, 1894.

FIG. 1.

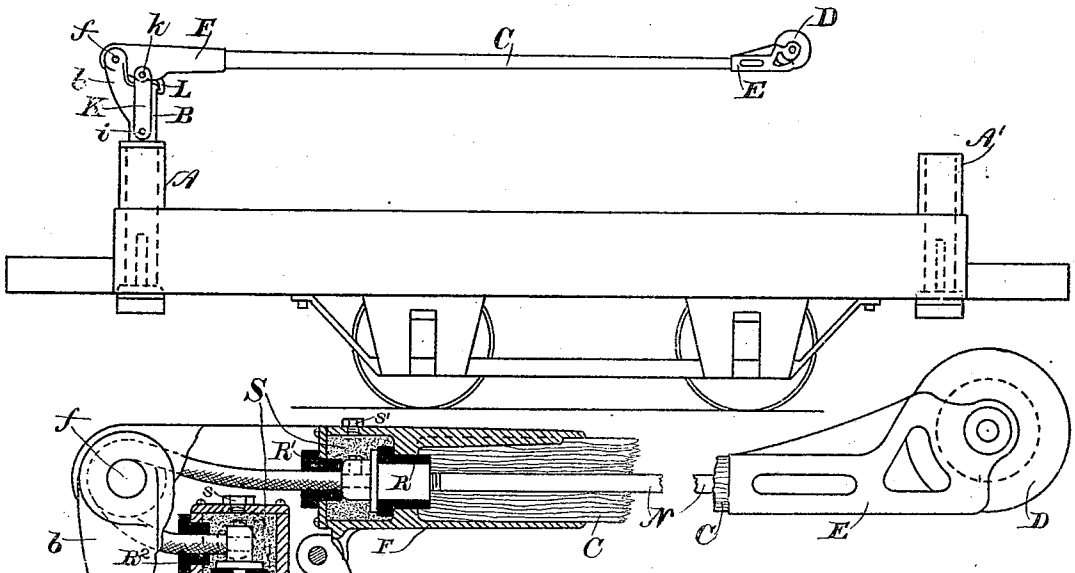


FIG. 2.

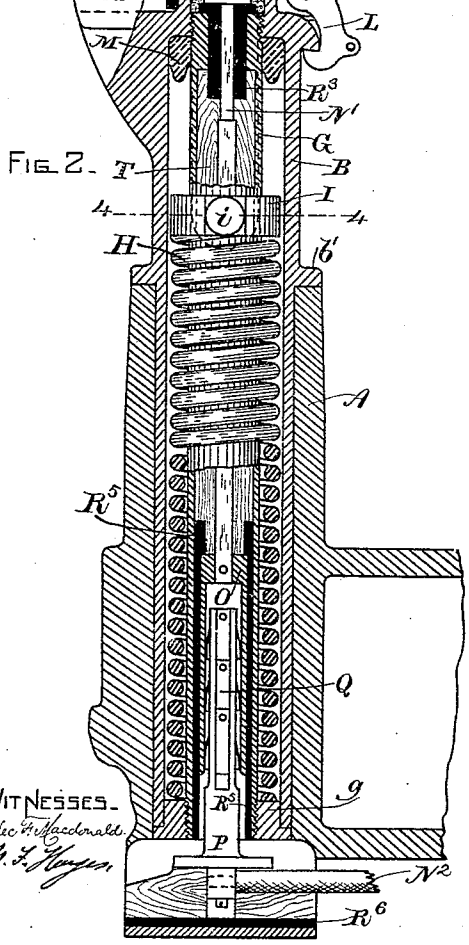


FIG. 3.

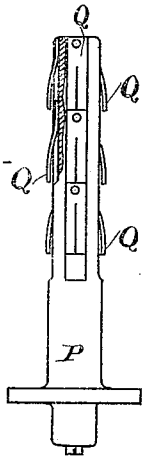
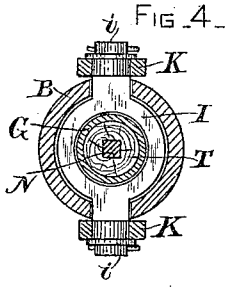


FIG. 4.



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TROLLEY MECHANISM FOR ELECTRICALLY-PROPELLED VEHICLES.

SPECIFICATION forming part of Letters Patent No. 511,824, dated January 2, 1894.

Application filed November 23, 1892. Serial No. 452,910. (No model.)

To all whom it may concern:

Be it known that I, CURTIS H. VEEDER, a citizen of the United States, residing at Lynn, county of Essex, State of Massachusetts, have invented a certain new and useful Improvement in Trolley Mechanism for Electrically-Propelled Vehicles, of which the following is a specification.

This invention is particularly useful upon electric railway cars where the insulation of all parts of the circuit needs careful attention, as in mining operations where water dripping from the roof of the mine can fall upon the car, and where the workmen are apt to come into contact with the trolley mechanism in moving about the car. It is also so constructed that it can be quickly taken off one part of the car and transferred to another part, or it can be taken off of one car and transferred to another car if desired.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 gives a general idea of its construction and its position upon the car. Fig. 2 is a sectional view. Fig. 3 is an elevation of the stationary conducting post, and Fig. 4 is a cross section on line 4—4 Fig. 2.

The trolley has three principal parts, a stationary standard A made in socket form and adapted to receive a short swiveling upright tubular post B to which is pivoted the spring elevated trolley arm C carrying at its extremity the usual contact wheel or block D which is intended to run upon an overhead conductor. The arm C is shown as made of wood. One end is secured in a socket of the trolley wheel frame E, and the other end in a socket F pivoted at *f* on a lug *b* extending from the swiveled post B, as shown. The post B, is made of metal and has a shoulder *b'* which rests upon the hollow socket or standard A. The post is hollow and has within it a small metal tube G which is screwed into the top of the post at its upper end and is held at the lower end by nut *g* which shoulders against the lower end of the post.

Surrounding the tube G is a helical spring H bearing against the nut *g* at its lower end and attached to a collar I at its upper end which slides freely over the tube G, and has laterally projecting pins *i* which pass through vertical slots in the post B and enter eyes in the lower ends of two links K one upon either side, respectively, only one being shown in Fig. 1. The other ends of the links K are pivoted at *k* to the socket F, as shown in Fig. 1. The spring H when under compression exerts an upward pressure upon the arm C tending to force it against the overhead conductor. A latch L is preferably provided upon the socket F for engagement with the head of the post B so that the trolley pole C can be fastened in its lowest position and the circuit broken when the car is not in motion. To prevent injury by the trolley pole flying upward under the influence of the spring H when unrestrained in any manner, as for example when it leaves the overhead conductor, a buffer M of rubber or other elastic material, is inserted into the annular space between the tube G and the post B surrounding it.

It remains now to describe the electrical connections in the trolley. From the trolley wheel frame E an insulated conductor N is brought down through the middle of the wooden pole C. This conductor is carried several times around the pivot *f* to prevent its breaking by constant bending and it then enters the upper part of the post B, where it is connected with the conducting strip N' whose lower end is secured to the head of a hollow metallic cap O received within the lower end of the tube G. The cap O is of such diameter as will enable it to pass down over the stationary conducting standard P arranged centrally within the socket A, and shown separately in Fig. 3. The cap presses upon the contact leaves Q, Q, Q, made of a good conducting and highly elastic metal, such as phosphorous-bronze, and secured to the standard P. These leaves may be placed diametrically opposite upon the standard and a single pin passed through the standard and two opposite leaves is riveted in position to hold them in place. The conductor N is insulated from the socket F by rubber or other insulating bushings R, R', and similarly insulated from the metallic parts of the post B by bushings R^2, R^3, the open space or chamber between

the bushings and the outer metal being filled with insulation after the bushings are in place. Asbestus S may be used for this purpose, and it may be introduced through small holes afterward closed by screws *s*, *s'*. The conducting strip N' is likewise insulated from the tube G by a wooden core piece T, and the lower terminal cap O is insulated from the tube G by an interposed tube of rubber R^5, or its equivalent. The lower part of the standard P goes to a conductor N^2 leading to the motor, insulation between its terminal and the metal frame being provided at R^6, as shown. It will be seen that the entire electric circuit through the trolley structure built as described, is most thoroughly insulated, so that this trolley can be drenched with water without danger of a contact forming between the conductors N, N' and the exterior accessible metal parts. The trolley described is designed especially for railway tram lines in mines and mills, and similar situations, where the operator usually manipulates the trolley by grasping it, and trolley cords are not employed. It is also capable of being lifted out of its socket and transferred to another similar socket A' at the other end of the car, or it may be transferred to another car. This avoids the necessity of providing each car with its own trolley pole, and likewise enables the trolley to be placed at that end of the car where the operator is stationed and where it is within easy reach.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a stationary socket, of a stationary contact standard concentrically arranged therein, a tubular post rotatable in the socket and carrying a cap to make contact with the standard, a trolley arm pivoted on said post, and insulated electrical connections between the trolley and the cap, substantially as described.

2. The combination with a stationary socket, of a stationary contact standard concentrically arranged therein, a tubular post rotatable in the socket, a tube fixed in said post, an insulated conductor within said tube, and a trolley arm pivoted on the post, substantially as set forth.

3. The combination with a stationary socket, and a stationary contact standard therein, of a post rotatable in said socket, a tube fixed in the post, a contact cap within and insulated from said tube, a trolley arm carried on the post, and an insulated conductor connecting the cap with the trolley, substantially as described.

4. In a trolley mechanism, a stationary contact standard, carrying metallic leaves secured at one end to said standard, substantially as set forth.

5. A trolley mechanism detachable at its base and provided with spring contacts at the point of separation, substantially as described.

6. The combination with an electric car, of two stationary sockets carrying spring contacts, and a post arranged to support the trolley mechanism and adapted to register with the contacts in either socket, substantially as described.

7. The combination with an electric railway car, of two stationary sockets, each having concentrically within it a stationary contact standard, and a tubular trolley supporting post containing contacts to co-act with the standards, and insertible into either socket, substantially as set forth.

8. In a trolley mechanism, a metallic post having a chamber for containing the connector between two portions of the current conductor, said chamber being filled with an insulating material, substantially as set forth.

9. The combination with the tubular post, of a tube fixed centrally therein, a helical spring surrounding said tube, a collar sliding on the tube and having lateral pins projecting through slots in the post, a trolley arm pivoted on the post and connected with said pins, and an electrical conductor within and insulated from said tube, substantially as described.

10. A trolley mechanism having the connections from the trolley through the trolley arm and stand entirely insulated and inclosed, and having the spring for raising the trolley arm inclosed in the rotatable portion of the trolley stand, substantially as set forth.

11. A trolley mechanism having an insulated wire from the trolley-wheel through the trolley-arm to connections within the stand, all inclosed and entirely insulated, substantially as set forth.

12. A trolley mechanism substantially as described herein consisting of a trolley-wheel, as D, a trolley-arm, as C, composed of insulating material, journaled at the point *f*, a standard, as A, inclosing a coil spring, as H, and means whereby such spring may be connected with the trolley arm C, the trolley mechanism being provided with continuous electrical connections through a trolley stand, being detachable therefrom, and having contacts at the point of separation, the electrical connections being all insulated from the trolley arm and from the stand, substantially as described.

13. A trolley having an insulated wire inclosed in its pole and extending from the trolley-wheel to insulated connections contained in its standard, substantially as set forth.

14. In a trolley mechanism a trolley arm, as C, journaled at *f* to a standard, as B, and provided with a latch, as L, engaging with a lug upon the standard, thereby retaining the trolley arm in its depressed position, substantially as described.

15. The combination with an electric railway car, of a support on the car, a contact device removably attached to said support, and electrical spring contacts carried by the

contact device and by said support and automatically joined by the mechanical connection of the contact device with the support, whereby the circuit of said contact device is completed by the placing of the contact device on its support, substantially as set forth.

In testimony whereof I have hereto set my hand this 18th day of November, 1892.

CURTIS H. VEEDER.

Witnesses:
JOHN W. GIBBONEY,
BENJAMIN B. HULL.