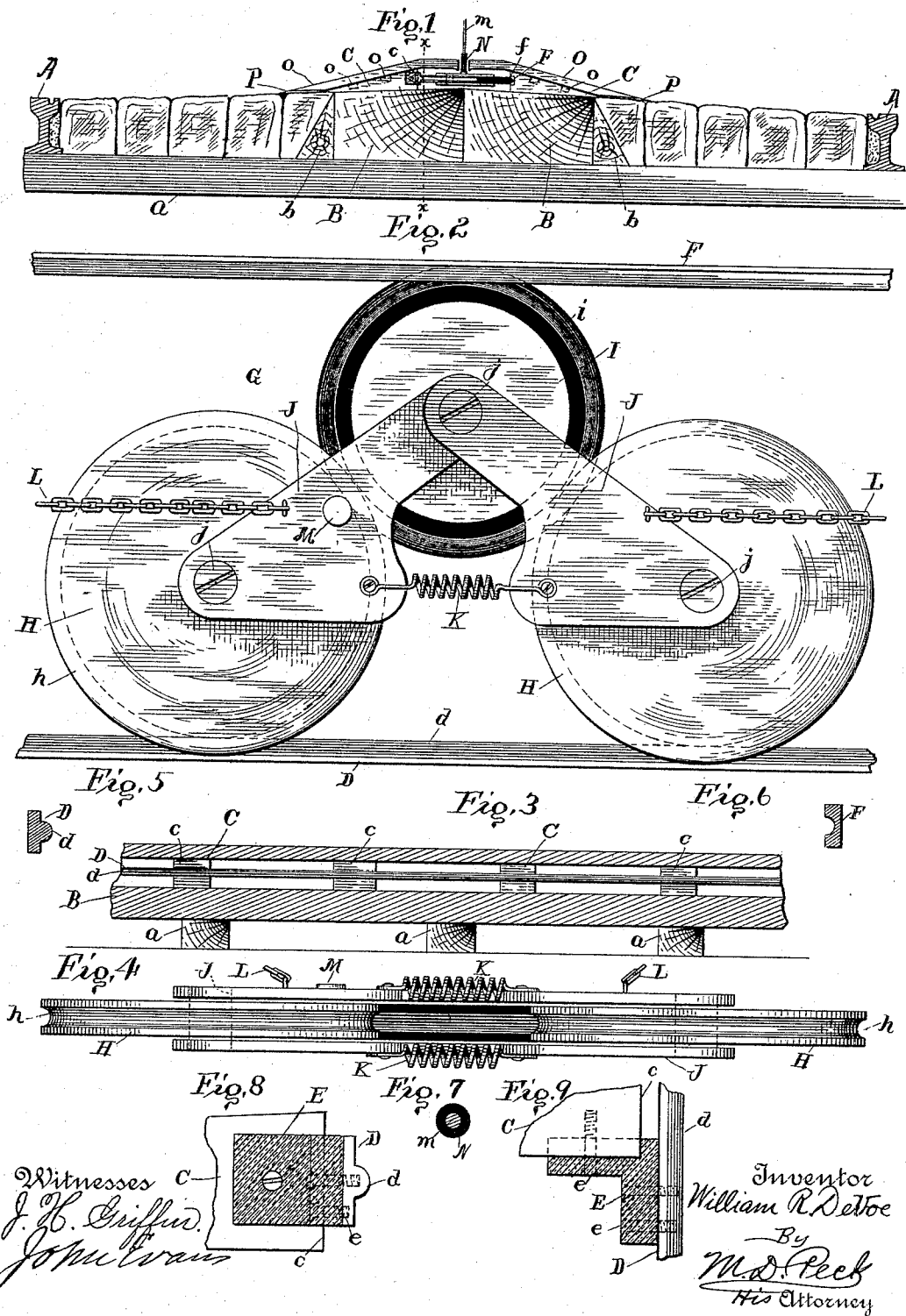


(No Model.)

W. R. DE VOE.
CONDUIT ELECTRIC RAILWAY.

No. 495,456.

Patented Apr. 11, 1893.



UNITED STATES PATENT OFFICE.

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FOURTH TO C. W. DAWLEY, OF DENISON, TEXAS.

CONDUIT ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 495,456, dated April 11, 1893.

Application filed September 6, 1892. Serial No. 445,204. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM R. DE VOE, a citizen of the United States, residing at Shreveport, in the parish of Caddo and State of Louisiana, have invented certain new and useful Improvements in Surface Trolleys for Electric Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to surface trolleys for electric railways and has for its object to provide a device to operate upon the surface of the pavement or ground between the tracks of the road, for connecting the car with the motor power, in place of the trolley and over head wires now suspended upon the unsightly poles in the center or at the sides of the street, which are found to be very objectionable on account of their obstructing the passageway in the streets and upon the side walks, and the wires preventing the free movement of fire companies in extending their ladders in gaining access to buildings, and also because of the great danger attending persons and animals moving about in the street, on account of the charged or live wires frequently being thrown down upon the ground, and coming in contact with and destroying the life of persons, and also on account of the frequent fatal accidents to persons having charge of the repair of the wires and other apparatus in connection with them, often coming in contact with the live wires while elevated on the poles and engaged in repairing them.

My system is also intended to provide a substitute for the storage battery car, whereby, without obstruction to the surface of the street, I am enabled to obtain direct contact with a stronger motor power, than has heretofore been obtained in a storage battery car, which at all times secures a steady and perfect movement of the car without increased weight, and it consists in the devices hereinafter described and more particularly pointed out in the claims.

Reference being had to the accompanying drawings it will be seen that like letters refer

to corresponding parts in each of the figures in which;

Figure 1, represents my improved device in cross section through the railway bed showing the rails at each end. Fig. 2, is a plan or top view of the trolley operating between two tracks as seen when the top or inclined protection plates are removed. Fig. 3, is a cross sectional view on the line *xx* of Fig. 1, showing the line wire or track secured to the ends of wedge shaped plate rests with a section of the base block on the cross ties. Fig. 4, represents an edge view of the trolley with the line wire track removed. Fig. 5, shows a cross section of the line wire. Fig. 6, is a cross section of the groove track in which the insulated wheel of the trolley operates. Fig. 7, is a cross section of an insulator showing the wire therein, one end of which is attached to the trolley, and the other end to the car. Fig. 8, is a side view of one of the plate rests showing the line wire, which forms a raised or beaded track, secured thereto by insulated material, and, Fig. 9, represents a top view of the same with the inclined guard plate removed.

A. represents any ordinary form of railway rail secured to the cross ties *a*, in the usual manner. On the cross ties in the center and between the two rails are secured two longitudinal base blocks B. The upper central or meeting edges of the two base blocks are slightly elevated above the plane of the top of the track, and the surface of each block declines or slopes downward and outward toward the track from the meeting edges to enable the water to readily drain to the sides of the road.

On the outer side of the base blocks B. there is a triangular strip *b*, which is spiked or otherwise secured to the cross tie *a*, for the purpose of holding the base blocks in position, and between the strips *b* and the track, any desired form of paving blocks or other paving material may be filled in, care being taken to preserve substantially the same degree of inclination toward the tracks or rails upon the surface of the pavement as that upon the base blocks B. in order to secure a perfect drainage from the center between, to the tracks on each side.

On the sloping surface of each of the base blocks, there are secured wedge shaped plate rests C. declining outward to about the edge of the blocks, and extending inward about two thirds the width of the blocks, leaving a space between the inner thickened ends of the oppositely fixed plate rests for a purpose hereinafter described. These plate rests are preferably made of cast or malleable metal, and are secured to the base blocks B. by spikes or by any other well known means at a distance of about two and one half feet apart, though they may be made of wood or any other suitable material if desired, and the distance varied between them according to the thickness of the guard plates which it is desired to use upon them. The plate rests C. at one side of the center of the tracks or rails have secured on the side of their inner enlarged ends *c*, a line conductor D. of any suitable form or construction which extends to the end of the line and is suitably connected with the motor power. In this instance I prefer to form this conductor with a bead *d*, extending from one side of its rectangular body for the purpose of forming a track for the trolley, with a flattened surface upon the opposite side for convenience in securing the wire to the plate rests.

Between the ends of the plate rest C. and the track line wire D. is placed an insulator E. of vulcanite, rubber, glass, earthenware, or any other suitable material made in the form of a right angle, one side of which is secured to the side of the plate rest, and the other side to the flattened surface of the line wire by means of screws *e*, which securely hold the wire in place, which forms a track for a trolley hereinafter described.

Upon the opposite side of the center of the way from the line wire, there is secured to the enlarged inner ends *f*, of the plate rests a continuous metal groove track F. for supporting one side of a trolley operating between this track and the line wire track D. which is made to serve the same purpose.

G. represents a trolley which consists of two large wheels H. arranged in a direct line with each other having a groove *h*, on their periphery adapted to fit the contour of the bead on the line wire forming one side of the track, and a smaller wheel I. having a beaded or convex periphery *i*, adapted to fit the grooved track F. on the opposite side of the way. These wheels are suitably connected upon each side by a flexible frame which is composed of two triangular plates J. of metal. One of the angles of each plate is secured on each side to the central portion of each grooved wheel H. by bolts or rivets *j*, which form the bearings for the journal of the wheel, and one of the angles of each plate on each side of the wheels is lapped over the angle of the other plate and the two are attached to the center of and form a double bearing for the journal of the smaller wheel I. The triangular plates J. are united at two of their

angles upon one side, and in line with the wheels H. by a tension spring K. which serves to draw the angles of the plate toward each other, and thereby increase the width of the trolley and keep the wheels bearing closely, and steadily upon the tracks as they are moved along beneath the car. At about the center of the width of the trolley small chains L. or other suitable attaching devices are secured to the sides of the triangular plates J. forming the frame on the upper side of the trolley, which are attached at the opposite ends to the under side of the car in front and in rear of the trolley for the purpose of drawing the trolley back or forth upon the tracks D. and F. so that the car may be moved in either desired direction. The wheel I. of the trolley forms an insulator to prevent the current from the main line wire or track D. from passing into the track F. upon the opposite side of the way. This wheel may be provided with vulcanite, rubber, or suitable material around its outer portion as indicated in black lines in the drawings, or the entire wheel may be composed of any suitable hard nonconducting material as desired.

One of the triangular plates J. forming the upper frame of the trolley is provided with a contact post M. for the attachment of a connecting wire *m*, which extends upward and is secured to the proper mechanism in the car for imparting motion thereto. The connecting wire *m*, may be substituted if desired by a rigid bar attached to the contact post M. and to the mechanism on the car, though in operation I prefer to use the wire. The portion of the wire or bar conductor *m*, extending about six inches or more above the contact post M. is provided with any suitable insulating material N. which encircles the conductor, and prevents it coming in contact with any material which would have a tendency to deflect the current until it reaches the operating mechanism in the car.

The track F. and line conductor D. and trolley G. are all securely protected by inclined guard plates O. which extend longitudinally over the tracks and trolley, and rest upon the wedge shaped pieces C. These plates are preferably made about nine inches wide, and may be of a length to extend over two or more of the plate rests C. if desired, and may be secured thereto by lugs *o*, on the under side of the plates which take into recesses in the pieces C. The inner portions of the plates extend over the top of the trolley leaving a longitudinal slot of only about three quarters of an inch between them. That portion of the plate over the trolley upon each side of the central line is upon the same plane, but the portion outside and beyond the trolley extends downward and outward beyond the plate rest C. The under and outer edge of the guard plate O. is beveled to conform to substantially the same inclination of the piece C. and is elevated slightly from the pavement beneath to form a drain P. in order

that all water that may by any means find lodgment around or beneath the guard plate, will readily drain off between the plate rests C. and underneath the edge of the guard plate beyond the rails or track A. and thereby preserve the space occupied by the trolley in practically a dry state, not admitting a sufficient degree of dampness to at any time prevent the successful operation of the current through the trolley to the car. The upper and central portions of the guard plates O. being about two inches above the plane of the surface of the car tracks A. the inclination is sufficient to readily throw off all water that may fall upon the guard plates or pavement between the tracks, and as only the small quantity of water to be drained off from beneath the plates will be that which may chance to fall through the longitudinal slot between their inner edges upon the surface of the base blocks B. which will not come in contact with the conductor D. as this is somewhat elevated upon the end of the plate rest C. and the trolley being always beneath the car and consequently kept in a dry state, no dampness except that in the atmosphere can come in contact with the line wire or trolley to interfere with the regular and steady current from the motor to the car.

In placing my improved surface trolley in position for operation, the base blocks B. being in position, the plate rests C. are secured thereto and the track F. and the conductor track D. are attached to the ends of the plate rests. Longitudinal traction is then made upon the grooved wheels H. which slightly narrows up the width of the trolley which is then readily placed upon the tracks D. and F. in a horizontal position, and the guard plates O. are secured upon the wedge shaped plates C. over the opening, when the trolley is easily moved along underneath the guard plates to the car by means of the connecting wire *m*, or the attaching chains L. and secured thereto by any suitable means provided for the purpose.

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

1. In electric railways, lateral wedge shaped plate rests on the surface of a road bed between the car tracks, in combination with a conductor and track on the inner ends of said plate rests, as set forth.

2. In an electric railway a conductor upon an inclined road bed between the car tracks, in combination with a horizontal trolley in contact with the conductor and connected with a car above, as set forth.

3. In an electric railway the combination with an inclined road bed between the car tracks having a conductor and horizontal trolley thereon, of a track supporting an insulated wheel of the trolley on the opposite side thereof from the conductor, as set forth.

4. In an electric railway the combination

with an inclined road bed between the tracks having lateral wedge-shaped plate rests thereon, of a conductor and track on the ends of said plate rests, a horizontal trolley engaging said conductor and track and connected with a car, as set forth.

5. In an electric railway the combination with an inclined road bed, of longitudinal base blocks in the center of the bed, the inner meeting edges of said blocks being on a plane above the car tracks, the outer edges of said blocks being secured by a triangular strip fastened to the cross ties, and their upper surfaces declining outward and having thereon a line conductor and track supporting a trolley connected with a car, as set forth.

6. In an electric railway the combination with inclined base blocks in the center of the road bed between the tracks, of plate rests declining outward, secured to said base blocks, a conductor attached to the inner ends of the plate rests on one side of the center of the base blocks and a track attached to the inner ends of the plate rests on the other side, the conductor and track being connected by a trolley attached to a car, as set forth.

7. In an electric railway the combination with an inclined road bed between the tracks, of wedge shaped plate rests declining outward on said road bed, with a conductor and track secured to the inner ends of said plate rests having a trolley operating between them, and guard plates secured to the plate rests and extending over the track, conductor and trolley from each side forming a narrow slot between their inner edges, as set forth.

8. In an electric railway the combination with an inclined road bed between the tracks with lateral inclined plate rests thereon having an electric conductor secured to their inner ends and communicating with the motor and the car, of guard plates secured to the plate rests and extending inward over the conductor and their ends, and outward beyond the plate rests, their outer edges being beveled and slightly elevated above the pavement forming a lateral surface drain between the plate rests, as set forth.

9. In an electric railway the combination with an inclined road bed between the car tracks of a conductor and track secured to the inner ends of wedge shaped plate rests and having a trolley thereon, guard plates attached to the plate rests and extending inward over the conductor and track and outward beyond the plate rests, the outer edges of the guard plates elevated above the surface of the pavement forming a lateral drain between the plate rests from the center to the outer edge of the pavement, as set forth.

10. In an electric railway the combination with an inclined road bed having a conductor and track mounted thereon, of a trolley consisting of metal wheels engaging the conductor and an insulated wheel engaging the track, said wheels being connected on their

side by yielding plates holding the trolley in position on the track and conductor and to the car, as set forth.

11. In an electric railway the combination with an inclined road bed having a conductor and grooved track thereon, of horizontal trolley wheels engaging the conductor and an insulated wheel engaging the track, said wheels being united on each side by journals in triangular yielding plates, said plates being connected by a tension spring on one of their sides and to the car by a contact post, as set forth.

12. In an electric railway the combination

with a laterally declining road bed between the car tracks, of inclined plate rests secured to the surface of the road bed, a beaded line conductor attached to the sides of the inner ends of the plate rests by right angled insulators and said conductor connected to the car by a trolley and connecting wire or bar, as set forth.

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

WILLIAM R. DE VOE.

Witnesses:

JOHN HAYDEN,
J. H. GRIFFIN.