(No Model.)

H. W. LIBBEY.

ELECTRIC RAILWAY.

No. 441,571. Patented Nov. 25, 1890.

Fig. 1.

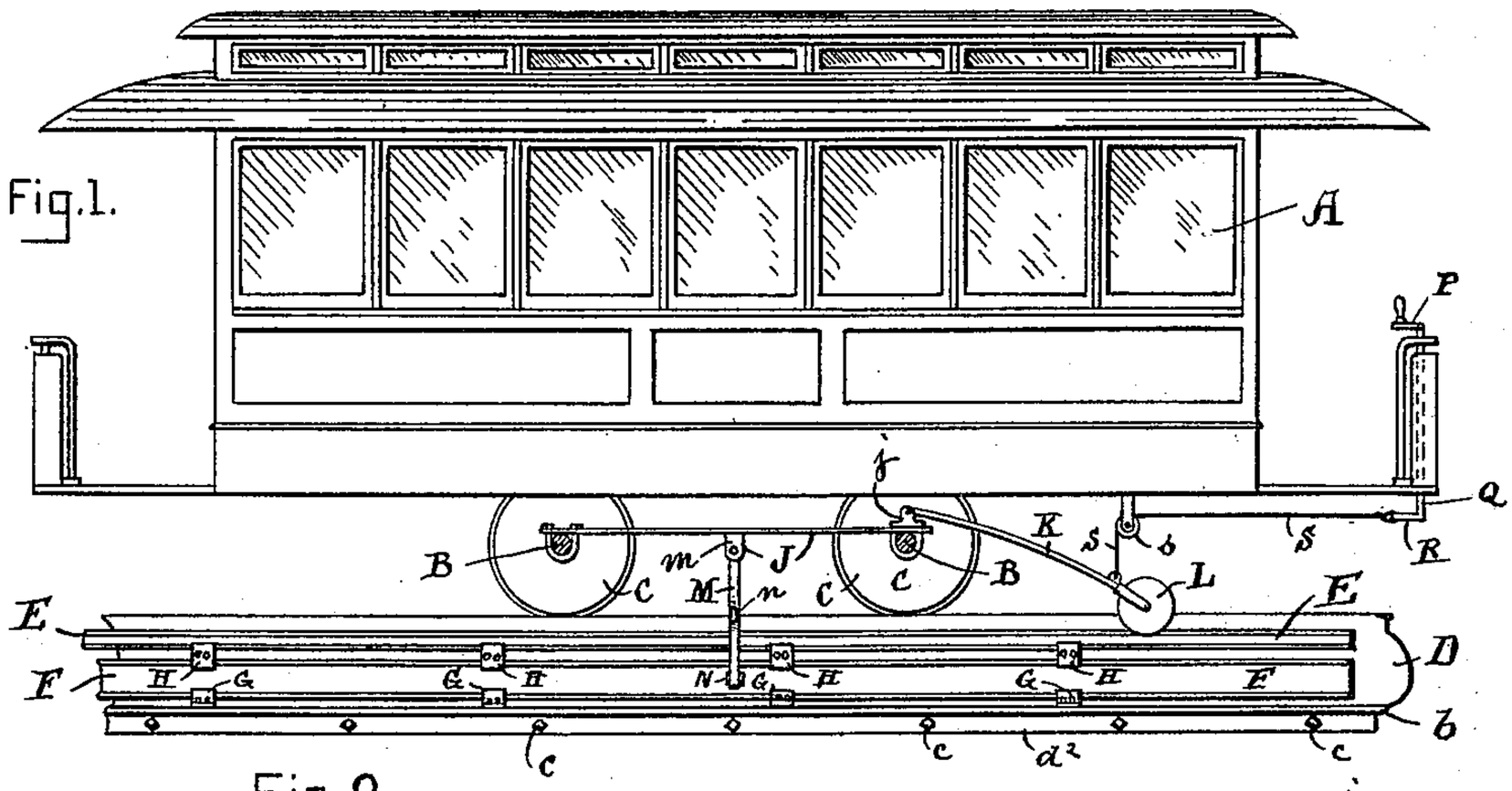
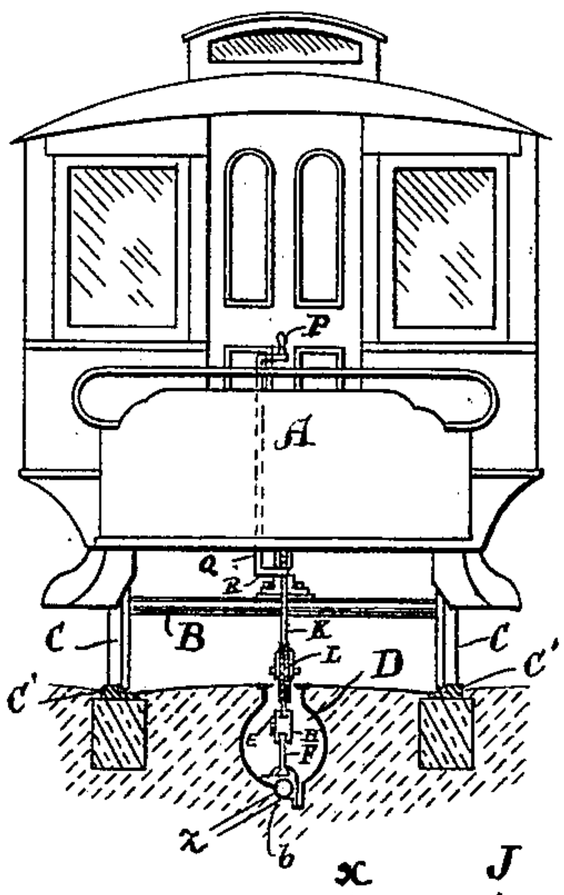


Fig. 2.



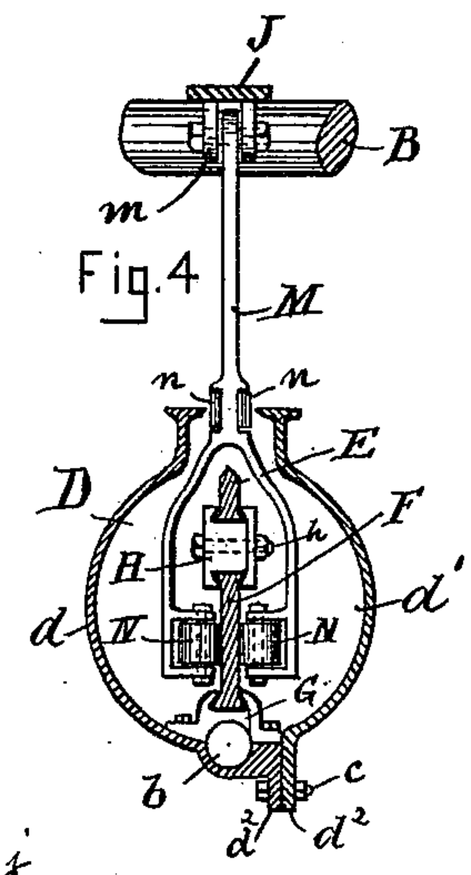


Fig. 4.

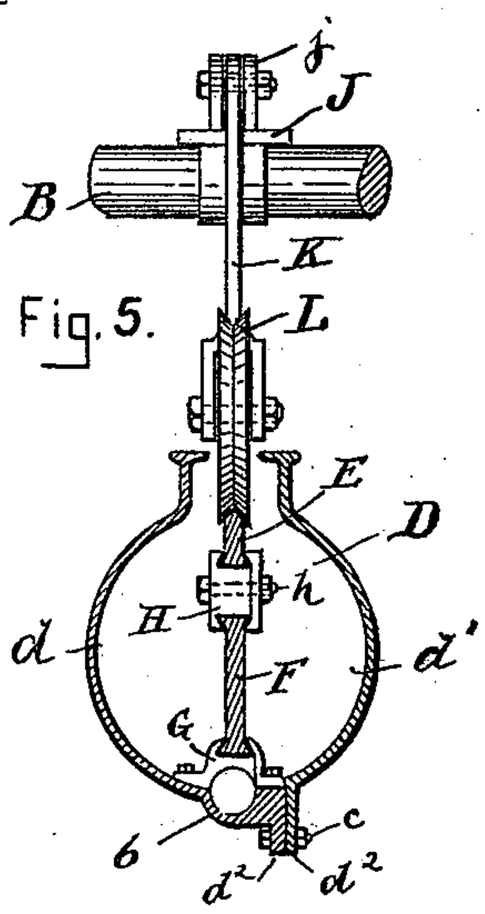


Fig. 5.

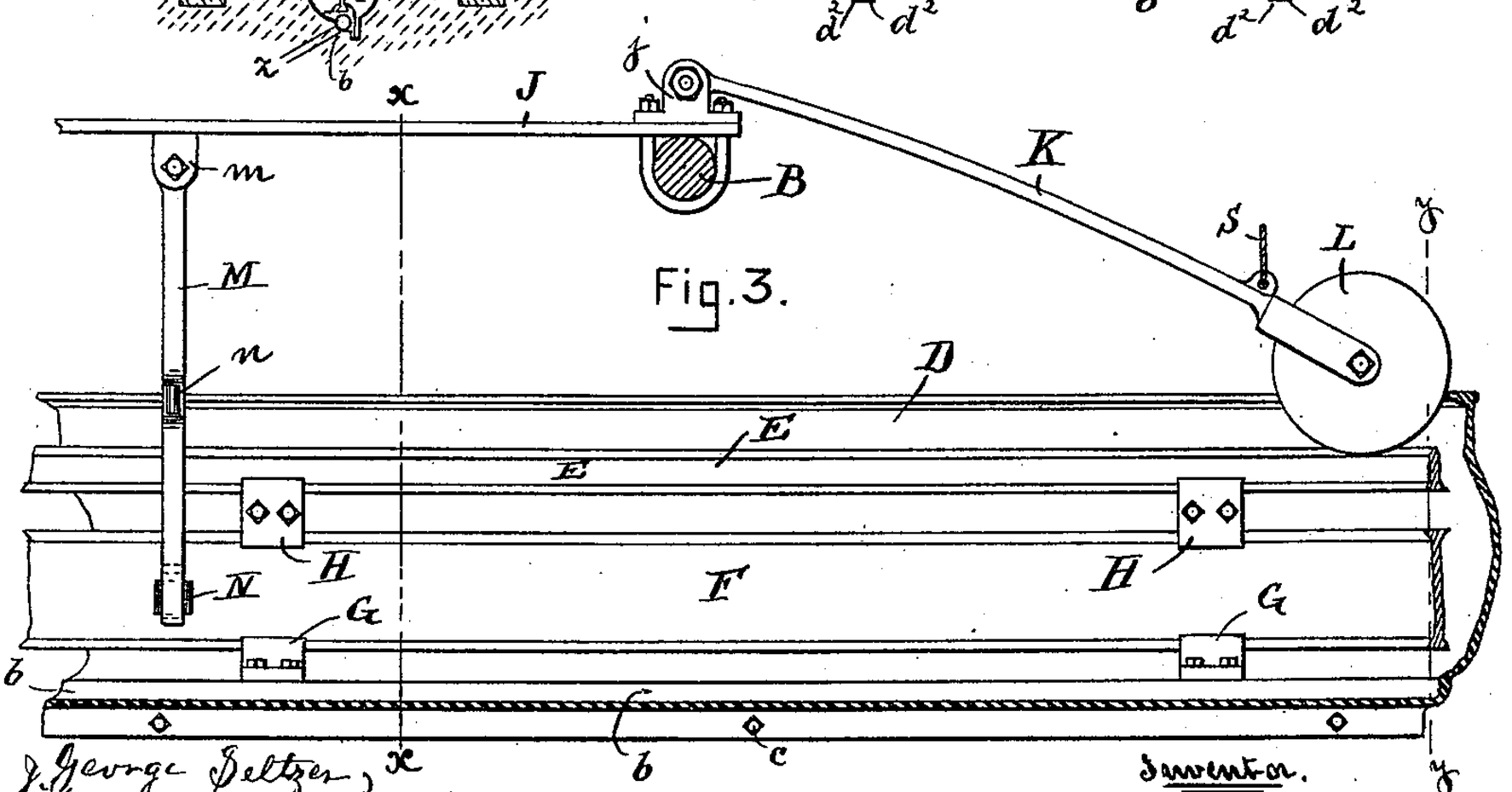


Fig. 3.

J. George Seltzer,
William H. Cook,
Witnesses

Inventor.
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UNITED STATES PATENT OFFICE.

HOSEA W. LIBBEY, OF BOSTON, MASSACHUSETTS.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 441,571, dated November 25, 1890.

Application filed September 23, 1889. Serial No. 324,849. (No model.)

To all whom it may concern:

Be it known that I, HOSEA W. LIBBEY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Electric Railways, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to conduits for electric railways, also to electric conductors and connections between the car and electric conductors; and the invention consists in the peculiar construction of the same, as hereinafter fully set forth, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 represents a side view of a car and a longitudinal vertical section through a conduit, showing electric conductors and connections embodying my invention. Fig. 2 is an end view of the car and connections and transverse section through the conduit. Fig. 3 is a longitudinal vertical section of conduit, showing the conductors and connections drawn to a larger scale. Fig. 4 is a transverse vertical section taken on line x x of Fig. 3. Fig. 5 is a similar section taken on line y y of Fig. 3.

A represents a car, B the axles, C the wheels, and C′ the rails, all of which may be of ordinary construction.

D is the conduit, which is formed in two parts d d', each provided at its lower end with a flange d^2, which are secured together by bolts c. One side of the conduit projects beyond the center line at the bottom and is formed with a gutter b, as shown.

E F are the electric conductors, the upper one E being the positive, and the lower one F the negative, or vice versa. The rail F is formed flaring out at its top and bottom edges, as shown, and its lower edge is secured in chairs G of corresponding form, made in two parts, so as to clamp and hold the rail in an upright position. The entire chair is secured to one portion of the conduit, so that if required a section of the portion or side d' of the conduit may be removed should it be required to repair the track. The upper rail E is preferably formed pointed at its upper edge, and at its lower edge is formed flaring, and the two rails are secured together—one above the other—by clamps H, made in two parts, (see Figs. 4 and 5,) secured together by bolts h. Insulating material is placed between the rails, chairs, and clamps, as indicated by thick black lines in Figs. 4 and 5; or the chairs and clamps may be made of any suitable non-conducting material. I prefer to line the inside of the conduit with glass, earthenware, or other non-conducting material.

To the car-axles B, I secure a bar J, to one end of which is secured a bearing j, in which is loosely mounted an arm K, the outer end of which is forked, in which fork is mounted a wheel L, grooved on its periphery to correspond with the shape of the upper edge of the rail E, upon which it runs, so that the electric current passes from the rail E through the wheel L, arm K, to the bearing j, from which it is by any suitable flexible connection conducted to the motor on the car, and returns by a flexible connection to a bearing m on the bar J. To this bearing is secured a bar M, forked at its lower end, so as to pass clear of both the rails, (see Fig. 4,) and the lower end of each prong is provided with bearings in which is mounted a roller N, each of which are in contact with the rail F—one on each side—so that the electric current passes from the bearing m, through the bar M and rollers N to the rail F. At a point opposite the edge of the slot in the conduit I mount on each side of the bar M a small roller n, of non-conducting material, so that should they come into contact with the edge of the slot there will not be any electrical connection. The sides of the wheel L are coated with non-conducting material, so as to prevent all liability of electrical contact with the conduit. The bearings j m are both insulated from the bar J. When the wheel L is in contact with the rail E, the circuit is complete and the car is propelled forward, and when it is desired to stop the car the arm K, and with it the wheel L, is raised by the driver moving a lever P, which, by a rod Q, is connected to another lever R, to which one end of a cord S is attached, which cord passes over a pulley s, and its other end is connected to the arm K, so that by a slight movement of the lever P the wheel L is drawn out of contact with the rail E. By having the upper edge of the rail E pointed all dust, dirt, and such like that falls

through the slot into the conduit is caused to fall to the bottom of the same, which can be kept clean by occasionally flushing, when the dirt and such like will be carried by the gutter *b* to an opening *h*, (see Fig. 2,) leading to the sewer.

What I claim as my invention is—

1. A conduit for electric railways, divided vertically into parts, one part being slightly larger than the other and provided at its lower end with a recess forming a gutter, the two parts of said conduit being each provided with a flange and connected together by bolts, substantially as shown and described.

2. In an electric railway, two rails arranged one above the other, the lower rail being supported by chairs, and the upper rail by clamps that engage the upper end of the lower rail and the lower end of the upper rail, substantially as shown and described.

3. In an electric railway, a conduit made in two parts *d d'*, each having a flange d^2, secured together by bolts, the part *d* having a gutter *b*, in combination with the chairs G, rail F, clamps H, and rail E, substantially as shown and described.

4. The wheel L, arm K, brackets *j m*, bar J, arm M, and rollers N, in combination with the rails E F, substantially as shown and described.

5. The lever P, rod Q, lever R, cord S, and pulley *s*, in combination with the arm K, fulcrumed in bracket *j*, for making and breaking connection with the rail E, substantially as shown and described.

6. The arm M, passing through the slot of a conduit, said arm having rollers *n*, of non-conducting material, at the opening of the slot and forked at its lower end, each prong having a roller N for making contact with the lower rail F, substantially as shown and described.

7. The wheel L, coated on each side with non-conducting material and having a V-shaped periphery, in combination with the arm K and bracket *j* for making contact between the upper rail E and the motor, substantially as shown and described.

8. A conduit for electric railways, divided vertically into two parts, one part being slightly larger than the other and provided at its lower end with a recess forming a gutter, the two parts being each provided with a flange that are connected together by bolts, the inner surface of both sections being coated with an insulating material, in combination with two rails, one above the other, the lower rail being supported by chairs secured to the bottom of the conduit, and the upper rail by clamps that engage the upper end of the lower rail and the lower end of the upper rail, substantially as shown and described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 26th day of July, A. D. 1889.

HOSEA W. LIBBEY.

Witnesses:
CHAS. STEERE,
EDWIN PLANTA.