(No Model.)

H. W. LIBBEY.

ELECTRIC RAILWAY.

No. 436,923. Patented Sept. 23, 1890.

Fig. 1.

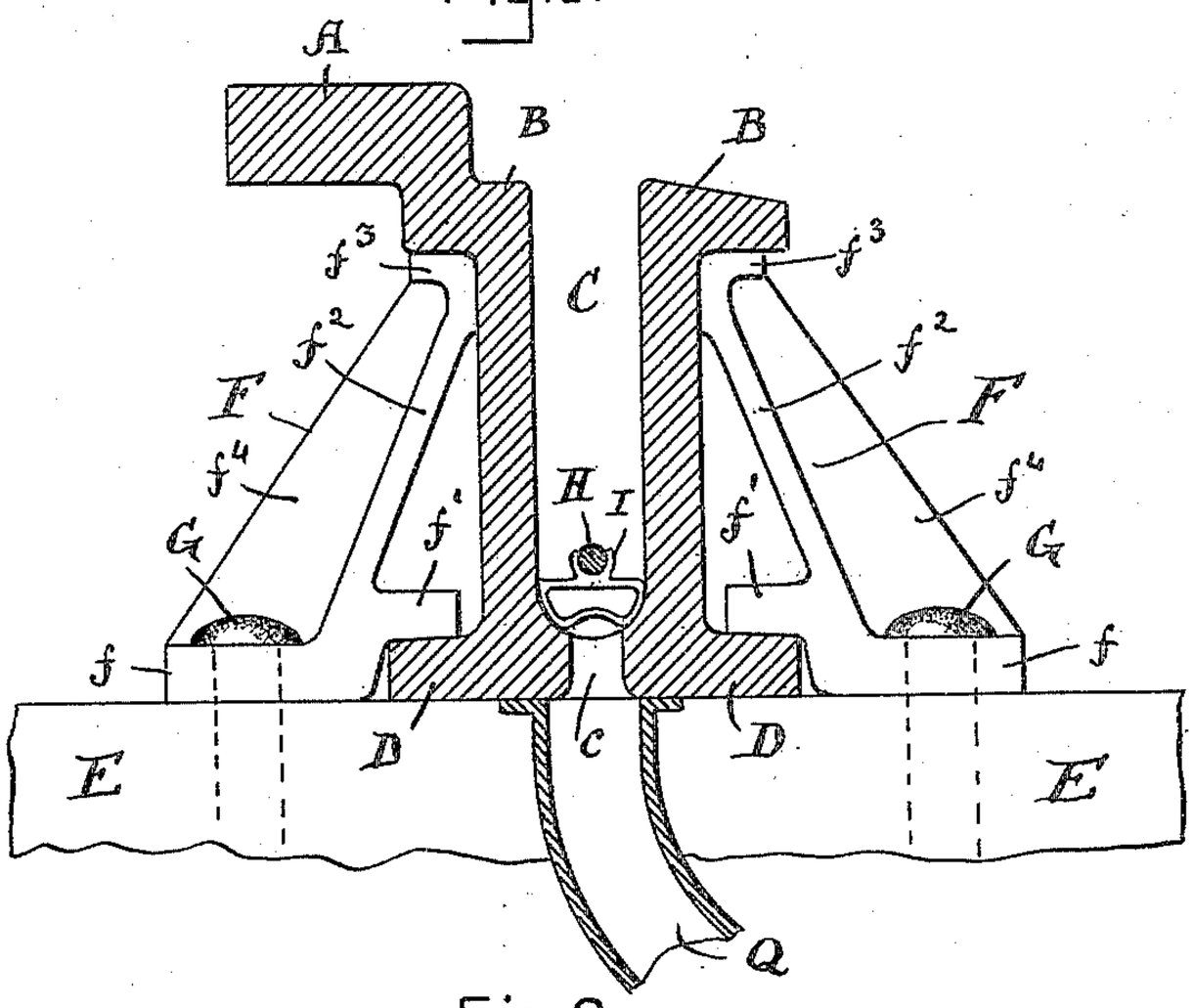


Fig. 2.

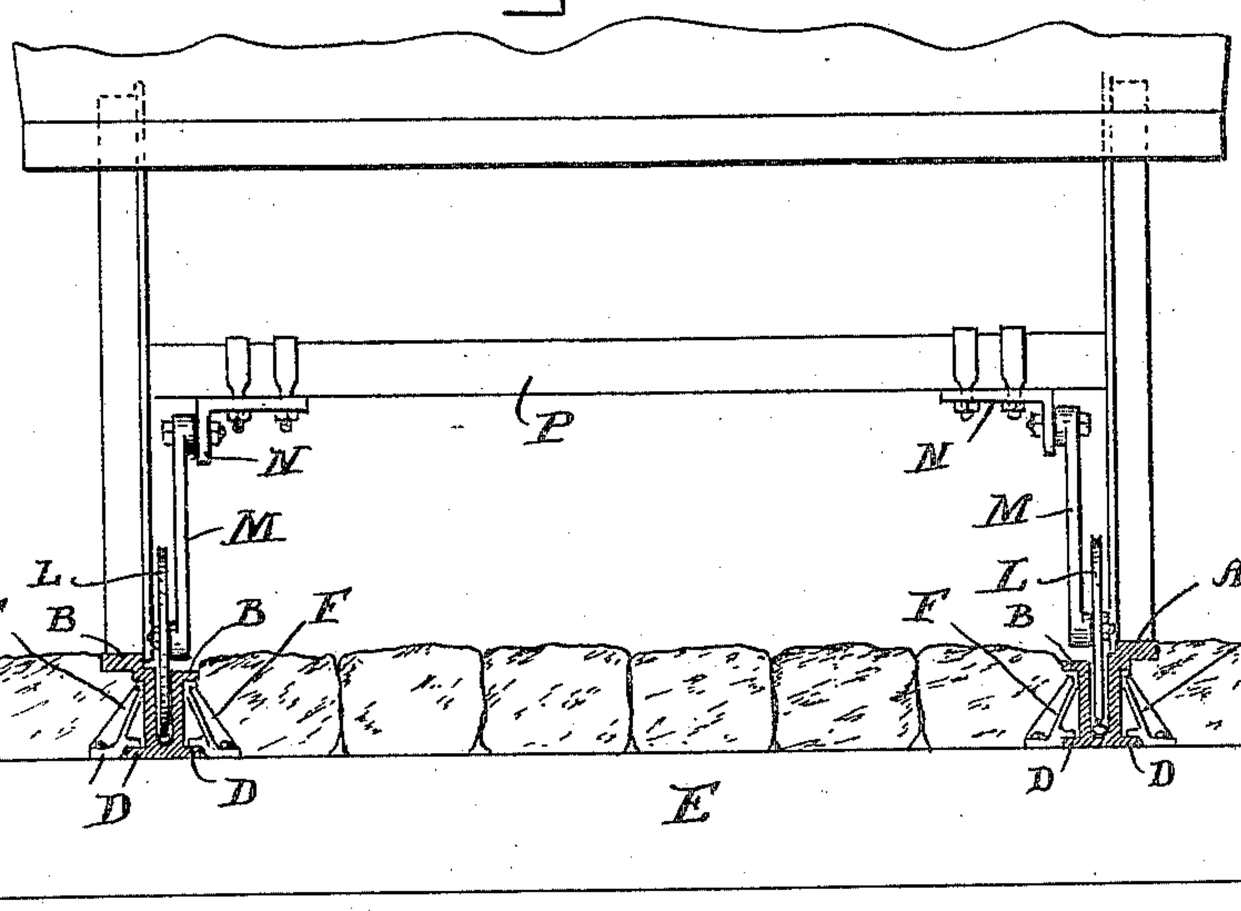


Fig. 6.

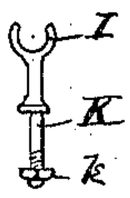


Fig. 3.

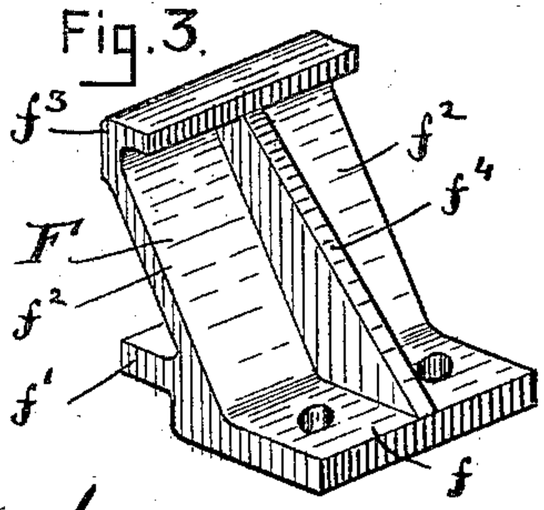


Fig. 4.

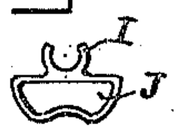
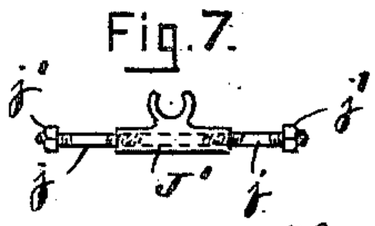


Fig. 5

Fig. 7.



Witnesses.

A. K. Atwood

Albert R. Beddall

Inventor.

Hosea. W. Libbey

by Edwin Blanke.

Attorney.

UNITED STATES PATENT OFFICE.

HOSEA W. LIBBEY, OF BOSTON, MASSACHUSETTS.

ELECTRIC RAILWAY.

SPECIFICATION forming part of Letters Patent No. 436,923, dated September 23, 1890.

Application filed November 14, 1889. Serial No. 330,336. (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 electric railways and to the construction of rails for the same; and the invention consists in the peculiar formation of the rail, whereby a combined rail and conduit is produced, the rail being made with a recess, groove, or depression in its flange in which the electric conductor is laid; and the invention also consists in certain details of construction, as hereinafter fully described, and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 represents a vertical cross-section through a combined rail and conduit for electric railways embodying my invention. Fig. 2 is a transverse section through a road-bed with combined rails and conduits embodying my invention, also showing the manner of connection with the motor on the car. Fig. 3 is a perspective view of one of the stay-clamps for holding the rail and supporting the same. Fig. 4 is a view of one of the clamps for holding the electric wire. Figs. 5, 6, and 7 are views of modifications of the same.

In making a rail according to my invention I form the flange with a recess, groove, or depression, as shown in Fig. 1, in which A represents the tread of the rail and B the flange, which is formed with the recess C of any desired depth, the lower or bottom portion of which I prefer to make of semicircular form, as shown, and the lower or base portion is provided with a flange D on each side that rests upon the sleeper E.

I secure the rails to the sleepers by means of stay-clamps F, as shown, the lower portion f of which rests upon the sleeper E, to which it is secured by spikes G. A lip f' projects inward and embraces the flange D of the rail. From the base $f\,f'$ a flat piece or body f^2 extends upward, and its upper end f^3 fits under the flange of the rail and against the side of the wall of the slot C, as shown, and a web f^4 extends from the lower to the upper portion to give additional strength to resist any outward strain. One of these clamps is shown in perspective in Fig. 3.

In the lower part of the groove or recess C is fitted at suitable intervals spring-clamps I to carry or support the electric wire H. These may be of the form shown in Fig. 4, in which the clamp I is secured to a semicircular frame or stand J, that fits tightly in the bottom of the recess C, the lower portion being rounded up so as to allow a clear passage at the bottom of the groove C. In Fig. 5 I have shown one of these stands and clamps provided with a screw-bolt K, which may be passed through a hole found in the bottom of the groove C and secured by a nut *k*. In Fig. 6 I have shown another modification, in which the clamp I is secured to the upper end of the screw-bolt K, the bolt extending up to the required height above the bottom of the groove, and in Fig. 7 I have shown another manner of supporting these clamps. In this case the clamp I is secured to a piece of pipe J′, just the length of the width of the slot C, which is first inserted in the slot opposite holes in its side walls. Short bars *j* are then inserted through the walls of the slot and screwed into the pipe J′, after which they are clamped by nuts *j*.

By means of the spring-clamps I the electric wire can be readily laid or removed, as required.

To make the contact between the electric wires H and the motor on the car, I employ a small wheel L, mounted loosely upon the end of a drag-bar M, that is connected to a bracket N, secured to the axle P, the bar M being insulated from said bracket, and the top of the drag-bar M is by a suitable flexible connection connected to the motor on the car.

I prefer to coat the inner side of the groove or recess C with any suitable insulating material, and the sides of the wheels L may also be covered with a coating of insulating material.

At suitable intervals I form in the bottom of the groove or recess C holes *c*, that connect with a pipe Q, which leads to the sewer, so that water will readily run off and not be retained in the groove or recess, and when required the groove or recess C can be cleansed by flushing, so as to carry off any dirt, mud, or other extraneous substances.

It will be seen by this construction that a very cheap and safe electric railroad is produced, as the conduit being formed in one with the rail it is therefore laid with it, thus saving the cost of an independent conduit. The wires being some distance below the level of the ground, they do not interfere with the travel of vehicles, and they are out of the way, so that persons cannot possibly come in contact with them.

What I claim as my invention is—

1. In combination with a rail for electric railroads, having a vertical groove formed in its flange, the groove being rounded at its bottom and of equal width throughout, the spring-clamps I, for holding the electric wire H near the bottom of the groove, substantially as shown and described.

2. The stay-clamps F, consisting of the lower part *f*, to rest upon the sleeper, the lip *f'*, to embrace the flange of the rail, the upper portion *f*, to fit under the flange and against the side of the rail, the upper portion f^3 being connected to the base *f f'* by a body f^2 and web f^4, substantially as shown and described.

3. A rail for electric railroads, consisting of the tread A, the flange B, having a groove or recess C formed therein wherein the electric wire is secured, the bottom of said groove or recess being provided at suitable intervals with holes *c*, connected by a pipe Q to a sewer, substantially as shown, and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 20th day of September, A. D. 1889.

HOSEA W. LIBBEY.

Witnesses:

CHAS. STEERE,

EDWIN PLANTA.