

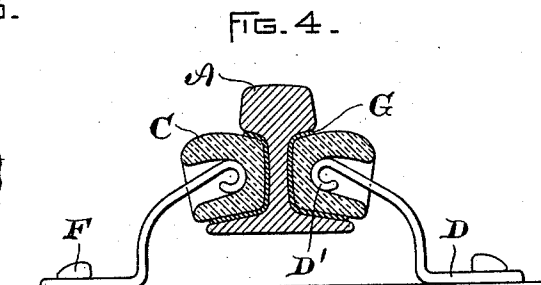
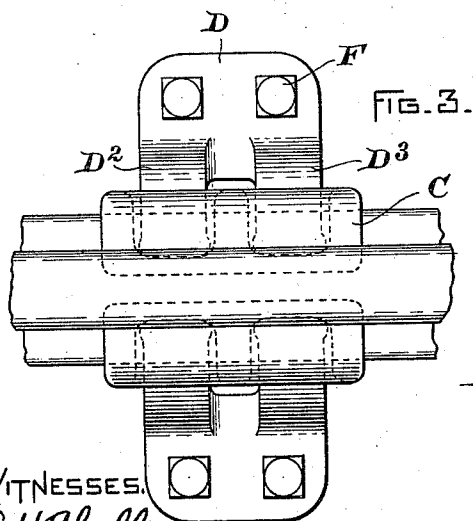
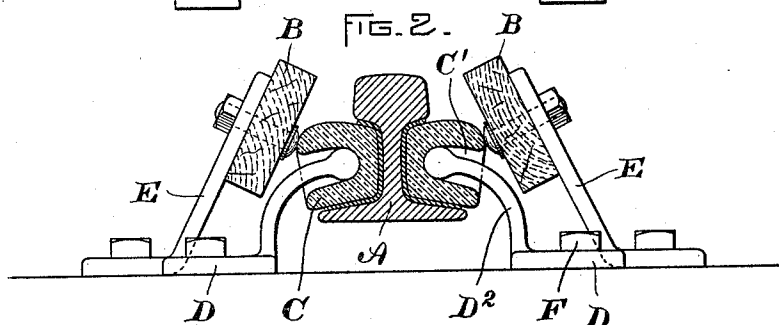
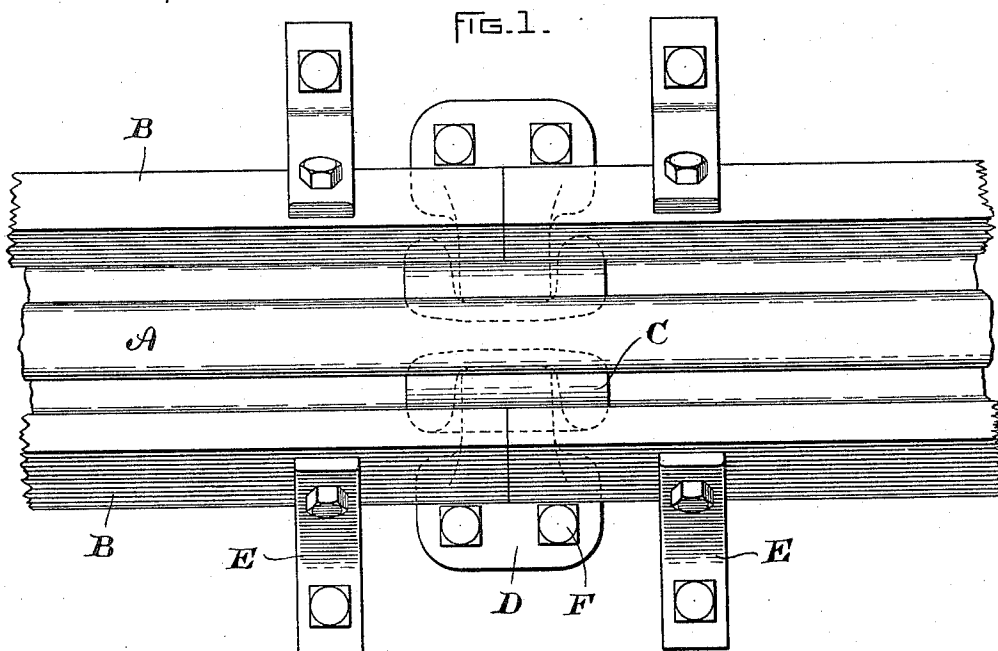
(No Model.)

2 Sheets—Sheet 1.

S. H. LIBBY.
INSULATOR.

No. 584,477.

Patented June 15, 1897.



WITNESSES.

A. H. Abell

A. MacDonald.

INVENTOR.
Sam. H. Libby, by
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(No Model.)

2 Sheets—Sheet 2.

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FIG. 5.

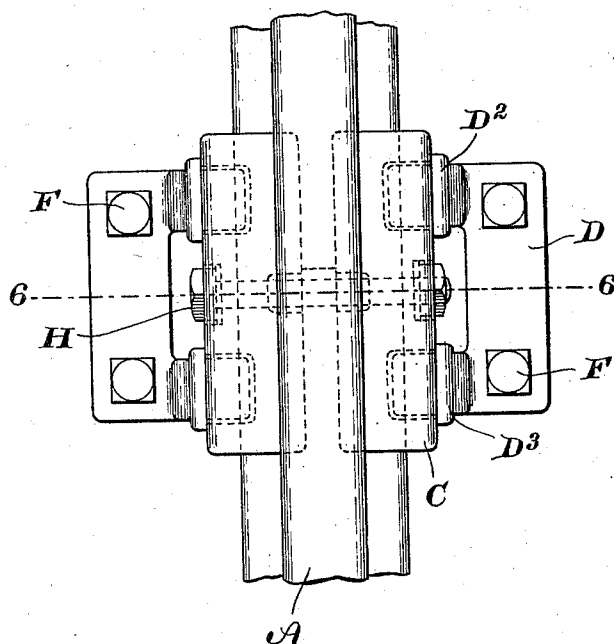
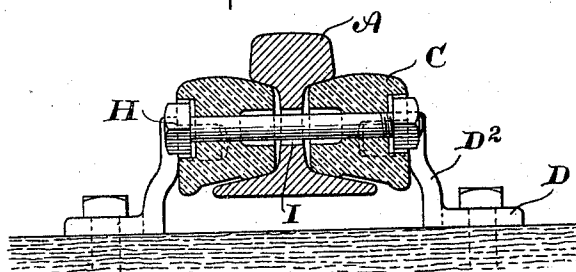


FIG. 6.



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UNITED STATES PATENT OFFICE.

SAM H. LIBBY, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

INSULATOR.

SPECIFICATION forming part of Letters Patent No. 584,477, dated June 15, 1897.

Application filed February 10, 1897. Serial No. 622,738. (No model.)

To all whom it may concern:

Be it known that I, SAM H. LIBBY, a citizen of the United States, residing at Schenectady, in the county of Schenectady, State of New York, have invented certain new and useful Improvements in Insulators, (Case No. 525,) of which the following is a specification.

The present invention relates to insulators which are employed for supporting and insulating the conductor-rail of a third-rail electric-railway system.

In the accompanying drawings, attached to and made a part of this specification, Figure 1 is a plan view of my improved insulator applied to a conductor-rail. Fig. 2 is a sectional view of the same. Fig. 3 is a modification. Fig. 4 is a sectional view of my preferred form. Fig. 5 is a plan view of an anchor-insulator, and Fig. 6 is a sectional view taken on the line 6 6 of Fig. 5.

In Fig. 1 the conductor-rail A is supported by insulators C, which engage with the rail between the tread and the lower flange and which are mounted on supports D on opposite sides of the rail. The insulators C consist of a substantially rectangular body of porcelain, vitrified brick, or other insulating material, and each insulator is provided with a socket or opening C', with which the upper end of the arm D² of the support D engages. Between the insulator and the rail is placed a sheet of lead, which compensates for slight irregularities in the insulator or rail and insures a good fit between them. The supports D are preferably made of malleable iron on account of its toughness, and each support is provided with an enlarged base, secured to the cross-tie by lag-screws F, and an arm D², projecting upward and inward toward the rail. On the upper end of the arm D² is a rounded portion which fits into a correspondingly-rounded socket on the insulator C. This reduces the liability of the insulator to split. The arm D² is rectangular in cross-section, and being thin in the vertical direction a certain amount of resiliency is provided. This permits the cross-tie on which the insulator is supported to move slightly independently of the conductor-rail as the

car-trucks pass over the traffic-rails, thereby relieving the strain on the insulator and decreasing the liability of breakage.

Extending parallel with the rail A and on both sides of it are guard-planks B, which are mounted at an angle and secured in position by angle-irons E. The latter are secured to the cross-ties and guard-planks by lag-screws and bolts. The top portion of the planks B extends slightly above the top of the rail A, protecting it from dropping wires or pieces of metal.

In Fig. 3 a slight modification is shown. The insulator C is provided with two sockets for the reception of arms D² D³, which form a part of the support D. The arms D² D³ are constructed in the same way as the arm D² in Fig. 1, with the exception that they are slightly narrower. It is evident that by increasing the number of arms and the length of the body of insulating material C the insulator may be adapted for much heavier rails.

In Fig. 4 I have shown the preferred form of my insulator. A standard T-rail is employed as a conductor and is supported on both sides by insulators C, which are constructed in the same manner as those described in connection with Fig. 1. Between the insulators and the rail are sheets of lead G, which insure a good fit between them and the rail. The supports D are made of forgings, or, if desired, of punchings. The outer ends of the arms are curved, as shown at D', which fit into the sockets on the insulators C. By varying the thickness of the arms any degree of resiliency may be obtained. The arms are so arranged that a slight movement of the rail is permitted in a vertical direction, but not in a lateral direction.

In Figs. 5 and 6 I have shown my insulator combined with means for anchoring the conductor-rail A against a forward or backward movement.

In third-rail traction systems, to which my invention is particularly adapted, I have found that the conductor-rail tends to creep in the direction in which the trains travel. This creeping is objectionable, and more particularly so where the system is divided elec-

trically into sections. In this case it sometimes even causes the adjoining sections to touch and thus unite the sections into one.

The insulators C are provided with two sockets, into which project the arms D² D³ of the support D. The support is secured to the cross-tie by lag-screws F. A bolt H is passed through a hole I in the web of the rail and thereby bolts the rail to the insulators and insulator-supports. The bolt-hole is made slightly larger than the bolt to provide a limited adjustment for the insulators.

The arms of the support D in the present instance are preferably more rigid than those in Fig. 4 on account of the increased strain due to the bolt H engaging with the web of the rail.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination of a conductor-rail, a body of insulating material situated each side of and supporting the rail, and a support for each body of insulating material permitting a limited amount of vertical movement of the conductor-rail.

2. The combination of a conductor-rail, a body of insulating material situated on each side of the rail and engaging therewith between the flange and tread, and a separate support for each body of insulating material.

3. In an anchor-insulator for a conductor-rail, the combination of a body of insulating material engaging with the conductor-rail, a support for the insulating material secured to a cross-tie, and means for preventing a movement of the conductor independent of the insulator.

4. In an anchor-insulator, the combination

of a conductor-rail, a body of insulating material applied to each side of the rail, a separate support for each insulator, and means for connecting the conductor-rail and the insulators together.

5. As an article of manufacture, a body of insulating material having part of its outer periphery conforming in shape to that portion of the T-rail between the flange and tread, and provided with openings or holes in which its support is secured.

6. In a third-rail electric-railway system, the combination of a conductor-rail, insulators supporting the rail at suitable intervals, guard-planks extending above and parallel with the rail on both sides thereof, and angle-irons supporting the guard-planks at an angle to the conductor-rail.

7. The combination of a conductor-rail, insulators fitting between the flange and tread of the rail, and upwardly-extending supporting-arms for the insulators supporting the rail from the sides above the surface of the cross-ties, as set forth.

8. The combination of a conductor-rail, insulators seated between the flange and tread of the rail on each side of the web, said insulators having sockets, as described, and metal supports having arms projecting into the sockets, whereby the rail is supported from the sides, substantially as described.

In witness whereof I have hereunto set my hand this 9th day of February, 1897.

SAM H. LIBBY.

Witnesses:

B. B. HULL,
M. H. EMERSON.