(No Model.) 2 Sheets—Sheet 1.

S. H. LIBBY.

INSULATOR.

No. 584,476. Patented June 15, 1897.

FIG. 1.

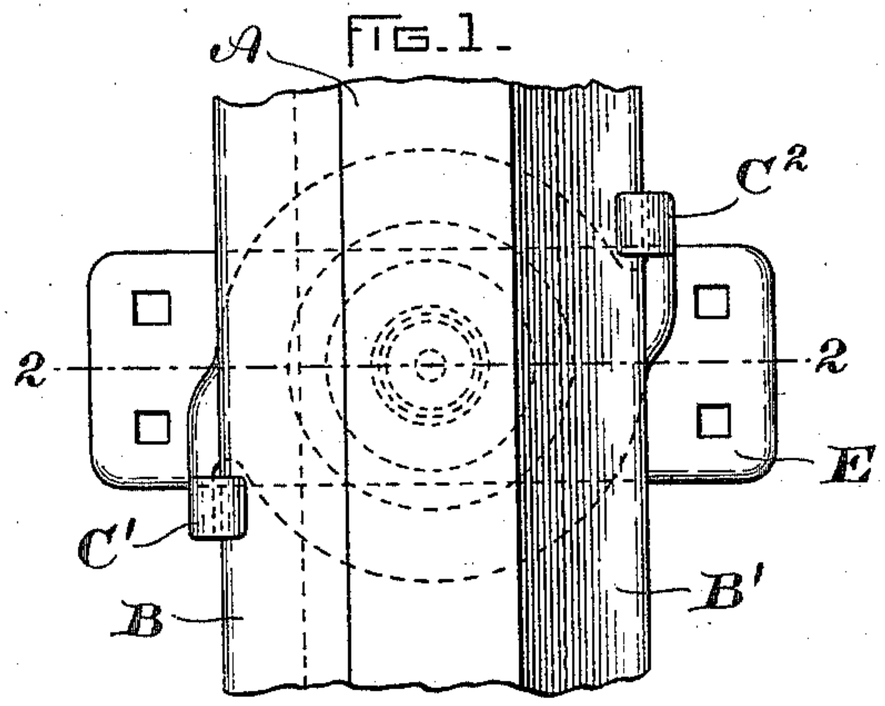


FIG. 2.

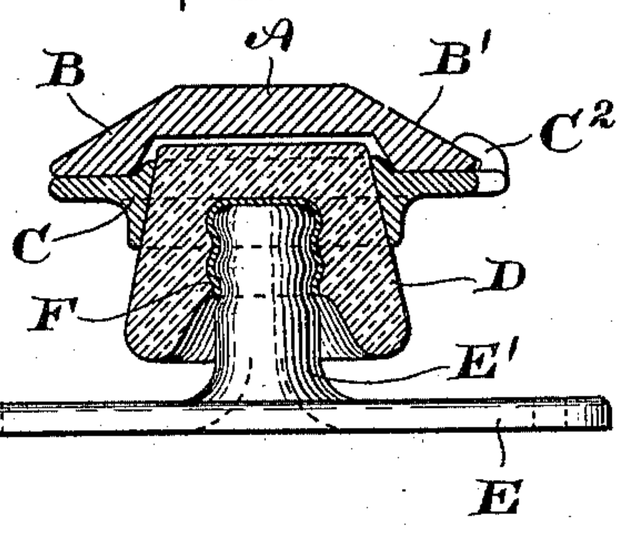


FIG. 3.

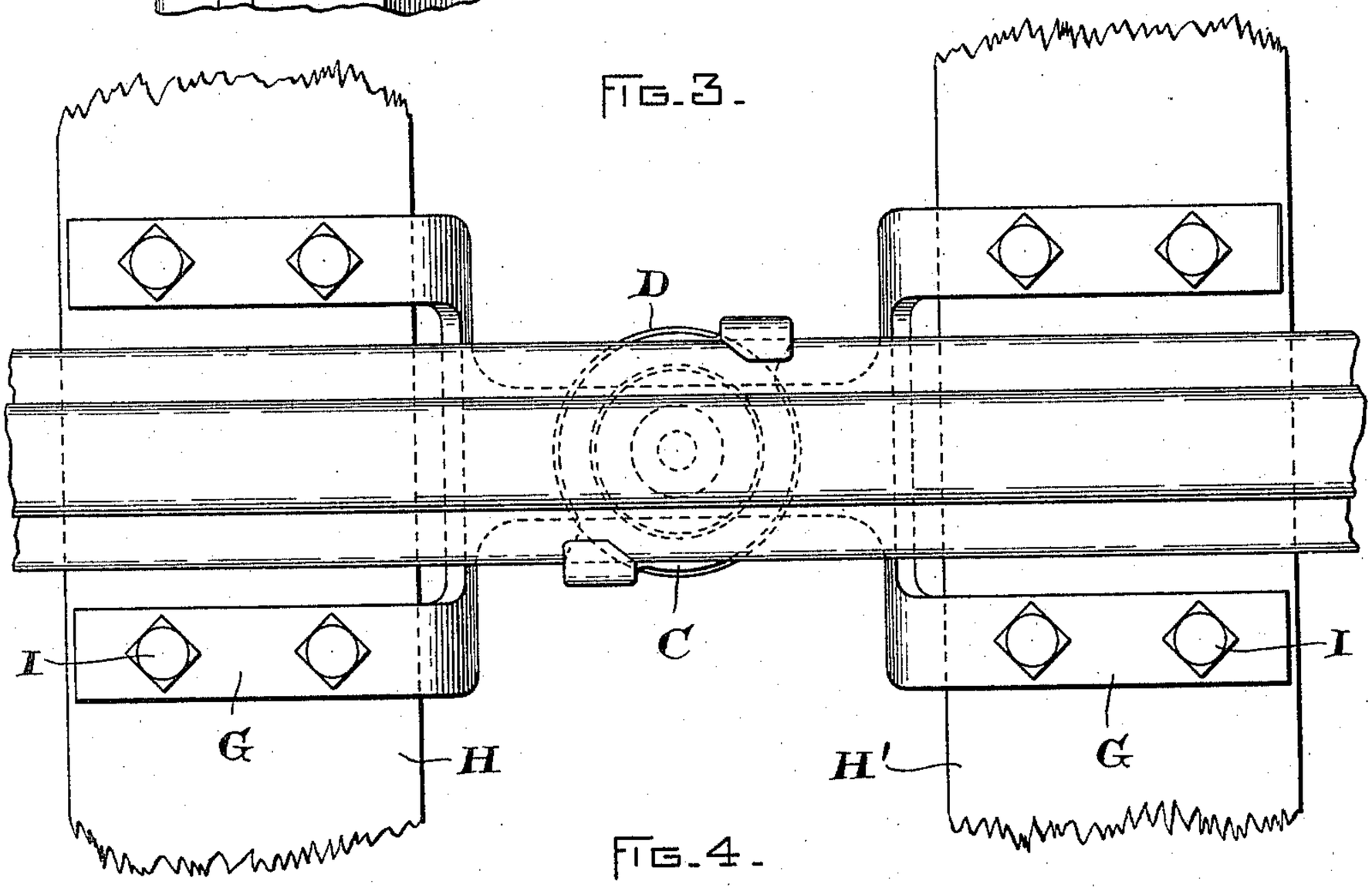
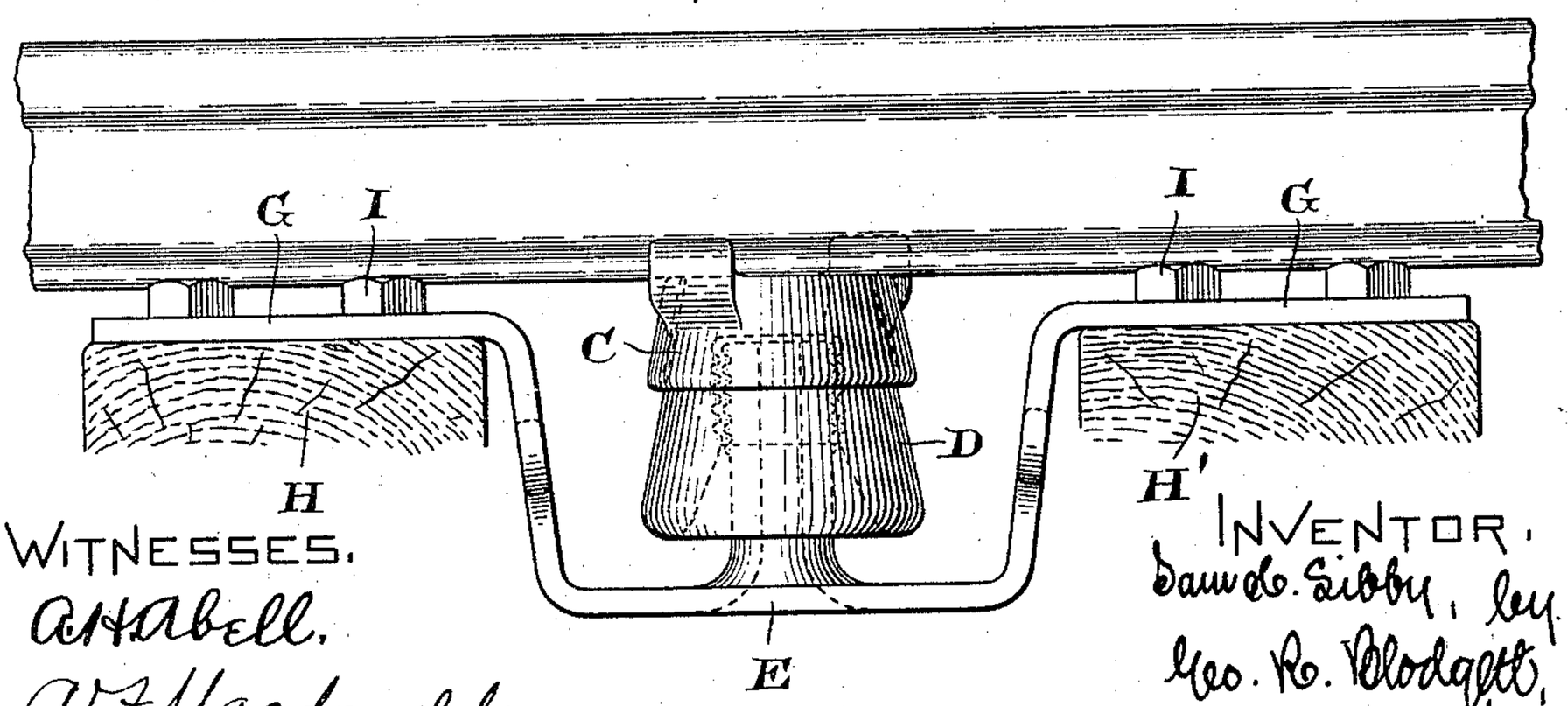


FIG. 4.



WITNESSES.

A. H. Abell.

A. F. Macdonald.

INVENTOR.

Samuel H. Libby, by

Geo. R. Blodgett,

Atty.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 5.

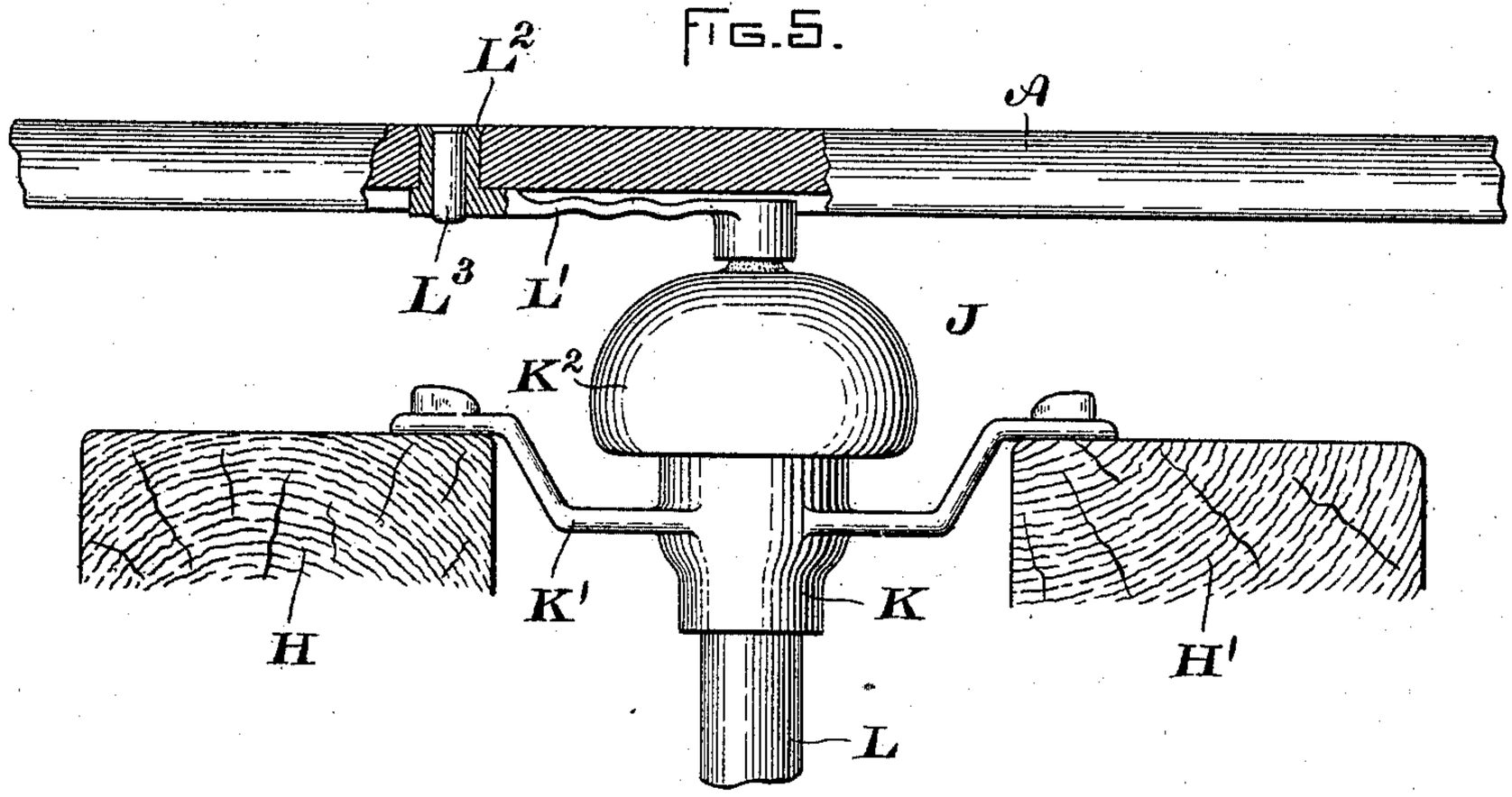
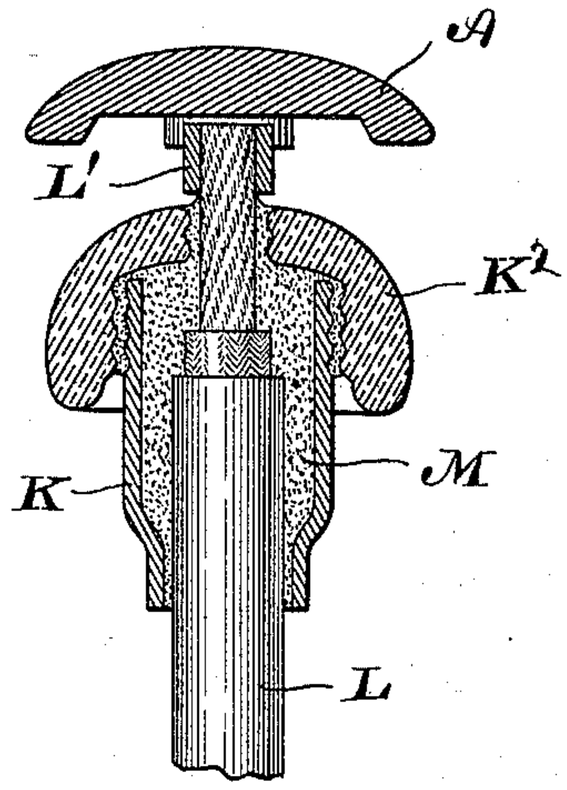


FIG. 6.



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Atty.

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. 584,476, dated June 15, 1897.

Application filed February 10, 1897. Serial No. 622,737. (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. 524,) of which the following is a specification.

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

The invention has for one of its objects to provide an insulator having a rail-clamp which may be secured to or loosened from the conductor-rail by a slight angular movement and where position upon the main body of insulating material is maintained by frictional engagement.

The invention further has for its object to lessen the cost of manufacture and to provide an insulator which occupies a minimum amount of vertical space, at the same time presenting a large surface over which moisture is obliged to creep before it can damage the insulation of the system.

The invention further relates to the means employed for tapping a feeder into the conductor-rail.

In the accompanying drawings attached to and made a part of this specification, Figure 1 is a plan view of my improved insulator secured to a contact-rail. Fig. 2 is a sectional view taken on the line 2 2 of Fig. 1. Figs. 3 and 4 are respectively a plan and side elevation of the insulator applied to a standard T-rail. Fig. 5 is a side elevation of my improved feeder-tap, and Fig. 6 is a sectional detail of the same.

In Figs. 1 and 2 the conductor or contact rail A is made with a special cross-section in order to reduce its vertical height to a minimum. Sloping downward and away from the center of the rail are side portions B B′, which correspond to the flanges of a standard T-rail and are engaged by lugs on the rail-clamps. The rail-clamp C is provided with lugs C′ and C^2. These are arranged on opposite sides of the center and are displaced to permit the clamp to be applied to the bottom of the rail A, after which it is slightly rotated and the lugs C′ C^2 engage with the sides B B′ of the rail. The center of the clamp C is provided with a circular tapered hole, into which projects the upper end of the insulator D. The latter is made of porcelain or other good insulating material and is provided with a slight taper which insures good frictional engagement between it and the rail-clamp. The insulator D is supported by a metallic base E, which is provided at its center with a vertical extension E′. The latter is screw-threaded or roughened, and between it and the insulator is a filling of suitable cement F. The base E is provided with holes, so that it may be spiked to a cross-tie.

The outer surface of the insulator may or may not be glazed. I have found, however, that there is less liability of the moisture creeping over the surface if it is glazed and also that dirt does not stick so readily.

The weight of the conductor-rail A is sufficient to prevent the clamps from turning after they have been mounted in position, and by extending the body of insulation D through the rail-clamp side movement of the conductor-rail A is prevented.

Figs. 3 and 4 show my invention applied to a standard T-rail. The vertical height of this rail being greater than the one of special cross-section shown in Fig. 1, the insulator D is mounted on a base E, provided with upwardly-extending extensions G, which rest on the cross-ties H H′ and are secured thereto by lag-screws I. This permits the base of the insulator to drop below the top of the ties. The construction of the clamp C and the insulator D is the same as shown and described in connection with Fig. 1.

Figs. 5 and 6 show a device for tapping a feeder into the conductor-rail. Supported from the cross-ties H H′ by arms K′ is an insulator J, comprising a metal cylinder K, within which is the lead-covered feeder-cable L. Between the cable and the cylinder is insulating material M, which is applied while in a plastic state. Surrounding the cylinder K is a cap K^2, of insulating material, and secured to the cylinder by any suitable means. In the present instance the cap and cylinder are screw-threaded, and between them is a small amount of the insulating material M.

At the upper end of the cable L the insula-

tion is removed and a connector L′ is soldered or otherwise secured thereto. The outer end of the connector L′ is provided with a tubular projection L^2, into which is driven the pin L^3. This expands the tube L^2 and insures good electrical contact between the connector L′ and the rail.

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

1. In a conductor-rail insulator, the combination of a metal base, a body of insulating material mounted upon the base, a rail-clamp secured to the conductor-rail and prevented from moving independently of the insulator by frictional engagement therewith.

2. In a conductor-rail insulator, the combination of a metal base, a body of insulating material mounted upon the base, a clamp secured to the conductor-rail by an angular movement, and friction-surfaces on the insulating-base and rail-clamp preventing the rail-clamp from moving.

3. In a conductor-rail insulator, the combination of a metal base, a body of insulating material mounted thereon and provided with a tapered portion, a rail-clamp mounted on the tapered portion of the insulator, and lugs on the rail-clamp engaging with the conductor-rail.

4. In a conductor-rail insulator, the combination of a metal base, a body of insulating material having an exterior tapered portion, a rail-clamp having a hole tapered to correspond with the taper on the insulating material, and lugs on the rail-clamp engaging with the conductor-rail.

5. In a conductor-rail insulator, the combination of a metal base, means permitting the base to be dropped below the top of the cross-ties, a body of insulating material mounted on the metal base, and a rail-clamp provided with lugs for engaging with the conductor-rail.

6. In a conductor-rail insulator, the combination of a metal base, extensions on the base secured to the cross-ties and permitting the base to be dropped below the top of the cross-ties, a body of insulating material mounted on the base, and a rail-clamp.

7. In a feeder-insulator, the combination of a metal cylinder, extensions from the cylinder secured to the cross-ties, insulation between the feeder-cable and the cylinder, and a connector secured to the cable and supply-conductor.

8. The combination of a conductor-rail, a fixed non-rotating insulator, and a metal clamp between the rail and the insulator free to rotate on the insulator and having lugs which are clamped upon the rail by a rotary movement of the clamp.

9. The combination of a metal base adapted to be fixed to a support, a porcelain or other vitreous insulating-body having a tapered circular outline and fixed to a stem upon the metal base, and a reversely-tapered metal clamp surrounding the insulating-body and free to turn thereon, said clamp having side flanges forming seats for a conducting-rail, and clamping-lugs which are clamped upon the rail by a rotary movement.

In witness whereof I have hereunto set my hand this 8th day of February, 1897.

SAM H. LIBBY.

Witnesses:
B. B. HULL,
A. F. MACDONALD.