No. 843,763. PATENTED FEB. 12, 1907.

J. McLAUGHLIN.

CONNECTOR OR TERMINAL FOR ELECTRICAL CONDUCTORS.

APPLICATION FILED SEPT. 11, 1901.

Fig. 1.

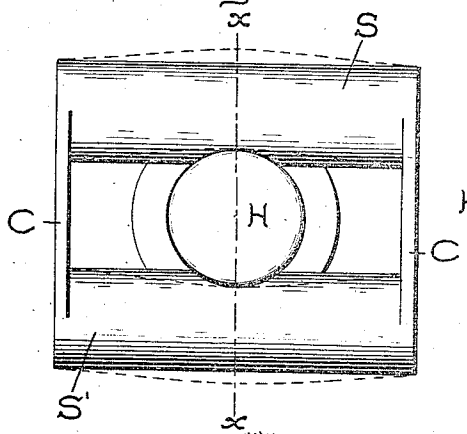


Fig. 2.

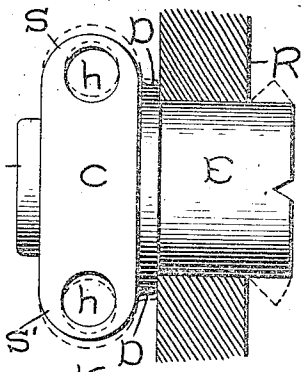


Fig. 3.

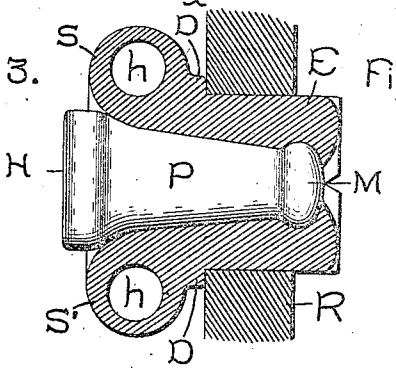


Fig. 4.

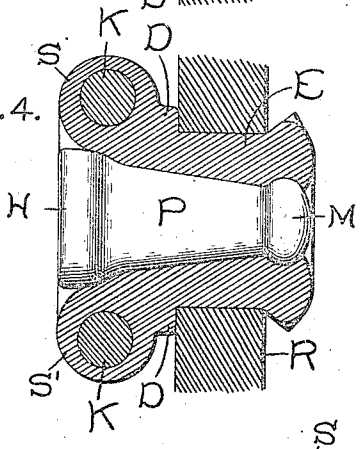


Fig. 5.

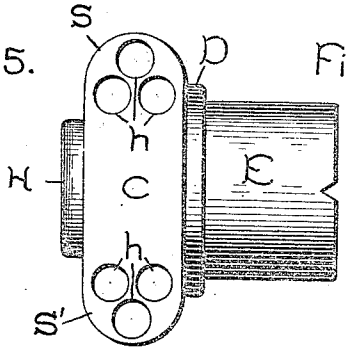
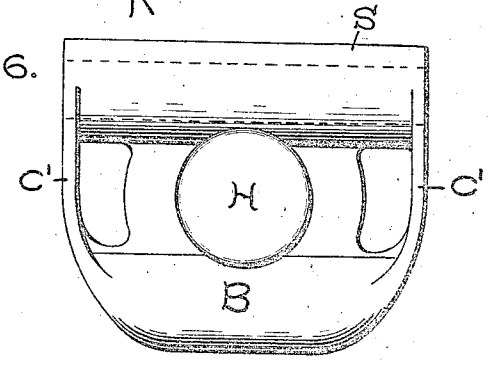


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES McLAUGHLIN, OF NEW YORK, N. Y., ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

CONNECTOR OR TERMINAL FOR ELECTRICAL CONDUCTORS.

No. 843,763. Specification of Letters Patent. Patented Feb. 12, 1907.

Application filed September 11, 1901. Serial No. 74,995.

To all whom it may concern:

Be it known that I, JAMES McLAUGHLIN, a citizen of the United States, residing at New York, county of New York, State of New York, have invented certain new and useful Improvements in Connectors or Terminals for Electrical Conductors, of which the following is a specification.

This invention relates to the electrical connection of conductors, and has for its object the provision of a connector by means of which a plurality of conductors may be securely connected both electrically and mechanically with the exercise of a minimum amount of labor and skill.

In Patent No. 583,309 I have described and claimed a rail-bond which consists, essentially, of an electrical connecting-conductor provided with terminals for attaching it to the rails. The terminals consist of bushings adapted to enter holes in the rails, said bushings being cast or formed about pins or keys, so that the said pins or keys are permanently held by them and the whole so constructed that when the bushing is placed in a hole in a rail and the pin or key driven home the bushing is expanded and a head formed upon the opposite side of the rail from the driving side, thus securely fastening the terminal to the rail.

It is obviously objectionable to form the terminal and conductor in one piece where long conductors are used, and in some cases—as, for instance, where old trolley-wire is used as a conductor—it is practically impossible, while the methods of attaching conductors to terminals or connectors now in use involve a considerable amount of labor and generally the use of several tools.

I propose to provide a connector which will greatly decrease the amount of labor required, will reduce the tools needed to a hammer or sledge, and will furnish a secure and lasting connection. It will accomplish this no matter what the form of conductors or whether there is one or two or more in parallel.

It can be best described with reference to the attached drawings, of which—

Figure 1 is a plan of one form of my proposed connector arranged for the reception of two conductors in parallel, both before and after its attachment to a rail or other conductor or support. Fig. 2 is an end elevation of the form shown in Fig. 1, the conductor or support to which it is to be connected being shown in section. Fig. 3 is a section of Fig. 1 on line X X, showing the connector ready for attachment. Fig. 4 is a similar view after attachment. Fig. 5 is an end elevation of a modified form, showing how the number of connecting conductors in parallel may be multiplied, (in this case the connector is adapted to receive six;) and Fig. 6 is a plan of a form adapted to receive one conductor.

Referring to Figs. 1, 2, and 3, H is the head of the tapering pin P, which terminates in the knob or expansion M at its other end. Cast or formed about the pin P is the bushing E, having the shoulder D, and cast with or otherwise attached to this bushing are receptacles or sleeves S and S′, secured together at their extremities by cross-pieces C. In the sleeves S and S′ are holes or chambers *h* to receive conductors, as K. The full lines of Figs. 1 and 2 and Fig. 3 show the connector before it has been applied. If now we strike upon the head H of pin P, it will be driven forward through the bushing E, and the connector will be firmly secured to the rail or other support R, as shown in Fig. 4, and in a manner as described in Patent No. 583,309; but as the pin P is driven forward the head H forces sleeves S and S′ apart, causing them to assume positions as shown by the dotted lines of Figs. 1 and 2. The cross-pieces C acting to hold the extremities of the sleeves at a fixed distance apart, the spreading action of the head H causes curves of small radii or deformations to be formed in the sleeves and in the conductors which were inserted into them previous to the driving of pin P, thereby making a firm and efficient electrical connection and a firm and enduring mechanical lock.

It is evident that we may as well have three chambers for the reception of connecting-conductors on each side of the pin P, as shown in Fig. 5, as one on each side, as shown in Figs. 1, 2, 3, and 4, and by similar constructions to that shown in Fig. 5 we may indefinitely increase the number. If it is desired to secure but one connecting-conductor to the terminal, a construction similar to that shown in Fig. 6 may be adopted, in which the sleeve S is adapted to receive the conductor, while the function of S′ in Figs. 1, 2, 3, 4, and 5, so far as S is concerned, is fulfilled by the piece B, which is secured to S by cross-pieces C′.

In the various figures I have shown the chambers for the reception of the connecting-conductors as having circular sections; but they may as well be of any other desirable form.

It is probable that my invention will be most widely used in connection with the bonding of electric railways; but it may be applied in many other cases where it is desired to connect a plurality of conductors together. I do not, therefore, wish to be limited to any specific application. Neither do I wish to be confined to any specific form of terminal, as any form which is adapted to be secured to a support by means of the driving of a pin or key when such driving of said pin or key operates also to secure a conductor to the terminal can be employed without departing from my invention.

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

1. The combination of a terminal, receptacles for conductors, a cross-piece connecting said receptacles, and a pin or key for expanding said terminal and deforming said receptacles.

2. The combination of a terminal, receptacles for conductors, cross-pieces holding certain portions of said receptacles at fixed distances apart, and a pin or key for securing said terminal to a support and simultaneously securing conductors in said receptacles.

3. The combination of a terminal, receptacles for conductors, attached to said terminal, and wedging means for simultaneously securing the conductors in said receptacle and securing said terminal to a support.

4. The combination of a terminal, conductor-receptacles carried thereby, cross-pieces joining together said receptacles, and a wedge arranged to be driven between said receptacles.

5. The combination of a terminal having a hollow stud, conductor-receptacles secured to said terminal and means for wedging apart said receptacles and expanding said stud.

6. The combination of a terminal having a hollow stud, conductor-receptacles integral with said terminal, and a wedge arranged to be driven between said receptacles and into said hollow stud.

7. The combination of a terminal having a hollow stud, conductor-receptacles secured transversely to said terminal, cross-pieces joining the ends of said receptacles, and wedging means arranged between said receptacles and in said hollow stud.

In witness whereof I have hereunto set my hand this 7th day of September, 1901

JAMES McLAUGHLIN.

Witnesses:
M LAWSON DYER,
BENJAMIN MILLER.