

G. A. MEAD.

CONNECTING STUD AND BOND TERMINAL.

APPLICATION FILED JUNE 14, 1917.

Patented Dec. 3, 1918.

2 SHEETS—SHEET 1.

1,286,381.

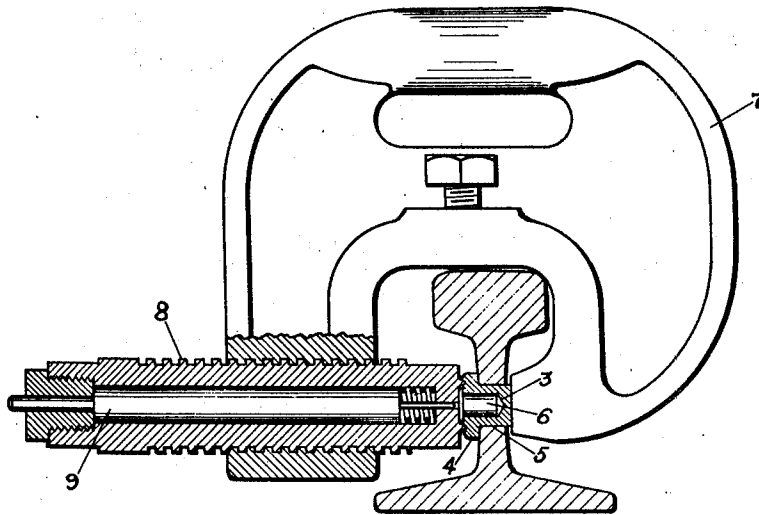


Fig. 1

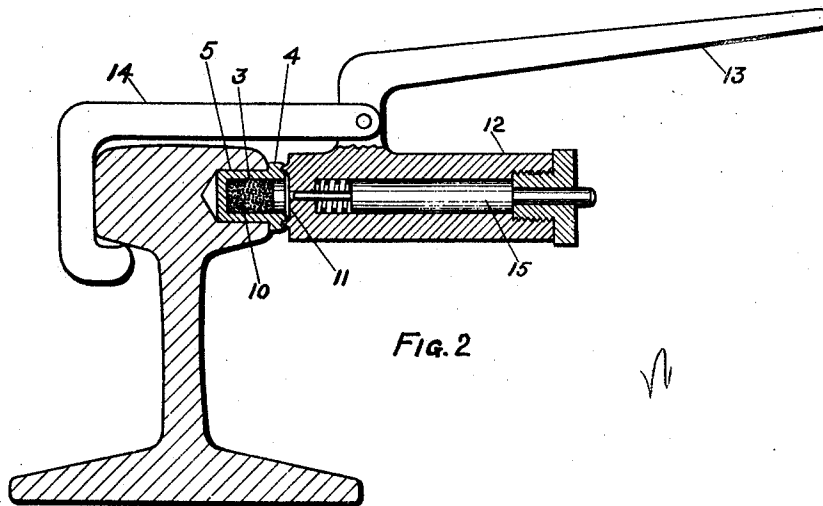


Fig. 2

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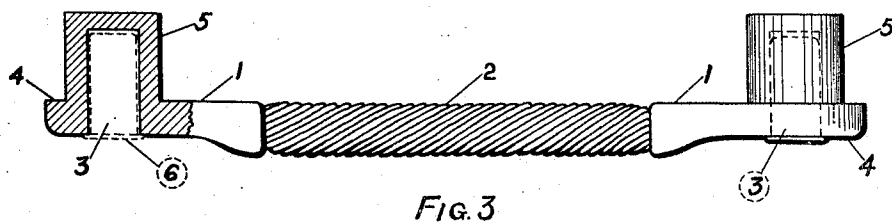


FIG. 3

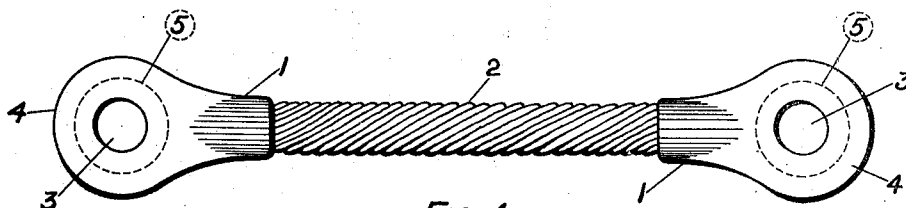


FIG. 4

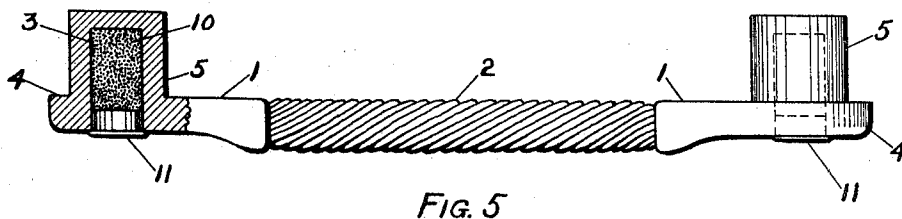


FIG. 5

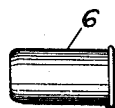


FIG. 6

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UNITED STATES PATENT OFFICE.

GEORGE A. MEAD, OF MANSFIELD, OHIO, ASSIGNOR TO THE OHIO BRASS COMPANY, OF
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CONNECTING STUD AND BOND TERMINAL.

1,286,381.

Specification of Letters Patent.

Patented Dec. 3, 1918.

Application filed June 14, 1917. Serial No. 174,666.

To all whom it may concern:

Be it known that I, GEORGE A. MEAD, a citizen of the United States, residing at Mansfield, in the county of Richland and State of Ohio, have invented certain new and useful Improvements in Connecting Studs and Bond Terminals, of which the following is a specification.

This invention relates to connecting studs and bond terminals.

The object of my invention is to produce a stud or terminal adapted to be secured within a hole in an article by means of an explosive force within the stud or terminal and is adapted to be applied to a great many different uses, but it is particularly adapted to the securing of electrical connections to a conductor.

One object of this invention is to produce a rail bond for spanning the joints of rails and for conducting the electric current from one rail to the next, thereby producing the effect of a continuous rail without joint.

Another object of this invention is to produce a bond which can be installed with a minimum amount of physical effort upon the part of the man installing the bond.

Another object of this invention is to produce a bond which can be installed with practically the same contacting pressure in each case.

Other objects of this invention will be pointed out later in the specification and still other objects will be readily comprehended by those versed in the art from the following description.

There are a number of disadvantages in the present type of bonds intended to be attached to rails by expanding the terminals in holes provided for same. One of the objections is that the operator is obliged to exert considerable effort upon the end of a long wrench in compressing the terminal of the bond into a hole in the rail. The operator soon tires and the result is that the majority of the bonds have been slighted and their contact efficiency is low. It is the aim of this invention to minimize the physical efforts

and at the same time to employ a means for expanding or compressing the terminal within the hole of a rail which will give uniform results; that is, the force will be equal in each case and therefore with uniform conditions as to size of terminal and size of hole in rail, the expansion or compression of the bond will be uniform and the contact efficiency will be equal practically in all cases.

In order to carry out this idea and secure these benefits, I employ an explosive which is located within the terminal of the bond, stud or rivet as a means for creating the expansive force. This explosive may be in the form of a solid, liquid or gas—but be a sufficiently unstable chemical compound to readily explode and expand under proper conditions.

The following is a description of the various figures presented in the accompanying drawings. Figure 1 shows a sectional end view of a rail and bond terminal, and a compressor positioned upon the rail and bond terminal shown partly in section. Fig. 2 shows a bond terminal and rail in section, the terminal being installed in the side face of the ball of the rail, and a compressor for holding the parts together is shown partially in section. Fig. 3 shows a side elevation of my bond with one terminal shown in section. Fig. 4 shows a plan view of the bond shown in Fig. 3. Fig. 5 shows a side elevation of my invention but of a different type than that shown in Fig. 3. Fig. 6 shows a view of a cartridge containing an explosive and a priming cap for use with the type of bond shown in Fig. 3.

A description of my invention is as follows.

The bond consists of one or more terminals indicated by numeral 1, united by a conductor 2, which may consist of a flexible copper member or other suitable conducting means. The terminals are attached to the intervening conductor in any suitable manner, such as providing the terminal with a hole, inserting one end of the conductor 2 therein, then squeezing the terminal neck about the

conductor end either cold or under heat or both. The terminal is formed with a hole or recess 3 which extends through the head 4 and into the shank 5. The recess 3 is for the reception of a shell containing an explosive as shown in Fig. 6 and which may be of the ordinary type of blank cartridge upon the market, or may be made specially in order to meet the requirements.

10 In applying my invention in general an aperture is formed in the article to which a stud terminal or rivet is to be secured and the stud terminal or rivet is placed in the aperture and an explosive charge contained in the interior thereof is exploded or fired thus causing the stud, etc., to securely engage the article to which it is to be secured.

In the application of a bond a hole is first drilled in each rail close to the abutting end. The hole is of such a size as to snugly receive the shank 5 of the bond as indicated in Fig. 1. A cartridge such as shown in Fig. 6 is inserted into the recess of the terminal and a compressor is applied as shown in Fig. 1.

25 The compressor resembles the ordinary type generally used in bond work but can be made very much lighter as it is not used for expanding the bond terminal. The compressor consists of a body 7 and a screw 8. The screw 8 is provided with a firing pin 9, adapted by striking the end thereof with a hammer, to set off the explosive.

It is, of course, quite obvious that some means must be secured by which the explosive 6 is retained in position in the bond terminal, and also a means by which the bond is held in position in the rail. The type of compressor described and shown is found to give very satisfactory results.

40 I have found that it is advisable to place some pressure upon the end of the explosive member 6 in order that it may be sealed in position, permitting no escape of the expanding gases within the terminal; otherwise the full expansive effect of the gases is nullified.

A modification of the bond shown in Figs. 3 and 4 is illustrated in Fig. 5. In this type of bond the explosive charge and priming cap constitute a part of the bond as furnished by the manufacturer; that is, the charge 10 is placed in the bond terminal at the time of manufacture of the bond and is retained in place by means of a short cap 11, which is pressed tightly into the bond terminal and contains the priming cap for discharging the explosive charge.

The type of bond shown in Fig. 5 can also be substituted for the one shown in Fig. 1 and the same compressor for applying the bond may be used.

Fig. 2 shows the method of installing my improved bond in the side face of the ball of a rail and also shows a modified form of

compressor although the one shown in Fig. 1 is equally applicable as a substitute for that in Fig. 2.

The type of bond shown in Fig. 2 is the same as that shown in Fig. 5 in which the explosive and priming cap are made an integral part of the terminal although even in this method of bonding to the side of the ball of a rail the type of bond shown in Fig. 3 can also be used.

The type of compressor shown in Fig. 2 consists of a barrel member 12, having a handle 13 attached thereto and a hook member 14 which engages the opposite base of the rail from the bond. The barrel 12 contains a firing pin 15 which is operated by a light blow on the outer end of the pin by means of a hammer. By pressing down on the handle 13 it is quite obvious the bond terminal will be held securely in position and the priming cap maintained in its original position.

I have shown herein and described the preferred construction as applied to a rail bond and method of application, but I do not wish to be limited to such precise construction or application shown and described as modifications may readily be made herein as applied to other uses without departing from the spirit of my invention.

Having described my invention, what I claim as new and novel and desire to secure by Letters Patent is:

1. A rail bond terminal provided with an explosive insert.

2. A rail bond terminal provided with explosive means for expanding a part thereof.

3. A stud terminal provided with a projection having a cavity formed therein, an explosive charge in the cavity adapted when exploded to expand the projection and means for retaining the explosive charge within the cavity.

4. A rail bond terminal having a head and shank made integral therewith, and provided with an opening adapted to receive a shell containing an explosive charge, for the purpose substantially as set forth.

5. A rail bond terminal having a head and shank made integral therewith, and provided with an opening having a cap fitted in the end thereof and an explosive charge within the opening and retained therein by the said cap.

6. A rail bond comprising a flexible body, a terminal secured to each end of the body, a cavity within the terminal, an explosive within the cavity and means secured to the terminal for retaining the explosive in place and for detonating the explosive when required.

7. A rail bond comprising a flexible body, a terminal secured to each end of the body, a cavity within the terminal, and an explo-

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sive charge detachably secured within the cavity.

8. A rail bond comprising a flexible body and a terminal upon each end of the body, a cavity within the terminal, an explosive in the cavity and means attached to the bond terminal for detonating the explosive.

9. A rail bond comprising a flexible body

and terminal members secured thereto, the terminals being adapted to be expanded by 10 direct action of expanding gases.

10. A stud provided with an explosive core.

In testimony whereof I affix my signature.

GEORGE A. MEAD.