

No. 666,403.

Patented Jan. 22, 1901.

M. M. WOOD.

RAIL BOND.

(Application filed Nov. 22, 1900.)

(No Model.)

Fig. 1.

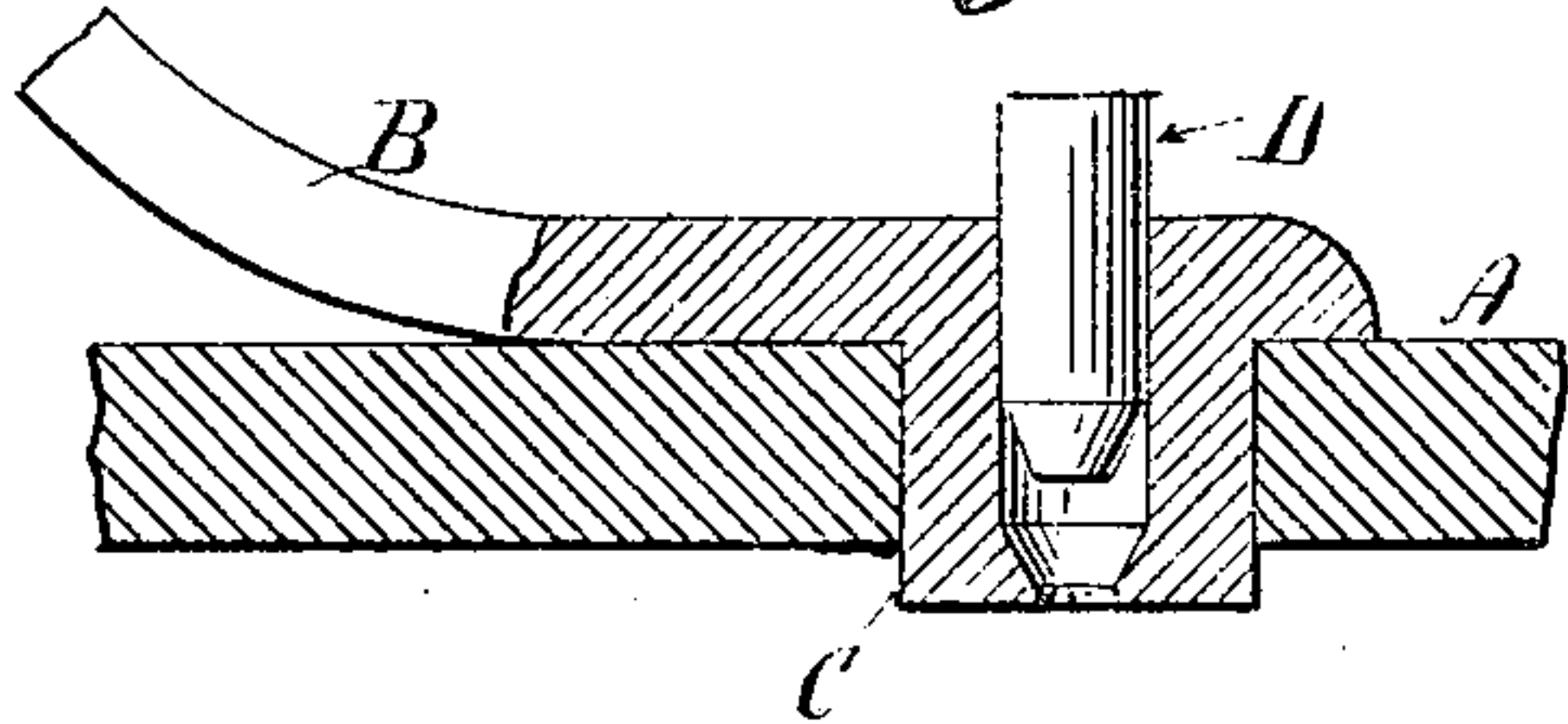


Fig. 2.

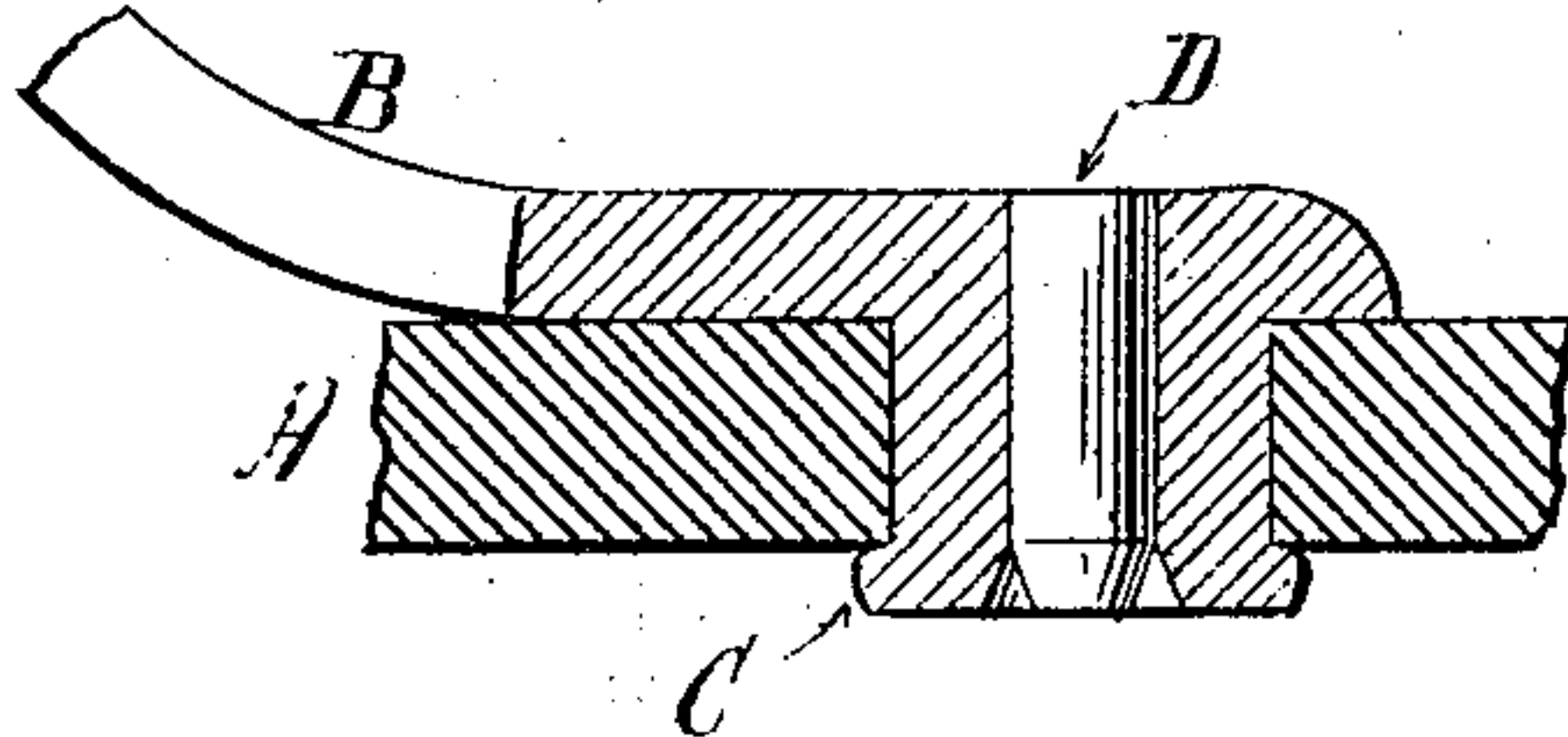


Fig. 3.

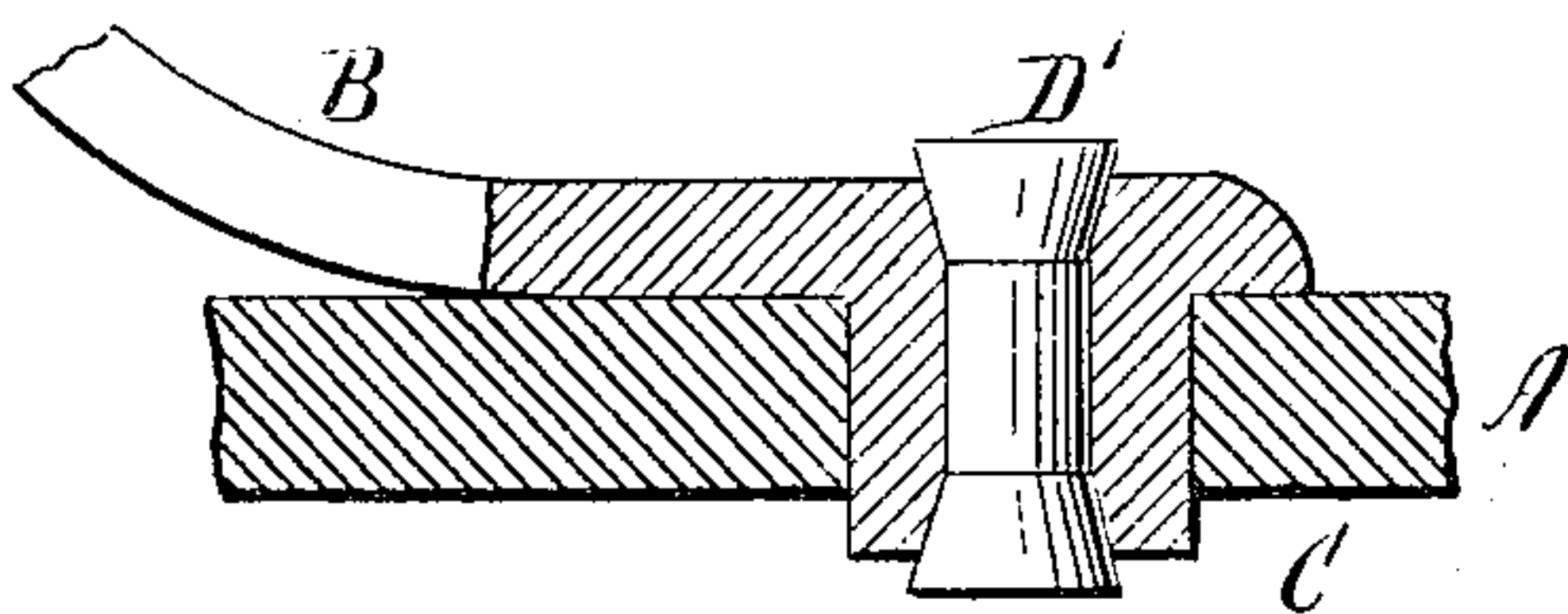


Fig. 4.

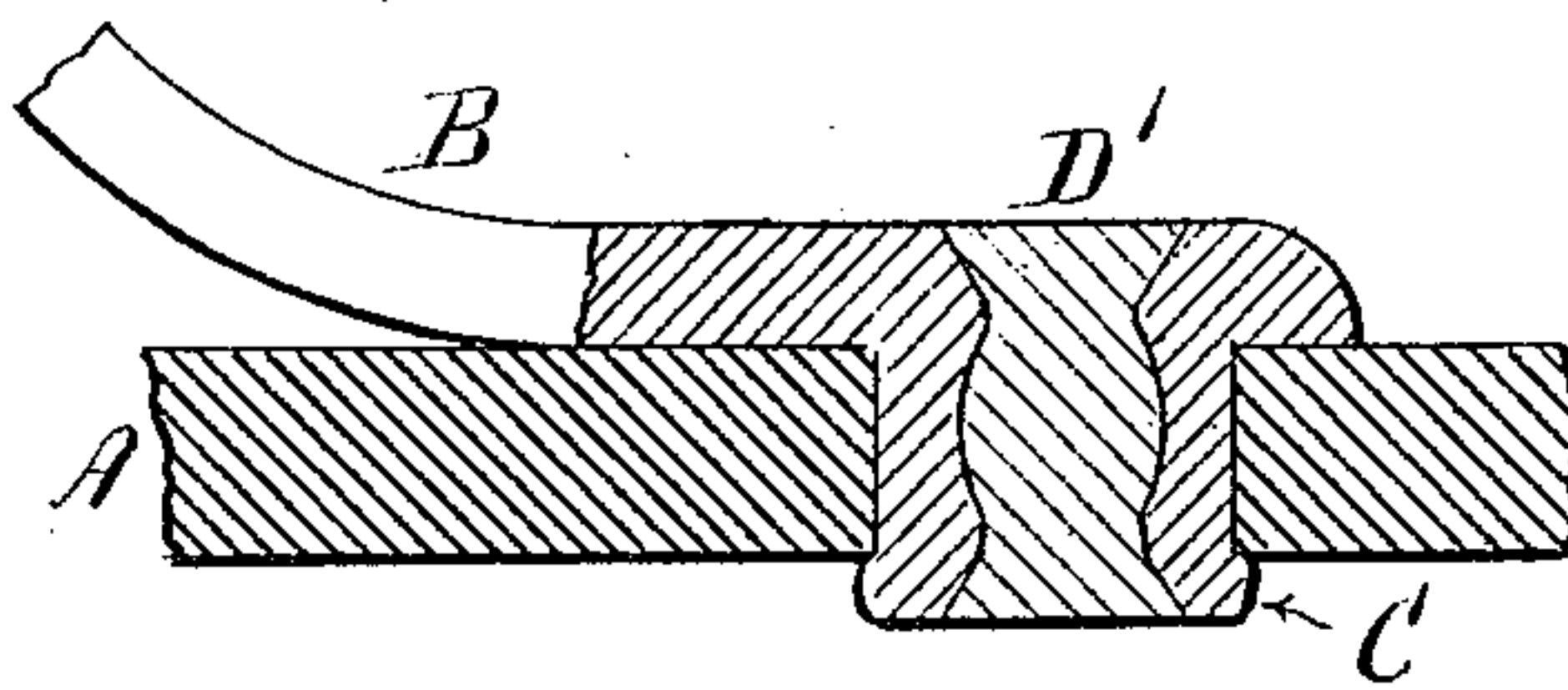


Fig. 5.

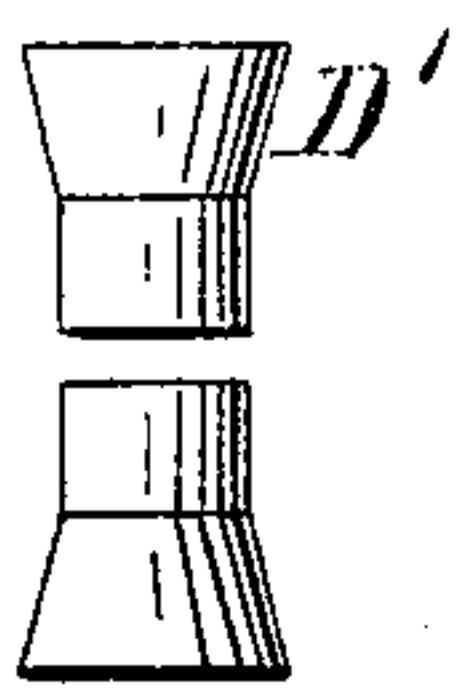


Fig. 6.

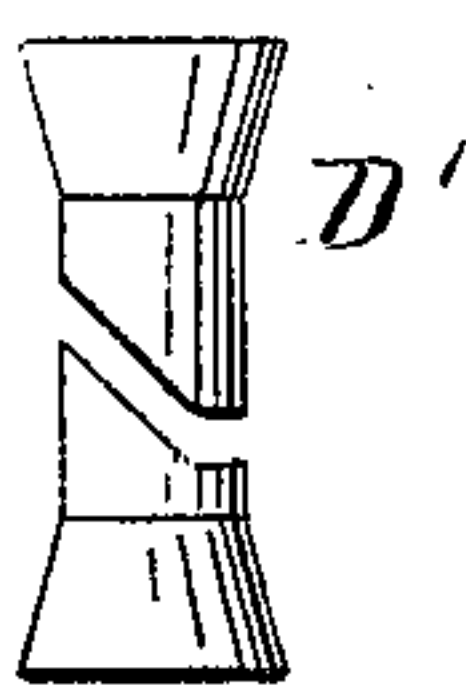
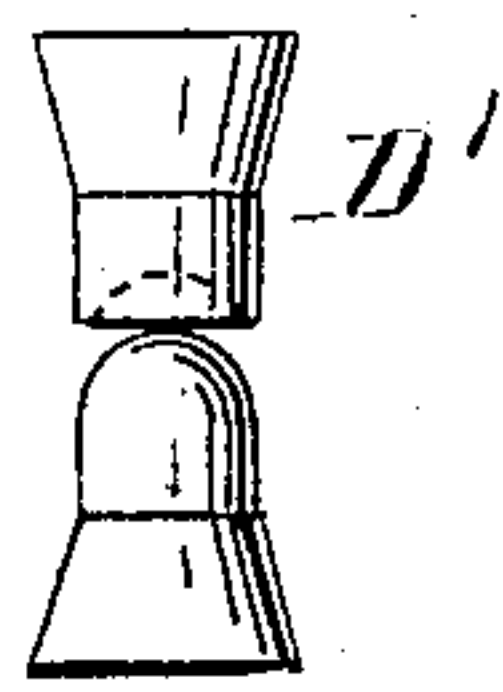


Fig. 7.



Witnesses:

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MONTRAVILLE M. WOOD, OF CHICAGO, ILLINOIS.

RAIL-BOND.

SPECIFICATION forming part of Letters Patent No. 666,403, dated January 22, 1901.

Application filed November 22, 1900. Serial No. 37,344. (No model.)

To all whom it may concern:

Be it known that I, MONTRAVILLE M. WOOD, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Rail-Bonds, of which the following is a specification, reference being made to the accompanying drawings, wherein—

Figures 1 and 2 show a form and arrangement of rail-bond terminals heretofore used. Fig. 3 shows one terminal of my rail-bond in position ready to be fastened. Fig. 4 shows the same after compression. Figs. 5, 6, and 7 show modifications of the pin or riveting-plug to be used in my invention.

Heretofore it has been common to employ a rail-bond for electrically connecting succeeding lengths of track-rail consisting of a short length of solid or laminated copper having at either end a terminal consisting of a hollow lug with expanded head and projecting laterally from the side of the bond, so as to enter a prepared hole in the web of the rail. Within this hollow lug a steel pin would be driven for the purpose of heading over the end of the lug on the opposite side of the rail. Thus, referring to Figs. 1 and 2, A represents the web of the rail; B, a rail-bond having a projecting lug C, made hollow, so as to enter an opening in the rail-web A. The central opening in lug C is shaped as appears in Fig. 1—namely, with a contracted opening at its inner end. Within this opening is driven a steel pin D, which will break through the contracted opening and spread out the material of the lug, as appears in Fig. 2, so as to head it over and prevent its being withdrawn. In some cases the pin D is partly set into the lug C in the process of manufacture and held therein, so that it is only necessary to force it in a slight additional distance to produce the heading-over effect indicated in Fig. 2. It will be observed that in this arrangement I have just described the pin D is of uniform diameter, except at its tip, which is beveled off to enable it to more readily enter and spread out the copper of the lug C surrounding the contracted end of the opening, and in consequence, while the lug C may be effectively headed over and so retained in position, yet it is liable to work loose because of the lack of a close and accurate fit between

the walls of the circular opening punched in the web of the rail and the copper lug C. This oftentimes results in an imperfect electrical connection, the electrical contact depending mainly upon those portions of the copper which lie against the side of the web of the rail or the edges of the opening.

My invention consists in a rail-bond of the type above referred to and a pin or plug to be used in connection therewith which will expand within the lug C when pressure is applied, so as to force the copper walls of the lug-opening outward against the walls of the hole in the web of the rail.

Referring to Fig. 3, which shows a form of my invention particularly designed to be used with a cast-bond, although available for other forms also, I provide a rail-bond B, having at its terminal a solid head and a hollow lug C projecting therefrom in the usual manner; but I inclose within the opening in the lug C a pin D', which is provided with expanded heads at either end; but its central or internal part, which connects the two heads, is made comparatively soft with respect to the heads themselves, although harder than the still softer material of the lug. The pin or plug is slightly longer than the lug. A bond of this description being applied to the rail, with the lug C inserted in a hole punched in the web, pressure is applied to the opposite ends of the pin or plug D' by hammering or other means, which forces the heads of the plug into the copper and at the same time causes the soft center of the plug to expand, and thereby force the still softer copper outward against the walls of the opening in the rail, as appears in Fig. 4, while the heads of the plug also tend to compress the copper inwardly. By this means I not only head over the lug C, so as to retain it in position in the web of the rail, but I also compress the copper firmly against the wall of the hole, so as to establish a complete electrical as well as mechanical connection between the terminal of the rail-bond and the rail.

Instead of using the form of plug shown in Fig. 3 I may make it in two pieces, as shown in Fig. 5, which are inserted in opposite ends of the opening in lug C and then driven or pressed together from opposite ends, so as to expand the inside portions, as in Fig. 4.

I may also arrange the two parts of the plug as shown in Fig. 6, wherein the inner ends of the two half-plugs are cut off diagonally, so as to tend to slide by each other and so expand in the center, as already described.

Another arrangement is that shown in Fig. 7, wherein one half of the plug is made with a socket in its tip and the other half with a point designed to enter the socket and give the same expanding effect.

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a rail-bond terminal designed to enter an opening in the rail, of an internally-expanding plug, substantially as described.

2. The combination with a rail-bond provided at its terminal with a hollow lug adapted to enter an opening in the rail, of an internally-expanding plug contained within the hollow lug, substantially as described.

3. The combination with a rail-bond adapted to enter an opening in the rail and an internally-expanding plug having its internal or central part of softer material than the external or exposed parts, substantially as described.

4. The combination with a rail-bond adapt-

ed to enter an opening in the rail, of an internally-expanding plug having its central or internal part harder than the material of the rail-bond, but softer than the material of the head or external portion of the plug, substantially as described.

5. A riveting-plug for a rail-bond having its central or internal part expansible, substantially as described.

6. A riveting-plug for a rail-bond having its internal or central part softer than its external or end portions, substantially as described.

7. A riveting-plug for a rail-bond having its internal or central part softer than its external or end portions and of a length greater than the length of the opening in which it is to be used, whereby its internal part may be expanded by longitudinal pressure, substantially as described.

In witness whereof I have hereunto set my hand, before two subscribing witnesses, this 19th day of November, 1900.

MONTRAVILLE M. WOOD.

Witnesses:

THEO. P. BAILEY,
LENA M. CONLEY.