

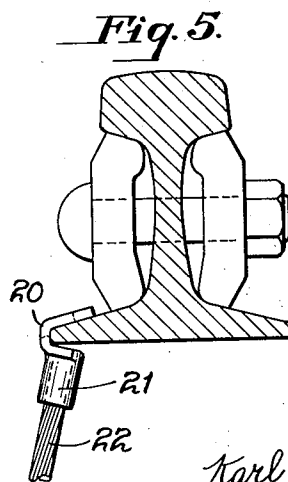
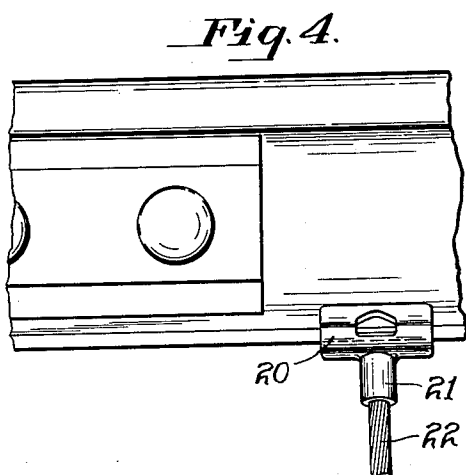
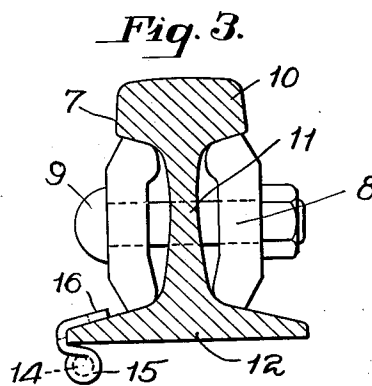
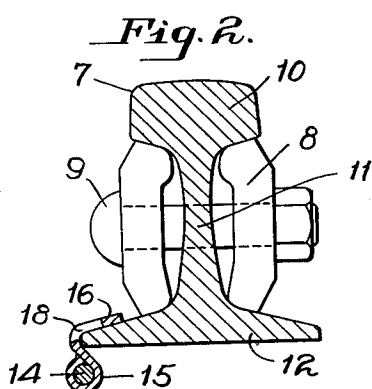
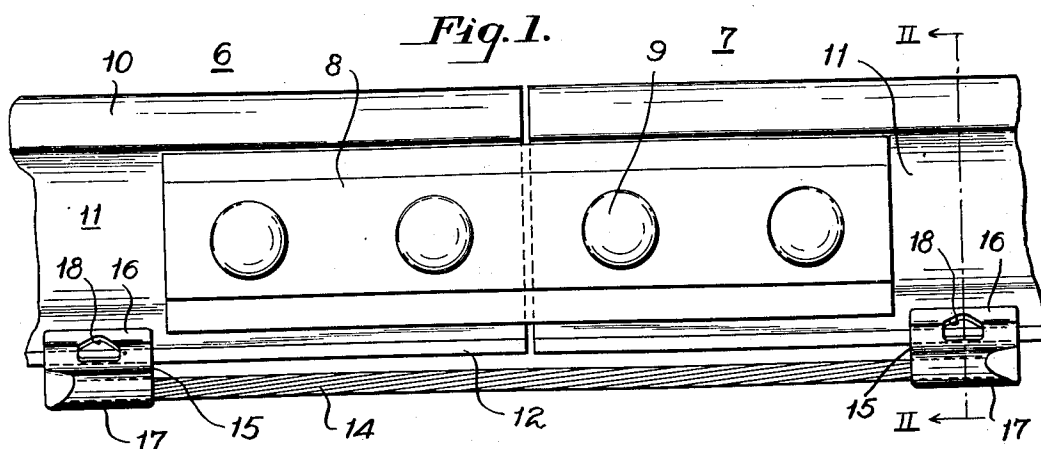
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1,945,404

RAIL BOND AND METHOD OF APPLYING THE SAME

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UNITED STATES PATENT OFFICE

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RAIL BOND AND METHOD OF APPLYING
THE SAME

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Application August 1, 1931. Serial No. 554,468

2 Claims. (Cl. 173-278)

My invention relates to rail bonds, such as are employed for effecting electrical connection between track rails, and more particularly to the manner in which said bonds are fastened to track rails.

The invention relates more particularly to rail bonds involving clip-like members of iron or steel which are welded to adjacent rails and which are connected by a copper cable or other suitable conductor. In welding the clips or terminals to rails, it is sometimes difficult to ascertain whether the welding metal has adhered intimately enough to afford proper electrical conductivity, because of the presence of scale or rust, improper welding temperature, etc.

One object of my invention is to provide a means and a method whereby a mechanical test can be made to determine whether the terminals have been properly secured in place.

Another object of my invention is to provide a terminal of such form that visual inspection thereof, after it is in place on the rail, will determine whether the welding test has been made.

Another object of my invention is to provide a conductor terminal of angular form with means whereby it can be applied to a rail in such a manner as to insure a relatively strong bond therebetween and to effect an improved electrical union between the rail and terminal.

A further object of my invention is to provide a rail bond of generally simplified and improved form.

Some of the forms my invention may take are shown in the accompanying drawing wherein, Figure 1 is a side elevation of a pair of aligned rail sections, with my improved bond electrically connecting the ends of the rails; Fig. 2 is a view taken on the line II-II of Fig. 1; Figure 3 is a view similar to Fig. 2, but showing the position of the rail bond terminal after the mechanical test has been applied thereto; and Figs. 4 and 5 are views similar to Figs. 1 and 2, showing another form of a rail bond terminal in position on a rail after being mechanically tested.

Referring to Figs. 1, 2 and 3, aligned track rail sections 6 and 7 are mechanically connected together by splice bars 8 and bolts 9, each of the rail sections being provided with the usual head 10, web portion 11 and base flange 12.

The track rails are also electrically connected together by a rail bond comprising a flexible electric cable 14, which is preferably composed of a plurality of strands of copper wires, and which is provided with a terminal or clip 15 at each end thereof. The terminal 15 is pre-shaped into

the form of an angle or hook, the upper portion 16 being substantially flat and adapted to rest upon the upper surface of the base flange 12. The other portion of the hook or clip is bent to form a socket 17 adapted to receive one end of the flexible cable 14, the end of the cable being secured within the socket 17 and soldered or welded therein, as desired. When the end of the cable is welded or fused in the socket, the portion of the cable where it issues from the socket should not be welded so as not to impair the bending quality of the cable by excessive heating at this point. However, the socket may be compressed at this point to clamp the cable securely, if desired.

The terminals are preferably made of malleable metal, such as steel, malleable iron, copper, etc. so that they may be easily shaped and the sockets formed therein; and in order that they may be readily bent when applying a mechanical test thereto to determine whether the terminals have been properly secured in place on a rail, as hereinafter described.

The terminals 15 of a rail bond are brought into contact with the base flange of adjacent rails, as shown in Figs. 1 and 2, with the upper portions 16 thereof engaging the upper surface of the flange and with the lower socket portions 17 disposed below the plane of the flange in spaced relation thereto. The portion 16 of each terminal is provided with an opening or hole 18 therethrough which is extended so as to expose the edge or side surface of the rail flange. The walls of the opening 18 are then subjected to welding temperatures thereby welding or fusing the terminal to the rail flange along the upper surface and edge of the flange, thereby securely fastening the terminals to the rail sections.

By welding or fusing the terminal to the flange at the edge of the flange where the metal is relatively thin, a more intimate and stronger union between the metal of the terminal and the metal of the flange is obtained, thereby effecting a better electrical contact between the flange and terminal than where a terminal is welded only at points along the surface of the flange. This feature is particularly advantageous where the terminals of rail bonds are welded or fused to rails that have been in service a considerable time, since such rails are usually coated with rust or scale, or are of such quality that a proper and efficient weld cannot be obtained.

However, to insure further that an efficient weld has been made between the rail and the terminals of the rail bond, I test the same by sub-

jecting the terminals to a percussive force, by striking them with a hammer or other suitable instrument to bend the same relatively inwardly and upwardly to the under surface of the base flange, thereby positioning the rail bond beneath the base flange of the rail sections, as shown in Fig. 3, where it will be out of the way and not liable to be damaged by derailed cars or broken otherwise. The terminals are driven or bent under the rail flanges while hot, so that the effectiveness of the weld is assured.

Since the terminals of the rail bond are bent about the lower edges of the rail flanges to a position beneath the flanges in mechanically testing the weld, as above described, a visual inspection of the position of the bond suffices to determine whether the weld test has been made, thereby simplifying the manner of testing the weld and eliminating the possibility of overlooking or passing by one of the bonds without testing the same.

In case it is desired to remove the terminals when the rails are taken up, a cutting tool, such as a chisel, may be forcibly moved between the upper portion 16 of each terminal and the rail flange, thereby readily severing or loosening the weld without excessive damage to the terminal and which also tends to bend the terminal to its original hook form, whereupon the rail bond may be re-used.

Referring now to Figs. 4 and 5, I show a modified form of a terminal which is of T-shape having a head portion 20 of hook or V-shaped form, and a socket stem portion 21 into which one end of an electric cable or conductor 22 is suitably

secured. A rail bond provided with the T-shaped terminals is suitable for electrically connecting parallel or adjacent rails, the head portion 20 of the terminals being secured to the flange of a rail and mechanically tested, in substantially the same manner as the terminals 15 are applied and tested.

While I have shown and described the terminals of a rail bond as being applied to the flange of rail sections and bent inwardly thereof to test the same, it is to be understood that they may be welded to any other suitable portion of a rail, such as the web thereof at a point beneath the head of the rail, and then be bent toward the web to test the effectiveness of the weld, the position of the bond visually indicating whether the test has been made, as is fully obvious.

I claim as my invention:—

1. The method of applying bond terminals of the hook type to rails which comprises welding the upper leg portion of a hook to the upper side of a rail base flange with the lower leg of the hook extending to a point below the said base flange and abutting the edge thereof, and bending the said lower leg inwardly.

2. The method of applying bond terminals of the hook type to rails which comprises welding the upper leg portion of a hook to the upper side of a rail base flange with the lower leg of the hook extending to a point below the said base flange and abutting the edge thereof, and bending the said lower leg inwardly, while the metal of the hook is in a heated condition.

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40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150