W. R. GORRELL.

COMBINED INSULATING AND FASTENING MEANS FOR RAILS.

APPLICATION FILED APR. 20, 1914.

1,104,660. Patented July 21, 1914.

Fig. 1.

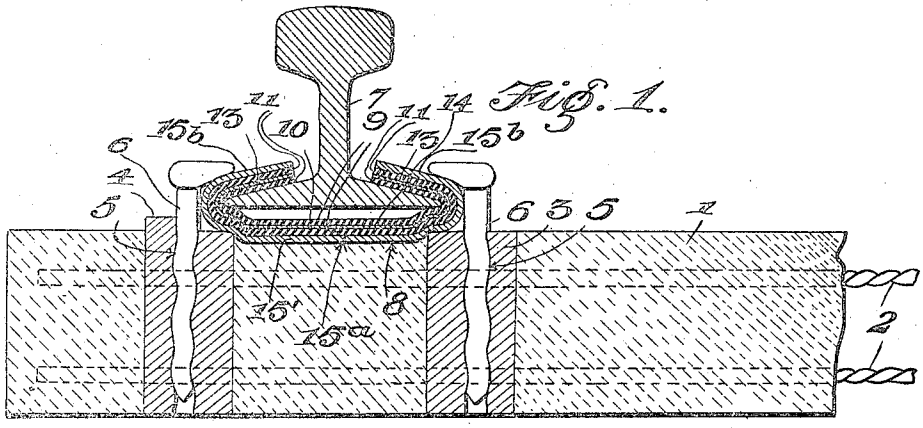


Fig. 2.

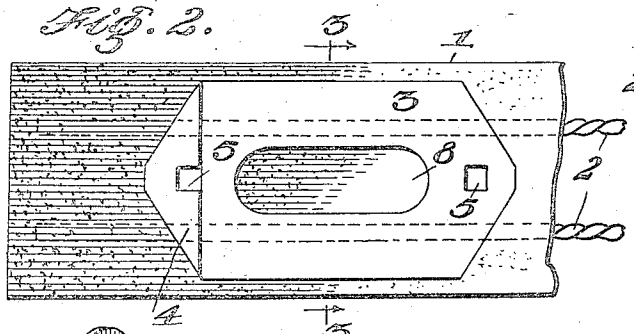


Fig. 3.

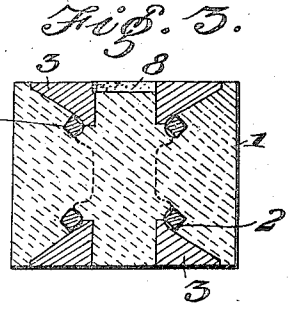


Fig. 4.

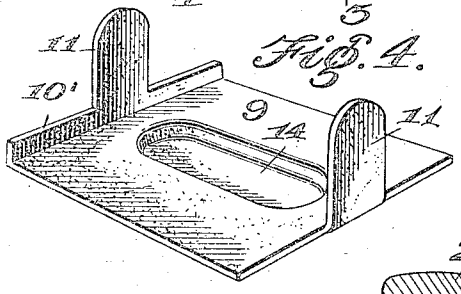


Fig. 5.

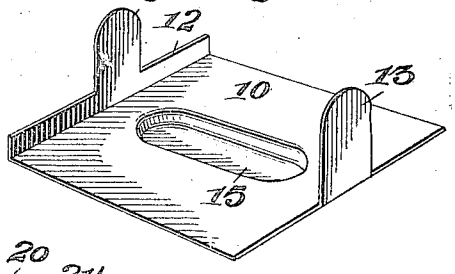
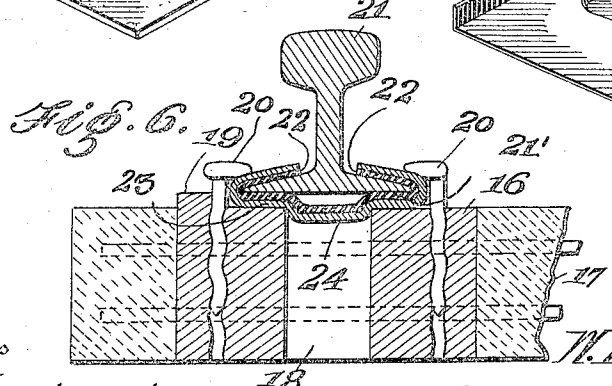


Fig. 6.



Witnesses

H. Woodard

C. Cleaver

Inventor

W. R. Gorrell

By H. B. Williamson & Co

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM R. GORRELL, OF ALHAMBRA, CALIFORNIA, ASSIGNOR TO GORRELL STEEL SPIKE LOCK RAILROAD TIE CORPORATION, OF HAVRE DE GRACE, MARYLAND.

COMBINED INSULATING AND FASTENING MEANS FOR RAILS.

1,104,660. Specification of Letters Patent. Patented July 21, 1914.

Application filed April 20, 1914. Serial No. 833,267.

To all whom it may concern:

Be it known that I, WILLIAM R. GORRELL, a citizen of the United States, residing at Alhambra, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Combined Insulating and Fastening Means for Rails; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to new and useful improvements in fastening devices for rails and more particularly to fastening devices for rails which are electrically energized and used in signaling systems and the primary object of the invention resides in providing an improved insulated fastener which is so constructed as to permit the parts thereof to be positively secured one to the other when positioned.

A further object of the invention resides in providing such a fastening means as will enable a short circuit to be readily detected by the application of an ammeter to use in connection with the rail and a portion of the fastening means.

Still another object of the invention resides in providing a fastening means which is simple and durable in construction, inexpensive to manufacture and one which will be very efficient and useful in operation.

With these and other objects in view my invention consists in the novel features of construction, combination and arrangement of parts as will be hereinafter referred to and more particularly pointed out in the specification and claims.

In the accompanying drawing forming a part of this application:—Figure 1 is a longitudinal section through a device constructed in accordance with my invention and applied to use. Fig. 2 is a plan view of a fragment of a rail tie with the base blocks mounted therein and the fastening means removed. Fig. 3 is a transverse section therethrough as seen on line 3—3, Fig. 2. Fig. 4 is a perspective view of one of the insulating plates removed. Fig. 5 is a similar view of the detector plate removed; and, Fig. 6 is a section through a slightly modified form of the invention applied to use.

In describing the invention I shall refer to the drawing in which similar reference characters designate corresponding parts throughout the several views and in which 1 indicates a rail tie formed preferably of plastic material such as cement and the like said tie being reinforced by means of the reinforcing metal rods 2 extending longitudinally therethrough. Embedded in the tie 1 adjacent each end thereof is a base or supporting block 3, the same having their upper and lower faces terminating substantially flush with the upper and lower faces of the tie proper and each block is bored or hollowed out in vertical and horizontal planes as clearly indicated from Figs. 1 and 3 of the drawing. These hollowed out or bored out portions of the blocks 3 are filled with cement or other plastic material of which the tie 1 is formed, inasmuch as said blocks are molded therein and said blocks 3 are also designed to receive the reinforcing metal rods 2 in secure engagement therewith, as clearly shown in Fig. 3 of the drawing. These metal base or supporting blocks 3 are adapted to form supporting members for the rails, it being a known fact that cement and other plastic material will not properly support rails in position under steady use. The outer end portion of each block 3 at the top face thereof is provided with a projection 4 which forms a shoulder thereon and these shoulders on the blocks prevent the rails from spreading and also serve as gages to insure the proper spacing of said rails on the ties. These blocks 3 are provided with spike receiving openings 5, the one of which in each set terminates at its upper end at the junction of the shoulder or projection 4 with the remaining portion of the block and these spike receiving openings are irregular to receive irregularly shaped spikes 6, whereby when the latter are driven in position the same will be securely locked.

In the drawing I have shown but a single block 3 with a rail 7 applied with respect thereto and in describing the fastening means for the rail and the insulating means therefor, reference will be had to but a single block and the single rail but it will be understood that the structure is the same in connection with the other rail and other block and fastening means at the opposite end of the tie. As described above, the block 3 is cored out centrally in intersecting vertical and horizontal planes for lightness and

also to enable the cement or other plastic material of which the tie 1 is formed to find secure engaging faces on said block and the cement at the upper portion of the cored out portion of the block 3 is recessed to provide a seat or socket 8 in the top of the block 3.

In order to insulate the track rail 7 from the metallic projections or other members on the tie 1, a pair of rectangular sheets of insulating fiber or the like are provided and interposed between the fiber plates 9 is a thin metallic plate 10 corresponding in design to the plate 9. This latter plate may be termed a detector plate, the purpose of which will be hereinafter and more particularly set forth. The plate 9 has one end thereof bent upwardly to form a flange or the like 10′ and formed at the extreme ends of each end edge of said plate 9 is a tongue 11. The plate 10 is likewise provided with a flange 12 corresponding to the flange 10′ and also has the tongues 13 at the end edges thereof alining and registering with the tongues 11 just described. The plates 9 are depressed about centrally as indicated at 14 to form depending projections or the like and, of course, the intermediate plate 10 is likewise depressed to conform thereto such depression being indicated as 15. The depressions 14 and 15 of the plates 9 and 10 respectively afford interlocking engagement therebetween and a protecting plate 15′ is also provided to receive thereon the insulating plates 9 with the plate 10 therebetween. This plate 15′ is designed identically the same as the plates 9 being provided at its ends with tongues indicated as 15^b and with a central depression 15^a which receives therein the depressed portions of the plates 9 and 10. The plates 9, 10 and 15′ when applied one to the other in proper relation to one another as set forth, form the combined fastening and insulating means for the rail section and when properly applied to the rail the depressed portions thereof, interlocking one with the other, are received in the seat or depression 8 in the top of the tie, thus retaining this fastening and insulating means in proper position on the latter. The rail 7 is applied over this fastening means, that is the interlocking plates 9, 10 and 15′ after the latter have been properly positioned with respect to the tie so that the depressions thereof are seated or received in the seat 8 and when so disposed, the alining tongues 11, 13, and 15^b of said plates 9, 10 and 15′ respectively are bent upwardly and then inwardly for engagement with the upper faces of the base flanges of said rail. The spikes 6 are then driven home in their respective channels 5 and the heads of said spikes, engaging the bent tongues will secure the latter in proper engagement with the upper faces of the base flanges, thus retaining said rail in proper position on the tie. When so positioned, it will be seen that the rail will be secured at the side edges of the base flanges while the under face of the latter for the greater portion of the width thereof will be entirely spaced from the fastening or insulating means as clearly disclosed in Fig. 1 of the drawing. It will further be seen that absolutely no metal will contact with the rail proper so that the latter will be completely insulated from projections or other members carried on the tie and a current passing through the rail is not adapted to be readily short circuited.

While I have shown a positive means for fastening and insulating the rail from the various metal portions carried on the tie, it will be understood that in practice after constant use it is quite possible that portions of the insulating plate may become unduly worn or chipped so that parts of the metal plates may contact with the rail or in other ways a short circuit may occur. When such a short circuit occurs, the main ammeter will indicate the same and the one in charge may determine approximately at what portion in the line of rails the short circuit occurs. Having thus located approximately at what point in the rail the short circuit occurs, a tester is sent to that particular portion of the rail to test the various rail fastening means through the medium of a portable or pocket ammeter. In this latter test, one terminal of the ammeter is applied to the rail and the other to the detector plate or the protection plate and it can be readily determined by tests of several of the rail fastening means along the line at what particular point the short circuit occurs. Having thus determined the exact point, the particular fastening means at this point is removed and new insulating plates and, if necessary, new detector and protection plates, are applied and the difficulty is thus remedied. From the above description it will be seen that it is only necessary under such conditions, to remove the particular fastening and insulating means at which particular point the short circuit occurs and as this short circuit may be readily and quickly detected, considerable time, labor and expense is thus avoided.

In Fig. 6 I have shown a slightly modified form of the invention wherein a block or the like 16 which is formed of metal is embedded in a cement or other plastic tie 17, the latter being reinforced by longitudinal rods, as in the first mentioned form. This block 16 is cored out or hollowed centrally as shown at 18 which hollowed or cored out portion affords lightness and the upper portion of the block 16 at the one end thereof is also provided with a projection 19 similar to the projection 4 in the first mentioned form. Spike receiving openings for spikes 20 are also provided and a rail section 21 is

adapted to be applied to the block 16. In this form, however, a single sheet of insulating material indicated at 21′ is provided the same being substantially rectangular in design and having the tongue portions 22 formed thereon. A protecting plate 23 is provided therefor the same being identically designed as the plate 21′ and the latter is adapted to be received directly on the upper face of the block 16. The plate 23 as well as the plate 21′ is depressed centrally as indicated at 24 to be received in the upper portion of the hollowed out portion 18 of said block 16. This provides an interlocking means between the plates 21′ and 23 and the block 16 and the alining tongues of the plates 21′ and 23 are adapted to be bent over one another and over the upper faces of the base flanges of the rail section and secured in position by means of the head on the spikes 20. The rail section is thus securely held in position on the tie and at the same time insulated from all metal portions of the latter, it being clearly shown in Fig. 6 of the drawing that the greater portion of the under face of the base flanges of said rail section is spaced from any portions whatsoever in view of the depressions in the plates which are received in the hollowed portion of the block 16. While there is no detector plate or the like provided in this particular form of the invention it will be understood that in case of a short circuit, the same may be readily determined by the same means as mentioned above in connection with the first mentioned form.

From the foregoing description of the construction of my improved rail securing and insulating mechanism the operation thereof and the manner of applying the same to use will be readily understood and it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the objects of the invention.

While I have particularly described the elements best adapted to perform the functions set forth, it is obvious that various changes in form, proportion and in the minor details of construction may be resorted to within the scope of the appended claims, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described my invention, what I claim is:

1. In a rail fastening and insulating means, the combination with a track rail and tie therefor, of a metallic chair mountd on said tie and an insulating plate applied thereto, means forming interlocking engagement between said chair and insulating plate and additional means in connection with the tie and last mentioned means to aid in retaining the chair in place on said tie.

2. In a rail fastening and insulating means, the combination with a track rail and tie therefor; of a chair comprising an insulating plate receiving the base flanges of the rail thereon, a protecting plate designed coincident to the outline of said insulating plate and receiving the latter thereon, said insulating and protecting plates being provided with interlocking depressions and means in connection with the tie and the depressions of said plates to aid in the retention of the chair on said tie.

3. In a rail fastening and insulating means, the combination with a track rail and a tie therefor, the latter being provided with a depression in its upper face over which said track rail is adapted to be disposed; of a chair comprising an insulating plate for the reception of the base flanges of said rail thereon, a metallic protecting plate designed coincident to the outline of said insulating plate and receiving the latter thereon, said insulating and protecting plates being provided with interlocking depressions received in the depression in the upper face of the tie, whereby to retain said chair in position thereon.

4. In a rail fastening and insulating means, a chair comprising a pair of insulating plates, metallic spacing means therefor, a metallic protecting plate for the same, and means formed in connection with said plates for the interlocking of the same one to the other.

5. In a rail fastening and insulating means, a chair comprising a pair of insulating plates, a metallic spacing plate interposed therebetween, and a protecting plate receiving the aforesaid plates thereon, said insulating and metallic plates being provided with interlocking depressions to retain the same one to the other and also aid in the retention of the chair on a tie.

6. In a rail fastening and insulating means, a chair comprising a substantially rectangular insulating member provided with engaging tongues at the ends thereof, a metallic protecting plate therefor designed coincident thereto and receiving said insulating member thereon, and interlocking projections formed on said plate and member to secure the same one to the other and aid in the retention of the chair on a tie.

7. In a rail fastening and insulating means, a chair comprising a pair of substantially rectangular insulating plates provided with engaging tongues at the ends thereof, a metallic spacing plate interposed therebetween and designed coincident to the outline thereof, a metallic protecting plate also designed coincident to the outline of the aforesaid plate and receiving the latter thereon, and means formed in connection with said plates for interlocking the same one to the other.

8. In a rail fastening and insulating

means, a chair comprising a substantially rectangular insulating plate provided with engaging tongues at the ends thereof, a metallic spacing plate interposed therebetween and designed coincident to the outline thereof, a metallic protecting plate designed coincident to the outline of the aforesaid plates and receiving the latter thereon, the aforesaid plates being provided with interlocking depressions to secure the same one to the other and also aid in the retention of the chair in place on a tie.

9. The combination with a metal reinforced concrete tie having open metallic blocks forming track rail seats and provided with shoulders, track rails and headed fastenings to fasten the rails to said block, a rectangular insulating seat to underlie the bases of said rails over said blocks and formed at their edges with tongues, and rectangular protecting plates formed on their side edges with tongues to cover the insulating tongues and to underlie the heads of said fastenings, the plates and insulating seats being co-extensive in size and each having on one edge upstanding flanges disposed between the rails and the shoulders on said blocks, the bottoms of said plates having stamped in their central portions downwardly projecting bosses to enter the hollow portions of the blocks to prevent the plates from slipping.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM R. GORRELL.

Witnesses:
A. G. HUTCHINSON,
W. H. GORRELL.