C. A. CHRISTOFFERSON.

INSULATING TIE BAR.

APPLICATION FILED FEB. 1, 1912.

1,023,923.

Patented Apr. 23, 1912.

FIG. 2.

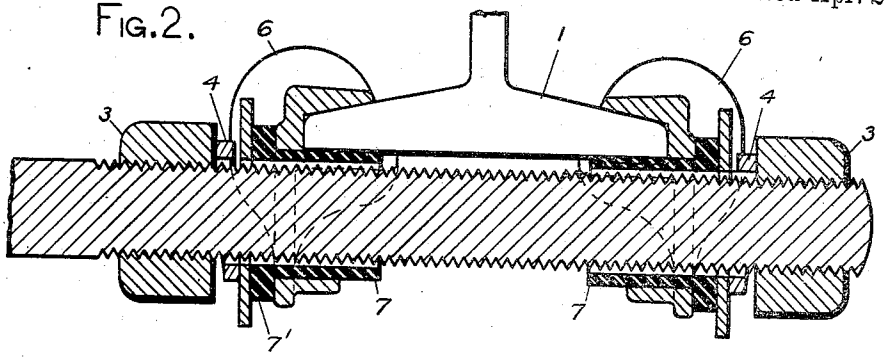


FIG. 3.

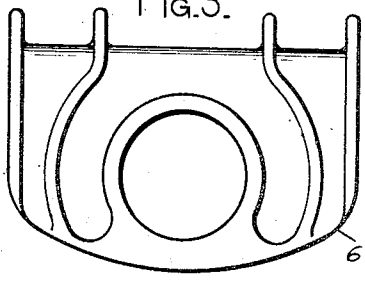


FIG. 4.

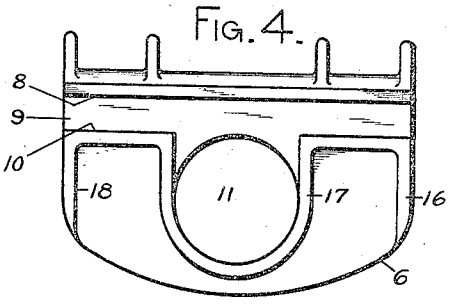


FIG. 1.

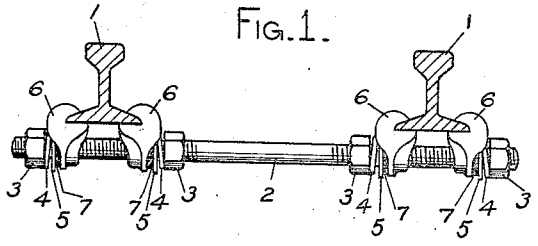


FIG. 6.

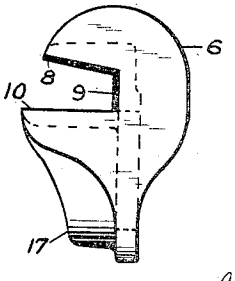
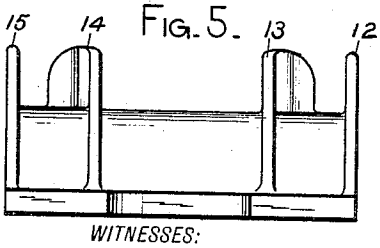


FIG. 5.



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INSULATING TIE-BAR.

1,023,923. Specification of Letters Patent. Patented Apr. 23, 1912.

Application filed February 1, 1912. Serial No. 674,695.

To all whom it may concern:

Be it known that I, CHRISTIAN A. CHRISTOFFERSON, a citizen of the United States, and resident of the city of St. Paul, in the county of Ramsey and State of Minnesota, have invented a new and useful Insulating Tie-Bar, of which the following is a specification.

This invention relates to a device, commonly known as a tie-bar, for connecting the two rails of a railroad track, in those cases where the rails form part of the well known track circuit, to prevent the rails moving relatively one to the other, except when desired for purposes of adjustment, and to prevent overturning of the rails.

The primary object of this invention is to construct a tie-bar which, although insulated and capable of performing the same functions as the ordinary tie-bar and as efficiently, has the insulation so combined with it that neither the operation of adjusting the distance between rails nor the tension of the parts after being adjusted, will have any substantial tendency to injure the insulating material, or to subject it to any other than a compressive strain.

Insulating tie-bars heretofore constructed have been formed in such a manner that the act of adjusting the distance between the two rails of the track to which they were applied, had a great tendency to tear the insulating material. Long experience has demonstrated that when the surface of the insulating material, such as is used with track devices has been destroyed, that it soon absorbs so much moisture that it becomes worthless both mechanically and electrically.

In applicant's invention, as will hereinafter appear more at length, a successful effort has been made to construct an insulating tie-bar in such a manner that marring of the surface of insulation by adjustments will be entirely obviated, thus avoiding the objectionable results caused by insulation which has absorbed moisture.

The nature of the insulating material used in devices of the character described is such that it can withstand but slight tensile strain. Devices of the character described, heretofore constructed, have been made in such a manner that the proper operation of the tie-bar was dependent in some measure upon the tensile strength of the insulation which was very objectionable.

Applicant has attempted in the form of tie-bar herein illustrated to remove all tensile strains from the insulation used therein, thus obviating said objection.

As the description of the preferred embodiment of applicant's invention progresses, it will be seen that in applicant's tie-bar the only force to which the insulation is subjected is that of compression, which it is fully able to withstand.

In the drawing accompanying this specification wherein is shown a preferred form of the invention,—Figure 1 is a view of the device looking lengthwise of the track and with the two rails thereof in section. Fig. 2 is a detail view showing the parts attached to one rail, together with the tie-bar proper in sectional elevation upon the longitudinal center line of the tie-bar proper. Fig. 3 is an elevation of a rail clip forming part of the invention, the same being viewed from the side remote from the rail to which it is attached. Fig. 4 is a view of the opposite side of the rail clip shown by Fig. 3. Fig. 5 is a plan view of the rail clip and Fig. 6 is an end view of the rail clip.

Similar characters of reference designate like parts throughout the several views.

Referring to Fig. 1.—Numeral 1, designates the rails of a railroad track; 2, designates a stout iron bar placed transversely of the track beneath the rails 1, it being threaded for a considerable distance on either end for the purpose of accommodating the nuts 3. Each nut has a spring washer 4, best shown in Fig. 2, bearing thereagainst and each spring washer also bears against a metal washer 5. The washer 5 bears against the shoulder of an insulating collar 7, the other side of which bears against a clip 6. The clips receive the flanges of the rail and are held tightly thereagainst by means of nuts 3.

The insulating collar 7 extends along the rod 2 for a distance sufficient to prevent the clip 6 from touching the rod 2, and also sufficient to prevent the rod 2 from coming in contact with the base of the rail 1. Any pressure exerted by the clips 6 upon the insulation 7 is resisted by the rod 2 ultimately, so that the collar 7 will have to withstand merely a compressive strain. Any pressure exerted by the rod 2 against the upper side of the collar merely compresses the upper side of the collar against the base of the

rail. As the nut 3 holds the clip 6 to the flange of the rail and as the nut 3 must be insulated from the clip 6, a shoulder 7^1 is formed on the collar 7, which shoulder bears at one side against the clip 6 and is pressed by the nut 3 on the other side, there being a washer 5 between the collar and nut to prevent marring the surface of the insulation on turning the nut 3. It will be noticed that although the pressure exerted by the nut 3 upon the clip 6 is transmitted through the insultation 7 by means of the shoulder 7^1 nevertheless the insulation has to withstand merely a compressive strain.

The clips 6 have an upper wall 8, an inner wall 9 and a lower wall 10 formed therein, which three walls form a cavity in the clip which is adapted to receive and fit snugly to the flange of a rail 1, best shown in Fig. 2. As the only parts of the device which are required to fit the rails are the clips 6, all parts may be of a standard size except the clips 6, and by varying the shape of the cavity adapted to fit upon the flange of the rail, the clips may be adapted to fit any size rail. In practice it has been found that but two or three different kinds of clips are necessary in order to adapt the device to the majority of railroads of the country.

The clips 6 have the hole 11 which is of such a size that it just allows the clip to fit over the insulating member 7, and the clip is formed with ribs 12, 13, 14 and 15 on its outer face by which the requisite strength in the clip is obtained with the minimum of metal. The clip is also further strengthened on the inner face by the ribs 16, 17 and 18, which, together with the outer ribs, allows the clip to be made of the minimum of metal with the maximum of strength in a direction, subjected to the greatest strain.

By employing the above described construction, including the insulating collar 7, the two rails of a railroad track may be rigidly connected together, to prevent spreading and at the same time they will not be connected electrically so as to destroy the proper operation of the ordinary track circuit of which the rails form a part.

Although applicant's tie-bar is primarily intended to prevent spreading of the rails, as that is the most dangerous thing that can happen, it is also to be observed that applicant's tie-bar also prevents the coming together of the rails, in fact, the use of applicant's tie-bar holds the rails absolutely rigidly at the proper distance apart.

Applicant's device is of such a nature that adjustment of the distance between rails is easily made and after such adjustment has been made, applicant's tie-bar is then just as effective as before to rigidly hold the rails a fixed distance one from the other. This adjustment is easily performed by the mere manipulation of four nuts or in most cases by the mere manipulation of two nuts, that is, the two underneath one rail of the track. After the adjustment is made the clips 6, one on each side of the rail, are held tightly against the rail by reason of the nuts 3 on the rod 2, and the adjustment can be made without in any way marring insulation 7.

As the clips 6 are fitted snugly to the flange of the rail 1, and as there are two clips fastened to each rail and as in practice the tie bar 2 is made very substantial, applicant's tie-bar not only prevents the rails from spreading or coming closer together but it also effectually prevents the rails from overturning. The last named function is exceedingly important where applicant's tie-bar is used upon a very sharply curved track for under such conditions the rails are slightly inclined and an enormous side thrust is exerted upon the outer rails of the curve when a car or train is passing thereover. Under ordinary conditions braces or similar devices are used upon each tie to prevent overturning of the rail, but when applicant's tie-bar is used to keep the rails a fixed distance one from the other, there is no necessity for rail braces, as applicant's tie-bar does all that a rail brace can do to prevent overturning of the rail and does it much more effectually.

When any tendency to overturn a rail is present, the insulation 7 is compressed either between the bar and the base of the rail, or between the bar and a clip, but never is subjected to a tensile strain, giving advantages heretofore pointed out.

During the thawing-out season, in cold climates where the ground is frozen solidly for many months of the year, great difficulty is experienced by trackmen to keep the track to gage and at the proper level and it is necessary in some instances on account of the settling and heaving of the ground to place small blocks of wood, called shims, under the rail at each tie to raise the rail to the proper level. These shims at times reach six inches in thickness and where a track for some distance is raised on such shims, great liability to overturning of the rail is present. In such situations, applicant's tie-bar is of decided advantage and it has proved in practical operation a most efficient means for maintaining a shimmed track forming part of a track circuit to proper gage and for preventing the same from overturning.

Having thus explained the principle of my invention and described one specific embodiment thereof, what I claim as new and desire to secure by Letters Patent, is—

In a track device, a bar, means for fastening one end of said bar to one rail of a track, the other end being screw threaded and extending under the other rail, an in-

sulating collar formed with a shoulder surrounding said rod, a member encircling said insulating collar and formed with strengthening ribs and a channel adapted to receive the inner base flange of the rail and bearing against one face of said shoulder on said insulating collar, a metallic washer bearing against the other face of said shoulder on said insulating collar, a screw threaded nut on the rod exerting pressure against said metallic washer, another insulating collar surrounding the rod and having a shoulder, another member encircling the insulating collar and formed with strengthening ribs and a channel adapted to receive the outer base flange of the rail and bearing against one face of said shoulder on said other insulating collar, another metallic washer bearing against the other face of said shoulder on said other insulating collar, another screw threaded nut on the rod exerting pressure against said other metallic washer, all so arranged and constructed that a movement of the nuts toward each other causes said flange engaging members to fit snugly against and grip the base flange of the rail tightly, whereby the two rails of the track are prevented from relative movement and from over-turning.

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