Sept. 4, 1928. 1,683,432

E. C. ZIMMERMAN

INSULATED RAIL JOINT

Filed Nov. 23, 1925

Fig. 1.

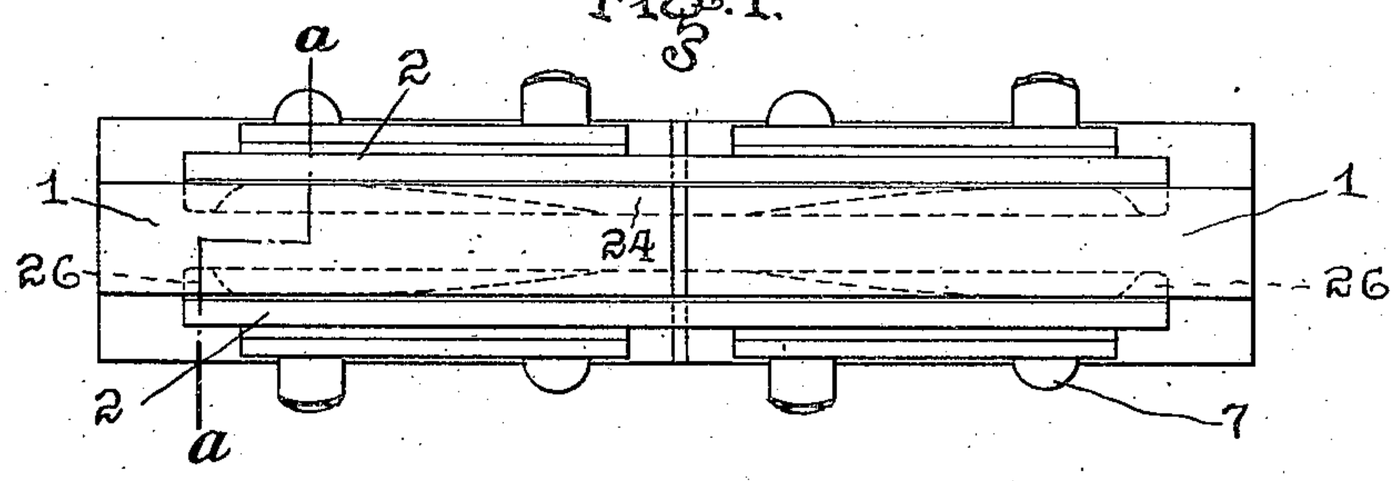


Fig. 2.

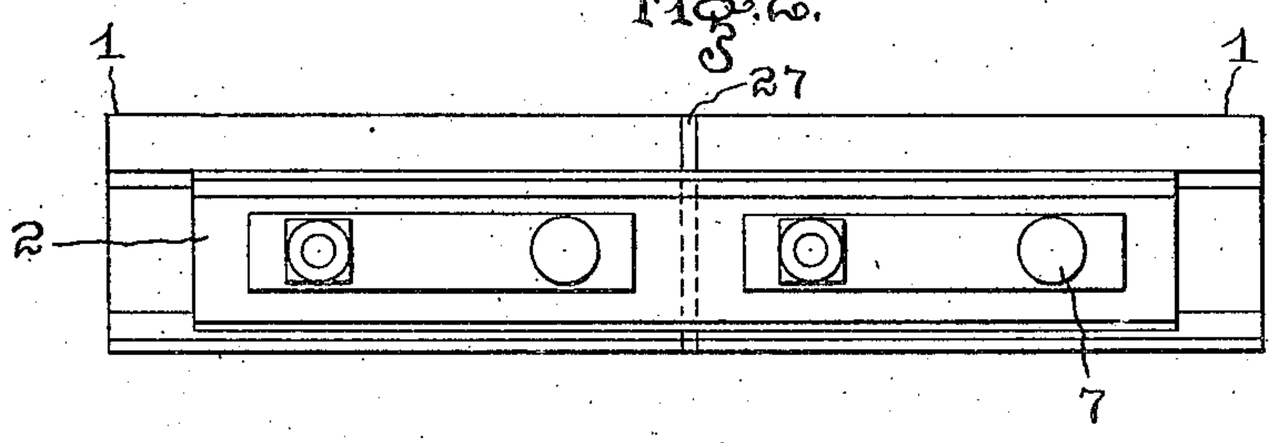


Fig. 3.

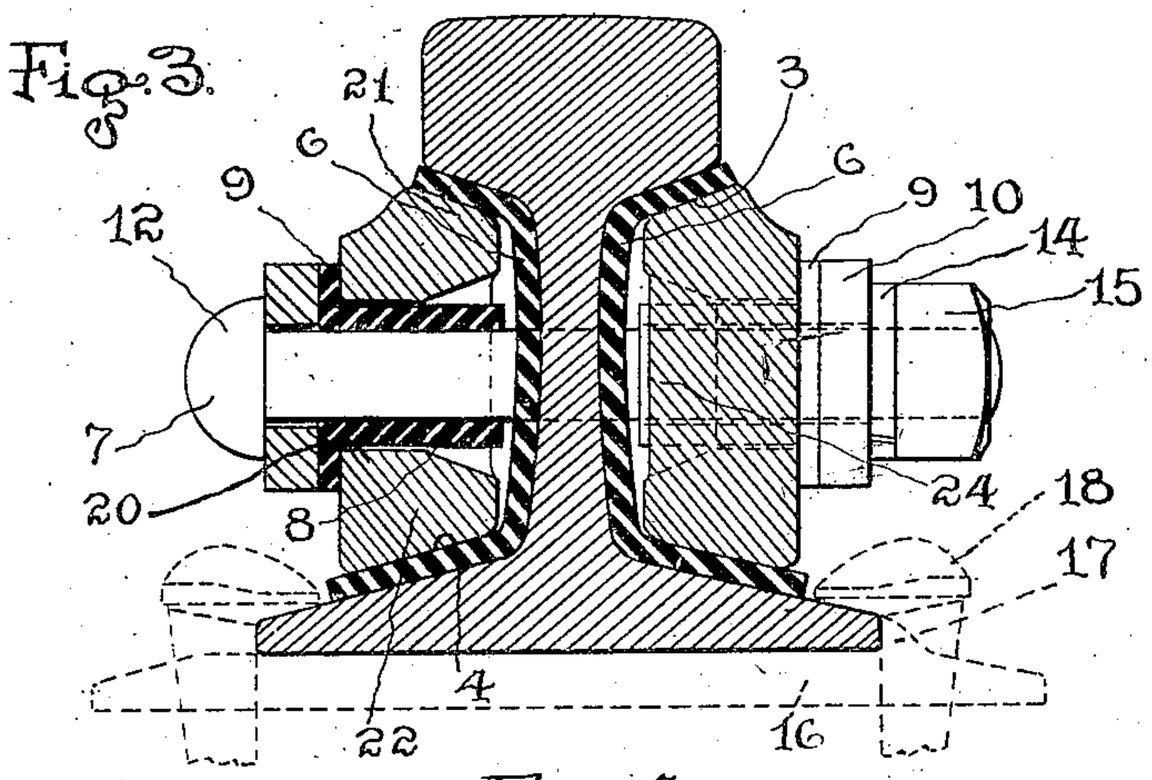
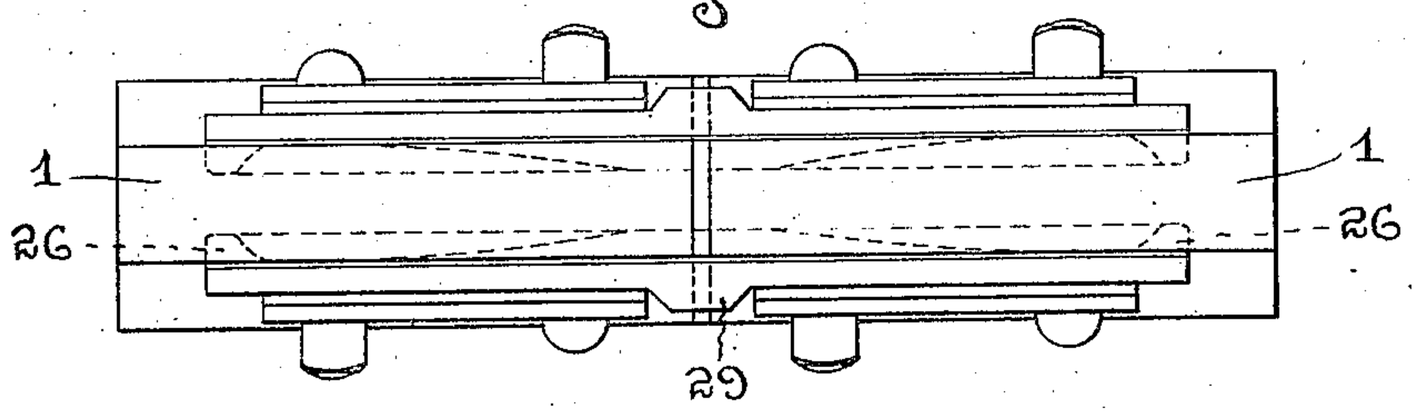


Fig. 4.



INVENTOR

Emil Carl Zimmerman

BY

ATTORNEY

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UNITED STATES PATENT OFFICE.

EMIL CARL ZIMMERMAN, OF NEW YORK, N. Y., ASSIGNOR TO Q & C COMPANY, OF NEW YORK, N. Y., A CORPORATION OF MAINE.

INSULATED RAIL JOINT.

Application filed November 23, 1925. Serial No. 70,767.

This invention relates to rail joints of the insulated type and has special reference to improvements in the design thereof adapted to produce an improved joint possessing many advantages over structures as heretofore used while requiring a minimum amount of insulating material, which, in its arrangement is utilized to the best advantage for its intended purpose.

In accomplishing the purpose of the present invention, there is employed an improved form or construction of splice bar of reinforced fish plate type specially designed to have added strength and rigidity at its center portion and of form allowing of its economical production by a forging operation. The additional strength contributed by the reinforcing features allows of the successful employment of the fish plate type of splice bars incident to which there is a substantial and important reduction in the area of insulating fibre required and a further advantage is obtained in that the use of standard tie plates upon the joint ties is permitted and the requirement of base insulation eliminated with resulting economy. My improved insulating joint structure furthermore readily allows of building up with different thicknesses of fibre to compensate or take care of varied spacing of fishing surfaces of different rail sections, thereby allowing of economy in die investments. The improved joint is, moreover, advantageous for the use in conjunction with frog and switch installations where close clearance conditions are present.

Other important features and advantages of the present invention will be more fully understood by reference to the accompanying drawings wherein like reference characters are applied to the corresponding parts in the several views.

In the drawings:

Fig. 1 is a plan view of an insulating joint embodying the features of my invention.

Fig. 2 is a view thereof in side elevation, and

Fig. 3 is a vertical sectional view taken on line *a*—*a* of Fig. 1 as viewed from the left.

Fig. 4 is a plan view of a suitable modification.

In the approved embodiment of the features of the present invention as shown in the drawings, 1—1 indicate the track rail ends to be joined, 2—2 indicate the splice bars which, as shown, are of the fish plate type having the usual upper and lower fishing surfaces 3 and 4 opposed to the co-acting fishing surfaces of the underside of the rail head and upper surface of the rail base flange. Interposed between the rail ends and the splice bars, there are positioned the insulating fibre members 6 and the splice bars and joint are secured by means of the usual bolts 7 passed through apertures in the bars and rail ends and insulated from the bars by means of tubular insulating bushings 8 fitted upon the bolts and within the bar apertures and also by means of fibre insulating strips 9 positioned between the outer surfaces of the bars and the bolt straps or washer bars 10 fitted upon the bolts. Four of the washer bars are employed, arranged oppositely in pairs and of a length to be received upon the two bolts associated with each rail end, the washer bars being engaged at one side by the bolt head 12 and opposite thereto by the usual spring or lock washer 14, positioned behind the usual retaining nut 15. At 16 is shown the usual and standard form of tie plate providing a bearing for the rail base, having the rail base edge engaging shoulder 17 and apertured to receive the holding spikes 18 in position when driven to have overlying engagement with the rail base flange.

In accordance with the present invention, the splice bars, which are of similar form are of improved design or contour embodying an important feature of reinforcement at the central portion so as to possess added strength and rigidity at the region of the meeting rail ends. For this purpose, my improved splice bars, as shown, are formed with a vertical web portion 20 having a longitudinally continuous vertical outer face or surface with upper and lower longitudinally extending and inwardly projecting bearing shoulder portions 21 and 22 providing inward extensions or continuations of the fishing surfaces. For reinforcing the central portion of the bar in the vicinity of the meeting rail ends to afford added strength, both laterally and vertically, additional metal is provided by a substantial thickening of the web portion inwardly, which is shown at 24 in the form of an elongated shoulder or fillet increment to the web section connecting the fishing shoulder extensions 21 and 22, having a vertical inner wall at its central region of maxi-

mum thickness parallel to the longitudinal axis of the bar for approximately a length of three inches and having its end portions tapered to converge into the normal section of the web portion at points approximately coincident with the innermost bolts as shown. The splice bars are further improved by the provision of the end fillets or web thickening portions 26 connecting the fishing shoulder extensions and functioning, in addition to strengthening of the bars at the end portions, as protection to the insulating fibre.

The improved insulated joint, by the employment of the fish plate type of splice bar effects a substantial economy in the amount of insulating fibre required and is further of advantage by reason of facilitating inspection and also replacement of the fibre as required which is accomplished by the removal of the splice bars without interference with the tie plates and track fastenings. The insulation is of simple and interchangeable form and includes the usual fibre end post 27 of a contour corresponding to the contour of the rail section and which is held in effective position by its bearing engagement with the splice bar insulating members 6.

While I have disclosed an approved embodiment of the features of my invention, it will be understood that varied modifications thereof may be made without departing from the scope of the invention as defined in the appended claims. As illustrative thereof, I have shown in Fig. 4 a suitable modification conforming to the foregoing disclosure with the addition of a modification of the splice bar which consists in providing an outwardly extending reinforcement of the bar at its central portion by the external thickening of the web at 29 to still further add to the thickness of the metal cross-section at the central region.

Having described my invention, I claim:

1. In an insulated rail joint, the rail ends, oppositely positioned splice bars, insulating members interposed between the rail ends and the splice bars, said splice bars being of the fish plate type composed of vertical web portions having upper and lower shoulder extensions providing fishing surfaces and said bars having their central portion reinforced by the thickening of the web upon the inner sides thereof and said bars being formed at their end portions with web thickening fillets connecting the fishing shoulder extensions, substantially as described.

2. In an insulated rail joint, the rail ends, oppositely positioned splice bars, insulating members interposed between the opposed surfaces of the rail ends and splice bars and said splice bars being of the fish plate type comprising vertical web portions having inwardly extending bearing shoulders on its upper and lower longitudinal edge portions and providing fishing surfaces and provided with a reinforced central portion formed by a thickening of the web inwardly to form a fillet portion connecting the fishing shoulder extensions, said fillet portion having its inner face in a vertical plane with a central region of maximum thickness with its end portions tapered to gradually converge into the normal section of the web portion of said bars, being formed at their end portions with web thickening fillets connecting the fishing shoulder extensions, substantially as described.

Signed at New York city, in the county of and State of New York this 18th day of September A. D. 1925.

EMIL CARL ZIMMERMAN.