Aug. 22, 1939. W. E. GADD 2,170,018

FROZEN RAIL JOINT

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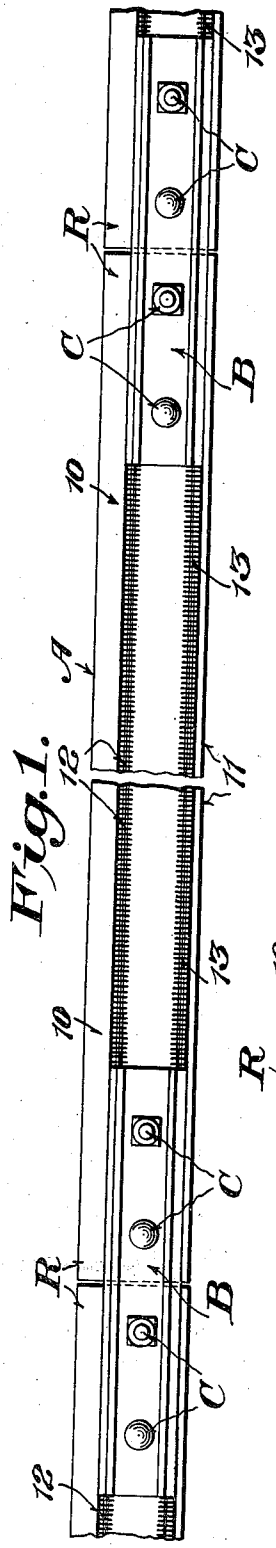


Fig. 1.

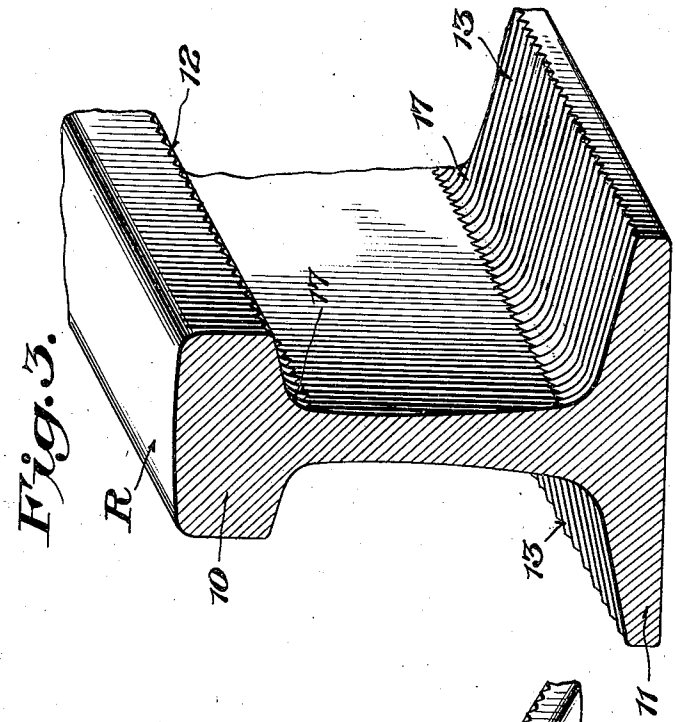


Fig. 3.

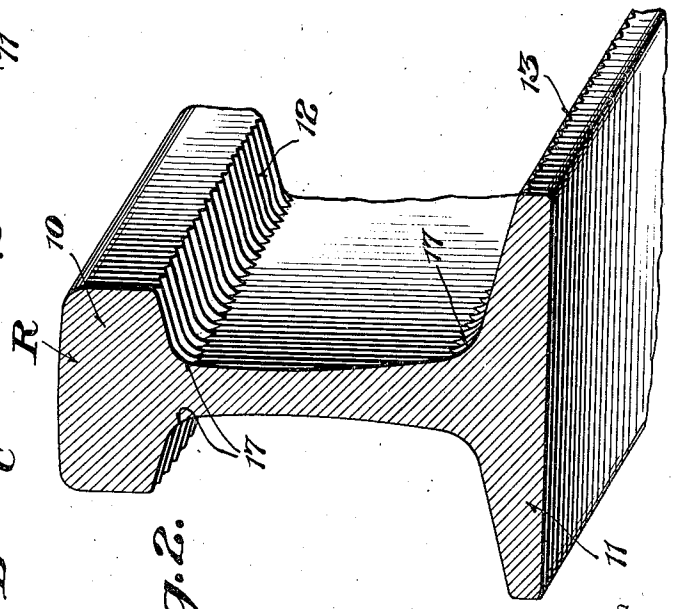


Fig. 2.

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Fig. 4.

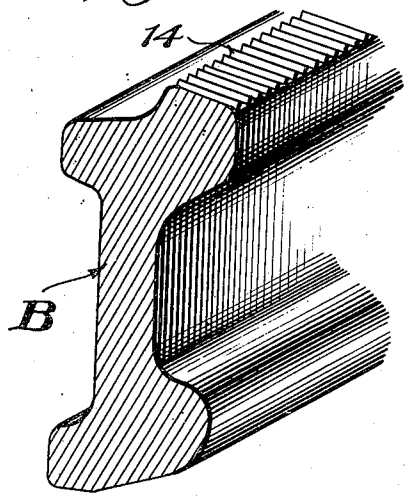


Fig. 5.

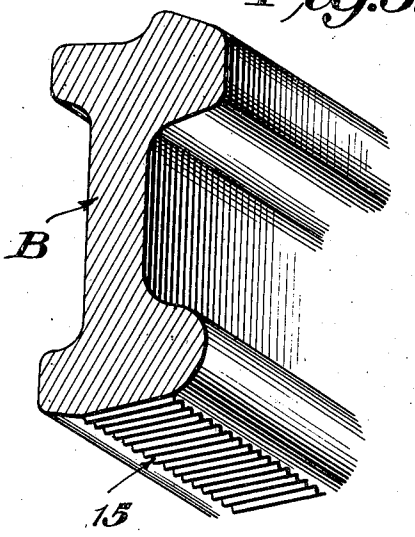


Fig. 6.

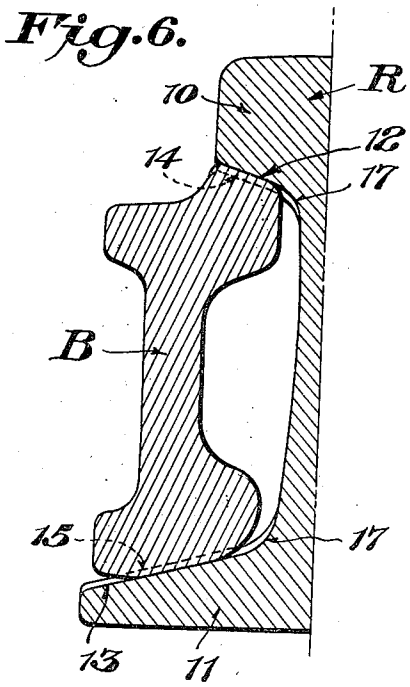
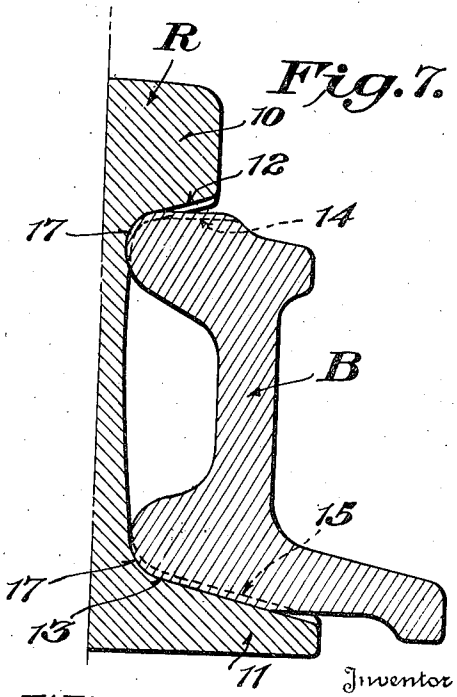


Fig. 7.



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FROZEN RAIL JOINT

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Application September 25, 1937, Serial No. 165,756

2 Claims. (Cl. 238—151)

This invention relates to an improved railway track and to improvements in rail joints used in constructing the same, and has generally in view to provide a track in which the rails are separably connected for individual removal and replacement, and to provide joints for connecting the rails in such manner that the rails are held against longitudinal movement relative to each other.

It has also been determined that in a track in which the rails are separably joined together by splice bars in a rigid or "frozen" manner, there is comparatively little pounding and wear on the rail ends, where pounding and maximum wear usually occurs, and that this is more especially true the closer together the rail ends are disposed.

As compared with a track in which the rails are welded together at their ends, it is advantageous, especially from the standpoint of permitting quick and easy removal and replacement of individual rails, to separably connect the rails by means of splice bars. Accordingly, the present invention has more particularly in view to provide, on the one hand, a track wherein the rails are separably connected for individual removal and replacement, and wherein the rails are rigidly connected in abutting or relatively close end to end relationship against the possibility of endwise movement relative to each other; and, on the other hand, to provide joints embodying novel features of construction for separably connecting the rails and effectively holding them rigidly alined and against relative longitudinal movement.

With the foregoing and other purposes in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the accompanying drawings, wherein like characters of reference denote corresponding parts in the different views:

Figure 1 is a side elevation of a section of track constructed in accordance with the invention.

Figures 2 and 3 are perspective views of a portion of one of the rails;

Figures 4 and 5 are perspective views of a portion of one of the splice bars.

Figure 6 is a transverse section through one of the joints; and

Figure 7 is a view similar to Fig. 6 illustrating the invention as embodied in an alternative type of joint.

Referring to the drawings in detail, A designates a section of a railway track comprising rails R connected together at their ends by splice bars B and joint bolts C in a manner which, generally speaking, is well known. That is to say, the splice bars B span the rail ends and fit the fishing spaces of the rails and are clamped in said fishing spaces by the bolts C.

In an ordinary rail joint in which splice bars are employed to connect the rail ends, the usual practice heretofore has been to make suitable provision to permit longitudinal movement of the rails relative to the splice bars and relative to each other responsive to expansion and contraction of the rails due to temperature changes. However, as has been demonstrated, such provision is not necessary, and important advantages are obtained if such provision is eliminated. Therefore, according to the present invention, the splice bars and the rails have their contacting faces formed for cooperation to prevent longitudinal movement of the rails relative to said bars and, consequently, relative to each other. In this connection, while the contacting faces of the splice bars and the rails may be formed in any suitable manner to accomplish the purpose stated, one suitable and practical manner of forming said faces is to serrate them transversely.

In some cases the splice bars may take loading engagement at their tops with the under sides of the rail heads and at their bottoms with the upper sides of the rail flanges as illustrated in Fig. 5. In that case the under sides of the rail heads 10 and the upper side of the rail flanges 11 may be transversely serrated as indicated at 12 and 13, respectively, and the top and the bottom faces of the splice bars may be transversely serrated as indicated at 14 and 15, respectively. In other cases the splice bars may take loading engagement either at the upper, inner corners of their heads with the head fillets of the rails, or at the lower, inner corners of the their bases with the base fillets of the rails, or at both their upper and lower inner corners with the head and the base fillets of the rails as illustrated in Fig. 6. In such cases the head and, or, the base fillets of the rails and also the upper, inner corners and, or, the lower, inner corners of the splice bars may be transversely serrated depending upon whether the fillet engagement of the bars is only at the head of the joint, or only at the base of the joint, or at both the head and the base of the joint. In other words, regardless of

the character of the head and the base engagements of the splice bars with the rails, the engaging surfaces of the bars and of the rails may be transversely serrated so as to cooperate to positively prevent any longitudinal movement of the rails relative to the splice bars and relative to each other. Moreover, the serrations may extend either entirely or only partly across said engaging surfaces and either throughout or only partly along their respective lengths, as may be found most suitable in particular instances.

As illustrated in Figs. 2 and 3, the serrations 12 extend across the under sides of the rail heads and continue across the rail head fillets 17. Thus, it is immaterial whether the splice bars have loading engagement with the under sides of the rail heads or with the head fillets of the rails, as non-slip joints will be provided in either case. Figures 2 and 3 also ilustrate that the serrations 13 extend across the upper faces of the base flanges of the rails and continue across the base fillets 17 of the rails, whereby non-slip joints will be provided whether the bases of the bars engage the upper faces of the rail flanges or the base fillets of the rails.

Of course, cooperating serrations may be provided only at the heads or only at the bases of the joints. Moreover, while the effective portions of the rail serrations are only within the lengths of the joints, said serrations preferably are continuous throughout the length of the rails so that in the event it is necessary to cut a rail the serrations will be present where the splice bars cooperate with the same.

While the splice bars may be of any suitable sectional shape, they preferably are strong and rigid so as effectively to support the rail ends against vertical deflections relative to each other, and in constructing the joints the rail ends preferably are abutted, or are disposed closely together so that the track approximates a single, continuous rail. This, in conjunction with the rigid, "frozen" type of joint afforded by the present splice bars and rails, results in rail end batter and wear being substantially eliminated and in the smooth passage of rolling stock over the track. In short, there is obtained according to the present invention a track condition approximating continuous rails, and yet the rails are readily removable and replaceable.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. A rail joint of the class described including the rails having transversely disposed serrations in both their head and base fillets, splice bars having both their upper and lower inner corners provided with transversely disposed serrations adjustably interlocking with the fillet serrations of the rails to prevent longitudinal movement of the latter, and track bolts connecting the splice bars and providing means for wear take-up thereof.

2. A rail joint of the class described comprising the rails having transversely disposed serrations in the under sides of their heads and in upper sides of their base flanges and respectively extending into the head and the base fillets of the rails, a splice bar having head and base transverse disposed serrations for interlocking cooperation with said rail serrations, and track bolts for drawing the splice bar inwardly relative to the rails.

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