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OBLIQUE JUNCTION-PLANE RAIL JOINT
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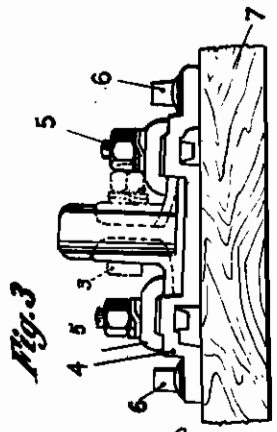

Fig. 3

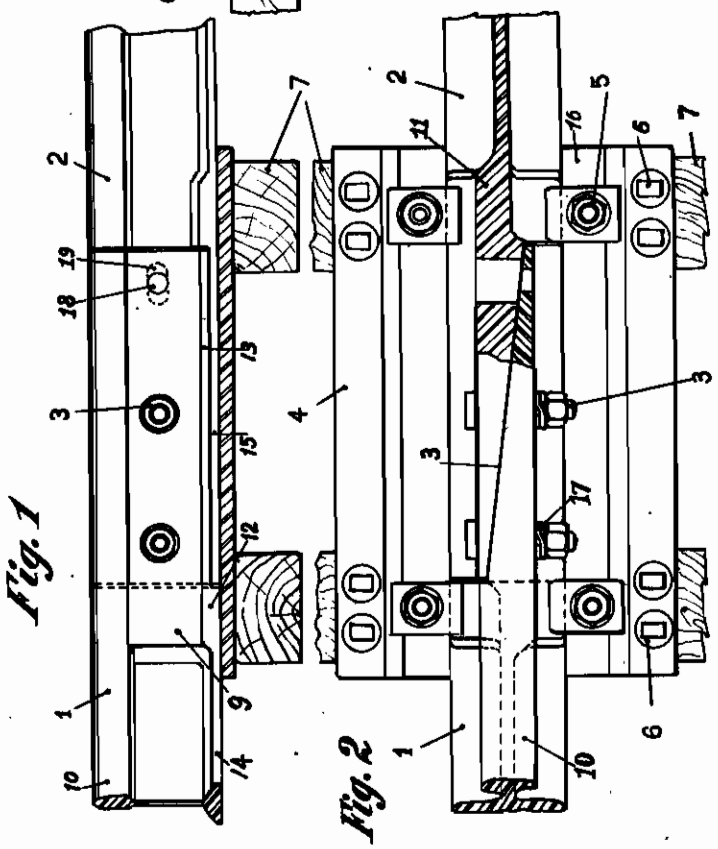

Fig. 1

Fig. 2

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OBLIQUE JUNCTION-PLANE RAIL JOINT

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This invention relates to rail joints for railroad tracks, and particularly to a type of such joints wherein the wheel-load is supported by the rail heads throughout the length of the joint and all dynamic loads on the joint are thus eliminated.

In the conventional types of joints the two adjacent rails are laid end to end with a small clearance left therebetween to allow of thermal expansions and contractions of the metal, and are then fished or otherwise suitably connected. These types of joints therefore comprise a short gap from the end plane of one rail to that of the other wherein the wheel-load is not supported by the head of either rail. When a wheel leaves the first rail, it falls for a brief instant into said gap and thus acquires a certain momentum in a direction perpendicular to the face of the rail which is the cause of a shock when the wheel comes into contact with the second rail. Such shocks repeated at frequent intervals are harmful to the rolling stock and they also cause wear in the rail joint and deformation of the same in ever increasing proportions. It is understood that these phenomena are well known and their consequences and import fully apprehended by persons skilled in the art.

The primary object of this invention is to provide a novel and improved type of rail joint wherein the two rails to be jointed are associated in a manner to provide a continuous supporting surface for the wheel-loads throughout the entire length of the joint and the load is gradually transferred from one rail to the other, so that all shocks in the passage of the wheels over the joint are eliminated and the mechanical and wear conditions of the rolling stock, of the rails, and of the joint are considerably improved.

Another object of this invention is to provide a rail joint wherein the ends of the adjacent rails are secured together by suitable locking means and are so strengthened as to accommodate said locking means without becoming dangerously lightened or weakened.

A further object of this invention is to provide a rail joint of the type described, wherein the ends of the two rails to be jointed are provided with suitably matching vertical and horizontal plane surfaces to assure great compactness, strength, and resistance to wear, and wherein said matching surfaces constantly engage each other irrespective of any thermal variations in the length of the rails.

A still further object of this invention is to provide a rail joint of the type described wherein the locking means used for securing the rails to each other comprise resilient elements, and allow of longitudinal adjustments of the joint due to thermal expansions or contractions of the rails, while a sufficient locking pressure is maintained by said resilient elements on the rails notwithstanding said longitudinal adjustments.

A still further object of this invention is to provide a rail with complementary shaped and reinforced ends adapted to cooperate with other similar rails to form joints of the type described. Other related and ancillary objects will clearly appear as the description proceeds.

A preferred embodiment of the invention is shown by way of example in the appended drawings wherein:

Fig. 1 is a side elevation of a joint according to the invention, showing the cross-ties and seat-plate in section.

Fig. 2 is a plan view and partial horizontal section of the rail joint of Fig. 1.

Fig. 3 is a vertical section of Fig. 1 on the line A—B of Fig. 1.

Referring to the drawings, the numerals 1 and 2 denote the two rails to be jointed. Rail 1 is cut along a vertical plane forming an acute angle with the plane of symmetry or axial plane of the rail, rail 2 is cut along a parallel plane, and the two oblique surfaces engage each other over their entire area, as shown at 8, Fig. 2.

The web of rail 1 has a thickened portion 9 on the side thereof opposite to the junction plane 8. In the embodiment the web has been thickened as much as it is necessary to bring it flush with the outer edge of the head 10 of rail 1. The web of rail 2 has a thickened portion 11 on the side thereof opposite to the junction plane 8, of the same thickness as the portion 9. Both webs are also slightly thickened at the beginning of the junction plane 8.

The flange of rail 1 is raised to provide a step at 12; thus the bottom portion of the rail 1 throughout the length of the joint has a flat sole 13 located on a plane higher than the plane 14 of the foot of the rail proper. The flange of the rail 2 on the other hand is provided with a flat horizontal end portion 15 on which the sole 13 bears.

The ends of both rails are seated on a seat-plate 4 fastened to the cross-ties 7 by means of spikes 6. To further secure the rails there are provided four clips 16 held by bolts 5 equipped with resilient washers. The two rails are held together by locking bolts 3 shown in number of three, provided with resilient washers 17. To

accommodate said bolts, rail 1 has circular bores 18 and rail 2 has horizontally elongated bores 19 to allow of longitudinal adjustments of the joint.

When the temperature changes and the rails undergo expansions or contractions, they slide relative to each other along the junction plane 8. This causes a slight decrease in the thickness of the joint, which is compensated by the elasticity of the resilient washers 17 which maintain the transversal locking pressure on the rails substantially constant or at any rate sufficient in spite of all such variations.

It will be noted that, when a wheel-load passes over a joint of this nature, the load is gradually abandoned by one rail and gradually received by the other, thanks to the fact, that throughout the joint both rails cooperate in supporting the load. In ordinary joints, even disregarding the shock due to the gap between the rails, the transmission of the load from one rail to the other is practically instantaneous, whereby the rails themselves and all the elements of the track are submitted to an additional strain. This strain is completely eliminated by the invention.

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