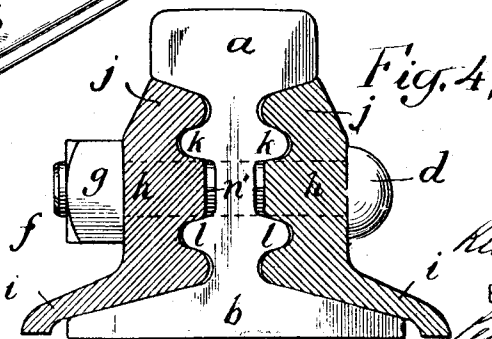
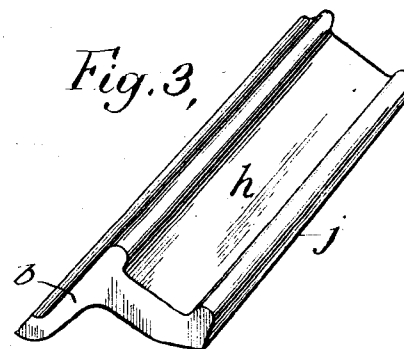
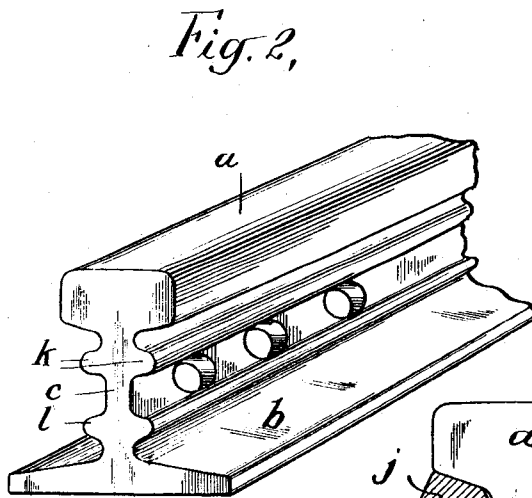
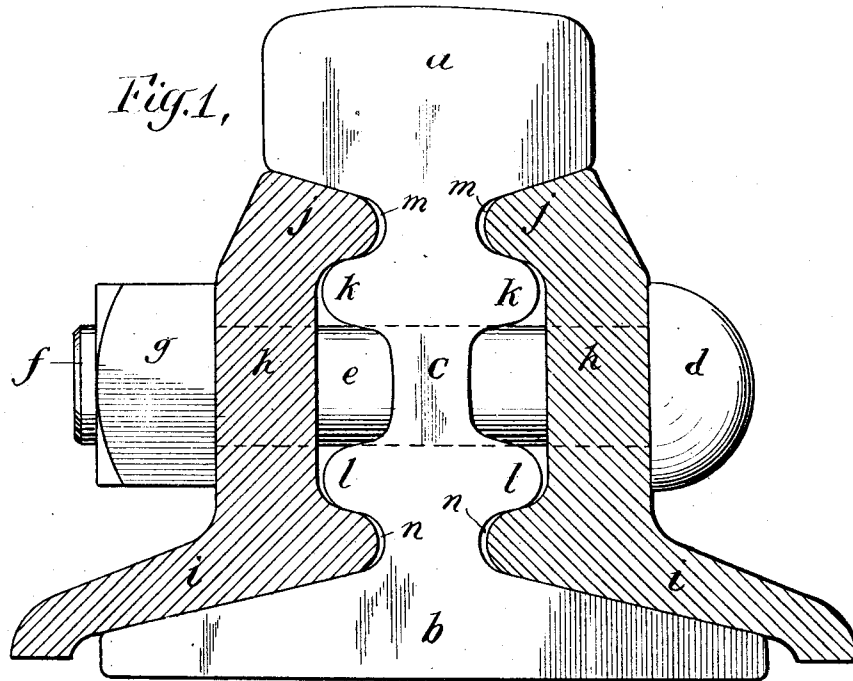


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RAIL JOINT.
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1,065,488.

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RAIL-JOINT.

1,065,488.

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To all whom it may concern:

Be it known that I, RICHARD P. WILLIAMS, a citizen of the United States, residing at No. 1285 Lincoln Place, Brooklyn, county of Kings, State of New York, have invented certain new and useful Improvements in Rail-Joints; and I do hereby 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.

In the standard rail joint made up of T-rail sections, in alinement end to end and connected to the standard splice bars by means of threaded bolts passing through the splice bars and through the webs of the rails, the weight of the rolling stock, transmitted through the car wheels, sets up strains in the rail joint which tend to break the rail along the line of the bolt holes, and also tend to elongate and loosen the bolts.

The purpose of my invention is to compensate for and thereby eliminate or greatly diminish the effect of these strains; and, as will hereinafter more fully appear, I effect this purpose by a construction wherein the strain transmitted from the under side of the head of the rail to the upper sides of the heads of the splice bars is in large part taken up by the web of the rail, through the intermediary of longitudinal ribs with which the under sides of the heads of the splice bars make contact. Furthermore, I provide like longitudinal ribs, interposed between the upper surfaces of the inner part of the base of the splice bars and the base of the rail, so as to transmit to the web of the rail the reaction strains which would otherwise be conveyed from the base to the top of the rail. By these expedients, I practically neutralize the tendency of the rail to split or crack along the line of the bolt holes, and convert the strains normally having that tendency into forces tending to strengthen and reinforce the rail along this line of its greatest weakness in normal service.

In the accompanying drawings: Figure 1 represents, in cross section, a rail joint constructed in accordance with my improvements; Fig. 2 represents, in perspective, the end of one of the meeting rails making a part of the joint; Fig. 3 represents a reversed view, in perspective, of one of the splice bars; and Fig. 4 represents a cross-sectional view of a modification.

Similar letters of reference indicate similar parts throughout the several views.

Referring to the drawing, *a* indicates the head and *b* the base, of standard dimensions, of a T-rail embodying my improvements, and whose end is to be connected with the similar end of an alined T-rail of the same construction. The webs *c* of the alined rails are provided with the usual bolt holes for the passage of the customary screw bolts having the head *d*, shank *e*, screw-threaded end *f*, and nut *g*. These bolts, as in the standard construction, pass through the web of the rail and through the webs *h* of the splice bars, which splice bars are provided with the base *i* and the head *j*, in contact respectively with the base of the rail and the under side of the head of the rail.

Immediately below the head *a* of the rail, the rail web is provided with longitudinal rib projections *k* with whose upper surfaces the corresponding lower surfaces of the heads of the splice bars make substantial contact. So also, immediately above the base *b* of the rail, the rail web is provided with longitudinal rib projections *l* between whose lower surfaces and the corresponding upper surface of the inner end of the base of the splice bar substantial contact is likewise made. Sufficient clearance is provided as indicated at *m* and *n*, so that upon drawing up the bolts by means of the nuts *g*, a strong wedging contact will be made between the projections *k* and the surfaces of the splice bars with which they cooperate, and also between the projections *l* and the surfaces of the splice bars with which they cooperate. As a consequence, the weight of the rolling stock and the force of impact of the car wheels at the joints, are transmitted from the head *a* of the rail in large measure to the projections *k* and thence to the web *c*; and, likewise, the reaction strains from the base *i* of each splice bar are in large part transmitted to the projections *l* and thence to the web of the rail. As a consequence, the effect of these strains, which are normally exerted in the standard rail joint in a direction tending to pull apart the web of the rail along the line of the bolt holes, is exerted in large part in the opposite direction, thereby counterbalancing the tendency to tear the rail apart along this line of weakened resistance. Furthermore, a lesser strain is exerted laterally upon the splice bars, in my improved

construction, so that the longitudinal tensile strain upon the bolts is lessened and their tendency to elongate diminished, which further adds to the efficiency and durability of the joint.

In the form of my invention shown in Figs. 1, 2 and 3, the web h of the splice bars bears such a relationship to the rail, that, in use, it partakes of the spring effect considered desirable in the standard rail joint. A greater degree of rigidity, however, can be imparted to the joint, if desired, for special uses, by providing the splice bars, as indicated in Fig. 4, with inwardly extending projections n' entering the spaces between the corresponding web projections k , l , and extending from end to end of the splice bar.

It will be evident to those skilled in the art that rails of the construction shown in the drawing can be rolled in an ordinary rail-rolling mill without other modification than to appropriately change the last few passes of the present rolls. Furthermore, it will be likewise evident that because of the amount of metal in these projections, the rate of cooling of the web as a whole will not differ so radically from the rate of cooling of the head and base as it does in the standard T-rail; consequently there will be a correspondingly less tendency for the rail to warp in cooling or to develop a different crystalline structure in the web than is present in the head and base. So also, the longitudinal projections will serve as strengthening elements to the web as against any lateral strains either in use or in shipment, and will increase the strength of the rail as a girder, *i. e.*, it will increase its strength without adding to its height.

Having thus described my invention what I claim is:

1. In a rail joint, rails having abutting ends and connecting splice bars, said rails being provided with longitudinal web projections immediately below their heads, and the splice bars being provided with projections wedging into the spaces between the lower sides of the head of the rail and the upper sides of the longitudinal web projections, sufficient clearance being provided in

said spaces to permit said wedging; substantially as described.

2. In a rail joint, rails having abutting ends and connecting splice bars, said rails being provided with longitudinal web projections immediately above their bases and the splice bars being provided with projections wedging into the spaces between the upper surfaces of the rail base and the lower surfaces of said web projections, sufficient clearance being provided in said spaces to permit said wedging; substantially as described.

3. In a rail joint, rails having abutting ends and connecting splice bars, said rails being provided with longitudinal web projections immediately below their heads and with longitudinal web projections immediately above their bases, and the splice bars being provided with projections wedging into the spaces between the lower side of the heads and the upper sides of the adjacent web projections and between the upper sides of the bases and the lower sides of the adjacent web projections, sufficient clearance being provided in said spaces to permit said wedging; substantially as described.

4. In a rail joint, rails having abutting ends and connecting splice bars, said rails being provided with longitudinal web projections immediately below their heads and with longitudinal web projections immediately above their bases, and the splice bars being provided with projections wedging into the spaces between the lower side of the heads and the upper sides of the adjacent web projections and between the upper sides of the bases and the lower side of the adjacent web projections, sufficient clearance being provided in said spaces to permit said wedging and said splice bars being further provided with a projection intermediate of the upper and lower web projections; substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

RICHARD P. WILLIAMS.

Witnesses:

JOHN C. PENNIE,
MINERYA LOBIL.