L. GRIFFITH.

INSULATED RAIL JOINT.

APPLICATION FILED SEPT. 2, 1908.

969,856.

Patented Sept. 13, 1910.

Fig. 1.

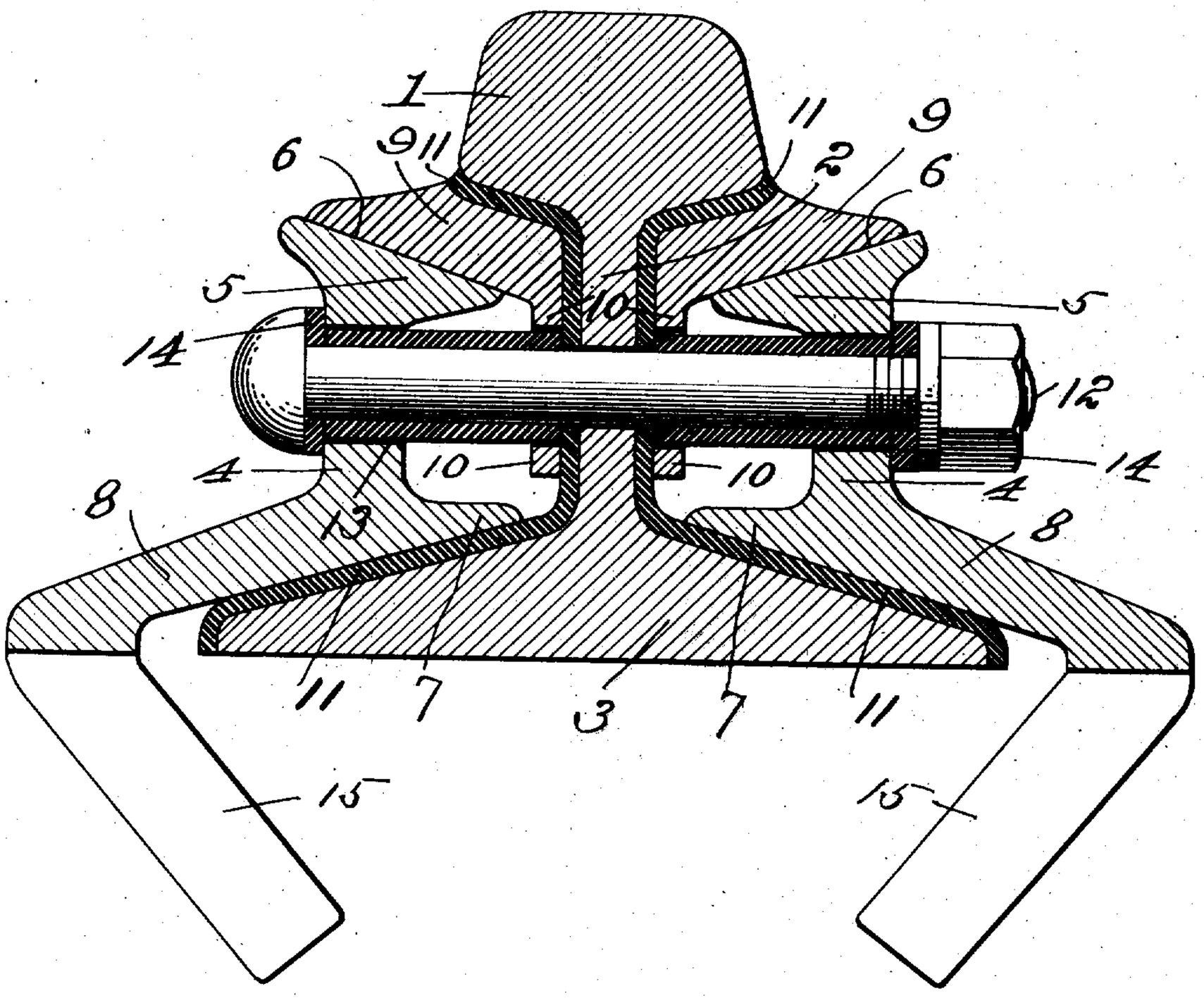
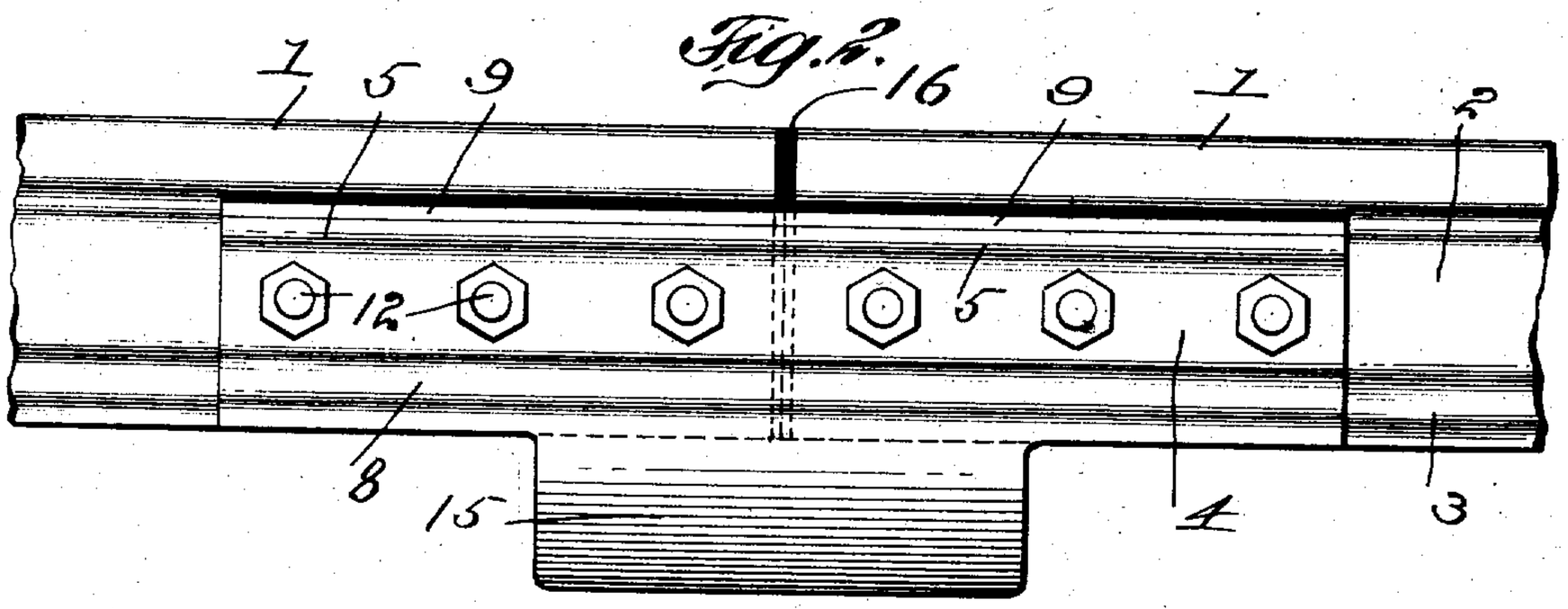


Fig. 2.



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UNITED STATES PATENT OFFICE.

LAWRENCE GRIFFITH, OF YONKERS, NEW YORK.

INSULATED RAIL-JOINT.

969,856. Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed September 2, 1908. Serial No. 451,318.

To all whom it may concern:

Be it known that I, LAWRENCE GRIFFITH, a citizen of the United States, residing in the city of Yonkers, county of Westchester, State of New York, have invented certain new and useful Improvements in Insulated Rail-Joints, of which the following is a specification, reference being had therein to the accompanying drawing, in which—

Figure 1 is a transverse vertical sectional view of the joint; and Fig. 2 a side elevation thereof.

It is one of the objects of this invention to provide an insulated rail joint of simple construction which will effectually prevent electric currents passing from one railroad rail to the adjoining connected rail.

A further object of the invention is to provide such a joint wherein the bearing surfaces between the parts of the joint will be very broad and so disposed as to resist the wear on the insulating material, this insulating material usually being the ordinary hard fiber insulation.

A further object of the invention is to so construct the parts of the joint that they may be rolled by suitable rollers, and in which the two sides of the joint will be exactly alike.

Referring to the various parts by numerals, 1 designates the head of the rail; 2 the web thereof, and 3 the base. The two sides of the joint are exactly alike, and, therefore, a description of one side thereof will apply to both sides. Each of the fish plates or splice bars 4 is formed along its upper edge with an inwardly extending head flange 5 whose upper surface inclines inwardly and downwardly, as indicated at 6. This flange extends a considerable distance beyond the inner surface of the fish plate so as to provide a very broad inclined surface, as shown in Fig. 1. The lower portion of the fish plate is formed with an inwardly extending flange 7 adapted to extend over the upper surface of the base of the rail; and with the outwardly extending base flange 8 which also extends over the base of the rail. The under side of the flange 7 constitutes the lower side of the fish plate.

Fitting under the heads of the rails are filler blocks 9 which are formed with depending vertical webs 10. These filler blocks are equal in length to the fish plates and bridge the joint between the rails. The under side of the upper main portion of the filler block is inclined to correspond to the inclination of the upper surface of the flange 5 and bears directly on said flange. The width of the upper surface of the flange 5 and the under surface of the upper portion of the filler block is much greater than the width of the underside of the adjacent portion of the rail head; and the under side of the flange 7 is substantially equal to the upper side of the flange 5. The filler block is wedge-shape in cross section, and tapers from its inner edge outwardly as shown in Fig. 1. The object of this is to hold the filler block in position against lateral displacement and to provide means whereby a downward strain on the filler block will tend to force the fish plates outwardly and to force the filler blocks inwardly toward the rail. This is of great advantage in that it prevents the fiber being broken by the vertical vibrations of the rail. The fish plates or splice bars are independently supported on the ties and there is frequently a slight vertical movement of the rail independently of the fish plates during the passing of a train. If some means are not provided to automatically take up this movement the fiber will be soon worn and disintegrated. By forming the filler block as described the parts of the joint will automatically adjust themselves to this independent rail movement while at the same time holding insulation firmly pressed against the rail.

Interposed between the filler block and the rail is insulation 11. This insulation is fitted closely against the under side of the rail head and against the web of the rail and on the upper surface of the base thereof. It is forced closely in contact with the rail by the upper portion of the filler block and the web thereof and by the flange 7 of the fish plate.

It will be noted that the insulation will be held closely against the rail by the filler block and that the filler block will bear on the insulation throughout its entire inner surface, thereby providing a broad bearing for the insulation on the rail and reducing the liability of disintegrating or cutting the insulation by the vertical vibrations of the rails. The object of forming the surfaces of the flanges 5 of the splice bars and the corresponding surfaces of the filler blocks larger than the under side of the adjoining portion of the rail head is to transmit the strains to a greater surface, thereby more

strongly bracing the rail and materially reducing the danger of lateral displacement. By providing the filler block for holding the insulation in place against the rail there will be a certain degree of flexibility in the joint which will prevent the cutting of the insulation; and by providing filler blocks which bridge the joint between the rails and are substantially equal in length to the fish plates or splice bars the entire joint is strengthened and the tendency to shear the insulation by an uneven vertical vibration of the rail ends is avoided. I consider this a great advantage of my joint over those joints in which the filler blocks do not bridge the joint between the rails.

The web 10 of the filler block does not extend to or contact with the base of the rail so that the rail may have a slight vertical vibration independently of the filler block. The webs of the filler blocks, and the splice bars, are correspondingly apertured for the passage of the connecting bolts 12 said bolts being insulated from the fish plates by the insulation 13 and the insulating washers 14. It will be noted that the insulation extends the entire length of the filler blocks. The splice bars are each formed with a depending strengthening web 15, said web bridging the joint between the rails. The rail ends are separated from each other by the insulation 16.

The features of invention shown in the drawings and described herein but not claimed are the subject matter of claims embodied in my co-pending application Serial No. 450,608, filed August 28, 1908, covering certain improvements in rail joints.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An insulated rail joint comprising a pair of fish plates having their upper surfaces downwardly and inwardly inclined and their lower surfaces downwardly and outwardly inclined to correspond to the inclination of the upper surface of the rail base, a pair of filler blocks having their lower surfaces inclined and adapted to fit closely against the upper surfaces of the fish plates, said lower surfaces extending inwardly beyond the inner surfaces of the fish plates, whereby the fish plates may move inwardly on the filler blocks, the inner and upper surfaces of the filler blocks corresponding in shape to the adjacent surfaces of the rail, and insulations fitting tightly between the filler blocks and the rail, and between the lower surfaces of the fish plates and the upper surfaces of the rail base, whereby the filler blocks will be held against movement on the insulations.

2. An insulated rail joint comprising a fish plate having an upper surface greater in width than the adjoining underside of the rail head and a lower surface adapted to fit over the base of the rail, a filler block having an under surface broader than the adjoining under surface of the head of the rail and extending inwardly beyond the inner edge of the fish plate, said filler block bridging the joint between the rails, and insulation interposed between the filler block and the rail and between the lower surface of the fish plate and the base of the rail, the filler block fitting closely against the insulation.

3. An insulated rail joint comprising a fish plate formed with a downwardly and inwardly inclined upper surface broader than the adjoining underside of the rail head, a filler block having a correspondingly inclined broad under surface adapted to contact with the upper surface of the fish plate, said under side of the filler block extending inwardly beyond the inner edge of the fish plate whereby the fish plate may move inwardly on the filler block, insulation interposed between the filler block and the rail, said insulation completely filling the space between the filler block and the rail whereby the filler block will be held against independent inward movement, and means for insulating the fish plate from the base of the rail.

4. An insulated rail joint comprising a fish plate having its under surface broader than its upper surface and downwardly and outwardly inclined to adapt it to fit over the base of the rail, a filler block interposed between the upper surface of the fish plate and the underside of the rail head, the under surface of said filler block extending inwardly beyond the inner edge of the fish plate, whereby the fish plate may move inwardly on the filler block, and insulation interposed between the filler block and the rail and filling the space between said block and the rail to prevent inward movement of the filler block, and insulation interposed between the base of the rail and the under side of the fish plate.

5. An insulated rail joint comprising a pair of fish plates, each of said plates being formed with a downwardly and inwardly inclined upper surface, a filler block interposed between the upper surface of each fish plate and the rail head, said filler block fitting closely against the upper surface of the fish plate and being wedge-shape in cross section and tapering outwardly, whereby it will be held in position against lateral displacement, and insulation interposed between each of said filler blocks and the rail head.

6. An insulated rail joint comprising a pair of fish plates, each of said plates being formed with a downwardly and inwardly inclined upper surface, a filler block interposed between the upper surface of

each fish plate and the rail head, said filler blocks fitting closely against the upper surface of the fish plate and being wedge-shape in cross section and tapering outwardly whereby it will be held in position against lateral displacement, said filler blocks bridging the joint between the rails, and insulation interposed between each of said filler blocks and the rail head.

7. A rail joint comprising a pair of fish plates, each of said plates being formed with a downwardly and inwardly inclined upper surface, a filler block interposed between the upper surface of each fish plate and the rail head, said filler block fitting closely against the upper surface of the fish plate and being wedge shape in cross section and tapering outwardly whereby it will be held in position against lateral displacement.

8. An insulated rail joint comprising a pair of fish plates, each of said plates being formed with a broad downwardly and inwardly inclined upper surface and with an upwardly and inwardly inclined lower surface overlying the base of the rail, the upper surface being broader than the adjoining under side of the rail head and said lower surface being as broad as the upper surface of said fish plate, a filler block interposed between the upper surface of each of the fish plates and the rail heads, said filler block being as broad as the upper surface of the fish plate and correspondingly inclined on its under surface and bridging the joint between the rails, and insulation interposed between the filler blocks and the rail heads and between the under surfaces of the fish plates and the base of the rail.

9. An insulated rail joint comprising a pair of fish plates, each of said fish plates being formed with a broad downward and inwardly inclined upper surface, said upper surface being of greater width than the width of the under side of the adjoining portion of the rail head, a filler block adapted to be placed between the upper surface of each fish plate and the rail head, the under surface of said filler block being of greater width than the width of the under side of the rail head, and insulation interposed between the filler blocks and the rails.

10. A rail joint comprising a pair of fish plates, each of said plates being formed with a downwardly and inwardly inclined upper surface, a filler block interposed between the upper surface of each fish plate and the rail head, said filler block fitting closely against the upper surface of the fish plate and being wedge-shape in cross section and tapering outwardly, the meeting surfaces of the filler blocks and the fish plates being of greater width than the width of the under side of the adjoining portion of the rail heads.

11. An insulated rail joint comprising a pair of fish plates, a filler block interposed between the upper surface of each fish plate and the heads of the rails, said filler block fitting closely against the upper surface of the fish plate and being wedge-shape in cross section, and insulation interposed between said filler blocks and the rail heads.

12. An insulated rail joint comprising a pair of fish plates, a filler block bridging the joint between the rails and interposed between the upper surface of each fish plate and the heads of the rails, said filler block fitting closely against the upper surface of the fish plate and being wedge-shape in cross section, and insulation interposed between said filler blocks and the rail heads.

13. In an insulated rail joint the combination of a fish plate, a filler block adapted to bridge the joint between the rails and to be interposed between the upper surface of the fish plate and the rail heads, said filler block being wedge-shape in cross section, and insulation interposed between said filler block and the rail heads.

14. In a rail joint the combination of a fish plate formed with a downwardly and inwardly inclined upper surface, a filler block interposed between the upper surface of said fish plate and the rail head, said filler block being wedge shape in cross section and tapering outwardly whereby it will be held in position against lateral displacement.

15. In a rail joint the combination of a fish plate formed with a downwardly and inwardly inclined upper surface, a filler block bridging the joint between the rails and interposed between the upper surface of said fish plate and the rail head, said filler block being wedge shape in cross section and tapering outwardly whereby it will be held in position against lateral displacement.

16. An insulated rail joint comprising a fish plate formed with a downwardly and inwardly inclined upper surface broader than the adjoining under side of the rail head, a filler block wedge-shaped in cross section and having a correspondingly inclined broad under surface adapted to contact with the upper surface of the fish plate, said under side of the filler block extending inwardly beyond the inner edge of the fish plate whereby the fish plate may move inwardly on the filler block, insulation interposed between the filler block and the rail, said insulation completely filling the space between the filler block and the rail whereby the filler block will be held against independent inward movement, and means for insulating the fish plate from the base of the rail.

17. An insulated rail joint comprising a fish plate formed with a downwardly and inwardly inclined upper surface broader

than the adjoining under side of the rail head, a filler block wedge-shaped in cross section interposed between the upper surface of the fish plate and the rail head, the under surface of said filler block being substantially equal in width to the upper surface of the fish plate and correspondingly inclined, said inclined surface extending inwardly beyond the inner edge of the fish plate and said filler block bridging the joint between the rails, insulation interposed between the filler block and the rail, said insulation filling the entire space between the filler block and the rail.

18. A rail joint comprising a fish plate formed with a downwardly and inwardly inclined upper surface broader than the adjoining under side of the rail head, a filler block wedge-shaped in cross section interposed between the upper surface of the fish plate and the rail head, the under surface of said filler block being substantially equal in width to the upper surface of the fish plate and correspondingly inclined, said inclined surface extending inwardly beyond the inner edge of the fish plate and said filler block bridging the joint between the rails.

19. In an insulated rail joint the combination with the meeting ends of rails, of a pair of fish plates having their under surfaces broader than their upper surfaces and downwardly and outwardly inclined to adapt them to fit over the bases of the rails, the upper surfaces of said fish plates being downwardly and inwardly inclined, a pair of filler blocks interposed between the upper surfaces of the fish plates and the under sides of the rail heads, the under surfaces of said filler blocks extending inwardly beyond the inner surfaces of the fish plates and said blocks bridging the joint between the rails whereby the fish plates may be adjusted inwardly on the filler blocks and the rail base, and insulation filling the space between said blocks and the rails to prevent inward movement of the filler blocks, and insulation interposed between the base of the rails and the under sides of the fish plates.

In testimony whereof I hereunto affix my signature in the presence of two witnesses this 1st day of September 1908.

LAWRENCE GRIFFITH.

Witnesses:
E. H. KAUFMANN,
WM. R. DAVIS.