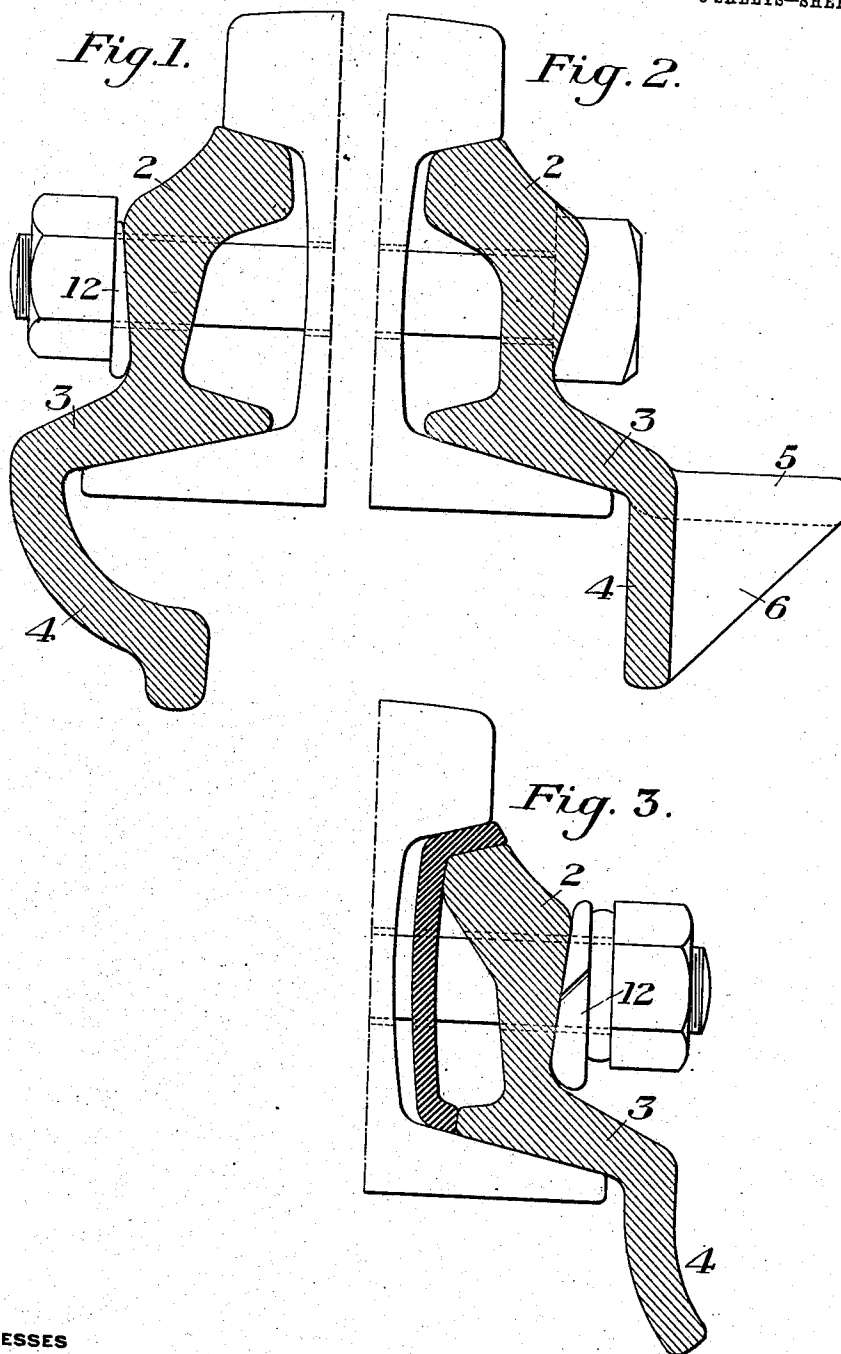


W. P. & S. G. THOMSON.
 SPLICE BAR FOR RAIL JOINTS.
 APPLICATION FILED JULY 20, 1907.

941,472.

Patented Nov. 30, 1909.
 3 SHEETS—SHEET 1.



WITNESSES

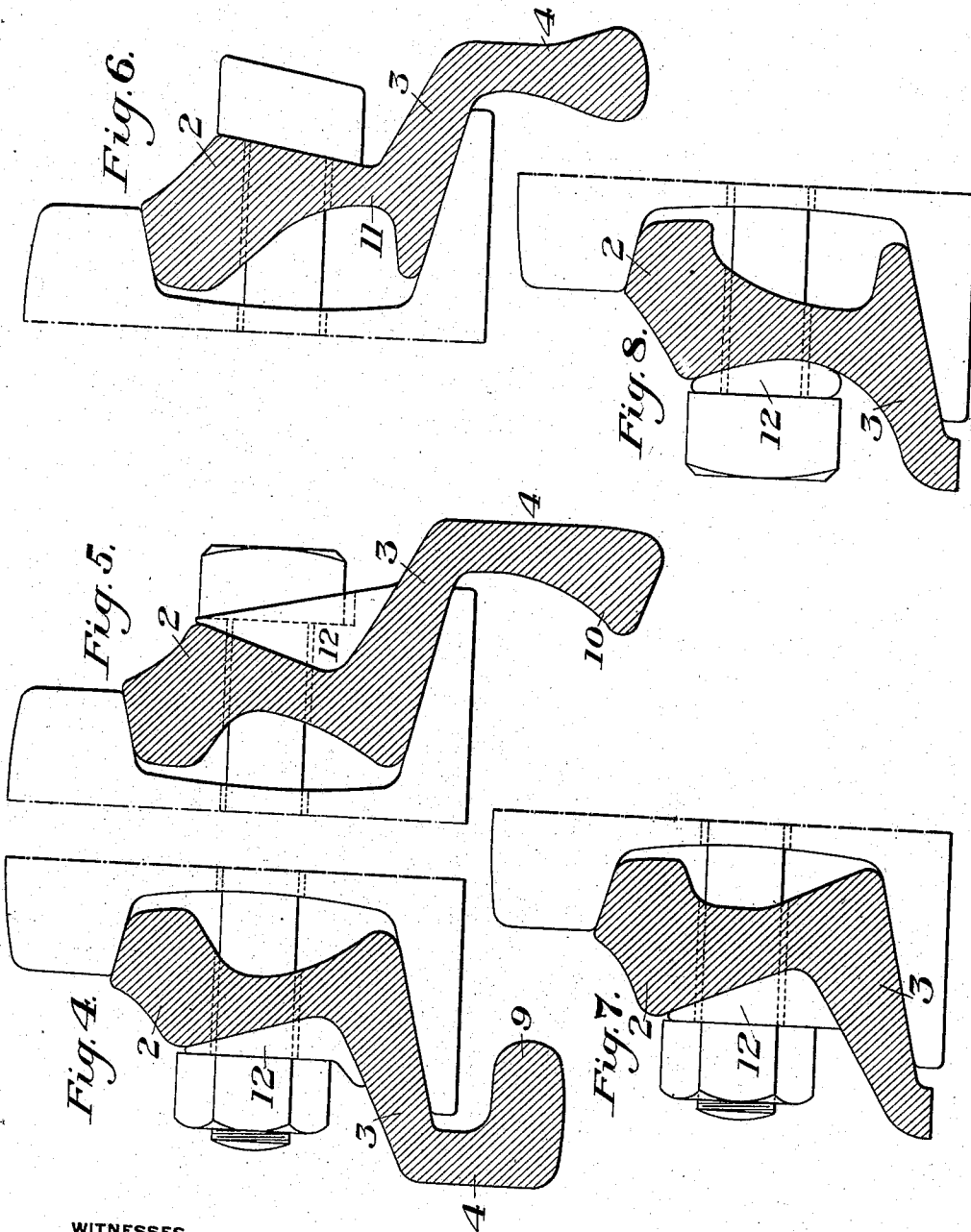
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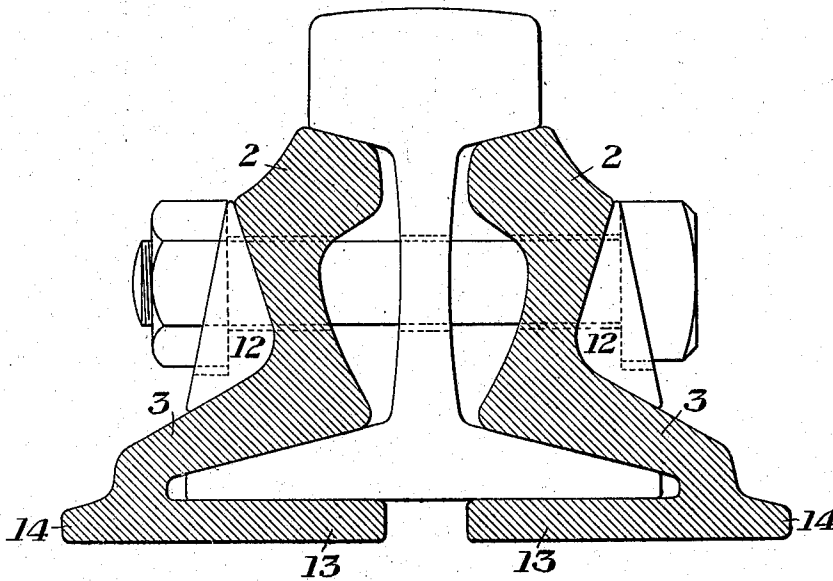
W. P. Thomson
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By B. H. Bowers, Byron & Paine, their Attys.

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Fig. 9.



WITNESSES

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UNITED STATES PATENT OFFICE.

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ASSIGNORS TO THOMSON-THOMSON COMPANY, OF PHILADELPHIA, PENNSYLVANIA,
A PARTNERSHIP.

SPLICE-BAR FOR RAIL-JOINTS.

941,472.

Specification of Letters Patent.

Patented Nov. 30, 1909.

Application filed July 20, 1907. Serial No. 384,800.

To all whom it may concern:

Be it known that we, WILLIAM P. THOMSON and SAMUEL G. THOMSON, both of Philadelphia, Philadelphia county, Pennsylvania, have invented a new and useful Splice-Bar for Rail-Joints, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 to 9 inclusive are sectional views illustrating different forms of splice bars embodying our invention.

This application is in part a division of our pending application, Serial No. 373,062, filed May 11, 1907.

Our invention has relation to splice bars for railway rail joints, and is designed to provide a splice bar having certain novel features of construction, which, together with the advantages arising therefrom, are hereinafter more fully explained, the essential feature of our invention consisting of a bar having an upper member provided with a downwardly and inwardly slanting bolting face.

Referring to the drawings, the numeral 2 wherever seen designates the upper member of the bar, 3 the intermediate or foot portion which fits the upper surface of the rail base, and 4 a lower depending member. This latter member is, however, not present in the forms of bar shown in Figs. 3, 8 and 9.

In the form shown in Fig. 1, the depending member 4 is shown as curved inwardly underneath the base of the rail, but out of contact therewith, constituting a freely-depending flange. In the form shown in Fig. 2, this lower member lies in a vertical plane at that portion which is between the ties, while the portion or portions which extend over the ties extend horizontally in the plane of the rail base, as shown at 5, the portions 2 and 5 being connected by the gusset 6.

In the form shown in Fig. 3, the depending member is of decreasing thickness toward its free edge, and is curved outwardly toward its lower end, its outer face being concave, and its inner face convex.

The form shown in Fig. 4 has its depending member 4 formed with an inward extension 9 underneath the rail base out of contact therewith.

The form shown in Fig. 5 has the depending member 4 thickened toward its free edge, as indicated at 10, this thickening being upon the inner face of the member. Fig. 6 shows a similar form except that the neck portion 11 which joins the upper member 2, and the foot is slightly more contracted, while the depending member 4 is thickened toward its lower end upon both sides.

Figs. 7 and 8 show two forms with the depending portion omitted, the bar shown in Fig. 7 having a straight inclined bolting face, while in Fig. 8 the bolting face is curved.

In the form shown in Fig. 9, the upper part of the splice bar is similar to that shown in Fig. 5, while the lower part has a portion 13 bent underneath the base of the rail, seating and holding the same. It also has a laterally projecting flange or rib 14, which is in the same horizontal plane as the portion 13.

12 wherever seen designates a washer placed between the head or nut of the bolt, and the adjacent downwardly and inwardly extending bolting face. In the form shown in Fig. 6, the washer is omitted, and the head of the bolt is inclined to fit the inclination of the bolting face. A separate washer may be employed for each bolt, or this may consist of a continuous slotted or punched plate or bar. By the provision of the downwardly and inwardly inclined bolting face, in connection with the beveled or curved washers, a great advantage is obtained, since a part of the gripping effect of the bolts is exerted downwardly and inwardly, thus holding the bars in at the bottom, where there is a tendency to buckle and kick upwardly and outwardly, unless the upper member effectively assists the foot member in carrying the strain directly around the base of the rail. That is to say, this arrangement of the bolting face directs the clamping action of the bolts in the direction of the corner or fillet, where the web of the rail joins the foot of the rail; thus on the one hand increasing the lifting tendency of the bolts from the base of the top member, rather than exerting a clamping action direct under the head of the rail; and on the other hand, this direction of the clamping

action increases the resistance of the foot member of the splice bar against slipping outwardly along the fishing angle on top of the rail base; and to still further diminish this outwardly slipping tendency, it is essential that the bar have as large a flat bearing as possible contacting with the top of the rail base. In order to maintain this solid flat bearing on top of the foot of the rail, and a similar solid flat bearing under the rail head, it is essential that the bar stand free from the web of the rail, so that, without tilting the bar, its own flat bearings can be drawn up tightly against these flat bearing rail surfaces. It is essential to our invention that these flat bearing faces be opposed to each other in the manner and to substantially the extent described, since any other form of bearings would decrease the support afforded by the splice bar to such an extent as to nullify the value of our improvement. The washers or plates not only afford a vertical bolting face, but may also be arranged to bear tightly on the top face of the foot portion of the bar, as shown in Figs. 4, 5 and 7, thereby counteracting whatever tendency there may be for the foot member of the bar to buckle upwardly out of contact with the top of the rail base; this function of the plate or washers emphasizes the value of the direction of the bolting face downwardly and inwardly since it is this location of the bolting face which produces the wedging action of the washers or plate, against the top surface of the foot portion of the bar, to resist the tendency of the foot portion to buckle upward at its outer end. It will be apparent that there is the greatest need for this function of the plate or washers when the web of the bar joins the foot portion near the inner end of the foot portion, and that the farther this point of juncture is located away from the inner end of the foot portion toward its outer end the less valuable this function of the plate or washers becomes until this function may be dispensed with entirely. This downwardly and inwardly slanting of the bolting face, combined with the downwardly and outwardly slanting portion of the inner face, also has the great advantage of placing the maximum amount of metal near the top of the bar, where it is most efficient, and where the common angle bars invariably fail, because the top member of any splice bar is under compression when loaded, or under tension as the rolling load approaches or recedes from the abutting ends of the rails, and there is not sufficient metal in the top members of the bars hitherto designed, to afford proper resistance to these strains.

The inner faces of the upper members 2 of the various forms of bars illustrated are so formed as to slant downwardly and out-

wardly to a point somewhere below the tops of the bolt holes, and thus add metal in the head of the bar to such an extent and in such a manner as has never before been accomplished, as more fully described in our said application, Serial No. 373,062. The downwardly and outwardly slanting inner face is the preferred form, although it is not essential to the use of the downwardly and inwardly inclined outer face.

By the word "inclined" as used in the claims, we intend to cover either a straight inclined or a curved inclined surface.

Our invention is obviously applicable to various other forms of bars than those shown, which merely illustrate the principle of our invention.

What we claim is:—

1. A splice bar for rails having a flat face to fit the top of the rail base for the greater portion of its width, said bar arranged to stand free from the web of the rail and having an upper member with a downwardly and inwardly slanting bolting face, the upper portion of said member being enlarged to form a head.

2. A splice bar for rails having a flat face to fit the top of the rail base for a greater portion of its width, said bar arranged to stand free from the web of the rail and having a bolting member with a downwardly and inwardly inclined outer face and bolt holes passing through said face, and a portion of its inner face inclined downwardly and outwardly to a point below a horizontal plane through the top of the bolt holes.

3. In a rail joint, a splice bar clamped to the rail above the rail base only by bolts and nuts said bar being arranged to stand free from the web of the rail, and having a flange extending freely below the rail base, and also an upper member with part of its outer face inclined downwardly and inwardly, said inclined portion lying entirely outside of the rail head and extending below a horizontal plane at the top of the nuts, the upper portion of said member being enlarged to form a head, substantially as described.

4. A rail joint having a splice bar fitting the top of the rail base for a greater part of its width, said bar having its upper portion enlarged into a head and having a downwardly and inwardly inclined bolting web, with bolt holes through said web, and a portion of its inner face inclined downwardly and outwardly to a point below a horizontal plane through the top of the bolt holes, said bar standing free from the web of the rail and constituting in itself one side of the joint, and bolts extending horizontally through the splice bar.

5. A rail joint having a splice bar with a head and a foot joined by a web portion, the outer face of which is inclined down-

wardly and inwardly, said foot portion having a flat face fitting the upper surface of the rail base for the greater part of its width, said splice bar standing free from the web of the rail, and bolts extending horizontally through the splice bar.

6. A splice bar having a web portion whose outer face is inclined downwardly and inwardly and having bolt holes through said portion, said web portion having a part of its inner face inclined downwardly and outwardly to a point below a horizontal plane through the top of the bolt holes, said bar arranged to fit the top of the rail base for the greater portion of its width and to stand free from the web of the rail, and also having a portion arranged to extend below the rail base.

7. A splice bar having a head, a web portion, and a foot portion, said web portion having a downwardly and inwardly inclined bolting face, the foot portion being arranged to stand free from the web of the rail and to fit the rail base for a greater part of its width and having a depending flange arranged to extend below the rail base.

8. A rail joint having a splice bar with an enlarged top head, and a foot portion to fit the top of the rail base for a greater part of its width, said bar having a downwardly and inwardly inclined outer face at the bolt holes, and a portion of its inner face inclined downwardly and outwardly to a point below a horizontal plane through the top of the bolt holes, bolts extending horizontally through the splice bar, and plates or washers fitting the inwardly inclined face of the bar and forming vertical seats for the bolt heads or nuts.

9. In a rail joint, the combination of splice bars with downwardly and inwardly inclined bolting faces, bolts extending horizontally through the splice bars, and plates or washers wedged firmly against the top surfaces of the foot portions of the splice bars.

10. A splice bar for rails arranged to stand free from the web of the rail, and having a foot member to fit the rail base for a greater part of its width, said bar having bolt holes through its upper member and a downwardly and inwardly inclined outer face at the bolt holes, and having a portion of its inner face inclined downwardly and outwardly and terminating between two horizontal planes lying at the top and at the center of the bolt holes, substantially as described.

11. A splice bar for rails arranged to stand free from the web of the rail and having an enlarged head and a foot member to fit the rail base for a greater part of its width, said bar having bolt holes through its upper member, and a downwardly and

inwardly inclined outer face at the bolt holes, and also having a downwardly and outwardly slanting portion of its inner face extending only as far as a horizontal plane between the center and the top of the bolt holes.

12. A splice bar for rails forming in itself the one side of a rail joint and arranged to stand free from the web of the rail, said bar having bolt holes through its upper member, and bolts and nuts clamping it to the rails, said upper member having its top enlarged into a head and also having a downwardly and inwardly inclined outer face lying entirely outside of a vertical plane at the outer edge of the rail head and extending below a horizontal plane at the top of the nuts, and a downwardly and outwardly inclined inner face intersecting a substantially vertical inner face at a point between the horizontal planes at the top and at the bottom of the bolt holes, substantially as described.

13. A splice bar for rails arranged to stand free from the web of the rail with bolts and nuts clamping it to the rail, said bar having a portion of its outer face inclined downwardly and inwardly, said portion lying entirely outside of a vertical plane at the outer edge of the rail head and extending below a horizontal plane at the top of the nuts, and having bolt holes through at least a portion of said face, said bar also having an inner face inclined downwardly and outwardly between the horizontal planes at the top and at the bottom of the bolt holes, substantially as described.

14. A splice bar for rails constructed to be clamped to the rails above the rail base only and to fit the top of the rail base for the greater portion of its width and to stand free from the web of the rail, said bar having an upper member with a part of its outer face slanting downwardly and inwardly, at least a portion of said slanting face lying outside of a vertical plane at the outer edge of the rail head, said bar also having a free flange extending downwardly under the rail base, substantially as described.

15. A rail joint having one splice bar on each side of the rails, said bars having their upper portions enlarged into a head and extending outwardly beyond the outer edge of the rail head, and bolt holes through said upper portion, the bars standing free from the webs of the rails and having a portion of their outer faces inclined downwardly and inwardly to a point below a horizontal plane at the top of the bolt holes, and plates or washers fitting the inclined faces of the bars and forming vertical seats for the bolt heads or nuts, substantially as described.

16. A rail joint having one splice bar on each side of the rails, said bars having free

flanges to extend below the rail base, said bars standing free from the webs of the rails and having substantially vertical upper members with downwardly and inwardly inclined outer faces, the upper portion of said members being enlarged into a head extending outwardly beyond the outer edge of the rail head, substantially as described.

In testimony whereof, we have hereunto set our hands.

W. P. THOMSON.
S. G. THOMSON.

Witnesses:

S. E. PATTERSON,
BESSIE COLLINS.