

W. P. & S. G. THOMSON.
 SPLICE BAR FOR RAIL JOINTS.
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937,118.

Patented Oct. 19, 1909.

2 SHEETS—SHEET 1.

Fig. 1.

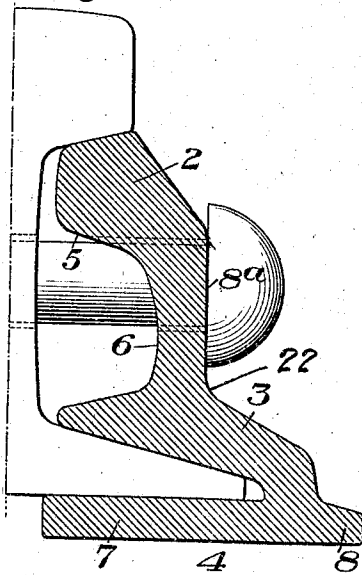


Fig. 2.

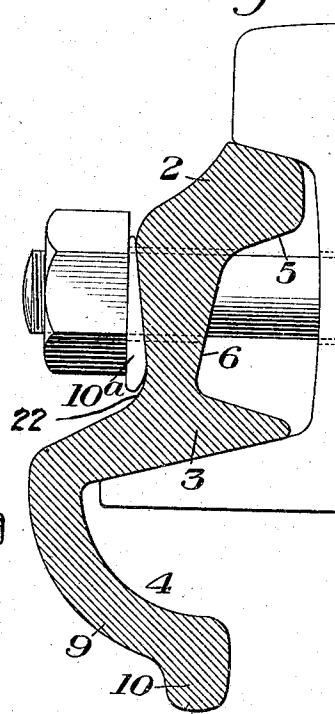


Fig. 3.

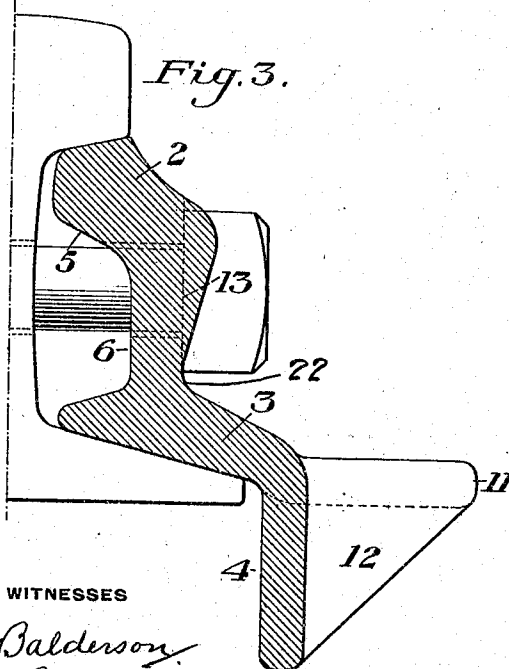
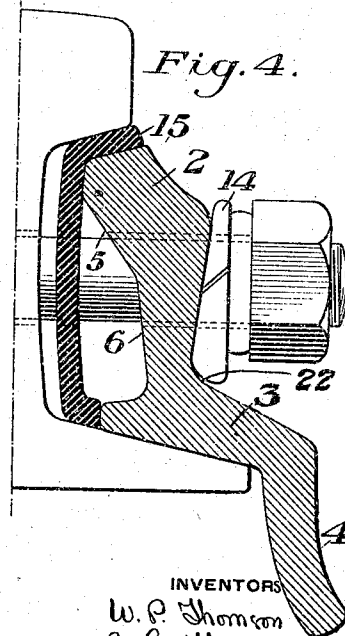


Fig. 4.



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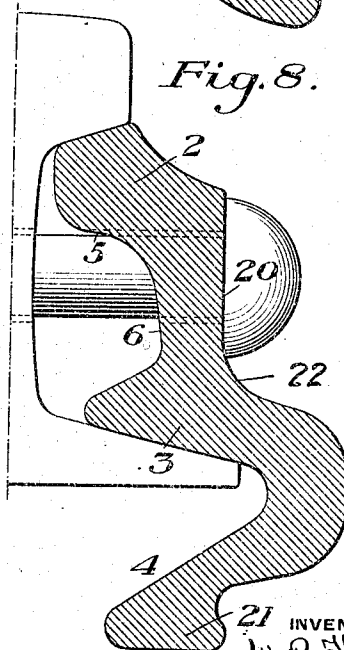
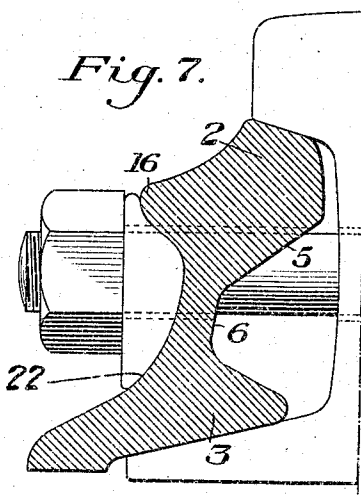
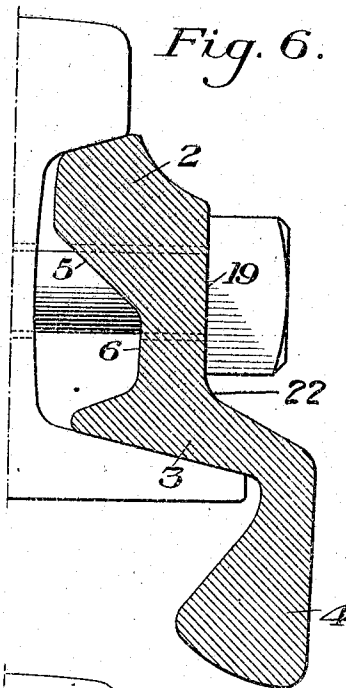
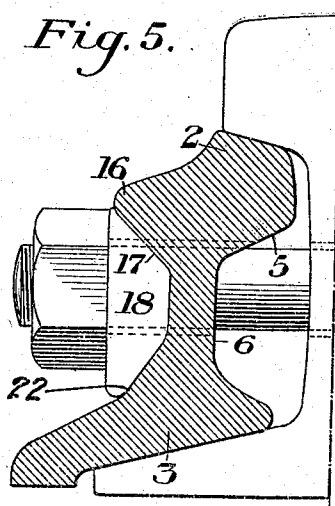
R. A. Balderson
 G. L. Butters

INVENTORS

W. P. Thomson
 S. G. Thomson,
 by Behrens, Pym & Parmelee,
 their Attys.

937,118.

2 SHEETS--SHEET 2.



R. A. Balderson
G. L. Bunters

W. P. Thomson
S. G. Thomson,
by Baker, Dymers & Parnell,
their Attys

UNITED STATES PATENT OFFICE.

WILLIAM P. THOMSON AND SAMUEL G. THOMSON, OF PHILADELPHIA, PENNSYLVANIA,
ASSIGNORS TO THOMSON-THOMSON COMPANY, OF PHILADELPHIA, PENNSYLVANIA,
A PARTNERSHIP.

SPLICE-BAR FOR RAIL-JOINTS.

937,118.

Specification of Letters Patent.

Patented Oct. 19, 1909.

Application filed November 14, 1908. Serial No. 462,736.

To all whom it may concern:

Be it known that we, WILLIAM P. THOMSON and SAMUEL G. THOMSON, both of Philadelphia, in the county of Philadelphia and State of 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 8, inclusive, are sectional views illustrating different forms of a splice bars embodying our invention.

Our invention has relation to splice bars, and is designed to provide a splice bar having an increased amount of metal in its head, with a relatively light web.

It is desirable to have the upper portion of a bar increase gradually in thickness toward the top, and the point where the taper begins is a matter depending upon how much metal should be placed in the upper member in order to meet the particular requirements of the bar. In the lighter forms of bars, it is essential that this taper be abrupt, and that the web be proportionally extended in length so that the upper member begins to taper abruptly to form the head at a point between horizontal planes at the top and at the bottom of the bolt holes. It is essential to keep the web as thin as practicable in order to facilitate the punching of the bolt holes, and it is also essential to keep as much metal in the head of the bar as possible.

The present improvement is, as above stated, designed to provide a bar in which the web shall be as thin as practicable, and in which there is added to the inside of the head an increased amount of metal at a place which has heretofore been reserved for the punching of the bolt holes.

To this end, our invention consists mainly in providing a splice bar having its upper member provided with a downwardly and outwardly inclined inner face which intersects a substantially vertical face between horizontal planes at the top and at the bottom of the bolt holes.

Our invention also consists in providing a bar of this character having its head further enlarged on the outside by means of a comparatively large abrupt rib also extending down into the region of the bolt holes in the

manner described and claimed in our pending application for patent, Serial No. 55 420,898.

Other features of our invention will hereinafter appear.

This application is in part a division of our pending application, Serial No. 373,062, 60 filed May 11th, 1907.

Referring to the drawings, the numeral 2 wherever seen, designates the upper member of the bar, 3 the foot portion which fits the upper surface of the rail base, and 4 the 65 lower member extending below the rail base. 22 wherever seen designates a stiffening fillet at the intersection of the outer face of the upper member and the upper face of the foot member for the purpose of eliminating the 70 buckling of the bar at this point. In all of the forms shown, the bar has a downwardly and outwardly inclined inner face 5, which joins or intersects a vertical or substantially vertical face 6 between horizontal planes at 75 the top and bottom of the bolt holes. This downward and outward incline may be either a straight incline, as shown in Figs. 4, 5, 6 and 7, or it may be a curve of varying forms as shown in Figs. 1, 2, 3 and 8. 80

In the form shown in Fig. 1, the splice bar has a portion 7 bent underneath the base of the rail, and seating upwardly against the same. It also has a projecting stiffening flange or rib 8 in the same horizontal plane 85 as the portion 7. The bar has a vertical outer bolting face 8^a.

In the form shown in Fig. 2, the bar is provided with a freely depending lower member 9, which is curved inwardly underneath 90 the base of the rail and terminates in a rib or enlargement 10 at its lower free edge. The outer bolting face of the splice bar shown in this figure is downwardly and inwardly inclined, and a washer 10^a is provided to form a square seating face for the 95 nut or head of the bolt.

In the form shown in Fig. 3, the lower member extends in a vertical direction at that portion which is between the ties, while 100 that portion which extends over the ties lies horizontally in the plane of the rail base, as shown at 11, the two portions being connected by the gusset or skirt 12. The outer or bolting face of the bar shown in this 105 figure is also downwardly and inwardly in-

clined, as in Fig. 2, but is deformed as indicated at 13 to provide a gripping face for the head or nut of the bolt.

The form shown in Fig. 4 has a freely depending flange of decreasing thickness toward its lower edge, being curved outwardly away from the base of the rail, with a convex inner face and a concave outer face. The outer or bolting face of the bar is downwardly and inwardly inclined, and a washer 14 is provided to form the gripping face for the nut or bolt head. This figure also shows an insulating or other bearing member 15 interposed between the bearing portions of the splice bar and the adjacent bearing surfaces of the rails.

In the form shown in Fig. 5, the head is exteriorly enlarged by the rib 16, which is shaped on its upper or outer surface to clear the flange of the wheel, and which has the downward and inward taper 17 extending below the top of the bolt hole. When this outer rib is used in order to form a T-head, it is not necessary to make the inner portion of the head extend below the outer portion in order to get sufficient metal in the head, and, therefore, the under face of the inner portion of the head does not need to be extended below the center of the bolt hole, although it may be made to do so as shown in Fig. 7. A beveled face washer 18 is fitted to the outer face of the bar to form the gripping face for the nut of the bolt. The bar shown in this figure does not have a freely depending flange, but terminates in the foot member which fits the base flange of the rail, and which tapers upwardly at both sides into the web portion of the bar.

Fig. 6 shows a form of bar having the downwardly and outwardly inclined inner face extending to a point below the center of the bolt holes, and with a vertical outer bolting face 19 and with a foot member depending below the base of the rail and of increasing cross-section toward its lower end, the increase in thickness being at the inner side of the member which is thus caused to project inwardly underneath the rail base. This form of bar provides a deep thickened head with a comparatively short web portion connecting it to the foot member.

The form shown in Fig. 7 is similar to that shown in Fig. 5, with the exception that the downwardly and outwardly inclined inner face extends to a point below the center of the bolt hole, as in Fig. 6.

In the form shown in Fig. 8, the bar is provided with a vertical outer bolting face 20, and has a flange depending below the base of the rail and extending inwardly underneath the same and terminating in the enlargement 21.

It will be seen that our invention provides for a material increase in the amount of metal in the head of the bar, while keeping

the web with the minimum thickness consistent with this increase and sufficiently thin in all cases to prevent cracking or injuring of the bars in punching the holes. While our improvement is applicable to bars either with or without a portion extending below the rail base, it is especially efficient when applied to shallow types of bars which do not extend below the rail base. In such bars, all the stiffness must be obtained by concentrating the largest amount of metal possible in the head and foot of the bar, and while heretofore it has been an easy matter to add any desired amount of metal to the foot of the bar, the possibilities of increasing the metal in the head are extremely limited.

While we have shown our invention as applied to ordinary T-rails, it will be understood that it is applicable to rails of other sections. It will be further understood that the forms of our invention which have been shown are illustrative only, and that it is applicable to other forms of bars than those shown.

We claim:—

1. In a rail joint, a splice bar for rails having an upper member with bolt holes through it, bolts through said holes, and nuts on said bolts, said upper member having a downwardly and outwardly inclined inner face joining an upright inner face between horizontal planes at the center and at the bottom of the bolt holes, said bar lying entirely below the lower outer edge of the rail head and all of said inclined inner face lying below a horizontal plane at the top of the nuts.

2. A splice bar for rails, having an upper member with bolt holes through it, and an inner face inclined in a downwardly and outwardly direction from its intersection with an upright inner face adjacent to the rail web to its intersection with a substantially vertical inner face at a point between horizontal planes at the center and at the bottom of the bolt holes.

3. A splice bar for rails, having a substantially flat inner face extending in a downwardly and outwardly direction from an upright inner face of the bar and terminating between two horizontal planes lying at the bottom and at the center of the bolt holes, said bar having an outer face joined by a stiffening fillet to a foot member.

4. A splice bar for rails having an upper member and a foot member, said upper member having a slanting inner face intersecting an upright inner face adjacent to the rail web and extending in a downwardly and outwardly direction only as far as a horizontal plane between the center and the bottom of the bolt holes, said bar having a downwardly and outwardly slanting stiffening fillet joining the outer face of said member to the foot member.

5. A splice bar for rails having an upper member with bolt holes through it, and a foot member, and a downwardly and outwardly inclined substantially flat inner face extending from the lower edge of an upright inner face adjacent to the rail web to a point between two horizontal planes at the center and at the bottom of the bolt holes, said bar having a downwardly and outwardly inclined stiffening fillet joining the outer face of the upper member to the foot member and means to clamp it to the rail above the rail base only.

6. A splice bar for rails having an upper member with a substantially vertical outer face and a rib extending outwardly beyond said face adjacent to its top and lying entirely below the lower outer edge of the rail head, said member having bolt holes through it and also having a downwardly and outwardly slanting inner face intersecting a substantially vertical face between horizontal planes at the top and at the bottom of the bolt holes.

7. In a rail joint, one bar clamped to each side of the rails by bolts and nuts, said bars each having an enlarged head lying entirely below the lower outer edge of the rail head and projecting beyond the lateral faces of a substantially vertical web member, said head having under faces on each side, each slanting downwardly toward the other and intersecting the lateral faces of the web below a horizontal plane at the top of the nuts.

8. In a rail joint, a splice bar having an enlarged head standing free from the rail

web, and a web portion formed with a substantially vertical inner face, said bar also having a bolt hole extending therethrough, and said head having an inner face extending downwardly and substantially parallel to the rail web to a point adjacent to said bolt, the head also having a downwardly and outwardly slanting under face joining the inner face of the web portion between horizontal planes at the top and bottom of the bolt holes.

9. A splice bar for rails having an enlarged head projecting beyond the lateral faces of a substantially vertical web member and bolt holes through said web, said head having flat under faces on each side and each slanting downwardly toward the other and intersecting the lateral faces of the web between horizontal planes at the top and at the bottom of the bolt holes.

10. A splice bar for rails, having an upper member with bolt holes through it, said upper member having a downwardly and outwardly inclined inner face intersecting an upright inner face between horizontal planes at the center and at the bottom of the bolt holes, said bar lying entirely below the lower outer edge of the rail head; substantially as described.

In testimony whereof, we have hereunto set our hands.

WILLIAM P. THOMSON.
SAMUEL G. THOMSON.

Witnesses:

S. E. PATTERSON,
MCLEOD THOMSON.