

W. P. & S. G. THOMSON.
 SPLICE BAR FOR RAILS.
 APPLICATION FILED APR. 26, 1909.

960,238.

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Fig.1. Fig.2.

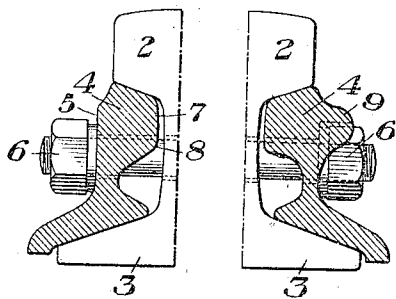


Fig.3. Fig.4.

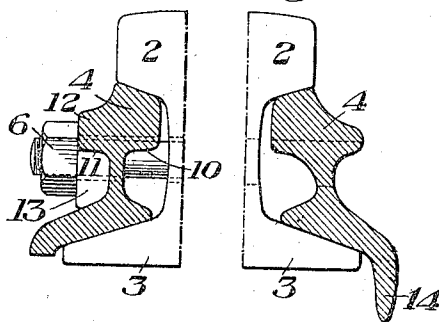


Fig.5. Fig.6.

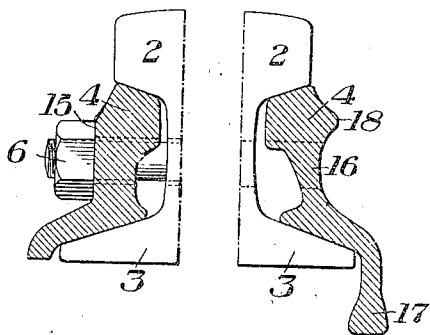
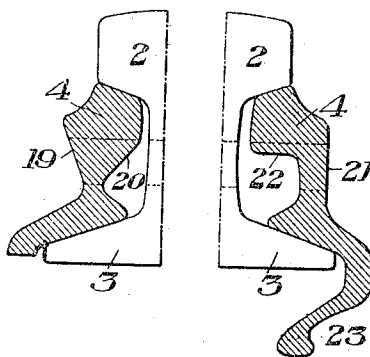


Fig.7. Fig.8.



WITNESSES

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UNITED STATES PATENT OFFICE.

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SPLICE-BAR FOR RAILS.

960,238.

Specification of Letters Patent.

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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 Improvement in Splice-Bars for Rails, 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—

Figure 1 is an end view with the splice bar in section and showing one form of our invention; Fig. 2 is a similar view showing another form of splice bar having its head projecting at both sides of the web; Figs. 3 and 4 are similar views showing other forms of bars embodying our invention; Fig. 5 is a similar view showing a bar somewhat like that of Fig. 1 but of different outline; Figs. 6 and 7 are similar views showing other forms of bars having head portions projecting at both sides of the web; and Fig. 8 is a similar view showing another form of bar in which the head projects inwardly only.

Our invention has relation to splice bars for rails, and is designed to provide a bar having a maximum amount of metal in its head at the inner side and underneath the rail head. We accomplish this object by extending the head portion of the bar inwardly to form a face which is substantially parallel to the rail web, this face extending downwardly to a point between horizontal planes lying at the top and bottom of the bolt holes for the joint bolts. Splice bars as heretofore constructed either do not have this upright face, or if they do it has been made to terminate above the tops of the bolt holes in order that the web portion of the bar may be made comparatively thin to facilitate punching the bolt holes. While our invention to some extent increases the work of punching or drilling the holes through the bar, the advantages gained in stiffness by the additional metal thus added to the head very much outweighs the increased difficulties of punching or drilling.

The precise nature of our invention will be best understood by reference to the accompanying drawings, which will now be described, in which we have shown it as applied to a number of different forms of bars, it being premised, however, that the inven-

tion is applicable to bars of other shapes and sections, as will be readily understood by those skilled in the art.

In the drawings, the numeral 2 wherever seen designates the head, and 3 the base of a T-rail.

4 wherever seen designates the splice bar constructed in accordance with our invention, and having a head portion fitting underneath the head of the rails, a foot portion fitting the base flanges of the rails, and a connecting web portion.

The form of the bar shown in Fig. 1 has a head portion formed by an inward projecting portion having its inner face 7 substantially parallel with the web of the rail but standing free from the web sufficiently to allow the bar to be drawn to the rail in taking up wear. The upright inner face of this head extension extends downwardly to a point 8 which is below a horizontal plane at the top of the bolt holes. At this point 8 it intersects a broad face extending abruptly inwardly and downwardly, and in this way a very substantial mass of metal is added to the head of the bar, and at the same time the metal is very greatly reduced at the horizontal neutral axis of the bar, which axis is located at about the bottom of the bolt hole. The characteristic and novel feature of our improvement is the extension of the lower inner edge 8, of the head of the bar to a point below the top of the bolt hole. It is apparent that this feature adds from one-third to one-half more to the head of the bar than would be possible if the lower inner corner of the head was located above the bolt hole. This is especially desirable in the type of bar shown in Fig. 1, which does not permit of an extension or reinforcing rib being added to the outer face of the bar. This vertical, ribless outer face is often necessary on bars which are to be applied to worn rails or to rails of the smaller sections having heads so shallow that the necessary clearance for wheel flanges precludes the possibility of adding metal to the head of the bar in the form of a rib on the outside. Under such circumstances, the addition as shown in this application, to the under side of the head on the inside, serves almost the same purpose as if added to the outside, although it is not quite

so far away from the horizontal neutral axis, and thus does not have quite as much value in affording stiffness to the bar.

The value of this improvement is especially marked when applied to the type of bar having a head projecting abruptly for a considerable distance beyond the inner face of the web of the bar, as shown in this figure, that is, when applied to a bar having a web located at considerable distance from the rail web, which is characteristic of the latest development in angle bar design.

Fig. 2 shows a bar having a head with its under face on the inside extending abruptly inwardly and lying entirely below the top of the bolt hole. This face is joined to the inner face of a vertical web by an enlarged fillet. The abrupt inward direction of the under face gives a more pronounced head and a longer, thinner web than is possible when the slanting inner face is used as in Fig. 1.

Fig. 3 shows a bar with a head joined very abruptly to a thin vertical web, the under faces of the head 10 and 11 being horizontal. This gives a distribution of metal which is most economical and is very similar to that of the rail. The under faces of the head extending below the top of the bolt hole give a maximum amount of metal in the head, and the horizontal under faces give length to the web and reduce the ineffective metal adjacent to the neutral axis to a minimum.

In Fig. 4 the under side of the head and the inside of the web is formed by a regular curve almost equal to a quarter circle. This curve forms one large fillet extending from the inner edge of the reinforcement on the under side of the head to the foot member and is effective when it is desired to increase the proportions of metal in the head of the bar over the most economical design, as shown in Fig. 3.

Fig. 5 shows the ordinary angle bar as used today with our reinforcement added to the under side of the head on the inside. It is apparent that the overhanging portion of the head is thus increased from one-third to one-half more than is possible in the usual type of bar having this under face lying entirely above the bolts.

Fig. 6 shows a narrow horizontal face under the head of the bar and below the top of the bolt thus affording the reinforcement. This under face is joined to a downwardly and outwardly slanting inner face of the web thus forming a slanting web, which tapers gradually to the point where it joins the head.

Fig. 7 shows a very large head tapered uniformly almost to the foot member, thus forming a very short neck or web portion. The extension of the lower inner edge of the head below the bolt hole makes a very

substantial increase to the amount of metal that can be added to such design of bar as has the large inwardly projecting head and wide slanting under face.

Fig. 8 shows a head overhanging only on the inside and having a wide horizontal under face 22 lying entirely below the top of the bolt. By the use of this broad under face the metal in the head is materially increased and the web which is reduced to a minimum is located adjacent to the outer edge of the rail foot in order to remove the buckling of the bar at this point. In this design our reinforcement forming the lower inner edge of the head is particularly desirable, since the amount of metal that can be added is large, on account of the wide overhanging head. When the web of the bar is thrown out adjacent to the edge of the rail foot in order to eliminate buckling, it is impossible to add much metal to the head of the bar on the outside in the form of a rib projecting beyond the bolting face, and it therefore becomes necessary to extend or reinforce the inner edge and under side of the head below the bolts, as outlined in our improvement.

While our invention is of special advantage in connection with bars such as shown in Figs. 1, 5 and 8, which have vertical outer faces and thus eliminate the necessity for the use of washers or for milling out or otherwise displacing the outer faces of the bar in order to provide vertical gripping faces for the nuts and bolts, it is, as shown, also applicable to T-head bars of the form shown in Figs. 2, 3, 4, 6 and 7, thereby providing a maximum amount of metal in the head of the bars where the greatest stiffness is required.

By extending the enlargement at the inner side of the head to a point below a horizontal plane lying at the top of the bolt holes, we take advantage of the additional space thus obtained which has heretofore been given up to bolt holes, and has, in so far as we are aware, never before been utilized for the purpose of providing increased stiffness of the head portions or members of the bars.

It will be obvious that our invention is not limited to the particular form of the bars which we have illustrated and described, since it can be applied to various forms of bars by extending the lower inner edge of the head below a horizontal plane at the top of the bolt holes.

We claim:—

1. A splice bar for rails to stand free from the rail web and having bolt holes through it, said bar having an inwardly-projecting head portion formed with an upright inner face adjacent to its top intersected by an outwardly extending face at a point between horizontal planes at the top and at the bottom of the bolt holes.

2. A splice bar for rails to stand free from the rail web and having an inwardly-projecting head portion adjacent to its top, a web and holes for clamping bolts, the lower inner edge of said head lying below the top of the bolt holes.

3. A splice bar for rails, having bolt holes through it and also having an enlarged upper head with an inwardly-projecting portion, the lower inner edge of said projecting portion lying between horizontal planes at the top and at the center of the bolt holes.

4. A splice bar for rails to stand free from the rail web and having bolt holes through it, and also having an enlarged head at its top with an inwardly-projecting portion, said projecting portion having an inner face substantially parallel to the rail web and extending below a horizontal plane at the top of the bolt holes.

5. A splice bar for rails, having bolt holes through it, and also having a foot member, a web member and a head portion projecting inwardly from said web, the lower inner edge of said head portion lying below a horizontal plane at the top of the bolt holes, and the upper face of said foot member being joined to the outer face of said web member by an enlarged fillet.

6. A splice bar for rails, having bolt holes through it, and also having a foot member, a web member and head portions projecting beyond both sides of said web, the lower in-

ner edge of the inwardly-projecting portion lying below a horizontal plane at the top of the bolt holes, said foot member bearing on top of the rail foot and extending downwardly opposite to its outer edge.

7. A splice bar for rails, having bolt holes through it and also having a top head with an inwardly projecting portion, the plane of the inner face of said projecting portion intersecting the plane of the under side of said portion at a point below a horizontal plane at the top of the bolt holes said portion being arranged to stand free from the webs of the rails.

8. A splice bar for rails, having a head with an inwardly projecting portion, and a web portion with bolt holes through it, said projecting portion arranged to stand free from the rail webs to form a clearance and having an upright inner face adjacent to the rail web and extending below the top of the bolt holes, said web having an inner face at a greater distance from the rail web than the inner face of the inwardly-projecting portion of the head of the bar.

In testimony whereof, we have hereunto set our hands.

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SAMUEL G. THOMSON.

Witnesses:

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