(No Model.)

McLEOD W. THOMSON.

RAIL SPLICE BAR.

No. 549,945. Patented Nov. 19, 1895.

Fig. 1.

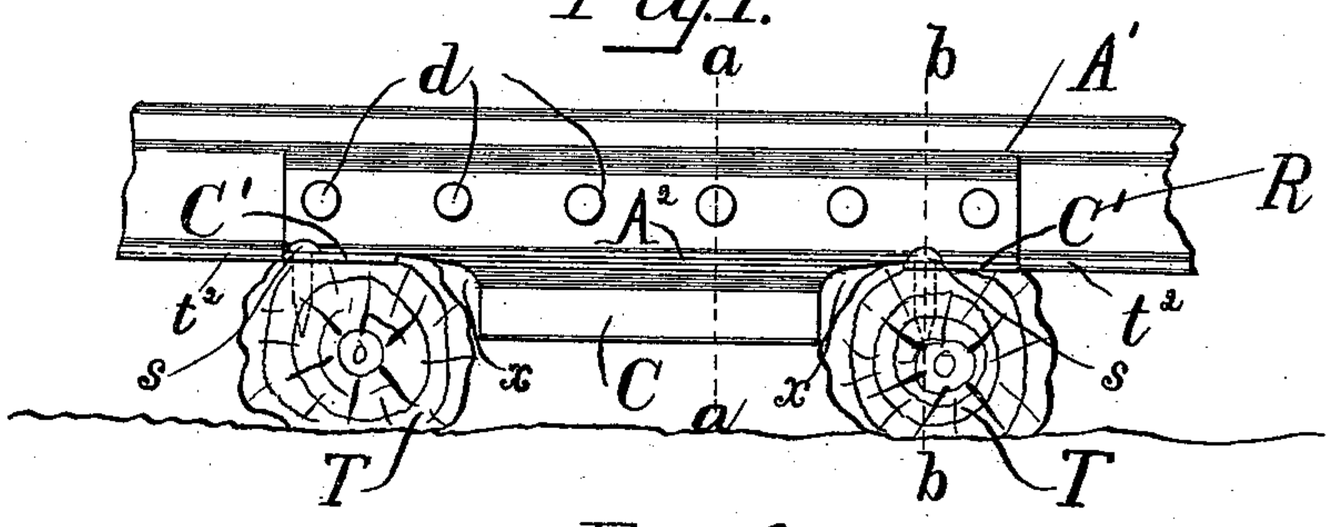


Fig. 2.

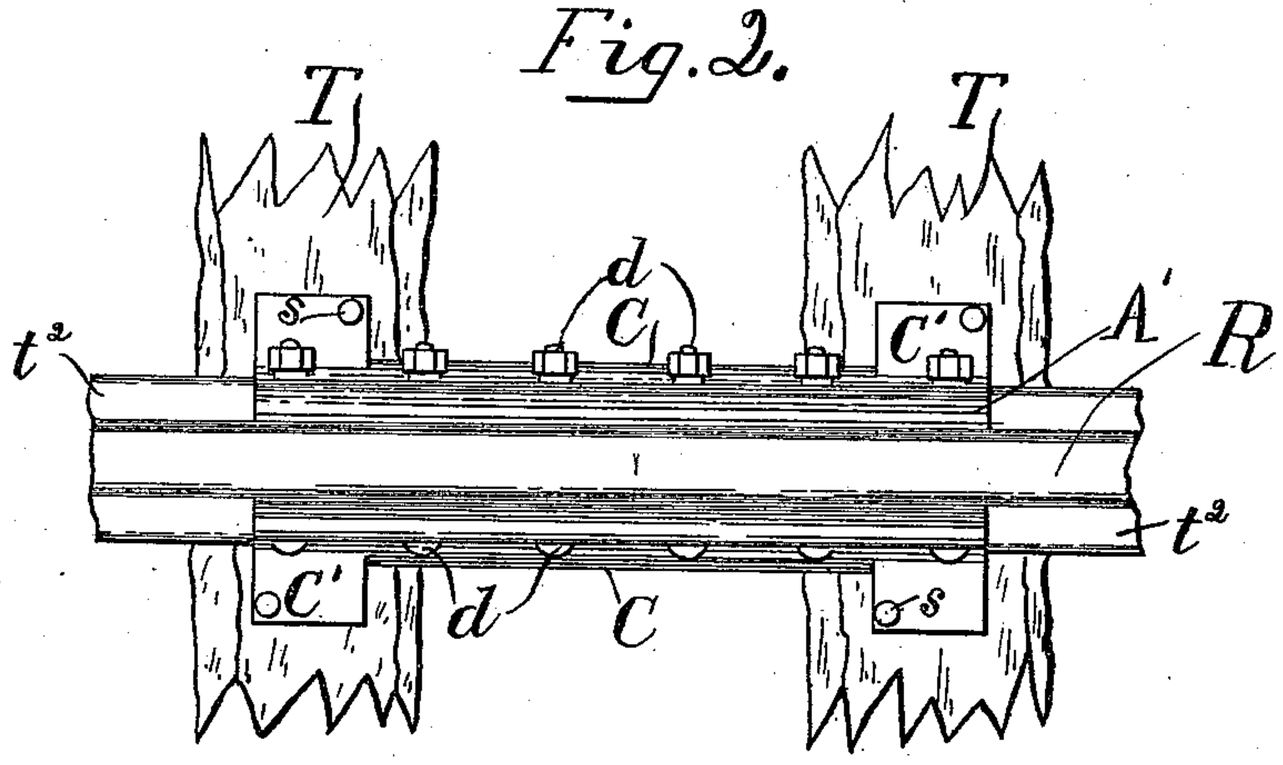


Fig. 5.

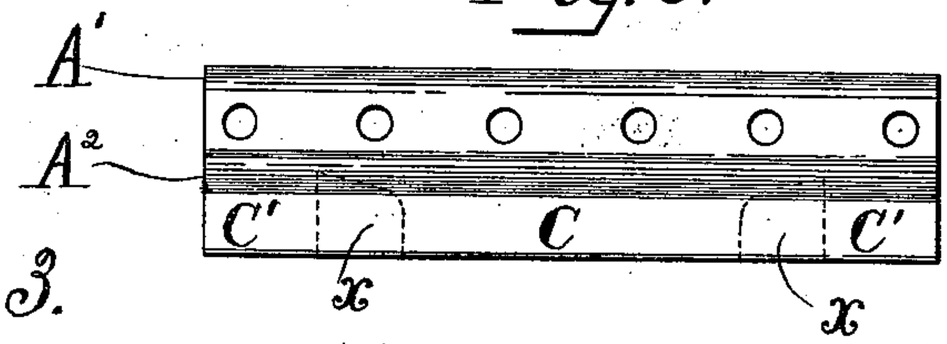


Fig. 6.

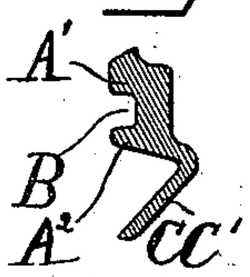


Fig. 3.

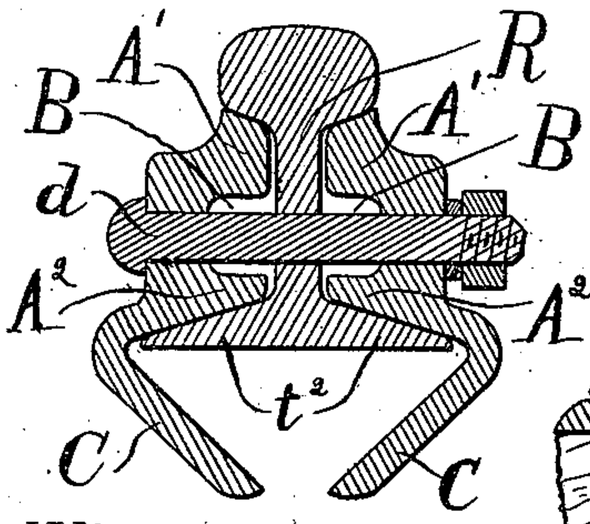
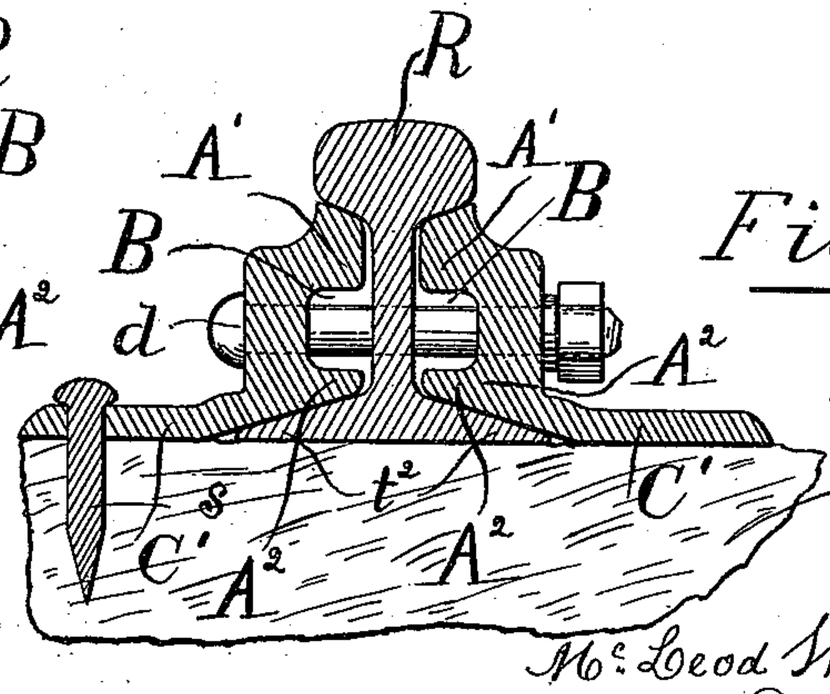


Fig. 4.



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UNITED STATES PATENT OFFICE.

McLEOD W. THOMSON, OF ALTOONA, PENNSYLVANIA.

RAIL SPLICE-BAR.

SPECIFICATION forming part of Letters Patent No. 549,945, dated November 19, 1895.

Application filed August 20, 1895. Serial No. 559,906. (No model.)

To all whom it may concern:

Be it known that I, McLEOD W. THOMSON, a citizen of the United States, residing at Altoona, in the county of Blair and State of Pennsylvania, have invented certain new and useful Improvements in Rail Splice-Bars, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is an elevation as applied to ordinary T-rails; Fig. 2, a plan view of Fig. 1; Fig. 3, a section on line *a a*, Fig. 1; Fig. 4, a section on line *b b*, Fig. 1; Fig. 5, a side elevation of the unfinished bar as rolled; Fig. 6, an end view of Fig. 5.

The object of this invention is to provide a splice-bar for railroad-rails that may be readily and cheaply made, of great strength, but comparatively light, firm, yet with a certain resiliency and with a stiffness about equal to that of the unbroken rail, so that the deflection at the joint shall be just the same as elsewhere.

It is a matter of common knowledge and observation among those skilled in railroading and in railway construction that the splice-bars in general use, which are more flexible than the rail, become "fatigued" and rupture in a comparatively short time at points about opposite the line of junction of the rails by reason of the changes in cohesion of the metal of the bars due to the countless excessive bendings under the passing loads. A number of forms of splice-bars have been devised with the view of overcoming or minimizing this serious defect, and although the problem would seem to be a simple one its solution is attended with no little difficulty by reason of mechanical and space limitations.

The splice-bars should not be too light, too heavy, too elastic, or too rigid. To the end of fulfilling these requirements and securing the advantages above mentioned—referring to the accompanying drawings, which illustrate the preferred specific form of my improvement—I take a "bloom" of iron or steel and by means of a set of rolls with a pass or passes of suitable contour I impart to the bloom the contour seen in Fig. 6—that is to say, constituting what may be termed the "blank" for the splice-bar. It has a continuous upper limb or member A′, whose free end is designed, when the finished bar is applied as in use to the ordinary T-rail, to bear against the under side of the head of the latter; a second member A^2, to bear against and upon the foot-flange t^2 of the rail; a groove or interspace B between these two members, and a dependent flange C C′, bent inwardly toward the faces of the parts A′ A^2 at an angle, preferably, of about forty-five degrees. The relation of these parts to the rail or rails R in practice will be clearly seen upon referring to Fig. 3. This blank is prepared for use as a splice-bar by punching the necessary transverse bolt-holes on a line with the groove or recess B and by removing the flange at *x* toward the ends thereof, as indicated by the dotted lines in Fig. 5. Finally the end portions C′ are bent outwardly to a horizontal line. These latter rest upon the ties T, Figs. 1 and 2, upon each side of the junction of the rails and are secured to the ties by the usual spikes *s*. The depending inbent part of the flange is of such length as to avoid interference with the ties, as seen in Fig. 1, the usual length of the bar being about twenty-six inches—that is, somewhat more than the distance between vertical lines extending through the centers of the two ties on opposite sides of the joint.

A splice-bar is of course used on each side of the rails, and the two are secured by means of through-bolts *d*. As will be seen by reference to Fig. 1, the bend of the flange C embraces or is contiguous to the edge of the base or foot of the rail, and the depth of the flange is, preferably, about equal to the height of the remaining upper portion of the bar.

The result of the form and construction hereinbefore described is a splice-bar that is efficient and very strong in proportion to its weight and dimensions. As the tendency of the free ends of the inbent flange is to still further bend or move inwardly or upwardly from the stress of passing loads, and consequent deflection of the two splice-bars where the ends of the rails come together, the action is a clasping instead of a spreading one. Again, while the ultimate strength and stiffness of the hereinbefore-described splice-bars are very great, the interspace or channel B, extending outwardly from the vertical medial plane of the rail fully as far as does the

head of the rail, as shown, leaves the members A′ and A² free to vibrate or spring toward each other, and thus provides an elasticity that the splice-bars in general use do not have—an elasticity that saves the bar itself from rapid destruction under the sudden and severe stress of passing wheels in the nature of blows.

As illustrating the resulting great gain in stiffness or resistance relatively to the amount of metal and work to that of the ordinary splice-bar, let it be assumed that the stiffness of the unbroken rail when placed in track is one hundred The relative stiffness or resistance of my splice-bar *in situ* will be about one hundred and eight, that of the ordinary plain splice-bar about thirty, and it may be added that of a splice-bar similar to mine, but without the flanges—that is, cut away on a line with the under side of the base of the rail—about thirty-nine.

The inturned flange will not interfere with the customary repair or tamping of the roadbed, as the workman may readily apply his tools to the ballast under the joint-ties.

I remark that the "blanks" may be rolled as a long rail and afterward divided up into suitable lengths for single splice-bars.

I do not wish to be understood as limiting myself to an angle of forty-five degrees in the bend of the flange C, as the angle may be somewhat varied without departing from the principle of my invention. It is, however, essential that the angle shall be less than a right angle and that the ends of the flanges of the two opposite splice-bars in place shall be out of contact and free to move toward each other under the circumstances and for the purpose hereinbefore mentioned.

I am aware of the fact that splice-bars have been constructed or described with flanges or side plates below the base of the rails, bent inwardly to embrace the latter or an interposed wedge or bridge piece, the said flanges being connected by means of bolts passing through the same. These constructions, however, do not accomplish the *desiderata* attained by my construction.

Having thus described my invention, I claim as new and useful—

1. The combination with the aligned contiguous rails, of the two splice-bars secured together and to said rails, and having each a flange extending inwardly below the base of the rails at an angle of about forty-five degrees, the lower extremities of said flanges being free to move toward each other by the action of the cars passing over the rail-junction, substantially as and for the purpose set forth.

2. A rail splice-bar having a depending flange integral therewith, with cut away portions, and the part of said flange between the latter bent inwardly at an angle of about forty-five degrees, and the end parts beyond the cut away portions, respectively, bent horizontally, substantially as and for the purpose specified.

3. The combination with two aligned contiguous rails supported upon the ties on opposite sides of junction therewith, of splice-bars on each side of the rails; each of said bars having an upper projecting member engaging the under side of the heads of the rails, a lower projecting member engaging the top of the feet of the rails, an inwardly bent flange depending from said lower member, at an angle of about forty-five degrees to the base of the rails, horizontal end flanges secured to the said ties, a contiguous groove between said upper and lower members, and through bolts traversing said groove, and rails, substantially as and for the purpose described.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

McLEOD W. THOMSON.

Witnesses:
W. C. HOAR,
E. M. JONES.