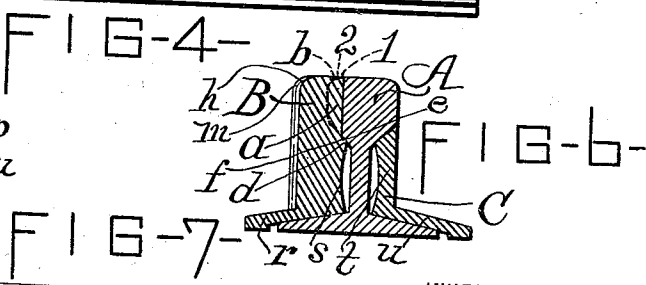
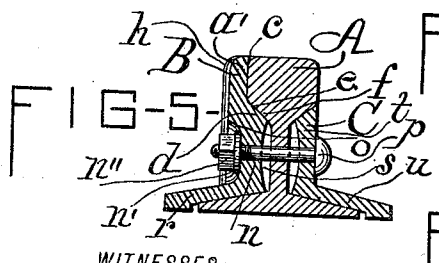
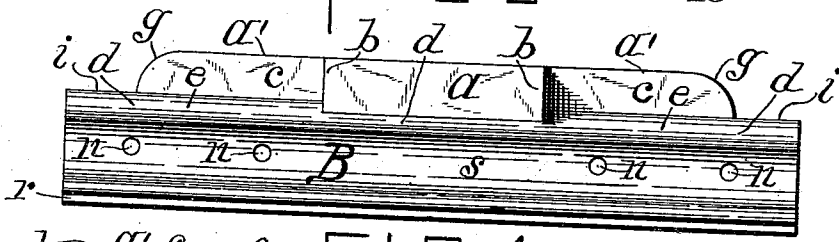
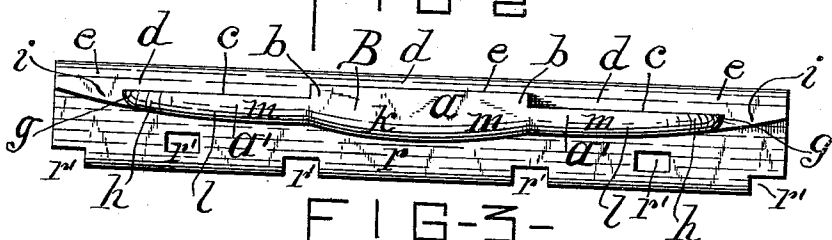
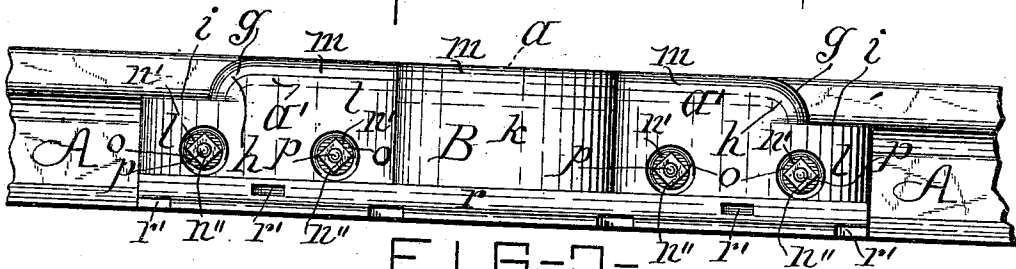
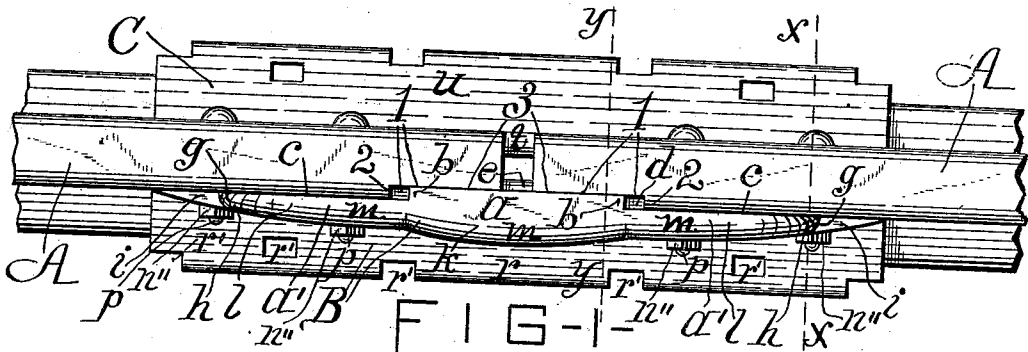


(No Model.)

M. MARTIN.  
RAILWAY RAIL JOINT SPLICE AND BRACE.

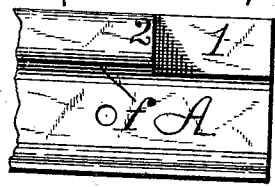
No. 514,862.

Patented Feb. 13, 1894.



WITNESSES:

E. Butler  
E. Hankins



INVENTOR -  
Matthew Martin  
BY  
C. Raymond  
his ATTORNEY.

# UNITED STATES PATENT OFFICE.

MATHEW MARTIN, OF CALEDONIA, NEW YORK.

## RAILWAY-RAIL-JOINT SPLICE AND BRACE.

SPECIFICATION forming part of Letters Patent No. 514,862, dated February 13, 1894.

Application filed January 11, 1892. Serial No. 417,753. (No model.)

*To all whom it may concern:*

Be it known that I, MATHEW MARTIN, a citizen of the United States, residing at Caledonia, in the county of Livingston and State of New York, have invented certain new and useful Improvements in Railway-Rail-Joint Splices and Braces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, in which—

Figure 1, is a top plan of my device as applied to the uniting of adjacent rail extremities; Fig. 2, an outer or front elevation thereof; Fig. 3, a top plan of the outside splice and brace plate as detached from the other portions; Fig. 4, a rear elevation of same in detached position; Fig. 5, a vertical transverse section through the parts as united, taken upon dotted line *x, x*, Fig. 1; Fig. 6, a like sectional elevation taken at dotted line *y, y*, Fig. 1; and Fig. 7, a detail, outside elevation, of a rail extremity as constructed for adaptation to my novel form of splice and brace.

Like letters and figures of reference denote corresponding parts throughout the several views of the drawings.

The object of my invention is to produce a splice and brace for the meeting ends of railway rails at their point of joining of such novel, durable, efficient and comparatively inexpensive construction as will insure the conjoint fastening of the rail ends immovably and accurately in position lineal and longitudinally; forming a practically solid and continuous tread or bearing, and that at the usually weakest spot—the abutting ends of the rail sections—will possess as great durability, strength, and resistance as is embodied in the central parts of the rail lengths; and presenting a smooth, continuous, and virtually unyielding bearing for the car wheels traveling upon the rails constituting the railway. Moreover, the object in view is to so coincidentally interlock and bracingly support the meeting ends of the rails—which rail ends are so constructed as to permit of the proper interlocking—in such a manner as to insure not only a thoroughly reliable and practical

rail-joint fastening, but also a satisfactory bearing surface of such nature and durability as to entirely prevent the pounding of the rail ends, as is so frequently the case in the employment of many of the common forms of rail joint splices now in use, and finally, the production of a rail-joint fastening and brace that is readily applied in place, as readily removed, and which may be attended to by the trackman with ease and rapidity in the tightening of the parts as may be requisite through the possible infrequent working loose of the nuts upon the connecting bolts, as may occur when proper nut locking devices are not employed.

My invention consists in the novel features of construction, combination, and adaptation hereinafter described, and which are specifically enumerated in the claim hereto annexed.

My device is constructed and arranged as follows:

A, A, are railway-rails—only the adjacent extremity of each being illustrated—arranged longitudinally lineal one to the other, each rail comprising the usual form of head (or tread), upright web (or neck), and rail foot (or lateral web). In the adaptation of the said rails for the utilization of my device, a portion is taken off of the head of the rail at its outer side, at each rail extremity, the said cut-away portion extending from the termination of the rail's ends longitudinally a short distance in the direction of the central portion, which cut or notched portion of the outer side of the head of the adjacent rail ends of independent rails forms at each head termination a longitudinal vertical mortise or recess 1, creating at their point of termination away from the rail's end a shoulder or off set 2, as clearly illustrated in the annexed drawings.

B, is my main splice and brace plate, of peculiar formation, which, when bearing against the outside of the meeting ends of two rails, in conjunction with an ordinary form of fish or splice plate C, erected at the opposite side of the rail's ends and whereto it is connected by screw bolts or other fastenings passing through the interposed rail extremities, securely and firmly retains the rail sections in operative position. The plate B, of

same length longitudinally with the rails, and which, as well as the plate C, stands vertically and abuttingly against the rail heads and the rail feet, comprises at its inner face or side a lateral center piece or tenon *a*, located midway the ends of said plate, which tenon portion is of such dimensions as to adapt its fitting into the double mortise 3, created by the side-mortised ends of the meeting extremities of the rails A, A, and at its face part being in close impact with the face of the individual mortises 1, 1, and at its ends or shoulders *b, b*, standing slightly away from the offsets or shoulders 2, of the rails at their recessed portion to permit of the unrestricted expansion and contraction of the rails longitudinally from the effects of cold and heat. Likewise, a corresponding degree of space is provided for between the ends of the rail sections for like purpose. The inner faces of the respective wings *a', a'*, of the plate B, which are located at either side of the projecting center-piece or tenon *a*, have a smooth vertical face as at *c*, permitting said parts to abut directly against the straight outside edges of the non-mortised portions of the rail heads. Said tenon portion *a*, and inward located smooth vertical wall parts *c, c*, of the wings *a'*, commencing vertically at a point lineal with the bottom commencement of the perpendicular outside of the head of the rails and continuing up to the top surface of the heads and horizontally flush therewith; and forwardly from the lower termination of the tenon *a*, and wall faces *c, c*, of the wings there projects a shoulder portion *d*, having a downwardly beveled upper edge *e*, which shoulder with its beveled top edge extends from end to end of the plate B, the bevel projecting slightly out beyond the face of the tenon or center-piece, as shown, and whereby the shoulder *d*, is adapted to bear against the inclined underneath part *f*, of the head portions of the rails when bolted in place. Endwise, at that point away from the centrally located center-piece or tenon *a*, the wings *a', a'*, extend to within a short distance of the extremities of the plate and terminating thereat in rounded edge *g*, which is gradually tapered outwardly as well, as denoted at *h*, the rounded ends of the wings ending vertically and at a right-angle to the horizontal beveled surface *e*, of the lengthy shoulder *d*, wherewith the ends *g, g*, intersect, and creating, as shown, beyond the end terminations of the aforesaid wings a depressed portion *i*, horizontally lineal with the beveled surfaces *e* of the continuous shoulder or bearing *d*, and being coincidently beveled therewith.

The outer vertical face or front side of the plate B, comprises centrally its length a swell or convex portion *k*, bulging outwardly, and extending longitudinally a distance corresponding to that of the opposite tenon portion *a*, and whereby the greatest width of bearing surface of the said plate is insured at that point; while, starting at the terminating

points of the swell part *k*, whereat the wings *a', a'*, commence, the outer and vertical face of the said plate B, gradually curves or tapers inwardly toward the ends of the plate as at *l, l*, and thereby causing the vertical portion of the plate to be of the lesser thickness transversely at its terminations—as is clearly shown in the drawings. The top edge of the middle portion and the wings is outwardly rounded off as denoted by the letter *m*.

Upon either side of the central swelled portion of the plate B, are a pair of bolt-holes *n*, a suitable distance apart, that extend transversely through the plate, and located substantially about as shown, which holes outwardly are slightly countersunk and widened sufficiently to permit of the reception of a washer *n'*, and nut *n''*, within the countersink *o*, when applied to the end of a headed bolt *p*, inserted through the bolt-hole. The vertical portion of said plate B, terminates downwardly in an inclined flange *r*, provided with customary spike-holes or notches *r'* arranged about as shown, said flange being adapted to rest upon the foot of the connected rails. At its inner face the upright portion of the plate is concaved, as at *s*, contiguous to the upright web or neck of the rails whereby a continuous space is secured between the rail and the plate B at such portion.

The fish-plate C, is of ordinary form, comprising an upright flange part *t*, provided with bolt-holes lineal with those in the plate B, and those in the upright web of the rails, and at its bottom with an inclined flange *u*, similar to that upon the plate B, and adapted to rest upon the foot portion of the rails, and correspondingly provided with spike holes and notches preferably disposed similar to those of the plate B. The rails being longitudinally and lineally disposed upon sleepers by spiking, there being allowed a slight space between the adjacent practically meeting ends thereof, the fish-plate B, is placed against the outer side of the said rail sections at their meeting ends, and the fish-plate C, against said rail extremities at their inner side, and headed screw-bolts then inserted through the apertures or bolt holes of the inner plate through the orifices in the rails and thence protruding through the bolt-holes of the outer main plate B, are provided at said free ends with a washer and a nut, which nut is worked upon the threaded bolt-end until the plates B, C, bear tightly against the interposed rail extremities, securing the same rigidly in place and thereby insuring a practically continuous rail throughout the track's length; while the plates are firmly secured to the ties, (and coincidently the rail ends,) by spikes driven into same through the spike-holes of the said plates.

It is obvious that my form of construction of rail joint splice and brace affords a perfect and superior tie for the meeting ends of rails; that the center-piece or tenon of the outside fish-plate creates a virtually continu-

ous bearing or tread for the wheels passing along upon the rails, and by reason of its protruding into the head of the rails a distance and lying horizontally flush at its top surface with the upper surface of the rails, a solid and smooth track is presented for traffic, and that by reason of the parts removed from the rail heads and the center piece or tenon of the plate fitting in the mortises created therein, whereby said center-piece comes underneath the wheels to an extent, no pounding or jarring is possible—and wearing of the head of the rails at their extremities entirely impossible, besides having a saving effect upon the rolling stock—as is readily apparent. The outside fish-plate being centrally of about double the thickness of its other portions, at its point of bearing against the rail heads, insuring the greatest amount of strength and solidity at the most requisite portion—the meeting ends of the rails—is of immeasurable importance, and the rounding of the ends of the wing portions, as well as other general special configuration, renders easy and smooth travel of the car wheels across the rail joint, as is self-evident. Consequently, it is clearly seen that, my device not only insures thorough splicing, interlocking, and bracing of the rail extremities, but correspondingly affording a smooth con-

tinuous rail surface at the jointed ends, and causing the rails thereat to be as stiff as at other parts, as well as providing a durable bearing surface at such places and in such manner as to absolutely prevent all jar or pounding of the rail ends under all circumstances.

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

The combination with the rails having notches in their treads at their ends, of the splice and brace bar resting on the flanges of the rails and having its web out of contact with the webs of the rails, said web being thickest at its center and tapering toward both ends, and having a central offset on its inner face engaging the notches at the ends of the rails and wings extending from said offset bearing against the sides of the treads, and a shoulder extending the entire length of the bar and bearing against the under sides of the treads.

In testimony whereof I affix my signature, in presence of two witnesses, this 14th day of September, 1891.

MATHEW MARTIN. [L. S.]

Witnesses:

J. MCYORK,

R. W. MATTESON.