

(No Model.)

R. P. MORGAN.  
RAILWAY RAIL JOINT.

No. 417,739.

Patented Dec. 24, 1889.

Fig. 1.

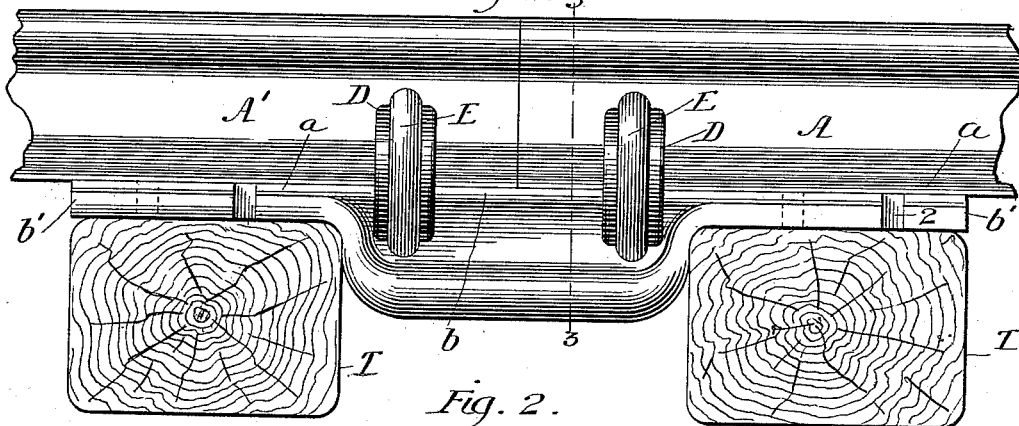


Fig. 2.

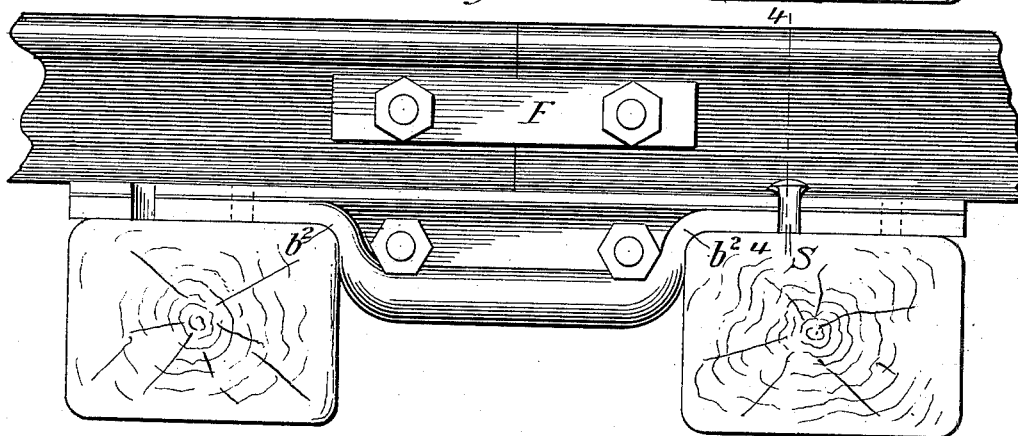


Fig. 3.

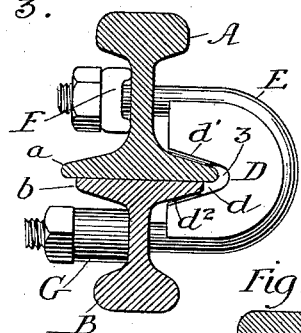


Fig. 5.

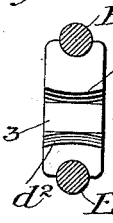


Fig. 6.

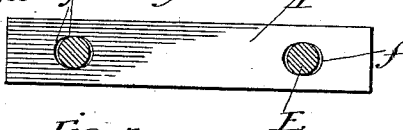


Fig. 7.

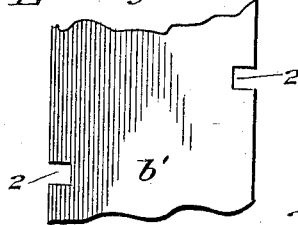
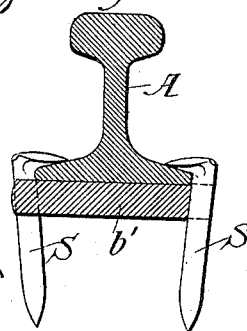


Fig. 4.



Witnesses:

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# UNITED STATES PATENT OFFICE.

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## RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 417,739, dated December 24, 1889.

Application filed April 15, 1889. Serial No. 307,250. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD PRICE MORGAN, a citizen of the United States, residing at Dwight, county of Livingston, State of Illinois, have invented certain new and useful Improvements in Railway-Rail Joints, of which I do declare the following to be a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention has relation to that class of railway-rail joints in which a sub-rail is employed to support the abutting ends of the track-rails, and in which, also, suitable jaws are used for clamping the ends of the track-rails to the sub-rail by means of bolts that encircle the jaws and pass through the webs of the track-rails and sub-rail. An example of this type of railway-rail is illustrated in Letters Patent No. 297,283, granted to the Morgan Rail Joint Company as my assignee April 22, 1884.

My present invention consists in the various novel features of construction hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the claims at the end of this specification.

Figure 1 is a view in side elevation of two abutting track-rails having my improved joint applied thereto. Fig. 2 is a view similar to Fig. 1, but taken from the opposite side. Fig. 3 is a view in vertical transverse section on line 3-3 of Fig. 1. Fig. 4 is a view in vertical transverse section on line 4-4 of Fig. 2. Fig. 5 is a front end elevation of the clamping-jaw, the encircling staple being shown in section. Fig. 6 is a face view of the alignment-bar, the staples being shown in section. Fig. 7 is a fractional plan view of one end of the sub-rail.

Beneath the abutting ends of the usual track-rails A and A' extends the sub-rail B, the body of which comprises a top flange *b*, corresponding in general contour with the contour of the flanges *a* of the track-rails above it. The sub-rail B has its ends formed with the flattened or reduced portions *b'*, that rest upon the surface of the cross-ties T, and by preference, also, these flattened or reduced ends of the sub-rails are expanded to

a width greater than the width of the flanges of the track-rails, as more particularly seen in Fig. 4, in order to permit the expanded ends of the sub-rail to be furnished with suitable slots 2, through which will pass the spikes S, that serve to firmly hold the sub-rail to the cross-ties. By thus flattening the ends of the sub-rail B all necessity for the cutting away of the upper face of the cross-ties is avoided, and a very material saving in expense is thereby secured; and by laterally expanding the ends of the sub-rail to such an extent as to give to these ends a width greater than the width of the superposed track-rails I not only secure broad bearing ends, and thereby save the wear upon the ties, but I am enabled, also, to provide the ends of the sub-rail with slots for the spikes, and thereby secure a much more effective spiking of the sub-rail to the cross-ties than was possible with my prior construction, in which no such expansion of the ends of the sub-rail was made. The body of the sub-rail B is also preferably formed with the somewhat square or abrupt shoulders *b<sup>2</sup>*, which will bear against the sides of the ties T, and will thus serve to better maintain the track in position. Upon the flange *b* of the sub-rail and upon the flanges *a* of the track-rails are set the jaw pieces or blocks D, that are furnished with suitable seats or indentations *d*, to admit the flanges of both the track-rails and the sub-rail. The seats *d* of the jaws D are formed with the bearing-surfaces *d'* and *d<sup>2</sup>*, adapted to bear, respectively, upon the upper faces of the flanges of the track and sub rails, and it will be observed that the seats or indentations are formed of such depth as to leave a space 3 adjacent the edges of the rail-flanges. My object in thus forming the seats or indentations *d* of the jaws D of such depth as to afford bearing-surfaces adapted to bind upon the flanges of the rail at some distance from their extreme edges is to enable a more effective binding of the rail-flanges together than is possible where the bearing of the jaws occurs at the extreme edges of the rail-flanges, and in practice I have found that this feature is of material importance, since if the binding of the

jaws occurs at the extreme edges of the rail-flanges, and if the edges of the flanges be warped or rounded, as is frequently the case, the tendency of the clamping action of the jaws upon one side of the rail-flanges is apt to cause a tipping or separation of the flanges upon the opposite side of the rail. Obviously this action will not occur when the binding of the jaws upon the rail-flanges is secured at a point remote from the edges of the flanges. Moreover, by thus forming the seats of the jaws it becomes possible to tighten the binding action of the jaws upon the rail-flanges from time to time after wear—a provision that could not so well be secured if the edge of the rail-flanges at the outset completely filled the seats or indentations of the jaws.

The exterior surface of each of the jaw-pieces D is by preference provided with a groove adapted to receive the curved portions of the staples E, that encircle the jaw-pieces and pass through suitable openings formed for the purpose in the track-rails A and A' and in the body of the sub-rail B, and the upper ends of these staples also pass through the alignment-bar F, that lies between the treads and flanges of the track-rails, while the lower ends of the staples are by preference provided with suitable washers or thimbles G, beneath the outer flange of the sub-rail, suitable nuts upon the ends of the staples serving to tightly bind the several parts in position.

By reference more particularly to Fig. 5 of the drawings it will be observed that the jaw-pieces D, which serve to bind together the track-rail and sub-rail, have slightly-elliptical inner surfaces bearing upon these parts—that is to say, the binding-surfaces  $d'$  and  $d''$  of the jaws are each formed upon an elliptical curve. The purpose of thus forming the bearing-surfaces of the jaw-pieces is to permit a slight rocking motion of these pieces, as the ends of the track-rails are moved by the expansion and contraction incident to changes in temperature, and it is plain that as the jaw-pieces are thus allowed a slight rocking motion the elliptical surfaces will at all times bear upon the flanges and maintain a uniform and close contact of the track-rail and of the sub-rail.

My purpose in employing the alignment-bar F is not merely to guard the track-rails against lateral displacement, but is also to limit the extent of contraction and expansion of the track-rails, and for this reason the openings  $f$  of the alignment-bar F, through which the staples E pass, are made oblong and somewhat larger than the diameter of the bolts or staples E, so that when a contraction or expansion of the track-rail occurs the bolts or staples E will be free to move with the track-rails to the extent of the elongated slots or openings of the alignment-bar; but it is obvious that when the bolts or sta-

ples E contact with the edges of the elongated slots or openings  $f$  further expansion or contraction of the track-rails will be resisted.

An additional important function performed by the alignment-bar in the present instance is that it secures a better action of the clamping-jaws, particularly when these jaws are formed with the curved bearing-surfaces  $d'$  and  $d''$ , since the alignment-bar serves to prevent the contraction of either of the track-rails to such extent as would tend to twist the jaw-pieces D out of position, and, moreover, by reason of its location upon the side of the track-rails opposite the jaw-pieces it tends to hold the bolts or staples E in straight line with respect to the jaw-pieces, so that a straight rocking movement of the jaw-pieces upon the rail-flanges is secured. In other words, when an alignment-bar is not employed there is danger, under extreme contraction and expansion of the track-rails, that the upper ends of the bolts or staples E will be so far drawn out of line with their lower ends as to twist the jaw-pieces upon the rail-flanges and thus destroy their effective action.

It will be readily understood that the details of construction above set out may be varied without departing from the spirit of my invention.

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

1. The combination, with the track-rails, of the sub-rail having the flattened ends to rest upon the cross-ties, substantially as described.

2. The combination, with the track-rails, of the sub-rail having the main body to rest between the cross-ties and having the flattened ends to rest upon the ties, said flattened ends being expanded, substantially as described.

3. The combination, with the track-rails, of the sub-rail having the flattened ends to rest upon the cross-ties, said flattened ends being expanded and provided with slots to receive spikes, substantially as described.

4. The combination, with the track-rails, of the sub-rail, the jaw-pieces, the staples passing through the sub-rail and track-rails and over the jaw-pieces, and the alignment-bar between the tread and flange of the track-rails upon the sides of the rails opposite the jaw-pieces, substantially as described.

5. The combination, with the track-rails, of the sub-rail, the jaw-pieces having elliptically curved bearing-edges  $d'$  and  $d''$ , the bolts or staples passing through the sub-rail and track-rails and over the jaw-pieces, and the alignment-bar between the tread and flange of the track-rails upon the side of said rails opposite the jaw-pieces, substantially as described.

RICHARD PRICE MORGAN.

Witnesses:

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I. B. CARPENTER.