D. C. CREGIER.

Railway Tie and Chair.

No. 215,509. Patented May 20, 1879.

Fig 1.

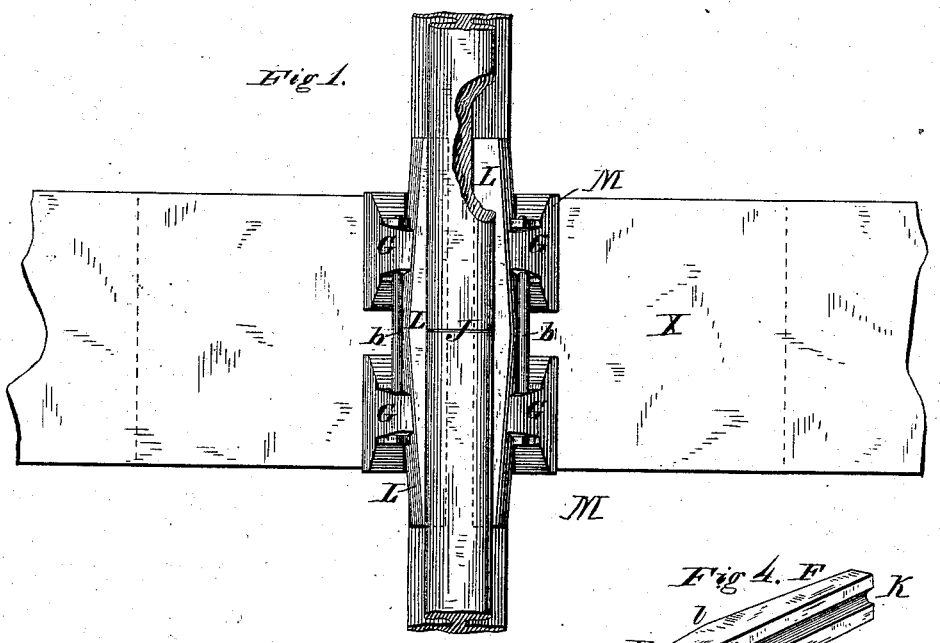


Fig 4.

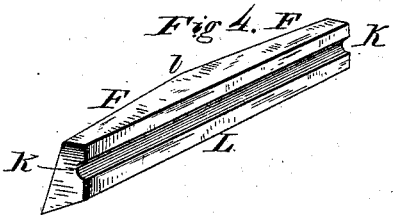


Fig 2.

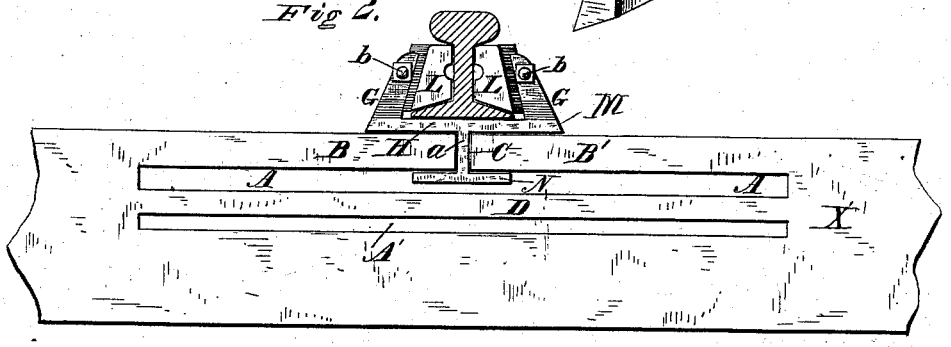
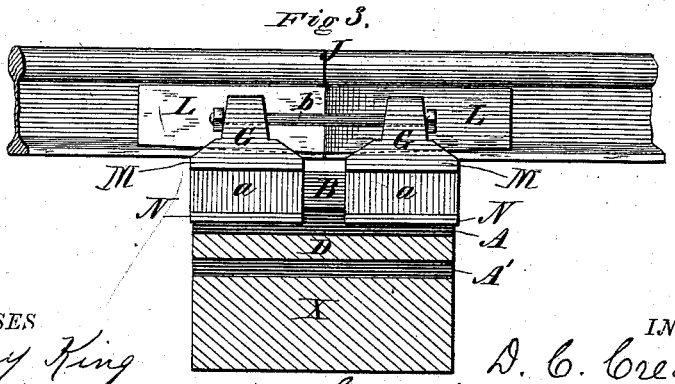


Fig 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

DEWITT C. CREGIER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN RAILWAY TIE AND CHAIR.

Specification forming part of Letters Patent No. **215,509**, dated May 20, 1879; application filed August 20, 1878.

To all whom it may concern:

Be it known that I, DEWITT C. CREGIER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railroad Cross-Ties and Fastenings for the Ends of the Rails; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification—

Figure 1 is a top view, showing the abutting rails, chairs, fish-plates, and tie. Fig. 2 is a side elevation of the tie, the rail being shown in vertical section, and the chair and fish-plates in end view. Fig. 3 is a side elevation of the rails, fish-plate, and chairs, the tie being shown in vertical transverse section. Fig. 4 is a separate view of the fish-plate.

The same letter indicates the same part wherever it occurs in the several figures.

The nature of my invention consists in providing the abutting ends of the rails of a railway-track with a secure and elastic bearing and fastening for the purpose of obviating the flattening, spreading, and abrasion of the abutting ends of the rails, the consequent inequality of the track, and the injury to rolling-stock resulting from it, all in the manner hereinafter more fully described.

The joints of a railroad-track, when resting on or secured to a solid road-bed, or to wooden cross-ties or sleepers, are subjected to greater wear and damage from the frequent blows and concussions of the wheels of a train of cars than the intermediate surface of the railroad-track, because the joints break the continuity of the rail, and the ends of the rails therefore more readily yield to the effects of the hammering action of the wheels, whereby the rail ends are caused to flatten, spread, and disintegrate, producing an inequality in the surface of the track, involving increased wear and damage to the rolling-stock moving over the track, and frequent and expensive repairs to the parts thus affected.

For these and other reasons an elastic bearing for the abutting ends of the rails forming the track, which will cause them at all times to coincide, and will accommodate itself by yielding to variable concussions or blows, and, upon being released from such force, will recover its normal condition, is very desirable.

It is also essential that the rails should be secured to said elastic bearing by a fastening which shall move with and share the elastic action of the bearing.

The object of my invention is to secure the advantages referred to, and for this purpose I construct and arrange the ordinary wooden railway cross-tie, or its equivalent in metal, so that said cross-tie will constitute in itself an efficient spring or cushion of any desired degree of elasticity, whether it is laid on solid rock or any other natural or artificial substructure.

My invention particularly consists in providing in the body, at each end of an ordinary cross-tie, sleeper, or other bearing which supports the abutting ends of the rails of the track, one or more slots or open spaces parallel to the grain of the wood, as shown in Fig. 2, X being one end of a cross-tie, and A A′ showing the slots or open spaces aforesaid. The width and length of said slots, as well as their relative position to each other, must be such as the character of the wood, metal, or other material of which the bearing is composed, and the degree of elasticity required, may demand.

Instead of making these slots in the solid tie, the cross-tie or sleeper may be formed of several layers of suitable material, such as plank of proper size and thickness, so combined as to leave the open spaces or slots A, A′, and C, and thus produce the desired spring or springs B, B′, and D, Figs. 2 and 3. One such elastic cross-tie is deemed sufficient for each joint of railroad-track, although two of less width may be used, laid parallel and close to each other, so that the end of each rail may have an independent spring.

A cross-tie may also be laid so as to rest upon a bearing at each end and in the middle, with space underneath on the line of track, and thus form a similar spring for the same purpose; but I prefer a cross-tie constructed as herein shown and described.

The upper web, B B′, Fig. 2, forms in itself a spring to receive the impact or blow of the

wheels of a passing train of cars. Should the force of concussion on the springs B B′ be great enough to compress them so that they shall be brought down upon web or spring D, or others that may be below, then such additional webs or springs will receive a portion of the transmitted force and become active, thus rendering the whole more rigid. These webs or springs may be multiplied in number, and be so proportioned as to afford any desired degree of elasticity.

The transverse opening C, Fig. 2, in the top web or spring, B B′, forms a slit to receive the vertical shank *a* of the chair M, which secures the rail-track to the cross-tie X.

The joints of the rail-track are each provided with two suitably-formed fish-plates, L L. The external surfaces, F F, of said fish-plates taper from the center toward each end, thus forming two longitudinal inclined planes. The said surfaces also taper from bottom to top, (see Figs. 2 and 4,) so that the jaws G of the chair M, when forced toward the center of fish-plates by bolts and nuts *b b* passing through the tops of jaws G, will bind the rail ends together and hold them from rising.

The greatest section of fish-plates is at the center, or at the joint of rail-track J. The bottom of said fish-plates is as broad as the bearing-flange of rail, and the configuration of all the bearing-surfaces of the fish-plate conforms to the outline of the rails of the track.

The ends of the abutting rails of the track are secured to the elastic cross-tie X by two properly-constructed chairs, as shown, in combination with the said fish-plates. No holes are required through the vertical web of rails, nor are any spikes necessary to fasten said rails to the cross-ties. The chairs may be made of steel, iron, or other suitable material, of required proportion and strength.

In Fig. 2, end view of chair is shown. The binding-jaws, as shown in Fig. 1, have a compound taper on the inside to conform to the tapers of the fish-plates at F F. The cross-web H rests upon the top of the cross-tie, and serves as a broad bearing for rail-track, thus protecting the surface of cross-tie from wear by the flange of rail.

Vertical web *a*, Fig. 2, is located transversely in slot C of the cross-tie, fitting closely to the ends of the upper web or spring, B B′, and serving to prevent any lateral displacement of the track.

The square flange N, Figs. 2 and 3, at the bottom of vertical web *a*, is located in slot A, and fits closely to the under side of springs B B′. Said flange extends on either side of slit C, and thus securely holds the rail-track down to cross-tie. Slot A is wider than slot A′, to allow flange N to move downward some distance before it touches web or spring D.

The rails are free to move through the binding-surfaces of fish-plates L L at pleasure, so that expansion and contraction may take place without interruption from bolts through the rail or spikes in the tie. The fish-plates and chairs, however, cannot move in a horizontal direction, because of the counter-planes F F on fish-plates.

The groove or channel K in fish-plates is mainly designed to lighten the mass and insure a positive bearing on the web of the rails.

When the cross-tie is placed below the surface of the ground the slots A A′ should be covered with wood, stone spalls, slate, or some material, to prevent dirt from entering. On bridges or other superstructures such covering will not be required.

Having thus fully described my invention, I wish it to be understood that I do not claim the laying of rails upon blocks having a recess cut in their lower side, as described in Patent No. 43,586; nor do I claim, separately, the double tapering fish-bar and chair as shown in English Patent 1,780 of 1853; but

What I claim, and desire to secure by Letters Patent, is—

1. The tie X, having the spaces A A′, separated by the springs D, and springs B B′, separated by transverse cut C, all substantially as shown and described, and for the purpose set forth.

2. The chair M, provided with the angled and tapering jaws G G, the longitudinal bearing-web H, the vertical bearing-web *a*, the holding-flange N, and the stop bolts and nuts *b b*, all constructed and arranged substantially as described, and for the purpose set forth.

In testimony that I claim the foregoing as my own invention I affix hereto my signature in presence of two witnesses.

DEWITT C. CREGIER.

Witnesses:
WM. M. CREGIER,
THEODORE T. GURNEY.