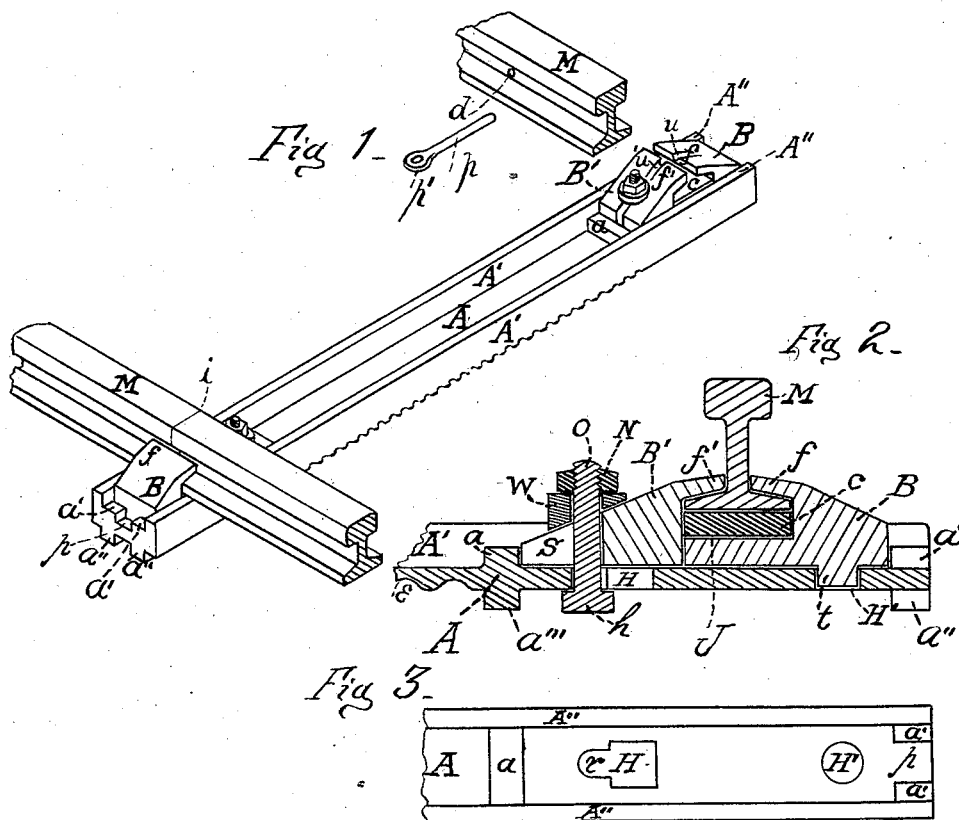


(No Model.)

E. R. PROCTER.
RAILROAD CROSS TIE.

No. 347,734.

Patented Aug. 17, 1886.



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RAILROAD CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 347,734, dated August 17, 1886.

Application filed December 23, 1885. Serial No. 186,524. (No model.)

To all whom it may concern:

Be it known that I, EDWIN R. PROCTER, of Washington Court-House, Fayette county, Ohio, have invented a new and useful Improvement in Railroad Cross-Ties, of which the following is a specification.

The objects of the invention are to construct railroad-ties of metal, either iron or steel, on account of their greater durability than the ordinary tie, and for this reason greater cheapness in the end, and also to construct such ties with means for securing the rails to them, so that, first, one or more ties may be removed from road-bed and returned without disturbing the other ties or the rails; second, that the rails may be likewise removed from and returned to position on ties without removing the tie proper from its bed; third, that the necessity of drilling holes in the ends of rails may be obviated, since the customary fish-plate and bolt-fastening are unnecessary where my improved tie is used; fourth, to save the trouble of gaging the road, as the ties are made to the required gage, and when the rails are once laid they cannot possibly shift; fifth, to lessen the cost of track-laying, as the amount of rails laid per day can be very materially increased with this tie, for as soon as it is laid the road is gaged, and then all that is necessary is to slip in the rails and secure the fastening-blocks, and the track is ready for ballast; sixth, to economize life and rolling-stock, for the rails are so securely adjusted in the chairs that any deviation, even in the sharpest curves, is out of the question, while under the present wood system, with its spikes, this is the weakest point; seventh, to prevent creeping. To attain these objects metallic ties of suitable form are combined with fastening blocks or chairs of metal that receive and lap over and against the top and side of rail-flange, as shown by the accompanying drawings, in which—

Figure 1 shows a perspective view of my improved metallic cross-tie and rail-fastening device. Fig. 2 shows a section taken lengthwise of tie and said fastening device. Fig. 3 shows a fragment of plan of tie.

In the drawings, A represents an iron or steel tie, made of considerable width, to prevent its being pressed down into the road-bed,

and roughened or having corrugations *e*, as shown, to give a better hold on the ground, as well as having cross-ribs *a'''* and *a'' a''*, as shown, near each end of tie, partially for the same purpose. Said tie A is formed with ribs or sides A' A', running the entire length of tie, which strengthen the tie and form near the ends of tie abutments, which assist to retain the fastening-blocks B and B' B' in their proper places on tie. Upon the upper surface of said tie A A' A', near each end of same, are the cross flanges or ribs *a* and *a' a'*, between which are fastened the chairs B and B', that hold the rail M in place by lapping the flange of said rail with their respective flanges *f* and *f'*.

Between the said ribs *a* and *a' a'* in the tie A are the holes H_r and H', which receive the bolt O and the tenon *t* of the block B, respectively, the former—to wit, the bolt O—being placed in position in tie by passing the head *h* entirely through the hole H, and then moving the shank of bolt into the recess *r* of said hole H, this operation bringing the bolt O into the proper vertical position occupied by it in the head of slot S of the fastening-block B'.

In order to lay a rail, M, after the tie A A' A' is in the road-bed and the bolt O in the proper vertical position in said tie, place the chair B between the sides A' A' of tie, with its heel abutting against the ribs *a' a'* at end of tie and its circular tenon *t* into the hole H'. The cushion *c*, of wood, rubber, or other suitable material, is next placed in position on the lower jaw, J, of the chair B, said cushion *c* being of a size to cover said lower jaw, and fitting down between the abutting sides A' A' of tie, which inclose it. The rail M is next laid on the cushion *c*, and then the fastening-block B' is placed between the sides A' A' of tie, with its slot S inclosing the vertical bolt O, its heel abutting against the cross-rib *a*, and its flange *f'* overlapping the flange of rail M. Slipping on the washer W and tightening the nut N secures the rail.

To remove a tie from the road-bed, it is only necessary to unscrew a nut at each end of the tie, lift out both blocks at one end of tie and one block, B', on the other end, and then loosen and draw out, the same as a wooden tie. A new tie can then be inserted and the whole

operation completed without disturbing the rails and as easily as with the customary wooden tie.

I use, preferably, one or the other of two nut-lock devices of my own invention to lock the nut N—to wit, Patent No. 328,972, October 27, 1885, or Patent No. 333,548, January 5, 1886.

It is obvious that the relative positions on each end of tie of the fastening-blocks B and B' can be reversed and still be useful, the location of H' and H' being reversed also.

When so desired, the ties A can be turned upside down—to wit, what is shown on the drawings as the sole of the tie A can be turned over and used as the top surface of tie, in which latter case the edges A'' A'' of the ribs A' A' of tie A rest on the ground in road-bed, while the bolts O O and tenons t t engage the holes H' H' and H' H', respectively, holding the fastening blocks or chairs as well to the inverted sole of tie, now the top surface, as they held them to tie in other described position.

The fastening blocks or chairs are cushioned, as shown and described, in order to give the rails a slight spring, so as to resist the shock of the passing train, and at the same time allow the cars to ride easily.

To prevent the lengthwise "creeping" of the rails, variously caused, a metal pin, p, is passed through the hole d, made in the web of rail M, portions of the shank of said pin projecting from each side of said web, and engaging the slots or furrows u u', made in the crowns of the fastening blocks or chairs B B', to receive such pins, thus holding the rail M to the tie, and making it necessary for the tie to move in its bed before the rail could "creep" lengthwise of track. The pin p may be of any suitable double-headed variety to prevent losing out endwise, but preferably one having a straight shank with a perforated disk-head on one end, the eye in disk being made of a size to pass over the threaded end of vertical bolt O. In use the washer W and nut N are put on over said perforated head of pin p, which prevents its escape from its proper position.

In Fig. 1, i represents a rail-joint occurring between the blocks or chairs B B'.

The corrugations c may be made lengthwise of the tie, instead of crosswise, as shown.

In practice only occasional crown-furrowed chairs need be used; therefore the holes d in web may be drilled *in situ*.

What I claim as new and useful and of my invention is—

1. A metallic railway cross-tie having a channel-beam-like cross-section, and roughened or corrugated on the under side to hold to the ground, and reversible, and adapted to receive movable metallic rail-fastening devices on either the under side of said tie or on the channel side of same, substantially as described, and for the purpose set forth.

2. A metallic cross-tie having a corrugated or roughened under surface or sole to give a

hold on the ground, and provided near each end with movable metallic rail-fastening devices or chairs, in combination with an ordinary rail and a nut-bolt securely locking said rail-chairs and tie together, substantially as set forth.

3. The metallic cross-tie A, having one of its surfaces corrugated or roughened, the holes H' and H' near each end of tie, and the longitudinal ribs or sides A' A' and cross-ribs a a, a' a' a' a', a'' a'' a'' a'', and a''' a''', for the purpose of strengthening tie and holding tie to the ground, as well as for assisting to hold the fastening blocks or chairs B B and B' B' in position on tie, substantially as described, and for the purpose set forth.

4. The metallic rail-fastening blocks or chairs B B and B' B', the former, B B, having the horizontal jaws J J, which bear the cushions c c, of wood, rubber, or other suitable material, and the circular tenons t t, which project from the soles of B B, and engage the holes H' H' in the tie A, the latter, B' B', having the vertical slots S S, which straddle the vertical fastening-bolts O O, which are fast in the recesses r r of the holes H H in tie and receive on their threaded ends the washers W W and the nuts N N, and both forms—viz., B B and B' B'—having the flanges f f and f' f', respectively, which lap over and against the tops and sides of the flanges of rails M M, substantially as and for the purpose set forth.

5. The metallic cross-tie A, having one of its surfaces corrugated or roughened, the holes H' and H' near each end of tie, and the longitudinal ribs or sides A' A' and cross-ribs a a, a' a' a' a', a'' a'' a'' a'', and a''' a''', for the purpose of strengthening the tie and holding the tie to ground, as well as for assisting to hold the fastening blocks or chairs B B and B' B' in position on tie, in combination with the movable metallic fastening blocks or chairs B B and B' B', having the flanges f f and f' f', respectively, which flanges lap over and against the tops and sides of the flanges of rails M M, the blocks or chairs B B also having the horizontal jaws J J, which bear the cushions c c, of wood, rubber, or other suitable material, and the tenons t t, which engage the holes H' H' in the tie A, and the blocks B' B', having the slots S S, which straddle the vertical bolts O O, fast in the recesses r r of the holes H H in tie and receive on their threaded ends the washers W W and the nuts N N, to secure the blocks B' B' to the tie, and thus the rails M M and blocks B B also to tie A, substantially as and for the purpose set forth.

6. In a rail-fastening device, the combination of metallic rail-fastening blocks or chairs, having slots or furrows in their crowns at right angles to rail, and a rail having a perforated web with metal pins, which pass through said perforations in web and engage with portions of their shanks projecting from each side of said web, with said furrows

or slots made in the crowns of said chairs, for the purpose of receiving portions of said pins, substantially as and for the purpose set forth.

7. In a rail-fastening device, the combination of metallic rail-fastening blocks or chairs, having slots or furrows *u u'* in their crowns at right angles to rail, and a rail, M, having perforations *d* through its web, with metal pins *p*, having perforated heads *p'*, said pins passing through said holes *d* in web of rail M, and engaging with portions of their shanks projecting from each side of said rail M, with said furrows *u u'* in the crowns of said rail-fastening chairs, and said heads *p'* being engaged by metal bolts, which penetrate the perforations in said heads *p'*, substantially as and for the purpose set forth.

8. The combination, in a rail-fastening device, of a rail having a perforated web, and metal fastening pins or bolts adapted to pass through and project from said perforations in web, with metallic rail-fastening blocks or chairs on the ends of cross-ties, and adapted to receive the ends of said metal fastenings, which project from each side of said perforated web, substantially as and for the purpose set forth.

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