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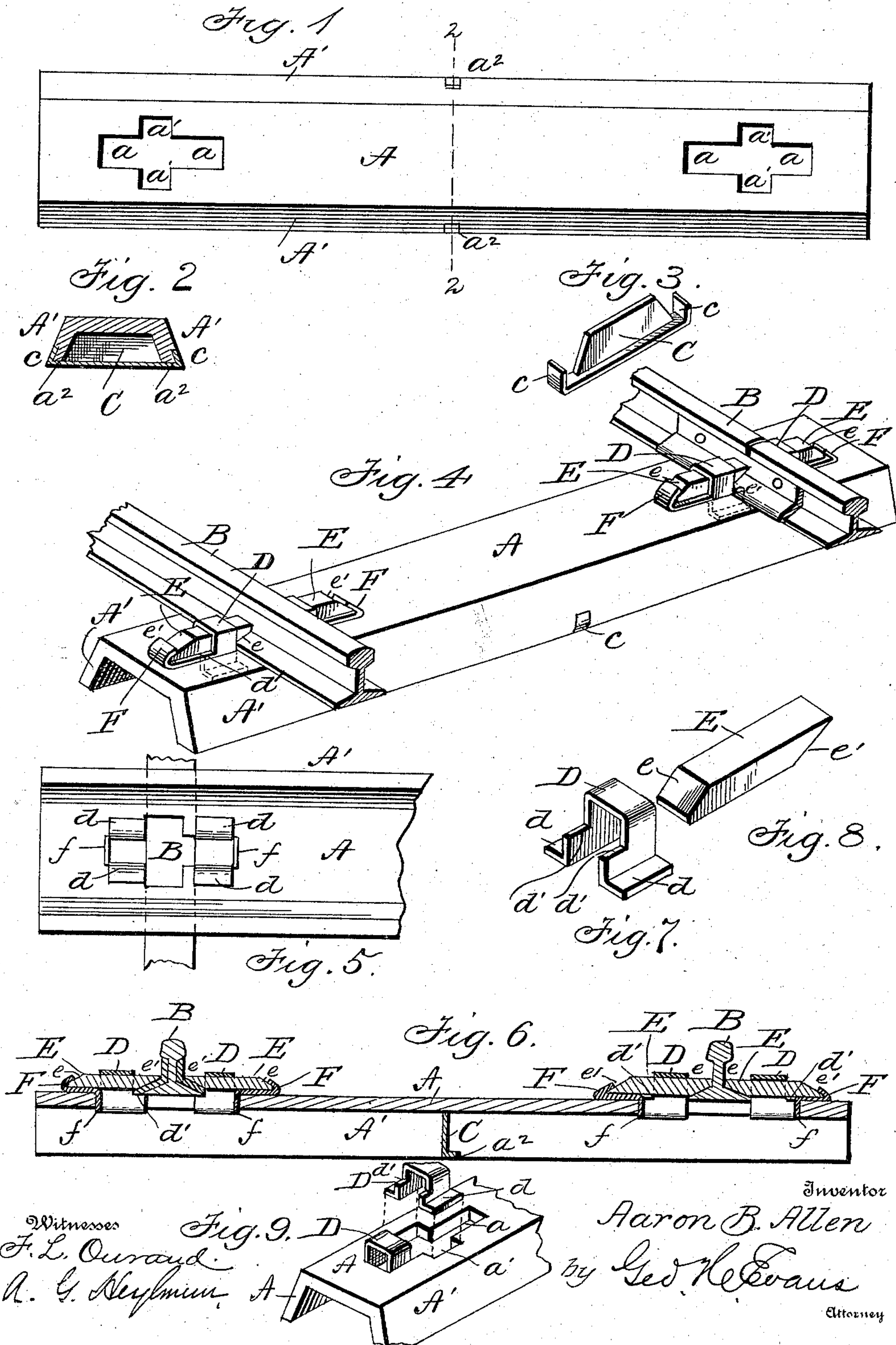
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A. B. ALLEN.

METALLIC CROSS TIE AND RAIL FASTENING.

(Application filed Feb. 8, 1898.)

(No Model.)



Witnesses
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METALLIC CROSS-TIE AND RAIL-FASTENING.

SPECIFICATION forming part of Letters Patent No. 607,906, dated July 26, 1898.

Application filed February 8, 1898. Serial No. 669,513. (No model.)

To all whom it may concern:

Be it known that I, AARON B. ALLEN, a citizen of the United States of America, residing at Pueblo, in the county of Pueblo, in the State of Colorado, have invented certain new and useful Improvements in Metallic Cross-Ties and Rail-Fastenings, of which the following is a specification.

My invention relates more particularly to that class of cross-ties formed of metal with downwardly-diverging flanges and provided with rail-fastenings in the form of bolts to lock over opposite sides of the rail-base or superposed fish-plate bases.

The objects of my invention are to provide the cross-tie with openings through which the lower wider portions of the bolt-keepers may be removably passed from the upper side of the tie and then moved laterally apart into narrower portions of the openings and into locking engagement with the tie, such movement being sufficient to permit the introduction of the rail-base between the keepers; to provide the rail-securing bolts with differently-inclined ends, so that they are adapted for direct engagement with the rail-bases or for engagement with the bases of the fish-plates; also, to provide an improved form of keeper adapted to be reversed in position for use at the rail-joints or fish-plates or points therebetween; also, to provide a simple and effective strap to lie under the bolts, interlock with the outer end of the slot or opening in the tie, and lock the bolt by being bent over and upon either outer inclined end thereof; also, to provide the cross-tie with an improved brace between its ends to prevent it from shifting in the direction of its length. These objects I accomplish by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan-view of the cross-tie. Fig. 2 is a transverse section on line 2 2 of Fig. 1. Fig. 3 is a perspective of the middle brace removed. Fig. 4 is a perspective of the tie and rail-fastening devices. Fig. 5 is an inverted plan view of the same. Fig. 6 is a longitudinal sectional elevation of the tie with the bolt and keepers at the left as they appear at a rail-joint and at the right as they appear at a point beyond the rail-joint. Fig. 7 is a detail perspective view of

one of the keepers. Fig. 8 is a similar view of one of the bolts. Fig. 9 is a detail view illustrating the placing of the keepers on the tie.

A designates a metallic cross-tie having a flat top and downwardly and outwardly inclined sides A'. The top plate of the tie is provided near each end with a cruciform slot the long arms a of which extend in the direction of the length of the tie while the short arms a' extend transversely and lie directly under the rails B. By a "cruciform slot" I mean any opening having an enlarged middle portion, for the purposes to be presently described. The lower edges of the sides A' are notched at their middle portions, as shown at a^2 , to receive the securing-lugs $c c$ at the lower corners of the middle brace C. This brace is formed of a metal plate shaped to snugly fit the under side of the tie A and its lower edge is strengthened by a laterally-projecting integral flange c' , of which the lugs $c c$ form a continuation, said lugs being bent up at their outer ends against the outer faces of the sides A', as shown in Fig. 2. The brace C therefore prevents spreading of the sides A' as the earth and ballast are compressed and packed therebetween and also prevents the tie from shifting longitudinally.

D represents the bolt-keepers in the form of an inverted U, the legs of which at their lower ends are provided with outwardly-projecting flanges $d d$. The keepers D are cut away at one side, as shown at d' , and are connected with the tie by first passing their lower flanged ends down through the enlarged openings a' and then moving them laterally into the narrower portions a , which are of a width to snugly receive the legs of the keepers between them and cause the flanges $d d$ to engage the lower face of the top member of the tie A, to thereby resist upward strain and hold the keepers in position. The upper looped or bolt-receiving portions of the keepers project above the top of the tie, and through them are passed the rail-engaging bolts E, which also lie above the tie. These bolts, after being driven inwardly into engagement with the opposite sides of the base of the rail, are locked by means of locking-straps F, formed of flat pieces of metal having their inner ends bent down, as at f , to

hook into the outer ends of the slots *a*, from which points they extend outwardly along the under sides of the bolts and beyond the outer ends thereof, so that they may be bent
 5 up over the outer ends of the bolts and prevent them from being retracted.

The bolts *E* have their ends beveled at their diagonally opposite corners at different angles, the bevel or incline *e* being adapted to
 10 directly engage the base of the rail and the outer incline *e'* being adapted to engage the base-flange of a fish-plate *B'* at the rail-joint. (See Fig. 6.)

The legs of the keepers *D* at their lower
 15 ends are of a width to extend from the edge of the rail-base to the bent ends *f* of the locking-straps; but owing to the fact that the bases of the fish-plates project beyond the rail-bases it is necessary to provide the up-
 20 per portions of the keepers with the cut-away portions *d'*, which when placed adjacent to the rail will accommodate such projecting portions of the fish-plate flanges, as shown to the left in Fig. 6. When the rail-base is
 25 directly engaged by the bolts, the keepers *D* are reversed and their cut-away portions are placed outermost, as shown at the right of Fig. 6.

It will be seen from the foregoing that the
 30 ties may be placed in position on the road-bed as the keepers may be inserted from above without disarranging the ties in the least. Moreover, should a keeper prove defective it may be replaced without the necessity of
 35 replacing the tie by a new one, as would be the case were the keepers integral with and struck up from the body of the tie. The bolts require no bends, as they lie on top of the tie, and they are formed of simple oblong bars
 40 beveled, as before described.

What I claim is—

1. The combination with a metal tie having longitudinal slots provided with transverse enlargements, of keepers adapted to be inter-
 45 locked with the slots from above, bolts passing through the keeper above the tie to engage the rails at opposite sides, and locking-straps adapted to be bent over the outer ends of the bolts, substantially as described.

50 2. The combination with a metal tie having longitudinally-extending cruciform or transversely-enlarged slots near its ends, of keepers inserted from above through the middle portion of the slots and of a size to fill the
 55 end portions of the long arms of the slots and interlock therewith; the adjacent edges of each pair of keepers being spaced apart the width of the rail-base and cut away at their opposite edges to form when reversed a wider
 60 space to receive the fish-plate flanges, bolts

beveled at their ends to fit the rail or fish-plate bases, and locking devices to engage the bolts and prevent their retraction, substantially as described.

3. The combination with a tie and keepers 65 projecting above the tie and spaced apart to receive a rail, of bolts passed along the upper side of the tie and through the keepers to engage the opposite sides of a rail, and locking-straps having downwardly-extending ends 70 projecting through openings in the tie and extending thence along the under sides of the bolts and beyond the outer ends thereof to be bent up over the said outer ends and prevent retraction of the bolts, substantially as de- 75 scribed.

4. The combination with the tie having a slot, of an inverted-U-shaped keeper adapted to be inserted therein from above and having op- 80 positely-projecting flanges at its lower end to lock under the lower side of the tie, a bolt extending along the upper side of the tie and through the keeper, and a locking-strap having its inner end bent down into the outer end of the slot and adapted at its outer end to be 85 bent over the outer end of the bolt, substantially as described.

5. The combination with a tie and spaced keepers, of bolts passed through the keepers and having their ends beveled at different 90 angles to engage either the rail-base or fish-plate base, and means for locking the bolts against retraction, substantially as described.

6. In a rail-fastening, a keeper for the rail-bolt, formed of a U-shaped strap provided 95 with outwardly-projecting flanges at its extremities and having its bowed or looped portion cut away at one side as shown at *d'*, substantially as described.

7. In a rail-fastening, a locking-bolt formed 100 of a straight short bar having its diagonally opposite end portions beveled at different angles to permit it to engage either a rail-base or its overlying fish-plate flange, substantially 105 as described.

8. A rail-fastening comprising a pair of keepers having means at their lower ends to interlock with a cross-tie, a pair of bolts passed through the keepers and beveled to engage 110 the rail-base, and locking-straps adapted to be bent over the outer ends of the bolts and bent down at their inner ends to engage a cross-tie, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

AARON B. ALLEN.

Witnesses:

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 H. F. BUCKHOLD.