

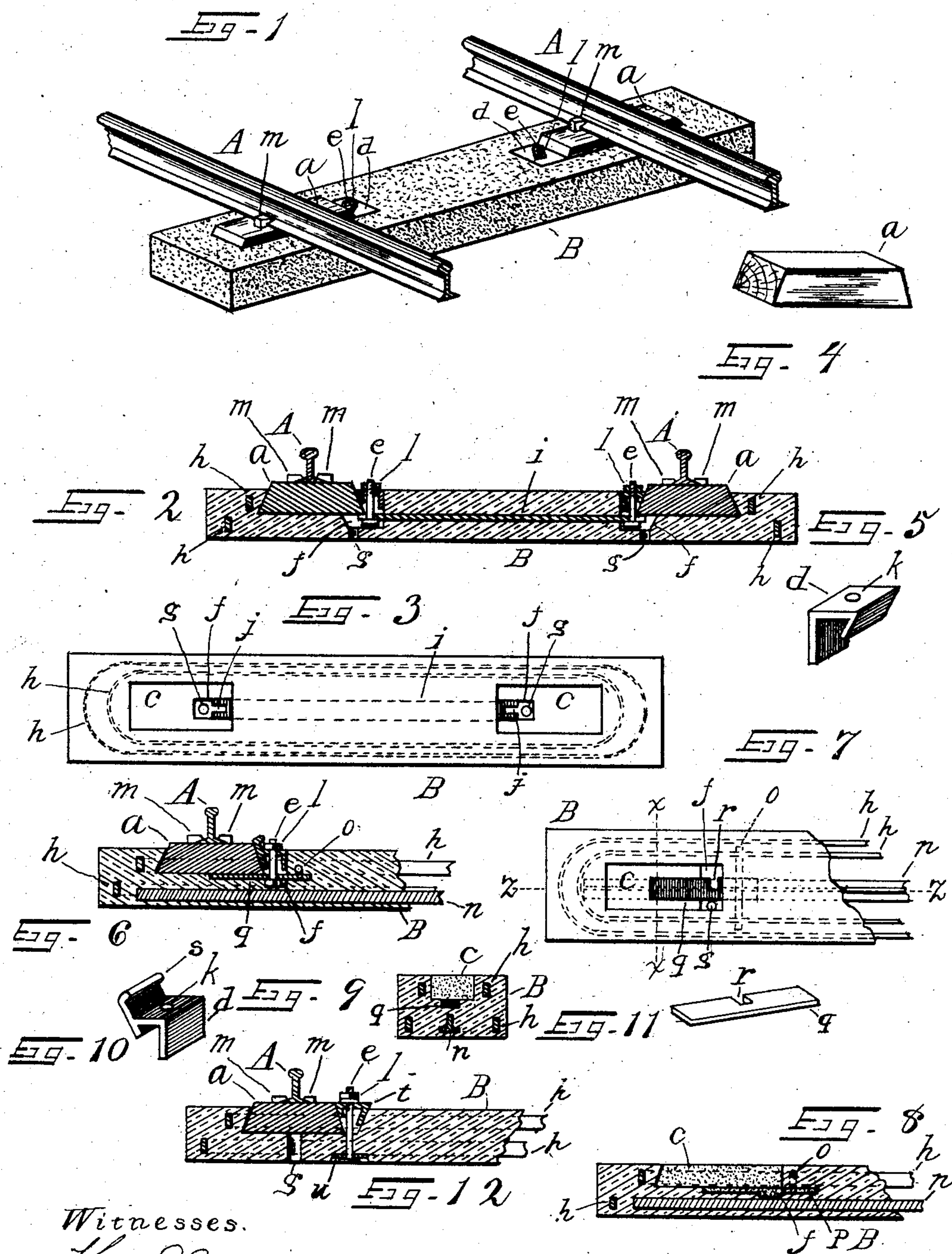
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V. E. RANDALL.
RAILROAD TIE.

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NO MODEL.



Witnesses.

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RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 777,920, dated December 20, 1904.

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To all whom it may concern:

Be it known that I, VICTOR E. RANDALL, a citizen of the United States, residing at Battlecreek, in the county of Calhoun and State of Michigan, have invented certain new and useful Improvements in Railroad-Ties; 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.

This invention relates to railroad-ties in which the body portion thereof is composed of some fixed and rigid substance within which mortises are provided, the latter of which are adapted to receive portable resilient blocks forming T-rail bearings secured therein by the use of metallic wedges, through which bolts are received, locking the same to the tie.

The object of the invention is to construct a tie for railroad usages which will be very simple in construction, practically indestructible, cheap of manufacture, and one that will afford to rolling-stock passing over a bed composed of the same all of the advantages afforded by ordinary wooden ties combined with durability, whereby no special tools other than those commonly employed by track and section gangs will be necessary to use the tie in securing T-rails thereto or removing them therefrom; and, finally, it consists in sundry novel arrangements and peculiar combination of parts whereby the tie is rendered more effective for the purpose than those heretofore constructed for like usage, all of which will be hereinafter fully described in the annexed specification and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved tie with T-rails secured thereto. Fig. 2 is a central longitudinal vertical section. Fig. 3 is a plan view with the resilient bearings and their anchor-wedges removed. Fig. 4 is a perspective view of a resilient block I employ for the T-rail bearing. Fig. 5 is a perspective view of an anchor or wedge for securing the resilient block or bearing within the tie. Fig. 6 is a detail vertical longitudinal section in a modified form. Fig. 7 is a

detail plan view of Fig. 6 with the resilient block and its locking or anchor wedge removed and shows a metallic plate within the bottom of the block mortise to which the securing-bolt is adapted to engage. Fig. 8 is a detail vertical longitudinal section of Fig. 7 with the resilient block, its locking or anchor wedge, and the securing-bolt plate removed. Fig. 9 is a vertical cross-section of Fig. 7 on the line *xx*. Fig. 10 is a perspective view of a locking or anchor wedge in modification. Fig. 11 is a perspective view of the securing-bolt plate, and Fig. 12 is a detail vertical longitudinal section in modification and shows a V-shaped anchor-wedge and the securing-bolt passing clear through the tie.

Like letters refer to similar parts throughout the several views.

The tie B is composed of Portland cement and grout composition in such proportions as will form artificial stone when set and it may be molded in any desired form other than the specific form shown. Within either end of the face thereof mortises or pockets *cc* are formed. These mortises run longitudinally with the tie and are rectangular in cross-section and are about two and one-half times longer than their cross-breadths. Their inner ends by preference are vertical, and their outer ends taper downwardly and outwardly from their upper orifices, as shown. At the inner ends of these pockets secondary pockets *ff* are formed, and communicating therewith apertures *gg* open through to the bottom of the tie and provide drainage for any water that may accumulate in the aforesaid pockets.

Embedded within the tie B when in a plastic state I provide a system of longitudinal strengthening and stiffening cores, of which *hh* represent metallic loops, the one being somewhat smaller than the other and located near the top of the tie, the other being placed near the bottom of the tie in parallel arrangement, the upper loop encompassing the mortises *cc* and providing a means for preventing said mortises from breakage. The provision of the loops being thus arranged, a bracing-framework is provided, which greatly lessens the tendency of the tie to fracture,

the loop ends preventing the tie from separating and stripping from the stiffening-core should the tie through abnormal strain ever become cracked or broken.

- 5 Embedded within the tie and protruding at either end above the mortises *f f* a third stiffening-bar *i* is placed. The ends of this bar are forked, the slots *j j* forming anchors for receiving the square shanks of headed fasten-
 10 ing-bolts *e e*. These bolts are introduced with their heads downward, so that their shanks will be received within the slots *j j* of the stiffening-bar *i*, said heads being below and within secondary pockets *f f*, Fig. 2.
 15 These bolts preferably have square shanks adapted to fit said slots in such manner that they will not turn when nuts *l* are run upon their threaded upper ends.

Within the mortises *c c* wooden or other
 20 resilient blocks *a a* are placed. These blocks are rectangular in cross-section and somewhat longer than their height or width and have downwardly - extended beveled ends. The length of the blocks may be equal to or
 25 slightly shorter than the top orifice of said mortises and when introduced within the same should fit the mortises snugly on the sides and protrude somewhat above the tops thereof.

- 30 After a tightening-bolt *e* has been placed within a mortise *c* and its head introduced below a forked end of the stiffening-core *i*, so that its shank will lie within a slot *j*, as aforesaid, its top end is tilted toward the vertical
 35 end of said mortise, and a block *a* is introduced within said mortise and shoved endwise from said bolt until a bevel end opposite said bolt locks snugly within the bevel end of said mortise, whence a cavity or opening will be
 40 left at its opposite end, within which a wedge *d* is introduced. This wedge in this instance has one vertical side and one tapering side, which are respectively adapted to fit the vertical end of the mortise *c* and the tapering end
 45 to the block *a*, a bolt-hole *k* being provided in said wedge, through which the fastening-bolt *e* is passed, and a jam-nut *l* thence run down on the upturned threaded end of said bolt, locking the aforesaid assemblages of
 50 parts firmly intact.

Upon the blocks *a* the T-rails *A* are secured by spikes *m*, as is customary in fastening rails to ordinary wooden ties.

- In Fig. 6 in lieu of the stiffening-core *i* of
 55 Fig. 2 I employ an angle-bar *n*, which may be of any suitable design in cross-section, but, as herein shown, is of inverted-T shape. This bar lies within and near the bottom of the tie and is wholly encompassed by the bottom loop
 60 *h*, and crosswise of the tie forward of the mortises *c c* I employ a metallic strip *o*, which crosses the tie above a longitudinal pocket *p*, opening within the bottom of the main mortise or pocket *c*. This strip by preference
 65 has its ends curved, so as to lie immediately

below the top link *h* and shown in such position by dotted lines in Fig. 7. Within the pocket *p* a metallic bar *q*, having in one side thereof a rectangular slot *r*, is placed. The aforesaid slot is alined immediately above a
 70 lower cavity or pocket *f*, so that the head of a bolt *e* may freely be received and the shank thereof be passed within said slot. In the construction of the wedge in Fig. 6 the tapering side thereof is provided with an upwardly-
 75 formed ear having an offset *s*, beneath which a spike claw or bar may be engaged to draw said wedge from its bearing when necessary.

In Fig. 12 the mortise *c* has its inner end sloped parallel with its opposite end, and when
 80 the block *a* is locked therein a V-shaped opening is provided within which a V-shaped anchoring-wedge *t* is introduced and secured by the tightening-bolt *e*, the latter of which
 85 passes through the tie, the headed end thereof engaging a washer *u*, countersunk within a recess within the bottom thereof.

It will be apparent that various changes could be employed in the construction of my improved tie without departing from the in-
 90 tent and spirit of my invention—as, for instance, in lieu of but one wedge and its fastening-bolt at the end of a T-rail block a wedge and fastening-bolt could be used at either or
 95 both ends of said T-rail blocks. Also the peculiar construction of the mortises for holding the resilient blocks, their anchor-wedges, and fastening-bolts could be readily applied to metallic ties, as well as those constructed from artificial stone.
 100

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation, and advantages of my improved tie will be readily understood without a more extended explanation.
 105

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

1. A cross-tie of composite material having
 110 longitudinal metallic stiffening-loops horizontally and parallelly arranged and embedded therein, mortises within either end of the face thereof, and portable resilient T-rail blocks encompassed by the upper of said loops, sub-
 115 stantially as set forth.

2. A cross-tie of composite material having longitudinal stiffening-loops horizontally and parallelly arranged and embedded therein, an upper loop being smaller than a lower loop and
 120 concentrically disposed therefrom, the face of said tie having mortises within either end thereof, and portable resilient T-rail blocks encompassed by the upper loop, substantially as set forth.
 125

3. A cross-tie of composite material having longitudinal stiffening-loops horizontally and parallelly arranged and embedded therein, an upper loop being smaller than a lower loop and
 130 concentrically disposed therefrom, the face of

said tie having mortises within either end thereof, and portable resilient T-rail blocks encompassed by the upper loop, and an angle-bar embedded below the bottom of said mortises longitudinally within the lower loop, substantially as, and for the purpose set forth.

4. A composite tie having longitudinal mortises in its face coincident with T-rail crossings, longitudinal metallic loops molded within said tie and an angle-bar molded longitudinally near the bottom thereof, an upper loop encompassing said mortises and an under loop encompassing said bar, and cross-bars molded within said tie and interposed between said loops adjacent to the inner ends of said mortises, resilient T-rail blocks fitted within said mortises, metallic plates fitted within a channel and extending within said cross-tie below the bottoms of said mortises and below said cross-bars, bolts fitted within said plates extending upwardly and passing through metallic wedges interposed between said blocks and the inner ends of said mortises, and nuts run on said bolts to impinge said wedges, all arranged substantially as, and for the purpose set forth and described.

5. A cross-tie having longitudinal mortises in its face coincident with T-rail crossings, said mortises having their outer ends beveled downwardly and outwardly, portable resilient T-rail bearings fitted within said mortises and extending above said cross-tie, metallic wedges fitted within said mortises between said resilient bearings and the inner ends of said mortises, bolts fitted within the bottoms of said mortises extending upwardly through said wedges, and nuts run on said bolts and adapted to impinge said wedges to secure said resilient cushions within said mortises, substantially as set forth.

6. A cross-tie having longitudinal mortises in its face coincident with T-rail crossings, said mortises having their outer ends beveled downwardly and outwardly and their inner ends vertically disposed, portable resilient T-rail bearings fitted within said mortises and extending above said cross-tie, metallic wedges interposed between the inner ends of said resilient bearings and the vertical ends of said mortises, bolts extending from the bottoms of said mortises and passing through said wedges, and nuts run on said bolts and adapted to impinge said wedges to impress and secure said resilient bearings within said mortises, substantially as, and for the purpose set forth.

7. A cross-tie having longitudinal mortises in its face coincident with T-rail crossings, said mortises having their outer ends beveled downwardly and outwardly and their inner ends vertically disposed, portable resilient T-rail bearings having their ends downwardly and outwardly beveled fitted within said mortises and extending above said cross-tie, metallic wedges interposed between the inner ends of said resilient bearings and the inner

ends of said mortises, said wedges having one beveled side adapted to bear against the bevel of said resilient bearing and a vertical side adapted to bear against said mortise end, bolts fitted within the bottoms of said mortises extending upwardly through said wedges, and nuts run on said bolts and adapted to impinge said wedges and lock said resilient bearings within said mortises, substantially as, and for the purpose set forth.

8. A cross-tie having longitudinal mortises in its face coincident with T-rail crossings, said mortises having their outer ends beveled downwardly and outwardly and their inner ends vertically disposed, portable resilient T-rail bearings having their ends downwardly and outwardly beveled fitted within said mortises and extending above said cross-tie, metallic wedges interposed between the inner ends of said resilient bearings and the inner ends of said mortises, said wedges having one beveled and one vertical side adapted to fit respectively the bevel of said resilient bearings and the vertical-ended mortises, metallic plates fitted within a channel and extending within said cross-tie below the bottoms of said mortises, bolts fitted within said plates and extending upwardly through said wedges, and nuts run on said bolts and adapted to impinge said wedges and secure said resilient bearings within said mortises, substantially as, and for the purpose set forth.

9. A cross-tie having longitudinal mortises in its face coincident with T-rail crossings, said mortises having their outward ends beveled downwardly and outwardly and their inner ends vertically disposed, portable resilient T-rail bearings having their ends downwardly and outwardly beveled fitted within said mortises and extending above said cross-tie, metallic wedges interposed between the inner ends of said resilient bearings and the inner ends of said mortises, said wedges having one beveled and one vertical side adapted to fit respectively the bevel of said resilient bearings and the vertical-ended mortises, portable metallic plates having notches in their sides fitted within a channel and extending within an aperture in said cross-tie below the bottoms of said mortises, bolts fitted within the notches of said plates and extending upwardly through said wedges, and nuts run on said bolts and adapted to impinge said wedges and secure said resilient bearings within said mortises, substantially as, and for the purpose set forth.

10. A cross-tie having longitudinal mortises in its face coincident with T-rail crossings, said mortises having their outer ends beveled downwardly and outwardly and their inner ends vertically disposed, channels within the bottoms of said mortises, apertures opening in the inner ends of said mortises and aligned with said channels, pockets bisecting said channels and apertures, portable metallic plates having rectangular notches in their edges co-

incident to said pockets adapted to fit within
said channels and extend within said aper-
tures, resilient T-rail bearings having taper-
ing ends adapted to fit within said mortises,
5 metallic wedges adapted to fit between the
inner ends of said bearings and mortises, the
headed ends of bolts adapted to pass below
and the shanks thereof adapted to engage the
notches in said plates, their opposite ends
10 passing through said wedges, and nuts run
thereon and adapted to impinge said wedges
and secure said resilient bearings within said
mortises, substantially as, and for the pur-
pose set forth.

15 11. A cross-tie having mortises in the face
thereof coincident with T-rail bearings, port-
able resilient T-rail blocks fitted within said
mortises, metallic wedges interposed between
said blocks and tie, bolts passing through said
20 wedges from said tie, nuts run on said bolts
and adapted to impinge said wedges and lock

said wedges within said tie, and means for re-
moving said wedges, substantially as set forth.

12. A cross-tie having mortises in the face
thereof coincident with T-rail bearings, port- 25
able resilient T-rail blocks fitted therein and
adapted to lock at their outer ends within cor-
responding seats within said mortises, metal-
lic wedges interposed between said blocks and
the inner ends of said mortises, bolts fitted 30
within said mortises extending upwardly
through said wedges, nuts run on said bolts
and adapted to impinge said wedges and se-
cure said blocks within said mortises, said
wedges having upwardly-extending curved 35
ears, substantially as, and for the purpose set
forth.

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Witnesses:

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