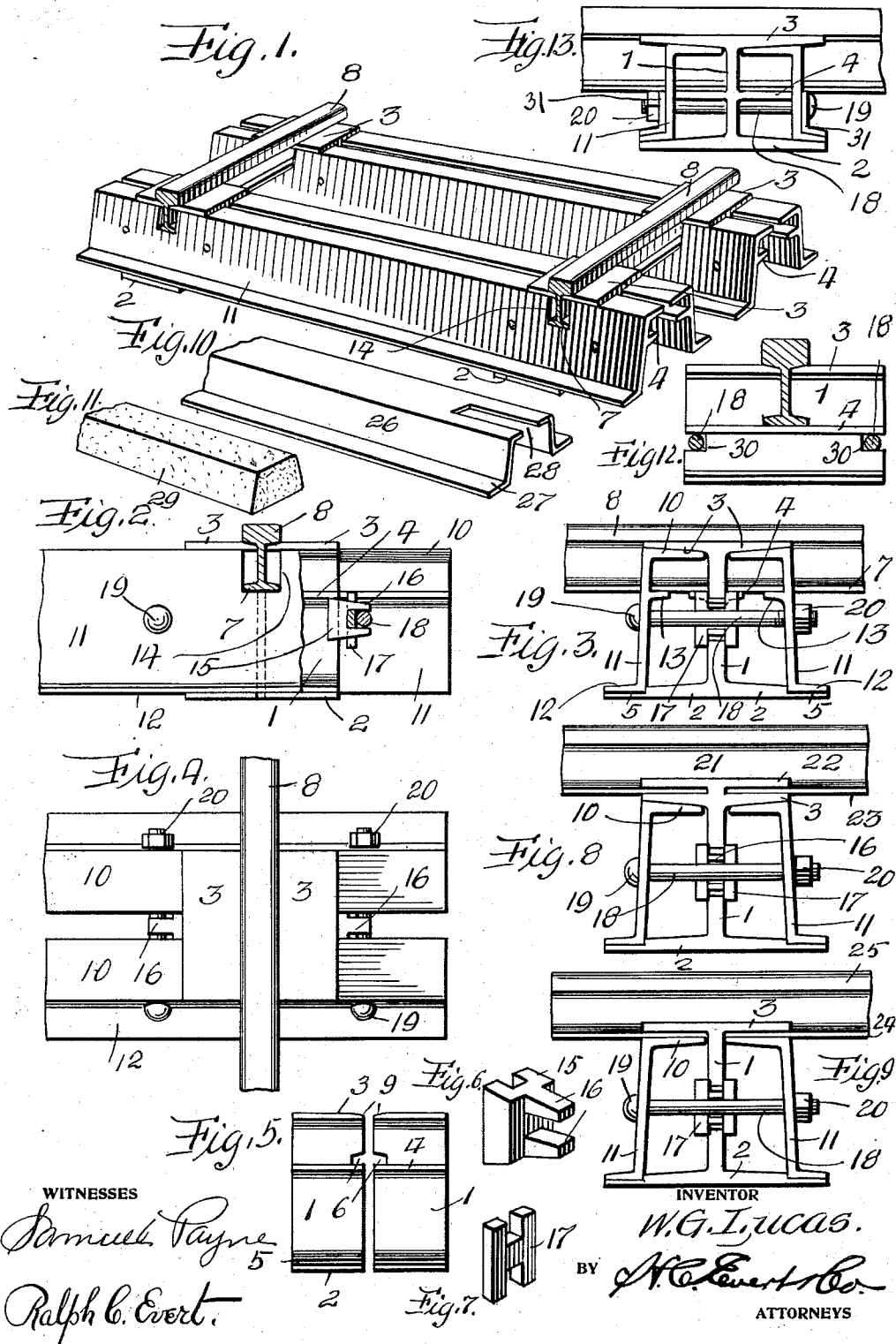


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TIE AND RAIL FASTENER.
APPLICATION FILED OCT. 2, 1911.

1,018,835.

Patented Feb. 27, 1912.



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WILLIAM G. LUCAS, OF McKEESPORT, PENNSYLVANIA.

TIE AND RAIL-FASTENER.

1,018,835.

Specification of Letters Patent.

Patented Feb. 27, 1912.

Application filed October 2, 1911. Serial No. 652,395.

To all whom it may concern:

Be it known that I, WILLIAM G. LUCAS, a citizen of the United States of America, residing at McKeesport, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Ties and Rail-Fasteners, of which the following is a specification, reference being had therein to the accompanying drawing.

10 This invention relates to rail fasteners and ties, and the invention aims to provide:—First, a fastener for holding rails without resorting to the use of spikes. Second, rail chairs that are easily and quickly
15 positioned for holding rails in a manner that the rails can not become vertically or laterally displaced. Third, tie sections or frames for housing the rail chairs and bracing the same, whereby one rail can not
20 spread relatively to the other rail. Fourth, tie units or frames that can be readily rolled and produced at a comparatively small cost. Fifth, to furnish metallic ties with fasteners that are not liable to injury by ordinary
25 use.

The invention further aims to accomplish the above results by a combination of mechanical elements that will be hereinafter specifically described and then claimed.

30 Reference will now be had to the drawing, wherein there are illustrated the preferred embodiments of the invention but it is to be understood that the structural elements are susceptible to such changes, as in
35 size, shape of manner of assemblage, as fall within the scope of the appended claims.

In the drawing:—Figure 1 is a perspective view of ties provided with the improved fasteners. Fig. 2 is a side elevation
40 of a portion of one of the ties partly broken away and partly in section. Fig. 3 is an end view of the same. Fig. 4 is a plan. Fig. 5 is a side elevation of a detached chair. Fig. 6 is a perspective view of a part of one of
45 the fasteners. Fig. 7 is a perspective view of a spacer washer. Fig. 8 is an end view of a modified form of chair. Fig. 9 is a similar view of another form of chair. Fig. 10 is a perspective view of a portion of a
50 modified form of tie. Fig. 11 is a similar view of a portion of the modified form of tie. Fig. 12 is a side elevation of a modified form of chair, and Fig. 13 is a perspective view of a portion of the modified form

of tie, illustrating a nut locking device in connection with the same.

A rail chair in accordance with this invention is made of two I-beams 1 having base flanges 2, top flanges 3 and intermediate longitudinal flanges 4. The base
60 flanges 2 are provided with longitudinal seats 5 and the confronting ends of the beams at a point above the flanges 4 are cut away, as at 6 whereby the flanges 4 will serve
65 functionally as seats for the base flanges 7 of a rail 8. The base flanges 7 are of a width corresponding to the head of a rail and this construction saves considerable
70 metal and expense in manufacture, particularly in connection with the heavy rails now employed for supporting the great weight
75 of rolling stock. With the rail 8 arranged between the chairs, the web of said rail is braced by the ends of the I-beams and the head of the rail is supported by the top
80 flanges 3, which are beveled, as at 9 to fit under the head of the rail.

The top flanges 3 of the rail chair are supported by longitudinal inwardly projecting
85 top flanges 10 of tie frames 11, said frames having the lower edges thereof provided with longitudinal outwardly extending
90 flanges or feet 12 engaging the seats 5 of the rail chair. The frames 11 are Z or F shaped in cross section and said frames 11
95 have inwardly projecting oppositely disposed intermediate flanges 13 coöperating with the flanges 4 in supporting the base
100 flanges 7 of the rail 8. The frames 11 have openings 14 providing clearance for the rail 8, as best shown in Figs. 1 and 2.

Engaging the ends of the I-beams 1 beneath the flanges 4 thereof are channel
105 shaped members 15 provided with outwardly extending arms 16 that are arranged in parallelism. Arranged against the outer
110 sides of the members 15 are H shaped spacer washers 17 and engaging these washers are transverse bolts 18 arranged within the
115 frames 11. The washers and the bolts are arranged between the arms 16 of the members 15, said bolts having heads 19 and nuts
120 20. The bolts tie the frames together upon the rail chairs, thereby preventing said frames from becoming accidentally dis-
125 placed relatively to the I-beam chairs.

In Fig. 8 of the drawings there is illustrated the first modification of my invention,

wherein an ordinary rail 21 is placed upon the flanges 3 thus obviating the necessity of using the flanges 4 and 13 and cutting away the frames 11 to provide the openings 14.

5 The flanges 3 are provided with integral splice bars 22 that extend over the base flanges 23 to the rail 21.

Another modification is illustrated in Fig. 9, wherein the base flanges 24 of a rail 25 are seated upon the flanges 10 of the frames 11, said flanges in this instance being horizontal to evenly support the rail. The flanges 3 of the I-beam chair extend over on to the flanges 24 of the rail 25, thereby securing said rail to the frames of the tie.

15 In Figs. 10 and 11 there is a further modification of the invention, wherein, the tie is made of an inverted channel bar 26 having lateral base flanges 27. The ends of the channel bar are longitudinally slotted, as at 29 whereby the I-beam chairs can be placed in the ends thereof, and between these chairs there is placed an oblong body 29 preferably made of concrete, said body adding rigidity 25 to the channel bar.

A still further modification of the invention is illustrated in Fig. 12, wherein the ends of the I-beam chair are slotted, as at 30 at a point below the intermediate flanges 30 4, the slots 30 accommodating the bolts or rods 18, thereby obviating the necessity of using the elements 15 to 17 inclusive.

The tie illustrated in Fig. 13 is of the channel bar construction, similar to that 35 shown in Fig. 10 and this tie is equipped with braces 31 held in place by the ends of the bolts 18, said braces firmly holding the frames 11 when said frames are placed under tension by pressure brought to bear 40 upon the rail chairs.

From the foregoing it will be observed that the frames 11 constitute longitudinal means for tying the rail chairs together whereby the alinement of the rails of a track 45 will be preserved, consequently the proper gage of the track. The chairs are tied within the frames 11, and even though one of the chairs should become displaced, it is practically impossible for a rail to become 50 vertically displaced with respect to the tie frames. In seating the tie frames upon the base flanges 2 of the chairs, said chairs are firmly held, particularly when the tie frames are tamped in the ballast of a road bed.

55 As the heads of the rails are braced in a line at right angles to said rails, the tilting of the rails is impossible, and as a fastening means is not exposed, brake rigging or other parts of rolling stock can not catch 60 upon the ties and cause damage or wrecks.

I attach importance to the fact that the principal parts of my invention are of a rolled inexpensive construction that can be quickly assembled by unskilled labor and 65 maintained at a minimum cost.

What I claim is:—

1. In a rail fastener and tie, I-beam chairs adapted to support rails, tie frames housing said chairs and resting thereon, and means for retaining said chairs in said frames. 70

2. In a rail fastener and tie, I-beam chairs supporting the rails, said chairs having the upper face of their bases provided with shoulders positioned inwardly of the longitudinal edges thereof, tie frames mounted 75 upon said chairs and abutting against said shoulders, said tie frames housing said chairs, and means for connecting together said frames and maintaining the chairs between the frames. 80

3. In a rail fastener, tie frames, chairs of the I-beam construction arranged between said frames and adapted to support rails, channel shaped members engaging the ends of said chairs, and means connecting said 85 frames and engaging said members for retaining said chairs between said frames.

4. In a rail fastener, rails, chairs of the I-beam construction adapted to support said rails, tie frames mounted upon said chairs, 90 channel shaped members engaging the ends of said chairs, spacer washers arranged upon said members, and means engaging said washers for connecting said frames together.

5. In a rail fastener and tie, chairs of the 95 I-beam construction adapted to support rails, intermediate flanges carried by said chairs for holding the base flanges of said rails, frames resting upon said chairs at the sides thereof, and means connecting said 100 frames for retaining said chairs adjacent to the ends thereof.

6. In a rail fastener and tie, tie frames adapted to support rails, chairs arranged within said frames for supporting said 105 frames and bracing said rails, and means including bolts arranged transversely of said frames at a point intermediate the upper and lower edges thereof for retaining said chairs between said frames, said bolts engaging the ends of said chairs. 110

7. In a rail fastener and tie, frames having longitudinal intermediate flanges adapted to support the base flanges of rails, chairs arranged between said frames, intermediate 115 flanges carried by said chairs and cooperating with the flanges of said frames in supporting said rails, and means arranged transversely of said frames and engaging the ends of said chairs for retaining said 120 frames and chairs together.

8. In a rail fastener and tie, frames, chairs arranged between said frames and having top flanges extending over the upper edges of said frames, rails seated in said chairs 125 and having the heads thereof supported by the top flanges of said chairs.

9. In a rail fastener and tie, chairs of the I-beam construction, intermediate flanges carried by said chairs and adapted to sup- 130

port the base flanges of rails with the top flanges of said chairs bracing the heads of said rails, and frames seated upon said chairs and bracing the top flanges of said chairs.

10. In a rail fastener, chairs of the I-beam construction, intermediate flanges carried thereby and adapted to support the base flanges of rails with the heads of said rails braced by the upper edges of said chairs, and means inclosing said chairs for retaining said chairs in alinement.

11. A rail support comprising longitudinal frames, chairs arranged between said frames and having the upper ends thereof supported above said frames with the lower ends thereof supporting said frames, and fastening means in connection with said chairs for holding rails.

12. In a rail support, frames, chairs arranged between said frames and having the upper ends thereof supported by the edges of said frames with the lower edges of said frames resting upon said chairs, and means in connection with said chairs for simultaneously connecting said frames and preventing longitudinal displacement of said chairs.

13. Rail chairs providing a rail seat, frames connecting said chairs above the lower ends thereof and having the upper edges thereof supporting the base flanges of rails below the upper ends of said chairs.

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

WILLIAM G. LUCAS.

Witnesses:

MAX H. SROLOVITZ,
CHRISTINA T. HOOD.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."