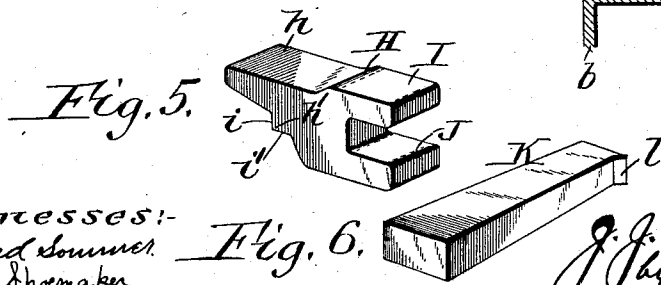
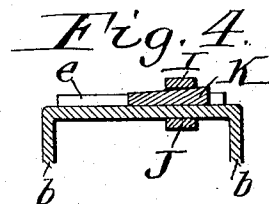
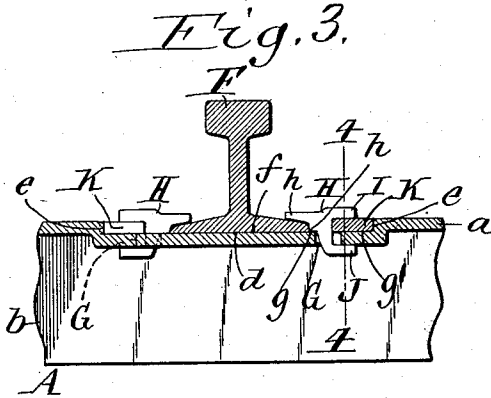
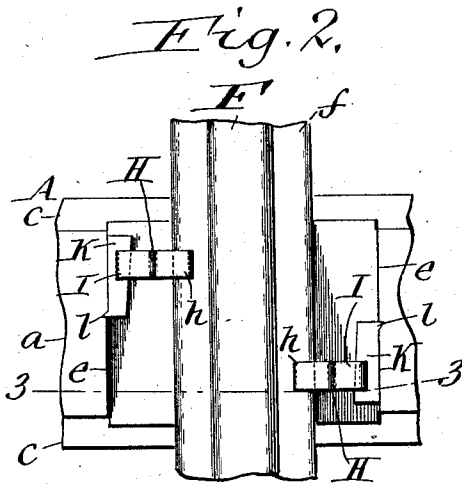
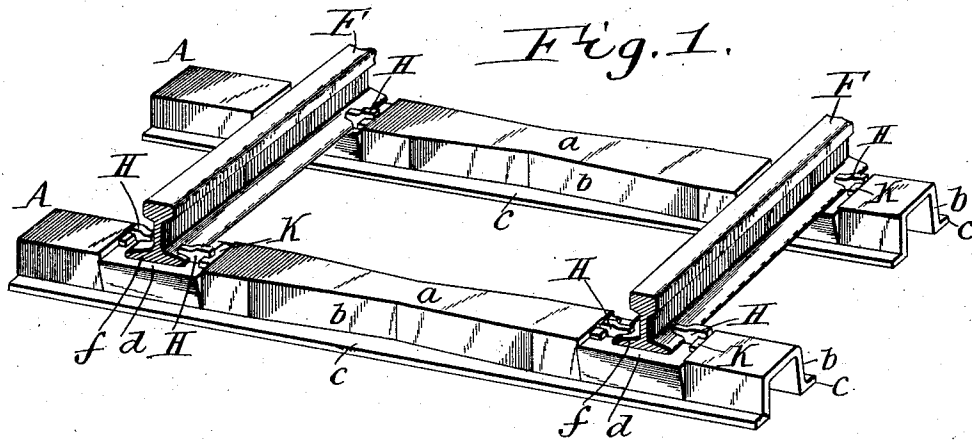


J. J. PIERCE, JR.
RAIL FASTENER.
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1,010,452.

Patented Dec. 5, 1911.



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JONAS JAMES PIERCE, JR., OF BUFFALO, NEW YORK.

RAIL-FASTENER.

1,010,452.

Specification of Letters Patent.

Patented Dec. 5, 1911.

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To all whom it may concern:

Be it known that I, JONAS JAMES PIERCE, Jr., a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Rail-Fasteners, of which the following is a specification.

This invention relates to a fastener which is more particularly designed for connecting rails and sheet metal ties of a railway and has the object to accomplish this by simple, efficient and economical means.

In the accompanying drawings: Figure 1 is a fragmentary perspective view of a railway in which the rails are attached to the metal ties by my improved fastener. Fig. 2 is a fragmentary top plan view of the same, on an enlarged scale. Fig. 3 is a vertical transverse section in line 3—3, Fig. 2. Fig. 4 is a fragmentary vertical longitudinal section in line 4—4, Fig. 3. Figs. 5 and 6 are detached perspective views of the clip and wedge of my improved rail fastener.

Similar letters of reference indicate corresponding parts throughout the several views.

A represents the railway ties which are preferably rolled out of sheet metal so as to form a horizontal top *a*, two upright longitudinal legs *b* connected at their upper edges with opposite edges of the top, and two horizontal longitudinal feet *c* projecting outwardly from the lower edges of the legs. Near each end of the top of each tie the same is constructed to form a depressed horizontal flat seat *d* and transverse shoulders *e* at opposite ends of said seat.

F represents the rails each of which rests by its lower flanges or base *f* on one seat of the tie at right angles to the length of the latter.

G represents locking openings formed in the seat of the tie preferably at diagonally opposite corners thereof and each opening being arranged a short distance from the adjacent edge of the rail base so as to leave a narrow bearing face *g* on said seat between the opening G and the edge of the base and a comparatively wide face *g*¹ between said opening and the adjacent shoulder *e* of the seat *d*.

H represents a clip which forms part of the means for fastening the rail to the tie and which comprises an inner arm *h* provided on its underside with an angular projection *h*¹ forming an inwardly facing upper shoulder *i* and a downwardly facing lower

shoulder *i*¹, an upper outer arm I and a lower outer arm J. Each of the rails is fastened to each tie by two of these clips.

In applying the clip to the tie and rail, its lower outer arm J is turned downwardly and outwardly through the opening G of the tie, so that the same engages with the underside of the tie adjacent to the outer edge of the opening G and when the clip is in this position the free end of the inner arm *h* overhangs the adjacent flange of the rail base, the upper shoulder *i* engages with the edge of said base flange, the lower shoulder *i*¹ bears against the inner tie face *g*, and the upper outer arm I overhangs but is separated from the outer tie face *g*¹, as shown in Fig. 3.

K represents a key whereby each clip is held in place and is preferably rectangular in cross section and has its narrow and wide sides converging toward one end in the form of a duplex wedge. Upon inserting this wedge-shaped key between the upper outer arm I of the clip and the outer face *g*¹ of the tie while the key has its wide sides arranged horizontally and then driving the wedge key so that the same advances in the direction of its small end, the same produces both a vertical and a horizontal wedging effect on the clip. The vertical wedging effect causes the upper outer arm I of the clip to be raised, the lower outer arm J thereof to be drawn upwardly against the underside of the tie while the horizontal wedging action of the key operates to move the clip inwardly, so that its shoulder *i* engages the edge of the rail base and also turns the clip so that the end of its inner arm *h* engages with the top of the base flange and its lower shoulder *i*¹ engages with the face *g* of the tie. The relative proportions of the parts is such that when the shoulder *i*¹ bears firmly against the upper side of the tie the inner arm of the clip bears lightly against the top of the rail base. By this means the rail is held firmly against lateral or vertical displacement on the tie but the same is free to slide lengthwise while expanding or contracting during changes in temperature and also while yielding under the stress of the loads running over the same.

If desired the wedge key may be held in place solely by friction and by the lateral compression of the adjacent shoulder *e* of the tie but this holding effect is preferably supplemented by a spur *l* which is arranged

on the outer lateral side of the small end of the key and which is adapted to be sunk into the adjacent tie shoulder *e* after the key has been sufficiently tightened by giving the small end thereof a lateral outward blow by means of a hammer, thereby holding the key positively against loosening.

Both the key and the clip of my improved rail fastener can be economically constructed by first rolling a bar of metal into the required cross section and then cutting the same transversely into sections of the desired width, thereby reducing the cost of the same materially.

It will be noted that my improved rail fastener dispenses with the use of nuts, bolts and screws, thereby avoiding the liability of loosening of the fastening and reducing the possibility of accidents.

I claim as my invention:

1. The combination of a tie having a seat adapted to support a rail and an opening adjacent to the base of the rail, a clip having an inner upper arm adapted to engage with the base of the rail, a lower outer arm adapted to extend through said opening and bear against the underside of the tie and an upper outer arm arranged above the tie, said arms being all arranged in the same vertical plane, and a wedge adapted to be driven horizontally and parallel with the rail between the upper side of the tie and the underside of said upper outer arm.

2. The combination of a tie having a depressed seat forming a shoulder at the side of the seat and having an opening in said seat adjacent to said shoulder, a rail adapted to rest by its base on said seat, a clip having an inner arm adapted to engage with the base of the rail, a lower outer arm adapted to extend downwardly through said opening and bear against the underside of the tie and an upper outer arm, and a wedge-shaped key adapted to be driven between the clip and the tie so that the upper side of the key engages the underside of the upper outer arm, its lower side engages the upper side of the tie, its inner edge engages the clip between its upper and lower outer arms and its outer edge engages said shoulder of the tie.

3. The combination of a tie having a depressed seat forming a shoulder at the side of the seat and having an opening in said seat adjacent to said shoulder, a rail adapted to rest by its base on said seat, a clip having an inner arm adapted to engage with the base of the rail, a lower outer arm adapted to extend downwardly through said opening and bear against the underside of the tie and an upper outer arm, and a wedge-shaped key adapted to be driven between the

clip and the tie so that the upper side of the key engages the underside of the upper outer arms, its lower side engages the upper side of the tie, its inner edge engages the clip between its upper and lower outer arms and its outer edge engages said shoulder of the tie, said key being provided on its outer side with a spur which is adapted to be driven into said shoulder of the tie.

4. The combination of a tie having a depressed seat forming a shoulder at the side of the seat and having an opening in said seat adjacent to said shoulder, a rail adapted to rest by its base on said seat, a clip having an inner arm adapted to engage with the base of the rail and provided on its underside with a projection forming an inwardly facing upper shoulder which bears against the edge of the rail base and a lower downwardly facing shoulder adapted to bear against the top of the tie between said opening and the base of the rail, a lower outer arm adapted to extend downwardly through said opening and bear against the underside of the tie and an upper outer arm, and a wedge-shaped key adapted to be driven between the clip and the tie so that the upper side of the key engages the underside of the upper outer arm, its lower side engages the upper side of the tie, its inner edge engages the clip between its upper and lower outer arms and its outer edge engages said shoulder of the tie, said key being provided on its outer side with a spur which is adapted to be driven into said shoulder of the tie.

5. The combination of a tie having a depressed seat forming a shoulder at the side of the seat and having an opening in said seat adjacent to said shoulder, a rail adapted to rest by its base on said seat, a clip having an inner arm adapted to engage with the base of the rail, a lower outer arm adapted to extend downwardly through said opening and bear against the underside of the tie and an upper outer arm, and a key of rectangular cross section which has both pairs of opposite sides converging in the same direction and adapted to be driven between the tie and clip so that the wedging action of two of its opposite sides raise the upper and lower outer arms of the clip and the two opposite sides operate to move the clip toward the base of the rail and cause the inner arm to move downwardly.

Witness my hand this 28th day of February, 1910.

JONAS JAMES PIERCE, JR.

Witnesses:

P. J. BARTLESON,
JONAS J. PIERCE.