

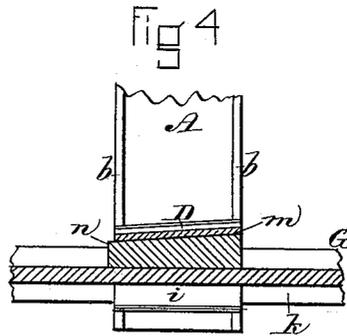
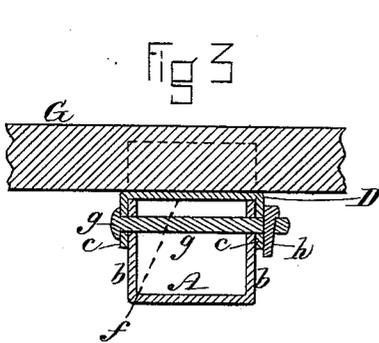
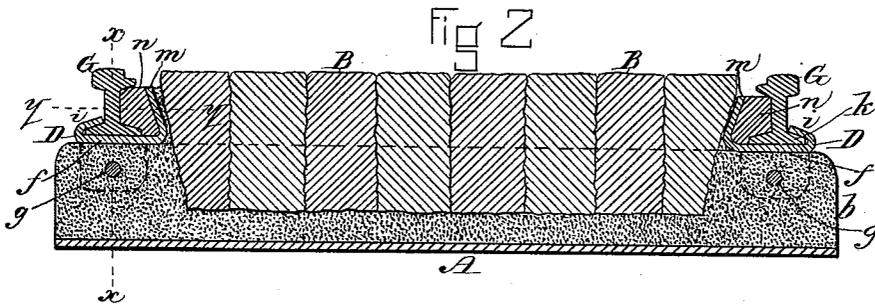
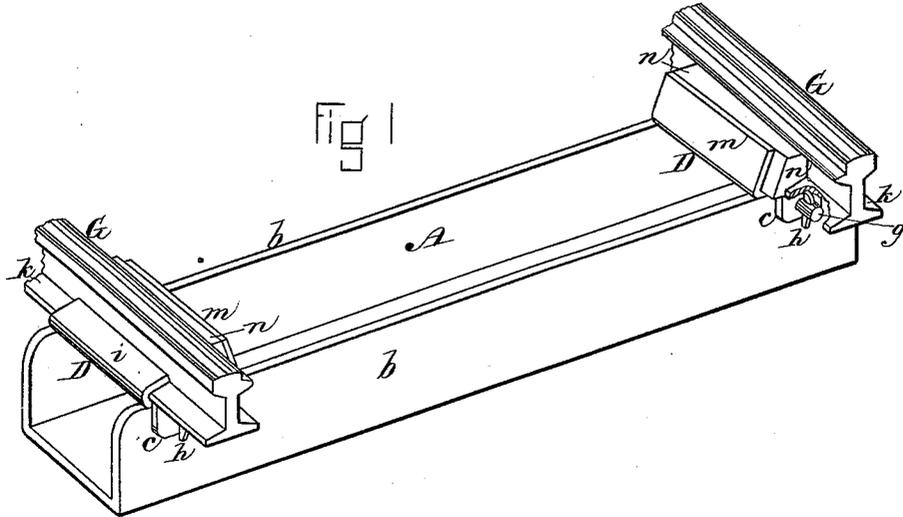
(No Model.)

H. HOWARD.

METALLIC CROSS TIE FOR STREET RAILWAYS.

No. 340,118.

Patented Apr. 20, 1886.



WITNESSES  
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# UNITED STATES PATENT OFFICE.

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## METALLIC CROSS-TIE FOR STREET-RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 340,118, dated April 20, 1886.

Application filed February 8, 1886. Serial No. 191,323. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY HOWARD, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Metallic Cross-Ties for Street-Railways, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved railway-tie. Fig. 2 is a longitudinal vertical section through the same, showing a portion of the pavement. Fig. 3 is a transverse vertical section on the line  $xx$  of Fig. 2. Fig. 4 is a horizontal section on the line  $yy$  of Fig. 2.

My invention has for its object to provide a simple, strong, and durable metallic tie for street-railways which will lie wholly beneath the surface of the pavement; and it consists in the combination, with a cross-tie formed of channel-iron having its open side uppermost to receive the lower portions of the paving-blocks, of a rail clamp or chair which rests upon the upper edges of the vertical flanges of the tie, and is provided with ears or lugs which extend down and lie closely against the outer sides of the said vertical flanges, and are secured thereto by a transverse bolt passing through the same, the said clamp being provided on one side with a lip, which extends over the base-flange or foot of the rail, and on the opposite side with a higher lip or flange, which extends up to near the level of the top of the rail, a wedge being driven between the said flange and the rail to hold the latter securely in place, while the flange is inclined inwardly toward the top of the rail, and also in the direction of its length, to conform to the shape of the wedge, and thus hold the latter in place, as hereinafter more particularly set forth and specifically claimed.

In the said drawings, A represents the tie, which is formed of channel-iron, having its open side uppermost to receive the lower ends of the paving-blocks B, as seen in Fig. 2, whereby the tie is held immovably in place upon the earth beneath the surface of the pavement.

Upon the upper edges of the vertical flanges or sides  $bb$  of the tie, at the opposite ends there-

of, rest the rail clamps or chairs D, in which rest the rails G. Each clamp D is provided at its opposite ends with two ears or lugs,  $c$ , which are formed by bending down the ends of the base-plate  $f$ , and these ears extend down and lie closely against the outer sides of the flanges  $b$ , to which they are secured by a transverse bolt,  $g$ , passing through both flanges and ears from one side of the tie to the other, and fastened by a key,  $h$ , as seen in Figs. 1 and 3. The chairs or rail-clamps are thus confined securely in position in a very strong and simple manner, and can be readily removed and replaced, the base-plate  $f$  having a firm bearing on the upper edges of the flanges  $b$ , while the ears or lugs  $c$ , resting against the outer sides of the said flanges, effectually prevent any lateral movement of the chair with respect to the tie.

Each clamp D has on one side a lip,  $i$ , which extends over the base-flange or foot  $k$  of the rail, while the opposite side of the clamp is turned up, forming a lip or flange,  $m$ , which lies off from the side of the rail, and extends up nearly to the level of the top of the same, a space being thus left between the two for the reception of a wedge,  $n$ , composed of wood or metal, which is driven in between the tread and base-flange of the rail in the direction of its length, as seen in Figs. 1, 2, and 4, and thus causes the rail to be firmly clamped and held immovably in position upon the tie without any possibility of moving in the direction of its length. The width of the space between the flange or lip  $m$  and the rail G is such that when the wedge  $n$  is removed the rail can be easily lifted out of the chair or placed therein by turning it slightly edgewise, thus facilitating the laying of the track or repairs on the same. The under side of the wedge  $n$  is shaped to fit over the base-flange of the rail, its outer portion being level with the bottom of the same, as seen in Figs. 1 and 2. The flange  $m$  is inclined inward toward the top of the rail, and also inward toward the side of the same in the direction of its length, to conform to the shape of the wedge, the two opposite sides of which thus lie in contact along their entire length with the rail G and flange  $m$ , whereby a firm hold is secured and the wedge prevented from becoming loose. When, however, the paving blocks are laid, they will fit snugly against

the ends of the wedge, and render it impossible for it to work out of its proper position.

I am aware that channel-iron has been used for railway-ties, and also that rail-chairs have been employed having wedges or keys inserted between their upturned lips and the rail; hence I make no broad claim to these features, as my invention relates to the peculiar construction and combination of parts and the novel method of securing the chair to the side flanges of the tie, as hereinbefore described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a cross-tie, *A*, formed of channel-iron, having its open side uppermost to receive the paving-blocks, of a rail clamp or chair adapted to rest upon the upper edges of the vertical side flanges of the tie, and having ears or lugs *c* extending down upon the outer sides of the said flanges, and secured thereto by a transverse bolt, *g*, passing through the same, substantially as set forth.

2. The combination, with a cross-tie, *A*, formed of channel-iron, having its open side uppermost to receive the paving-blocks, of a rail clamp or chair, *D*, provided on one side with a lip, *i*, extending over the base-flange of the rail, and on the opposite side with a flange, *m*, inclined inwardly toward the top and side of the rail, and extending nearly up to the top of the same, and the wedge *n*, adapted to be driven in between the said flange *m* and the side of the rail, said clamp resting upon the upper edges of the vertical side flanges, *b*, of the tie, and having ears or lugs *c* extending down upon the outer sides of the said flanges *b*, and secured thereto by a transverse bolt, *g*, passing through the same, all constructed to operate substantially in the manner and for the purpose described.

Witness my hand this 5th day of February, A. D. 1886.

HENRY HOWARD.

In presence of—

P. E. TESCHEMACHER,  
W. J. CAMBRIDGE.