(No Model.)

R. W. FLOWER, Jr., & S. L. WIEGAND.

METALLIC RAILWAY TIE.

No. 386,119. Patented July 17, 1888.

Fig. 1.

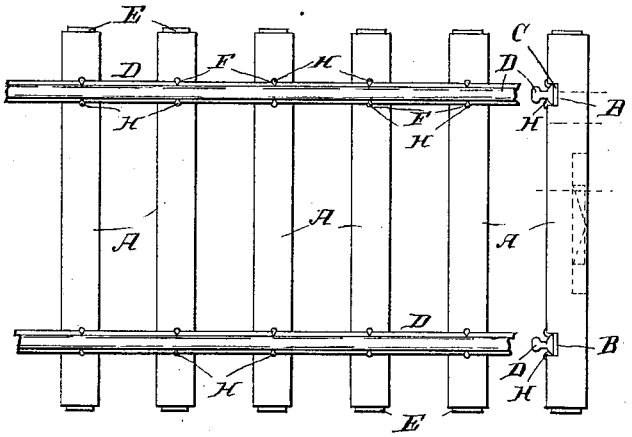


Fig. 2.

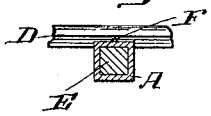


Fig. 3.

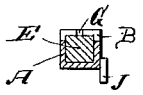


Fig. 4.

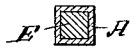


Fig. 5.

Fig. 7.

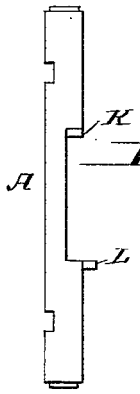


Fig. 8.

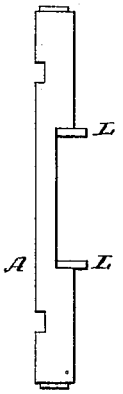
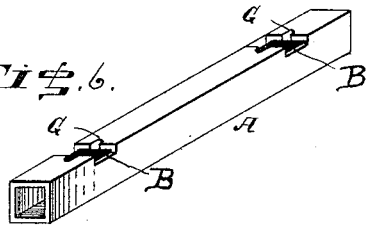


Fig. 6.



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By their Attorney
S. Lloyd Wiegand

UNITED STATES PATENT OFFICE.

REESE W. FLOWER, JR., AND S. LLOYD WIEGAND, OF PHILADELPHIA, PENNSYLVANIA.

METALLIC RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 386,119, dated July 17, 1888.

Application filed October 6, 1887. Serial No. 251,566. (No model.)

To all whom it may concern:

Be it known that we, REESE W. FLOWER, Jr., and S. LLOYD WIEGAND, both citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Railway-Ties; and we do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use the said invention.

This invention relates to cross-ties for railways, and has for its object the safe and secure retention of metallic ties in the ballast of the road-bed against the forces operative to disturb them at curves and other points where the resistances and forces upon the rail are unequal.

It has been found experimentally that smooth tubular cross-ties of metal and of wood and metal combined have a less adhesion from friction with or pressure of the ballast upon their surfaces to hold them in the direction of their length than wooden ties, so that the tangential or centrifugal force developed in passing curves and the unequal extent of rail traversed by wheels, compelled by reason of their rigid connection to the same axle, displaces or slides metallic cross-ties in the direction of their length, and although compensation for such unequal forces is measurably secured at curves by raising the outer rail upon curves such compensation can only be partially effective, because the effect of gravitation is constant, while the centrifugal force varies with the velocities of different trains, and such unequal strain is further subject to great variations by the application of brakes to trains while passing curves.

The nature of this invention consists in the devices hereinafter described and claimed, for the purpose of avoiding these defects.

The mode of making and using this said invention is hereinafter fully and particularly described, referring to the annexed drawings, in which—

Figure 1 shows a plan of a tubular metallic railway-tie embracing this invention, and Fig. 2 a vertical section thereof. Figs. 3 and 4, respectively, show plans and vertical sections of a modified form thereof; and Figs. 5 and 6 respectively show plans and vertical sections of another modification thereof. Figs. 7 and 8 show side views of the different forms of ties.

The same letters of reference indicate like parts in the several figures.

A represents a tubular metallic cross-tie, notched transversely at B B in upper side to receive the bases C of the rails D, and fitted with blocks of wood E, into which spikes F are driven through notches G in the upper side of the tie A, with the heads H of spikes F hooking over the edges of base C of the rail D. As shown in Figs. 2 and 7, a portion of the bottom and the lower portion of the sides, in the center of the length of the tie A, are cut in the direction of the dotted lines and bent inward and upward, forming shoulders J, which, resting in the ballast, prevent motion in the direction of the length of the ties. As shown in Fig. 1, the parts are cut in the direction indicated by the dotted line and bent so as to form the flange or shoulder J, and also laterally by projecting flanges K. As shown in Figs. 1, 7, and 8, the parts cut, as indicated by dotted lines, are bent into lateral flanges K and downwardly-projecting flanges L. The flanges J, K, and L engage in the ballast of the road-bed and resist forces tending to displace the ties in the direction of their length.

We are aware that metallic railway-ties have been made in the form of an inverted trough, with portions of metal of the upper surface cut and bent downwardly to engage in the ballast, and that cross-ties formed of angle-irons with downwardly-projecting braces riveted thereto have been made for a like purpose. These are objectionable in that the first impairs the strength of the upper side of the cross-tie and does not engage the ballast at a depth where it is compacted, and the second that such structures involve additional pieces and the labor of attaching them, and for the same strength use more material.

We are aware that the ends of metallic railway-ties have been bent outward, and also that they have been bent downward for the purpose of preventing motion lengthwise. Such projections, not being in position to engage securely in the compacted portion of the ballast

between the tracks, are inefficient and form no part of our invention; but,

Having described this invention, what we claim is—

1. A tubular metallic railway-tie having projecting flanges, with portion of the metal of the bottom near the mid-length thereof cut and bent into shoulders adapted to engage in the compacted ballast of the central part of the road-bed, substantially as set forth.

2. A tubular metallic railway-tie having the lower parts of the sides thereof cut and bent outwardly at the mid-length thereof and adapted to be covered by and engage in the compacted ballast of the road-bed, substantially as set forth.

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