

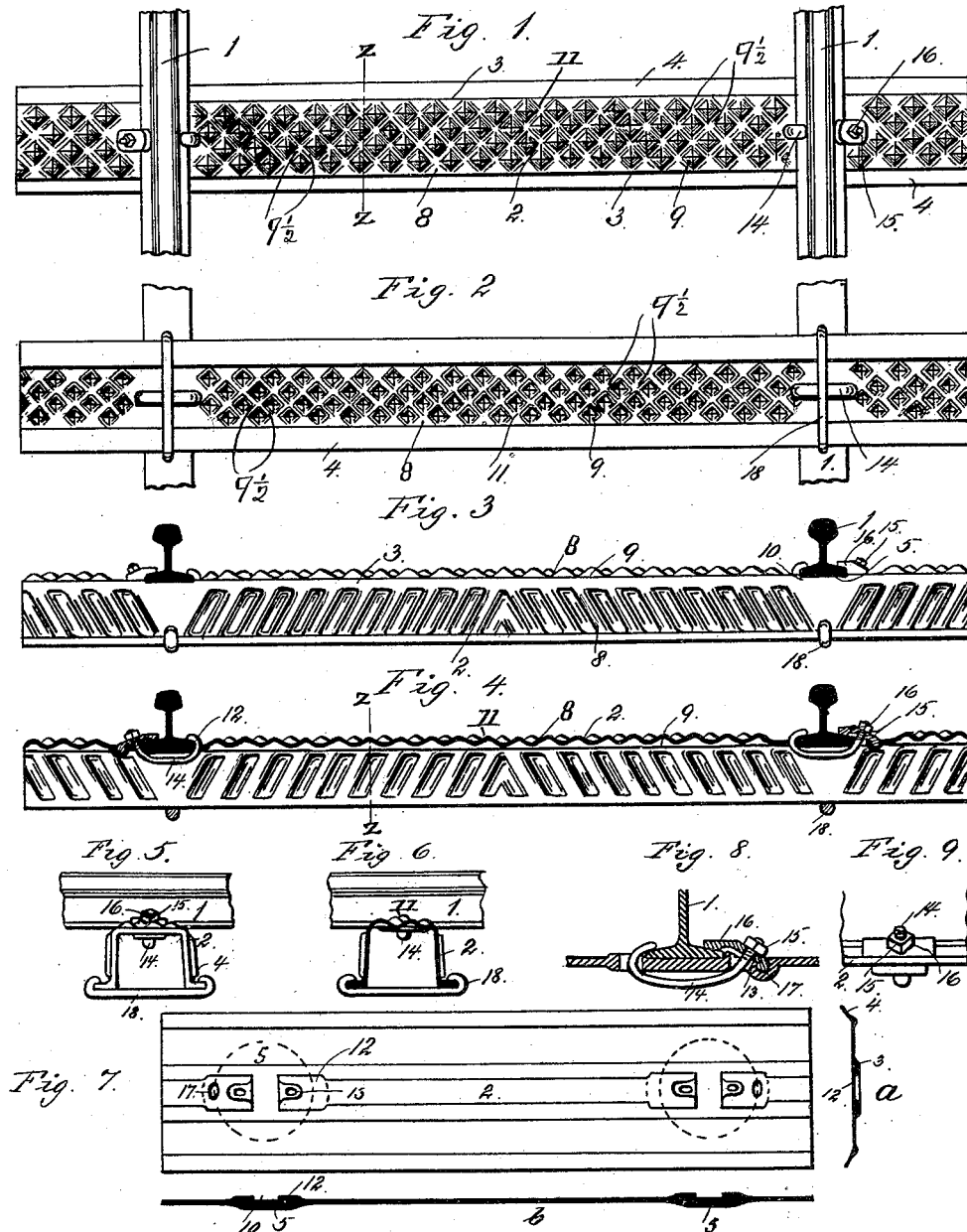
(No Model.)

S. L. WIEGAND.

METALLIC RAILWAY CROSS TIE AND RAIL FASTENING.

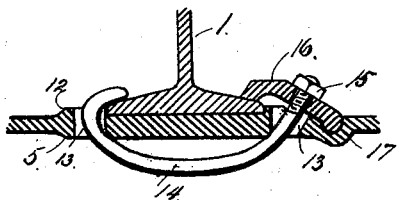
No. 420,485.

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WITNESSES:

James A. Hicken
Daniel Eby



INVENTOR

S. L. Wiegand

UNITED STATES PATENT OFFICE.

S. LLOYD WIEGAND, OF PHILADELPHIA, PENNSYLVANIA.

METALLIC RAILWAY CROSS-TIE AND RAIL-FASTENING.

SPECIFICATION forming part of Letters Patent No. 420,485, dated February 4, 1890.

Application filed February 1, 1889. Serial No. 298,411. (No model.)

To all whom it may concern:

Be it known that I, S. LLOYD WIEGAND, a citizen 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 Cross-Ties and Rail-Fastenings therefor; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof to enable others skilled in the art to make and use the said invention.

This invention relates to metallic railway-ties and the fastenings for securing the rails thereto, and has for its object economy of material and facility of manufacture, more secure durable fastenings of the rails, greater facility in fastening and adjusting, and less risk of personal injuries to persons engaged therein, and a more secure hold upon the ballast of the road-bed. These several desiderata are attained by the construction of tie and fastening device therewith combined, hereinafter fully described, and shown in the accompanying drawings, in which—

Figure 1 shows a top view of a tie, parts of the rails, and the rail-fastenings; Fig. 2, a bottom view thereof; Fig. 3, a side view; Fig. 4, a central perpendicular lengthwise section; Fig. 5, an end view; Fig. 6, a transverse section in the plane indicated by the dotted lines Z Z in Figs. 1 and 3; Fig. 7, a view of the plate of metal from which the tie is formed, with cross and central sections marked *a* and *b*; Figs. 8 and 9, respectively, enlarged end and side views of the clamps for holding the rail; and Fig. 10, an enlarged side view of the clamping bolt and nut.

The same reference-marks indicate the same parts in the several figures.

11 represent the rails; 2, the cross-ties, consisting of an inverted-U-shaped trough or channel-bar thickened at the angle-bearings 3 and at the lower edges or flanges 4, and also at the parts 5 under and contiguous to the rails 1, and presenting vertical surfaces to the edges of the flanges. The surfaces 7 between the angles 3 and the flanges 4, and the upper surface 11 between the angles 3 are made with elevations and depressions 8, with intervening flat or approximately flat surfaces 9. Depressions or rail-seats 10, adapted

to receive and fit the base of the rails 1, are made in the upper surface 11, having shoulders 12, between which the rails 1 fit and are held to the proper gage.

Through the top 11 of the tie 2 on each side of the rail-seats are slots 13, through which bolts 14 pass, provided with nuts 15 and washers 16, which serve to hold the rails 1 down to the seats 11.

The bolt 14, nut 15, and washer 16 are shown on enlarged scale in Fig. 10 with the contiguous portions of the rail 1 and tie 2. The washer 16 rests at one end in the depression 17 in the tie 2 and at the other upon the outer rail-flange, and the head of the bolt 14 hooks over the inner rail-flange. The central part of the bolt 14 is bowed and bears upwardly on the under side of the tie beneath the rail-seat. The contiguous surfaces of the washer 16 and nut 15 should be spherical. The lower flanges 4 of the tie 2 may be braced together by hooked rods 18, engaging the flanges 4 at points near the rail-seats, as shown in Figs. 2 and 5, so as to prevent spreading.

Ties of this construction afford a sufficiently elastic and firm support for rails. The depressions on the faces between the angles and edges serve to engage the road-ballast and prevent slipping on the road-bed. The straight or approximately flat parts 9 between the depressions 8 brace the thicker parts at the angles 3 and edges or flanges 4, and the thickened part under and around the rail-seats 10 afford firm support to the rail and the fastening-bolt 14 and nut 15 and washer 16.

Between the flat parts 9 and the depressions 8 are formed diagonal straight surfaces 9 $\frac{1}{2}$.

The cavities 17 afford a bearing for the washer 16, so that the head of the bolt 14 draws the inner flange of the rail downward, and inner end of the washer 16 simultaneously presses the outer flange of the rail downward. The bolt 14 is sufficiently elastic to recover and clamp after any motion between the rail and tie from passing trains without loosening the nut.

The nut 15 is accessible and easily turned by a socket-wrench by persons at the side of

the track without exposure to injury by passing trains.

The roughening of the ties by the elevations to hold the road-ballast is adapted to discourage walking upon the ties.

To produce these ties the plate of metal to form them is rolled with the thick and thin parts in it, as shown in Fig. 7, *a* and *b*, and with the depressions 8 and other depressions for the rail-seats 10, the depressions 17 for the washer 16, and with the slots 13 through or nearly through. They are then, while hot, placed in a bending-machine, and with suitable dies bent to the inverted-V form, and the bracing-rods 18 applied. The slots 13 are cut through, and the tie is ready to have the bolts 14, nuts 15, and washers 16 applied, ready to receive the rails.

Having described this invention, what I claim is—

1. A railway-tie formed in the shape of an inverted trough with thickened and shouldered rail-seats adapted to receive and hold rails at gage, and having slots 13, adapted to receive a hooked bolt 14, provided with a nut 15 and washer 16, and therewith to hold rails, substantially as set forth.

2. A railway-tie having the form of an inverted trough with thickened angles and thickened angular rail-seats and raised and depressed surfaces, with intervening diagonal straight surfaces and slots for introducing rail-fastenings, substantially as set forth.

3. A metallic railway-tie consisting of an inverted trough or channel bar having angular rail-bearings presenting vertical surfaces to the edges of the rail-flange and slots contiguous thereto, combined with a hooked bolt fitting through said slots and provided with a nut and washer arranged to clamp the rail-flange with the bolt-head and the other rail-flange with the washer against the rail-seats, substantially as set forth.

4. A rail-fastening consisting of the combination of a hooked bolt 14, a washer 16, and nut 15, adapted to pass under a rail-seat and hold the opposite rail-flanges under the bolt-head and the washer, substantially as set forth.

5. A combined railway-tie and fastenings consisting of a metallic plate having angular rail-seats, depressions 17, adapted to receive the washer 16, a hooked bolt 14, and nut 15, substantially as set forth.

6. A railway-tie consisting of an inverted metallic trough provided with rail-seats and having thickened flanges and rail-bearing portions and intervening thinner portions with bracing straight surfaces and elevations and depressions between them, and transverse braces 18, uniting the sides of the trough, substantially as set forth.

S. LLOYD WIEGAND.

Witnesses:

ALEX. H. SIEGEL,
J. DANIEL ELY.