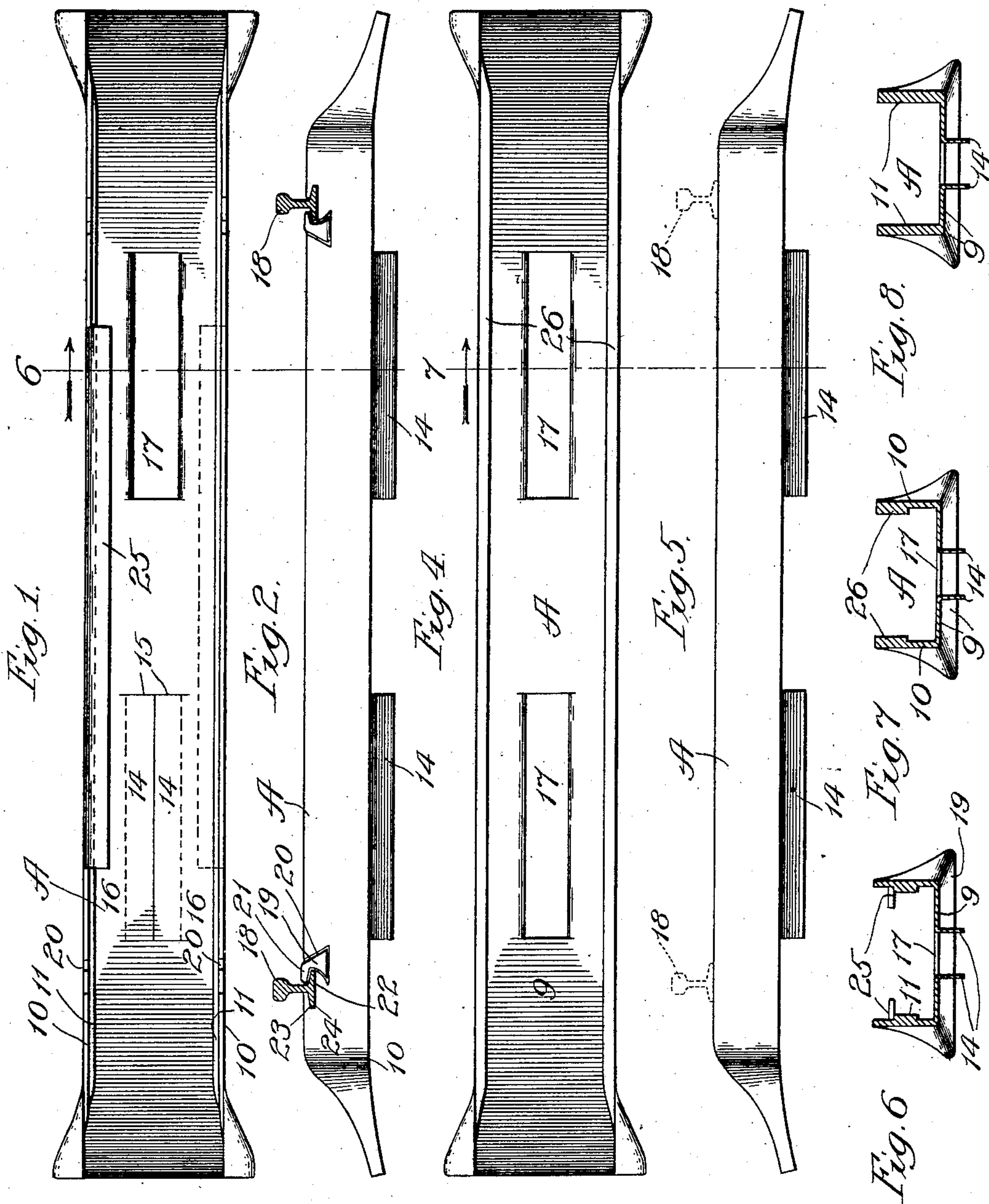


C. R. HOLDEN.
RAILWAY TIE.

APPLICATION FILED FEB. 25, 1908. RENEWED FEB. 11, 1909.

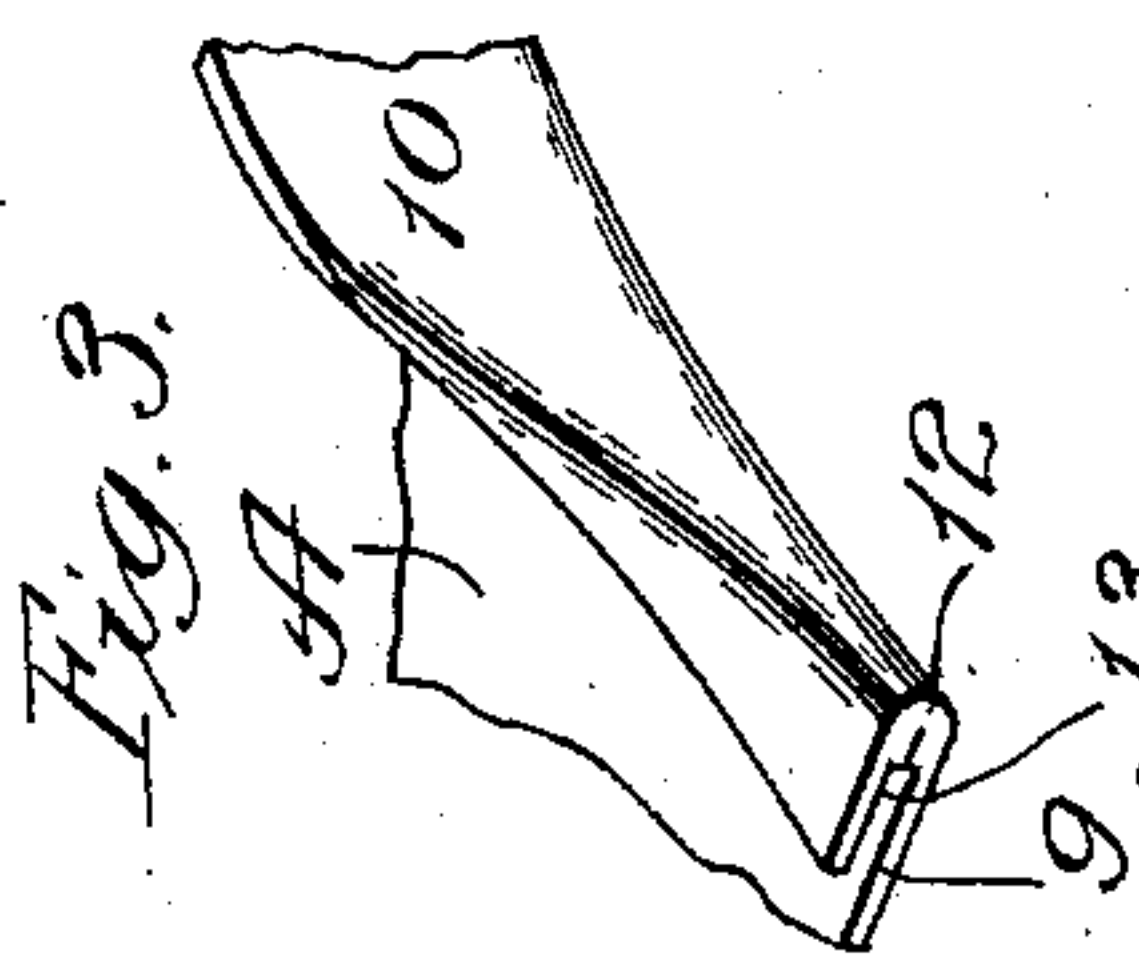
933,836.

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UNITED STATES PATENT OFFICE.

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RAILWAY-TIE.

933,836.

Specification of Letters Patent. Patented Sept. 14, 1909.

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To all whom it may concern:

Be it known that I, CHARLES R. HOLDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Railway-Ties, of which the following is a specification.

My invention relates to improvements in sheet-metal ties, and my primary object is to provide an inexpensive, strong and durable tie which shall be capable of resisting the heavy strains to which railway ties are subjected in use.

Another object is to provide a tie which shall resist the tendency to creeping on the roadbed under the strains to which ties are subjected in use.

Referring to the accompanying drawing—Figure 1 shows, by a plan view, a tie constructed in accordance with my invention. Fig. 2 is a view in side elevation of the tie shown in Fig. 1, showing rails and fastening means therefor in position on the tie. Fig. 3 is a perspective view of a portion of an end of the tie shown in the preceding figures. Fig. 4 is a top plan view of a modification of the tie illustrated in Fig. 1. Fig. 5 is a view in side elevation of the same, with rails shown thereon in dotted lines. Fig. 6 is a section taken at the line 6 on Fig. 1 and viewed in the direction of the arrow. Fig. 7 is a section taken at the line 7 on Fig. 4 and viewed in the direction of the arrow; and Fig. 8, a view like that of Fig. 7, but of another modification.

The ties represented in all of the figures are of the general U-shape variety formed by the well-known rolling process.

The tie A of Fig. 1 comprises a base 9 having two right angle flanges 10 bent from it to extend upwardly. The flanges 10 as to their greater portions are relatively thin, as is also the bottom 9, and formed on the inner opposed surfaces of the flanges and integral therewith and disposed intermediate the top and bottom edges of the flanges, are longitudinally extending ribs 11, which thus form reinforcements for the flanges. The flanges 10 at the opposed ends of the tie are first bent on themselves as illustrated at 12 in Fig. 3, and then, while in bent condition, flattened out as represented at 13 in the same figure, with the result of broadening the ends of the tie and deflecting them downwardly to the positions represented in Figs. 1 and 2. I prefer to provide the tie with an

opening through it for permitting drainage of moisture from the tie, and to provide means for embedment in the ballast to prevent creeping of the tie lengthwise of the track of which it forms a part. To accomplish this I cut lips 14 from the bottom 9 of the tie to extend longitudinally thereof, by severing the metal along the lines 15, and then by bending the lips 14 downward on the dotted lines 16 I form depending flanges which, when the ties are applied to the roadbed, extend downward into the ballast and thus serve as stops for preventing the creeping of the tie, the manner of providing the flanges as described affording openings 17 through the bottom 9 of the tie for permitting moisture to escape through them, instead of being retained in the tie.

The ties are applied to the roadbed with the flanges 10 projecting upwardly and it is preferred that the channels in the tie formed between the flanges 10 be filled with crushed stone or cement, as desired, or any other suitable filling, up to a point where the filling will not interfere with the operation of fastening the rails to the tie. In applying the tie to the ballast, the openings 17 permit of the tamping of the ballast underneath the tie and thus a firm foundation for the tie may be afforded.

The rails, such as for instance those represented at 18, may be fastened to the ties A in any suitable manner. The means for securing each rail to the tie, as illustrated in the drawings, comprises a key 19 which extends across the tie and fits in opposed recesses 20, 20 in the flanges 10, this key having a flange 21 which, by driving the key transversely of the tie into engagement with the walls of the recesses 20, engages with the adjacent flange 22 of the rail 18, which engages at its opposed flange 23 with the other recesses 24 in the flanges which communicate with the adjacent recesses 20.

If desired, the thin metal section of the flanges 10 above the rib 11 may be bent inwardly as represented at 25 in Fig. 6 to permit a switch-rail (not shown) to extend across the tie intermediate the main rails supported thereon.

The construction illustrated in Figs. 4, 5 and 7 is the same as that shown in Figs. 1, 2 and 3 with the exception that instead of providing the reinforcing rib 11, a rib 26 is formed at the top of each of the flanges 10 on their inner surfaces, as represented in

Fig. 7; and the rails 18 instead of fitting in recesses in the flanges and being held to the ties by wedges likewise fitting the recesses, rest crosswise of the ties upon the upper edges of the latter as represented in Fig. 5, where they may be fastened to the ties in any suitable manner.

The construction illustrated in Fig. 8 is the same as that of Fig. 1, except that the flanges 10 instead of having ribs 11 formed on their inner surfaces as described, are made of uniform thickness throughout and are relatively thicker than the bottom 9 of the tie, thereby affording reinforced flanges. It is a matter of common knowledge among those versed in railroad engineering that the tendency of a tie, when pressure is brought to bear against it at points near its ends, as is the case in practice, is to bend down at its ends, and consequently great strain is brought against the center of the tie, often resulting in its breaking or buckling. The main reason for the deflection of the ends of the tie is that they are too narrow to offer the desired resistance to the bending pressure, and thus when a train traverses the rails supported by them the ballast under the ends of the rail, for the reason given above, sinks, with the disastrous results heretofore pointed out. In the constructions illustrated and described, the deflected, broadened ends of the ties formed by bending the flanges 10 upon themselves and then flattening them out, serve to resist, to a great degree, the tendency of the tie to depression at its ends and bending down from points beyond its center, thereby obviating the objections heretofore noted in ties as hitherto constructed; and the provision of the reinforced flanges 10 serves also to resist this tendency and to prevent the inward collapsing or buckling of the flanges 10. By reinforcing the flanges as described the tie may

be made relatively light in weight and still afford the requisite strength at the points at which it is subjected to the greatest strain in use.

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

1. A U-shaped metal tie having each of its metal flanges formed with a reinforcing rib between its bottom and top edges affording relatively thin sections of metal above and below the rib, with the upper thin section of metal bent down a portion only of its length, substantially as described.

2. A U-shaped metal tie having a horizontal bottom portion and two upright flanges, the end-portions of its flanges being bent upon themselves and flattened out to form a tie having expanded ends with the bent end-portions of the flanges superposed on the adjacent portions of the tie.

3. A U-shaped metal tie having the end portions of its flanges bent upon themselves and flattened out with the ends of the tie extending at angles to the body of the tie, for the purpose set forth.

4. A U-shaped metal tie having each of its upwardly extending flanges formed with a reinforcing rib, with the end portions of its flanges bent upon themselves and flattened out, for the purpose set forth.

5. A U-shaped metal tie having each of its upwardly extending flanges formed with a reinforcing rib between its top and bottom edges, with the end portions of its flanges bent upon themselves and flattened out to form expanded tie-ends bent at angles to the bottom of the tie, for the purpose set forth.

CHARLES R. HOLDEN.

In presence of—

A. U. THORIEN,
W. B. DAVIES.