(No Model.)

H. TAYLOR & D. E. SHERMAN.

RAILWAY.

No. 450,686. Patented Apr. 21, 1891.

Fig. 1.

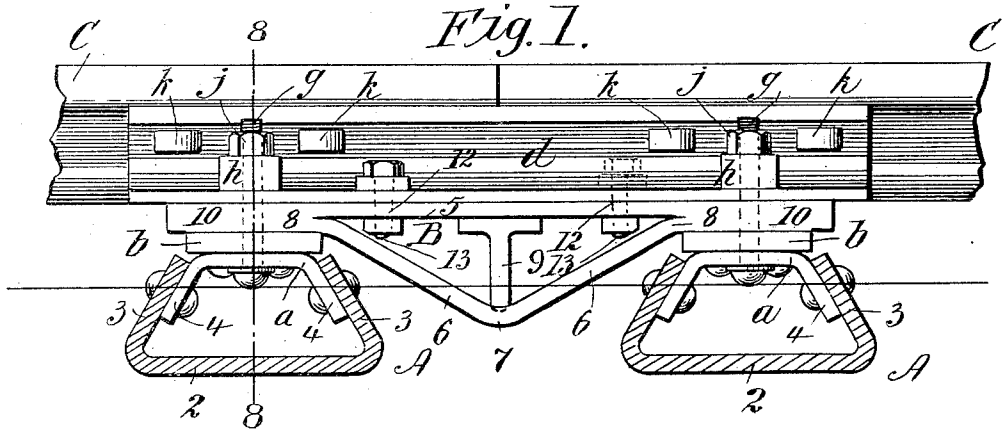


Fig. 2.

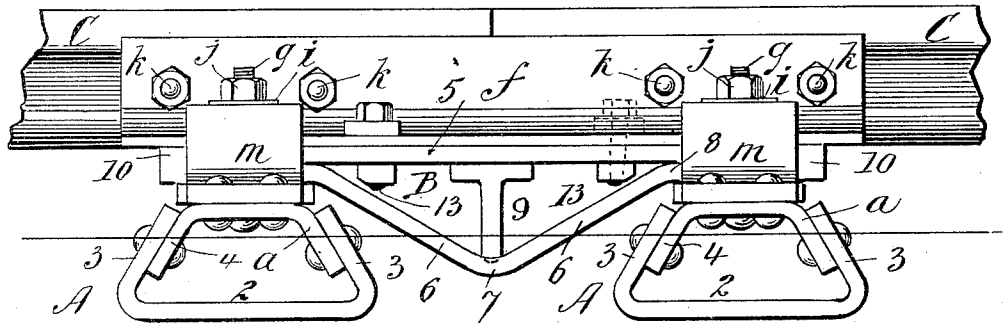


Fig. 4.

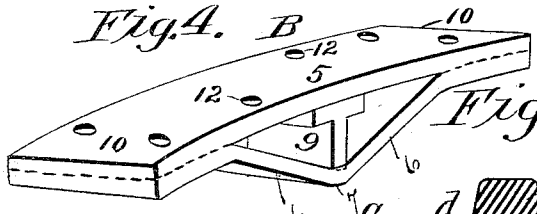
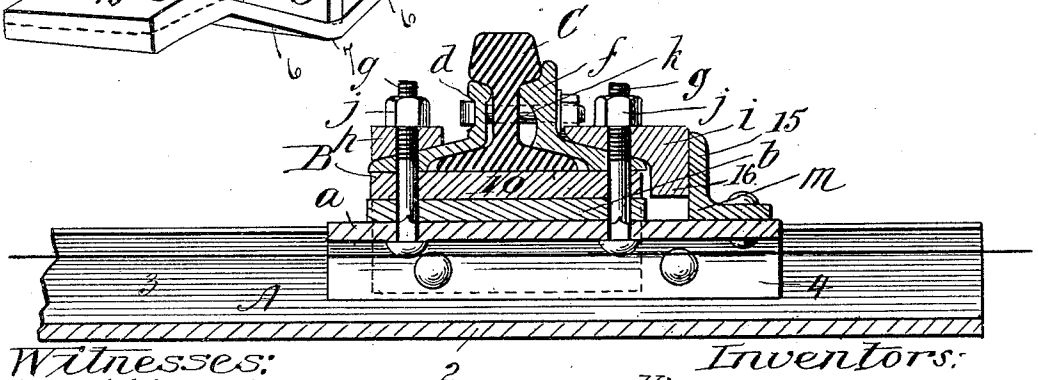


Fig. 3.



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UNITED STATES PATENT OFFICE.

HIRAM TAYLOR, OF NORTHAMPTON, AND DWIGHT E. SHERMAN, OF SPRINGFIELD, MASSACHUSETTS.

RAILWAY.

SPECIFICATION forming part of Letters Patent No. 450,686, dated April 21, 1891.

Application filed December 19, 1890. Serial No. 375,268. (No model.)

To all whom it may concern:

Be it known that we, HIRAM TAYLOR, residing at Northampton, in the county of Hampshire, State of Massachusetts, and DWIGHT E. SHERMAN, residing at Springfield, in the county of Hampden, State of Massachusetts, citizens of the United States, have invented new and useful Improvements in Railways, of which the following is a specification.

This invention relates to improvements in railways, and particularly to metallic ties comprised therein, and to supporting and connecting or confining devices for the rails, the object being the provision of a railway structure and appliances intimately relating thereto which are of unusual strength and certainty of confinement, convenient and easy of application and adjustment, and capable of maintaining the requisite integrity and rigidity of combination.

The improved compound tie and co-operating appliances are especially available for employment at the rail-joints of the railway, for reasons which will hereinafter be made more apparent.

The invention comprises, in combination, metallic ties, truss connected, and appliances for confining the rails upon the said ties, which appliances also serve as rail-joints and otherwise, substantially as will hereinafter more fully appear, and be set forth in the claims.

In the accompanying drawings, compound metallic ties, the adjacent sections of two rails, and rail and tie connecting and rail-jointing devices are shown.

Figure 1 is substantially a view in elevation of the said structure along the inside of the rail and transversely of the ties. Fig. 2 is a similar view in elevation of the same, but as seen at the other side of the rail; and Fig. 3 is a vertical sectional view taken on the line 8 8, Fig. 1. Fig. 4 is a perspective view of the truss for connecting a pair of the metallic ties.

In the drawings, A A represent metallic railway-ties, the form thereof which is shown being an approved one, although the invention is not necessarily limited to said form. Each of the said ties shown is integrally made of a single piece of sheet or plate metal and is hollow or more or less resembling a triangular tube having a base 2 and upwardly-converging sides 3 3, which, however, do not meet, but are separated by a considerable space at the top of the tie, which runs as a wide seam from end to end thereof. There is, however, combined with the said tie a bridge-piece *a* near each end thereof, the top of said bridge-piece preferably being in substantially the plane of the upper edges of the sides 3 3 of the tie, the horizontal intermediate portion of the bridge-piece being located at a proper place to support the rail, it being maintained in its position by means of rivets, which pass through the extremities 4 4 thereof, which are formed to lie closely against and upon the sides of the tie.

b represents a frost-block, which is shown as applied at each end portion of the tie, resting upon the bridge-piece *a*. This frost-block may at times be omitted.

B represents a truss-connection for uniting the end portions of a pair of the metallic ties A A, a similar truss-connection being provided between the other end portions of the pair of ties, thereby forming a compound tie. This truss is shown in edge view in Figs. 1 and 2, and in perspective in Fig. 4, and consists of a top or chord member 5 and tie members 6 6, integrally formed and having the central bend, as at 7, their extremities 8 8 being connected to the chord member 5 toward the ends thereof. The united tie members 6 6 are preferably formed from a suitable section of plate metal bent by the intermediate portions into the form substantially as shown, and having the terminal portions thereof welded or riveted—preferably welded—to the end portions of the upper member 5, the line of the union being indicated by the dotted lines in Fig. 4. There is in this tie-connecting truss a king-post, which is constituted by the T-iron 9, as shown. The said tie-connecting truss is preferably formed, as to its upper or chord member, slightly crowning.

The extremities 10 10 of the truss B are primarily supported from the bridge-pieces *a a* of the ties, resting, however, directly upon the frost-blocks *b* when the latter are employed.

The rails C C rest a short distance from their ends, which are in or nearly in abut-

ment, upon the top of the said truss, the same being disposed about centrally thereof and ranging longitudinally with the said truss, which latter, as well as the rails, of course traverse the ties.

d and *f* indicate angle-plates, which, as to the vertical portions thereof, conform more or less intimately to the sides of the rail under the tread, the extremities of the vertical portions of said angle-plates lying closely under and against the shoulders of the rails beneath the treads thereof, and the bases of said angle-plates bear as to portions thereof upon the feet of the rail, and as to other portions thereof upon and along the upper member 5 of the tie-connecting truss. The said angle-plates serve, in the manner of fish-plates, as rail-joints, having a length somewhat greater than the distance between a pair of the ties.

g g represent bolts which pass vertically through the bridge-pieces *a*, the frost-blocks *b*, when the latter are used, the end portions of the truss B, and the bases of the angle-plates *d f*, and also vertically through and beyond the clips *h i*, receiving thereabove the confining-nuts *j j*.

The angle-plates *d f* and the rail extremities are horizontally apertured, the bolts *k k k k* being passed horizontally through said apertured angle-plates and the rails, and, with the confining-nuts, holding the said parts, the one closely in relation to the other.

The truss-connection B is, as shown in Fig. 3, somewhat wider than the base of the rail which is seated thereon, the top of the said truss-connection also constituting a seat for the base portions of the angle-plates *d f*. The upper chord member 5 intermediately thereof between the post 9 and the points at which the tie-members 6 6 merge into the end portions of the chord member 5 is vertically apertured, as at 12 12, through the portions thereof which are outside of the base of the rail, and which portions form the seats for the bases of the angle-plates, one of said apertures being provided at one side and the other at the opposite side of the longitudinal median line of the said truss. The base of each of the angle-plates *d* and *f* is also vertically apertured coincident with an aperature 12 in the truss-section 5, bolts 13 passing vertically through the said truss portion 5 and the bases of said angle-plates held in confinement by the nuts thereon, as shown.

In the formation of the truss the same is formed crowning at the top, as shown in Fig. 4, in which figure, however, such crown is shown as somewhat exaggerated; and in the setting up of the parts the bolts *g g g g* and the bolts 13 13 force the top of the truss straight and plane to form the continuous seat for the rails and the bases of the angle-plates, there being, however, due to the natural deflection or crown of the top of the truss, a tendency of the truss to bear by its middle portion directly under the rail-joint with as great, if not greater, firmness than by any other portion thereof.

Owing to the fact that it is practically impossible to maintain the railway for any considerable length of time with the abutting end portions of the rails at exactly the same height, and that there is liable to be, as it were, a step, if ever so slight, at said abutting end portions, it becomes most desirable and advantageous to provide such a support for the extreme rail ends as will resist what is in substance a pounding action of the car-wheels at the ends of the rails as the train passes over the railway, and by the provision of the tie-connecting trusses and the application thereof, as described, when the tops are formed crowning, the shattering effects upon the rails and their supporting, jointing, or confining devices are measurably decreased.

There is provided for each tie, on the bridge-piece thereof and outside of and at a little distance from the outer edge of the truss, an angle-brace *m* which by its base is firmly riveted or bolted to the bridge-piece, the riser portion 15 of said brace serving as an abutment and re-enforce to the clip *i* at the outside of the rail-joint, the said angle-brace relieving the strain upon the bolts *g* and constituting a valuable supplemental element in the compound tie for resisting any tendency of the rails to spread.

It will be noticed that the angular-formed clips *i i*, provided outside of each rail-joint, have their base portions 16 of such an extent that when the frost-block *b* is employed there is a space between the top of the bridge-piece *a* and the base of said clip, so that when the frost-block is removed and the extremities 10 of the truss rest directly upon the bridge-pieces of the ties the said clips may be correspondingly lowered and yet maintain their confining relations with the angle-plate *f*.

Having fully described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a railway, the combination, with the proximate aligned end portions of two rails, and rail-jointing angle-plates having portions which overlie said rail-end portions at opposite sides thereof, and which have horizontally-extended bases, as described, of a pair of metallic ties and a truss connecting same, the top of which is of a suitable length to extend between and overlie the tops of both of said ties and to form the seat for the rail and said angle-plates, the bases of which latter are also extended to lie across and above both ties, and bolts passed vertically through parts of said ties, said truss-top, and the bases of said angle-plates, substantially as described.

2. The combination, with a pair of metallic railroad-ties and a truss uniting same, comprising an upper or chord member which is normally formed crowning, of a rail, a portion thereof seated on said upper truss member, an elongated rail-confining plate having a portion which lies along and over the foot

of the rail and a base portion which rests on said upper truss member, and bolts passed vertically through suitable portions of the ties, said truss, and said rail-confining plate at different points in the lengths of said parts, confining same closely the one upon the other, in the manner and for the purpose set forth.

3. The combination, with a pair of hollow metallic railroad-ties, each having opposing upper side portions thereof separated and united by a fixed metallic bridge-piece, and a frost-block *b* above each bridge-piece, of a truss for uniting said ties, having its extremities formed flat and resting on said frost-blocks, the elongated rail-confining plates resting on and along the top of said truss, and confining-bolts passed vertically through said bridge-pieces, said truss extremities, and said rail-confining plates, for the purpose set forth.

4. The combination, with a pair of hollow metallic railroad-ties, each having opposing and separated upper side portions and provided with uniting bridge-pieces, of a truss interposed between and uniting said ties, rail-confining angle-plates having their bases resting on and along the top of said truss at either side of the rail-line and having portions for overlying and confining the rail-feet clips *h* and *i*, resting on the bases of said rail-confining plates, the bolts passed vertically through said bridge-pieces, truss, said rail-confining angle-plates, and said clips, substantially as and for the purpose described.

5. The combination, with a pair of railroad-ties having angle-braces *m m* secured on the upper sides thereof at one side of the rail-line, of a truss uniting said tie, a rail-confining plate resting on the top of said truss and having a portion for engaging the foot of the rail, a clip overlying the base of said plate and bearing by its outer edge against said angle brace, and the confining-bolts, substantially as described.

6. The combination, with a pair of hollow metallic railroad-ties, each having opposing and separated upper side portions and uniting bridge-pieces, and having the angle-braces *m m*, secured on said bridge-pieces, of a truss uniting said ties, a rail-confining plate resting along the top of said truss outside of the rail-line and having a portion for engaging the foot of the rail, a clip overlying the base of said plate and bearing by its outer edge against said angle-brace, and the confining-bolts, substantially as described.

7. The combination, with a pair of hollow metallic railroad-ties and a uniting-truss therefor, of rail-confining angle-plates resting on and along the top of said truss at both sides of the rail-line, having portions for overlying and confining the rail-feet, and also having portions which are upwardly extended and adapted to bear upon the shoulders of the rail, under the tread thereof, angle-braces *m m* on said ties, and the clips *i i*, overlying one of said rail-confining angle-plates and by their edges bearing against said angle-braces, the confining-bolts *k k*, transversely uniting said plates, and the bolts *g g*, passed vertically through suitable portions of the ties, the truss, and said rail-confining plates and said clips, substantially as described.

8. In a railway, the combination, with a pair of hollow metallic ties, each having opposite and separated upper side portions and uniting bridge-pieces, and having the angle-braces *m m* secured on the latter, of a truss uniting said ties, rails lying end to end along and midway of said truss, with their ends over said post, forming center thereof, rail-confining angle-plates *d f*, which rest on the top of said truss and have portions overlying the rail-feet and also portions supporting the rail-shoulder under the tread, and the transverse confining-bolts *k k*, the clips *i*, overlying one of said angle-plate bases and bearing by its edge against said angle-braces *m*, and the confining-bolts *g g*, vertically applied, all substantially as described and shown, for the purposes set forth.

9. In a railway, the combination, with a pair of hollow metallic ties, each open and separated at its upper side and having uniting bridge-pieces, of a truss having a chord 5, formed normally crowning, and the tie members 6 6 and post 9, rails lying end to end along and midway of said truss, with their ends over said post, forming center thereof, rail-confining angle-plates *d f*, which rest on the top of said truss and have portions overlying the rail-feet and also supporting the rail-shoulder under the tread, and the transverse confining-bolts *k k* and the confining-bolts *g g* and 13 13, vertically applied with relation to said truss and angle-plates, and said bolts *g g* also having an engagement with the said tie bridge-pieces, substantially as described.

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