

W. P. & S. G. THOMSON.

RAILWAY TIE.

APPLICATION FILED JUNE 25, 1907.

1,018,139.

Patented Feb. 20, 1912.

2 SHEETS—SHEET 1.

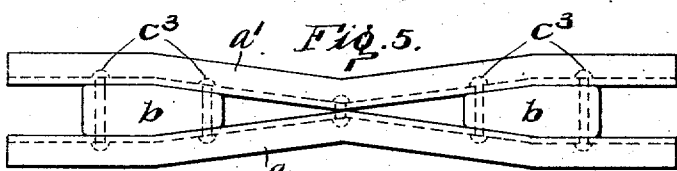
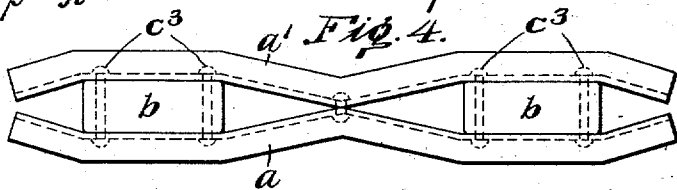
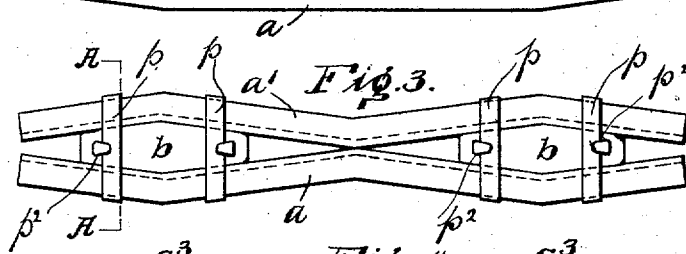
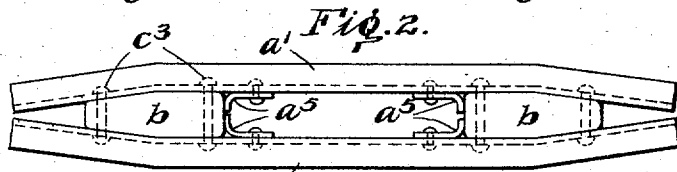
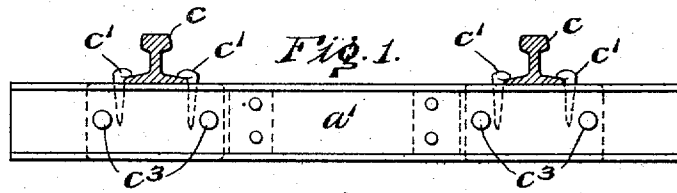
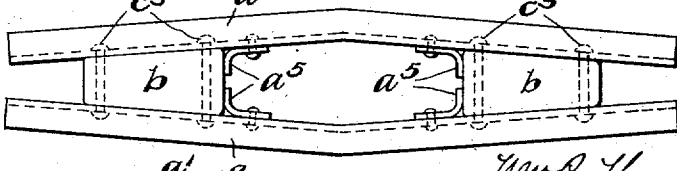


Fig. 7.



Witnesses.

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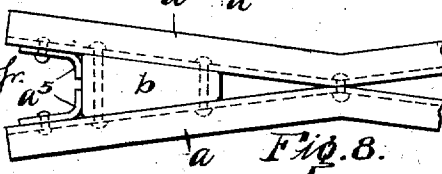


Fig. 8.

Inventors

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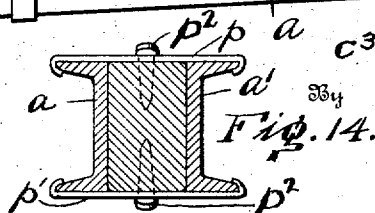
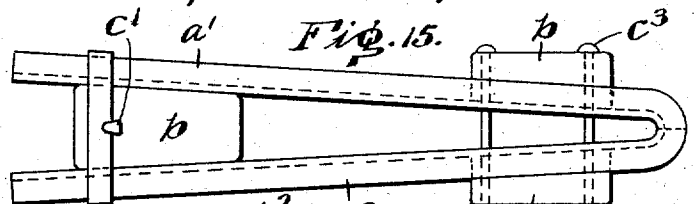
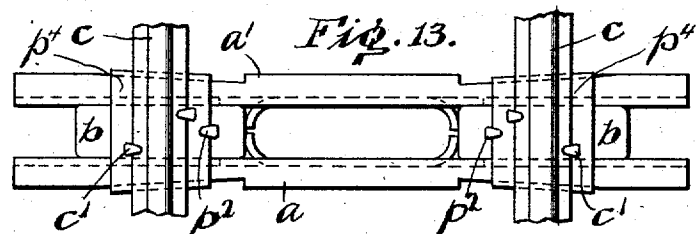
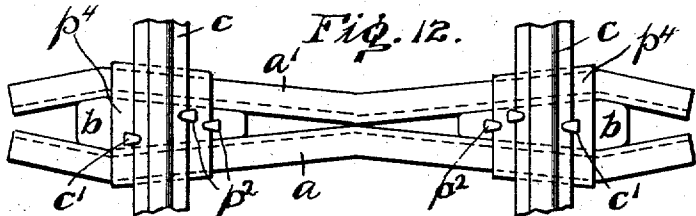
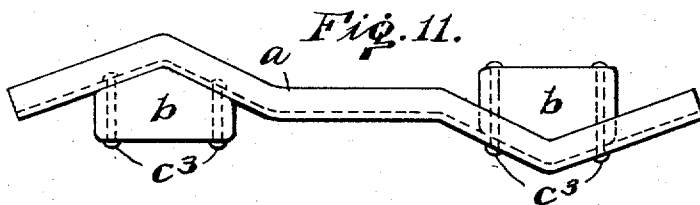
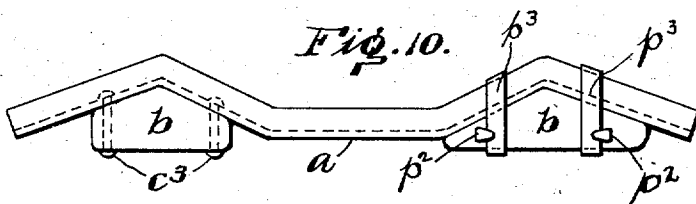
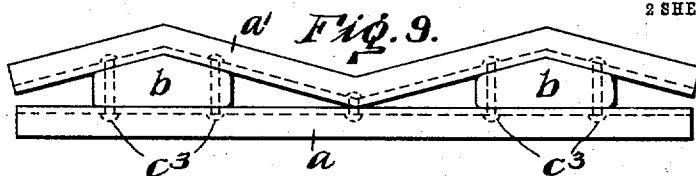
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2 SHEETS—SHEET 2.



Witnesses
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RAILWAY-TIE.

1,018,139.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, WILLIAM P. THOMSON and SAMUEL G. THOMSON, residents of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Railway-Ties, of which the following is a specification.

It is one of the objects of this invention to prevent the endwise movement or shifting of the tie in its road-bed and the resulting displacement of the rails. This object we accomplish by making the tie of an irregular outline to a vertical plane transversely to the rails. This irregularity in the outline of the tie causes it to become firmly fixed in the ballast or in the material of which the bed is composed, and the tendency to endwise movement in either direction is resisted. In the preferred form of our invention, for accomplishing this object, we employ a metallic member extending from rail to rail and bent into an irregular form to a vertical plane transversely to the rails. These irregularities are the means for holding it against endwise movement in the road-bed or ballast.

Our invention is also particularly adapted to that class of ties in which one or more metallic members are combined with a wooden block or member, which acts as a fastening means or as an elastic rail bearing. In this class of ties it is necessary that the wooden block or member shall be held against longitudinal displacement with reference to the metallic member or members to which it is secured, and the irregularities in the outline of the metallic member or members are utilized for this purpose, and may be employed to hold the wooden member or spiking blocks against movement in either or both directions, in addition to the usual rivets or means by which the wooden block or member is secured. In the preferred forms of our tie we employ two metallic members secured together with the wooden blocks or members between them and the adjacent faces of the metallic members bent to converge at one or both ends of the wooden blocks so as to form narrowed spaces to confine the blocks.

In the drawings: Figure 1 is a side elevation of one form of a railway tie embodying our invention; Fig. 2 is a plan view of

the same omitting the rails; Figs. 3, 4, 5, 6, 7, 8 and 9 are plan views illustrating other forms employing two metallic members; Figs. 10 and 11 are similar views showing forms using a single metallic member; Figs. 12, 13 and 15 are plan views illustrating further modifications; and Fig. 14 is a transverse section on the line A—A of Fig. 3.

a a' are the metallic members; *b* the wooden portions or blocks; and *c* the rails.

In the forms shown in Figs. 1 to 9 the tie is composed of two metallic members *a a'* between which the wooden blocks *b* are secured, while in the forms shown in Figs. 10 and 11 but a single metallic member *a* is employed with the wooden blocks placed both on one side, as in the form shown in Fig. 10, or on opposite sides of the two ends, as in the form shown in Fig. 11. The metal members *a a'* are of a length sufficient to extend under both rails and may be of any suitable cross section, but we prefer to employ flanged structural irons having a vertical web to which the wooden members are secured by bolts or rivets *c*, or by other means, such as the clamps *p*. In any case one or both of these metallic members is bent, preferably at the rail bearings partly for the purpose of holding the wooden blocks or members, which are secured to them, against longitudinal movement, and partly to vary the width of the tie so that the tie itself will be more firmly held in the road-bed or ballast against longitudinal movement.

In those forms shown in Figs. 1 to 8 and Fig. 12 the two metallic members *a a'* converge toward one another at the ends or center so as to form narrowed spaces for retaining the block *b* in place and also to vary the width of the tie. In the form shown in Figs. 1 and 2, the two members *a* and *a'* are parallel to one another at the center and the outer ends converge toward one another to form a narrowed space at the outer ends adjacent to the rail bearings; the blocks *b b* located at the rail bearings extend into these narrowed spaces and are thus held against outward movement. In this construction, we have shown metal cleats *a^s* secured to the vertical webs of the members *a a'* and extending outwardly over

the inner ends of the blocks to resist inward movement also, but these cleats may be omitted, or they may obviously be in the form of tongues cut and bent from the flanges; or a single continuous block may be used extending from rail bearing to rail bearing. In this construction, the two metallic members are riveted together to form the unitary tie by the rivets c^3 which secure the blocks or members between them.

In the forms shown in Figs. 3, 4 and 12, the members $a a'$ converge both at the outer ends and at the center.

In the form shown in Fig. 5 the outer ends of the members $a a'$ are parallel and the members converge at the center where they may be riveted together. In this case, the narrowed space between the vertical flanges acts to resist inward movement of the blocks.

In the forms shown in Figs. 2, 4, 5, 6, 7, 8 and 9 the two members $a a'$ are riveted together. In Figs. 3 and 14, however, we have shown a construction in which the members $a a'$ are secured together by clamps $p p'$ which engage the edges of the members $a a'$. These clamps are driven home on the inclined edges of the members $a a'$ and may be secured when in tightened positions to the blocks b by spikes p^2 or other fastenings. This construction enables the riveting of the members to be dispensed with and greatly cheapens the construction. While we have shown such clamps at both the top and bottom we do not mean to limit ourselves to the use of both clamps or to the particular form of the clamp shown.

The form shown in Fig. 6 is substantially the same as that shown in Figs. 3 and 4 except that the converging portions of the members $a a'$ are curved instead of straight.

In the form shown in Fig. 7 the widest part of the tie is at the center and the members $a a'$ converge toward one another from that point; in this case, the cleats a^5 for the inner ends of the blocks $b b$ may be used, as in the form shown in Figs. 1 and 2, or the block may be made in one continuous piece.

In the form shown in Fig. 8, the narrowest part of the tie is at the center and the members $a a'$ spread apart from one another from that point; in this case the cleats a^5 may be used at the outer ends of the blocks.

In the form shown in Fig. 9 one of the members (a) is straight and the other member (a') is bent as in the form shown in Fig. 3.

In the forms shown in Figs. 10 and 11, a single metallic member a is used, but such member is bent in the manner shown to retain the block b against longitudinal movement and also to present the irregular outline in the length of the tie. In Fig. 10 the blocks b are shown secured to each end on

the same side of the member a , while in Fig. 11 they are shown on opposite sides. In Fig. 10 clamps p^3 generally similar to the clamps $p p'$ are used for securing the block b to the member a .

In Figs. 12 and 13 the clamps p^4 are in the form of rail bearing plates but act in the same manner as the clamps $p p'$ for securing the members $a a'$ while having the additional function of acting as rail bearings. They may be secured to the blocks b either by the rail spikes c' or by independent fastenings p^2 , and obviously the conformation of the upper or lower surfaces of these plates may be varied at will and still come within the scope of this invention. It will be apparent that this construction, when these rail bearing plates are used, may be so modified as to greatly simplify the re-gaging of the track rails, since the plate, the block b and the tie members may be adjusted at will into new relationships to suit the changed position of the rail. These adjustments are almost limitless in variety by reason of the clamping function of the plate and the spreading function of the block when given a wedging shape.

In Fig. 13 the inner faces of the members $a a'$ are parallel and the outer faces at the rail bearings are converging. In this case also we have shown the rail bearing clamping plates p^4 .

In Fig. 15 the tie is of the shape of an elongated V so as to present the converging faces. The block b at one end is secured between the outer converging ends and at the other end blocks $b b$ are secured on each side.

These different forms have been shown to illustrate the modifications of which our invention is susceptible, and it will be apparent to those skilled in the art that many other forms may be used without departing from the essential idea of the irregularity in the length of the tie for holding the blocks against longitudinal movement in either or both directions, and preventing the endwise movement of the tie as an entirety. The particular form which should be used in any case will depend on the nature of the road-bed, the character of the traffic and other engineering conditions.

The rails $c c$ are spiked to the wooden member or blocks b by spikes c' or are fastened in any suitable manner; if an all wooden bearing is desired it may be obtained by extending the surface of the wooden member or members above the tops of the metallic member or members. In those cases where an elastic rail bearing is not required and spiking blocks or members are not necessary the wooden member or members b may be omitted.

In those forms in which two metallic members $a a'$ are used there is an open space between the members, which the ballast or

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material of the road-bed will enter thus serving to hold the tie more effectively in place.

When we speak of the blocks or members δ as "wooden" blocks or members, it is to be understood that we mean to include a block or member composed of other suitable non-metallic material or composition which may be used as a spiking member or as an elastic rail bearing.

What we claim as new is as follows:

1. A railway tie consisting of a metallic member extending from rail to rail bent into an irregular form in a vertical plane transversely to the rails at a point between the end of the tie and the inner edge of the adjacent rail foot, said member having an upright web and a longitudinally extending flange projecting from its side, and a wooden member having its lower surface exposed and free to be engaged by the ballast of the road-bed, said metallic member adjacent to said bent portion being laterally secured to said wooden member and said wooden member being retained against longitudinal movement by said bent portion of the metallic member.

2. A railway tie having two metallic members secured together and having adjacent faces which are at varying distances apart and portions of which faces lie between the end of the tie and the inner edge of the adjacent rail foot, each of said members having an upright web and a longitudinally extending flange projecting from its side, and a wooden spiking member between said metallic members and held against longitudinal movement by the varying proximity of the adjacent faces of said metallic members.

3. A railway tie having two metallic members secured together and having adjacent faces converging toward one another between an end of the tie and the inner edge of the adjacent rail foot, each of said members having an upright web and a longitudinally extending flange projecting from its side, and a wooden spiking member between converging portions of said adjacent faces of the metallic members.

4. A railway tie having the outer portions with laterally extending flanges, said outer portions being secured together and presenting an irregular outline on either side of the tie in a vertical plane transversely to the rails and between the end of the tie and the inner edge of the adjacent rail foot, and wooden spiking members secured between the outer members at the rail bearings, said outer portions and their securing means bounding space between the rail bearings which is open at the top and bottom of the tie.

5. A railway tie having outer members with laterally extending flanges, a portion of the upright web of each of said mem-

bers being arranged at an angle one to the other with spiking blocks intervening between said portions.

6. A railway tie having outer members with laterally extending flanges, a portion of an outer member being bent so that the outer members lie at an angle one to the other beneath the rail with intervening spiking blocks between said outer members.

7. A railway tie consisting of two side members having upright converging faces and laterally extending flanges, intervening spacing members, and means clamping said members together, the convergence of the faces of the side members affording a resistance to longitudinal shifting of said spacing members at a point between the end of the tie and the inner edge of the adjacent rail foot.

8. A railway tie having converging side members, an intervening spacing member and a rail bearing plate clamping said parts together at converging portions of said side members.

9. A railway tie having side portions converging beneath a rail, and means for clamping said side portions together.

10. A railway tie having side members having portions which converge beneath a rail, and rail bearing plates clamping said side members together.

11. A railway tie embracing a metallic member and a spiking block having upright longitudinally converging faces, and means to clamp said parts together.

12. A railway tie consisting of outer members having irregular outlines in vertical planes transversely to the rails, intervening members, clamps fitting converging parts of the outer members, and means for fastening said clamps in tightened position.

13. A railway tie consisting of outer members having irregular outlines in vertical planes transversely to the rails, intervening members, clamps fitting converging parts of the outer members, and means securing said clamps to the intervening members in tightened position on the outer members.

14. A railway tie having converging side portions, clamps fitting said converging parts, and means for fastening said clamps in tightened position.

15. A railway tie comprising two flanged-base sections, the centers of said sections contacting with each other, both sections bent to form divergent walls and again bent to form substantially parallel spaced terminals.

16. A railway tie comprising two flanged-base sections, the midlengths of said flanges being contiguous, both sections bent to form divergent walls and again bent to form substantially parallel spaced terminals.

17. A railway tie comprising two flanged-base sections, the midlengths of said flanges

being contiguous, both sections bent to form divergent walls and again bent to form substantially parallel spaced terminals, and means for securing said sections together.

5 18. A railway tie comprising two flanged-base sections, the midlengths of said flanges being contiguous, both sections bent to form divergent walls and again bent to form substantially parallel spaced terminals, a wood

block seated within said terminals, and means for securing the tie sections together.

In testimony of which invention we have hereunto set our hands.

W. P. THOMSON.
S. G. THOMSON.

Witnesses:

ERNEST HOWARD HUNTER,
R. M. KELLY.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."