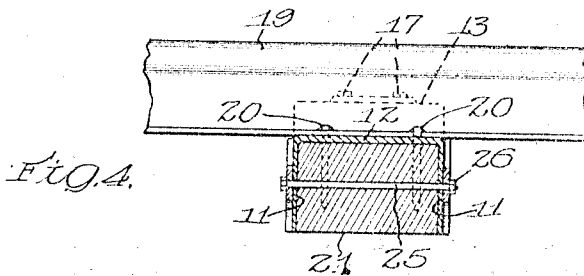
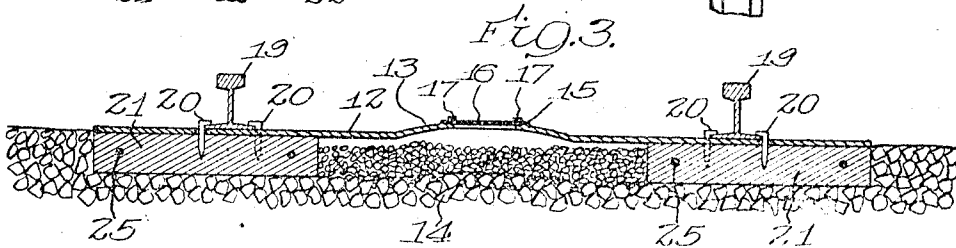
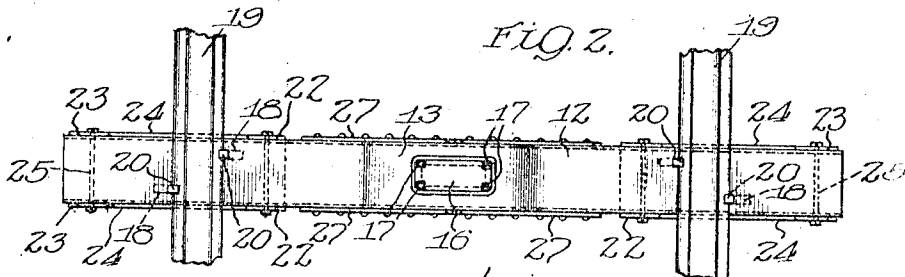
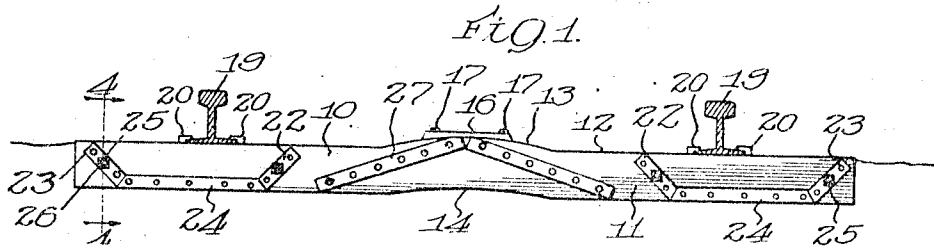


H. V. SLUTZ.
RAILWAY TIE.

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1,053,659.

Patented Feb. 18, 1913.



Witnesses:

H. Tomarus Jr.
R. Burkhardt.

Inventor:

Harmon V. Slutz
By: Brown & Hopkins

Attys.

UNITED STATES PATENT OFFICE.

HARMON V. SLUTZ, OF CHICAGO, ILLINOIS.

RAILWAY-TIE.

1,053,659.

Specification of Letters Patent.

Patented Feb. 18, 1913.

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To all whom it may concern:

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

This invention relates to cross ties for railways, and the principal object of the invention is to provide an improved, simple, strong and resilient device of the class described which is effective and efficient in operation.

A further object of the invention is to provide a tie which prevents the wheels of a vehicle passing over the rails secured thereto, from becoming rail-bound.

A still further object is to provide a tie of this kind which has a strong hold on the road ballast, thereby preventing the track from slipping and permitting the use of less expensive ballast.

Another object is to provide improved means for tamping the ballast about the tie and to permit the resilient action of the tie in the center.

For the attainment of these ends and the accomplishment of other new and useful objects, as will appear, the invention consists in the features of novelty in the construction, combination and arrangement of the several parts generally shown in the drawing and described in the specification, but more particularly pointed out in the appended claims.

In the drawing, Figure 1 is a side elevation of a tie constructed in accordance with the principles of this invention; Fig. 2 is a plan view of the same; Fig. 3 is a longitudinal section of the same showing the ballast disposed about the tie; Fig. 4 is a cross sectional view on the line 4—4 of Fig. 1.

One of the difficulties to be overcome in railway construction is to provide means for preventing the rails from being inclined outwardly when a load is imposed upon the rails. This is caused in case of the ordinary wood tie, because of the fact that the ballast is disposed all about the tie and the rails are located adjacent the ends of the tie. When a train passes over the rails, the constant action of the car trucks in passing over any tie, will cause, in time, an up and down movement of the end of the tie, since it is

evident that the center of the tie is supported by the ballast underneath it, and the weight imposed upon the tie is directed toward the ends thereof. This causes a bulging action in the center of the tie which finally results in the ends of the tie being permanently depressed, whereby the rails will be tilted outwardly from their original position and the inner edges of the balls of the rails, will be moved upwardly and will engage the flanges of the wheels as they pass over the rails. This causes the wheels to become bound between the rails and results in an undue wearing of the rails. Particularly is this true in constructions where the material of which the road bed is constructed, is not of the best, or where there is much moisture.

The present invention has for its principal object to obviate this difficulty as well as to provide an improved, light and simple resilient construction which has a superior hold upon the road bed, and which may be regulated as far as the resilient action of the tie itself, is concerned.

Referring now more particularly to the drawing, a resilient member 10 preferably of channel shape in cross section, as shown clearly in Fig. 4, is composed of any suitable metallic material, such as steel or wrought iron and the like, and is formed with substantially vertical depending side portions 11 which are preferably thinner in construction than the connecting web portion 12. This member 10 is preferably of a length substantially the same or slightly less than the standard tie, and is preferably formed at its center with a rounded and raised portion 13 necessitating corresponding curved recesses 14 at the lower edge of the depending side portions 11. This rounded portion 13 is preferably provided with a tamping opening 15 substantially rectangular in form and disposed within the longitudinal axis of the opening extending lengthwise of the tie member 10. A lid or closure 16 is provided for this opening 15 and fastening devices 17, preferably bolts or the like, are positioned at the corners to fasten the lid in place over the opening. In the connecting web portion 12 and adjacent the ends of the member 10 properly spaced apart, are openings 18, some of which may be slotted as indicated in dotted outline in

Fig. 2, to receive fastening devices for securing the rails 19 to the tie. In the present exemplification of the invention, spikes 20 are employed as the fastening members or devices as will be presently set forth.

Disposed at the ends of tie member 10, are blocks 21 which may be of any desired or suitable material, and in the present exemplification of the invention, are intended to be composed of wood. These blocks are positioned between the side members of the tie, preferably extend to the end of the tie member, and are of such a length that a greater portion of each block is disposed without the center line of the rail than between the rails. The rail is fastened to the block 21 by means of the spikes 20 which pass through the openings 18 provided for them at the proper places adjacent the ends of the tie members. It has been found with this construction that a much cheaper grade of material can be used for the blocks 21 for the reason that they are entirely covered except at the outer end by the tie member 10 and for this reason are not so much subject to the action of the weather or moisture as are other ties. It will furthermore be noted in this connection that either one or both of the blocks may be removed from the member 10 at the ends thereof, without disturbing the position of the member 10 or of the rails upon the member. This results in a saving of time in repairing the track and in substituting new blocks for old ones.

The disposition of the blocks with respect to the rails is for the express purpose of directing the weight imposed upon the rails toward the center of the track. In other words, as a weight is imposed upon the rails, the blocks 21, if depressed at all by the weight passing over the rails, are inclined inwardly for the reason that each rail is positioned nearer the inside end of the block than the outside, and if there is any tendency of the block to be inclined, it will be toward the center, thereby eliminating the possibility of the rail tilting outwardly, and preventing it from bending the flanges of the wheels passing over the rails. In other words, the tilting action of the blocks prevents wheels passing over the rails from becoming rail-bound.

In order to strengthen and to properly distribute the stresses and strains in the tie member, it is provided with braces 22 and 23 which are secured on the outside of the depending side portions 11 of the said member 10. These braces are preferably of the same or a similar material to that of which the member 10 is composed, and they are disposed at an angle to a vertical center line and at different distances from the rails 19. In the present exemplification of the invention, the braces 23 are disposed adjacent the ends of the tie member, and the braces

22 are disposed between the center lines of the rails and at a distance therefrom less than the distance of the braces 23 from the said center line. Disposed along the lower edge of the side portions 11 and extending between the lower ends of the braces 22 and 23, are braces 24. These braces 24 are adapted to strengthen the support of the braces 22 and 23 and to form a lower edge of increased width for the depending side portions.

To secure the blocks 21 in position at the ends of the member 10 and to properly direct the weight imposed upon the blocks to the tie member 10, bolts or bars 25 are provided which extend through the blocks 21, the depending side portions 11 and the braces 22 and 23. These bolts 25 are secured in position by nuts 26 or other fastening devices at the ends thereof, and it is evident that the weight imposed upon the blocks, will be communicated by means of the bolts to the tie member 10, so that no severe strains are placed upon the blocks 21. It will also be noticed that these bolts 25 are spaced with respect to the center line of the rail so that as shown in the present exemplification of the invention, the bolt at the outer end of the block is farther from the line of the rail than the bolt of the inner end of the block.

In order to strengthen the central portion of the tie, braces 27 are provided which are secured on the outside of the depending side portions and extend from the upper middle portion of each side at an angle, to the lower edge of the side at a point intermediate of the center line of the tie and the outer end thereof. The lower end of each of these braces preferably extends to a point adjacent the inner end of the block 21 which is secured in the end of the tie. The object of these braces 27 is to strengthen the tie member at its central portion and to direct the weight imposed upon the tie by the rails toward the center of the tie, thereby resulting in a resilient action of the middle portion of the tie member.

The resilient action of the middle portion of the tie member is aided by reason of the disposition of the blocks at the ends of the tie member leaving the portion between the inner ends of the blocks unsupported, and providing a space for the reception of ballast. In practice, this space between the inner ends of the blocks 21 is filled with ballast, and a space is usually left at the top of the ballast (see Fig. 3) between the ballast and the upper web of the tie member 10 so that the upper side of the tie member is free to bend downwardly under a sufficient strain caused by a weight imposed upon the rails. The ballast within this space is tamped in position through the tamping opening 15, any de-

sired or suitable tamping tool being inserted through the opening for this purpose. As this chamber is closed, it is evident that the ballast contained in the chamber is not subject to the weather and under ordinary conditions even in rainy weather, is in dry condition. By leaving a space between the top of the ballast in this chamber and the web connecting portion of the tie member, the resilient action of the middle portion of the tie member is permitted in a greater degree than would be permitted if the ballast entirely fills the chamber. As has been previously described, a weight imposed upon the tie member and upon the rails is directed toward the middle of the tie, and results in a bending action upon the middle portion which tends to bend the tie concavely. In other words, the lower edges of the depending side portions 11 of the tie member are subjected to the greatest tensional strain. The bending of the tie member is by means of the braces which are disposed along the sides of the tie member, and which are positioned to distribute and direct the weight and tension toward the center of the tie member. With this construction, it is evident that a very firm hold upon the ballast is possible, for the reason that the two end blocks are embedded in the ballast and bear against it upon all sides, thus providing a double bearing surface to prevent lateral movement with respect to the track, and an additional bearing surface is afforded by the channel shaped middle structure of the tie member whereby both of the depending side portions engage the ballast to prevent a longitudinal movement of the tie with respect to the track. The downward bearing surface of the tie is of course the same as any other tie of equal width. With this construction, it is possible and is found expedient to reduce the length of the tie slightly from that of the standard length which is considered eight feet, so that this tie is found very efficient in curves of short radius. A further advantage of this construction on curves of short radius is that the superior holding power of the tie upon the ballast keeps the tie, and consequently the track, more firmly in position upon the curves, for it is upon the curves that the greatest danger of slipping of the ties, is present.

While I have thus described the preferred embodiment of my invention, it is evident that others skilled in the arts to which this appertains, may make various changes in the construction, combination and arrangement of the several parts without departing from the spirit and scope of the invention.

What I claim is:

1. In a railway tie, the combination with a resilient member, of blocks disposed at the ends thereof to which the rails are attached, and means to secure the blocks to the said

member through the sides thereof, at different distances from the rails to throw a greater weight between them than outside.

2. In a railway tie, the combination with a resilient member, of blocks disposed at the ends thereof to which rails are attached, and means to secure the blocks to the member at different distances from the rails to distribute the load imposed upon the rails throughout the tie.

3. In a railway tie, a channel member adapted to be positioned with the side portions down and having a raised middle portion with an opening therein to provide a chamber higher than the level of the ballast, and the opening being for tamping purposes.

4. In a railway tie, a channel member adapted to be positioned with the side portions down and having an upwardly rounded portion in the middle with a corresponding recess in the edge of the side portions of the member.

5. In a railway tie, a channel member adapted to be positioned with the side portions down and having an upwardly rounded middle portion with a tamping opening therein extending longitudinally of the member.

6. In a railway tie, the combination with a resilient channel member with a raised and rounded portion adjacent the middle of the member having an opening longer than wide extending longitudinally of the member, and means to close said opening.

7. In a railway tie, the combination of a resilient member having vertical side portions, and braces extending at an angle from adjacent the middle and top of the side portion to the bottom edge of the side portion and remote from the ends of the tie.

8. In a railway tie, the combination of a resilient channel shaped member with its sides disposed downwardly, the connecting web portion being formed at the middle of the member with a raised and rounded projection and the bottom edge of the sides being correspondingly recessed; and braces secured to the sides of the member and each extending at an angle from the upper middle part of the side of the member to the lower edge thereof at a point intermediate of the side of the member and the end thereof.

9. In a railway tie, the combination of a resilient member, having vertical side portions, the rails being positioned adjacent the ends of the tie, and braces secured to the said portions and extending at angles to the vertical upon the side of the member.

10. In a railway tie, the combination of a resilient member, having vertical side portions, the rails being positioned adjacent the ends of the tie, and braces secured to the said portions and extending at angles to the

vertical upon the side of the member and at different distances from the center line of the rails, the braces at the outer ends of the member being disposed at a greater distance than the other braces.

11. In a railway tie, the combination of a resilient member having depending side portions, the rails being positioned near the ends of the tie, braces secured to the depending portions on the outside thereof, and extending at angles to the vertical at different distances from the center line of the rails and terminating adjacent the upper and lower edges of the side, and a brace disposed along the lower edge of the side between the lower ends of said angularly disposed braces and providing a wider supporting lower surface for the tie.

12. In a railway tie, the combination with an inverted channel shaped resilient member having substantially vertical depending side portions and a raised and rounded projection at the center with a tamping opening therein, and corresponding depressions in the lower edges of the depending sides, of blocks disposed in the member at the end thereof, leaving a space at the center of the member for ballast, a cover for said tamping opening, the said member being provided with openings at the ends to fasten rails through them to the blocks, braces on the outside of the said member and secured thereto at angles to the vertical center line of the rails and at different distances therefrom, a brace at the bottom edge of each of said sides extending between two angularly disposed braces, rods extending through the blocks, the depending side members and the said angularly disposed braces, the said

blocks being so disposed that the greater portion thereof is outside of the center line of each rail and the said rods being spaced nearer to the center line of the rail between the rails than the ones outside thereof, and braces secured to and extending from adjacent the top edge of each depending side portion to a point adjacent the bottom edge thereof and in proximity to the inside edge of the said blocks, all of the said braces being arranged at different distances from the rails to distribute the weights imposed upon the rails throughout the tie and to cause the said tie to be bent concavely when a load is imposed upon the rails.

13. A railway tie comprising a metallic channel shaped member, longitudinally resilient and having straight side portions substantially at right angles to the connecting web and thinner than the web, members secured thereto at the ends and inside thereof to which the rails are attached, the resilient member being disposed with the web uppermost, and the members at the ends being disposed with a greater portion outside of the rails than between them to arch the channel member downwardly at the center, the thin sides being adapted to enter the ballast at the center when weight is applied to the tie through the rails at the end.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 20th day of November A. D. 1911.

HARMON V. SLUTZ.

Witnesses:

C. H. SEEM,
K. W. WONNEL.