G. S. WRIGHT.

RAILWAY TIE.

APPLICATION FILED APR. 25, 1911.

999,477. Patented Aug. 1, 1911.

Fig. 1.

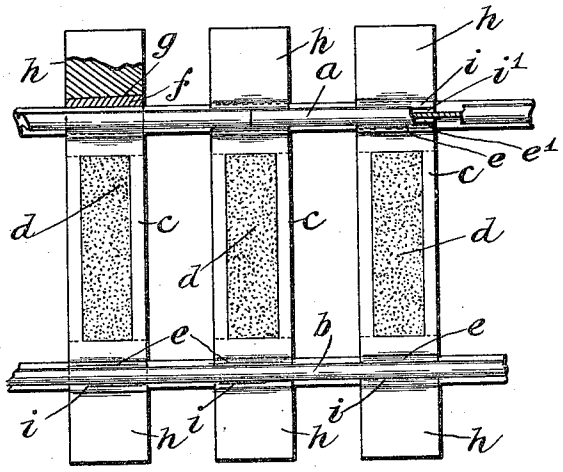


Fig. 2.

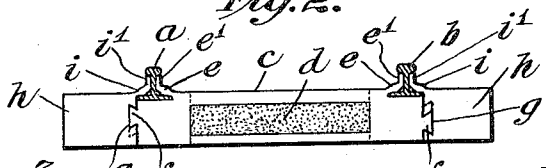


Fig. 3.

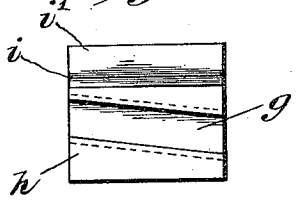


Fig. 4.

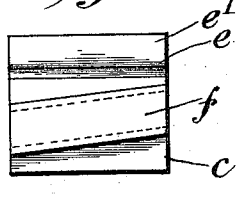


Fig. 5.

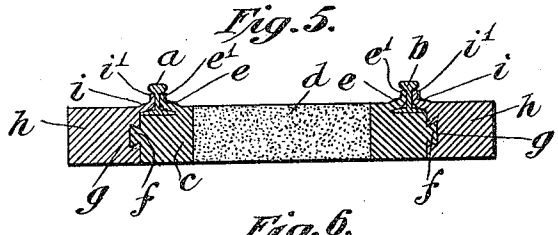
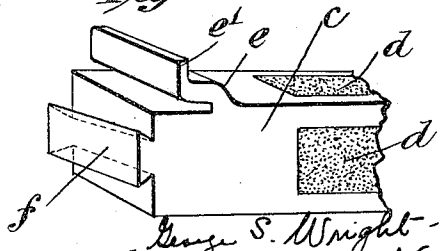


Fig. 6.



Attest:

E. Mitchell

Eugene Kenning.

Inventor:

George S. Wright.

by Frank P. Wentworth his Atty.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

GEORGE S. WRIGHT, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF, EDWARD G. ROYCE, AND THOMAS BIRMINGHAM, TRUSTEES.

RAILWAY-TIE.

999,477. Specification of Letters Patent. **Patented Aug. 1, 1911.**

Application filed April 25, 1911. Serial No. 623,163.

To all whom it may concern:

Be it known that I, GEORGE S. WRIGHT, a citizen of the United States, residing in the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Railway-Ties, of which the following is a specification, reference being had therein to the accompanying drawings, which form a part thereof.

My invention relates to railway ties, and more particularly to a type of metallic cross tie.

The main object of the invention is to provide a tie of this type wherein the rail may be firmly secured in place without the necessity of using spikes, bolts, or other similar articles.

A further object is to provide a tie wherein the securing means may be quickly released to permit the removal and re-laying of rails.

A still further object is to provide a tie of this character which will prevent any possibility of a spreading of the rails through the displacement of the rail securing means under lateral stresses upon the rail.

A still further object is to provide a tie, wherein, if desired, the securing means may also act as a fish plate in so far as the reinforcement of the rail head is concerned.

A still further object is to provide in a tie, rail securing means, the operation of which will be such as to cause said means to automatically adjust themselves to any irregularity in the foot of the rail. And a still further object is to provide a tie, the parts of which are interchangeable and which tie in its entirety may be substituted for any other type of tie, thus avoiding any necessity for the re-installation of an entire road bed due to the use of my improved tie.

The invention consists primarily in such novel features of construction and combination of parts as are hereinafter set forth and described, and more particularly pointed out in the claims hereto appended.

Referring to the drawings:—Figure 1 is a top view of a section of a road bed having my improved ties in position therein; Fig. 2 is a front view of a tie; Fig. 3 is an end view of the central section of the tie; Fig. 4 is an end view of the inner face of the removable member for securing the rail to the tie; Fig. 5 is a vertical section through a tie; and Fig. 6 is a perspective view on an enlarged scale of one end of the tie.

Like letters refer to like parts throughout the several views.

In the embodiment of my invention shown in the drawings, *a* and *b* indicate the parallel rails of a track. These rails are attached to a series of ties, each of which consists of a central section *c* preferably comprising a hollow metallic frame reinforced with a concrete filling *d*, the said section being hollowed out and cut away at the top and sides to reduce the weight of metal in the tie. The cut away portion may take any desired form to secure the desired strength of the metallic frame of the tie. The concrete filling *d* will also serve to minimize reverberation of the tie and thus deaden the noise of trains passing thereover. The hollowed portion of the central tie section extends adjacent to the ends thereof, leaving these ends solid to facilitate the formation thereon of means for securing the rail in place on the ties. Each end of the section *c* is provided with an upwardly projected overhung flange *e* adapted to pass over the foot, and engage the web, of the rail, said flange projecting over the top of the end of the section *c*, thus forming a seat or rest for the foot of the rail adjoining said end. Preferably this flange *e* is provided with an upwardly projected portion *e'* adapted to pass under, and engage the lower face of the head of the rail, and act as a fish plate adjacent to the abutting ends of rails, so far as presenting an anvil beneath said head is concerned.

Each end of the section *c* is provided with a laterally projecting, downwardly pitched dove tailed tongue *f*, the tongues upon opposite ends of said section being pitched in opposite directions so as to permit the securing means to be used upon either end of the tie. If desired, the tongues *f* may also be pitched slightly inwardly toward the end of the tie, so as to bring the securing flange directly under the rail head to act as a fish plate upon the inside of said rail.

Slidably mounted upon each end of the

section *c* by means of a dove tailed groove *g* coöperating with the tongues *f* is a metallic securing block *h*, the upper inner face of which is provided with an upwardly and inwardly projecting overhung flange *i* adapted to pass over the foot of, and abut against the web of, said rail, and in some instances, to pass under and engage the head of the rail. This overhang of the end pieces *h* may also be projected upwardly as at *i'*, to act as a fish plate for the outside of the rail.

The dove tailed slide tongues *f* and the grooves *g* serve to draw the slidable, detachable end block *h* down upon the foot of the rail with a strong clamping action and the position of the overhung flange *i* is such as to cause any stress thereon from the rail foot to have a toppling effect upon the securing block so as to tend to further bind said block upon the section *c* rather than to loosen the rail through the movement of said block. The foot of the rail is clamped between the overhung flange *i* and the seat or rest on the section *c* adjoining the end of said section.

The end of the section *c* and the abutting face of the block *h* preferably present continuous parallel bearing surfaces, the ends of the section *c* and also said blocks being solid to impart the desired strength to these parts and afford a firm foundation to the seat for the foot of the rail.

In laying rails, the section *c* is laid in the ballast of the road bed in the usual manner, with the ends thereof clear so as to leave a sufficient field for the application of the end blocks thereto. The rails *a b* are then laid upon this section with the foot thereof in place upon the rest or seat at the ends of this section, the inner side of each foot being positioned beneath, and engaged by, the overhung flange *e*, with the upward extension *e'* thereof in close juxtaposition to the head of the rail. When so positioned, the flange *e* and the seat or rest will resist any tendency of the rail to topple over, and the outer side of the rail foot will come substantially flush with the end of the section *c*. Thereafter, an end block *h* is mounted upon each end of the section *c* by means of the tongue *f* and groove *g*, the said block being forced longitudinally of the said tongue *f* in any desired manner, as with an ordinary sledge. As the block *h* is forced upon and along the tongue *f*, said tongue draws it gradually downward, until the overhung flange *i* upon said block is clamped by this wedging action upon the outer side of the rail foot, the force of the clamping action being controlled entirely by the extent of movement of the block *h* along the tongue *f*. If any looseness or wear should occur upon these parts, such may be readily taken up by forcing said block farther along the tongue *f*. When so forced to place, the overhang *i* of the block *h* will not only firmly clamp the rail foot against the seat or rest upon the section *c*, but will also engage the web of the rail in a manner to prevent any toppling or spreading of the rails. When the flange *i* is provided with the upward extension *i'* to form a fish plate, the lateral pitch of the tongue *f* will permit the extension *i'* of the flange *i* to pass the head of the rail and to be forced laterally into position beneath the same. The vertical pitching of the tongues *f* upon opposite sides of the section *c* in opposite directions, permits the application of any block *h* to either end of any section *c*. The power applied in forcing the block *h* to place will ordinarily cause a sufficient binding action between the lower face of the wedge-like tongue *f* and groove *g*, through the resistance offered to the overhang *i* by the rail foot, to prevent a displacement of the block *h* sufficiently great to permit the rail to become loosened from the tie, particularly in view of the fact that considerable longitudinal movement of the end block *h* would be required to result in a substantial loosening of the rail. Furthermore, the said block would become more or less set in position after having been upon the road bed for a short time, and ordinarily the road ballast would be so placed as to minimize any tendency of the end piece to jar loose. The ordinary strains upon the rail would be such as to increase the binding action between the end blocks *h* and the central section *c*.

My improved tie has the further advantage that the track walkers or section hands may at a glance determine the exact condition of the rail securing means and may by simply tapping the end blocks *h* take up any looseness between the rail and the tie. When it is desired to take up rails for any purpose, it is merely necessary to drive the blocks *h* up the inclined tongues *f* to remove the block, the use of a sledge being sufficient to start the block, notwithstanding that the tie may have laid in the road bed for a considerable length of time.

If desired, the lateral pitch of the tongues *f* may be dispensed with by eliminating the extension *i'* engaging the under section of the rail head, the securing flange *i* under these conditions, being sufficiently low to pass under the head and engage the rail web before the block *h* is driven home.

It will be observed that the arrangement of the tongue and groove connections between the section *c* and the blocks *h* are such as to place no limitation upon the quantity of longitudinal movement of the blocks, the sole limitation to such movement being the engagement between the overhung flange *i* and the foot of the rail.

It is not my intention to limit myself to all of the details of construction shown in the accompanying drawings, it being ap-

parent that many such may be varied without departing from the spirit or scope of the invention.

Having described my invention, what I claim as new and desire to have protected by Letters Patent, is:—

1. A railway tie, embodying therein a fixed metallic section, means thereon engaging the foot of a rail, a removable metallic end section also having means thereon adapted to engage the foot of a rail, and means whereby said removable section may be secured to said fixed section, said securing means having a vertical wedging action when actuated whereby the engaging means upon said removable section are drawn down upon the foot of the rail.

2. A railway tie, embodying therein a fixed metallic section having a rest or seat adjoining the end thereof, means adjacent said rest or seat engaging the foot of the rail, a removable metallic end section also having means thereon adapted to engage the foot of a rail, and means whereby said removable section may be secured to said fixed section, said securing means having a vertical wedging action when actuated whereby the engaging means upon said removable section are drawn down upon the foot of the rail.

3. A railway tie, embodying therein a fixed metallic section, means thereon engaging the foot of a rail, a removable metallic end section also having thereon means adapted to engage the foot of a rail, and a downwardly pitched tongue and groove connection between said fixed and said movable sections whereby said removable section may be secured to said fixed section, said securing means having a vertical wedging action when actuated whereby the engaging means upon said removable section are drawn down upon the foot of the rail.

4. A railway tie, embodying therein a fixed metallic section, an overhung flange adjacent to the end of said section adapted to project over and engage the foot of the rail, a removable metallic end section also having thereon an overhung flange adapted to project over and be forced into engagement with the foot of a rail, and a downwardly pitched tongue and groove connection between said fixed and said removable sections whereby the engaging means upon said removable section are drawn down upon the foot of the rail.

5. A railway tie, embodying therein a fixed metallic section, means adjacent to each end thereof adapted to project over and engage the foot of a rail, removable end sections, each having thereon means adapted to project over and be forced into engagement with the foot of a rail, and means whereby said removable sections may be secured to said fixed section, said securing means having a vertical wedging action when actuated whereby said engaging means upon said removable sections are drawn down upon the foot of the rails.

6. A railway tie, embodying therein a fixed, hollow metallic section filled with concrete and having solid ends, means adjacent to each end thereof adapted to project over and engage the foot of a rail, removable solid metal end sections, each having thereon means adapted to project over and be forced into engagement with the foot of a rail, and means whereby said removable sections may be secured to said fixed section, said securing means having a vertical wedging action when actuated whereby said engaging means upon said removable sections are drawn down upon the foot of a rail.

7. A railway tie, embodying therein a fixed metallic section, an overhung flange adjacent to the end of said section adapted to project over and engage the foot of a rail, said flange having an upwardly projecting extension thereon adapted to pass under and engage the head of the rail, a removable metallic end section also having thereon an overhung flange adapted to project over and be forced into engagement with the foot of a rail, and a downwardly pitched tongue and groove connection between said fixed and said removable sections whereby the engaging means upon said removable section are drawn down upon the foot of the rail.

8. A railway tie, embodying therein a fixed metallic section, an overhung flange adjacent to the end of said section adapted to project over and engage the foot of the rail, a removable metallic end section also having thereon an overhung flange adapted to project over and be forced into engagement with the foot of a rail, the overhung flange on said end section having an upwardly projecting extension adapted to pass under and engage the head of a rail, and a downwardly and laterally pitched tongue and groove connection between said fixed and said removable sections whereby the engaging means upon said removable section are drawn down upon the foot of the rail, and said upwardly projecting extension is caused to pass beneath the head of the rail.

9. A railway tie, embodying therein a fixed metallic section, an overhung flange adjacent to the end of said section adapted to project over and engage the foot of a rail, said flange having an upwardly projecting extension thereon adapted to pass under and engage the head of the rail, a removable metallic end section also having thereon an overhung flange adapted to project over and be forced into engagement with the foot of a rail, the overhung flange on said end section having an upwardly projecting extension adapted to pass under and engage the head of a rail, and a downwardly and later-

ally pitched tongue and groove connection between said fixed and said removable sections whereby the engaging means upon said removable section are drawn down upon the foot of the rail, and said upwardly projecting extension is caused to pass beneath the head of the rail.

In witness whereof, I have hereunto affixed my signature, in the presence of two witnesses, this 24th day of April, 1911.

GEORGE S. WRIGHT.

Witnesses:

EDWARD G. ROYCE,

FRANK T. WENTWORTH.