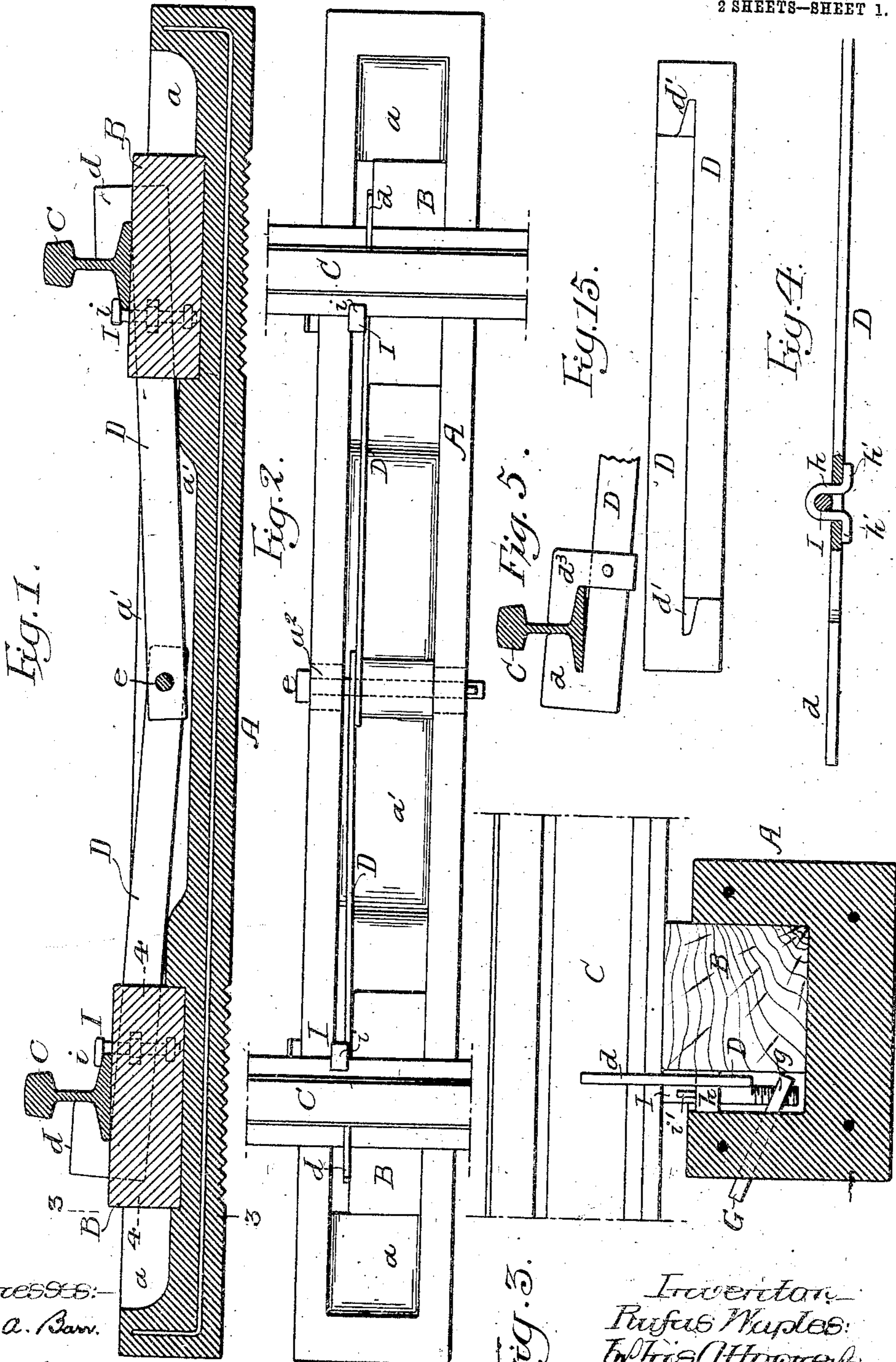


924,705.

Patented June 15, 1909.

2 SHEETS—SHEET 1.



Witnesses:
J. A. Barr.
J. H. Jones.

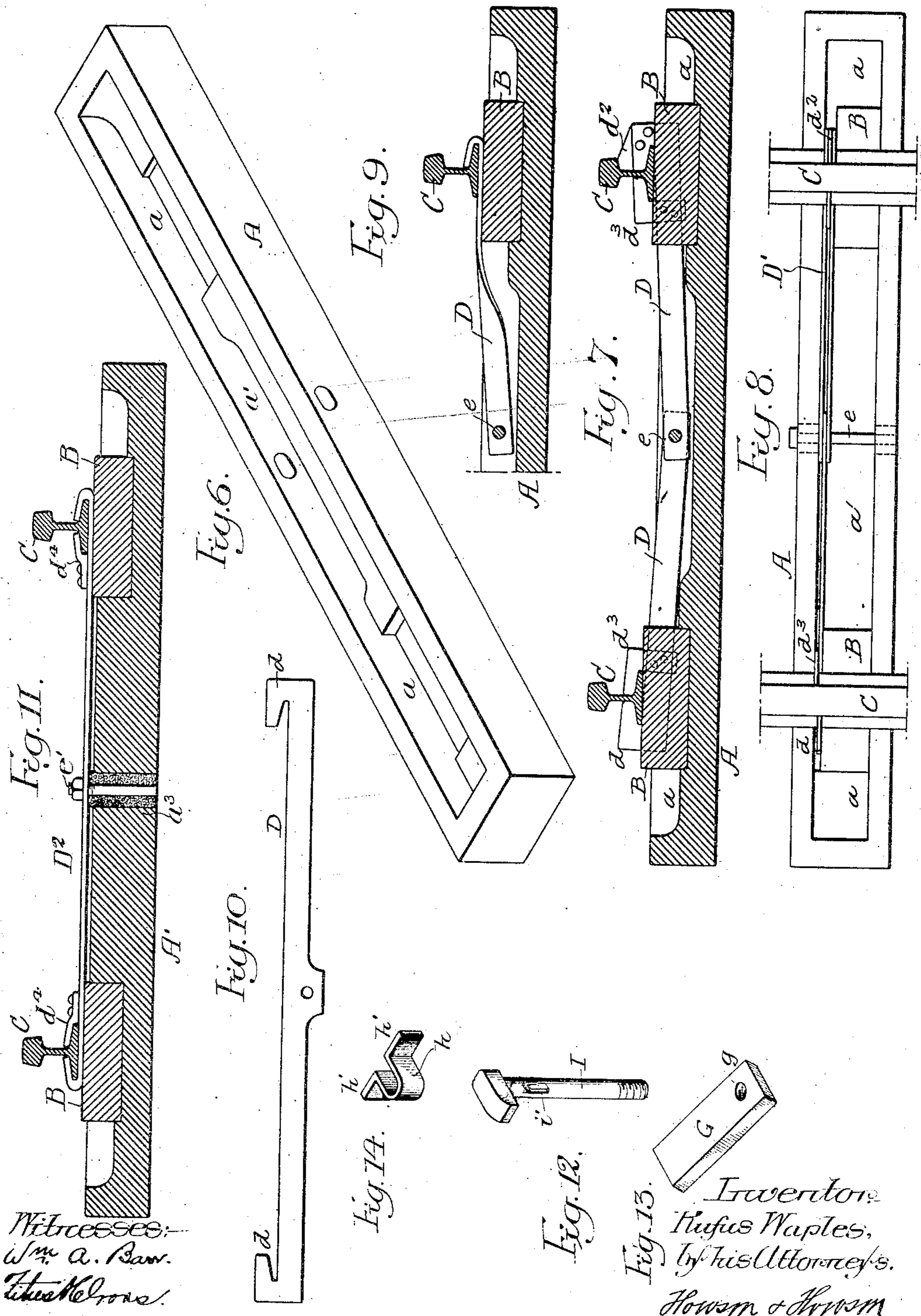
Fig. 3.

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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

RUFUS WAPLES, OF WAYNE, PENNSYLVANIA.

RAILWAY CROSS-TIE.

No. 924,705.

Specification of Letters Patent.

Patented June 15, 1909.

Application filed February 5, 1908. Serial No. 414,381.

To all whom it may concern:

Be it known that I, RUFUS WAPLES, a citizen of the United States, residing in Wayne, Delaware county, Pennsylvania, have invented certain Improvements in Railway Cross-Ties, of which the following is a specification.

My invention relates to certain improvements in ties made of concrete and to devices for securing the rails to the ties.

The main object of my invention is to improve the form of the concrete tie and prevent the fastenings from becoming loose by securing the rail to the tie some distance from the point of support of the rail, so that the rails can be leveled without disturbing the ties.

A further object of the invention is to provide means for fastening the rails directly to the ties where additional security is desired.

In the accompanying drawings:—Figure 1, is a longitudinal sectional view of my improved railway cross tie showing the rails in position; Fig. 2, is a plan view of Fig. 1; Fig. 3, is an enlarged sectional view on the line 3—3, Fig. 1; Fig. 4, is a sectional view on the line 4—4, Fig. 1; Fig. 5, is a view showing the method of securing the tension members of the rails; Fig. 6, is a perspective view of the concrete tie; Fig. 7, is a longitudinal section showing a modification of the invention particularly adapted for use at curves; Fig. 8, is a plan view of Fig. 7; Fig. 9, illustrates a modification of the tension member; Fig. 10, is a view of another modification of the tension member; Fig. 11, is a view of a modification of the tie and means for securing the tie to the rails; Figs. 12, 13 and 14, are perspective views illustrating details of the means for fastening the rails to the tie; and Fig. 15, is a diagram view showing the method of cutting the tension members.

A is a cross tie made of concrete and reinforced in any suitable manner; this tie has cavities *a, a* in its upper surface near each end, as shown in Fig. 6, and a central cavity *a'* all drained in any suitable manner. Mounted in the cavities *a, a* are the bearing blocks B of wood or other suitable material, and these blocks extend above the upper surface of the tie as shown in Fig. 1. Supported directly upon these blocks are the rails C, C of any suitable shape.

D, D are metallic tension members perfo-

rated at their inner ends, in the present instance, for the passage of a transverse bolt *e*, and their ends *d* are notched at *d'*, Fig. 15, and shaped to fit over one of the base flanges of a rail. These tension members act to hold the rails in position on the blocks B, B and being properly made the gage of the track is sure to be correct. If it is found desirable to shift the rails bodily on the tie then the hole in the tie for the reception of the pin *e* is made oblong, as shown at *a''* by dotted lines (Fig. 2), so that when the pin is properly adjusted the space surrounding the pin may be filled with concrete or other suitable material; firmly securing the rails in position with respect to the tie.

The blocks are preferably mounted between shoulders on the tie, as shown, but this construction may be modified without departing from my invention.

The object of placing the securing means at a point some distance from the rails is to prevent the loosening of the fastening means due to the passage of the rolling stock over the rails; and furthermore the rails and the blocks or the rails alone may be raised independently of the tie and filling strips or plates may be inserted between the block and the tie or between the rail and the block to raise the rail when found necessary.

One of the objects of the invention is to so construct the tie and the attaching means that the tie can be properly located upon the road bed and remain permanently in position and if, due to any settling, it is desired to raise the rails then filling strips or plates are inserted between the block and the tie, leaving the tie permanently in position.

The tension members are preferably made, as shown in Fig. 15, from a plate or bar cut in given lengths and each section of plate making two tension members; notches *d'* are made in the ends of the tension members so as to fit the base flanges of the rails, as above described. In order to secure the tension members firmly to the rails I preferably provide a plate *d''* which underlaps the tension member, and has a portion which overlaps the inner base flange of the rail, as shown in Fig. 5.

In some instances it is desirable to strengthen the tension members and this can be done, especially on curves as shown in Figs. 7 and 8, by making the tension members double as at *D'* and placing a brace

piece d^2 between the two sections and riveting it to the said sections, the brace piece extending under the head of the rail. This member may be placed on the outer rail at the curve so as to resist the lateral strain due to the bearing of the wheels hard against the outer rail. Both sides may be reinforced without departing from my invention.

In Fig. 10, I have illustrated the tension member in a single piece instead of two parts, and having a depending lug which is perforated for the passage of the retaining bolt.

In Fig. 9, I have shown the tension member twisted and bent so that the flat portion will fit under the rail and the bent portion will extend over the outer base flange of the rail, in order to give a broad bearing against the rail.

In Fig. 11, I have shown a tie A' slightly different from that of the other figures, the blocks B being mounted in the recesses near each end and a flat plate D^2 extending from one rail to the other and having each end bent so as to overlap the base flange of the rail and having clips d^4 which overlap the inner base flanges of the rails; these clips can be secured to the plate D^2 in any suitable manner. This tension member is secured to the tie by a vertical bolt e' which passes through an oblong recess a'' in the tie and when the rails are in the proper position the space around the bolt can be filled with concrete or other suitable material.

In all the figures above described the securing means for holding the rail in position is situated some distance from the bearing of the rail so that the slight vertical movement due to the passing of the rolling stock over the tracks will not loosen the fastenings, as is now the case and it allows for the ready lifting of the rails without removing the spikes or other fastening devices to place liners or plates under the rails and without having to continuously tamp the roadbed under the ties.

In some instances it may be desirable to secure the rails to the ties independently of the tension members and this is accomplished by bolts I , as shown in Figs. 1, 3 and 12, having the heads i which overlap the inner base flange of the rail and the threads on the bolt mesh with threads in the opening g of the bar G arranged at an incline, as shown in Fig. 3, and in order to hold the tension member and the bolt together I preferably pass the bolt through a loop formed by a strap h , Figs. 4 and 14, which is formed with flanges h' . The tension member is slotted at a point opposite the bolt I and the body of the strap is passed through the slot, the flanges limiting the movement so that the bolt will be held in position in respect to the tension member D and yet will be held rigidly to the tie. I may pass a key through the slot z' in the bolt if desired, to prevent the bolt turn-

ing. By inclining the bar G as shown, I am enabled to insert or withdraw the bar without removing any portion of the roadbed in which the tie is embedded. When the bolts I are used to engage the inner base flange of the rail then the plates d^3 are dispensed with and I preferably alternate the plates and the bolts throughout the track.

The blocks B are slightly narrower than the recess in the tie, so that the tension members and the bolts can be mounted between the block and the side walls of the tie, as shown in the drawings.

I claim:—

1. The combination of a concrete tie, bearing blocks thereon for supporting the rails, with a tension member connecting said rails and secured to the tie, said tension members consisting of two parts hinged together so as to permit of vertical adjustment of the rails.

2. The combination of a concrete tie, bearing blocks, rails supported on the bearing blocks free of the tie, and tension members engaging the rails and secured to the tie between said rails at a point or points relatively distant from the point of bearing of the rails upon the blocks.

3. The combination of a concrete tie recessed near each end, bearing blocks mounted in the recesses and extending above the surface of the tie for supporting the rails, and tension members engaging the outer base flanges of the rails and secured to the tie at a point midway between the two rails.

4. The combination of a concrete tie recessed near each end, bearing blocks mounted in the recesses and extending above the surface of the tie and arranged to support the rails, two tension members, one engaging the outer base flange of one rail and the other engaging the outer base flange of the other rail, and a bolt securing both tension members to the tie.

5. The combination of a tie recessed near each end, blocks mounted in the recesses, rails supported by the blocks, metallic tension members arranged on edge and engaging the base flanges of the rails and secured to the tie some distance from the point of support of the rails on the blocks.

6. The combination of a concrete tie recessed near each end, blocks mounted in the recesses for supporting the rails, tension members arranged on edge having their outer ends notched to receive the outer base flanges of the rails and perforated at the inner end, with a transverse bolt extending through openings in the tie and through the perforations in the tension members.

7. The combination of a tie, rails thereon, tension means secured to the tie some distance from the bearing points of the rails, said tension means engaging the outer base flanges of said rails, and adjustable devices

held to the tie independently of the tension means and respectively engaging the inner base flanges of the rails.

8. The combination of a concrete tie, rails, a tension member secured to and extending between the rails, and means for connecting said tension member to a tie some distance from the bearing points of the rails, said means being adjustable before the rails are set to allow said rails to be moved laterally independently of the tie.

9. The combination of a concrete tie, blocks mounted in the tie near each end and supporting the rails, tension members engaging the rails, the tie having an opening some distance from the bearing point of the rails upon the blocks, a fastening means adapted to the opening for securing the tension members to the tie, the opening being of sufficient size to allow for the lateral adjustment of the rails, and filling material adapted to close the opening and secure the pin in a fixed position in the tie.

10. The combination of a concrete tie, a bearing block, a rail above the block, tension members, a headed bolt adapted to overlap a flange of the rail, and a plate, said plate being adapted to an inclined opening in the body of the tie.

11. The combination of a concrete tie, a tension member engaging the outer base flange of the rail, a headed bolt engaging the inner base flange of the rail, a strap projecting from the tension member and through

which the bolt passes, and a plate having a threaded opening adapted to receive the bolt.

12. The combination of a concrete tie, rails, a double tension member engaging the rails and secured to the tie some distance therefrom, rail brace plates secured to the outer ends of the tension member and bearing against the outer base flanges of the rails, and means engaging the inner base flanges of the rails and holding the same to the tie independently of the said tension member.

13. The combination of a concrete railway tie, rails, tension members engaging the rails, and means for securing said members to the cross tie only at a point some distance from the rails and on but one side thereof whereby said rails are left free to be raised without disturbing said securing means.

14. The combination of a tie, rails thereon, tension means secured to the tie some distance from the bearing points of the rails and engaging the outer base flanges of said rails, with adjustable devices held to the tie independently of the tension means and respectively engaging the inner base flanges of the rails.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

RUFUS WAPLES.

Witnesses:

JOS. H. KLEIN,
WM. A. BARR.