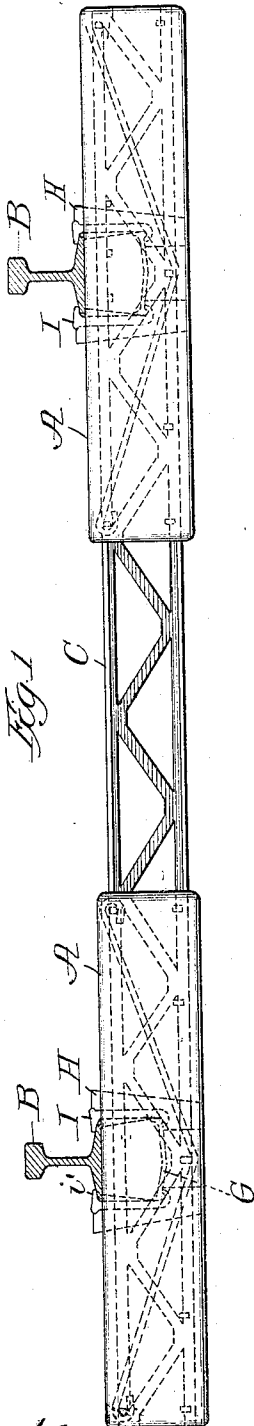


A. J. BATES.
RAILWAY TIE FASTENING.
APPLICATION FILED DEC. 8, 1911

Patented Oct. 22, 1912.
2 SHEETS—SHEET 1.

1,042,309.



Witnesses:
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M. A. Kiddie

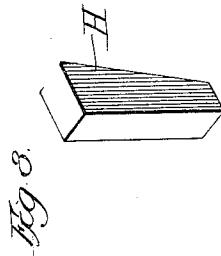


Fig 7

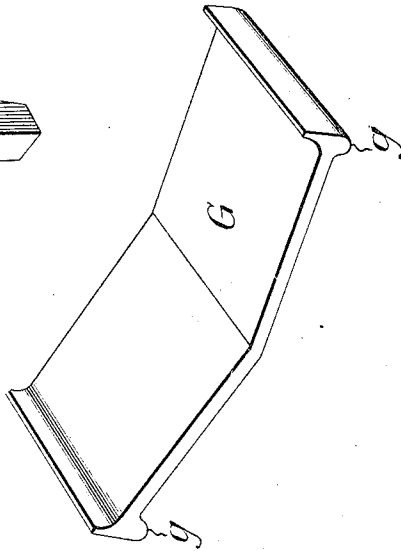
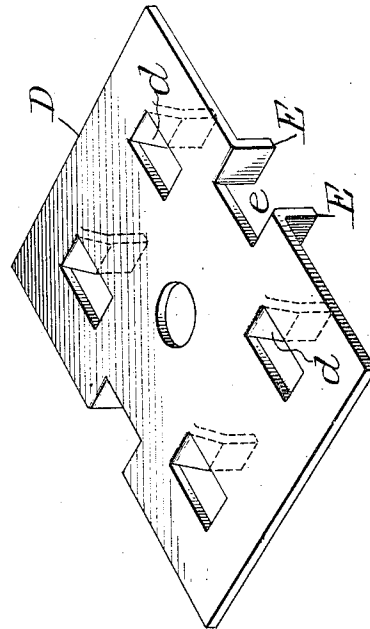


Fig 6



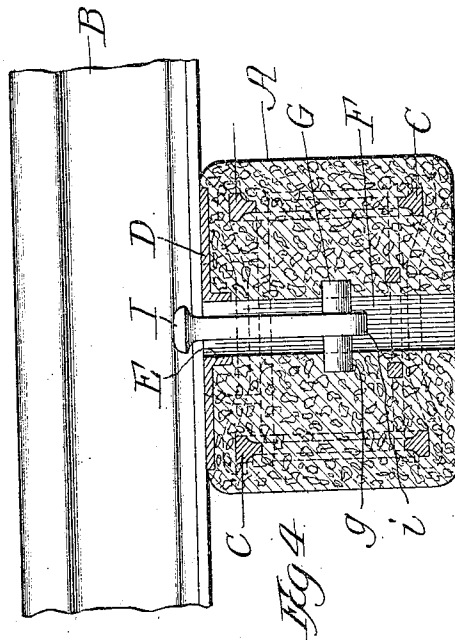
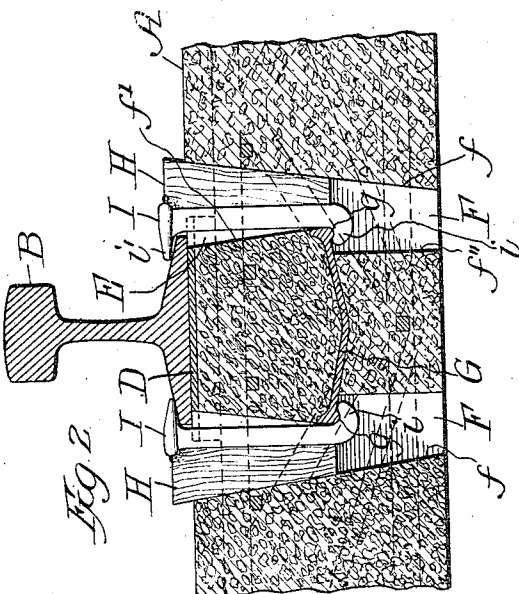
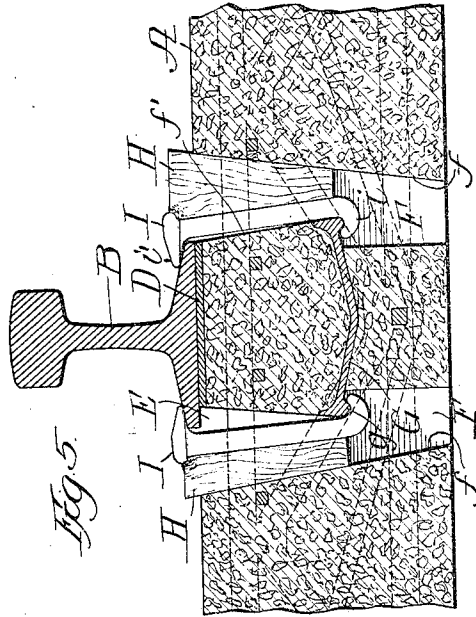
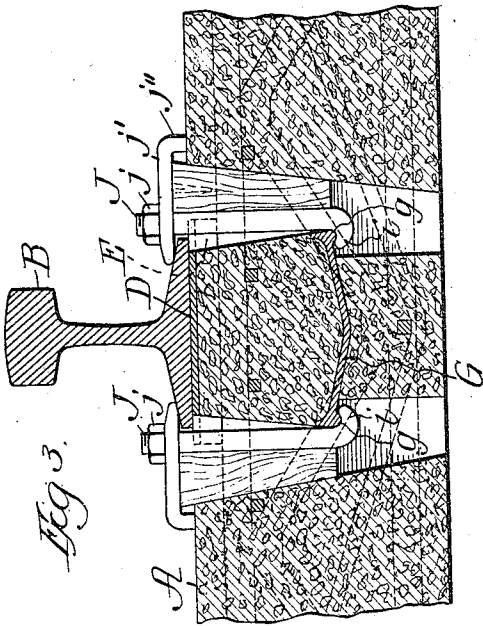
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UNITED STATES PATENT OFFICE

ALBERT J. BATES, OF CHICAGO, ILLINOIS.

RAILWAY-TIE FASTENING.

1,042,309.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Original application filed August 25, 1911, Serial No. 645,896. Divided and this application filed December 8, 1911. Serial No. 664,544.

To all whom it may concern:

Be it known that I, ALFRED J. BATES, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Railway-Tie Fastenings, of which the following is a specification.

This invention relates to railway ties and particularly to the class of composition ties as distinguished from those made entirely of wood or metal and the application is a division of my application filed August 25, 1911, Serial No. 645,896.

The primary object of the invention is to secure the rails to a composition tie in a simple and novel manner and so that the tie is susceptible of a broad range of adaptability.

In order that a composition tie may be satisfactorily and successfully used commercially it must embody in a single standard construction all the necessary requirements of an ordinary tie and be capable of use alongside of wood ties under rails of the various sizes now employed. These rails vary in height, width of flange, and weight, and a commercially successful composition tie must be standard in size and construction and capable of use wherever it is found necessary to remove a rotted wood tie, for the commercial use of composition ties will naturally come in substituting such ties for rotted or worn out wood ties. It must be standard in size and construction to keep down the cost and so that it can be supplied in quantities for use on any part of the railroad. It must conform as near as may be to the present requirements as to size of wood ties so that it can be used alongside of wood ties without change in the roadbed. And it must have a broad range of adaptability so that it can be used under rails of different sizes and weights and accommodate the rails to the change of gage on curves.

My invention aims to accomplish all these objects in a simple and efficient manner and also to provide sufficient flexibility and elasticity to prevent injury to the concrete.

With these and other objects in view the invention consists of the novel fastening means hereinafter more particularly described and shown in the accompanying drawings, for illustration, in the tie forming the subject matter of the parent application

heretofore mentioned, of which this is a division.

Referring to the drawings Figure 1 is a side elevation of a tie embodying the invention. Fig. 2 is an enlarged longitudinal sectional view through one of the pedestals of the tie showing the fastening devices. Fig. 3 is a similar view showing another embodiment of the fastening devices. Fig. 4 is a transverse sectional view through one of the pedestals. Fig. 5 is a longitudinal sectional view through one of the pedestals showing the rail on the tie shifted to one side in a position, for example, to increase the track gage. Figs. 6, 7 and 8 are detail perspective views of the wear plate, anchor plate and wedge key, respectively.

The tie, with which my invention is embodied in the form illustrated in the drawings, comprises a pair of concrete pedestals A, A, spaced apart to a position centrally disposed below the track rails B and these pedestals are connected by parallel trussed metal reinforces C, C, embedded in the pedestals and preferably extending approximately throughout their length.

A wear plate D is embedded in each pedestal to form a seat for the rail and this wear plate is provided with lips or projections *d* stamped out of the plate and bent downward to make locking engagement with the concrete of the pedestal. At the sides of the wear plate lugs E are stamped out of the plate and bent downward in parallel position to provide openings *e* for the holders hereafter described and also to assist in anchoring the plate to the pedestal. The form and construction of this wear plate may be changed or the plate omitted entirely, so far as this invention is concerned, and it will therefore be understood that I refer generally to that portion of the tie immediately below the rail as the rail seat, whether there is a wear plate or not.

The pedestal is provided with openings F on opposite sides of the wear plate, and these openings preferably extend entirely through the pedestal for drainage purposes and have their outer walls *f* inclined from top to bottom. An anchor plate G is embedded in the concrete pedestal below the wear plate and between the openings F and this anchor plate is preferably provided with ribs or enlargements *g* on its lower

side and at its outer edges. The inner walls of the openings F are inclined downwardly and outwardly at f' from the wear plate to the anchor plate and below the anchor plate the inner walls f'' of the openings may be straight. Thus, that portion of the pedestal between the wear plate and the anchor plate and the openings is wider than that portion below the anchor plate and between the openings, leaving the ribs or enlargements on the anchor plate exposed.

The rail is fastened to a pedestal of the tie by holders which engage the flange of the rail and the anchor plate and are held in such engagement by wood wedge keys H. In the form shown in Figs. 1, 2, 4 and 5 the holder I is substantially similar to the ordinary rail spike except that it is provided with a hooked end i to engage the rib on the anchor plate. The head i' overlaps and engages the flange of the rail and the holder is held in position by the wedge key which is driven in until it is engaged beneath the head of the holder, as shown in Fig. 2.

By some railway men it is considered desirable to permit the rail to creep more or less on the ties and for this purpose the spike holder I may be satisfactorily employed for securing the rail to the ties. By other railway men it is considered desirable to fasten the rail so tightly and securely to the ties that creeping of the rail will be prevented and for this purpose I may use the bolt holder J (Fig. 3) which corresponds substantially to the spike holder I except that the upper end of the bolt is threaded to receive a nut j which engages an angle plate j' fitting on the bolt and engaging the flange of the rail. This angle plate preferably extends over the wedge key to hold it in place, and has a down-turned end j'' to engage the pedestal of the tie. It will be readily observed that the nut can be tightened sufficiently to cause the angle plate to pinch the rail flange tightly and thus lock the rail to the tie to prevent creeping, if desired.

My invention provides simple means for fastening a railway rail securely to a composition tie and presents that range of adaptability which is necessary for the practical commercial use of composition ties. The danger of spikes working loose in wood ties, which, it is well known, requires the constant attention of track walkers, is entirely eliminated because the holders can not work loose so long as the wedge keys are in proper position and these wedge keys are held in their proper position by the holders, thus making a strong and substantial fastening, the wood wedge keys providing a sufficient degree of flexibility and elasticity, however, to avoid that rigidity of fastening which might be disadvantageous. By providing wedge keys of proper size, or trim-

ming wedge keys to the proper size, a matter of little trouble and expense, the fastening devices may be used for securing the rail in any desired position on the tie, thereby in a simple manner enabling the change of gage of the track as required on curves without necessitating any material change in the fastening devices. The importance of this will be understood from the fact that the gage of the track is frequently increased to the extent of one-half inch on curves and also from the fact that rails of different sizes are often used on the same track, the flanges varying in width from $4\frac{1}{4}$ inches on an eighty pound rail to $5\frac{1}{2}$ inches on a hundred pound rail. To adapt my invention to these varying conditions requires only the provision of wedges of the necessary size and this, it will be readily observed, can be accomplished in one way by trimming down wedges of large size to a proper fit. This range of adaptability of the invention is largely due to the manner in which the holders are anchored to the tie and the rail, whereby they are enabled to hold the rail on the tie in various positions without any change in the manner in which they are engaged with the rail and the tie. The heads of the holders will engage the flange of the rail and the hooked ends of the holders will engage the ribs on the anchor plate in precisely the same manner regardless of the position of the rail on the tie, and as the holders are not connected with any of the parts but are simply engaged with the rail and the anchor plate and held in such engagement by the wedge keys, the fastening of the rail to the tie is greatly facilitated.

I claim:

1. A railway tie having a seat for the rail and openings on opposite sides of the said seat to receive the rail fastening means, said openings extending entirely through the tie and having the upper portion of the inner side walls inclined downwardly toward and outwardly from the lower portion of the same.

2. A railway tie having a seat for the rail and openings on opposite sides of said seat for the rail fastening means, the lower portion of the section of the tie between said openings being of less width than the upper portion and said upper portion having downwardly and outwardly inclined side walls projecting outwardly beyond the side walls of the lower portion of said section, substantially as described.

3. A railway tie having a seat for the rail and openings on opposite sides thereof for the rail fastening means, an anchor-plate located below said seat and projecting into said openings, and upwardly removable holders detachably engaged with the ends of said anchor plate in said openings and

with the flange of the rail, substantially as described.

4. A railway tie having a seat for the rail and openings on opposite sides thereof for the rail fastening means, an anchor-plate located below said seat having ribs located in said openings, and upwardly removable holders detachably engaged with said ribs and with the flange of the rail, substantially as described.

5. A railway tie having a seat for the rail and openings on opposite sides thereof for the rail fastening means, an anchor-plate embedded in the tie below said seat and projecting into said openings, the outer walls of said openings being inclined downwardly and inwardly, and the inner walls of said openings being inclined downwardly and outwardly above the anchor-plate, substantially as described.

6. A railway tie having a seat for the rail and openings on opposite sides of the rail for the rail fastening means, an anchor-plate located below said seat and projecting into said openings and having ribs on its under side and at its outer edges, the section of the tie below said anchor-plate being of less width than the width of the anchor-plate to leave said ribs exposed in said openings, substantially as described.

7. A railway tie having a seat for the rail and openings on opposite sides of said seat, said openings having inclined outer walls, an anchor-plate projecting into said openings below the seat upwardly removable, holders detachably engaged with said anchor plate and the flange of the rail, and wedge keys driven in said openings alongside the holders to hold them in place, substantially as described.

8. A railway tie having a seat for the rail and openings on opposite sides of said seat having inclined outer and inner walls, an anchor-plate located below the seat and projecting into said openings upwardly removable, holders detachably engaged with said anchor-plate and with the flange of the rail, and wedge keys driven in said openings alongside the holders to hold them in place, substantially as described.

9. A railway tie having a seat for the rail and openings on opposite sides of the said seat provided with inclined outer walls, holders engaged at their lower ends in the openings and having heads engaged with the flange of the rail, and wedge keys driven into the openings alongside the holders to hold them in place, said wedge keys being engaged at their upper ends beneath the heads of the holders whereby the wedge keys are held in place by the holders.

10. A railway tie having a seat for the

rail and openings on opposite sides of the said seat provided with inclined outer walls, holders engaged at their lower ends in the openings and having heads engaged with the flange of the rail, and wedge keys driven into the openings alongside the holder to hold them in place, said wedge keys being driven within the openings until the heads of the holders are disposed above the upper surface of the wedge keys and in engagement therewith, thereby retaining the wedge keys in position.

11. A railway tie having a seat for the rail and openings on opposite sides thereof, anchor devices in said openings upwardly removable, holders detachably engaged with the flange of the rail and having hooked ends engaged with said anchor devices, and wedge keys driven in the openings alongside of said holders to hold them in said engagement, substantially as described.

12. A railway tie having a seat for the rail and openings on opposite sides of said seat having inclined outer walls, an anchor-plate embedded in the tie and having ribs projecting into said openings, holders arranged in said openings and having heads engaged with the flange of the rail and hooked ends engaged with the anchor-plate, and wedge keys driven in the openings alongside of the holders to hold them in place, said wedge keys being engaged at their upper ends with the heads of the holders to be held in place in the openings by the holders, substantially as described.

13. A railway tie having a rail seat and provided at one side of the seat with a vertical opening intersecting the top of the tie, a rail holder having a detachable interengagement with one wall of the opening and capable of movement in the opening to disengage it from the tie, and a wedge key in the opening and in engagement with one wall thereof and the rail holder to hold the latter in interengagement with the tie, substantially as described.

14. A railway tie having a rail seat and provided at opposite sides of the seat with upright openings intersecting the top of the tie, a rail holder in each opening, each rail holder having a detachable engagement with one wall of its opening and capable of movement in the opening to disengage it from the tie, and a wedge key in each of the openings, each wedge key being in engagement with one wall of its opening and also with the rail holder to hold the latter in interengagement with the tie, substantially as described.

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