

UNITED STATES PATENT OFFICE.

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COMBINED TIE AND RAIL-FASTENING.

SPECIFICATION forming part of Letters Patent No. 764,861, dated July 12, 1904.

Application filed November 30, 1903. Serial No. 183,190. (No model.)

To all whom it may concern:

Be it known that I, HAROLD V. MORDAUNT, a citizen of the United States, residing at Malden, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in a Combined Tie and Rail-Fastening; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and said invention is fully disclosed in the following description and claims.

Referring to the drawings, Figure 1 is a perspective view of a railway-tie and rail-fastening embodying my invention and showing the part of a rail in vertical section. Fig. 2 is a top plan view of the construction, showing the portion of the rails in horizontal section. Fig. 3 is an end view of the tie. Fig. 4 is a perspective view of the rail-locking key. Fig. 5 is a vertical longitudinal sectional view taken through a portion of one end of the tie, showing the rail in position. Fig. 6 is a detail view representing a slight modification.

The object of my invention is to provide a metal tie for railway construction and a fastening device cooperating therewith for supporting the rails and holding them rigidly to the ties without the use of bolts or screws, and, further, to provide a construction of great simplicity, and consequently comparatively inexpensive, and one which will give the greatest possible stability to the road-bed.

In the drawings, A represents the tie, which is provided with a solid flat base-plate *a* of the required length and width and of such thickness as to give the necessary strength. This base-plate is provided with two integral hollow blocks B, which are preferably of the same length transversely of the tie as the base-plate and of a width longitudinally of the tie sufficient to support the foot of a rail and leave a considerable space at either side of the

same, as shown. Each of these blocks B is cored out to lighten the construction, and I prefer to form a recess *b*, triangular-shaped in vertical cross-section and with its apex adjacent to the top face of the block, extending through the block B from one edge of the tie to the other, as shown. This form of recess gives the required amount of strength in the block at each side of the rail-foot. The top face of each block B is provided with two parallel vertical grooves or recesses *b'*, located so that their inner edges are a distance apart equal to the width of the rail-foot, said recesses extending transversely of the tie and each of said recesses being provided with undercut portions on each side adjacent to their bottoms, forming shoulders *b² b²*. The bottom of the recess is preferably tapered or V-shaped, as shown at *b³*, although this is not essential. The blocks B B are connected by a central vertically-disposed web C, integral with the base-plate and with the blocks and of slightly-greater thickness than the base-plate, and I prefer to cut away the central portion of the vertical web C to lighten it, as shown at *c*. The vertical web is preferably produced from the blocks B B to each end of the base-plate, as indicated at *C' C'*, the central portions of these extensions of the web being also cut away, as indicated at *c' c'*.

D represents the form of the locking-key for securing the rails to the tie, four of which are used with each tie, as shown. This locking-key consists of a main body constructed to fit one of the recesses *b'* and is provided adjacent to its lower edges with shoulders *d² d²*, projecting on opposite sides of its main body *d* to engage the shoulders *b² b²* of the locking-recess. The lower part of the key is preferably V-shaped in cross-section, as shown at *d³*, to fit the bottom of the recess *b²*. The upper part of the main body *d* of the locking-key is provided with a lateral projection *d'* integral therewith and of any desired width to engage the foot of the rail and hold it firmly down upon the block B, the central portion *b⁴* of which affords a broad unbroken surface the full width of the rail.

E E represent the rails, which are shown

secured in position. In attaching a rail to the tie A it is placed upon the central portion b^4 of one of the blocks B thereof, and two of the locking-keys D are driven in transversely of the tie, their lateral projections d' extending inward and engaging the foot of the rail, while the shoulders d'' of the keys engage the shoulders b^2 of the block B, and thus form a very rigid fastening for the rail. I prefer to have the upper face of the key D on each side of the locking projection d' flush with the top face of the block B; but in some instances I may have the main body d of the key project above the top face of the block B, as shown in Fig. 6, so that the foot of the rail lies in a channel formed between the two keys D, thus holding the rail against lateral vibration at each side of the locking projection. I wish it to be understood also that, as before stated, the locking projection d' may be coextensive with the length of the key, if desired, or of any desired width less than the length of the key without departing from my invention.

On account of the long bearing which the locking-keys have in the recesses of the blocks there is little or no tendency for the keys to move under the action of jar or vibration. In any case these keys could only move horizontally or endwise, and as the entire tie is embedded in the road-bed and the earth or ballast firmly packed around the tie and above the ends of the keys such ballast will prevent the keys from moving endwise should they have any tendency so to do.

While it is obvious that the tie and locking-key could be made of any metal having the necessary strength and rigidity, I prefer to form both the tie and the keys of malleable cast-iron, which will permit the keys to be driven without danger of breaking or cracking and will in other ways facilitate the carrying out of my invention.

What I claim, and desire to secure by Letters Patent, is—

1. The combination with a tie comprising among its members a horizontal base-plate, separated rail-supporting blocks formed integrally therewith and having their upper faces provided with means for receiving rail-securing devices, and a vertically-disposed web connecting said blocks and formed integrally therewith and with the base-plate of rail-securing devices for engaging said blocks, substantially as described.

2. The combination with a tie comprising among its members a horizontal base-plate, separated rail-supporting blocks formed integrally therewith and having their upper faces provided with means for receiving rail-securing devices, a vertically-disposed web connecting said blocks, and formed integrally therewith and with the base-plate and extensions of said web extending from said blocks to the end of the tie and formed integral with said

blocks and base-plate, of rail-securing devices for engaging said blocks, substantially as described.

3. The combination with a tie comprising among its members a horizontal base-plate, separated rail-supporting blocks formed integrally therewith and having their upper faces provided with means for receiving rail-securing devices, a vertically-disposed web connecting said blocks and formed integrally therewith and with the base-plate, said web being cored out to enable the ballast to be packed around and through said web, of rail-securing devices for engaging said blocks, substantially as described.

4. The combination with a tie comprising among its members a horizontal base-plate separated rail-supporting blocks formed integrally therewith and having their upper faces provided with means for receiving rail-securing devices, said blocks being cored out transversely of the tie, a vertically-disposed web formed integrally with said base-plate and blocks and extending between said blocks, and being cored out to permit the ballast to pack around and through said web, of rail-securing devices for engaging said blocks, substantially as described.

5. The combination with a tie having a base-plate and separated rail-supporting blocks formed integrally therewith and having their upper faces above the plane of the base-plate, said blocks being each provided with a long recess extending transversely of the tie and having undercut portions throughout its length, of a locking-key having a main body of substantially the length of said recess, and constructed with lateral projections to engage the undercut portions thereof, said keys being provided with lateral rail-engaging projections, each of said blocks being provided with means for engaging the foot of the rail on the side opposite said key, substantially as described.

6. The combination with a tie having a base-plate, and separated rail-supporting blocks formed integrally therewith and having their upper faces above the plane of the base-plate, said blocks having their upper faces provided with parallel vertical recesses extending transversely of the base-plate, said recesses having undercut portions below the face of said block perpendicular to the walls of said recesses, of a locking-key having a main body of substantially the same length as said recesses, and adapted to fit therein, said main body being provided with lateral projections forming perpendicular shoulders to engage the undercut portions of said recesses, and being provided with a rail-engaging projection for engaging the foot of the rail, substantially as described.

7. The combination with a tie comprising among its members, a base-plate, separated rail-supporting blocks formed integrally

therewith and having their upper faces provided with parallel recesses, having undercut portions, and a vertically-disposed web connecting said blocks and formed integrally therewith and with the base-plate, of a key having a main body provided with projections to fit the undercut portions of said recesses and having at its upper edge a rail-foot-engaging projection, substantially as described.

8. The combination with a tie having a base-plate, a pair of separated rail-supporting blocks, cored transversely of the tie, and a vertical cored web connected to said base-plate and tie, said blocks having their upper faces provided with undercut locking-recesses extending from one edge to the other, of a key having a body portion adapted to fit said recesses and provided with a lateral projection to engage the foot of the rail, substantially as described.

9. The combination with a tie having a flat horizontal base-plate, integral rail-supporting blocks thereon, cored transversely of the tie and having their upper faces provided with undercut locking-recesses extending throughout the length of the block transversely of the tie, a vertical web connecting said blocks and formed integrally therewith and with said base-plate, and extensions of said web extending from said blocks to the ends of the base-plate, of a locking-key having its main body adapted to fit said recesses and provided with

lateral projections adjacent to its lower edge to engage the undercut portions of said recesses and provided at its upper edge with a lateral projection to engage the foot of the rail, substantially as described.

10. The combination with a tie having a flat horizontal base-plate, integral rail-supporting blocks thereon, cored transversely of the tie and having their upper faces provided with undercut locking-recesses extending throughout the length of the block transversely of the tie, a vertical web connecting said blocks and formed integrally therewith and with said base-plate, and extensions of said web extending from said blocks to the ends of the base-plate, of a locking-key having its main body adapted to fit said recesses, and provided with lateral projections adjacent to its lower edge to engage the undercut portions of said recesses, and provided at its upper edge with a lateral projection to engage the foot of the rail, the main body portion of said key being of such extent vertically as to project above the face of the block, and form a support for the edge of the rail-foot throughout the length of said key, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

HAROLD V. MORDAUNT.

Witnesses:

L. P. WHITAKER,
J. D. MOORE.