

UNITED STATES PATENT OFFICE.

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RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 738,940, dated September 15, 1903.

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To all whom it may concern:

Be it known that I, ALFRED A. RAYMOND, 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 Railroad-Ties, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to railroad-ties, and particularly to railroad-ties which are made of cement or concrete or composition material of similar nature.

Concrete ties are very desirable on account of their weight and solidity; but as heretofore constructed such ties have been subject to breakage on account of their brittleness. The strains placed upon them tend to cause a bending of the tie, which material of such a nature is not capable of withstanding. Heretofore it has also been found difficult to properly secure the rails to such concrete ties.

My invention contemplates an improved concrete railroad-tie of such construction as to be well able to withstand the bending strains caused by the weight of the rolling-stock, and at the same time I provide a simple and efficient means for clamping rails to said ties.

My invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a plan view of one of my improved ties, sections of rail being shown in place thereon. Fig. 2 is a sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is a plan view of a section of railroad as laid upon my improved ties.

Like reference characters designate similar parts in all the figures.

I have here shown a tie composed of a body portion 1 of concrete, cement, or similar composition material. Embedded within the body of the tie I provide a central truss-rod 2 and two laterally-disposed truss-rods 3 3. These truss-rods are desirably provided with anchor-plates 4 4. The central truss-rod is preferably bent as shown, so as to resist the bending action of weight placed upon the tie at the rail-bearing points when the tie itself is supported largely by ballast near the middle of its length, as at the point 5—that is to

say, the ends of the truss-rod are embedded in the lower and outer corners of the composition body, and the rod extends in straight lines to a bend 6 near the upper central part of the tie.

The laterally-disposed truss-rods 3 3 are bent so as to provide trusses, which in addition to strengthening the tie when supported at the central portions also serve to strengthen the tie when largely supported at its outer ends. These truss-rods 3 3 may desirably be anchored at the outer and upper corners of the tie 7 7. From these points the truss-rods extend in straight lines to points 8 8 in the lower part of the tie-body and directly beneath the rails. From these points below the rail-centers the truss-rod extends diagonally upward toward the upper part of the central portion of the tie. Thus these truss-rods serve to strengthen the tie when it is carried largely by ballast at the points 9 9, as well as when carried partially by ballast at the point 5. I further provide an improved clamping means for holding the rails securely to the ties, as above described. The rails 10 10 are laid upon the ties, as shown. The tie-body is provided with recesses 11 11, each recess being provided with a perpendicularly-extending wall 12 and with one inclined wall 13, a slight indentation 14 being provided at the bottom of the wall 13. A clamp is provided consisting of a gripping-finger 15 and a depending wedge-shaped portion 16, at the bottom of which is provided a toe 17, adapted to fit into the indentation 14. The width of the lower edge of the portion 16 is such that it will slip readily through the opening in the top of the recess 11. A key 18 is provided which, together with the filler 19 of wood, leather, or other spongy or springy material and the portion 16 of the clamp, is adapted to completely fill the recess 11.

In laying a rail the method of applying my improved clamping means is as follows: After laying the rail on a tie in proper position the clamp is dropped into place in the recess 11. The filler of spongy or springy material 19 is then inserted at the back of the clamp. The key 18 is then driven into place.

I find that the use of the filler of spongy or springy material, as above described, is particularly useful in that it serves to maintain

a tight fit between the walls of the recess 11 and the clamp and wedge. At the same time it prevents the fracture of the tie when the key is driven into place, this fracture being
 5 a very common occurrence when a filler of such material is not interposed between the key and the clamp.

In using my improved concrete ties I find it desirable to provide the clamping means on
 10 alternate ties, first on the inside of the rail and then on the outside, as best illustrated in Fig. 3. This arrangement, however, is not at all essential, as I have also found it entirely practicable to employ clamping means
 15 on both sides of the rail at each tie.

While I have herein shown and described one particular embodiment of my invention, it is evident that many changes and modifications might be made therein without de-
 20 parting from the spirit thereof. I do not, therefore, wish to limit myself to the precise disclosure herein particularly set forth and described; but,

Having described my invention, I claim as
 25 new and desire to secure by Letters Patent—

1. In a composite railroad-tie, the combination with rails carried by said tie, of a recess formed in said tie, having an inwardly-inclined wall, a clamp adapted to engage a rail-
 30 flange and having a face corresponding to said inwardly-inclined wall, a key adapted to wedge said clamp against said inclined wall, and a filler of springy or spongy material interposed between the key and the clamp, sub-
 35 stantially as described.

2. In a composite railroad-tie, the combination with rails carried by said tie, of a recess formed in said tie having an inwardly-inclined wall, an indentation in the surface of
 40 said inclined wall, a clamp adapted to engage a rail-flange and having a face corresponding to said inwardly-inclined wall and a toe corresponding to said indentation, a key adapted to wedge said clamp against said inclined
 45 wall, and a filler of springy or spongy material interposed between the key and the clamp, substantially as described.

3. In a composite railroad-tie, the combination with rails carried by said tie, of a recess
 50 formed in said tie having an inwardly-inclined wall, an indentation in the surface of said inclined wall, a clamp adapted to engage a rail-flange and having a face corresponding to said inwardly-inclined wall and a toe cor-
 55 responding to said indentation, and a key adapted to wedge said clamp against said inclined wall, substantially as described.

4. In a composite railroad-tie, the combination with a recess formed therein, of a clamp-
 60 ing member adapted to fit into said recess, a key adapted to wedge said clamping member into said recess, and a layer of compressible or

elastic material interposed between said key and said clamp, substantially as described.

5. In a composite railroad-tie, the combina- 65
 tion with a recess formed therein, of a clamping member adapted to fit into said recess, a key adapted to wedge said clamping member against the wall of said recess, said key and
 70 said clamping member also serving to wedge a layer of compressible or elastic material into said recess, substantially as described.

6. In a concrete tie, the combination with
 trussing means, tending to prevent a flexure at or near the center of the tie, of trussing 75
 means tending to prevent a flexure of the tie at or near the rail-bearing points thereof, rails carried by said tie, recesses formed in said tie, a clamping member adapted to fit into
 80 each of said recesses, and a key adapted to wedge said clamping member against a wall of said recess, said key and said clamping member also serving to wedge a layer of compressible or elastic material into said recess, substantially as described. 85

7. In a concrete tie, the combination with
 a trussing member tending to prevent a flexure at or near the center of the tie, of a truss-
 ing member tending to prevent a flexure of the tie at or near the rail-bearing points, rails 90
 carried by said tie, recesses formed in said tie, each of said recesses having an inwardly-inclined wall, a clamping member adapted to clamp a rail-flange and having a face corresponding to said inclined wall, a key adapted 95
 to wedge said clamping member against a wall of said recess, and a layer of compressible or elastic material wedged into said recess by said key and clamping member, substan-
 100 tially as described.

8. In a concrete tie, the combination with
 a trussing member tending to prevent a flexure at or near the center of the tie, of a truss-
 ing member tending to prevent a flexure of the tie at or near the rail-bearing points, rails 105
 carried by said tie, recesses formed in said tie, each of said recesses having an inwardly-inclined wall with an indentation therein, a clamping member adapted to clamp a rail-
 110 flange and having a face corresponding to said inclined wall and a toe adapted to register with said indentation, a key adapted to wedge said clamping member against a wall of said recess, and a layer of compressible or elastic material wedged into said recess by said key 115
 and clamping member, substantially as described.

In witness whereof I hereunto subscribe my name this 17th day of September, A. D. 1902.

ALFRED A. RAYMOND.

Witnesses:

CHARLES A. BROWN,
 HARVEY L. HANSON.