J. H. MILLER.

RAIL TIE AND FASTENER.

APPLICATION FILED AUG. 16, 1916.

1,220,443. **Patented Mar. 27, 1917.**

Fig. 1

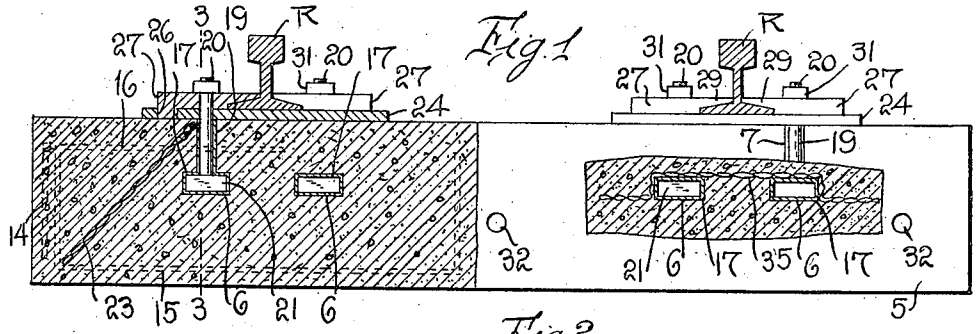


Fig. 2

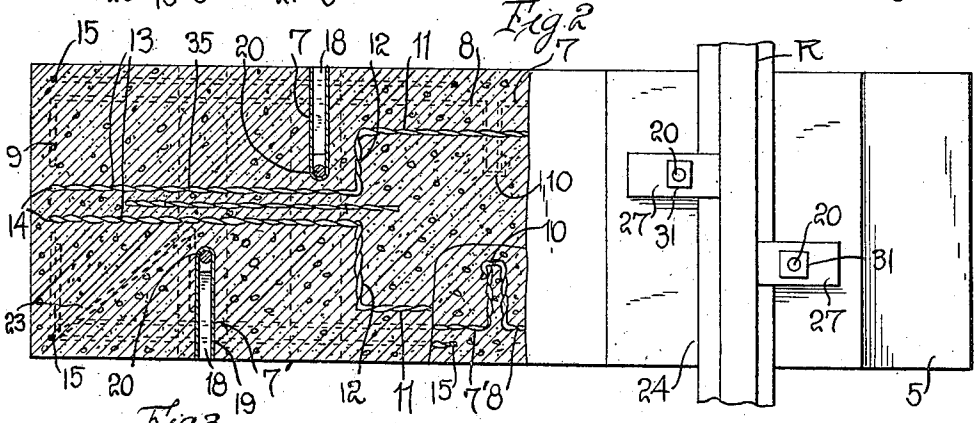


Fig. 3

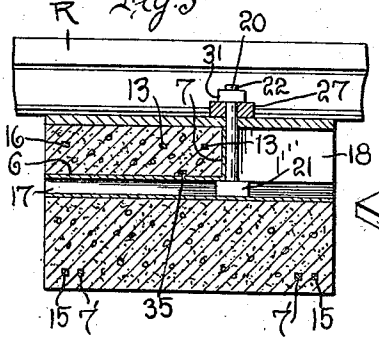


Fig. 5

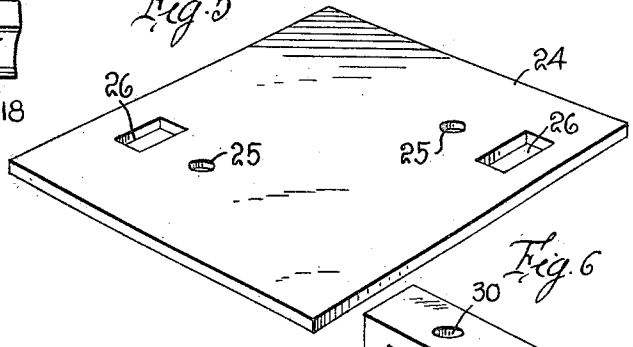


Fig. 6

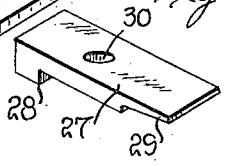
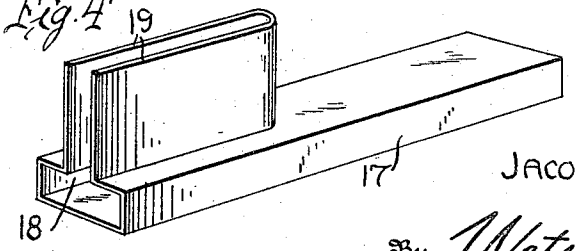


Fig. 4



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UNITED STATES PATENT OFFICE.

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RAIL TIE AND FASTENER.

1,220,443. Specification of Letters Patent. Patented Mar. 27, 1917.

Application filed August 16, 1916. Serial No. 115,280.

To all whom it may concern:

Be it known that I, JACOB H. MILLER, a citizen of the United States, residing at Cresson, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Rail Ties and Fasteners, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved rail tie and fastener and has for its primary object to provide simple and effective means for fastening the rails upon a concrete tie and securely holding the same against transverse shifting movement thereon.

It is a more particular object of the invention to provide a rail fastening device including vertically disposed bolts, means for securely mounting the bolts in the concrete tie but permitting of their easy and quick removal when necessary, and rail clamping means engaged upon the upper ends of the bolts.

It is another important object of the invention to provide a concrete tie structure, and improved reinforcing means therefor which will prevent its crumbling or disintegration.

It is a further general object of the invention to improve and simplify the construction of devices of the above character and render the same highly efficient and reliable in practical use and capable of manufacture at comparatively small cost.

With the above and other objects in view, my invention consists in the novel features of construction, combination and arrangement of parts to be hereinafter more fully described, claimed and illustrated in the accompanying drawing, in which,

Figure 1 is a side elevation of the tie, the same being shown partly in section, and illustrating my improved rail fastener in operative position;

Fig. 2 is a top plan view, portions of the tie being in section;

Fig. 3 is a transverse section taken on the line 3—3 of Fig. 1;

Fig. 4 is a detail perspective view of one of the metal bolt holding members removed from the tie;

Fig. 5 is a similar view of the chair plate; and

Fig. 6 is a detail perspective view of one of the rail clamping dogs.

Referring in detail to the drawing, 5 designates the tie which is formed of concrete in a suitable mold. This tie is provided in spaced relation to each of its ends with spaced, parallel, transverse openings 6 extending entirely through the body of the tie, and at the relatively opposite ends of the respective openings a vertical, transverse slot 7 communicates with the opening and extends upwardly to the top surface of the tie. The particular purpose of these openings and slots thus formed in the tie body will be hereinafter fully referred to.

The concrete body of the tie is reinforced by means of twisted bars of iron or steel, one pair of such bars, designated by the numerals 7′ and 8, extending longitudinally through the tie adjacent each of its side faces and in a plane below the openings 6. The outer end portions of said bars are angularly bent and extended inwardly into the tie body, as at 9. The inner ends of said bars are also angularly bent to extend into the body of the tie, and the extremity of the reinforcing bar 8 is formed with a hook 10 within which the extremity of the other reinforcing bar 7′ is disposed.

In addition to the reinforcements 7′ and 8, a pair of reinforcing bars 11 are embedded in the body of the tie at its upper portion. The intermediate portion of each reinforcing bar 11 extends parallel to one side face of the tie and adjacent thereto, and from the ends of such intermediate portion the reinforcing bar is extended inwardly, as at 12, and then has its end portions longitudinally extended, as at 13, and the terminals 14 thereof projected downwardly adjacent to the opposite ends of the tie. There is also provided in the tie body, adjacent each of its side faces, a pair of reinforcing bars 15 vertically disposed in a plane at right angles to the reinforcing bars 7′ and 8 and having angular portions extending in parallel relation to the bottom and end faces of the tie. One end of each reinforcing bar 15 is longitudinally extended inwardly from the vertical portion thereof, as shown at 16, and terminates at a point contiguous to the respective slots 7.

A hollow, rectangular tube 17 of sheet metal is disposed through each of the openings 6 in the tie body, and the top wall of said tube, at one of its ends, is longitudinally slotted, as at 18, said slot being sur-

rounded by the vertical, upstanding walls 19 constituting a guide channel, said channel being closed at its inner end. These walls 19 fit within the respective slots 7 and are substantially co-extensive in length therewith.

Each of the tubes 17 is adapted to receive the rectangular head 21 of a bolt 20, said bolt extending vertically upward between the spaced walls 19 and having a threaded portion 22 projecting above the top surface of the tie. Each of the vertical channel portions of the outermost bolt receiving tubes 17 is braced against lateral strain by means of a substantially Z-shaped, obliquely disposed, reinforcing bar 23 which is embedded in the tie body and has one of its ends engaged with the outer wall 19 of the channel and its other end engaged with one of the reinforcing bars 15 at the juncture of its vertical end portion with the longitudinally extending, intermediate portion thereof.

24 designates the chair plate which is provided with openings 25 to receive the upper ends of the vertical bolts 20, said plate also being provided adjacent each of the bolt receiving openings and outwardly thereof with a rectangular opening 26. One of these plates is arranged upon each end of the tie on the upper surface thereof and over the slots 7, and upon the same the rails indicated at R are seated between the bolts 20. 27 designates the rail clamping dogs, each of which is in the form of a metal bar having a rectangular head 28 formed on one end and a reduced extension 29 upon its other end. Each of said dogs is also provided with an opening 30 in its shank to receive the threaded end of one of the bolts 20. After the rail has been arranged in position, the dogs 26 are engaged upon the upper ends of the bolts and the downwardly projecting heads or enlargements 28 of said dogs are fitted into the respective openings 26 in the chair plate. The reduced end 29 of the dog extends over the rail base and engages against the side of the rail web. Suitable nuts 31 are then threaded upon the upper ends of the bolts 20 into clamping engagement upon the fastening dogs and suitably locked in position. It will be apparent that the dogs are thus held against turning movement upon the bolts 20, and the rails in turn are securely clamped upon the chair plates and held against any possibility of transverse shifting movement thereon.

The provision of the metal receiving tubes or holders for the vertical bolts effectually prevents strain upon the concrete tie and the breakage or crumbling of the same. The chair plate prevents a longitudinal shifting movement of the bolts in the metal tubes 17, and should any one of these bolts be broken, the same may be readily removed from the tube 17 and replaced by a new bolt.

From the foregoing description, taken in connection with the accompanying drawing, it will be seen that I have produced a very simply constructed, as well as highly durable and serviceable supporting tie and fastening means for the rails. I have above described what I have found to be the preferable arrangement of the reinforcing bars within the tie body, but it is apparent, of course, that these reinforcing bars might be otherwise arranged or multiplied in number, as desired. In addition to the reinforcements above referred to, the metal bars 35 are centrally arranged in each end portion of the tie body and extend over and upon the tops of the metal tubes 17 between the inner ends of the channel walls 19 of said tubes. The bar 35 is then extended downwardly along the side walls of the tubes 17 and its end portions project in opposite directions longitudinally into the tie body. The several parts of the rail fastener may be easily and quickly assembled upon the tie and readily adjusted to securely clamp the rails in place.

In the opposite side faces of the tie and adjacent to each of its ends and at its center, the sockets or recesses indicated at 32, are formed. These sockets are adapted to receive the terminals of suitable lifting tongs whereby the tie may be conveniently lifted and set into the desired position.

While I have shown and described the preferred form, construction and arrangement of the several elements employed, it is to be understood that the device is susceptible of a great many minor modifications therein and I, therefore, reserve the privilege of resorting to all such legitimate changes as may be fairly embodied within the spirit and scope of the invention as claimed.

Having thus fully described my invention, what I desire to claim and secure by Letters Patent is:—

1. The combination with a concrete rail tie having spaced, transverse openings extending therethrough adjacent each of its ends and slots extending downwardly from the upper surface of the tie and communicating with one end of each opening, a metal bolt receiving tube engaged in each of said openings and having a guide-way fitting into the slot communicating therewith, a vertically disposed bolt removably engaged in said member and extending upwardly through the guide-way, and rail clamping means engaged upon each of said bolts.

2. The combination with a concrete rail tie having spaced, transverse openings extending therethrough adjacent each of its

ends and slots extending downwardly from the upper surface of the tie and communicating with one end of each opening, a metal bolt receiving tube engaged in each of said openings and having a guide-way fitting into the slot communicating therewith, bracing means for the guide-way of the outermost bolt receiving tube embedded in each end of the tie, a vertically disposed bolt removably engaged in said member and extending upwardly through the guide-way, and rail clamping means engaged upon each of said bolts.

3. The combination with a concrete rail tie, of a pair of metal bolt receiving tubes extending transversely through the tie at each end thereof, each of said tubes having a longitudinal guide-way extending upwardly through the tie, bolts detachably engaged in said tubes and guide-ways and projecting above the upper surface of the tie, a chair plate arranged upon each end of the tie and over said guide-ways and having openings to receive the bolts, and clamping means for the rail engaged upon the upper ends of the bolts and having co-acting locking engagement with the chair plate.

4. The combination with a concrete rail tie, of parallel, rectangular, metal bolt receiving tubes extending transversely through the tie adjacent each of its ends, each of said tubes having a vertical guide-way extending upwardly through the tie body and communicating with the tube, the open ends of the guide-ways in each pair of tubes being disposed upon the opposite side faces of the tie, bolts provided with rectangular heads for sliding engagement in said tubes, said bolts projecting upwardly through the guide-ways and above the upper surface of the tie, chair plates having openings to receive said bolts, and clamping dogs engaged upon the upper ends of said bolts and having heads on one end, said tie plate being provided with additional openings to receive the heads on the clamping dogs, said dogs extending over the rail base and engaging the web of the rail.

5. The combination with a concrete rail tie, of parallel, tubular members extending transversely into the tie body at its opposite ends, rail fastening means including vertically disposed elements engaged in said members and extending upwardly above the surface of the tie, and rods embedded in the tie body and extending over and upon the transverse members in the ends thereof.

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

JACOB H. MILLER.

Witnesses:
M. C. LYDDANE,
M. R. WILSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."