Jan. 17, 1939. J. A. McGREW 2,144,413

RAILWAY TRACK CONSTRUCTION

Filed April 8, 1936

FIG. 1.

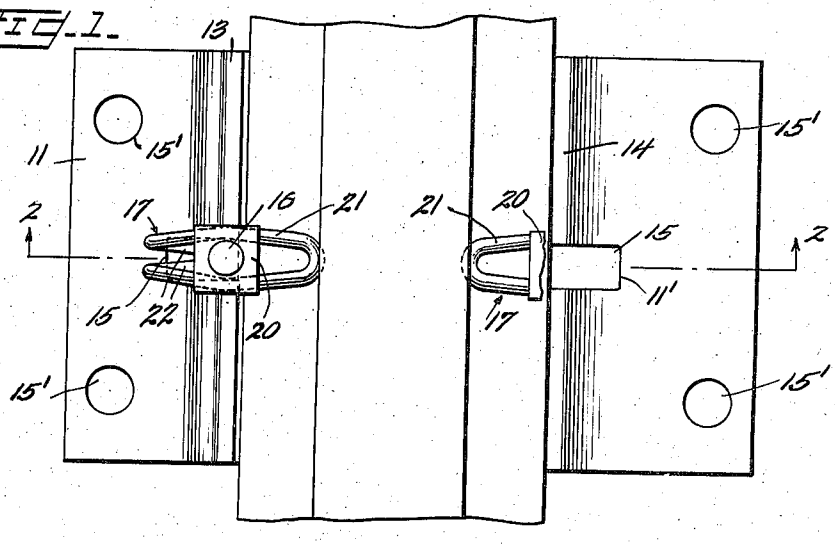


FIG. 2.

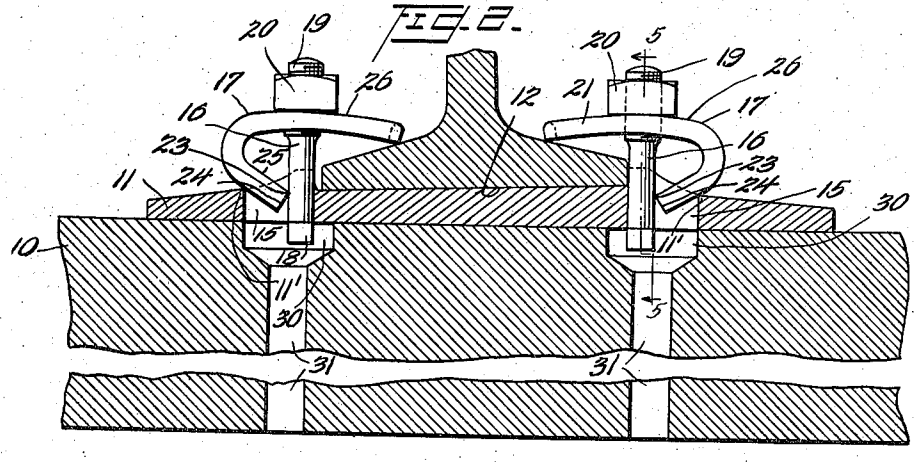


FIG. 3.

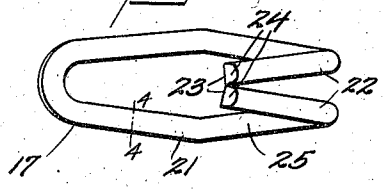


FIG. 4.

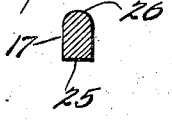
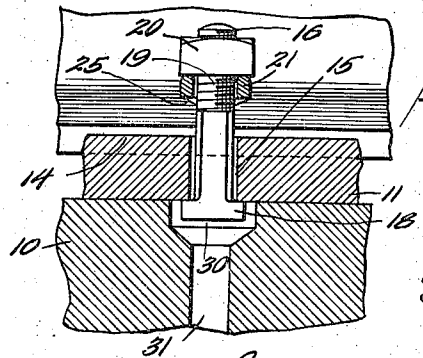


FIG. 5.



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RAILWAY TRACK CONSTRUCTION

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6 Claims. (Cl. 238—349)

The present invention relates to tie plate and rail fastening appliances and particularly to devices of this character which include resilient clips for securing the base of a rail upon a seating surface formed upon a tie plate.

In several prior patents issued to me, of which Patent No. 1,863,274, granted June 14, 1932, is an example, are disclosed and claimed various types of devices for securing rails upon tie plates each of which includes a resilient clip one end of which bears upon an upper surface of the rail base and the other end of which bears upon the tie plate, and a bolt for securing the clips firmly in position. In use, devices of this class have proven to be eminently successful in railroad track constructions for preventing loosening and creeping of the rails. By the use of resilient clips each portion of a rail which lies immediately above a tie plate is permitted to have a slight rolling or rocking movement upon the plate beneath when a locomotive or car passes along the trackway, the rail seating surface of the tie plate being cambered slightly longitudinally of the rail to facilitate such movement. Increased economy is realized by reason of the fact that anti-creeping devices are found to be no longer necessary, track maintenance is decreased in cost and rail life lengthened. The present invention has for its object the provision of a rail securing device generally similar to those disclosed in my prior patents but having a number of novel features of construction which, when made use of, decrease the initial cost of installation and likewise result in the realization of other advantages hereinafter to be more particularly pointed out.

One embodiment of the invention is illustrated in the accompanying drawing but it will be appreciated that the form of the invention so illustrated is set forth by way of example only and that various changes may be made in the design and arrangement of its component elements in adapting the invention for use with various types of rails, tie plates and track constructions.

In the drawing:

Figure 1 is a top plan view of portion of a tie together with a single tie plate and two of the securing devices employed therewith;

Figure 2 is a section on line 2—2 of Figure 1;

Figure 3 is a bottom plan view of one of the rail securing clips;

Figure 4 is a section on line 4—4 of Figure 3; and

Figure 5 is a section on line 5—5 of Figure 2.

The tie is indicated at 10 in the drawing and in this instance is shown to be a wooden tie. It will be appreciated that the material of which the tie is made may be varied widely. The tie plate is indicated at 11 and may be of any standard construction although it is highly desirable that the rectangular seating surface 12 for the rail be cambered slightly longitudinally of the rail. Lateral, longitudinally extending rail confining ribs are indicated at 13 and 14 and apertures 15' are provided for the reception of screw spikes for the purpose of securing the tie plate to the tie. These apertures may be made rectangular for the reception of cut spikes if desired, or the tie plate may be otherwise secured in position.

Rectangular apertures passing completely through the tie plate 11 are indicated at 15, these apertures being preferably, although not necessarily, located close to the lateral margins of the rail seating surface 12, and passing through the ribs 13 and 14. Identical securing bolts are indicated at 16 and identical clips are indicated at 17. Each bolt is provided with a shank of rectangular cross-section, an enlarged head 18, and a threaded portion 19, the shank of the bolt having such width that the oppositely facing edge surfaces are disposed, respectively, in close proximity to the parallel mutually facing side walls of the rectangular opening 15 in the tie plate through which the bolt passes. The head of each bolt engages the under surfaces of the tie plate, to the sides of the aperture 15, and the nut 20 has threaded engagement with the threaded end 19 of the bolt, the nut being provided for the purpose of securing the resilient clip 17 in rail clamping position.

Each clip comprises essentially a continuous bar of resilient steel bent into the form shown in the drawing. In cross-section the bar (see Figure 4) has three flat sides and a curved side, the flat sides intersecting to form two sharp corners. The bar is so fabricated by first bending the same about an axis adjacent its midpoint and parallel to one of its flat sides, and thereafter about an axis disposed normally to a plane passing through the first mentioned axis and the longitudinal axis of the clip, as to have two principal portions, i. e., the bridging portion 21 and the tie plate engaging portion 22, the adjacent ends of these portions joining in a smooth curve and the portions being disposed at an acute angle to each other. The bridging portion extends in a substantially horizontal direction when the clip is in operative position in a trackway, as indicated in Figure 2, and the tie

plate engaging portion 22 of each clip is downwardly and inwardly inclined so as to enter and lie within the associated recess 15 in the tie plate.

As is readily apparent from an inspection of the drawing, the bridging portion 21 of each clip comprises two portions of the original bar which portions are spaced apart to permit the passage therebetween of the threaded portion 19 of the associated bolt. The tie plate engaging portion 22 of each clip likewise comprises two bar parts which converge downwardly and inwardly, the extreme free ends of these portions being disposed in close proximity, or in actual contact with each other, as illustrated in Figure 3.

In applying a rail securing device of the type just described it is first positioned, together with the securing bolt, substantially as shown in the drawing, it being apparent that in the insertion of the bolt its head 18 must first be inserted through the aperture 15 while turned with its longer axis lengthwise of the aperture and thereafter being given a 90° turn so that the ends of the head underlie the spaced portions of the undersurface of the tie plate to either side of the aperture. By tightening the nut 20 the central part of the bridging portion 21 is brought downwardly and the rail engaging curved end of the clip caused to bear heavily upon the upper surface of the rail base. Simultaneously the tie plate engaging portion of the clip is forced into aperture 15 and the sharp inner corners 23 at the end of the clip are caused to engage the flat outer side of the shank of bolt 16. As will be seen from a study of the drawing, the corner 23 is formed by the intersection of the flat end surface 24 of the clip and the flat bottom surface 25 thereof so that this corner is in reality a sharp corner.

In moving downwardly into aperture 15, the rounded surfaces 26 of the clip pass over the sharp corner 11' of the tie plate and there may be a slight rocking motion of the portion 22 of the clip upwardly about the corner 11' of the tie plate as the clip is compressed as the nut 20 is tightened to effect a further gripping or wedging action of the clip upon the shank of the bolt. Likewise the two legs of the tie plate engaging portion 22 of the clip may be sprung inwardly toward each other as the bolt is tightened, by reason of the camming action of the side walls of the aperture 15, with the results that the clip is firmly wedged into the position shown and the bolt itself is firmly secured by the clip.

For the purpose of providing adequate clearance for the heads of bolts 16 the tie is recessed at 30, each recess 30 registering with the tie plate aperture 15 immediately above the same. For the purpose of drainage the bottom of each recess opens into a drainage duct 31 which extends completely through the tie to its bottom surface, thus permitting the outflow of any water which may pass into the recess 30 from above.

The rail securing means just described is quite rugged and thoroughly efficient in operation while at the same time presents certain advantages over prior types, particularly with respect to the clip construction. Clips of the type described may be easily fabricated from continuous bars and no waste material results from the clip forming operation, a section of the bar of the proper length being simply cut and thereafter bent to the form shown. Furthermore the clip weighs, when completed, very substantially less than any clip of a type heretofore suggested, in some cases weighing only approximately ⅓ as much as clips of the type heretofore used, while having the same strength and capacity. The cost of fabricating clips of the type disclosed is less than the cost of fabricating clips of the flat plate type heretofore generally used and the clip described serves to retain the clip holding bolt in a definite position with increased effectiveness.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. A rail securing device including a resilient clip, said clip comprising a single continuous bar of substantially uniform cross section doubled upon itself at its midpoint so as to have a curved rail flange engaging portion, the remainder thereof forming resilient bridging portions and rail plate engaging portions disposed at an acute angle to each other, the parts of the bar forming the bridging portion being spaced apart to receive therebetween a securing bolt, said bar having a rounded side and three flat sides which last mentioned sides intersect to form corners.

2. As an article of manufacture, a rail clip comprising a bridging portion and a tie plate engaging portion, said clip being a single elongated member of resilient metal curved at its midpoint to provide spaced bridging elements and curved adjacent each free end to provide substantially straight, converging, tie plate engaging elements.

3. As an article of manufacture, a rail clip comprising a bridging portion and a tie plate engaging portion, said clip being a single elongated member of resilient metal curved at its midpoint to provide spaced bridging elements and curved adjacent each free end to provide substantially straight, converging, tie plate engaging elements the free ends of said member being substantially in contact.

4. In a railroad track construction, a tie plate having a rail seating surface and a bolt receiving aperture therein at one side of said seating surface, a rail mounted on said seating surface, a clip comprising a bridging portion and a tie plate engaging portion, said portions being angularly disposed, the bridging portion being substantially normal to the rail and comprising two bridging elements spaced apart for the passage of a bolt and the tie plate engaging portion comprising downwardly and inwardly converging elements which project into said aperture, and a bolt having a portion within said aperture and securing said clip, the side of the bolt being engaged by the end of said tie plate engaging portion, for the purpose specified.

5. In a railroad track construction, a tie plate having a rail seating surface and a bolt receiving aperture therein at one side of said seating surface, a rail mounted on said seating surface, a clip comprising a bridging portion and a tie plate engaging portion, said portions being angularly disposed, the bridging portion being substantially normal to the rail and comprising two outwardly bowed bridging elements between which the bolt may pass and the tie plate engaging portion comprising downwardly and inwardly converging element which project into said aperture and the lower ends of which are in contact with each other, and a bolt having a portion within said aperture and securing said clip, the side of the bolt being engaged by the end of said tie plate engaging portion, for the purpose specified.

6. In a railroad track construction, a tie plate having a rail seating surface and a bolt receiving aperture therein at one side of said seating surface, a rail mounted on said seating surface, a clip comprising a bridging portion and a tie plate engaging portion, said portions being angularly disposed, the bridging portion being substantially normal to the rail and comprising two bridging elements spaced apart for the passage of a bolt and the tie plate engaging portion of the clip comprising downwardly and inwardly converging elements, the bridging portion resiliently maintaining said inwardly converging elements in predetermined relationship but permitting them to move toward each other when the bolt is tightened.

JOHN A. McGREW.