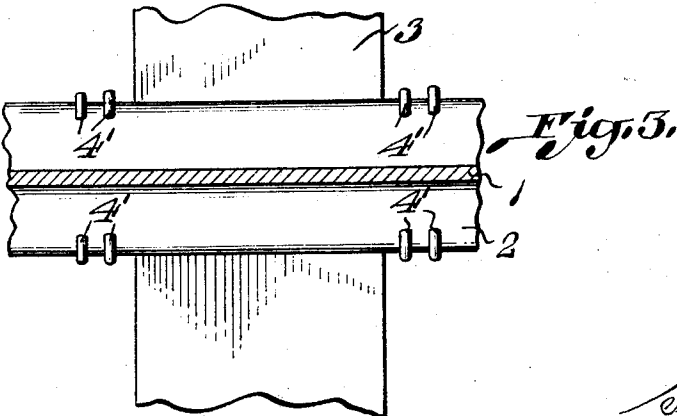
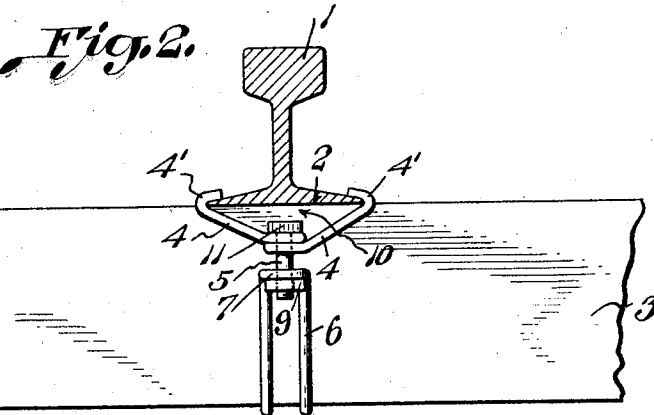
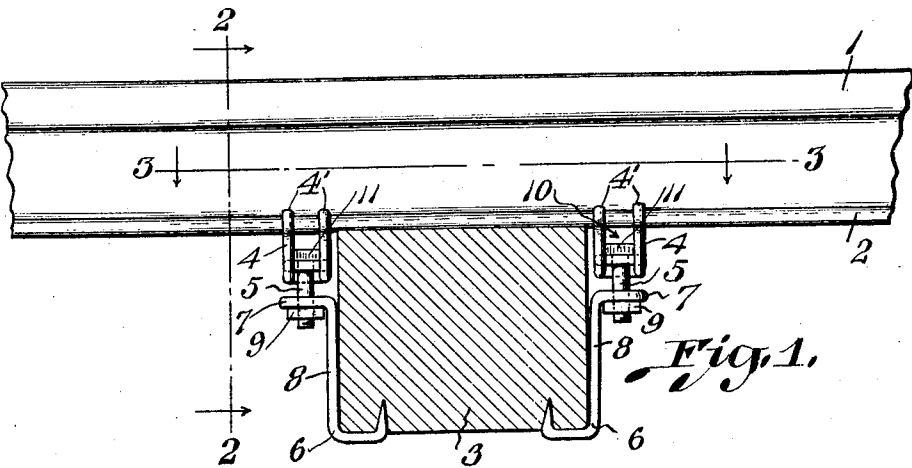


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S. W. FINCH
RAIL TYING DEVICE
Filed May 28, 1927

1,741,151



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UNITED STATES PATENT OFFICE

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RAIL-TYING DEVICE

Application filed May 28, 1927. Serial No. 195,015.

This invention pertains to rail-tying devices, by means of which the rails and ties comprising the major units of a railroad track may be fastened together securely.

5 My present invention comprises certain modifications and improvements over the devices shown in Patents No. 1,630,696 and No. 1,630,697 issued to me by the United States Patent Office relating to rail-tying devices.

10 My present device relates particularly to simplified forms of the units comprising the device and to improvement in the method of placing tension on said units. From the accompanying drawings it will be noted that
15 each grab hook is preferably made from a single metal rod bent to form; likewise each tie hook is preferably made from a single metal rod bent to form, and having one end sharpened so as to penetrate readily one of
20 the surfaces of the tie. Each pair of grab hooks is connected to the tie attachment unit by means of a bolt as indicated. It is to be understood, however, that my invention is not limited to the use of grab hooks or tie attachment means of the particular bent-to-form
25 type shown, but my invention covers also grab hooks and tie attachment means of the type shown in my Patent No. 1,630,696, issued May 31, 1927, the form of the grab hooks and of the
30 tie-attachment means shown in the said patent being, however, modified by having a round hole (instead of the square hole shown in my said previous patent) through the lower end of the grab hook, and the upper
35 end of the rail attachment means being modified as shown in the accompanying drawings so as to prevent the turning of the nuts. Thus I provide for the adjustment of the tension between the grab hooks and the tie attachment unit by means of the turning of the
40 bolt itself as hereinafter specified and described.

45 An important feature of my present device lies in the fact that ordinarily the ballast supporting a railroad track substantially covers

the ties so that there is only a small open space between the bottom of a rail and the surface of the subjacent ballast. This makes it somewhat difficult to adjust the tension of a rail-tie device when made in the form shown in my said application, Serial No. 167,781, without reaching down through the ballast with a wrench for the purpose of turning the nut. In my present device it is necessary only to place the wrench close under the rail in order to contact the head of the bolt and, by turning the bolt, adjust the tension of the device on the rail and tie.

The device is shown in the accompanying drawings wherein:—

Fig. 1 is a side elevation showing the rail-tying device as it appears when in operation in connection with a rail and a tie, the tie being shown in cross section.

Fig. 2 is a view, partly in section, taken on the line 2—2 of Fig. 1.

Fig. 3 is a plan view, partly in section, taken on the line 3—3 of Fig. 1.

In the drawings 1 denotes a rail such as is used in ordinary railway tracks, said rail having a base or flange 2.

3 is a tie.

4—4 are grab hooks, one part 4' of each of which overlaps the edge of the flange 2, the lower end of each grab hook having an opening of a form which permits the turning of the bolt-like member 5, the shank of which bolt-like member is preferably round (though it may be of any other desired shape which will not interfere with its turning) and extends downwardly through the openings in the grab hooks 4 and also through openings in the tie-contacting means 6,—preferably through an ear-like portion 7 of said tie-contacting means which ear-like portion has an opening sufficiently close to the upright portion 8 to prevent the nut 9 from revolving when the bolt 5 is turned for the purpose of adjusting tension between the grab hooks and the rail-contacting member.

As hereinbefore stated, the preferred form of grab hook which I employ in this invention is made, as illustrated, from a single piece of metal rod bent to form. The grab hook in this form may be produced at very low cost and has been found to be thoroughly efficient in operation. However, as hereinbefore stated, my invention also covers a grab hook of the general form shown in my Patent No. 1,630,696, issued May 31, 1927, the only change necessary being the substitution for the square hole there shown of a hole which will permit the turning of the bolt 5.

The preferred means of fastening the rail to the tie by the use of my present device involves, as illustrated in the accompanying drawings, a tie-contacting element 6, having ear 7, through which a bolt 5 passes and is secured in place by means of the nut 9 (which nut 9 is prevented from turning by reason of the fact that one side thereof contacts the upright portion 8 of the tie-contacting member 6), the said bolt extending downwardly through openings in the grab hooks 4, the head of the bolt lying above said openings. It is obvious that with the grab hooks, bolt and tie-contacting member in the position thus indicated, the tension between the elements may be adjusted by inserting a wrench in the opening 10 between the bottom of the rail and the upper surfaces of the grab hooks and turning the head portion 11 of the bolt 5. By turning the bolt and keeping the nut from turning (instead of by turning the nut and keeping the bolt from turning as is suggested in my Patent No. 1,630,696, issued May 31, 1927,) it is possible to adjust the tension between a tie and a superimposed rail without disturbing the ballast, since to do this it is necessary only to place the jaw of the wrench close up under the lower surface of the rail flange in order to engage the bolt head and turn the bolt. This feature is found in practice to be a great advantage. This type of rail-tie device also has the advantage of minimizing the likelihood of any tampering by unauthorized persons, since the entire device, except the fingers 4' shown in Fig. 3, is practically invisible to casual observers, the device being in large part either underneath the rail or beneath the ballast so that it attracts very little attention, the fingers 4' having much the appearance of ordinary anti-creeping devices such as are frequently used on modern up-to-date railroads.

Aside from the obvious advantage of making each tie-attachment member and grab hook from a single piece of metal rod bent to form in the manner indicated, thus reducing expense for material and saving the cost of drilling holes, etc., the outstanding feature of my present invention is the special adjustment feature above described, whereby adjustment of tension may be made by turning the bolt itself by applying the wrench to the

head instead of turning the nut, as suggested in my previous Patent No. 1,630,696, issued May 31, 1927.

It is, of course, to be understood that the bolt heads 11 may be square, hexagonal, or of any other convenient shape. The nuts 9 are preferably square so as to prevent turning with reference to the tie-contacting unit 6 but may be of any other suitable form adapted to resist such turning motion.

While a pair of hook-shaped tie-contacting units for a single tie is shown, my invention also covers a single tie-contacting unit extending across the under side of the tie provided such unit is adapted to function as stated in connection with the other tensioning means herein shown and described. Thus such single tie-contacting unit might consist of a straight, or substantially straight, piece of metal, provided only that such unit has means adjacent the end thereof adapted to receive the lower end of the bolt 5 and to prevent the turning of the nut 9. A section of channeled or angular steel with holes at each end would, of course, serve this purpose.

It will, of course, be understood that the same rail-attachment means which serves to prevent the rotation of the nut 9 might be used to prevent the rotation of the head 11 of the bolt 5, if the position of the bolt were reversed so that the threaded portion extended upwardly instead of downwardly as shown.

What I claim is:—

1. A rail-tying device having an element comprising a pair of grab hooks adapted to embrace the base flange of a rail, a tie-contacting element, and adjustable tensioning means intermediate said elements, one of said grab hooks consisting of a metal rod bent to form at one end a hook portion and bent to form at the other end an opening for the reception of the shank of a bolt.

2. A rail-tying device comprising a rail grappling member consisting of a metal rod bent to form at one end of said member a hook portion and bent to form at the other end an opening for the reception of the shank of a bolt.

3. A rail-tying device comprising a tie-grappling member consisting of a single metal rod bent to form at one end of said member a hook portion and bent to form at the other end an opening for the reception of the shank of a bolt.

4. A rail-tying device comprising a tie-grappling member consisting of a metal rod bent double to form at one end of said member hook portions and bent to form at the double end an opening for the reception of the shank of a bolt.

5. A rail-tying device comprising a rail-grappling member consisting of a metal rod bent to form, a hook-shaped tie-grappling member consisting of a metal rod bent to

form, and adjustable tensioning means intermediate said members.

6. A rail-tying device comprising a member consisting of a pair of grab hooks adapted to embrace therebetween the base flange of a rail, a tie-contacting member, and adjustable tensioning means intermediate said members, said tensioning means comprising a bolt having a shank portion adapted to extend through aligned openings in the grab hooks and the tie-contacting member, said bolt being also adapted to turn in said openings and the nut on said bolt being held by the tie-contacting member against turning movement; whereby the distance between the grab hook member and the tie-contacting member may be adjusted by turning the said bolt.

7. A rail-tying device consisting of rail-grappling means, tie-contacting means, and intermediate adjustable tensioning means, said tensioning means consisting in part of a bolt adapted to extend through and turn with relation to the rail-grappling means and also consisting in part of a nut adapted to be held against rotation by the tie-contacting means; whereby the tension between said rail-grappling and tie-contacting means may be regulated by turning said bolt.

8. In a rail-tying device, rail-attachment means comprising a metal rod bent to form at one end of said means a grab hook and bent to form at the other end of said means an opening for the reception of the shank of a bolt.

9. In a rail-tying device, tie-attachment means comprising a metal rod bent in such manner as to form at one end of said means an opening for the reception of the shank of a bolt.

10. In a rail-tying device, a tie-attachment unit comprising a metal rod bent in such manner as to provide at one end of said unit an opening for the reception of the shank of a bolt and also to provide means for preventing the rotation of the nut portion of the bolt when the shank of the bolt extends through said opening.

11. A rail-tying device comprising rail-attachment means, tie-attachment means and a bolt-like member located wholly beneath the rail and adapted to regulate the tension on said means when said bolt-like member is rotated.

12. In a rail-tying device, a rail, a tie, an upstanding bolt-like member the head of which is adapted to lie directly below the base flange of a rail, tie-contacting means, and rail-contacting means, the bolt-like member being intermediate said means and being adapted tensionally to connect the rail and tie when said bolt-like member is rotated.

13. In a rail-tying device, tensioning means operative by the turning of a bolt-like mem-

ber, said member being adapted to be located wholly beneath the rail.

14. In a rail tying device, rail-grappling means, tie-contacting means, and adjustable tensioning means, said tensioning means comprising a movable member having a portion located intermediate the bottom of the rail and the rail-grappling means and adapted for turning and a stationary member held against rotation by the tie-contacting means, whereby the tension between said rail-grappling and tie-contacting means may be regulated by turning said movable member.

15. In a rail tying device, rail-grappling means, tie-contacting means, and adjustable tensioning means, said tensioning means comprising a bolt-like member containing a head portion and a nut portion, one of said portions being movable and located intermediate the bottom of the rail and the rail-grappling means and the other of said portions being stationary and held against rotation by the tie-contacting means; whereby the tension between said rail-grappling and tie-contacting means may be regulated by turning said movable portion.

16. In a rail tying device, rail grappling means, tie-contacting means, and adjustable tensioning means, said tensioning means comprising a bolt-like member containing a head portion and a nut portion, the head portion being movable and located intermediate the bottom of the rail and the rail-grappling means, the nut portion being stationary and held against rotation by the tie-contacting means; whereby the tension between said rail-grappling and tie-contacting means may be regulated by turning said head portion.

17. In a rail tying device, rail grappling means, tie-contacting means, and adjustable tensioning means comprising a movable member and a stationary member, said tie-contacting means comprising a metal rod bent to form an upright portion and an ear-like portion, the latter containing an opening for the reception of one member of the adjustable tensioning means, said opening in the ear-like portion being sufficiently close to the upright portion of said metal rod to prevent rotation of the stationary member of said tensioning means.

18. In a rail tying device, rail-grappling means, tie-contacting means comprising a metal rod bent at substantially a right angle to form an upright portion and an ear-like portion having an opening therein close to said upright portion, and adjustable tensioning means comprising a movable member and a stationary member, one of said members passing through the opening in said ear-like portion and one of said members being held against rotation by contact with the upright portion of said metal rod.

19. In a rail tying device, rail-grappling means, tie-contacting means comprising a

metal rod bent at substantially a right angle
to form an upright portion and an ear-like
portion having an opening therein close to
said upright portion, and adjustable ten-
sioning means comprising a bolt-like mem-
ber containing a shank portion and a nut
portion, the shank portion passing through
the opening in said ear-like portion and the
nut portion being held against rotation by
contact with the upright portion of said
metal rod.

In testimony whereof I have affixed my
signature.

STANLEY W. FINCH