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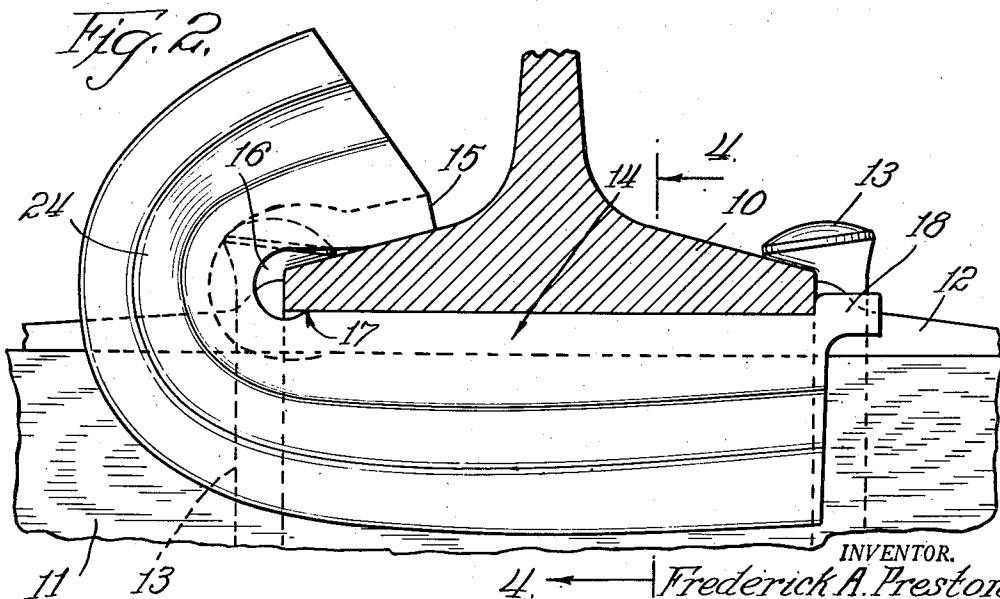
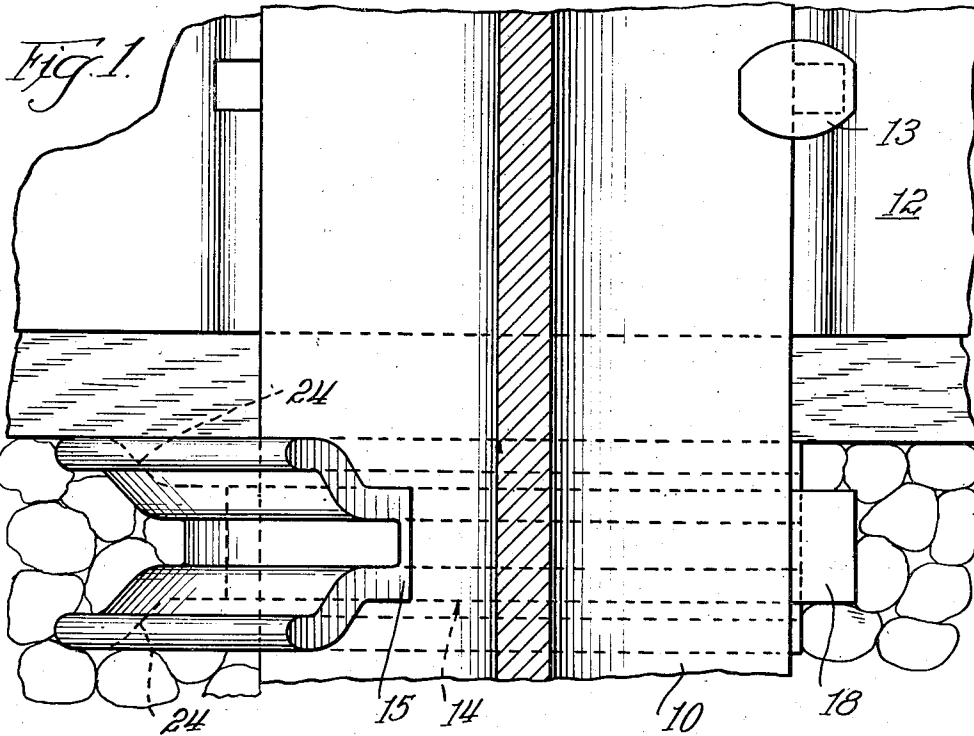
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2,473,345

RAIL ANCHOR

Filed Dec. 7, 1944

3 Sheets-Sheet 1



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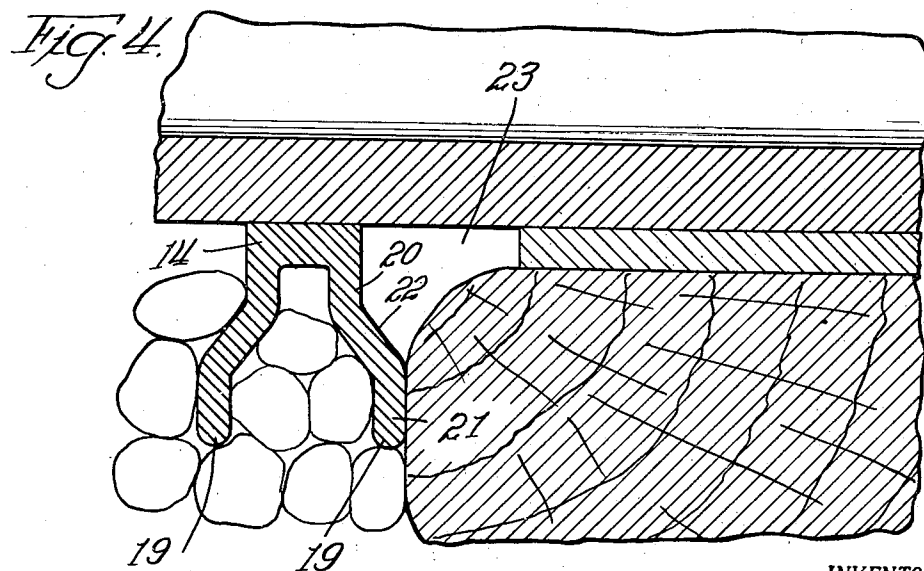
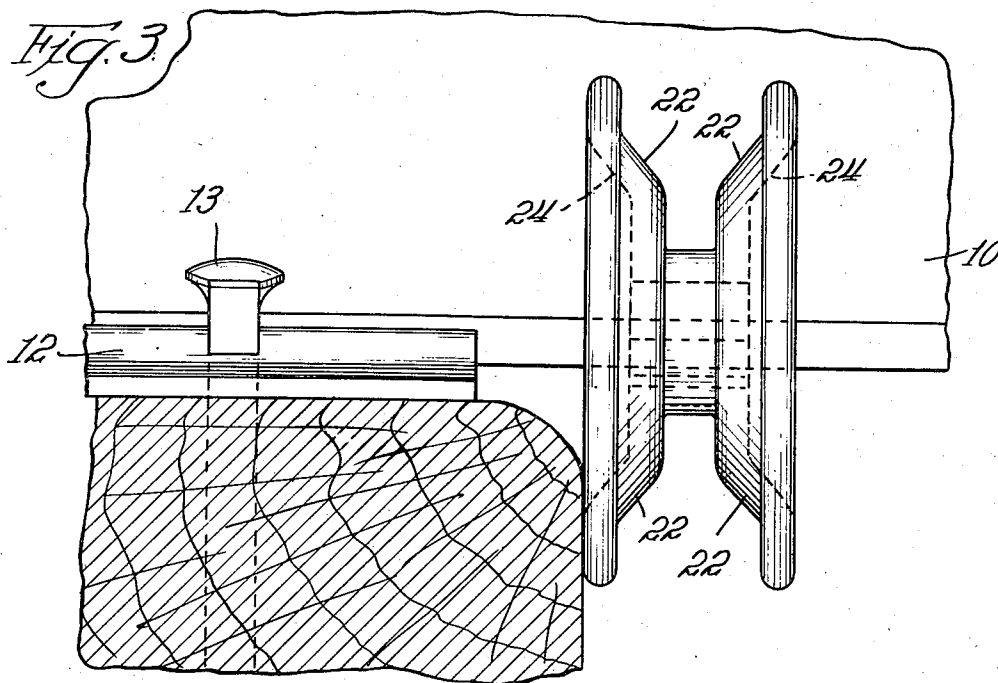
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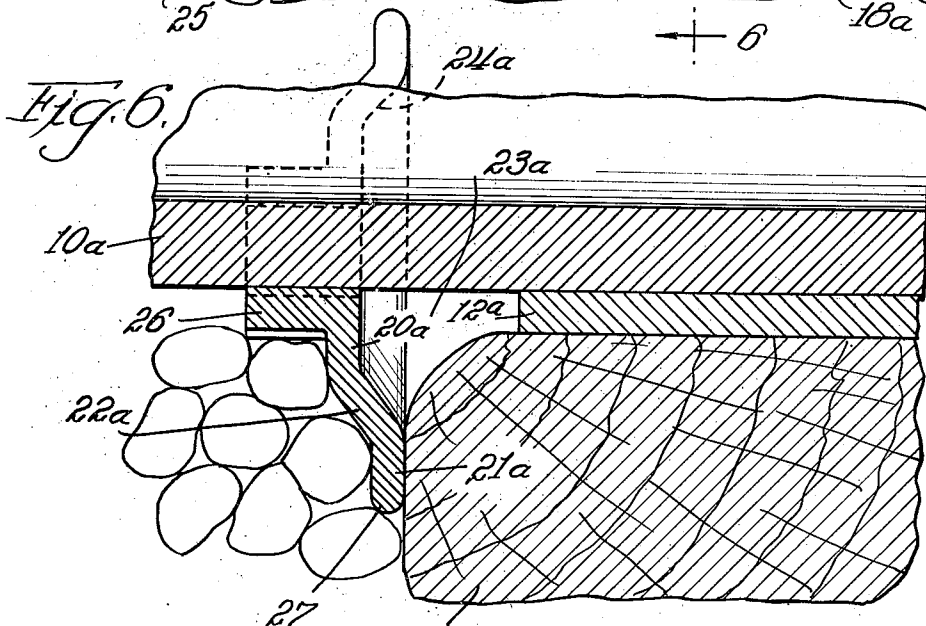
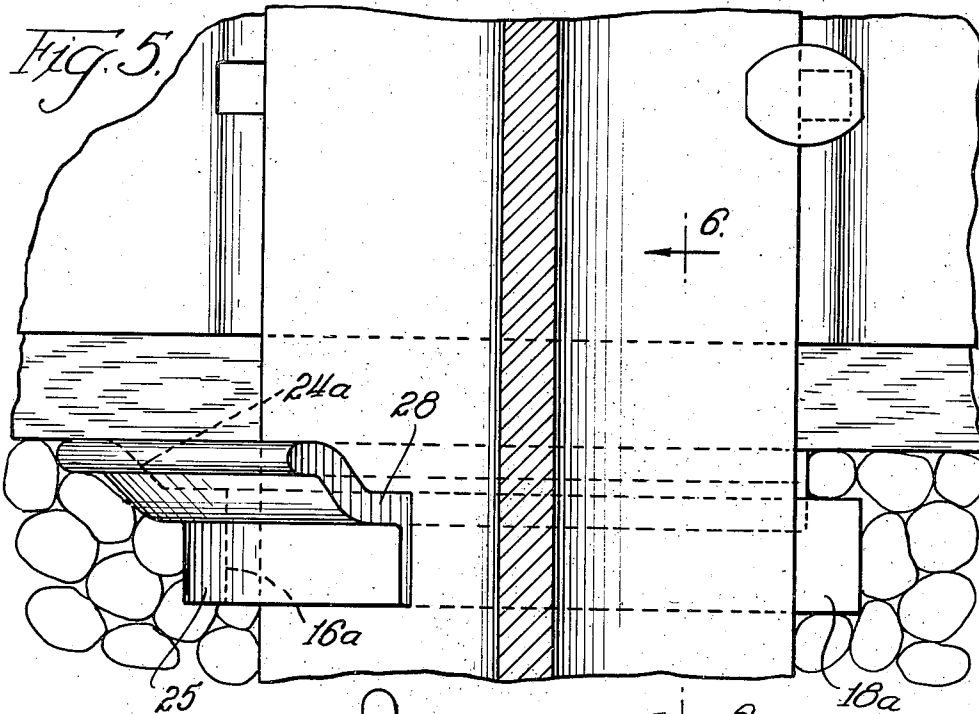
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3 Sheets-Sheet 3



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## UNITED STATES PATENT OFFICE

2,473,345

## RAIL ANCHOR

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Application December 7, 1944, Serial No. 566,977

7 Claims. (Cl. 238—327)

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This invention relates to certain new and useful improvements in rail anchors of the general type adapted to grip the base portion of a railroad rail in a position to abut against a vertical face of a crosstie.

One of the principal objects of the invention is to provide an improved rail anchor of the above general type which includes a body having a horizontal web to provide rail gripping surfaces of a desired width and with a vertical flange which, in addition to providing the desired strength to effect a strong resilient grip on the rail base, also provides the anchor with a tie-abutting portion of large area adapted to engage a vertical face of the crosstie at a substantial distance below the bottom surface of the rail base.

Another object of the invention is to provide a rail anchor device of the above general type in which the cross-sectional configuration of the anchor is such that it can be readily formed either as a die-forging or may be made from pre-formed blanks by bending the blank around a suitable die having the desired contour.

A further object is to provide an anchor of the above character in which the vertical flange of the anchor is relatively wide and is offset laterally relative to the horizontal web so that the said vertical flange will be provided with an angular reinforcement which will resist the bending strains imposed on the said flange when its lower portion is pressed against a vertical face of the crosstie at a substantial distance below the bottom surface of the rail base. In this connection the invention also contemplates the provision of a vertical flange having such angular configuration in cross-section that the flange, when the anchor is formed, provides a dished or rim-like reinforcement which extends around the hooked end of the anchor device.

A further object of the invention is to provide a rail anchor device having a cross-sectional configuration which will permit the anchor device to be made relatively light but which at the same time will provide maximum strength. In this connection the invention contemplates a rail anchor device having such cross-sectional configuration that it can be readily formed by die-forging, or by a simplified method in which it may be formed by bending a channel bar of the desired cross-section around the suitable die.

Other objects and advantages of the present invention will be apparent from the detailed description of the specific devices shown in the accompanying drawings, wherein:

Fig. 1 is a plan view of a fragmentary portion

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of a railroad rail and its supporting structure, together with a rail anchor device constructed in accordance with this invention applied to the base portion of the rail.

Fig. 2 is a face view in elevation of the rail anchor device shown in Fig. 1.

Fig. 3 is an end view in elevation illustrating the construction of the jaw end of the anchor shown in Fig. 2.

Fig. 4 is a fragmentary sectional view taken on line 4—4 of Fig. 2 looking in the direction indicated by the arrows.

Fig. 5 is a plan view illustrating a modified form of anchor device; and

Fig. 6 is a vertical sectional view taken on line 6—6 of Fig. 5 and looking in the direction indicated by the arrows.

Referring first to Figs. 1 to 4 inclusive of the drawings: A fragmentary base portion of the railroad rail is designated by the reference number 10. It is supported on a fixed portion of the roadbed including an ordinary wooden tie 11 and preferably though not necessarily a tie-plate 12 interposed between the top surface of the crosstie and the bottom surface of the rail base 10. The rail may be held in proper position by any suitable means. For example, rail spikes 13. The rail anchor device illustrated in said Figs. 1 to 4 inclusive of the drawings includes a body portion 14 which is preferably channel-shaped in cross-section. One end of the body is provided with a hook portion designated generally by the reference numeral 15, which overlies and bears against the inclined upper surface of one base flange of the rail. Preferably the space between the said hook 15 and the top face of the body 14 is such that these portions are spread apart slightly when the said hook is driven upon the rail base flange. The said hook portion 15 is also preferably so formed as to provide a substantial clearance designated 16 between the edge portion of the rail base and the anchor device so that the engagement of the said hook 15 with the top surface of the rail base is confined to an area spaced inwardly from the edge of the rail base. Consequently, the pressure exerted by the said hook 15 on the top surface of the rail base tends to turn the anchor device about the point 17 to force the anchor body into firm gripping contact with the bottom surface of the rail base. The other end of the anchor body is formed preferably with an offset portion 18 to provide a shoulder adapted to snap up over the lower corner portion of the rail base to lock the anchor device on the rail.

The anchor device is of channel-shape in the cross-section and the vertical flanges of the channel are so shaped as to simplify the manufacture of the device and to also provide the additional strength and rigidity which is necessary to withstand the severe strains imposed on devices of this character when the tie-abutting portion of the device is so positioned as to engage a crosstie 11 only at a substantial distance below the bottom surface of the rail base. According to the present invention, the portion of the anchor body which grips the bottom surface of the rail base is approximately one inch in width and the tie-abutting portion of the device, to-wit, a depending flange 19 of the channel, may be considerably wider than the horizontal web. In many situations it is necessary to provide the anchor device with a relatively deep tie-abutting portion to insure proper engagement with the crosstie. For example, when a tie-plate is interposed between the top surface of the tie and the bottom surface of the rail base or when a so-called pole tie, a tie having round corners, is used. In such situations there is a pronounced tendency for the relatively wide tie-abutting flange to bend in a direction lengthwise of the rail as a result of the heavy pressures exerted on the tie-abutting flange. In order to provide a tie-abutting flange which will resist these pressures and which will also possess the other advantages hereinafter referred to in connection with the manufacture of the device, the vertical flanges of the channel anchor device herein shown are made of special shape. They are preferably spread apart near their outer ends so that each of the said flanges includes upper and lower perpendicular portions 20 and 21 and an intervening incline portion 22. Each flange therefore has an angular configuration which will better resist the said bending strains and thereby prevent the rail engaging body portion of the anchor from being crowded into the space 23 intervening between the rail base and the curved corner portion of the crosstie. The special shape of the said flanges 19—19 also provide dished configurations 24—24 in the opposite faces of the hook portion. These configurations of the reinforcing flanges 19—19, because of the incline portions 22—22 thereof, provide highly effective resistance to any tendency which the pressures exerted on this anchor may have to twist the upper and lower portions of the hook out of vertical alignment with each other when the anchor is pressed against a crosstie. A further advantage of the special configuration of the vertical flanges 19—19, as herein shown, is that they facilitate the manufacture of the device as a die-forging and also make it practicable to form the device by bending one end of a channel bar around a die. When channel bars having perpendicular webs are bent in this manner the strains imposed on the outer portions of the webs during the bending operation tends to force the webs laterally relative to the main body of the channel bar. However, when the said channel bar is initially formed with its vertical webs offset laterally as shown herein, the said webs will retain substantially their initial contour during the bending operation.

Referring now to the modified embodiment shown in Figs. 5 and 6. The anchor device herein designated by the reference numeral 25, instead of being of channel configuration as shown in Figs. 1 to 4 inclusive, has a cross-sectional configuration in the form of angle bar. The horizontal web 26 thereof constitutes the body portion

of the anchor and the vertical web 27 constitutes a tie-abutting portion. The proportions of the said webs 26 and 27 may be and preferably are the same as the corresponding portions shown in the preceding embodiment. The modified embodiment, like the previously described device, may be formed either as a die-casting or it may be formed from an initially formed angle bar by bending one end of the angle bar around a suitable die to form the hook-shaped jaw 28. The laterally offset configuration of the web 27, in the modified embodiment, functions to rigidify the anchor device as a whole and makes it practicable, as previously described, to form the anchor device by bending one end of the angle bar into the hook form. The opposite end of the bar may be offset to provide a locking shoulder 18a corresponding to the locking shoulder 18 of the previous embodiment. The other constructions shown in Figs. 5 and 6 corresponding to the similar constructions of Figs. 1 to 4 inclusive are identified by the same reference numerals with the exponent "a."

I claim:

1. A rail anchor comprising a body portion provided at one end with a hook, which hook and said body portion cooperate to provide upper and lower jaws for gripping the top and bottom surfaces, respectively, of one base flange of a railroad rail; the said body portion including a horizontal web which bears against the bottom surface of the rail and extends around the inner face of the hook to provide the upper jaw with a horizontal portion for gripping the top surface of said base flange and a rigidifying flange extending around said hook to reinforce the hook and depending from said horizontal web of the body to provide abutting engagement with a rail supporting structure; the said rigidifying flange being bent laterally along its longitudinal center portion to offset the outer marginal portion of the flange relative to said horizontal web, whereby a reinforcing dished configuration is formed in said rigidifying flange at the hook end of the anchor and the engagement of the anchor with the rail supporting structure is confined to the offset marginal portion of said rigidifying flange.

2. A rail anchor comprising a body portion provided at one end with a hook, which hook and said body portion cooperate to provide upper and lower jaws for gripping the top and bottom surfaces, respectively, of one base flange of a railroad rail; the said body portion including a horizontal web which bears against the bottom surface of the rail and extends around the inner face of the hook to provide the upper jaw with a horizontal portion for gripping the top surface of said base flange and a rigidifying flange extending around said hook to reinforce the hook and depending from said horizontal web of the body to provide abutting engagement with a rail supporting structure; the said rigidifying flange being bent laterally along its longitudinal center portion for the full length thereof to offset the outer marginal portion of the flange relative to said horizontal web, whereby a reinforcing dished configuration is formed in said rigidifying flange at the hook end of the anchor and the engagement of the anchor with the rail supporting structure is confined to the offset marginal portion of said rigidifying flange.

3. A rail anchor comprising a body portion provided at one end with a hook, which hook and said body portion cooperate to provide upper and lower jaws for gripping the top and bottom

surfaces, respectively, of one base flange of a railroad rail; the said body including a horizontal web which bears against the bottom surfaces of the rail and extends around the inner face of the hook to provide the upper jaw with a horizontal portion for gripping the top surface of said base flange and a vertical rigidifying flange somewhat wider than said horizontal web extending around said hook to reinforce the same and depending from the horizontal web of the body for abutting engagement with a rail supporting structure; the said rigidifying flange being bent laterally throughout its full length along its longitudinal center portion to offset the outer marginal portion of the flange relative to said horizontal web, whereby a reinforcing dished configuration is formed in said rigidifying flange at the hook end of the anchor and the engagement of the anchor with the rail supporting structure is confined to the offset marginal portion of said rigidifying flange.

4. A rail anchor comprising a body portion provided at one end with a hook, which hook and said body portion cooperate to provide upper and lower jaws for gripping the top and bottom surfaces, respectively, of one base flange of a railroad rail; the said body portion being of inverted channel form including a horizontal web for bearing against the bottom surfaces of the rail and extending around the inner face of the hook to provide the upper jaw with a horizontal web for gripping the top surface of the rail base flange and a pair of vertical flanges extending lengthwise of the body and around said hook and having their longitudinal center portions bent laterally to offset their outer marginal portions relative to the edges of said horizontal web, whereby each of said horizontal flanges is provided with a reinforcing dished configuration at the hook end of the anchor and the engagement of the anchor with the rail supporting structure is confined to the offset marginal portion of either vertical flange.

5. A rail anchor comprising a body portion provided at one end with a hook, which hook and said body portion cooperate to provide upper and lower jaws for gripping the top and bottom surfaces, respectively, of one base flange of a railroad rail; the said body portion being of inverted channel form including a horizontal web extending the full length of the body for bearing against the bottom surface of the rail and extending around the inner face of the hook to provide the upper jaw with a horizontal web for gripping the top surface of the rail base flange and a pair of vertical flanges extending the full

length of the body and around said hook and having their longitudinal center portions bent laterally throughout their length to offset their outer marginal portions relative to the edges of said horizontal web, whereby each of said horizontal flanges is provided with a reinforcing dished configuration at the hook end of the anchor and the engagement of the anchor with the rail supporting structure is confined to the offset marginal portion of either vertical flange.

6. A rail anchor formed from a blank of channel bar cross section having a horizontal web and spaced apart vertical flanges and bent at one end into hook form to provide upper and lower jaws for gripping the top and bottom surfaces of a base flange of a railroad rail at one side of the rail and having a locking means at the other end for engagement with the edge of the other base flange of the rail; the vertical flanges of the channel bar being somewhat wider than the horizontal web and being offset outwardly along their longitudinal center portions, whereby the portion of the channel at the outer edges of the said vertical flanges is substantially wider than the portion of the channel which lies contiguous to the horizontal web.

7. A rail anchor formed from a blank of channel bar cross section having a horizontal web and spaced apart vertical flanges and bent at one end into hook form to provide upper and lower jaws for gripping the top and bottom surfaces of a base flange of a railroad rail at one side of the rail and having a locking means at the other end for engagement with the edge of the other base flange of the rail; the vertical flanges of the channel bar being somewhat wider than the horizontal web and having their outer edges spaced apart a greater distance than the width of the portion of the channel adjacent the horizontal web.

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