Nov. 23, 1926. 1,607,644

R. T. SCHOLES

RAIL ANCHOR

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Fig. 1.

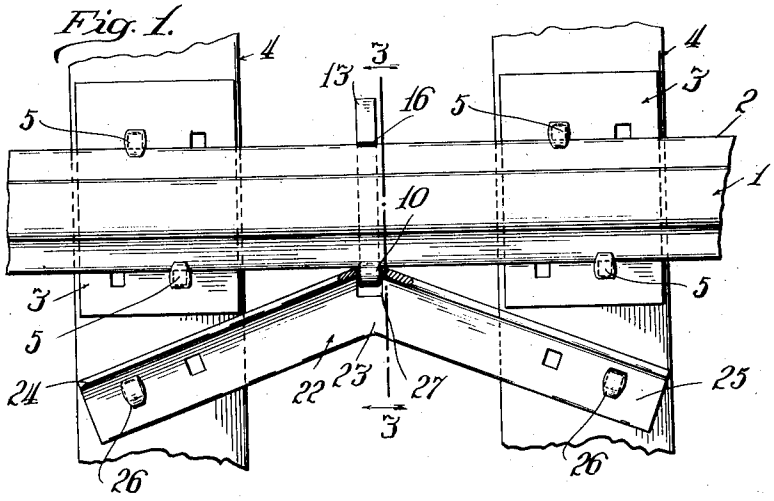



Fig. 2.

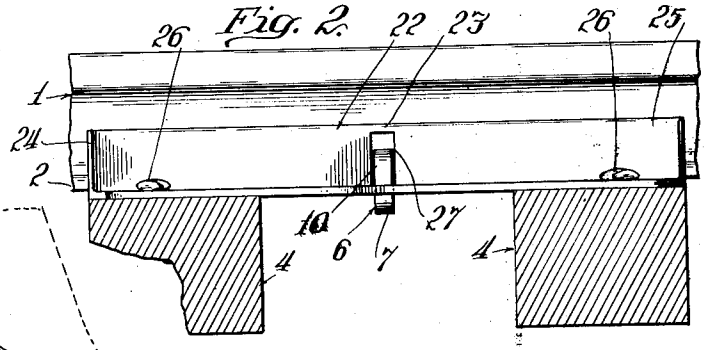



Fig. 3.

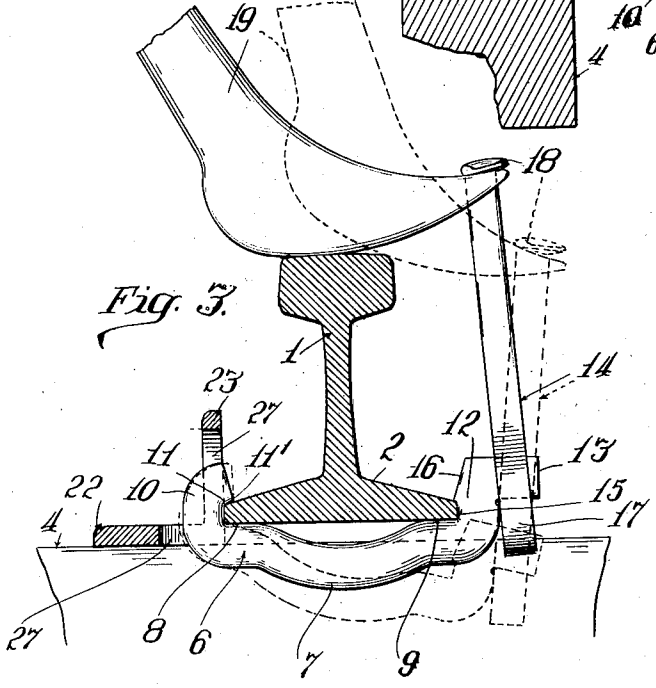
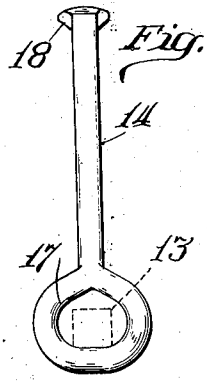



Fig. 4.




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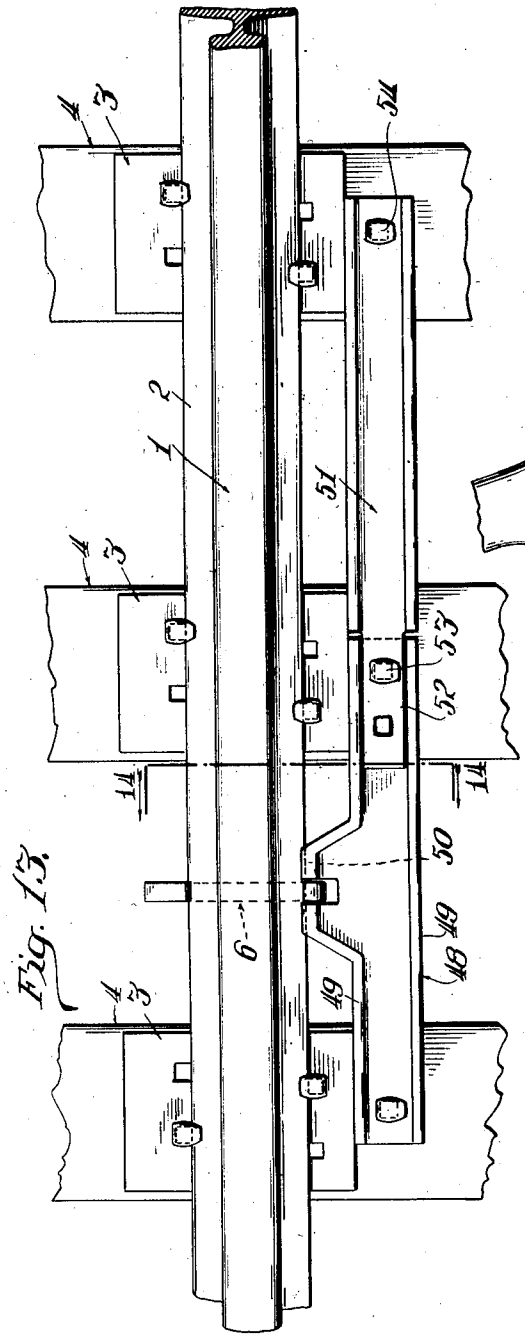


Fig. 13.

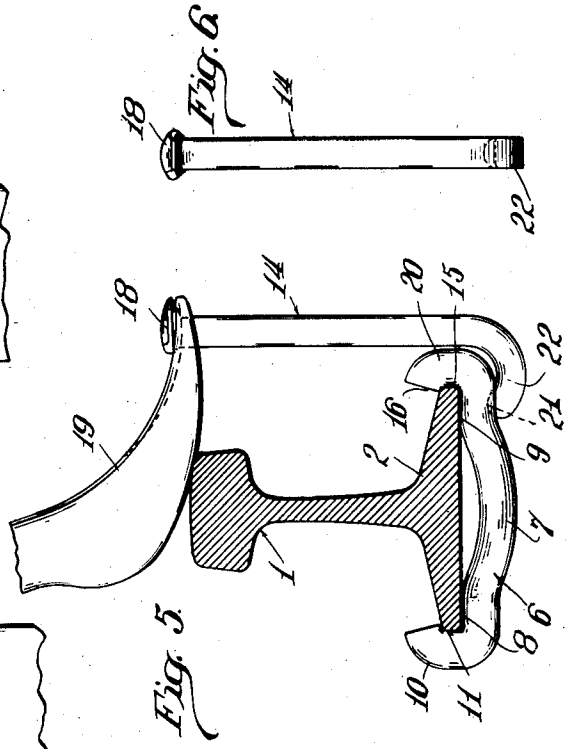


Fig. 5

Fig. 6

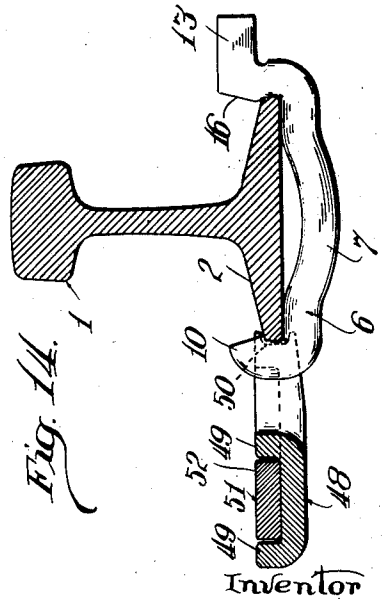


Fig. 14.

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Fig. 15.

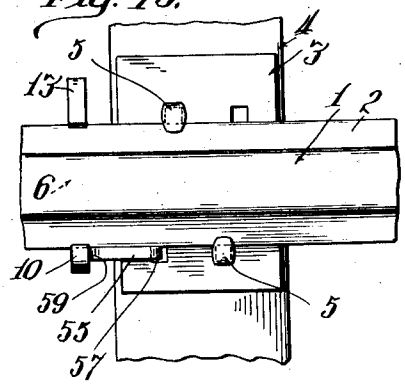



Fig. 16.

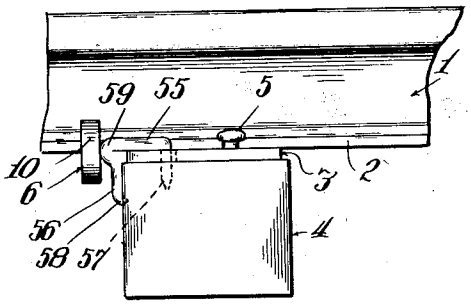



Fig. 7.

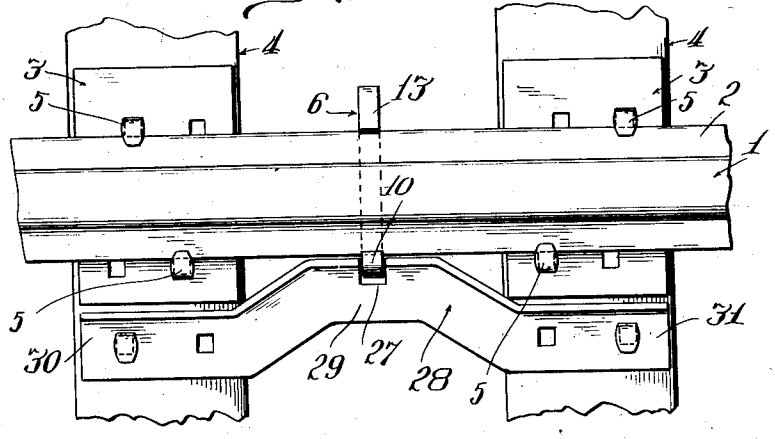
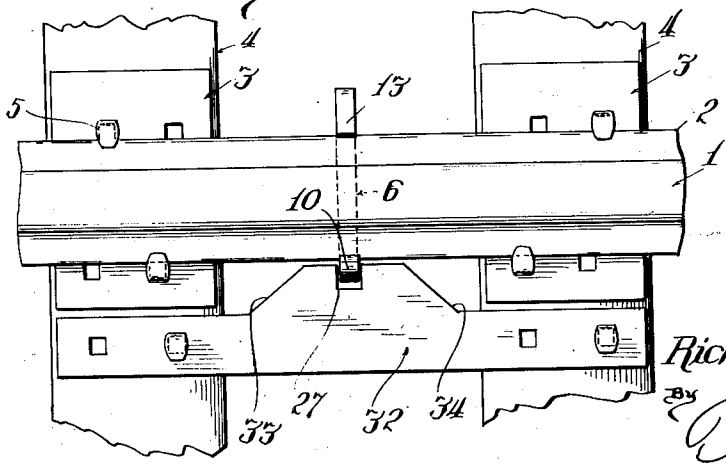



Fig. 8.




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Fig. 11.

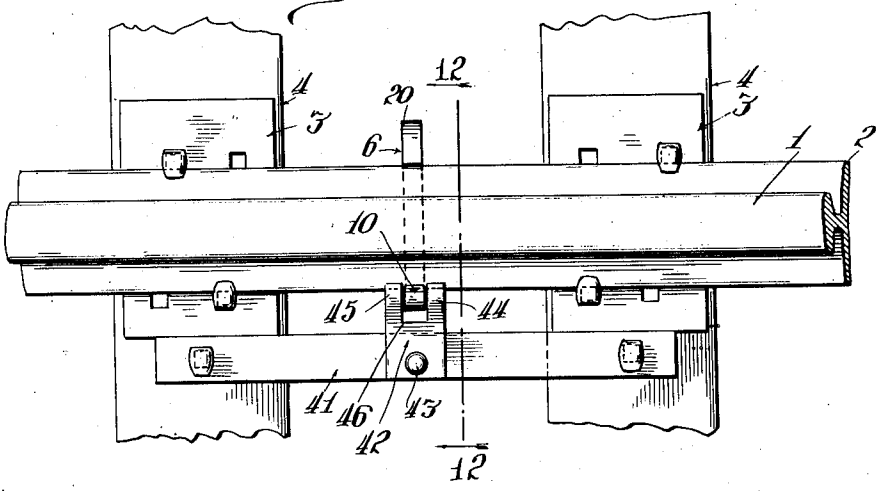



Fig. 12.

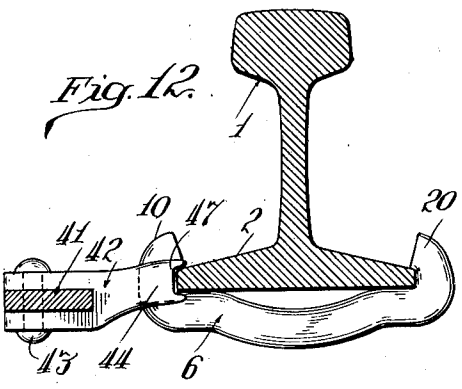



Fig. 10.

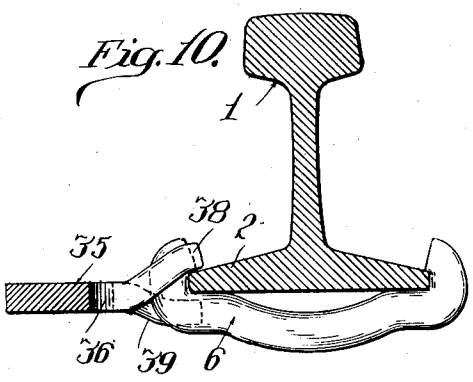
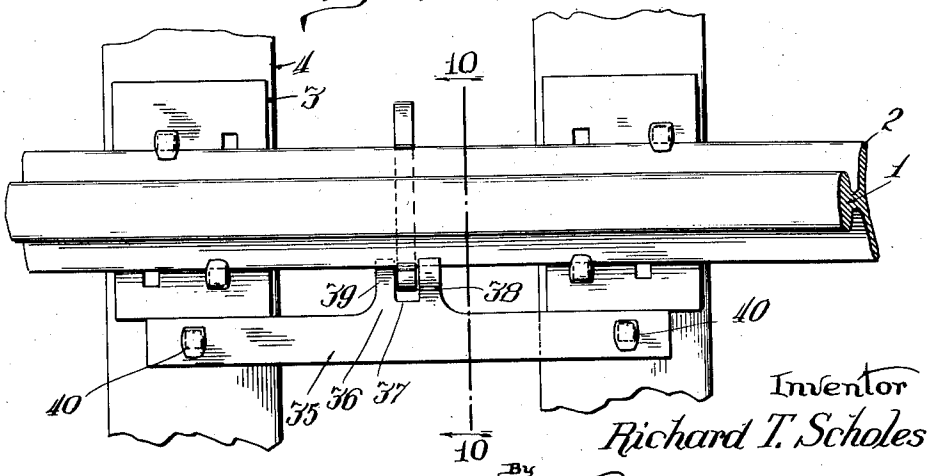



Fig. 9.




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# UNITED STATES PATENT OFFICE.

RICHARD T. SCHOLES, OF HINSDALE, ILLINOIS.

## RAIL ANCHOR.

Application filed January 8, 1926. Serial No. 79,999.

This invention relates to rail anchoring devices, adapted to prevent the creep of the rail, when in service, in either one or both directions.

On railroad tracks where the traffic in general moves always in one direction, substantially all of the tendency to creep will be in this one direction and so-called one-way rail anchors are used adapted to transmit this thrust to the ties and roadbed. In some trackways, due to the passage of trains in both directions, or other causes, the track tends to creep alternately, first in one direction and then in the other, and so-called two-way rail anchors must be used. Such anchors usually take the form of some means permanently secured or bolted to both the rail and one or more of the ties. Such anchors are difficult to apply and tend to weaken the rail at the point of application. Since such an anchor must share the up and down motion of the rail, this action tends to pull or work loose the spikes with which the anchor is secured to the tie. When the rails of a stretch of railway track are to be removed or replaced, the entire anchor must also be removed, and since these anchors are usually placed on the rail opposite a joint in the other rail, and the joints will be at new positions after the rails have been relaid, it is often necessary to re-position the ties and provide new rail openings for bolting the anchors in place.

The general object of the present invention is to provide an improved anchor, of simple and economical construction, capable of use either as a one-way or two-way anchor.

Another object is to provide a simple spring anchor member capable of being quickly and easily applied to the rail base, and gripping the rail with a constant spring pressure.

Another object is to provide a simple one-piece rail gripping member adapted to interchangeably form part of either a one-way or a two-way rail anchor.

Another object is to provide an improved applying tool or hook for positioning the rail-gripping member on the rail.

Another object is to provide an anchor comprising two members, one of which grips the rail, and the other being permanently secured to a tie, the two members engaging one another to prevent relative horizontal movement, but each being capable of vertical movement independently of the other.

Another object is to provide a two-way anchor, secured partly to the ties and partly to the rail, whereby horizontal lengthwise movement of the rail in either direction is resisted, but free vertical movement of the rail is permitted without putting stress on the tie engaging portions of the anchor.

Another object is to provide a rail anchor member adapted to distribute the thrust from the rail gripping member to a tie and tie-plate, without permitting the rail gripping member to come in actual engagement with the tie.

Another object is to provide a rail anchor comprising two cooperating members secured to the tie and rail, respectively, whereby the rail and rail gripping member may be removed without disturbing the tie-engaging member.

Another object is to provide a rail anchor including a portion which is anchored to adjacent ties with an extension member or members for distributing the thrust among additional ties.

Other objects and advantages of this invention will be apparent from the following detailed description of certain approved forms of the devices.

In the accompanying drawings—

Fig. 1 is a plan view of a portion of a rail, secured to two adjacent ties and showing one of the two-way anchors in place.

Fig. 2 is a side elevation of the installation shown in Fig. 1.

Fig. 3 is a transverse vertical section, on a larger scale, taken substantially on the line 3—3 of Fig. 1. In this view the method of applying the rail-gripping member is shown in dotted lines.

Fig. 4 is an elevation of the applying tool or hook.

Figs. 5 and 6 are views, similar to Figs. 3 and 4, showing a modified form of rail-gripping member and applying tool.

Figs. 7 and 8 are plan views, similar to Fig. 1, showing modifications of the tie-engaging member.

Fig. 9 is a plan view of another modification.

Fig. 10 is a transverse vertical section, taken substantially on the line 10—10 of Fig. 9.

Fig. 11 is a plan view of still another modification.

Fig. 12 is a transverse vertical section, taken substantially on line 12—12 of Fig. 11.

Fig. 13 is a plan view of another modification including an extension for the tie-engaging member.

Fig. 14 is a transverse vertical section, taken substantially on the line 14—14 of Fig. 13.

Fig. 15 is a plan view of a one-way anchor.

Fig. 16 is a side elevation of the construction shown in Fig. 15.

The rail 1 is supported by its base 2 upon the tie plates 3 carried by the ties 4, the base 2 being held down against the tie plates and ties by the spikes 5 in the usual manner.

Referring first to Figs. 3 and 4, the rail-gripping portion of the rail anchor is formed of a single piece metallic bar 6, preferably of substantially square cross-section. The bar 6 has an intermediate downwardly bowed portion 7 terminating at either end in substantially horizontal portions having surfaces 8 and 9 adapted to bear against the under surface or bottom of the rail base 2 adjacent either edge thereof. One end of the bar is curved upwardly and inwardly, as at 10, to form a hooked end enclosing a notch 11 adapted to fit about one edge of the rail base 2 and bear thereagainst. There is a small angular clearance at 11′ between the upper side of notch 11 and the upper surface of the rail base flange to permit a limited vertical swinging movement of the gripping member about this edge of the rail base when the gripping member is being applied. The other end of bar 6 is turned upwardly, as at 12, and then outwardly, as at 13, to form a lug which is engaged by the applying tool 14 when the member is being positioned on the rail base. In the inner face of the upwardly extending portion 12 is formed a notch 15, oppositely disposed to notch 11, the two notches 11 and 15 being spaced apart a distance substantially equal to, or slightly less than, the width of the rail base, so that when the member 6 is applied to the rail, the rail base will be snugly gripped between the two upturned ends of this bar 6. The downwardly bowed portion 7 is sufficiently elastic to form a powerful spring which may be flexed sufficiently to permit the application of the member to the rail base, and will subsequently hold the notched ends of the bar firmly in engagement with the opposite rail base flanges. A cam-surface 16 is formed on the inner face of the upturned end portion 12, extending from the upper edge of notch 15 to the upper surface of lug 13.

When the member 6 is to be applied to the rail, the end 10 is first hooked from beneath onto one edge of the rail base, so that the notch 11 is engaged with this edge of the rail base flange. This position of the member is indicated in dotted lines in Fig. 3. The lower eye or looped end 17 of the tool 14 is now hooked over the lug 13, and the tool 14 is of such length that the enlarged head 18 will extend approximately level with the upper surface of the rail 1. An ordinary claw-bar 19, such as is used for removing spikes, is now engaged with the head 18 of the tool 14, and by fulcruming the bar 19 upon the rail 1, the bar 6 may be drawn up into engagement with the rail base. The spring 7 will flex and permit cam surface 16 to guide the edge of the rail base into engagement with the notch 15. The tool 14 may be conveniently formed by welding the eye 17 onto the end of an ordinary track spike.

A simplified form of rail-gripping member, and applying tool therefor, are shown in Figs. 5 and 6. The bar 6 is provided with the same bowed spring portion 7 and hooked end 10 as in the form first described. However, the lug 13 is omitted, and this end 20 of the bar is inturned, similarly to the end 10, to enclose the notch 15. The cam surface 16 is formed on this end of the anchor as in the first described modification. In lieu of the lug 13, the under surface of the hooked end 20 is provided with a depression or socket 21, into which is adapted to be engaged the upturned end of the hook 22 on the applying tool, which forms an integral extension of the lower end of the spike 14 and replaces the loop 17 previously described. Obviously, the applying operation is the same as with the forms of gripping member and applying tool first described. This latter form of gripping member is simpler and easier to manufacture and eliminates the lug 13 which is a useless projection after the anchor is once applied. The lug 13 gives a longer leverage to the applying tool, but on the other hand the upward pull on lug 13 is directly opposed to the outward spring of the member caused by the engagement of cam 16 with the rail base edge. This latter objection is avoided by applying the upward pull in socket 21 by means of hook 22.

In the form of two-way anchor shown in Figs. 1, 2 and 3, a suitable length of angle bar 22 is bent intermediately at 23 to form an elbow which will project adjacent one edge of the rail base 2, while the ends 24 and 25 rest upon a pair of adjacent ties 4 beyond the ends of the tie plates 3. The ends 24 and 25 may be secured to the ties in any suitable manner, as by means of the ordinary spikes 26. The angled face of the elbow 23 is cut away or notched, as at 27, to engage about the hooked end 10 of the rail gripping member 6. The notch 27 fits fairly closely against the sides of hooked end 10, but is of sufficient height to permit free ver-

tical movement of the rail 1 and gripping member 6 without necessitating any corresponding movement of the anchoring plate 22.

After the member 6 is applied to the rail base 2, it grips the opposite edges of this rail base by the spring pressure furnished by the downwardly bowed portion 7 with sufficient pressure to resist movement of the member longitudinally of the rail, and prevent any material canting of the member in the plane of the rail base. However, if a pressure is applied lengthwise of the rail to one end of the bar 6, for example, the hooked end 10, there will be a tendency to cant, or a very slight canting of the member, in a horizontal plane, which will cause the gripping member to engage the rail base even more firmly and securely lock the gripping member to the rail. This canting movement is so slight that the member will be locked by a force exerted in either direction lengthwise of the rail without causing any material movement of the gripping member along the rail base. With the parts in position, as shown in Figs. 1, 2 and 3, any creeping of rail 1 in either direction will bring the hooked end 10 of the gripping member 6 into engagement with one side or the other of notch 27 in the anchoring plate 22, and any further thrust of the rail will lock the gripping member 6 firmly in position on the rail and transmit the thrust through the plate 22 to the ties 4. At the same time the up and down, or wave motion of rail 1, as the trains pass thereover, will be permitted, without causing any corresponding movement of the anchoring plate 22, since the gripping member 6 is permitted free vertical movement in the slot or notch 27 in the plate 22. The rail 1, or the gripping member 6, or both of them, may be removed and replaced without necessitating any disturbance of the anchoring plate 22. Thus there are no vertical thrusts tending to loosen the spikes 26, and since the ends 24 and 25 of the plate 22 are secured directly to the ties 4, beyond the ends of the tie plates 3, this anchorage is enduring, regardless of the shifting movements of the rail either vertically or horizontally. When the rail 1 is relaid, or a new rail is positioned on the ties, a member 6 can be applied to the rail base directly in line with the notched portion 27 of the anchorage plate 22 without requiring any movement or readjustment of this plate. This is possible since the application of the gripping member 6 is performed entirely in a vertical plane without requiring any lateral shifting whatever of the gripping member.

In Fig. 7 is shown a slightly modified form of the anchorage plate. The plate 28 here shown is substantially the same as the plate 22 previously described, but is reversely bent to form a straight central portion 29 adjacent the edge of the rail base, and parallel straight end portions 30 and 31 which rest on the ties 4, directly beyond the ends of the tie plates 3. This plate is a little more difficult to form, but has the advantages of not being weakened by being bent at the notch, and also is positioned more compactly against the sides of the rail, particularly at its ends 30 and 31, so as to avoid objectionable projections along the sides of the track.

The simple form of anchorage member 32 shown in Fig. 8 is a single flat plate centrally notched at 27 to engage the gripping member 6, and cut away at its ends, at 33 and 34, to avoid the tie plates 3. The anchors shown in Figs. 7 and 8 operate in every way substantially the same as the one described more in detail hereinabove and shown in Figs. 1, 2 and 3.

Another form of anchoring member is shown in Figs. 9 and 10. A flat metal strip 35, similar to the plate 32 in Fig. 8, has an intermediate forked projection 36 enclosing the notch 37 for engaging the end of the rail-gripping member. One prong 38 of the fork is deflected upwardly and adapted to extend over the adjacent flange of the rail base 2, and the other prong 39 of the fork is deflected downwardly beneath the rail base. The vertical spacing of these fork ends which overlap the rail base is sufficient to permit a limited amount of vertical movement of the rail and gripping member 6 independent of the plate or anchoring member 35, but the end of the gripping member will never be permitted to move vertically completely out of the notch 37. The ends of bar or plate 35 are anchored to the ties 4 at 40 in the usual manner.

The last described form of anchoring member can be made, as shown in Figs. 11 and 12, of a straight bar or strip 41, and a casting 42 riveted or otherwise secured to an intermediate portion of the bar 41, as at 43. The casting or forging 42 is formed with forked ends 44 and 45, enclosing the notch 46 for accommodating the rail gripping member 6, each forked end 44 and 45 being notched or forked as at 47 to loosely engage the adjacent rail base edge and prevent excessive vertical movement of the rail independently of the anchoring plate.

The anchoring member 48 shown in Figs. 13 and 14 is much the same as the one shown in Fig. 8, with the addition of an upwardly directed strengthening rib 49 extending along both longitudinal edges of the bar. The forked portion which engages the rail gripping member 6 is also notched at 50 to loosely engage the rail base as in Figs. 11 and 12. The member 6 has a very powerful gripping action on the rail and it is sometimes desirable to distribute the thrust from

this gripping member between more than two of the ties. For this purpose an extension bar 51 is provided, having a tongue 52 at one end adapted to interfit with and be secured to one end of the main bar 48, for example, by securing the same spike 53 through both bars. The other end of the extension bar 51 is secured to another tie as at 54. A second extension bar could be added to the first one, or such a bar could also be used at the other end of the main bar 48. Obviously, similar extension bars could be adapted for any of the other forms of anchoring bars heretofore described.

In Figs. 15 and 16 is illustrated a form of one-way anchor. The tie engaging member is an angular metallic bar having a horizontal portion 55 adapted to overlie the top of the tie plate 3, and a vertical portion 56 adapted to bear against one side of the tie 4. Horizontal portion 55 terminates in a downwardly extending spiked end 57 adapted to extend through one of the spike holes in the tie plate into the tie, and the vertical leg 56 terminates in a horizontal spike 58 adapted to be engaged into the side face of the tie. Intermediately, adjacent the upper corner of the tie 4, the anchoring member is bent outwardly to form a lug 59 against which bears the hooked end 10 of the rail gripping bar 6. The operation of this form of anchor is substantially the same as that of the two-way anchor previously described, except that the one-way anchor is only effective against thrusts in one direction, that is, toward the tie 4 to which the anchoring member 59 is applied.

It will be noted that the rail gripping member 6 is equally effective, either as a part of a one-way anchor or a two-way anchor. If both forms of anchors are to be used, only one form of rail gripping member need be supplied, and these may be applied to, and will operate with, either the two-way anchoring plates 22 or the one-way anchoring members 59. The rail gripping members 6 are applied in the same manner, if either the one-way or two-way forms of anchor are to be used, it only being necessary that the member 6 be applied to the rail base so that the hooked end 10 will lie in proximity to the portion of the plates 22 or 59 with which it is to cooperate.

The gripping member 6 will be effective as a rail anchor provided any anchoring surface is present against which one end of the member may abut (in either direction) so as to obtain the slight canting tendency in a horizontal plane by which the member 6 is securely locked to the rail base. It will further be noted that in all of the forms of rail anchors here shown, although two parts are used, these parts merely abut against one another and there is no necessity for properly mating or fitting these parts, so that no selection is required and either part may be replaced without altering the efficiency of the anchor.

The rail gripping member 6 (either the form shown in Fig. 3 or the form shown in Fig. 5) might be applied to the rail by any upward pressure, for example, by fulcruming a crow bar on a tie or the roadbed and lifting up on the under surface of member 6 until the notched end 15 snaps into place on the rail flange. However, the use with either form of gripping member of the appropriate form of tool 14 hereinabove described, in cooperation with a claw-bar fulcrumed on the rail head is preferable, since in this operation all thrusts are toward the rail, and there is no tendency to loosen spikes or otherwise disturb the anchorage for the rail.

I claim:

1. A rail anchor comprising a member adapted to grip the rail, and a cooperating member adapted to be anchored to a tie, the two members being capable of vertical movement in either direction independently of one another.

2. A rail anchor comprising a member adapted to grip the rail, and a cooperating member adapted to be anchored to a tie and to bear against both sides of one end portion of the first member, the two members being capable of vertical movement in either direction independently of one another.

3. A rail anchor comprising a member adapted to grip the edges of the railbase with a spring pressure, and a cooperating member adapted to be anchored at its ends to a pair of adjacent ties, and to be engaged intermediate its ends by one end of the rail-gripping member which projects beyond the side of the railbase.

4. A rail anchor comprising a member adapted to grip the railbase with a spring pressure, and a cooperating member adapted to be anchored at its ends to a pair of adjacent ties, and to be engaged intermediate its ends by one end of the rail-gripping member, the two members being capable of vertical movement in either direction independently of one another.

5. A rail anchor comprising a member adapted to grip the railbase, and a bar secured adjacent its ends to a pair of ties, and having an intermediate forked portion engaging the rail gripping member to prevent relative horizontal movement but permit relative vertical movement of the two members.

6. In a rail-anchor a single-piece rail-gripping member comprising a downwardly bowed spring bar extending beneath the railbase and engaging the bottom of the rail base adjacent its edges, and having upturned end portions notched to engage the rail flanges, the notches being so spaced as to

engage the opposite edges of the railbase with spring pressure when applied.

7. In a rail-anchor, a single-piece rail-gripping member comprising a downwardly bowed spring bar extending beneath the railbase and engaging the bottom of the rail base adjacent its edges, and having upturned end portions notched to engage the rail flanges, the notches being so spaced as to engage the opposite edges of the railbase with spring pressure when applied and a cam surface beyond one notched end to assist in applying the member to the rail.

8. In a rail anchor, a single-piece rail-gripping member comprising a spring bar extending beneath the rail base and having upturned end portions which are notched to grip the edges of the rail base, the lower surface of one end portion being provided with a socket to be engaged by an applying tool.

9. In a rail anchor, a single-piece rail-gripping member comprising a spring bar extending beneath the rail base and having upturned end portions, each of which is inturned to form a hook for engaging the edge of the rail base, the inner surface of one hooked end having a cam formation to assist in applying the anchor to the rail, there also being a socket in the lower surface of this hooked end to be engaged by an applying tool.

10. In a rail anchor, a single-piece rail-gripping member comprising a spring bar extending beneath the rail base and having one upturned hooked end comprising an upwardly extending portion to bear against the edge of the rail base, and a portion extending inwardly and upwardly over the rail base flange so that the bar will have capacity for a limited vertical swinging movement about the edge of the rail base, the other end of the bar being upturned and formed with a notch to grip the other edge of the rail base.

11. In a rail anchor, a single-piece rail-gripping member comprising a spring bar extending beneath the rail base and having one upturned hooked end comprising an upwardly extending portion to bear against the edge of the rail base, and a portion extending inwardly and upwardly over the rail base flange so that the bar will have capacity for a limited vertical swinging movement about the edge of the rail base, the other end of the bar being upturned and formed with a notch to grip the other edge of the rail base, and formed with a cam surface above the notch.

12. In a rail anchor, a single-piece rail-gripping member comprising a spring bar extending beneath the rail base and having one upturned hooked end comprising an upwardly extending portion to bear against the edge of the rail base, and a portion extending inwardly and upwardly over the rail base flange so that the bar will have capacity for a limited vertical swinging movement about the edge of the rail base, the other end of the bar being upturned and formed with a notch to grip the other edge of the rail base, and formed with a cam surface above the notch, and a socket beneath this latter end to be engaged by an applying tool.

13. In a rail anchor, a single-piece rail-gripping member comprising a spring bar extending beneath the rail base and having upturned hooked ends, each comprising an upwardly extending portion to bear against the rail base edge and an inwardly turned portion to extend over the rail base flange, there being an angular clearance between one inturned portion and the rail base flange to permit limited vertical movement of the bar about this rail base edge, the other inturned portion having a cam surface to engage the rail base when the bar is swung upwardly to applied position.

14. A rail anchor comprising a member adapted to grip the opposite edges of the rail base with a spring pressure, in combination with a member adapted to be anchored to a tie and bear against one projecting end of the rail gripping member beyond the side of the rail base.

15. A rail anchor comprising a member adapted to grip the opposite edges of the rail base with a spring pressure, in combination with a member adapted to be anchored to a tie and engage both sides of one end of the rail gripping member whereby relative vertical movement of the two members is permitted but relative lateral movement is prevented.

16. A rail anchor comprising a member having a downwardly bowed spring portion adapted to extend beneath the rail base and upturned ends notched to grip against the vertical edges of the rail base with a spring pressure, in combination with a member adapted to be anchored to a tie and bear against one end of the rail gripping member.

17. A rail anchor comprising a member having a downwardly bowed spring portion adapted to extend beneath the rail base and upturned ends notched to grip the edges of the rail base with a spring pressure, in combination with a member adapted to be anchored to a tie and having a portion engaging both sides of one end of the rail gripping member so that relative lateral movement is prevented without interfering with relative vertical movement of the members.

18. In a rail anchor, a rail gripping member adapted to extend transversely of a rail, and having end portions adapted to intimately engage the opposite edge portions

of the rail base, so that pressure applied against one end of the member in either direction lengthwise of the rail will securely lock the member to the rail.

19. In a rail anchor, a rail gripping member adapted to extend transversely of a rail, and having end portions adapted to intimately engage the opposite edge portions of the rail base, so that pressure applied against one end of the member in either direction lengthwise of the rail will securely lock the member to the rail, in combination with an anchoring member to be attached to a tie and form an abutment for one end of the gripping member.

20. In a rail anchor, a rail gripping member adapted to cooperate interchangeably with suitable abutment members to form part of either a one-way or two-way rail anchor, the gripping member having a portion adapted to extend transversely of a rail, and having end portions adapted to intimately engage the opposite edges of the rail base, so that pressure applied by the abutment member against one end of the gripping member, in either direction lengthwise of the rail will securely lock the member to the rail.

21. In a rail anchor, a rail gripping member adapted to extend transversely of a rail, and having end portions adapted to intimately engage the opposite edge portions of the rail base with a spring pressure, in combination with an abutment member adapted to be attached to a tie and engage a side of one end of the gripping member, whereby movement of the gripping member toward the abutment will tend to cant the gripping member and lock it to the rail base.

22. In a rail anchor, a rail gripping member adapted to extend transversely of a rail, and having end portions adapted to intimately engage the opposite edge portions of the rail base with a spring pressure, in combination with an abutment member adapted to be attached to a tie and engage the opposite sides of one end of the gripping member, whereby movement of the gripping member in either direction lengthwise of the rail will tend to cant the gripping member and lock it securely to the rail.

23. A rail anchor comprising a member adapted to grip the rail base, and a bar secured adjacent its ends to a pair of ties and having an intermediate forked portion engaging the sides of one end of the rail gripping member, the ends of the forked portion overlapping the adjacent edge of the rail base.

24. A rail anchor comprising a member adapted to grip the rail base, and a bar secured to a tie and having a forked portion engaging the sides of one end of the rail gripping member, the ends of the forked portion overlapping the adjacent edge of the rail base.

25. A rail anchor comprising a member adapted to grip the rail base, and a cooperating member adapted to be anchored at its ends to a pair of ties and to intermediately engage one end of the rail gripping member, and an extension member adapted to be attached at one end to the tie engaging member and anchored at its other end to a third tie.

26. A rail anchor comprising a member adapted to grip the rail base, and a cooperating member adapted to be anchored at its ends to a pair of ties and to intermediately engage one end of the rail gripping member, and an extension member having a tongue at one end adapted to interfit with and be attached to one end of the tie engaging member, and adapted to be anchored at its other end to a third tie.

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