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R. A. BLAIR

2,217,040

RAIL ANCHOR

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Fig. 1

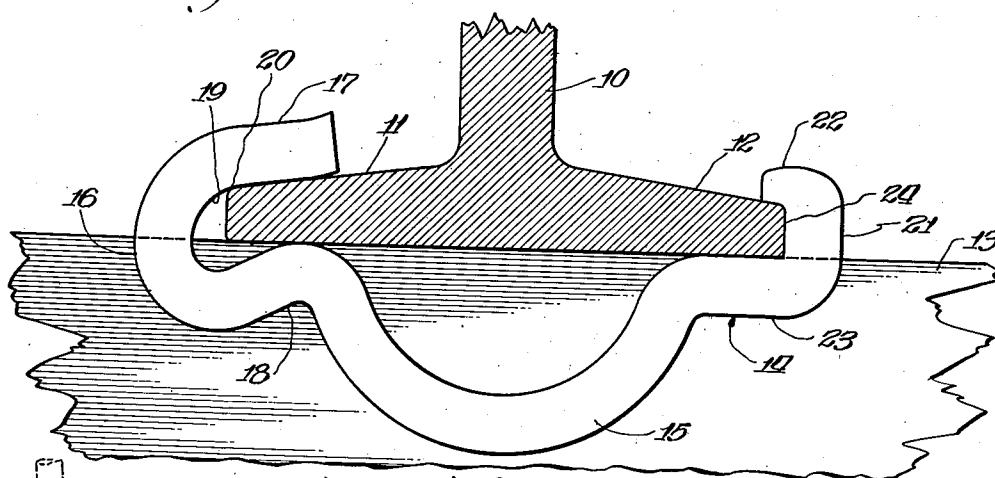


Fig. 2

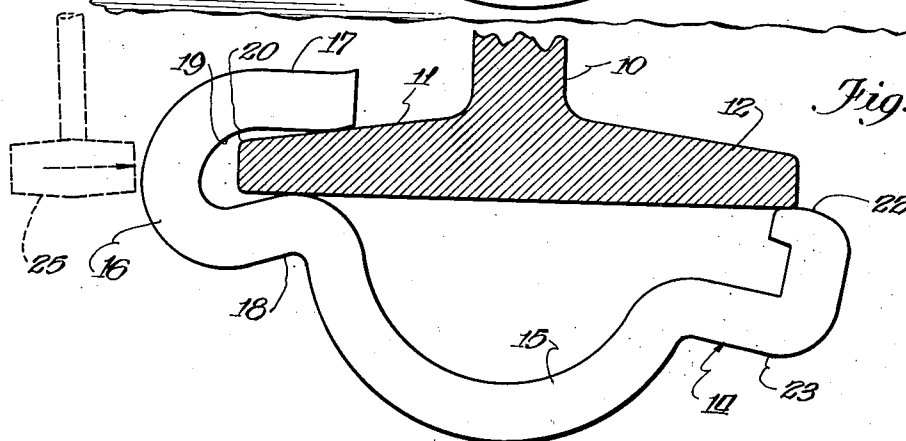
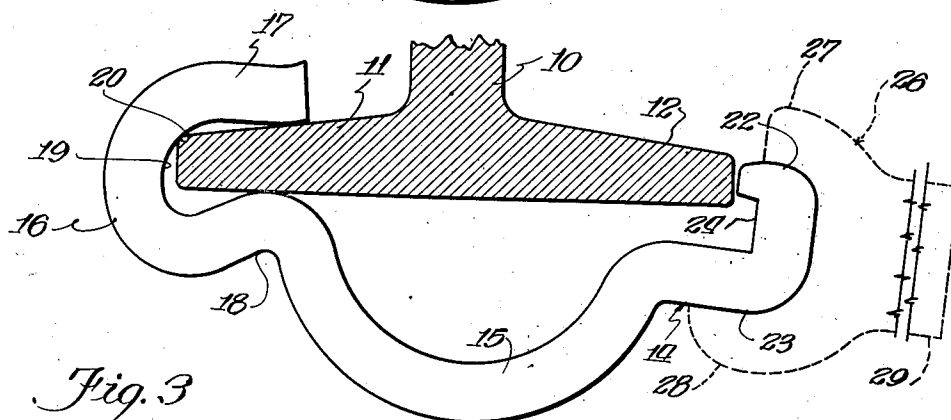


Fig. 3



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UNITED STATES PATENT OFFICE

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RAIL ANCHOR

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Application February 17, 1939, Serial No. 256,977

8 Claims. (Cl. 238—327)

My invention relates to devices for preventing movement of rails longitudinally of the road bed, which are commonly called rail anchors.

5 This application is a continuation in part of my application Serial No. 200,592, filed April 7, 1938.

One of the objects of my invention is to provide a novel and improved type of rail anchor formed from a single piece of spring steel which 10 possesses sufficient inherent elasticity to permit its application to the base of a rail by temporary deformation from normal shape and which when mounted on the rail against a fixed portion of the road bed, such as a cross tie, will exert a 15 strong spring grip on the rail base and will restrain the rail from longitudinal creepage.

Another object of the invention is to provide a simple inexpensive and efficient rail anchor which may be quickly and easily applied to and 20 removed from the rail base and which cannot be damaged by installation and removal.

A further object of the invention is the provision of an improved form of rail anchor so designed that it can only be applied to a rail base 25 in the correct way and will serve to prevent creepage in either direction.

It is another object of my invention to provide a device of this type which is so constructed that it cannot, when in use, work off the rail to which 30 it is attached.

It is still another object of my invention to provide a rail anchor of this type which is constructed with an abutment portion adapted to bear against one of the rail base flanges with increasing pressure and limit transverse movement 35 of the anchor in the direction in which the abutment portion bears against the flange.

It is also an object of my invention to improve devices of this type in sundry details hereinafter 40 pointed out. The preferred means by which I have accomplished by several objects are illustrated in the drawing and are hereinafter specifically described. That which I believe to be new and desire to cover by Letters Patent is set forth 45 in the claims.

In the drawing,

Fig. 1 is a side view in elevation of a rail anchor embodying the principles of my invention in operative position on a rail against a cross 50 tie;

Fig. 2 is a view similar to Fig. 1 but showing the anchor in its normal condition when first placed upon the rail base for application thereto; and

55 Fig. 3 is a view also similar to Fig. 1 but show-

ing the anchor in an intermediate position in its application to the rail base.

Referring now to the several figures of the drawing in which corresponding parts are indicated by the same reference characters, 10 indicates in section a fragmentary portion of a rail provided with base flanges 11 and 12 which are positioned upon a cross tie 13 of the road bed. My improved anchor comprises a transversely 10 extending bar 14 which is downwardly bowed at 15 in its middle region and is formed adjacent one end of the bowed portion with a return bend 16 and on the ends of the return bend with cooperative upper and lower lever-like long jaw 15 members 17 and 18. The return bend 16 is so curved downwardly adjacent the upper long jaw member 17 that its inner surface provides an abutment 19 which is adapted to bear against the upper corner 20 of the adjacent rail base flange 11. Adjacent the other end of the downwardly 20 bowed portion 15, the bar is formed with comparatively short rigid jaw means comprising a vertically disposed portion 21, an upper short rigid arm 22 and a lower arm 23. The arm 22 is adapted to overlie the adjacent flange 12 and the notch 24 formed by the parts 21, 22 and 23 25 is adapted to receive the edge of the adjacent flange 12 as shown in Fig. 1. Preferably the device is formed so that all its parts are disposed in a common vertical plane when the device is in operative position on a rail base, the downwardly bowed portion 15 providing an effective tie abutment means. 30

In applying the device to a rail base the jaw member 17 is hooked over one of the rail base 35 flanges, for example the flange 11, substantially as shown in Fig. 2. The return bend portion 19 is then struck by suitable means, such as a spike mall 25, and the device is driven from the left to the right, as viewed in the drawing, until 40 the inner end of the jaw 22 clears the vertical edge of the base flange 12 and springs upwardly into a position substantially as shown in Fig. 3. The long jaw members 17 and 18 bear forcibly on the top and bottom surfaces of the flange 11 45 and in order to bring the anchor into its final position on the rail, with the short jaw 22 in place on top of the flange 12, the end of the anchor carrying the short jaw must be forced upwardly. This result may be accomplished wholly 50 or in part by rotating the anchor against the frictional restraining forces of the jaw members 17 and 18 on the flange 11 or by springing upwardly the end of the anchor carrying the short jaw with respect to the other end of the device. 55

This operation may be carried out by any suitable means. I have found that it may be quickly and easily performed by means of a special tool 26. The tool 26 comprises an upper jaw portion 27, a lower jaw portion 28, and an arm 29. The open part of the tool comprising the upper and lower jaw portions 27 and 28 is adapted to fit on the end of the anchor formed with the short rigid jaw means so tightly that the tool must be slid on the anchor from the side. Such tight fit is necessary in order that the tool may not slip in any other than a sidewise direction relative to the anchor. The anchor is rotated counter-clockwise or sprung as described from the position shown in Fig. 3 by pulling upwardly on the arm of the tool 26 until the lower arm 23 of the anchor is in contact with the bottom of the base flange 12. The end of the tool arm 29 is then struck by a mallet until the anchor has been driven from right to left, as viewed in the drawing, into its final holding position as shown in Fig. 1, with the upper rigid arm 22 overlying the flange 12. The tool 26 is then slid from the anchor.

It should be noted that when my improved anchor is being applied to the rail, as well as when the anchor is in final position, the inner ends of the jaw members 17 and 18 make contact with the surfaces of the supporting flange intermediate the rail web and flange edge, and the anchor may thus be rocked on the rail. When the anchor is in final position the jaw members 17 and 18 are in contact with the flange at points substantially opposite each other with respect to the flange, and the upper long jaw 17 as shown in Fig. 1 also makes contact with the flange 11 from its edge to a point near the inner end of the jaw. The anchor is made of spring steel and is preferably heat treated in oil after it is made to give it the desired elastic or resilient qualities without danger of breakage. The distance between the top surface of the long jaw 18 and the under surface of the long jaw 17 when they are free of the base flange is substantially less than the corresponding distance when the anchor is in final position. The long jaw members, when the anchor is in holding position, therefore, take a powerful spring grip on the base flange 11 and such grip is maintained and no reverse movement of the anchor transversely of the rail is possible due to the effective hooked engagement of the short jaw on the edge of the base flange 12, the end of the anchor carrying the short jaw in application to the rail being forcibly sprung up from a substantially lower position thus maintaining such hooked engagement. The abutment portion 19 of the anchor bears against the corner 20 of the base flange 11 as shown in Fig. 1 and the pressure between the portion 19 and that flange increases as the anchor tends to move to the right, and the anchor is thereby held against movement in that direction. Under longitudinal creepage, the downwardly bowed portion 15 bearing against the side of a cross tie tends to tilt the device on a rail base which serves to increase the spring grip of the device on the rail base and thereby augments its holding power.

The device may be easily removed from the rail base. The return bend portion 16 is struck with a spike mallet or the like adjacent the lower jaw 18 until the extremity of the short jaw 22 clears the vertical edge of the base flange 12 and springs downwardly to a position substantially as shown in Fig. 3. The tool 26 is then applied to the anchor, as hereinbefore described, and that end of

the anchor carrying the short jaw 22 is forced downwardly to bring the upper surface of the short jaw 22 below the bottom surface of the rail. The end of the tool 26 is then struck until the anchor is in substantially the position shown in Fig. 2, and it may then be removed from the rail by hand.

My improved rail anchor may be applied, removed, and reapplied to rail bases a number of times without materially affecting its efficiency or holding power. The device can only be installed properly on the rail base; it is so designed that it cannot be improperly applied by any workman no matter how unskilled he may be. The device is what may be termed a two-way rail anchor, that is to say, it will prevent creepage of a rail in either direction, depending merely upon which side of a cross tie it is positioned against.

While I prefer to employ the form of anchor as shown in my drawing, it is to be understood that my invention is not limited thereto except so far as some of the claims may be so limited in terms, it being understood that some changes may be made in the arrangement shown without departing from the principles of the invention.

I claim:

1. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and being provided adjacent one end of said bowed portion with cooperative long lever-like resilient jaw members and adjacent the other end of said bowed portion with comparatively short rigid jaw means, said resilient jaw members being adapted to bear with strong spring pressure on the top and bottom surfaces of one of the rail base flanges at a substantial distance outwardly from the rail web and at a substantial distance inwardly from the edge of such flange when driven thereon and being held in gripping relation on such flange by forcing upwardly said short jaw means into overlying engagement with the other base flange, the anchor being applied to the rail by transverse movement first in one direction with the resilient jaw members in engagement with one base flange whereby the rigid jaw means clears the other base flange and then in the opposite direction while the end carrying the short jaw means is held in elevated position.

2. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and being provided adjacent one end of said bowed portion with cooperative long lever-like resilient jaw members adapted to bear with strong spring pressure on the top and bottom surfaces of one of the rail base flanges at a substantial distance outwardly from the rail web when transversely driven on said flange in one direction, said spring bar adjacent the other end of said bowed portion having a notch and a comparatively short rigid arm positioned beyond the edge of the other base flange but adapted when that end of the bar is forced upwardly and the anchor is driven in the opposite direction to receive and overlie the edge of the other base flange thereby limiting reverse transverse movement of the anchor and maintaining the grip of the resilient jaw members on the base flange engaged by them.

3. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and being provided adjacent one end of said bowed portion with cooperative long lever-like resilient jaw members

adapted to bear on the top and bottom surfaces of one of the rail base flanges at a substantial distance outwardly from the rail web when transversely driven on said flange in one direction, the distance between the flange engaging portions of said members being substantially less when they are free of the flange than the thickness of the engaged portion of the flange, said spring bar adjacent the other end of said bowed portion having a notch and a comparatively short rigid arm positioned beyond the edge of the other base flange but adapted when that end of the bar is forced upwardly and the anchor is driven in the opposite direction to receive and overlie the edge of the other base flange thereby limiting reverse transverse movement of the anchor and maintaining its grip on the base flanges.

4. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and having adjacent one end of said bowed portion cooperating upper and lower long lever-like resilient jaw members and adjacent the other end of said bowed portion comparatively short rigid jaw means, said resilient jaw members bearing with strong spring pressure on the top and bottom surfaces of one of the rail base flanges when driven thereon, said upper jaw member being provided on its under side with an abutment portion adapted to bear against the upper corner of the rail base flange engaged by said jaw members for limiting transverse movement of the anchor inwardly on said flange, the normal length of the bar being such that said short jaw means will clear the other base flange during application of the anchor to the rail, said short jaw means limiting reverse transverse movement of the anchor when in sprung-up and overlying engagement with said other flange.

5. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and being formed adjacent one end of said bowed portion with a return bend and cooperative upper and lower long lever-like resilient jaw members at the ends of the bend, the anchor being formed adjacent the other end of said bowed portion with comparatively short rigid jaw means, said resilient jaw members being adapted to bear with strong spring pressure on the top and bottom surfaces of one of the rail base flanges when driven thereon, said return bend on its inner surface adjacent said upper jaw member being curved to provide an abutment adapted to bear with increasing pressure against the upper corner of the flange engaged by said jaw members as the anchor tends to move transversely inwardly on said flange, the normal length of the bar being such that said short jaw means will clear the other base flange during application of the anchor to the rail, said short jaw means limiting reverse transverse movement of the anchor when in sprung-up and overlying engagement with said other flange.

6. A rail anchor comprising a transversely extending bar having in its middle region a downwardly bowed portion and being provided adjacent one end of said bowed portion with cooperative long lever-like resilient jaw members adapted

to bear with strong spring pressure on the top and bottom surfaces of one of the rail base flanges when transversely driven thereon, said spring bar adjacent the other end of said bowed portion having a notch and a comparatively short rigid arm, the normal length of the bar being such that said short arm will clear the other base flange during application of the anchor to the rail, said upper jaw member being provided on its under side with an abutment portion adapted to bear against the upper corner of the rail base flange engaged by said resilient jaw members for limiting transverse movement of the anchor inwardly on said flange, reverse transverse movement of the anchor being limited by springing up the end of the bar carrying said notch and said short rigid arm to bring the notch and arm into receiving and overlying engagement with the other base flange.

7. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and being provided adjacent one end of said bowed portion with cooperative long lever-like resilient jaw members adapted to bear on the top and bottom surfaces of one of the rail base flanges when transversely driven thereon, the distance between the flange engaging portions of said members being substantially less when they are free of the flange than the thickness of the engaged portion of the flange, said upper jaw member being provided on its under side with an abutment portion adapted to bear against the upper corner of the rail base flange engaged by said resilient jaw members for limiting transverse movement of the anchor inwardly on said flange, said spring bar adjacent the other end of said bowed portion having a notch and a comparatively short rigid arm, the normal length of the bar being such that said short arm will clear the other base flange during application of the anchor to the rail, said short arm limiting reverse transverse movement of the anchor when in sprung-up and overlying engagement with said other flange.

8. A rail anchor comprising a transversely extending spring bar having in its middle region a downwardly bowed portion and being formed adjacent one end of said bowed portion with a return bend and cooperative upper and lower long lever-like resilient jaw members at the ends of the bend, said jaw members being adapted to bear with strong spring pressure on the top and bottom surfaces of one of the rail base flanges when driven thereon, said return bend on its inner surface adjacent said upper jaw member being curved to provide an abutment adapted to bear with increasing pressure against the upper corner of the flange engaged by said resilient jaw members as the anchor tends to move transversely inwardly on said flange, said spring bar adjacent the other end of said bowed portion having a notch and a comparatively short rigid arm, the normal length of the bar being such that said short arm will clear the other base flange during application of the anchor to the rail, said short arm limiting reverse transverse movement of the anchor when in sprung-up and overlying engagement with said other flange.

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