Dec. 24, 1940. H. G. WARR 2,226,035

RAIL ANCHOR

Filed April 15, 1940

Fig. 1.

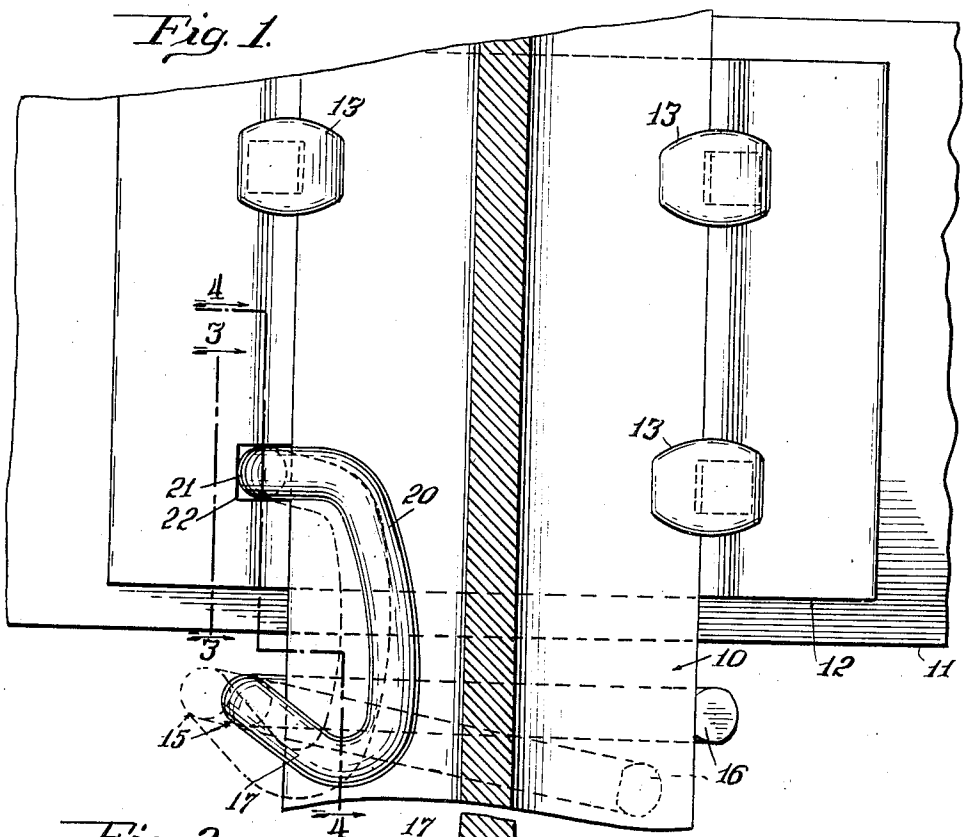


Fig. 2.

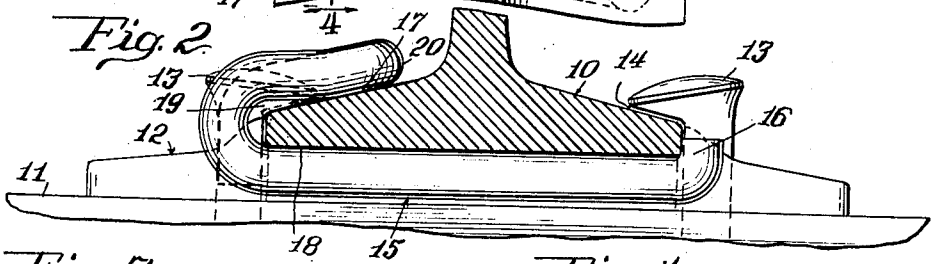


Fig. 3.

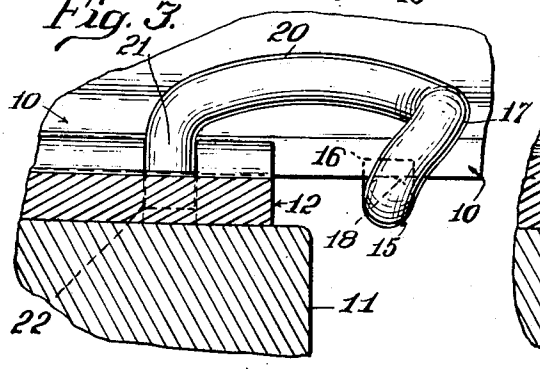
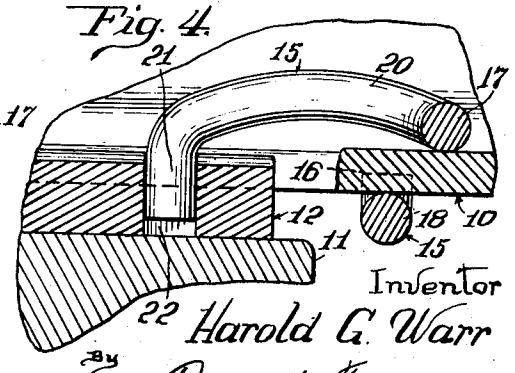


Fig. 4.



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Patented Dec. 24, 1940

2,226,035

UNITED STATES PATENT OFFICE

2,226,035

RAIL ANCHOR

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Application April 15, 1940, Serial No. 329,745

6 Claims. (Cl. 238—330)

This invention relates to certain new and useful improvements in a one-piece rail anchor adapted to grip the base flange of a railroad rail and to interlock with a portion of a rail supporting structure so as to resist creeping movement of the rail in both forward and reverse directions.

A principal object of the invention is to provide an improved one-piece anchor device of the above character adapted to interlock with a tie-plate with capacity for vertical movement relative to the plate and which is so formed as to provide a lower jaw for gripping the bottom surface of a rail base flange and an upper jaw which cooperates with the said tie-plate interlocking means to provide surfaces which bear on the top surface of the rail base flange at opposite sides of the lower jaw; whereby the resilient grip of the jaws on the rail flange serves to clamp the tie-plate engaging member firmly against the rail base flange and thereby resists the vertical pressures encountered in service which would otherwise tend to move the said tie-plate engaging member upwardly relative to the rail base.

Other objects and advantages will appear from the detailed description of the construction and operation of a preferred construction shown in the accompanying drawing.

In the drawing:

Fig. 1 is a plan view of a portion of a railroad rail, the tie-plate and a cross-tie, together with a rail anchor device constructed in accordance with this invention applied to the base flanges of the railroad rail and interlocked with the tie-plate.

Fig. 2 is a sectional view taken transversely through the base portion of the rail and showing the rail anchor device in elevation.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1, showing an end portion of the anchor device in elevation, and

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1 to illustrate the spaced relation of the rail bearing surfaces of the upper and lower jaws of the anchor and also to illustrate the manner in which the tie-plate arm of the anchor device is interlocked with the tie-plate.

The fragmentary portion of a railway track structure, illustrated in the drawing, comprises the base portion 10 of a railway rail, an ordinary wooden cross-tie 11, and a tie-plate 12 interposed between the top surface of the cross-tie 11 and the bottom surface of the rail base 10. The tie-plate 12 may be made in accordance with any of the well known constructions now in general use. For the purpose of illustration, the tie-plate illustrated herein is secured to the cross-tie by ordinary driven spikes 13; the spikes being inserted in suitable openings in the tie-plate and so driven into the cross-tie as to provide a slight clearance 14 between the top surface of the rail base and the bottom surface of the spike head. This manner of fastening the rail in position permits the rail to move a slight distance vertically of the tie-plate, during the normal wave movement of the rail, without disturbing the position of the spikes in the rail supporting structure.

The improved rail anchor device is designated as a whole by the reference numeral 15. It is formed by bending a metal bar into the configuration shown in the drawing to provide the several rail gripping surfaces hereinafter described. The body portion of the anchor device is preferably straight and extends across beneath the rail base 10 at a location spaced outwardly from a side face of the cross-tie 11. A locking member 16 is formed at one end of the body for engagement with a vertical face of the rail base 10 at one side of the rail. The said locking member 16 may be formed by bending, as illustrated herein, or by any of the various well known methods of the prior art. At the other end of said anchor body the bar is bent into hook form to provide upper and lower jaws 17 and 18 for gripping the top and bottom surfaces, respectively, of the rail base at that side of the rail. Preferably, the jaws 17 and 18 are normally spaced apart, when the anchor is free of the rail a distance less than the vertical thickness of the rail base flange engaged, whereby the said jaws are spread apart slightly when the anchor is forced to its applied position. The upper jaw 17 is also preferably formed to provide a clearance 19 between its lower face and the top surface of the rail base adjacent the edge so that the pressure or tension in the said upper jaw 17 will function to hold the locking member 16 in its locking position. The said upper jaw 17 is preferably formed to extend over and engage the top surface of the rail base at a location in advance of the under-rail body portion of the anchor—that is to say, the upper jaw 17 bears on the top surface of the rail base at a greater distance from the rail supporting structure than does the lower jaw 18. An arm 20 is connected to the hook portion of the anchor device, preferably at the extremity of jaw 17, and extends lengthwise of the rail to a position overlying the tie-plate 12. The said arm is formed preferably to bear throughout its length against the top surface of the rail base and is provided at its free end with a downturned por-

tion 21 adapted to be inserted in one of the spike holes 22 of the tie-plate. The downturned end 21 of the anchor device has a pivotal action in the said spike hole 22 during the application of the anchor device to the rail. For this reason the anchor device as a whole is illustrated herein as formed from bar stock of round cross-section. It will be apparent, however, that the device can be made from metal bars of rectangular cross-section if the downturned end 21 is rounded so as to be capable of rotating in the spike hole 22.

The position of the upper jaw, whereby its rail engaging surface extends beyond the rail gripping surface of the lower jaw in a direction away from the rail supporting structure, coacts with the arm 20 to provide rail gripping surfaces on opposite sides of the lower jaw 18. In other words, the said jaw 17, jaw 18 and arm 20 may be considered as a lever in which the bearing surface of the jaw 17 is the fulcrum. The spaced relation of said fulcrum and the lower jaw 18 in a direction lengthwise of the rail is proportioned in relation to the length of the arm 20 so that the resilience of the jaws 17 and 18 will hold the arm 20 firmly against the top surface of the rail base and thereby prevent upward movement of the arm 20 relative to the rail base when the arm is subjected to normal upward pressures, for example, such as may result from the frictional engagement of the downturned end 21 of the arm against a wall of the spike opening 22 during normal vertical movements of the rail. This spaced relation of the jaws 17—18 also serves to relieve the jaws from excessive strains which would otherwise tend to spread the jaws apart vertically when the said arm 20 is subjected to abnormal upward pressures.

In applying the anchor to the rail, the downturned end 21 of the arm 20 is inserted in the spike opening 22 of a tie-plate and the device as a whole is swung about the said downturned portion 21 as an axis to the position indicated in dotted lines in Fig. 1. The curved portion of the hooked end of the anchor may then be struck by a sledge or spike maul to drive the jaw 17 and arm 20 upwardly on the inclined surface of the rail base to effect the desired resilient gripping action. This driving force will also cause the under-rail body portion of the anchor to assume a position at right angles to the length of the rail base. Whereupon the locking member 16 will snap over the lower corner of the rail base and engage the vertical surface thereof to lock the anchor in its applied position. Any creeping force on the rail tending to move it across the tie-plate in either forward or reverse direction is transmitted through the arm 20 to the tie-plate and thence through the rail fastenings 13 to the underlying cross-tie.

While one preferred embodiment of the invention is illustrated in this application it will be obvious to persons familiar with this art that certain structural modifications may be made without departing from the features which characterize this invention. It will be understood, therefore, that the invention contemplates all such changes in structure which come within the scope of the appended claims.

I claim:

1. A two-way rail anchor comprising a body portion for extending across beneath a railroad rail, means at one end of the body for engaging an edge portion of a rail base flange at one side of the rail, a hook portion at the other end of the body for gripping the top and bottom surfaces, respectively, of the rail base flange at that side of the rail, and an arm connected with said hook and formed with a downturned portion adapted for interlocking engagement with a rail supporting element but with capacity for vertical movement relative to said element, the said upper jaw being formed to bear on the rail base at a greater distance from the said downturned end portion of said arm than the distance between the bearing surface of the lower jaw and the said downturned arm, whereby the position of said jaws resists upward movement of said arm relative to the rail base.

2. A two-way rail anchor comprising a body portion for extending across beneath a railroad rail, means at one end of the body for engaging an edge portion of the rail base flange at one side of the rail, a hook portion at the other end of the body for gripping the top and bottom surfaces, respectively, of the rail base flange at the other side of the rail, and an arm overlying the base flange of the rail and cooperating with said upper jaw to provide rail gripping surfaces on opposite sides of the said underrail body portion, whereby the arm is held clamped to the rail by the resilience of said jaws, and means at the end of said arm for interlocking engagement with a rail supporting structure.

3. A two-way rail anchor comprising a body portion for extending across beneath a railroad rail, means at one end of the body for engaging an edge portion of the rail base flange at one side of the rail, a hook portion at the other end of the body for gripping the top and bottom surfaces of the rail base flange at the other side of the rail, and an arm overlying the base flange of the rail and cooperating with said upper jaw to provide rail gripping surfaces at opposite sides of the said under-rail body portion whereby the arm is held clamped to the rail base by the resilience of said jaws, and means comprising a downturned portion at the free end of the arm adapted to be inserted in a spike opening in a tie-plate, whereby the device is interlocked with said tie-plate with capacity for vertical movement relative to the plate.

4. A two-way rail anchor comprising a body portion for extending across beneath a railroad rail, means at one end of the body for engaging an edge portion of the rail base flange at one side of the rail, a hook portion at the other end of the body for gripping the top and bottom surfaces of the rail base flange at the other side of the rail, and an arm connected with said hook portion and formed with a downturned end adapted for interlocking engagement with a rail supporting element but with capacity for vertical movement relative to said element, the said upper jaw being formed to bear on the rail base at a greater distance from the said downturned portion of said arm than the distance between the bearing surface of the lower jaw and the said downturned portion, whereby pressure exerted upwardly on the arm forces the said upper and lower jaws into tighter gripping engagement with the rail.

5. A two-way rail anchor comprising a body portion for extending across beneath the railroad rail, means at one end of the body for engaging an edge portion of the rail base flange at one side of the rail, a hook portion at the other end of the body for gripping the top and bottom surfaces of the rail base flange at the other side of the rail, and an arm connected with said hook and formed with a downturned portion adapted for interlocking engagement with a rail support-

ing element but with capacity for vertical movement relative to said element, the said upper jaw being bent laterally relative to the lower jaw, whereby the said upper jaw grips the rail at a greater distance from the downturned end of said arm than the distance between the bearing surface of the lower jaw and the said downturned arm.

6. A one-piece rail anchor for resisting creeping movements of a railroad rail in either forward or reverse direction, comprising a resilient metal bar having a substantially straight portion for extending across beneath the base portion of a rail, means at one end of said straight portion for engaging over one edge of said rail base to lock the anchor in position, a hook shaped bend providing upper and lower jaws at the other end of said straight portion, and an arm united with the inner end of the upper jaw, extending lengthwise of the rail, and interlocking with a tie plate of a rail supporting structure; the said upper jaw and a portion of said arm being disposed at opposite sides of said lower jaw, whereby upward pressure on the said arm presses the upper and lower jaws into tighter gripping engagement with the upper and lower surfaces of the rail base flange engaged.

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