F. W. COOPER AND H. STEADWORTHY.

RAIL ANCHOR.

APPLICATION FILED DEC. 19, 1919.

1,379,531. Patented May 24, 1921.

2 SHEETS—SHEET 1.

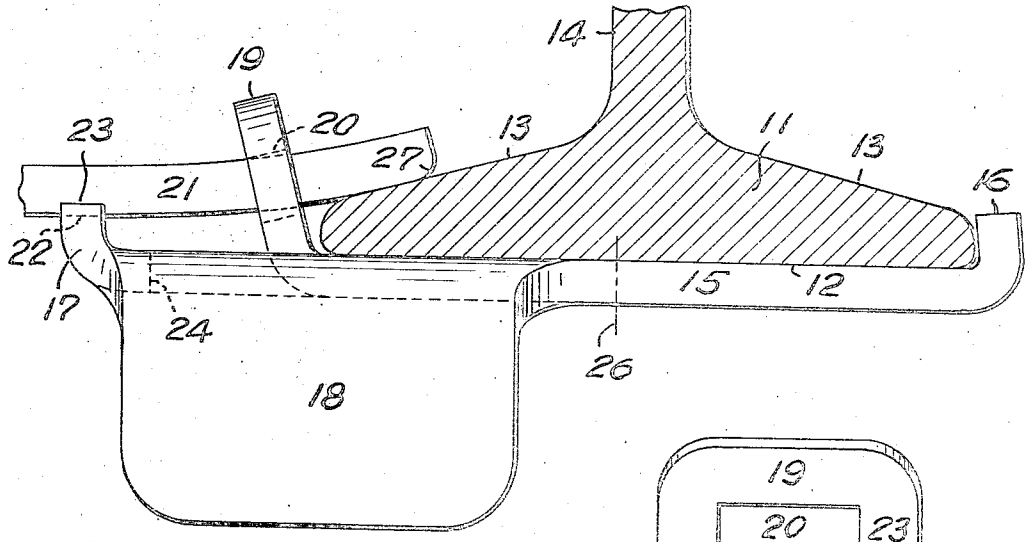


FIG. 1

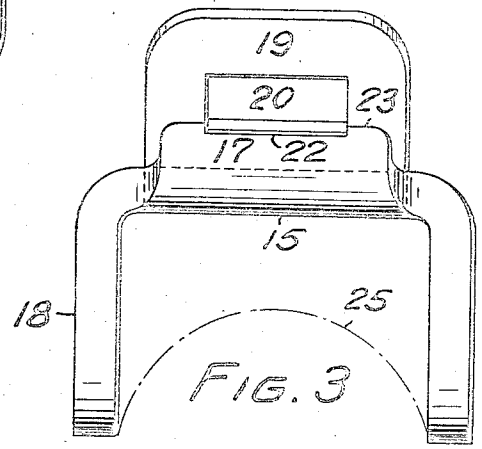


FIG. 3

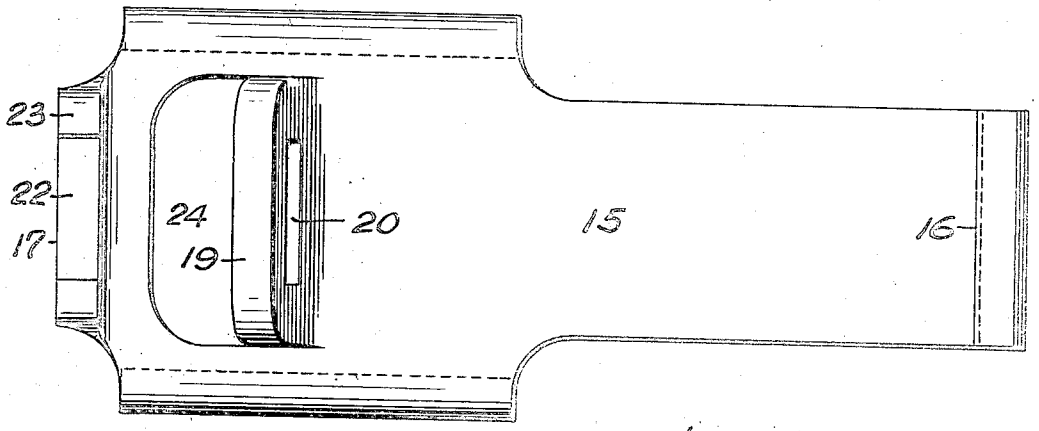


FIG. 2

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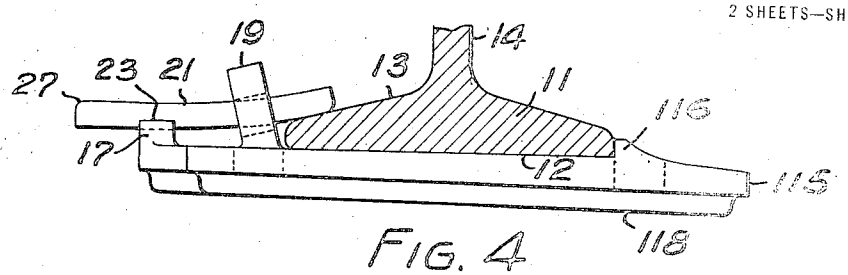


FIG. 4

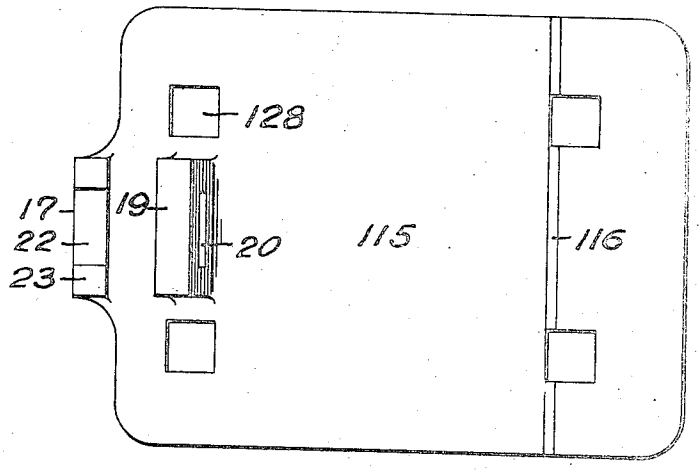


FIG. 5

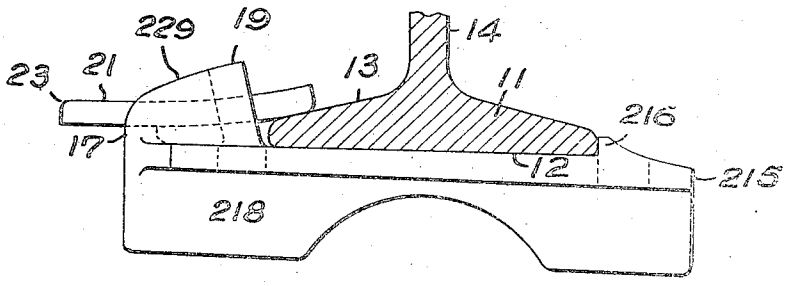


FIG. 6

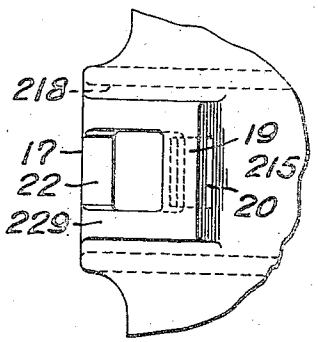


FIG. 7

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UNITED STATES PATENT OFFICE.

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RAIL-ANCHOR.

1,379,531. Specification of Letters Patent. Patented May 24, 1921.

Application filed December 19, 1919. Serial No. 346,100.

To all whom it may concern:

Be it known that we, FRANCIS W. COOPER and HENRY STEADWORTHY, both subjects of the King of Great Britain, and residents of the city of Montreal, in the Province of Quebec and Dominion of Canada, have invented certain new and useful Improvements in Rail-Anchors, of which the following is a full, clear, and exact description.

This invention relates to improvements in rail anchors and the object of the invention is to provide an anchor which may be quickly and easily attached to a rail, and which will not become accidentally detached.

A further object is to provide an anchor which may be applied either from the inside or the outside of the rail and which will resist movement in either of two opposite directions equally well.

A still further object is to provide an anchor which may constitute part of a tie plate or tie spacer.

Another object is to provide an anchor in which the locking is maintained by a resilient member under load, whereby loosening due to vibration is prevented.

The invention consists briefly in providing a body adapted to underlie a rail, said body having an apertured projection adjacent one edge of the rail base and a key seat outside said projection. A key of resilient material passing through the apertured projection and resting upon the seat may be driven over the sloping upper surface of the rail base to secure the body to the rail. The body portion may be either a special member or a member, the existence of which is already necessary, such as a tie plate or tie spacer, with the result that a great economy of material may be effected.

In the drawings which illustrate the invention:—

Figure 1 is a side elevation of an anchor proper constructed according to this invention and illustrated as in position on a rail.

Fig. 2 is a plan view of the anchor body.

Fig. 3 is an end elevation of the anchor body.

Fig. 4 is a view similar to Fig. 1, showing the anchor constructed as a tie plate.

Fig. 5 is a plan view corresponding to Fig. 4.

Fig. 6 is a view similar to Fig. 1, illustrating the device constructed as a tie spacer.

Fig. 7 is a fragmentary plan view corresponding to Fig. 6.

Referring more particularly to the drawings, and especially to Figs. 1 to 3 inclusive, 11 designates the base of a railroad rail having a flat lower surface 12 and an upper surface 13 sloping upwardly from the edges to the web 14.

The anchor comprises a body portion 15 extending transversely of the rail and lying under and close against the base. This body 15 is longer than the width of the rail base and is provided at the ends with upturned portions 16 and 17, the former of which may be bent slightly toward the rail and which is designed to engage the edge of the rail base, so that the latter projection 17 is spaced away from the rail. A pair of downwardly projecting flanges 18 are provided arranged one on each side of the body 15 and extending from substantially the projection 17 for a suitable distance under the rail base. These flanges 18 are the movement resisting shoulders of the anchor and are adapted for engagement with a tie. The body carries an upward projection or fulcrum member 19, which springs upwardly a short distance from the edge of the rail base, and is preferably out of normal to the anchor body. The fulcrum member 19, as shown in the drawings, is at right angles to the upper surface of the rail base but it will be understood that this particular angle is not necessary and that the fulcrum may even be formed normal or perpendicular to the anchor body. As will be clearly seen, the rail base fits easily between the parts 16 and 19 with a small amount of play allowed. The fulcrum member 19 is apertured at 20 for the passage of a key 21. The projection 17 forms a seat for the key and, to guard against dislodgment of the key, may be slightly recessed as at 22 in the key receiving portion, so that the key will be embraced between the upstanding lugs 23.

The anchor is preferably formed of stamped sheet metal, as illustrated, but may be cast or forged. In the stamped construction shown, the fulcrum 19 is struck up or displaced from the body between the flanges 18, thus leaving an opening 24 outside the rail base. When the device is a casting, the resisting shoulders 18 may be supported by any suitable number of transverse ribs 25 extending between them, as indicated in Fig. 3. For certain purposes, the body 15 may if desired be cut short at say the line 26. The key 21 is formed of flat spring steel and may

be provided with a rounded edge 27 at one end on one side and at the opposite end on the opposite side, as shown in Fig. 4, so that the key may be reversed and will present a rounded leading edge which will slide over the rail base without scoring the same. As previously stated, the key is normally straight and is bent to the form shown when driven up on the rail base.

In Figs. 4 and 5 the anchor body, designated 115, takes the form of a tie plate, the rail abutting rib 116 replacing the upturned body end 16 of Fig. 1. The fulcrum member 19, key seat 17 and key 21 are formed as already described. The resisting shoulders 18 of the body are replaced by the usual tie engaging ribs 118 on the bottom of the body which bite into the tie, and also by spikes which will pass through apertures 128 and into the tie in the usual manner.

In the modification shown in Figs. 6 and 7, the anchor body takes the form of a tie spacer 215, the part 16 being replaced by the rail abutment 216 and the resisting shoulders 18 by the specially shaped resisting shoulders or flanges 218, which extend between and against the ties of a bridge or the like. In this particular form, the fulcrum member 19 and key seat 17 are illustrated as connected by ribs 229, which support the fulcrum member, the key seat and the body between the two in addition to the support furnished by the flanges 218.

From the foregoing description, it will be seen that the invention may be arranged in a variety of ways to meet a variety of requirements without in the least modifying the principle of construction. An anchor proper formed according to this invention is compact, durable, efficient, inexpensive and easily applied and removed. In construction where tie plates or tie spacers are necessary as well as rail anchors, the two may be combined in one, thus effecting great economy of both capital and operating expense.

The operation of the device is extremely simple. The anchor in any of its forms comprises only two pieces. The body is slipped under the rail and the projection 16 or its equivalent in the other forms engaged against the edge of the rail base. The key is inserted and driven over the sloping upper surface of the rail base, which transforms the simple straight key in effect into a wedge and tightly clamps the anchor against the lower surface of the rail. When properly driven, the key will be slightly bent, as shown in the drawings, and will be fulcrumed in the part 19. The fulcrum member is preferably inclined, as shown, for a particular reason, namely, that in driving the key there is a tendency to swing the fulcrum member toward the rail, which swing raises the upper edge of the aperture 20 against which the key bears and tends to loosen the key during driving. If the key has any tendency to back down the slope of the rail base, its frictional engagement with the fulcrum will tend to carry the fulcrum with it and thus swing the bearing line down, producing a tightening of the grip. If the fulcrum 19 were perpendicular at the commencement, it is obvious that it would tend to tighten during driving of the key and to loosen the key upon any tendency of the key to back out. It therefore follows that the best results are obtained when the angle between the upper surface of the rail base and the fulcrum member is 90° or more. The above statement applies only when the thickness of rail base, thickness of key and height of key seat are in the proper relation to bring the bearing line between the key and the fulcrum at the upper outer edge of the fulcrum aperture. If the key seat is too low, the key too thick or the rail base thicker than the anchor was designed for, the bearing may be transposed to the upper inner edge of the aperture, with the result that the operation will not necessarily be as described. The anchor proper is in direct compression between the rail and the ballast, so that pounding on frozen ballast will not have any loosening or dislodging effect. The anchor presents plates 18 edgewise to the direction of drainage, so that drainage of the track is not interfered with in any way. The key being arranged transversely of the rail is not subject to dislodgment by accidental blows from objects moving along the track. The location of the key above the rail base and transversely thereof renders it exceedingly easy to drive and also removes all possibility of it becoming loosened by contact with the ballast. The key being driven transversely of and toward the rail, its tip end is protected against blows in the driving out direction by the web and head of the rail.

Having thus described our invention, what we claim is;—

1. A device of the class described comprising a body adapted to engage the under surface of a rail base, a fulcrum member carried by the body adjacent the rail edge, a key seat carried by the body above the plane thereof, and a key passing through said fulcrum and adapted to be supported at one end on the upper surface of the rail base and at the opposite end on the key seat.

2. A device of the class described comprising a body adapted to engage the under surface of a rail base, a fulcrum member carried by the body adjacent the rail edge and disposed at an angle of not less than 90° to the upper surface of the rail base, and a key passing through said fulcrum and adapted to be supported at one end on the upper surface of the rail base and at the opposite end on the body.

3. A device of the character described comprising a body adapted to engage the under surface of a rail base, a fulcrum member carried by the body adjacent the rail edge and a key passing through said fulcrum and adapted to be supported at one end on the upper surface of the rail base, and at the opposite end on the body and on the side of the fulcrum remote from the rail base, the relation between the points of support on the rail and body being such that the key normally occupies a position out of perpendicular with respect to the fulcrum.

4. A device of the character described comprising a body adapted to engage the under surface of a rail base, a fulcrum member carried by the body adjacent the rail edge, and a key passing through said fulcrum and adapted to be supported at one end on the upper surface of the rail base, and at the opposite end on the body, the arrangement being such that the angle above the key between the key and that side of the fulcrum adjacent the rail is greater than 90°.

5. A device of the character described comprising a body adapted to engage the under surface of a rail base, a fulcrum member carried by the body adjacent the rail edge, and a key passing through said fulcrum and adapted to be supported at one end on the upper surface of the rail base and at the opposite end on the body, the said fulcrum being disposed in such relation to the key that fulcrum oscillation toward the rail induced by driving of the key will raise the fulcrum point above the key, and fulcrum oscillation induced by key withdrawal will swing the fulcrum point downwardly upon the key.

6. In a device of the class described, a body adapted to engage the lower surface of a rail base, an upward projection at one end thereof adapted to engage one edge of the rail base, an upward projection at the opposite end spaced from the opposite edge of the rail base, an apertured member projecting upwardly from the body adjacent the second edge of the rail base, and a key passing through said apertured member and adapted to rest toward its ends upon the upper surface of the rail base and upon said second projection.

7. A device according to claim 6, in which the apertured member lies in a plane approximately at 90° to the inclined plane of the upper surface of a rail base.

8. In combination with a device according to claim 6, upwardly projecting lugs at the ends of said second projection adapted to hold the key against lateral movement on said projection.

9. A device according to claim 1, in which the key is resilient and adapted to be flexed between its points of support on the rail base, fulcrum and body.

10. In a device of the character described, a body adapted to underlie a rail base, a fulcrum member carried by the body and movable relatively thereto, and a key passing through said fulcrum member and adapted to be tensioned between said body, fulcrum and rail base, the fulcrum being movable by the key in a direction to relieve key tension during driving in the key and to increase key tension during reverse movement of the key.

In witness whereof, we have hereunto set our hands.

FRANCIS W. COOPER.
HENRY STEADWORTHY.