Sept. 15, 1959 J. L. DEVANEY, JR 2,904,256

ADJUSTABLE RAIL BRACE

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Fig:1.

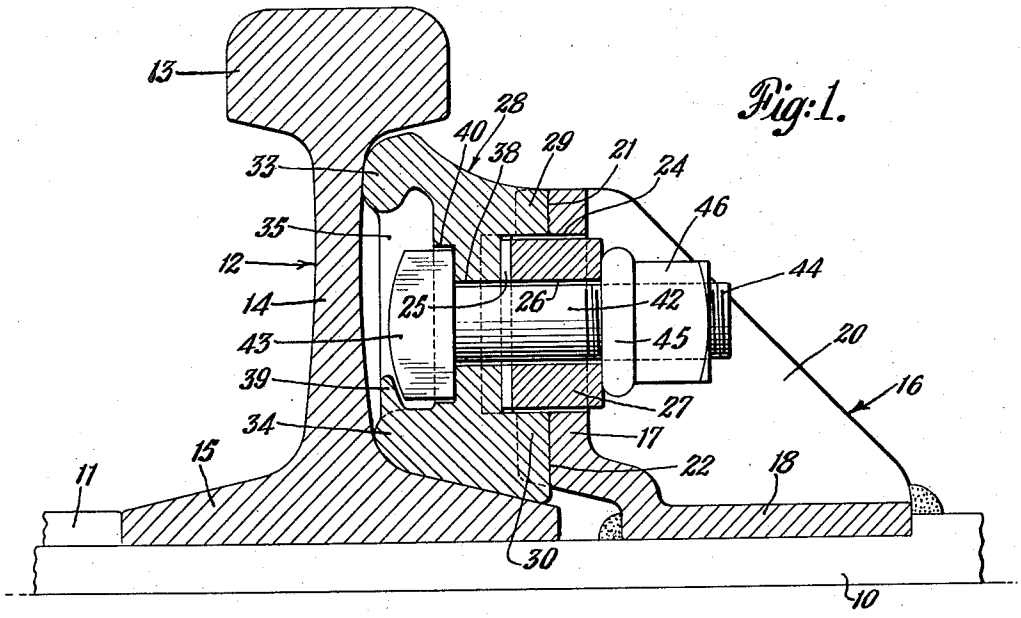

Fig:2.

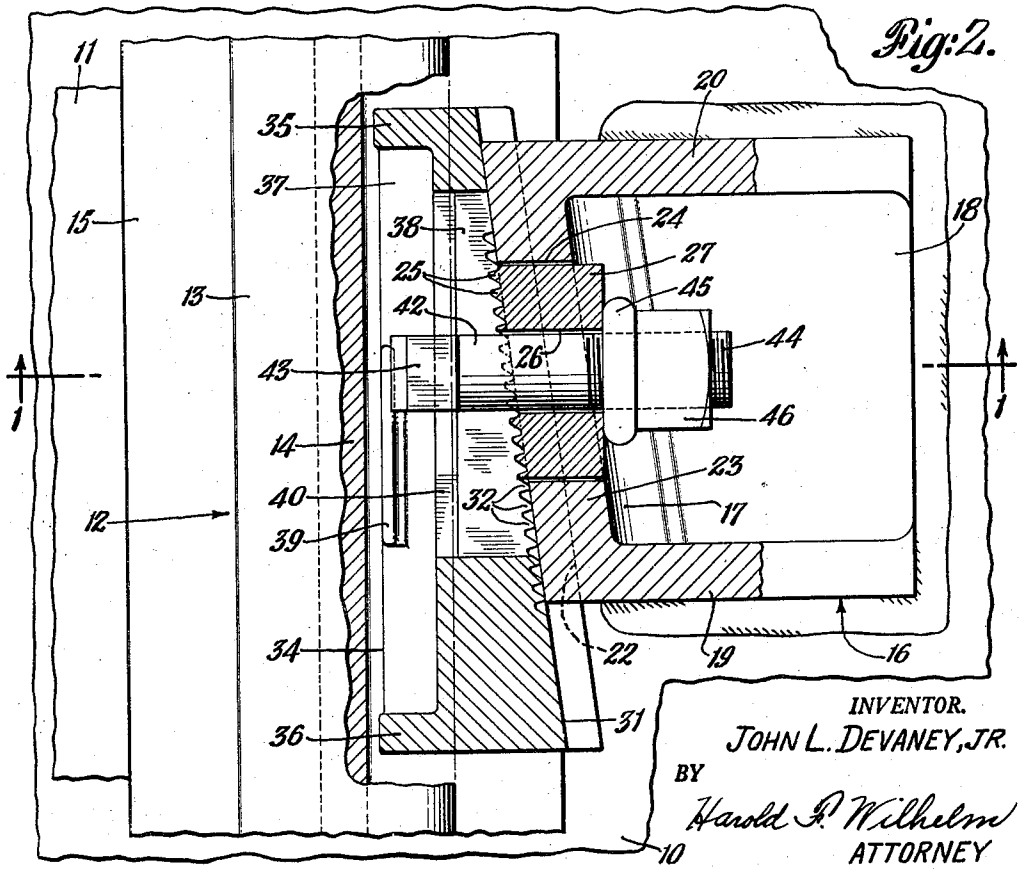

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Fig. 3.

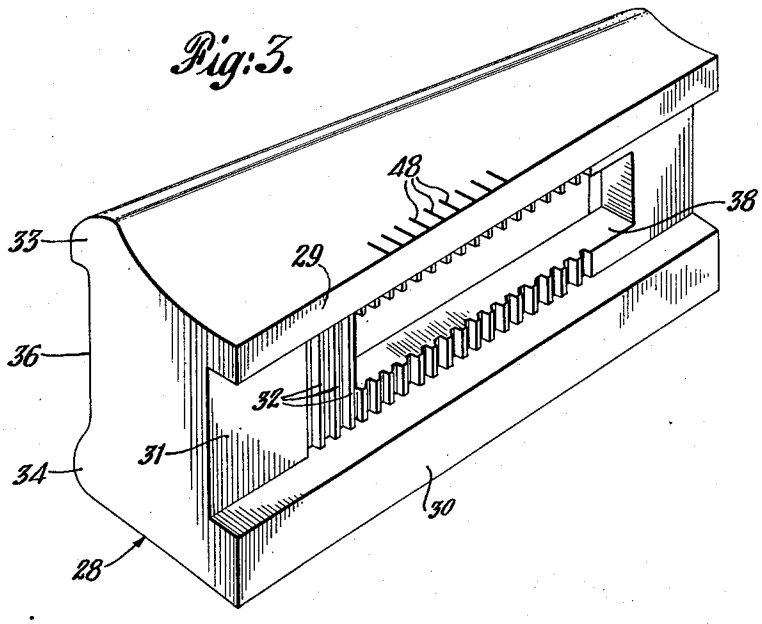


Fig. 5.

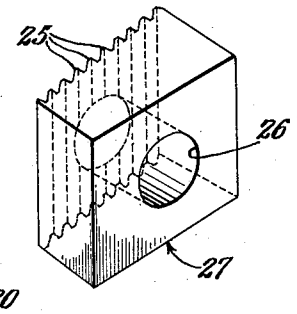
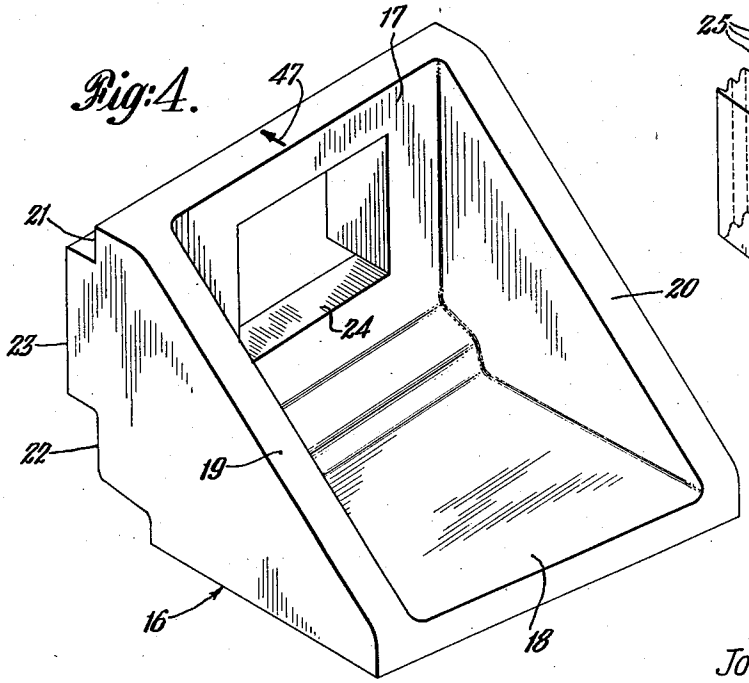


Fig. 4.



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ADJUSTABLE RAIL BRACE

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Application December 15, 1953, Serial No. 398,292

9 Claims. (Cl. 238—292)

The present invention relates to adjustable rail braces of the type shown in Mock Patent No. 1,694,136, in which the adjusting wedge contacts the rail.

The Mock construction has given quite satisfactory service over the years but it is open to one objection. Longitudinal movement or creeping of the rail in the direction of tightening the assembly often actually drags the adjustable wedge along with the rail and tightens the assembly to an undesired extent. This has certain disadvantages; for example, the opposite edge of the rail base often becomes worn, or the tie plate riser becomes upset. When these things occur, the rail brace bolt loosens and, frequently, track people will tighten the nut, with the result that the cycle is repeated when the rail again creeps in the same direction.

An object of the present invention is to provide an adjustable rail brace of the general type represented by the Mock patent which will not have the above-mentioned disadvantages; and which, on the other hand, will have definite advantages of its own as regards manufacture, assembly and service.

Other objects will be apparent from the following description and claims taken with the accompanying drawings which represent one embodiment of the invention.

In the drawings, Fig. 1 is a vertical section through the rail brace of the invention, taken on the line 1—1 of Fig. 2;

Fig. 2 is a plan view, partly in section, of the rail brace assembly;

Fig. 3 is a perspective of the adjustable rail contacting wedge member;

Fig. 4 is a perspective of the stationary backer, and

Fig. 5 is a perspective of the washer block or pawl.

In the following description specific terms will be used for convenience of explanation, but in the claims these terms should be given a meaning as broad as the prior art will permit.

Referring now to the drawings, the ordinary switch plate or tie plate is represented by 10. This plate may have a riser 11 which may be integral with the plate or suitably welded or riveted thereto. The conventional T-head rail 12 has the usual head 13, web 14 and base 15. The base 15 abuts riser 11.

The adjustable rail brace comprises a stationary wedge element or backer 16 (see also Fig. 4) having a base wall 18 suitably welded or otherwise secured to the tie plate 10, as indicated. The backer 16 has an overhanging upstanding wall 17 with gussets or end webs 19 and 20 connecting the upstanding and base walls. The upstanding wall 17 has upper and lower wedge surfaces 21 and 22 with a projecting flange or key 23 therebetween. A hole 24 passes through the wall 17 for the reception of pawl block 27.

Referring to Fig. 5, pawl block 27 is of generally wedged or tapered construction, as shown more particularly in Fig. 2. It has an opening 26 passing therethrough, and pawl teeth 25. The surface having the teeth 25 follows the taper of the wedge surfaces of the brace. The back surface is generally parallel to the direction of the rail.

Referring now to Fig. 3, the adjustable wedge element

28 has upper and lower ribs 29 and 30 having wedge surfaces which cooperate with the backer wedge surfaces 21 and 22. Wedge element 28 has a keyway 31 in which are ratchet teeth 32 which cooperate with the pawl teeth 25.

Adjustable wedge member 28 has upper and lower flanges or ribs 33, 34. Rib 34 engages the lower fillet of the rail 12, and the lower surface of the wedge member 28 engages the base flange 15 of the rail, to firmly hold the rail down and in lateral position against riser 11. Upper rib 33 may engage the rail web 14 near the upper fillet.

Adjustable wedge member 28 has end walls 35 and 36 forming a recess 37 in the wedge member. A longitudinal slot 38 passes through the wedge member. Slot 38 has an enlarged shoulder 40 providing a recess for T-bolt head 43. At the lower part of recess 37 is a retaining flange or ridge 39 cooperating with the bolt head, as discussed below.

The brace bolt 42 clamps the assembly together. It has a T-head 43 and a threaded shank 44. A conventional lock washer 45 and a nut 46 are disposed on the shank 44.

To help in adjusting the rail brace, the stationary backer 16 may have a match mark 47 (Fig. 4). The adjustable wedge member 28 (Fig. 3) may have a series of match marks 48 corresponding in pitch to the pitch of the teeth 32. These marks may be indented in the metal.

The device is assembled as follows. See also Figs. 1 and 2. The backer 16 is welded to the switch plate 10, as shown. The assembled plate and backer is then installed in the track with the plate on the tie (not shown) underneath the stock rail 12, with the riser 11 against the inside edge of the rail base 15.

The adjustable wedge 28 is then placed between the backer 16 and the rail at a proper position with rib 35 on adjustable wedge 28 about even with web 20 of backer 16. The T-head bolt 42 can then be inserted with the T-head 43 in horizontal position and the T-head 43 rotated to a vertical position (shown in Figs. 1 and 2). The bolt is then pulled by hand toward the backer 16. Upper and lower surfaces of shoulder recess 40 act as head locks for the T-head, preventing the bolt from turning after it is pulled toward the backer.

The wedge 28 is then driven, say, by light blows of a hammer to a tight fit between rail and backer. The forward faces of the teeth have a more gradual slope than the rear faces to facilitate ratchet-and-pawl action. The ridge 39 prevents the bolt from moving toward the rail. The toothed block 27 is then inserted in opening 24 around the bolt, and spring washer 45 and nut 46 threaded into position. The nut 46 is tightened to secure the assembly.

The match marks 47 and 48 will show when the teeth 32 of the wedge are engaged by those of the toothed block 27. A slight over-driving or loosening of the wedge 28 will not adversely affect the assembly since the teeth have a small pitch. For example, the teeth may have such pitch that movement of the wedge element 28 lengthwise of the rail, enough to correspond to one tooth or marker 48, causes the rail-contacting surface to move 1/32 inch toward the rail.

Before inserting the pawl block 27, one of the match marks 48 on adjustable wedge 28 should be in alignment with match mark 47 on backer 16. This can be done by forcing the adjustable wedge 28 in further, and if this is not possible, by withdrawing it slightly; maximum looseness of the brace can be only 1/32 inch.

The nature of the fits between the several parts of the rail brace will be apparent to those skilled in the art. Generally speaking, it is desired to have the upper and

lower wedge surfaces **21**, **29** and **22**, **30** take the wedging pressure, with some clearance between the vertical surfaces of the key member **23** and keyway **31**. The fit between the upper and lower horizontal surfaces on the key **23** and keyway **31** may be reasonably close to insure that the adjustable wedge member **28** holds down the rail.

The lower shelf of keyway **31** and the lower shoulder of key **23** may have a machined fit to prevent tilting the rail in over-tightening the assembly. While the illustrated construction is preferred, in some cases the upper rib **29** of the adjustable wedge **28** and upper shoulder of key **23** may be omitted.

The upper and lower surfaces of the pawl block **27** need not be too close to the corresponding surfaces of the opening **24**. However, the vertical end surfaces of the pawl block **27** should be parallel to, and fit as closely as possible, the vertical end walls of opening **24** without machining the surfaces, thus to minimize movement of the adjustable wedge **28** and pawl block **27** lengthwise of the rail.

Thus an adjustable rail brace is provided which overcomes the objections of prior braces, first mentioned. Due to the positive interblock between the rail-contacting wedge member and the stationary backer, the rail-contacting wedge member cannot creep with the rail. The brace is simple to make and install and reliable in use.

What is claimed is:

1. In an adjustable rail brace, a backer adapted to be secured to a tie plate or the like, said backer having a wedge surface and a projecting key member, said backer having an opening therethrough, an adjustable rail-contacting wedge member adapted to engage the rail, said wedge member having a wedge surface and a keyway cooperating with said backer wedge surface and backer key member respectively, said adjustable wedge member having locking teeth, a block in said backer opening, said block having locking teeth interengaging said first locking teeth, and a fastening member passing through said block and said adjustable wedge member to clamp the brace in adjusted position.

2. In an adjustable rail brace, a backer comprising a base adapted to be secured to a tie plate or the like, said backer having an upstanding wall, end webs connecting said wall and base, said wall having upper and lower wedge surfaces with a projecting guide key therebetween, said wall having an opening therethrough, a rail-contacting wedge member having an upstanding wall and having upper and lower longitudinal ribs adapted to engage the rail, upstanding end walls connecting said ribs forming a recess, said upstanding wall having a longitudinal slot and locking teeth, said upstanding wall having projecting longitudinal upper and lower ribs with wedge surfaces engaging corresponding wedge surfaces on said backer above and below said guide key, a block in said backer wall opening, said block having locking teeth interengaging said first locking teeth and having a bolt opening, a bolt whose shank is disposed in said wedge slot and in said block opening, the head of said bolt being disposed in said wedge recess, a spring washer and a nut on said shank adjacent said block to clamp the brace in adjusted position.

3. In an adjustable rail brace, a first wedge element having an upstanding surface with locking teeth thereon and having a wedge surface, a second wedge element having a wedge surface engaging said first wedge surface, a lock member located on said second wedge element and having a locking part engageable with said locking teeth, bolt means engaging said lock member and said first wedge element for tightly engaging said locking part and said locking teeth, one of said wedge elements being longitudinally fixed with respect to a tie plate or the like, the other wedge element contacting the rail and being longitudinally movable lengthwise of the rail.

4. An adjustable rail brace according to claim 3 in which said lock member is in the form of a block having teeth, said second wedge element having an opening in which said block is located, said first wedge element having a slot extending lengthwise of the rail, said block having an opening, said bolt means comprising a bolt disposed in said slot and in said opening, a spring washer and a nut on the end of said bolt.

5. In an adjustable rail brace, a stationary wedge element secured to a tie plate or the like, said wedge element having a wedge surface, an adjustable rail-contacting wedge element having a wedge surface engaging said stationary wedge surface, said adjustable wedge element being longitudinally movable lengthwise of the rail, said adjustable element having locking projections, a lock member located on said stationary wedge element, said lock member having a projection interengageable with said first locking projections, bolt means engaging said lock member and said adjustable wedge element for clamping the interengaging locking projections together in adjusted position, whereby when the bolt means are tightened, the interlocking projections prevent tightening movement of the adjustable wedge element due to creeping of the rail.

6. An adjustable rail brace according to claim 5 in which said lock member comprises a block having a plurality of locking projections, said stationary wedge element having an opening in which said block is adjustably located, said adjustable element having a slot extending lengthwise of the rail, said block having an opening, said bolt means comprising a bolt disposed in said slot and opening, a spring washer and a nut on the end of said bolt adjacent said block, said bolt being generally horizontal and extending transversely of the rail.

7. In an adjustable rail brace, a first brace element, a second brace element, one of said brace elements being movable lengthwise of the rail, the other brace element being adapted to be secured to a tie plate or the like and to be fixedly positioned lengthwise of the rail, wedge means cooperating with said brace elements to tighten the brace, said brace elements carrying locking projections, and a bolt element passing through said brace elements, transversely of the faces thereof carrying said locking projections, to clamp the interlocking projections together.

8. In an adjustable rail brace, a first brace element, a second brace element, one of said brace elements being movable lengthwise of the rail, the other brace element being adapted to be secured to a tie plate or the like and to be fixedly positioned lengthwise of the rail; wedge means cooperating with said first and second brace elements to cause tightening of the brace when said movable brace element is moved lengthwise of the rail, said first brace element having locking teeth, a lock member located on said second brace element and having a locking part engaging said locking teeth, a generally horizontal bolt member having a shank extending transversely of the rail and engaging said first brace element and said lock member to clamp said last mentioned parts together, whereby positively to prevent movement of said movable brace element when said bolt member is tightened.

9. In the adjustable rail brace of claim 8, said lock member comprising a block having teeth engageable with said locking teeth, said second brace element having an opening in which said block is located, said first wedge element having a slot extending lengthwise of the rail through which said shank extends.

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