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(54) Railtrack Anchorage.

(57) An adjustable rail track anchorage comprises a base (10) rigidly secured by welding to a metal sole plate (12) that also supports the rail track (13), and an adjustable anchorage shoe (23) located partly inside an arch or bridge (40,41). The anchorage shoe can be adjusted towards and away from the track rail by means of a rotary eccentric adjusting cam (19) or a transverse inclined cam shoulder (61). The adjustable shoe is held down in position by means of a wedge (43,62) inserted between the shoe and the bridge.

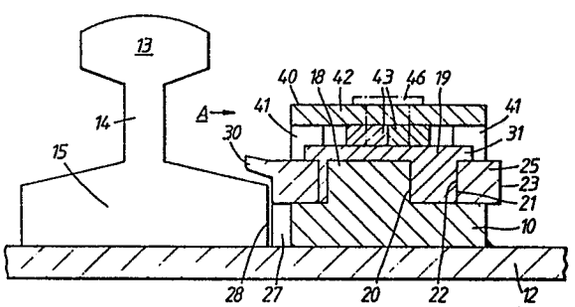

FIG. 1.

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Description

"Railtrack Anchorage"

This invention relates to anchorages for railtracks, more particularly heavy duty tracks as used for supporting extremely heavy moving loads such as "Goliath" cranes. The invention may however be applied to certain railtracks designed for other purposes.

One existing form of adjustable anchorage includes a rotary eccentric cam mounted on a stationary bolt which may be welded to the stationary sole plate on which the track rail is supported. The cam engages a laterally movable shoe which in turn engages part of the track rail, such that by turning the cam the lateral abutment for the rail is altered in position. After the cam has been adjusted a nut on the bolt is tightened down to fix the cam in position. A problem arising in this design is that the heavy lateral forces generated by the movement of large loads along the rail may apply excessive lateral stresses to the bolt. In addition the bolt may also be required to absorb vertical lifting forces generated by rise and fall of the rail as a load moves lengthwise. Accordingly it is an object of the invention to provide an improved anchorage which will reduce problems arising from over-stressing of the bolts.

The invention is based on the concept of transferring the forces from the bolt onto other components, and broadly stated the invention consists in an adjustable anchorage for a railtrack, comprising a stationary base secured to a mounting surface and having a rigid abutment surface of circular profile in plan, an adjustable anchorage shoe having a locating surface to engage the base flange of the rail, directly or indirectly, and a circular bearing surface, and a rotary adjusting cam having an inner circular surface to engage the circular profile of the rigid abutment and an outer eccentric circular surface to engage the circular bearing surface on the adjustable shoe.

According to a preferred feature of the invention the anchorage includes a clamp for fixing the adjustment cam in any selected position, the clamp including a bridge which spans across and above the cam. The clamp may include a wedge, tightening bolt, or the equivalent engaging the bridge and bearing on the cam.

The invention may be performed in various ways and one specific embodiment with some possible modifications will now be described by way of example with reference to the accompanying drawings, in which:-

Figure 1 is an end elevation partly in section of an anchorage according to the invention in position against a track rail,

Figure 2 is a plan view,

Figure 3 is a lateral view of the anchorage seen in the direction of arrow A in Figure 1,

Figure 4 is a diagrammatic sectional end elevation illustrating an alternative form of anchorage,

Figure 5 is a plan view of another embodiment,

Figure 6 is an end elevation and Figure 7 is a side elevation thereof,

Figure 8 is a plan view of another example,

Figure 9 is an end view, and Figure 10 is a side view thereof,

Figure 11 is a plan view of another example,

Figure 12 is an end view thereof,

Figure 13 is a plan view of yet another example, and

Figure 14 is an end view thereof.

In the first example the anchorage comprises a base casting 10 securely welded at 11 around three sides to an underlying metal sole plate 12 which also supports the track rail 13. The track rail has a vertical web 14 and a bottom flange 15. The anchorage base 10 has an integral rigid upstanding circular boss 18 and over this is loosely mounted a circular eccentric adjusting cam 19 having a circular internal profile 20 engaging the boss 18 and a circular external profile 21 which is a loose fit in a circular socket 22 formed in an adjustable anchorage shoe 23. This shoe has a generally flat plate portion 25 lying on the upper face of the base 10 and a pair of legs or feet 27 which rest on the sole plate 12 and engage the adjacent edge 28 of the bottom flange 15 of the rail. The shoe 23 also has a projecting nose 30 which overhangs the bottom rail flange 15 and is preferably spaced from the flange to give clearance for the rail to lift to a limited extent. A spring (not illustrated) may be incorporated below this nose.

The adjusting cam 19 is provided with means for rotating the cam about the vertical centreline of the boss 18 to adjust the shoe laterally as required. It is also important that the overall height of the anchorage should be at a minimum to avoid the anchorage being fouled by the driving gear of a crane or other machine moving along the track rail. In one convenient form the cam has a shallow flange 31 of hexagonal profile lying above the top face of the shoe 23 so that a large spanner can be used to turn the cam. Alternatively the cam may be sunk below the level of the top face of the shoe, and formed with a pair of sockets or a square recess in its upper face to allow it to be turned by a special tool without the need for any part projecting above the top face of the shoe.

To fasten or clamp the shoe after adjustment it is desirable to avoid using any form of bolt extending upwards through or from the boss 18. Any bolt in this situation tends to reduce the strength of the anchorage and to increase its overall vertical height, and if the bolt accepts any stress there is a risk of failure. In this particular example the anchorage includes a bridge 40 having two upstanding pillars 41 on opposite sides, and a horizontal span 42 bridging across between the pillars over the cam. A pair of wedges 43 can be driven in opposite directions into the gap between the span of the bridge and the upper face of the cam, and the wedges may have transverse grooves or serrations to allow a locking wedge to be driven in at right angles. Alternatively a

clamping bolt 46 may be provided, in a screw-thread aperture in the bridge span, to bear down on the upper surface of the cam and prevent movement after the final adjustment.

In the alternative example illustrated in Figure 4 the eccentric cam after adjustment is fixed in position by means of a pin 49 driven through an aperture 47 in the base casting. The pin thus locates the cam rotationally and if the cam is provided with a top flange, as shown at 47, the pin also acts to hold the shoe down against the track rail. If a "roll pin" is used as a pin the resilient expansion of the roll pin will hold it firmly in position. To provide for different rotational positions of the cam a series of angularly spaced apertures or recesses are formed around its periphery.

It will be seen that this anchorage provides large rigid abutment surfaces through which the loads from the track rail are transmitted to the sole plate and avoids the weakening associated with the use of a clamping bolt extended upwards from the sole plate through the adjusting cam.

In the example described the circular cam fits over a rigid upstanding boss, but the invention can be applied to an arrangement in which the cam has a rigid boss fitting in a recess in the base plate. In the example of Figures 5, 6 and 7 the bottom flange 15 of the track rail rests on the underlying sole plate 12, with an intervening pad 9, and is located by an anchorage comprising a base 50 which is welded to the sole plate, and an anchorage clip 51 which has a nose 52 overlying the track rail with a clearance, and a vertical abutment flange 53 which forms a locating shoulder to bear against the edge of the rail flange 15. The anchorage clip 51 is generally rectangular in plan as seen in Figure 5 and is movable in the direction of the arrow X towards and away from the track rail through an opening or tunnel 56 formed by an arch 57 formed integral with the base 50. On its underside this anchorage clip has a downward projection 58 which fits into a depression 59 in the underside of the tunnel and the abutting transverse shoulders 60 are inclined, as illustrated at 61 in Figure 5, so that the final position of the clip in the direction X can be adjusted by movement of the clip laterally in the direction Y.

The anchorage clip 51 can be introduced into position from the right in Figure 6 and then lowered to engage the cam shoulders 60 after which the clip is located by a transverse wedge 62, which is inserted laterally into the clearance gap above the anchorage clip, the wedge being restrained by a shallow rib 63 on its upper surface. If required further wedges 64 may be inserted into the same tunnel along the flanks of the anchorage clip 51 to hold it in position.

In the example of Figures 8,9 and 10 the anchorage again comprises an anchorage clip 71 positioned within a tunnel opening 72 in an anchorage block 73 which is welded to the sole plate 12. In this case the anchorage clip 71 is formed with an inclined transverse flange 74 on its underside fitting within a corresponding inclined transverse groove 75 in the anchorage block such that lateral movements of the clip in the direction Y likewise cause adjustment of its position in the direction X. In this example the anchorage clip is held in position by a spring steel U-clip 76 whose lower limb 77 engages between the upper surface of the clip 71 and the top part 78 of the tunnel arch.

In the example of Figures 11 and 12 the adjustable anchorage clip 80 fits over a fixed anchorage base 81, which is welded to the sole plate 12 and its position in the direction of arrow X is adjustable by means of an eccentric rotary cam 82, which has a circular boss 83 fitting in a socket 84 in the anchorage clip and a further eccentric socket 85 fitting over a rigid spigot 86 integral with the base 81. Thus rotational movements of the cam by applying torque to its hexagonal head cause movement of the anchorage clip in the direction or arrow X. The rotary cam is held in position by a separate spring steel clip 88, which has a lower limb 89 engaging below part of the base 81 and an upper limb 90 which fits over the top of the rotary cam and has a small rounded lug 91, which is a snap-fit into a corresponding dimple in the top of the cam.

The example of Figures 13 and 14 is in many respects similar to that of Figures 5 to 7 and like parts are indicated by the same reference numerals with an added suffix. In this case the position of the anchorage clip 51′ in the direction of arrow X is determined by a rotary adjustable eccentric cam 93 similar to the rotary cam of the example in Figures 11 and 12. This has a circular boss 94 on its underside fitting in a circular socket 95 in the clip 51′ and an eccentric circular socket 96 fitting over a spigot 97 formed rigid with the base 50′ of the anchorage.

In all these embodiments it will be seen that the anchorage clip is adjustable by an arrangement which causes lateral loads from the rail track to be transferred directly to the welded base of the anchorage block. This eliminates the risk of failure which arises if the loads are transmitted to a positioning bolt. Moreover, the arched tunnel construction provides a robust structure for holding down the anchorage clip without the need for anchorage bolts and avoiding excess height which is a disadvantage with several existing types of operating cranes.

Claims

1. An adjustable anchorage for a railtrack, comprising a stationary base secured to a mounting surface and having a rigid abutment surface of circular profile in plan, an adjustable anchorage shoe having a locating surface to engage the base flange of the rail, directly or indirectly, and a circular bearing surface, and a rotary adjusting cam having an inner circular surface to engage the circular profile of the rigid abutment and an outer eccentric circular surface to engage the circular bearing surface on the adjustable shoe.

2. An adjustable anchorage according to Claim 1, including a clamp for fixing the adjustment cam in any selected position, the

clamp including a bridge which spans across and above the cam.

3. An adjustable anchorage according to Claim 2, in which the clamp includes a wedge, tightening bolt, or the equivalent engaging the bridge and bearing on the cam.

4. An adjustable anchorage for a railtrack comprising a base designed to be rigidly secured by welding or otherwise to an underlying sole plate, an adjustable anchorage shoe having a locating surface to engage the base flange of the rail, an adjusting cam to engage both the base member and the anchorage shoe, so as to locate the shoe adjustably, means for transferring lateral thrust from the rail via the shoe to the base and means for holding the shoe down onto the base.

5. An adjustable anchorage according to Claim 4, in which a part of the base, or attached thereto, extends in an arch over the shoe.

6. An adjustable anchorage according to Claim 5, including a wedge or filler element located between the shoe and the overlying arch.

7. An adjustable anchorage according to Claims 4, 5 or 6,in which the cam is tapered and is moveable in a linear direction.

8. An adjustable anchorage according to Claims 4, 5, 6 and 7, in which the cam is a tapered wedge and is arranged to be moved relative to the base in a direction generally parallel with the length of the rail.

9. An adjustable anchorage as in any of Claims 4 to 8, in which the shoe and the base have co-operating inclined abutment surfaces, inclined in relation to the length of the rail, such that relative movement of the shoe in a direction parallel to the length of the rail causes the shoe to move towards and away from the rail.

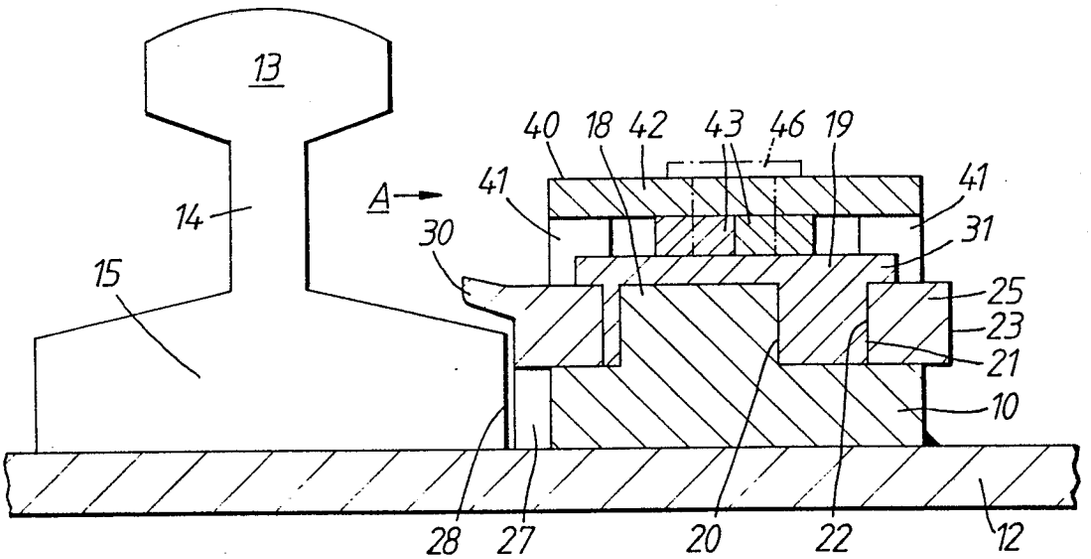
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FIG. 1.

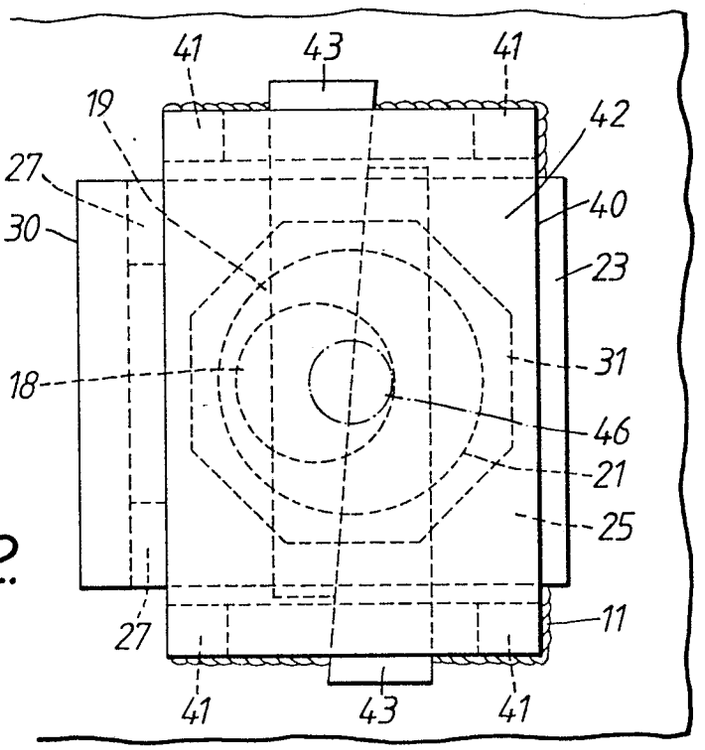
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FIG. 2.

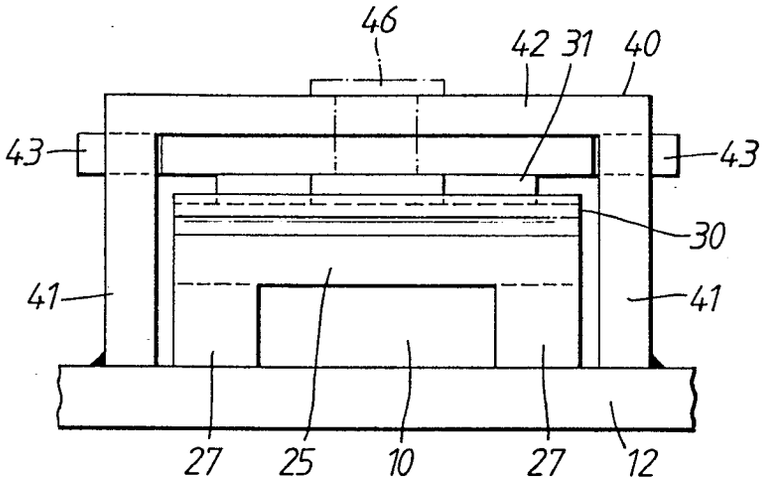

FIG. 3.

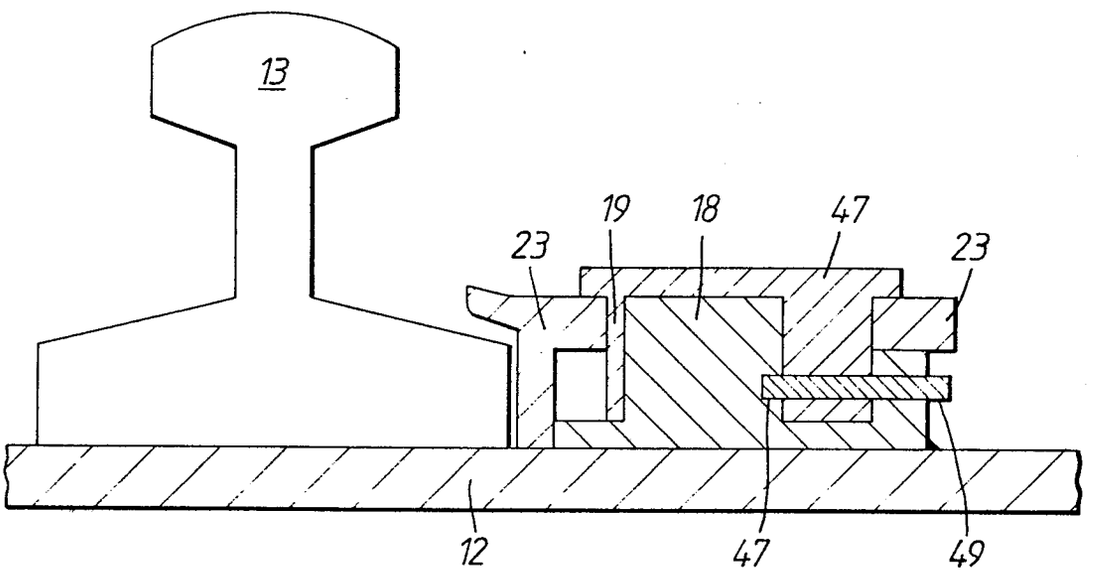

FIG. 4.

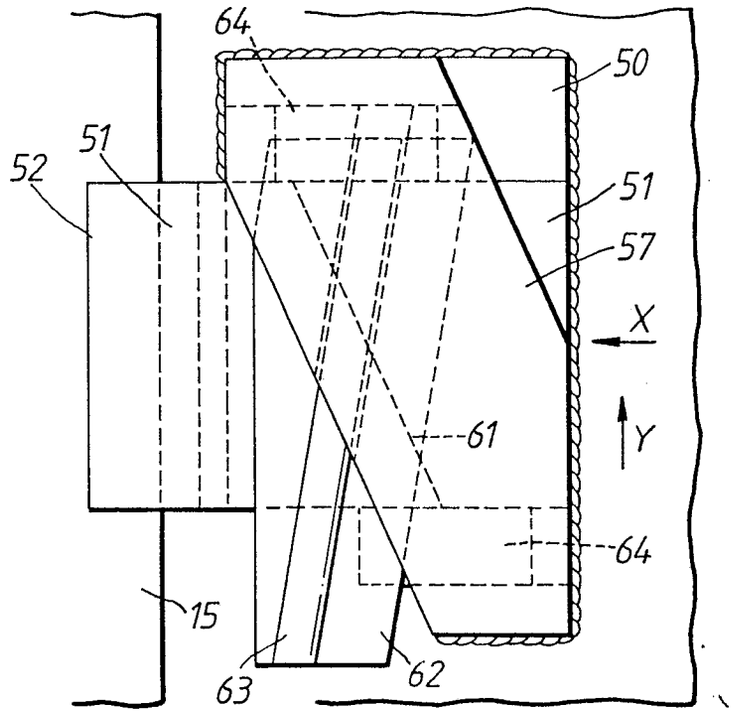

FIG.5.

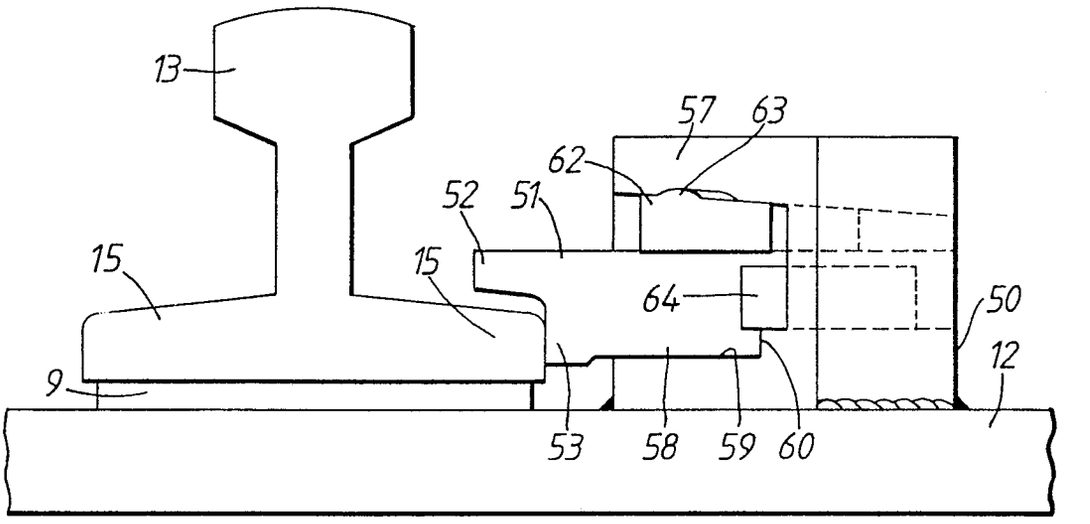

FIG.6.

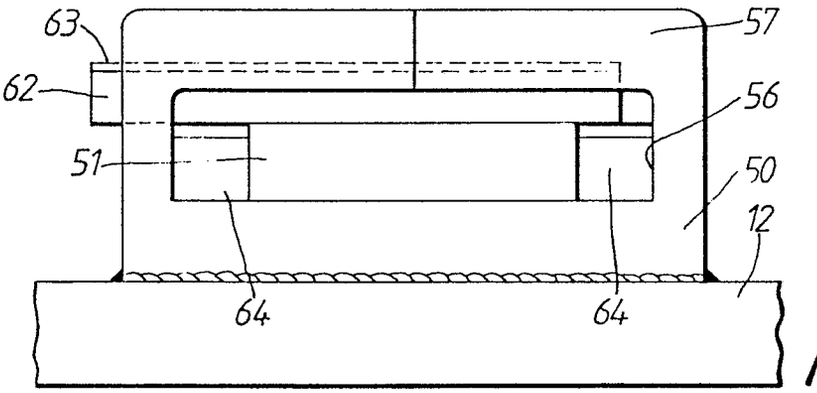

FIG.7.

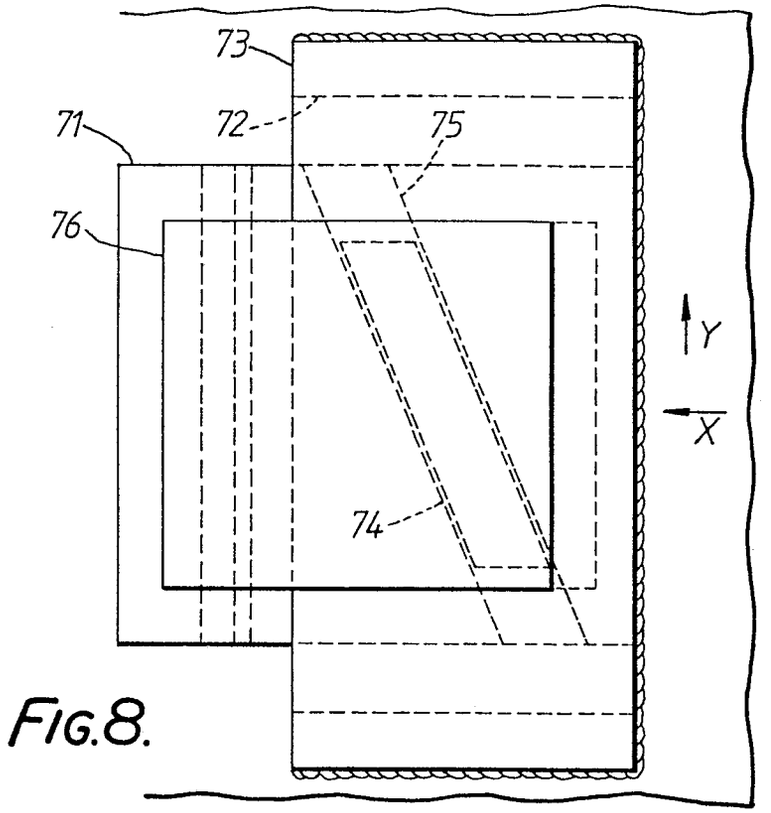

FIG.8.

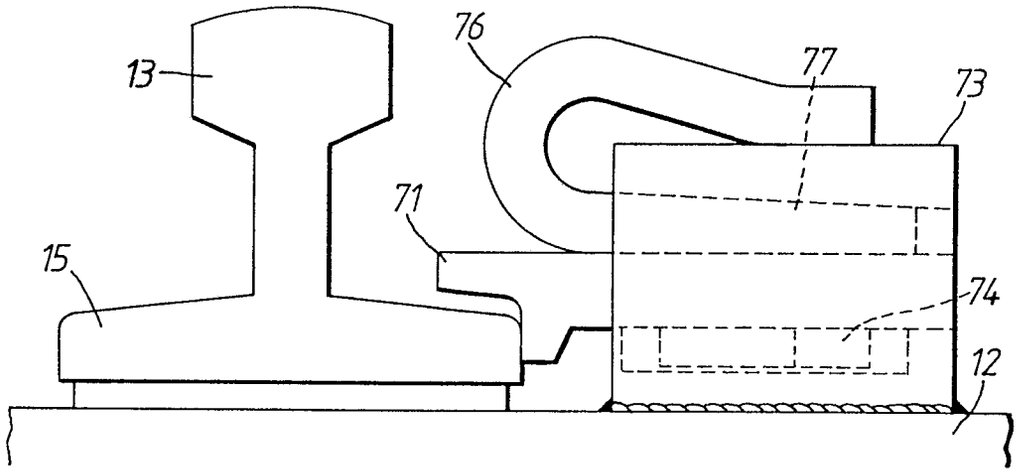

FIG.9.

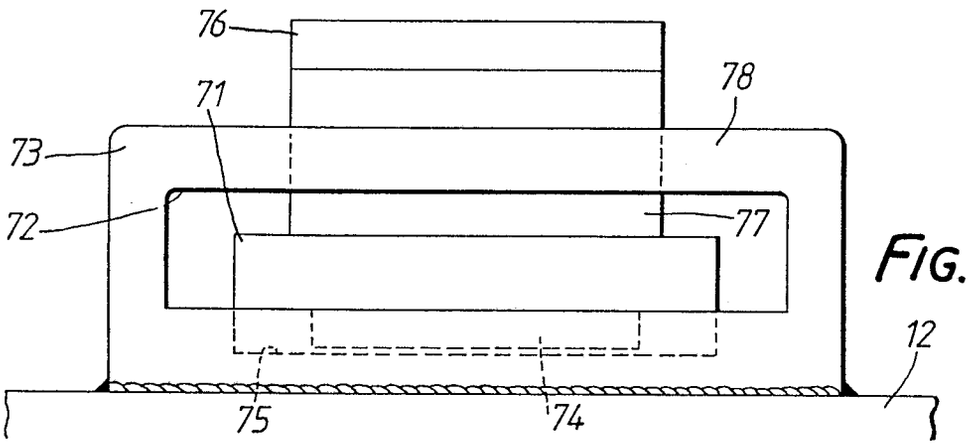

FIG.10.

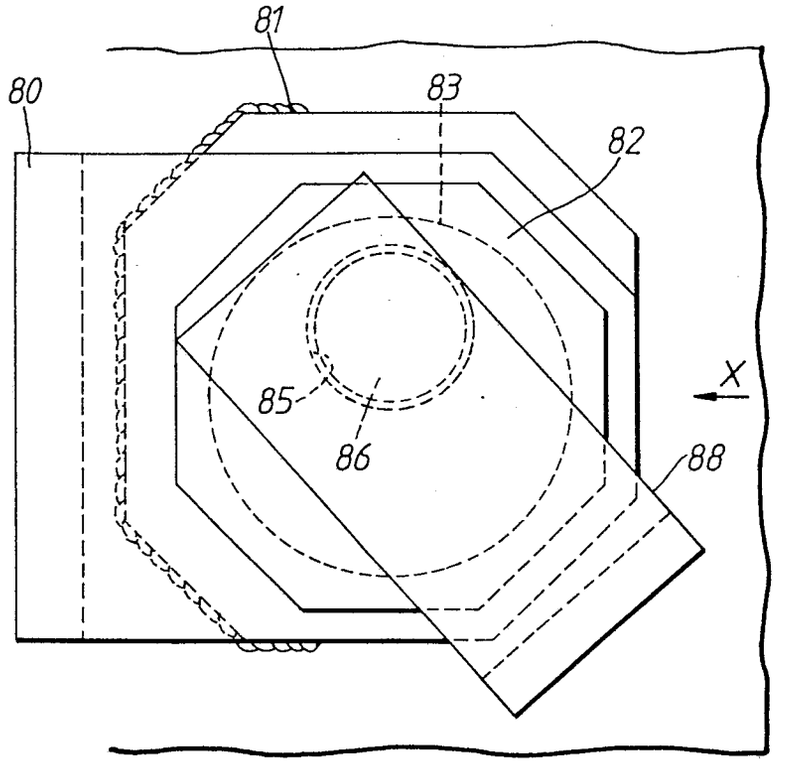

FIG.11.

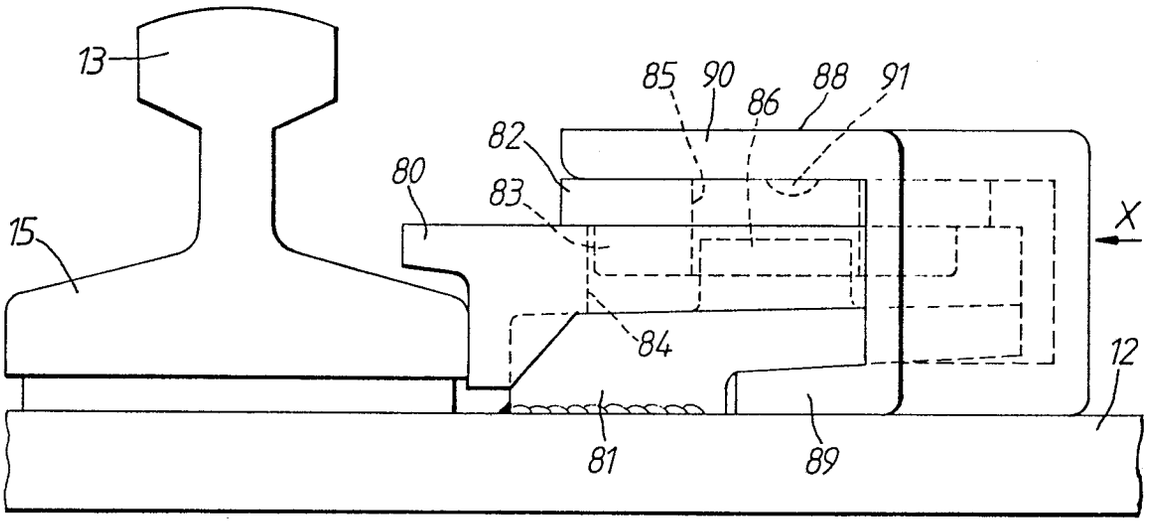

FIG.12.

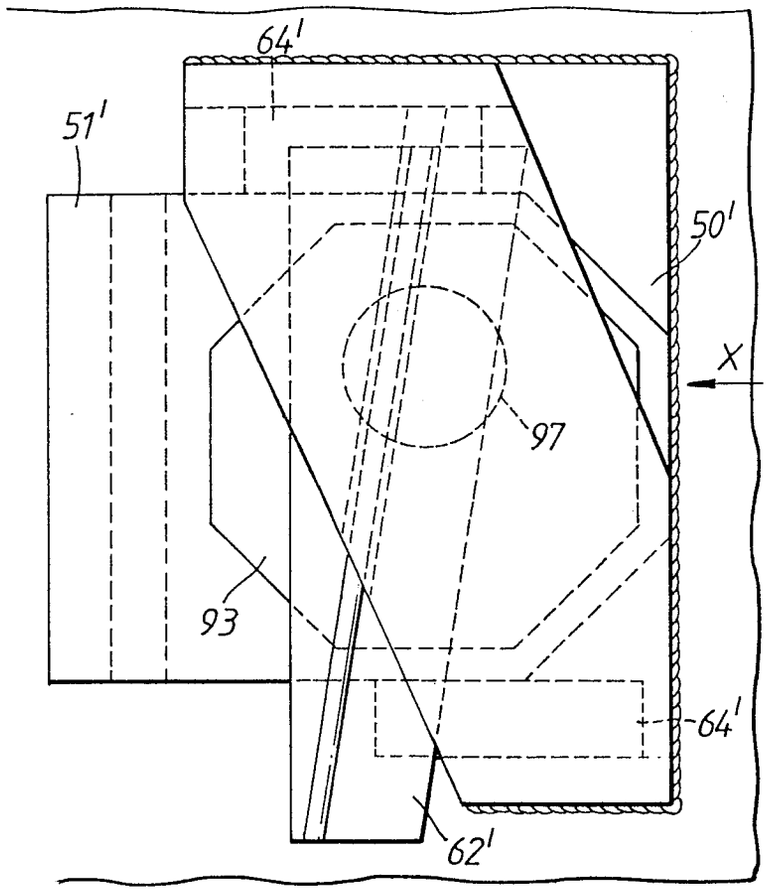

FIG.13.

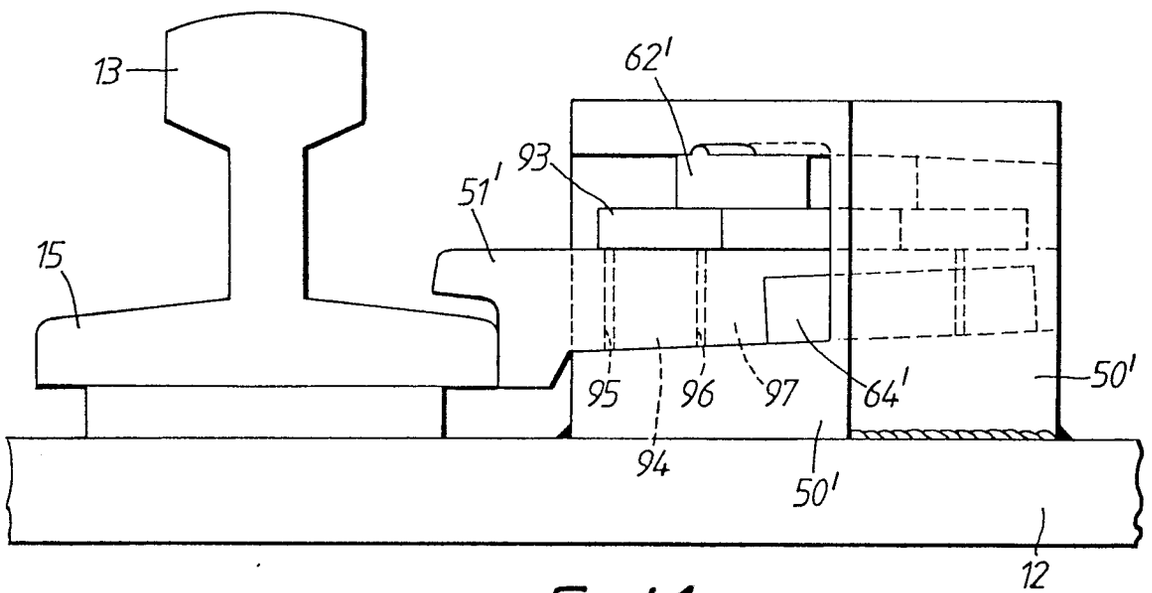

FIG.14.