

**Sept. 4, 1928.**

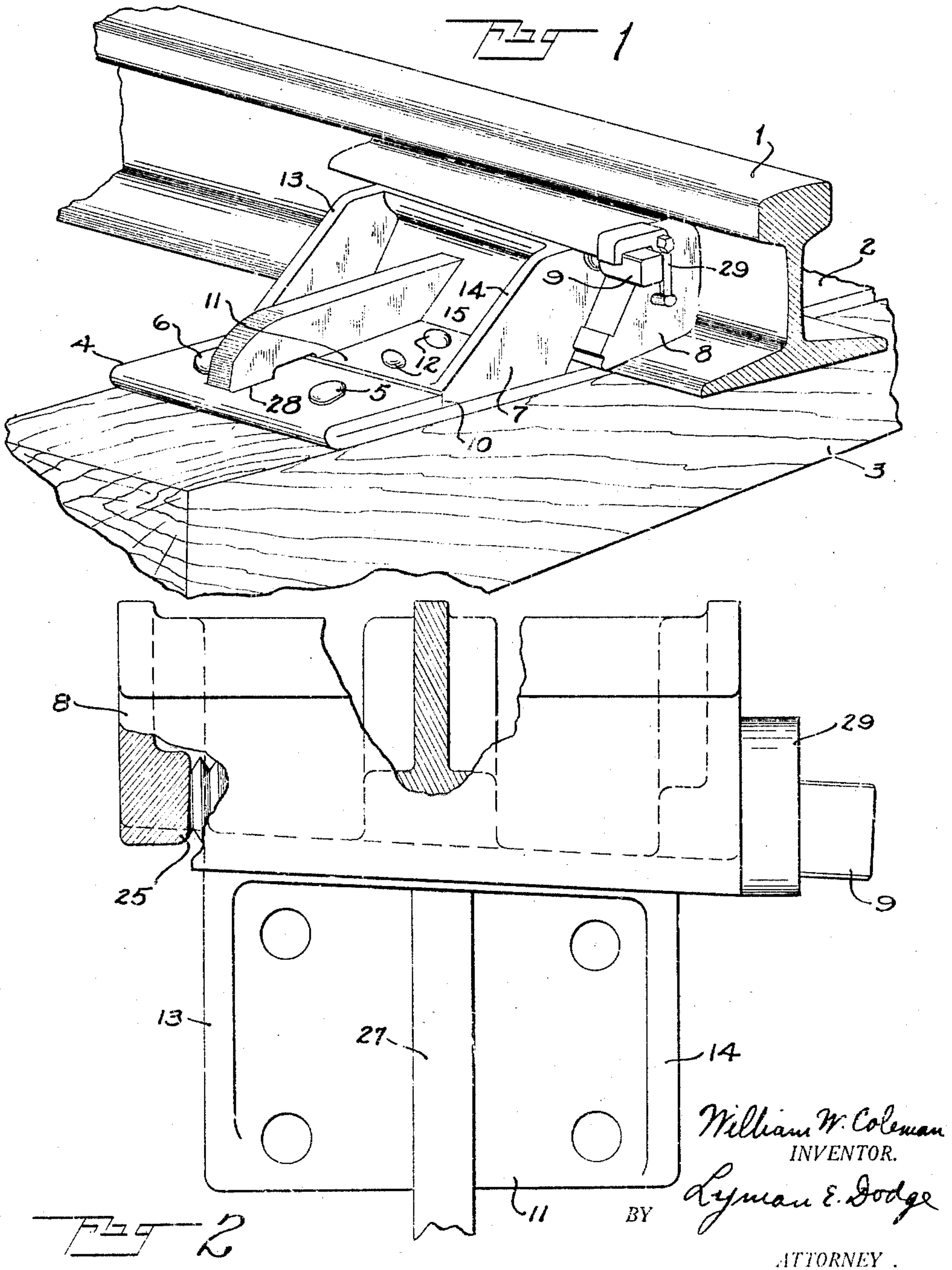
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**1,682,887**

RAIL BRACE

Filed Dec. 22, 1926

4 Sheets-Sheet 1



**Sept. 4, 1928.**

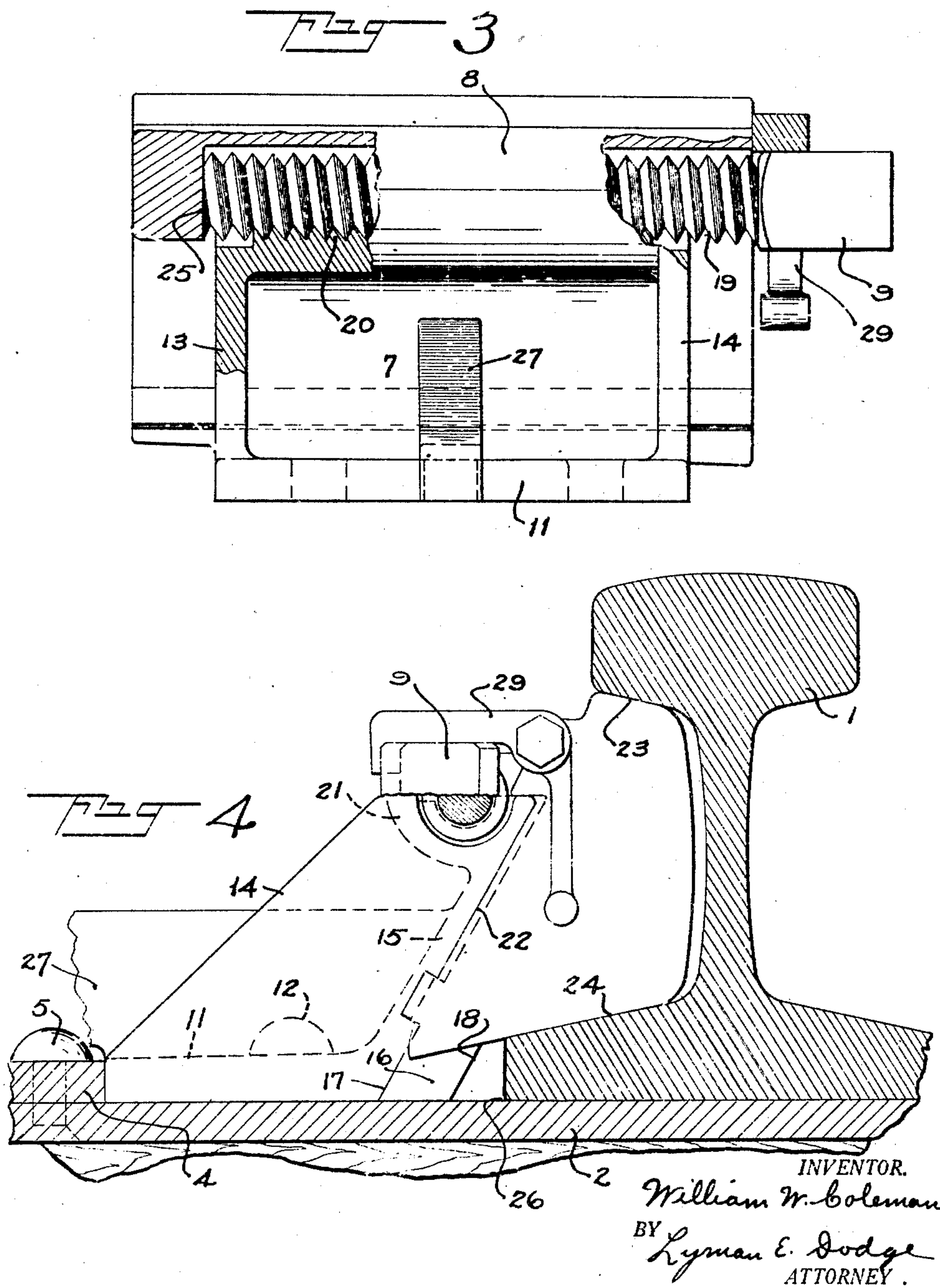
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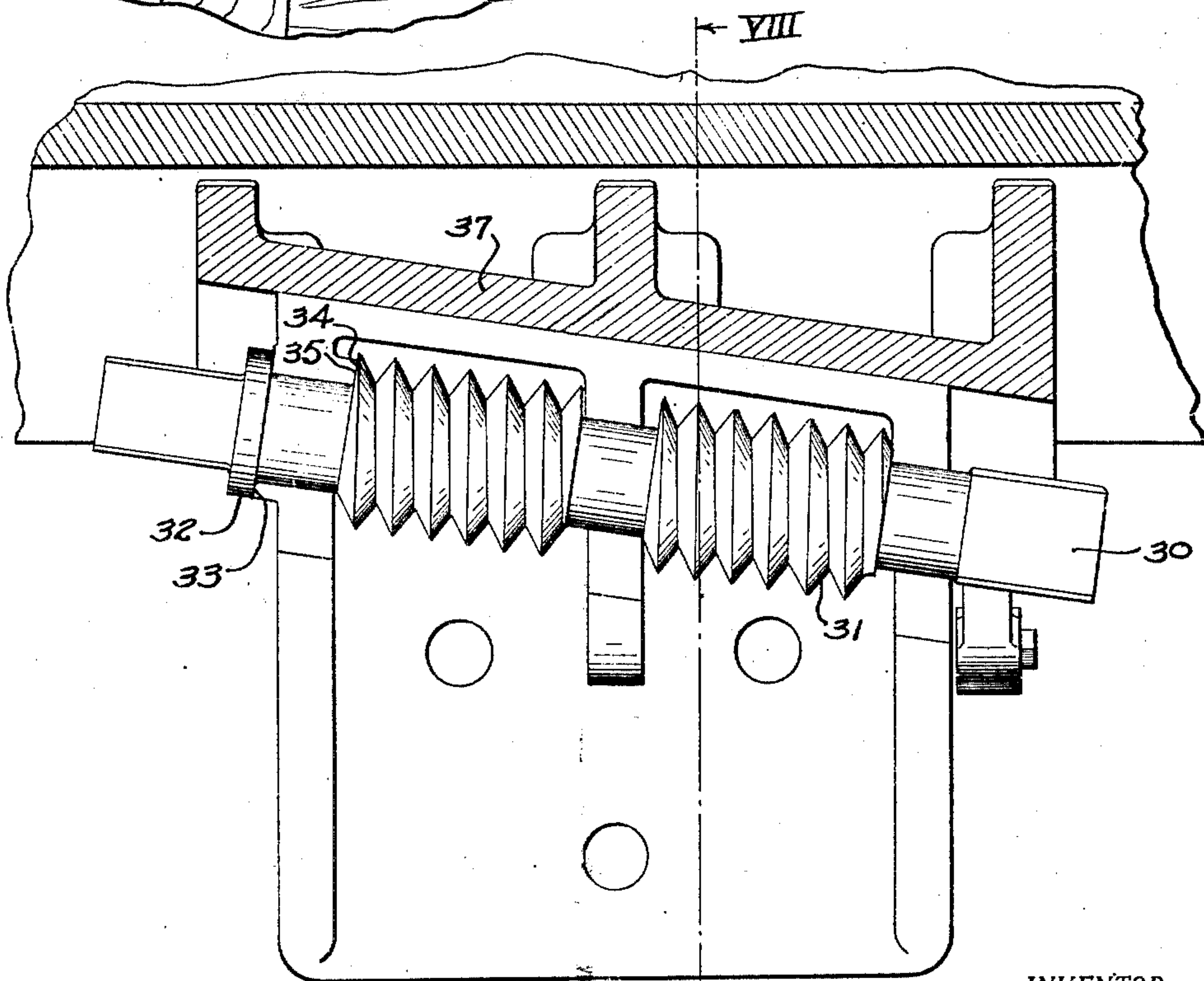
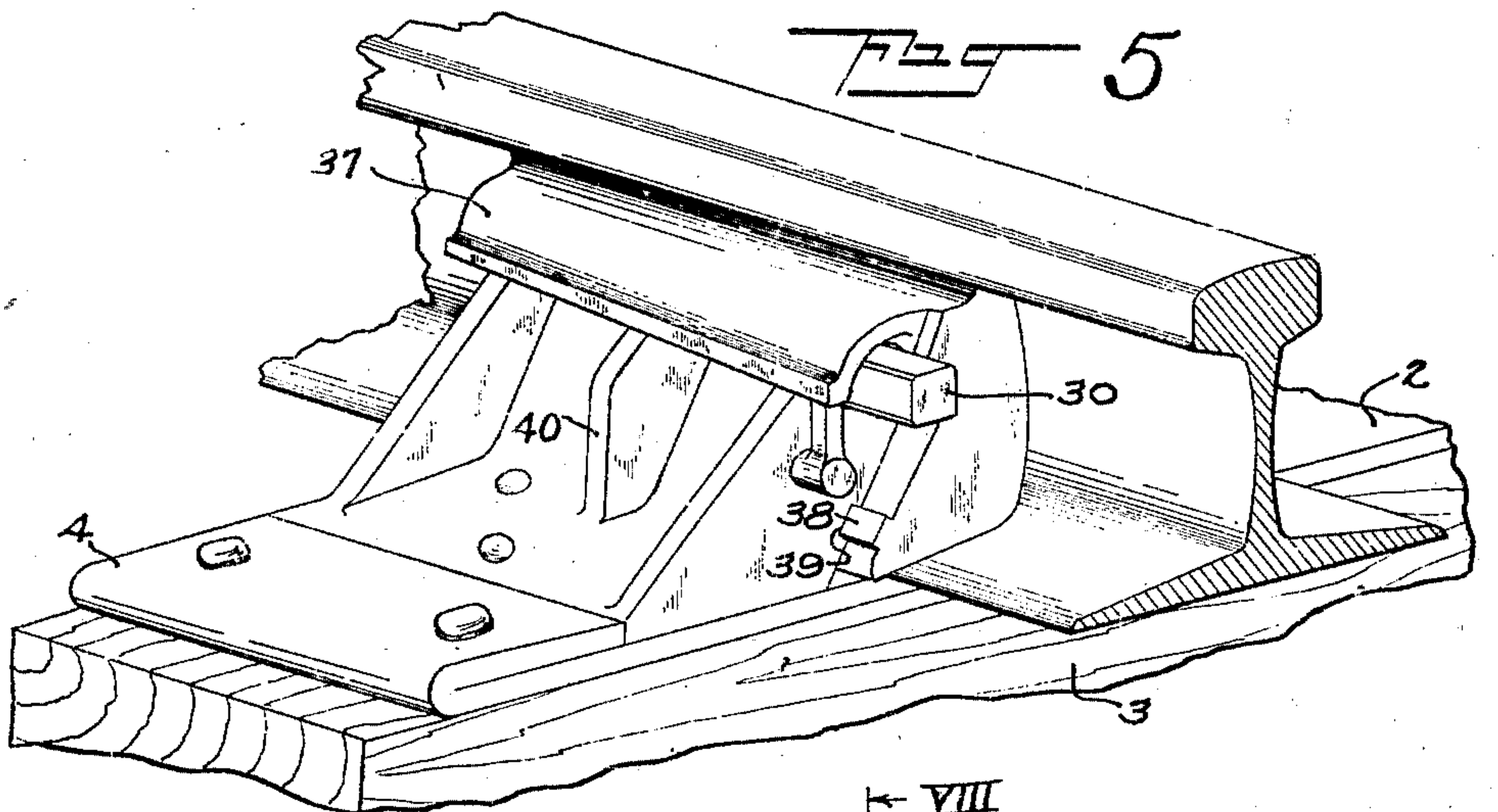


Fig. 7

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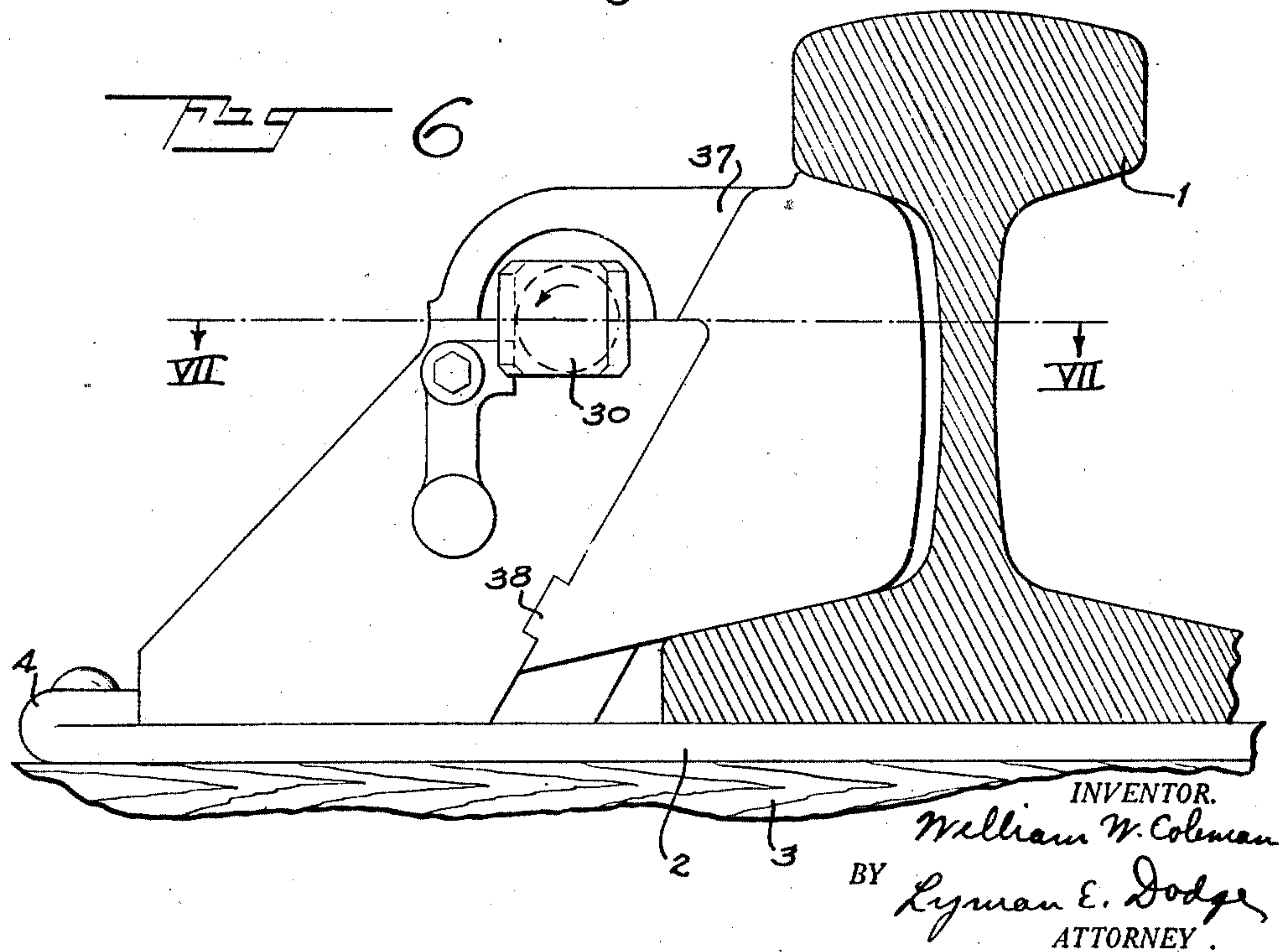
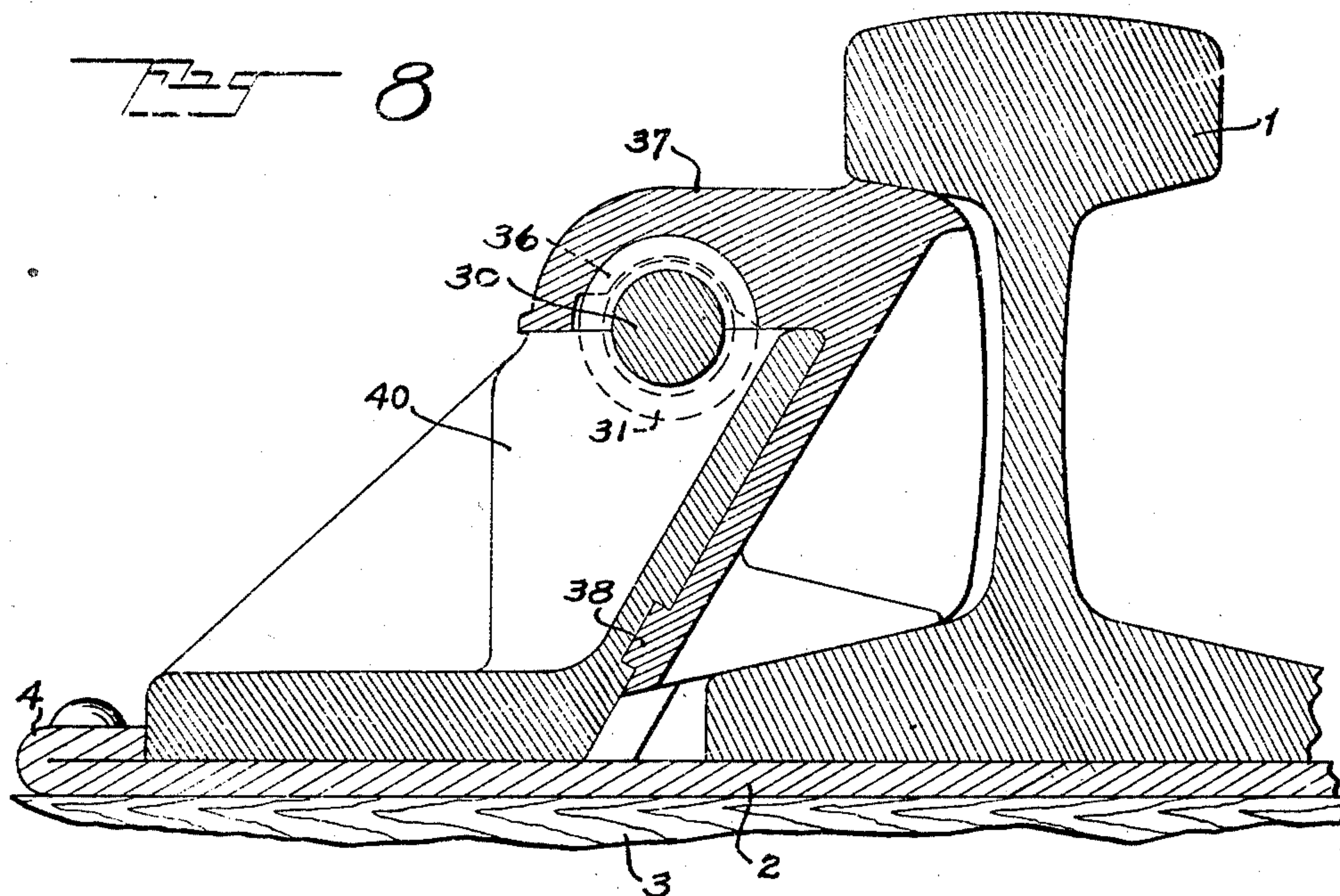
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4 Sheets-Sheet 4



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# UNITED STATES PATENT OFFICE.

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## RAIL BRACE.

Application filed December 22, 1926. Serial No. 156,317.

This invention relates to railway structures and particularly to the trackway and more especially to means generally known as a rail brace for maintaining the usual and well known rails of a trackway to gauge.

The principal object of the invention is the production of a device of the type specified which will be efficient in performing its function of holding a railway rail to gauge, and which is so formed that wear upon the rail caused by the flanges of the wheels passing thereover, may be easily and readily compensated for by an adjustment of the rail brace and to prevent rails spreading when not fastened securely.

Other objects and advantages will appear as the description of the particular physical embodiments selected to illustrate the invention progresses and the novel features will be particularly pointed out in the appended claims.

In describing the invention in detail and the particular physical embodiments selected to illustrate the invention, reference will be had to the accompanying drawings, wherein I have illustrated particular preferred physical embodiments of the invention and in which similar parts are similarly designated throughout the several views, and in which:

Figure 1, is a perspective view of my improved rail brace in place supporting a rail; Fig. 2, is a top plan view, with certain parts broken away to more clearly show the construction, of my improved rail brace; Fig. 3, is a side elevational view of my improved rail brace with certain parts broken away to more clearly show the construction; Fig. 4, is an end view of my improved rail brace in place supporting a rail; Fig. 5, is a perspective view of a modified form of a rail brace made in accordance with my invention shown in connection with the rails supported thereby; Fig. 6, is an end view of my improved rail brace as shown by Fig. 5; Fig. 7, is a cross sectional view on the plane indicated by the line VII—VII of Fig. 6; Fig. 8 is a cross sectional view on the plane indicated by the line VIII—VIII of Fig. 7.

In Fig. 1, the numeral 1, indicates a rail which is shown as resting upon a tie plate 2 which in turn rests upon the ordinary and well known tie 3.

The tie plate 2, as is usual, has a portion 4 adjacent one end bent over upon itself.

Orifices are formed through the bent over portion 4 and the main tie plate 2 through which spikes as 5 and 6 are passed and driven into the tie 3, thereby holding the tie plate securely in place.

Applicant's rail brace consists broadly of three parts: a butt member 7, a wedge member 8 and a spindle 9.

The butt member 7 has a shoulder 10 which abuts the turned up portion 4 of the tie plate 2. The butt member 7 has a base web 11, best shown in Fig. 4. Through the base web 11, orifices are formed and through the orifices are passed rivets as 12 which also pass through the tie plate 2 and upon being headed as is usual securely hold the base web 11 and the butt member to the tie plate. The base member 7 also has end webs or flanges 13 and 14, best shown in Fig. 1. The butt member 7 also has a sloping web 15, the outer face of which forms a sloping face 16, best shown in Fig. 4. This face on the side sloping downwardly away from the rail, also is inclined to the longitudinal axis of the rail, that is, the face at 17 is farther away from the rail than the face at 18.

The spindle 9 is formed with a thread 19 thereon. This thread engages a similarly formed thread 20, formed in the trough member 21 of the butt member 7. This trough is shown in Fig. 3, and also in Fig. 4.

The wedge member 8 is, as its name indicates, a wedge. It is narrow on one end and wider at the other end. The narrow end as viewed in Fig. 2, is at the left hand end. The wedge member 8, is formed with a sloping surface 22 which abuts the sloping surface 15 of the butt member. The wedge member 8 also is formed with an upper and with a lower rail engaging surface, as 23 and 24. The upper surface 23 engages the sloping surface of the under side of the ball of the rail, and the lower surface 24 engages the upper sloping surface of the flange of the rail. The wedge member 8 has an abutment 25 formed thereon, best shown in Figs. 2 and 3, against which the end of the spindle 9 bears.

From the description hereinbefore contained, it will be readily apparent that a very rigid and easily adjustable structure has been produced. The tie plate 2 either fastened by spikes as 5 and 6 or other well known means to the tie 3 and having one end 4 bent over on itself, furnishes what may be called



a fixed abutment. Against this fixed abutment the surface 10, of the butt member 3 abuts. In addition to abutting the member 4 fastening means, as rivets, are passed through the bottom web 11 of the butt member, and secure the butt member firmly to the tie plate. The wedge member 8 has its sloping surface 22 in engagement with the sloping surface 15 of the butt member, and due to the downward slope away from the rail of these surfaces, the wedge member 8 is prevented from moving upwardly, so as its face 24 bears against the upper face of the flange of the rail, the rail is prevented from moving upwardly. In order to further prevent upward movement of wedge member 8, if desired, a rib, as 38, is formed on the wedge member and a groove as 39 in the butt member 7, as well shown in Fig. 5. In order to further prevent the over turn, which might be caused by the rail as 1, rotating on the edge 26, as shown in Fig. 4, as a pivot or fulcrum, a bearing arm 27 is formed, preferably integrally with the butt member 7, and extending outwardly therefrom, bearing at some point beyond the surface 10 on, say, the portion 4 of the tie plate at the surface 28. This long bearing arm 27 is very efficient in preventing overturning of the butt member 7 and very materially assists the fastening means, as the rivets 12, in holding the butt member 7 from overturning.

The wedge member 8 having an upper surface 23 in engagement with the under side of the ball of the rail, efficiently supports the rail and together with the surface 24, in conjunction with the surface 22 bearing against the surface 15 prevents any movement bodily of the rail 1. In order to adjust the position of the rail 1, due to unforeseen changes or wear or what not, applicant has provided the spindle 9 which is formed with the screw thread 19 engaging with the screw thread 20, formed in the butt member 7. If the wedge member 8 does not wedge strongly enough against the rail 1, then the spindle 9 is turned, as by a wrench, so as to force the end of the spindle against the bottom of the wedge member. This action causes the wedge member by reason of this surface 22, bearing against the surface 15 of the butt member to both move longitudinally and outwardly against the rail 1, thereby forcing the rail to the proper position. When the wedge has been moved to the proper position, the pivoted latch 29 holds the spindle 9 from turning backwardly, and so maintains the adjustment.

In Figs. 5 to 8 inclusive, a rail brace substantially like that shown in Figs. 1 to 4 inclusive has been illustrated. There is this difference however, in Figs. 5 to 8 inclusive, no bearing arm as 27 has been shown, and in addition, the spindle 30 comparable with the spindle of Figs. 1 to 4 inclusive, has been arranged to engage with a screw thread

formed in the wedge member rather than in the butt member.

In Fig. 5, the modified form of rail brace is shown in perspective, and all of the parts have some general construction as shown in Fig. 1, except that the bearing arm or member 27 is omitted and in place thereof there is formed a central web 40. In Fig. 7, the modified spindle 30 is shown. This spindle 30 has threads thereon 31, and in the form shown has a flange 32 which bears against an abutting surface 33 of the butt member and also has a surface 34 which abuts against the surface 35 of the butt member. By means of these coacting surfaces, a rotation of the spindle 30 cannot cause the spindle to move endwise even if the threads 31 engage with other screw threads.

The screw threads 31 engage with screw threads 36 formed in the wedge member 37. From the hereinbefore contained description, it will be readily seen that the form of rail brace illustrated by Figs. 5 to 8 inclusive, operates substantially as does the rail brace shown by Figs. 1 to 4 inclusive, but with the difference that the spindle 30 does not move longitudinally with respect to the butt member, but by coacting with shoulders thereon, maintains its longitudinal position upon being turned, and that longitudinal movement of the wedge member 37 arises by reason of the fact the screw threads 31 of the spindle 30 engaged with screw threads 36 of the wedge member 37.

Although I have particularly described the construction of physical embodiments of my invention and explained the operation and principle thereof, nevertheless, I desire to have it understood that the forms selected are merely illustrative, but do not exhaust the possible physical embodiments of the idea of means underlying my invention. What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a rail brace; in combination: a fixed projection; a butt member formed with a surface to abut the fixed projection and a bearing arm attached to the butt member and extending out beyond the fixed projection.

2. In a rail brace; in combination: a butt member formed with a sloping surface; a wedge member formed with surfaces to engage the lower side of the ball of a rail and the upper side of the flange of the same rail and with a sloping surface to engage the sloping surface of the butt member; a screw threaded spindle supported by one of the members; a thread formed in one of the members and an abutment formed on the other member against which the spindle bears whereby a rotation of the spindle causes a relative movement of the butt member and the wedge member.

3. In a rail brace; in combination: a butt member formed with a sloping surface; a



wedge member formed with surfaces to engage the lower side of the ball of a rail and the upper side of the flange of the same rail and with a sloping surface to engage the sloping surface of the butt member; a screw threaded spindle supported by one of the members; a thread formed in one of the members and an abutment formed on the other member against which the spindle bears whereby a rotation of the spindle causes a relative movement of the butt member and the wedge member, and means for preventing longitudinal movement of the spindle. 10

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