

J. W. STEPHENSON.
 GUARD RAIL TIE PLATE AND CHAIR.
 APPLICATION FILED MAR. 8, 1910.

984,310.

Patented Feb. 14, 1911.

4 SHEETS—SHEET 1.

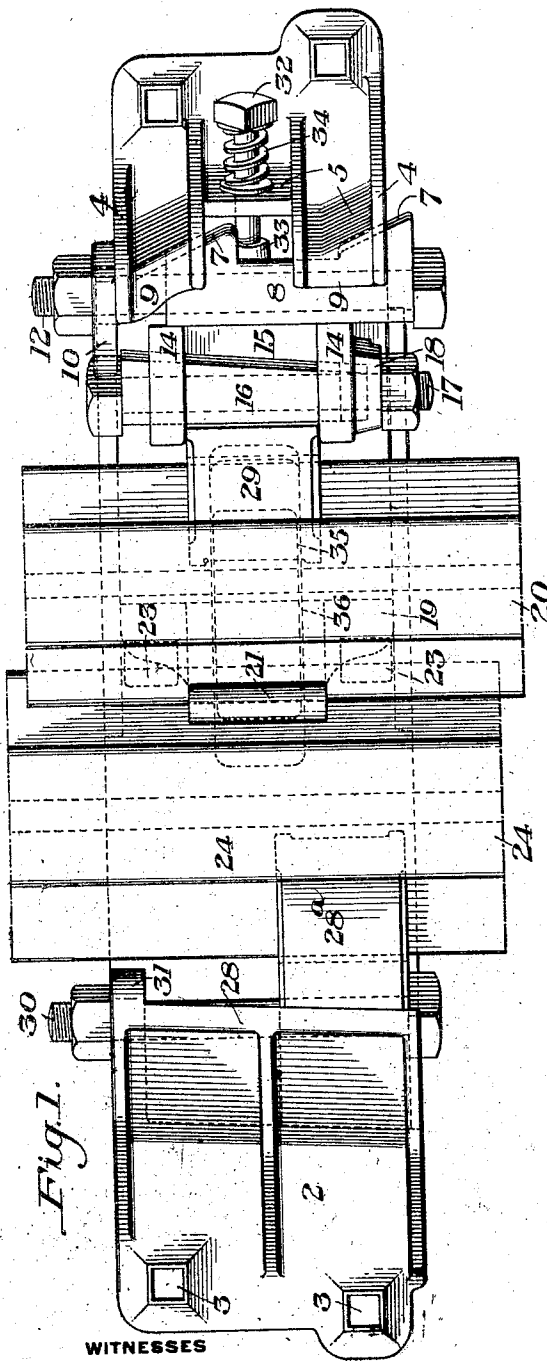


Fig. 1.

WITNESSES

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Walter J. Farness

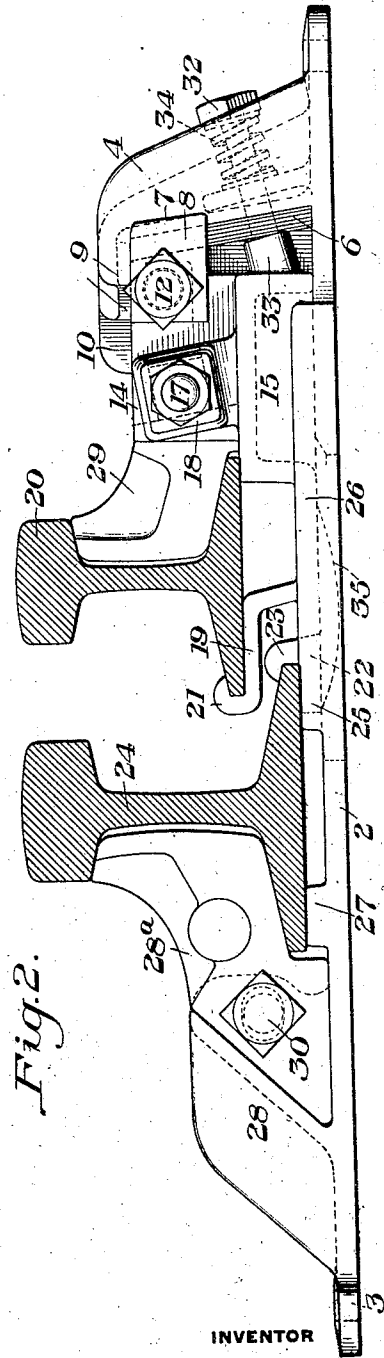


Fig. 2.

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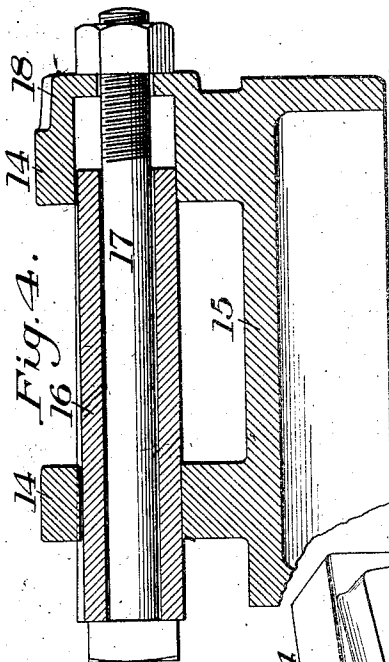


Fig. 4.

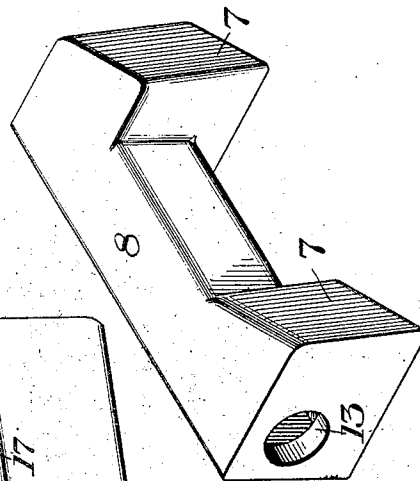


Fig. 5.

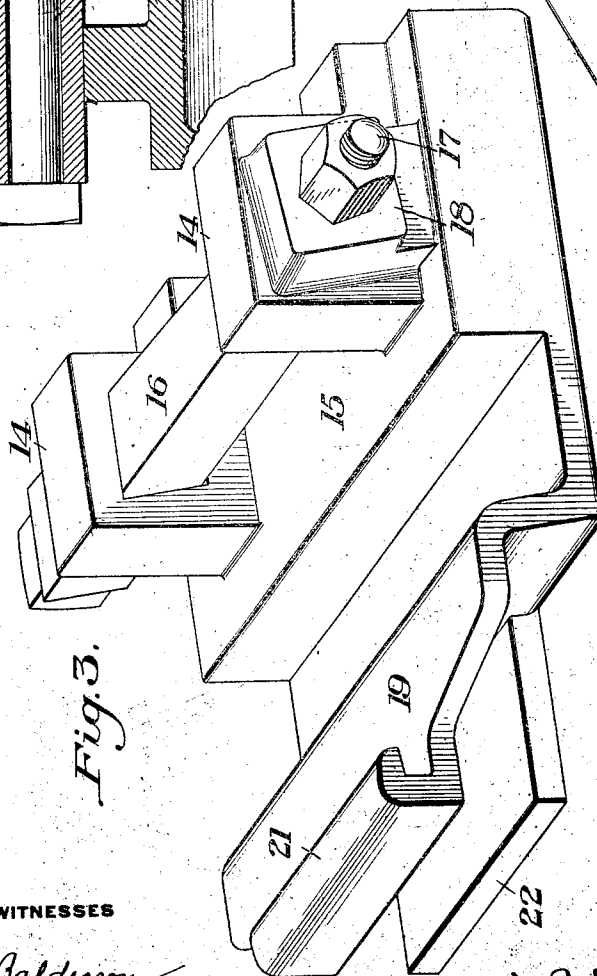


Fig. 3.

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4 SHEETS—SHEET 3.



Fig. 8.

Fig. 7.

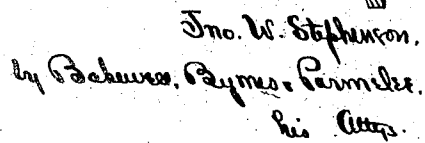
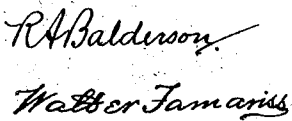
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4 SHEETS—SHEET 4.



UNITED STATES PATENT OFFICE.

JOHN W. STEPHENSON, OF TOLEDO, OHIO, ASSIGNOR TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

GUARD-RAIL TIE-PLATE AND CHAIR.

984,310

Specification of Letters Patent.

Patented Feb. 14, 1911.

Application filed March 8, 1910. Serial No. 548,036.

To all whom it may concern:

Be it known that I, JOHN W. STEPHENSON, of Toledo, Lucas county, Ohio, have invented a new and useful Guard-Rail Tie-Plate and Chair, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view showing a preferred form of my invention; Fig. 2 is a side elevation of the same; Fig. 3 is a perspective view of the chair and key; Fig. 4 is a cross-section of the same; Fig. 5 is a perspective view of the chair-operating key; Fig. 6 is a perspective view of the tie plate; Fig. 7 is a perspective view of the brace key; Fig. 8 is a perspective view of the rail brace; Fig. 9 is a view similar to Fig. 1, showing a modified form of construction; and Fig. 10 is a section on the line X—X of Fig. 9.

My invention relates to the securing and bracing of guard rails.

Heretofore, the inner base flange of the guard rail has been machined off to bring the guard rail sufficiently close to the main rail, and the corresponding flange of the main rail has been notched or recessed to receive the spikes. The inner portion of the guard rail head wears away rapidly in service, owing to the grinding action of the inside faces of the wheels. This enlarges the space between the heads of the rails, which space should be maintained constant. When this face becomes worn, the trackmen are supposed to draw the spikes, move the guard rail closer to the main rail, to the proper gage, and then again spike down the guard rail. In practice, this is so much trouble that it is slighted by the trackmen, and derailments occur, especially on curves, owing to the wheel not being held on the main rail by means of the guard rail. Since the distance between their heads has become lengthened by wear. Moreover, only one side of the guard rail can be used, since when one base flange is cut away the other cannot be cut away and the guard rail turned around and used again.

My invention is designed to overcome this difficulty in unspiking and moving the guard rail after wear, and it consists in providing means for holding and adjusting the guard

rail without the use of spikes engaging the tie.

My invention provides for easy and quick adjustment of the guard rail, so that the trackmen will have no excuse for not keeping it to the proper gage.

It also consists in combining with the adjusting shoe or chair for the guard rail, a guard rail brace and adjustable securing means therefor.

In the preferred form of my invention, I also provide for doing away with the cutting of the base flange of the guard rail by supporting its base above the base of the main rail, so that it can be brought to the proper gage without cutting either rail base.

It also consists in using a guard rail of less height, in mounting the same on adjusting means; and further, in the construction and arrangement of the parts as hereinafter more fully described.

In the drawings, referring to the form of Figs. 1 to 8, inclusive, 2 represents a tie plate, having spike holes as shown at 3, by which it may be secured to the ties. The tie plate is provided with upwardly and preferably inwardly inclined projections 4, 4, near one end, which may be connected by the inclined web 5. The inner faces of these projections are preferably provided with horizontal inclined faces 6, 6 to engage the inclined faces 7, 7 of the chair operating wedge key 8, shown in Fig. 5. The projections are preferably provided at their tops with forwardly over-hanging lips 9 engaging the upper face of the key 8, and one of them has a bracket portion 10 provided with a hole 11 to receive a bolt 12 which extends through a longitudinal hole 13 in the key 8 and acts to draw this key endwise along the horizontally and vertically inclined faces 6. The forward flat face of the key 8 bears against the rear faces of lugs 14 projecting upwardly from the sliding shoe or chair 15. These lugs are provided with slots, whose walls are inclined to the vertical, the slots being of different size and suitably shaped to receive the wedge key 16, which also has a longitudinal hole to receive the bolt 17. The smaller end of the wedge key preferably enters a boss portion 18 in the manner shown in Figs. 3 and

4. The lugs 14 rise from a thicker portion of the chair, the forward portion of the chair having a raised seat 19 on a level with the part 15, the guard rail 20 resting on these seat portions. The seat portion 19 is preferably provided with a hook-shaped clip portion 21 to engage the inner flange of the guard rail, and below this I have shown a projecting plate portion 22. This plate portion 22 is reduced in width, so as to fit between the clip portions 23 which rise from the tie plate and engages the inner base flange of the main rail 24. These clips preferably rise from rests 25, from which side ribs 26 extend toward the projections 4 to guide and hold the sliding chair or shoe 15 in place. 27 is another cross-rest on the tie plate for the main rail, the plate having at this end an upwardly and inwardly extending transverse projection 28, engaged by the wedge-shaped rail brace 28^a, as shown in Figs. 1 and 2. The corresponding faces of the brace and projections are inclined longitudinally to give a wedge action, and the brace is held in wedge position by the bolt 30 extending through it and through a flange 31 on the projection. It will be noted that the clip 21 and the seat for the guard rail are above the level of the clips 23 and the seat for the main rail. For the guard rail I preferably use a lighter rail section of less height than the main rail, so that their heads will be substantially on a level. In order to provide for drawing back of the guard rail, if it is adjusted too close to the main rail by turning the nut of the key 8, I show a screw-bolt 32 passing through a hole in the web 5 and screwed into a boss 33 at the rear end of the sliding chair, a spring 34 being provided between the web 5 and the head of the bolt. This spring will draw back the guard rail as far as the inclined wedge key 8 will allow. In order to further hold down the chair, I may provide in the lower face of the plate portion 22 a central bulge 35, which fits in a slot 36 in the plate, being held down by the main rail. This, however, is not essential, as the main rail base fits over the plate 22.

50 In adjusting the parts, the tie plate is placed in position under the main rail, which engages the clips 23. The brace for the main rail is then inserted, driven home, and the bolt drawn up to hold it in adjusted position. The chair being put in position, the guard rail is placed on it with its inner flange engaging the clips 21, the brace 29 is driven into wedging position and secured by the key 16, which is drawn home by the bolt 17, thus moving it inwardly and downwardly against the brace, and the chair key 8 is then inserted and driven or drawn lengthwise until the guard rail is adjusted to the proper distance from the main rail.

65 This is usually done by moving it against a

gage placed between the heads of the two rails. The chair-operating key 8 then being secured by its bolt, the parts are then secured. When the head of the guard rail is worn away, the operator by adjusting the nut of the bolt for the key 8 can force the sliding chair and guard rail toward the main rail to readjust it to the proper gage, and if adjusted too far, by turning it slightly in the other direction, the spring-actuated bolt will draw back the guard rail.

In Figs. 9 and 10, I show a similar form of the invention, wherein the sliding chair is used for adjusting the guard rail, but the bases of the two rails are at the same level, thus requiring the inner base flange of the guard rail to be cut away. This gives the advantage of adjustment although the guard rail base is cut as before. In this form, the tie plate 2^a is used with the spike holes 3^a, the projections 4^a, the web 5^a, these projections having the inclined faces to cooperate with the similar faces on the wedge-key 8^a for the sliding chair. This chair is somewhat different in form, being a plate 15^a, resting on the tie plate, and preferably having a central extension 22^a under the base flange of the main rail 24^a. The tie plate has the clips 23^a for the main rail, and the central slot to receive the bulge 35^a of the extension. The clip 21^a is between the clips 23^a and engages the cut-away base flange of the guard rail 20^a, this being on the same level as the base flanges of the main rail. The brace 29^a for the guard rail is shown as having an inclined face and is generally similar to the brace 28 of the first form, being drawn endwise by a bolt 30^a, no key being used. In this modified form, parts similar to those of Fig. 1 are designated with the same numeral with the letter "a" applied.

The advantages of my invention result first from the use of an adjustable device by which the guard rail may be secured and adjusted without spiking. Also, in the preferred form, from the arrangement of the rails with their bases at different levels, thus avoiding cutting or notching of the rail bases. In this form, when one side of the guard rail head has been worn away, this rail may be turned around and the other portion of its head used, thus giving double life for the guard rail. No notching of the main rail base is required. I prefer to use the braces and wedge-securing means as above shown and described, though other forms of braces and securing means may be employed. In both forms the operator can adjust the guard rail by simply turning the nut on the key wedge for the chair. Therefore, for adjusting these guard rails he need only carry an ordinary wrench. In the preferred form, the guard rail is cheaper, because of less weight per yard.

The tie plate, chair, and the securing means for the rails may be varied widely within the spirit of my invention, and the braces and adjustments may be varied or
5 other devices used within my broader claims.

I claim:—

1. A guard rail support, having clamping mechanism for both base flanges of a guard rail, and means for moving said support to
10 adjust the guard rail relatively to a main rail; substantially as described.

2. The combination with a guard rail, of a sliding support therefor having means for securing the guard rail thereto, and adjusting
15 mechanism for adjusting the guard rail laterally; substantially as described.

3. A guard rail tie plate having a sliding guard rail support, the members being shaped to guide the support against sidewise move-
20 ment, and mechanism for adjusting the guard rail support relative to the plate; substantially as described.

4. A guard rail support having clamps engaging both base flanges of the guard rail, and mechanism on the other side of the
25 guard rail from the main rail arranged to adjust the guard rail support and its clamps toward and from the main rail; substantially as described.

5. A tie plate having means for securing a main rail thereon, a sliding support arranged to carry the guard rail, and mechanism for adjusting the guard rail support
30 toward the main rail; substantially as described.

6. A guard rail tie plate having a guard rail movable laterally thereon and a wedge device on the other side of the guard rail from that of the main rail and arranged to
40 adjust the guard rail laterally independently of the main rail; substantially as described.

7. A guard rail tie plate having a sliding shoe or support, means for securing the
45 guard rail thereto, and a wedge device arranged to adjust the guard rail support laterally; substantially as described.

8. A guard rail tie plate having projections, a guard rail supported thereon, and
50 wedge mechanism cooperating with the projections and means arranged to move the wedge mechanism endwise to adjust the guard rail support laterally; substantially as described.

9. A tie plate having a sliding support for a guard rail, a guard rail brace on the support, and mechanism for adjusting the support
55 laterally of the track; substantially as described.

10. In a guard rail system, a tie plate device arranged to support the guard rail with its base flange above that of the main rail, said device having clamps for both base
60 flanges of the guard rail, and means for adjusting said device toward and away from the main rail; substantially as described.

11. In a guard rail system, a tie plate, a movable support thereon having clamps for both base flanges of the guard rail and mechanism for adjusting said support on
70 the tie plate toward and from the main rail; substantially as described.

12. A guard rail support arranged to carry the guard rail base at a level above and overlapping the main rail base, and
75 mechanism for adjusting the guard rail toward and from the main rail; substantially as described.

13. A tie plate arranged to support a main rail, a sliding support on the plate having clamping means for the guard rail, said support being arranged to carry the
80 guard rail base at a level above the main rail base, and mechanism for adjusting the guard rail support laterally; substantially as described.

14. A tie plate having securing clips for a main rail, a movable support for the guard rail having a clip device staggered relatively to the clips for the main rail, and
90 mechanism for adjusting the sliding guard rail support; substantially as described.

15. A movable guard rail support, having means for clamping the guard rail independently of the tie, and mechanism for
95 adjusting the guard rail support in both directions toward and from the main rail; substantially as described.

16. A tie plate having projections near each end, a brace cooperating with one projection to engage the main rail, a sliding
100 shoe for the guard rail, and a key device cooperating with the other projections to adjust the shoe; substantially as described.

17. In a guard rail support, a sliding shoe, and wedge mechanism arranged to adjust the shoe laterally; substantially as described.

18. In guard rail support, a sliding shoe, a wedge device arranged to adjust the same laterally, and a bolt arranged to draw the
110 wedge device endwise; substantially as described.

In testimony whereof, I have hereunto set my hand.

JOHN W. STEPHENSON.

Witnesses:

JOHN J. MANNING,
MARK KUEHN.