

1,155,270.

*Fig. 1*

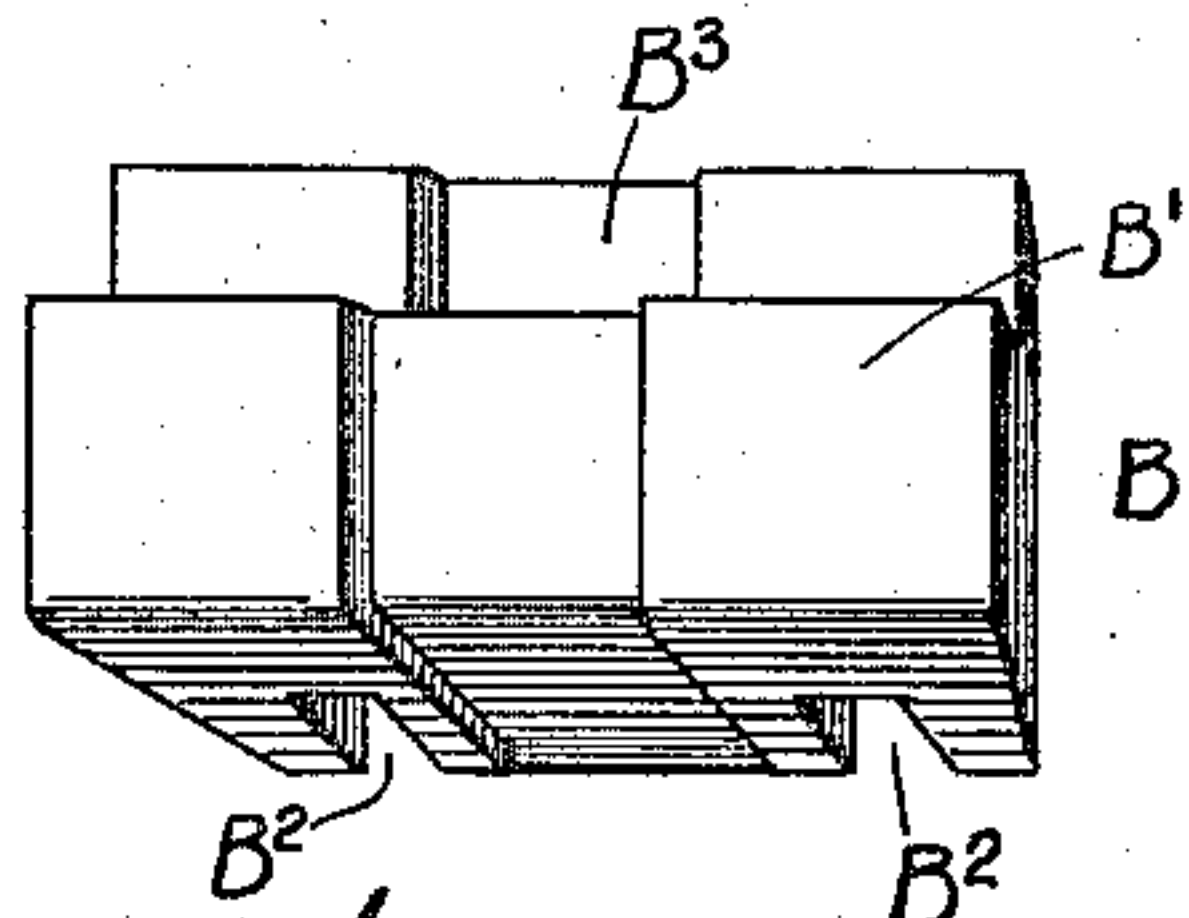
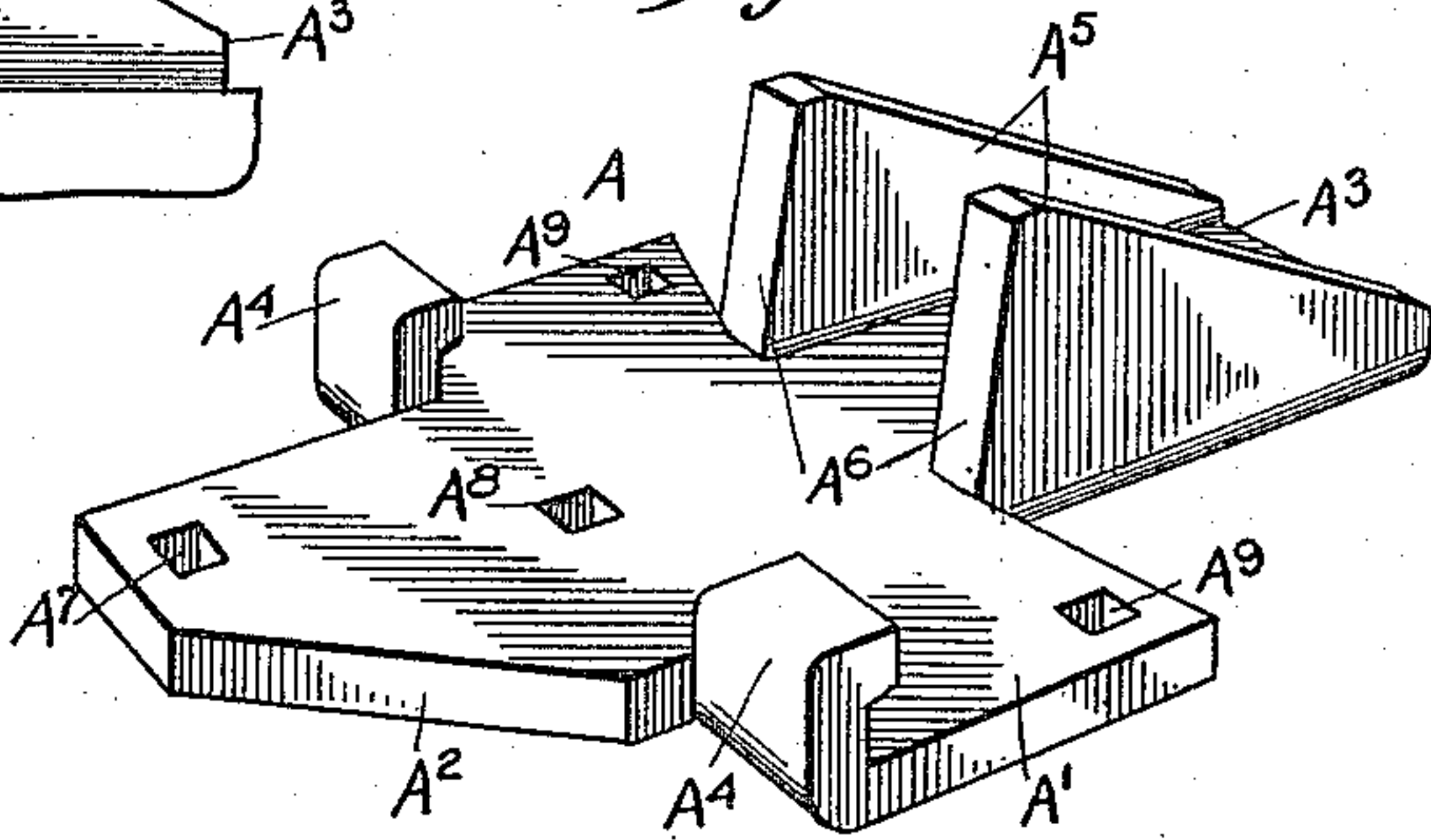


Fig. 5



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## COMBINED RAIL-BRACE AND TIE-PLATE.

1,155,270.

Specification of Letters Patent.

Patented Sept. 28, 1915.

Application filed November 3, 1914. Serial No. 870,037.

*To all whom it may concern:*

Be it known that I, JOHN O. PHELPS, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Combined Rail-Brace and Tie-Plate, of which the following is a full, clear, and exact description.

The invention relates to railroad appliances and its object is to provide a new and improved combined rail brace and tie plate which is simple and durable in construction and arranged to permit of conveniently placing the rail in position on the tie plate and then fastening the rail securely in place and bracing the same against spreading.

In order to accomplish the desired result use is made of a tie plate provided with a rising abutment and a rail brace having a face adapted to fit the outer side of the rail, the back of the rail brace being grooved to fit the abutment.

A practical embodiment of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan view of the combined rail brace and tie plate as applied; Fig. 2 is a side elevation of the same with the rail shown in cross section; Fig. 3 is a similar view of the same and showing the rail and brace in position when assembling the parts; Fig. 4 is a perspective view of the brace; and Fig. 5 is a like view of the tie plate.

The device for fastening the rail in place and for holding the same against spreading consists essentially of a tie plate A and a rail brace B. The tie plate A is adapted to rest on the tie C and is provided with a middle portion A' for the base of the rail D to rest on, and the said tie plate A is provided with inner and outer side extensions A<sup>2</sup>, A<sup>3</sup> to provide a large surface in contact with the tie C to give the desired stability to the rail fastener. The tie plate A is provided at the inner edge of the middle portion A' adjacent the ends thereof with upwardly extending retaining lugs A<sup>4</sup>, undercut to form seats for the inner edge of the base of the rail D, as will be readily understood by reference to Figs. 2 and 3. The outer side extension A<sup>3</sup> of the tie plate A is provided with upwardly extending abutment flanges A<sup>5</sup> at a right angle to the length of the rail

and having their inner edges A<sup>6</sup> slanting upwardly and outwardly, as plainly shown in Figs. 2, 3 and 5. The lower ends of the inner edges A<sup>6</sup> abut against the outer edge of the rail D so that when the latter is in place on the tie plate A the inner edge fits under the lugs A<sup>4</sup> and the outer edge abuts against the bottoms of the edges A<sup>6</sup> of the abutment flanges A<sup>5</sup>.

The rail brace B is in the form of a block having its inner face B' shaped to correspond to the outer side of the rail D, and the back of the rail brace B is provided with spaced grooves B<sup>2</sup> fitting the inner ends of the flanges A<sup>5</sup>. By the arrangement described the rail brace B is held against movement in the direction of the rail D as the flanges A<sup>5</sup> engage the grooves B<sup>2</sup> to prevent such movement. It is understood that the bottoms of the grooves B<sup>2</sup> fit snugly onto the slanting inner edges A<sup>6</sup> of the abutment flanges A<sup>5</sup> whenever the parts are assembled so that the rail brace B is held against side-wise movement and consequently the rail brace B prevents the rail D from spreading. The inner edges A<sup>6</sup> of the abutment flanges A<sup>5</sup> are made slanting to allow of conveniently placing the rail D and the rail brace B in position, as will be readily understood by reference to Fig. 3. In practice, the rail D is slightly tilted in an inward direction, and the inner edge of the base is engaged with the lugs A<sup>4</sup>, and then the rail brace B is placed in position on the outer face of the rail D with the lower ends of the grooves B<sup>2</sup> engaging the inner ends of the flanges A<sup>5</sup>. The rail brace B is now swung downward and with it the rail brace B until the base of the rail D rests on the middle portion A' of the plate A, and the rail brace B is in engagement with the flanges A<sup>5</sup> throughout the length of the grooves B<sup>2</sup>.

Instead of tilting the rail, the tie plate and rail brace may be tilted and slipped in position on the rail between adjacent ties and then the tie plate is swung back to horizontal position and slipped with the rail brace lengthwise of the rail until the tie plate reaches the top of the adjacent tie.

The inner extension A<sup>2</sup> of the tie plate A is provided near its end with a spike hole A<sup>7</sup> for engagement by a spike E to fasten the tie plate A in position on the tie C. A spike hole A<sup>8</sup> is arranged on the extension A<sup>2</sup> adjacent the middle portion A' and intermediate the lugs A<sup>4</sup> so that when a



spike E' is driven into the spike hole A<sup>8</sup> its head engages the top of the inner edge of the base of the rail D to hold the latter down on the tie plate and to assist in holding the latter on the tie C. Spike holes A<sup>9</sup> are provided in the middle portion A' near the outer ends thereof for engagement by spikes E<sup>2</sup>, the heads of which bear down on the outer edges of the base of the rail D at points opposite the lugs A<sup>4</sup> to firmly fasten the rail D in place.

The inner face B' of the rail brace B is preferably provided with a drainage recess B<sup>3</sup> to allow rainwater to drain out from between the outer face of the rail D and the rail brace B.

From the foregoing it will be seen that the rail is securely fastened in position on the tie plate and is firmly braced against spreading. The desired result is accomplished by but two parts which can be readily assembled when placing the rail in position and without requiring separate fastening devices for fastening the rail brace to the tie plate.

It will be noticed that by the arrangement described the rail D can be shifted forward or backward in the direction of its length while adjusting the parts. The rail brace B extends from the bottom of the outside portion of the rail base to within a short distance of the top of the head of the rail, thus reinforcing the head of the rail and preventing the same from buckling. The rail brace B is preferably rounded off at the top and beveled at the ends (see Fig. 1) to present no undesirable projections for chains or other dangling parts on the car to hook on or be otherwise caught.

The combined rail brace and tie plate is very effective when used on curves to prevent spreading of the rails. A downward bending of the middle of the tie plate A incident to heavy weights passing over the rail is prevented owing to the interposition of the rail brace B at or near the middle of the tie plate and hence the long life of the tie plate and brace is insured.

It will further be noticed that by the arrangement described the rail is not liable to be turned over in the track by a heavy sidewise pressure and the rail is not liable to break owing to the reinforcing rail brace.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A rail fastener, comprising a tie plate for a rail to rest on and provided with retaining lugs for engagement with one side of the base of the rail, the said tie plate having a rising abutment for the outer side of the base of the rail to abut against, the inner edge of the abutment extending upwardly and outwardly opposite the rail web and approximately to the same height

thereof, and a rail brace having a face shaped to fit the outer side of the rail, the back of the base being beveled upwardly and outwardly and the said brace being wedged in between the outer side of the rail and the said inner edge of the abutment, the said brace and abutment being interlocked to hold the brace against movement in the direction of the length of the rail.

2. A rail fastener, comprising a tie plate for a rail to rest on and provided with retaining lugs for engagement with one side of the base of the rail, the said tie plate having spaced upright abutment flanges, and a rail brace having its face shaped to conform to the side of the rail, the back of the said rail brace having grooves fitting the said abutment flanges to hold the brace against movement in the direction of the length of the rail and to prevent the rail from spreading.

3. A rail fastener, comprising a tie plate for a rail to rest on and provided with retaining lugs for engagement with one side of the base of the rail, the said tie plate having spaced upright abutment flanges, the inner edges of which slant upward and outward, and a rail brace having its face shaped to conform to the side of the rail, the back of the said rail brace resting against the sloping inner edges of the said flanges.

4. A rail fastener, comprising a tie plate for a rail to rest on and provided with retaining lugs for engagement with one side of the base of the rail, the said tie plate having spaced upright abutment flanges, the inner edges of which slant upward and outward, and a rail brace having its face shaped to fit the side of the rail and having its back provided with grooves engaging the said inner edges of the abutment flanges.

5. A rail fastener, comprising a tie plate for a rail to rest on and provided with retaining lugs for engagement with one side of the base of the rail, the said tie plate having spaced upright abutment flanges, the inner edges of which slant upward and outward and the lower ends of the said inner edges being adapted to engage the other side of the rail brace, and a rail brace having its face fitting the outer side of the rail, the back of the said rail brace being provided with grooves fitting the slanting inner edges of the said abutment flanges.

6. A rail fastener, comprising a tie plate having a middle portion for the base of the rail to rest on and having inner and outer side extensions intermediate the ends of the tie plate, retaining lugs adapted to engage the inner edge of the rail base and arranged at the inner edges of the middle portion of the tie plate adjacent the ends thereof, abutment flanges rising from the outer extension



of the tie plate and spaced apart, the inner edges of the said flanges slanting upward and outward and the lower ends of the said flange edges being adapted to abut against the outer edge of the rail base, and a rail brace having its face fitting the outer side of the rail, the back of the said rail brace having grooves fitting the slanting inner edges of the said flanges.

7. A rail fastener, comprising a tie plate having a middle portion for the base of the rail to rest on and having inner and outer side extensions intermediate the ends of the tie plate, retaining lugs adapted to engage the inner edge of the rail base and arranged at the inner edges of the middle portion of the tie plate adjacent the ends thereof, abutment flanges rising from the outer extension of the tie plate and spaced apart, the inner edges of the said flanges slanting upward and outward and the lower ends of the said flange edges being adapted to abut against the outer edge of the rail base, the said tie plate having spike holes of which one is located adjacent the end of the inner side extension, another is located on the said inner side extension adjacent the middle portion, and the latter is provided with spike holes near the ends adjacent the outer edges of the middle portion, and a rail brace having its face fitting the outer side of the rail, the back of the said rail brace having grooves fitting the slanting inner edges of the said flanges.

8. A rail fastener, comprising a tie plate having a middle portion for the base of the rail to rest on and having inner and outer side extensions intermediate the ends of the

tie plate, retaining lugs adapted to engage the inner edge of the rail base and arranged at the inner edges of the middle portion of the tie plate adjacent the ends thereof, abutment flanges rising from the outer extension of the tie plate and spaced apart, the inner edges of the said flanges slanting upward and outward and the lower ends of the said flange edges being adapted to abut against the outer edge of the rail base, and a rail brace having its face fitting the outer side of the rail, the back of the said rail brace having grooves fitting the slanting inner edges of the said flanges, the inner face of the said rail brace and a portion of the bottom thereof being provided with a drainage recess.

9. A rail fastener, comprising a tie plate having a middle portion for the base of the rail to rest on and having inner and outer side extensions intermediate the ends of the tie plate, retaining lugs adapted to engage the inner edge of the rail base and arranged at the inner edges of the middle portion of the tie plate adjacent the ends thereof, and abutment flanges rising from the outer extension of the tie plate and spaced apart, the inner edges of the said flanges slanting upward and outward and the lower ends of the said flange edges being adapted to abut against the outer edge of the rail base.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN O. PHELPS.

Witnesses:

THEO. G. HOSTER,

PHILIP D. ROLLHAUS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."