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COMBINED GUARD RAIL AND CHAIR.

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964,176.

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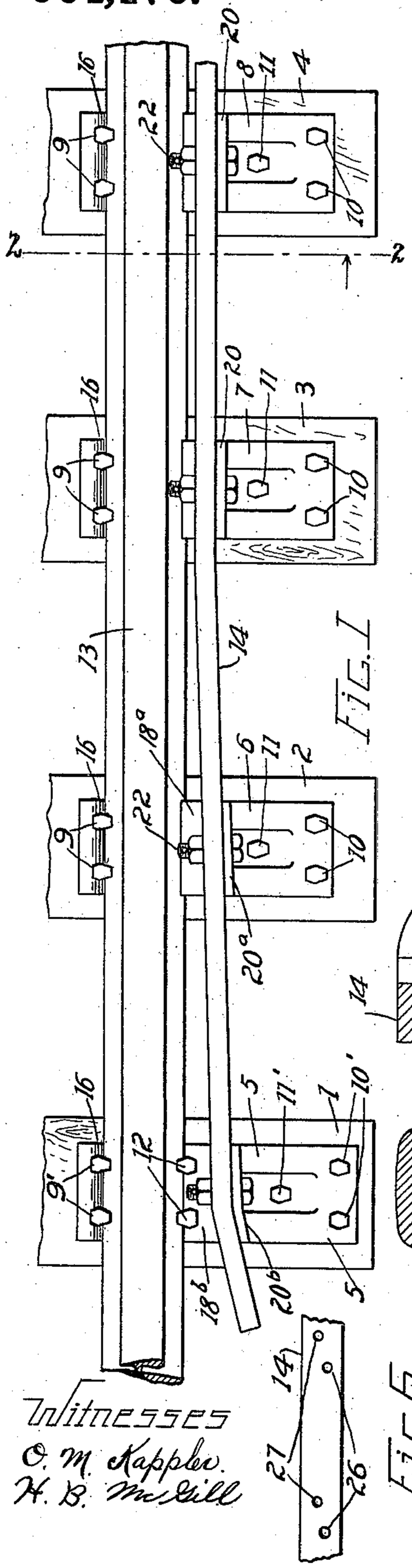

FIG. 1.

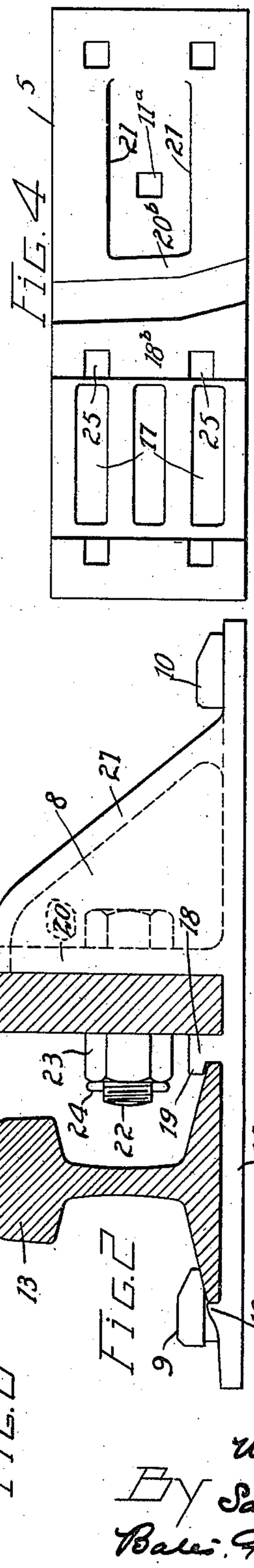

FIG. 4.

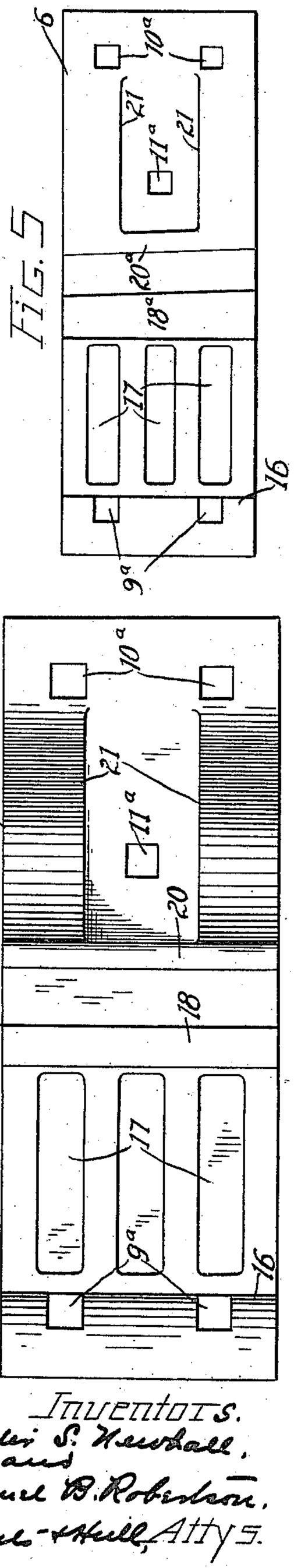

FIG. 5.

FIG. 2.

FIG. 7.

FIG. 6.

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UNITED STATES PATENT OFFICE.

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COMBINED GUARD-RAIL AND CHAIR.

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To all whom it may concern:

Be it known that we, WALTER S. NEWHALL and SAMUEL B. ROBERTSON, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, and at Columbus, in the county of Franklin and State of Ohio, respectively, have jointly invented a certain new and useful Improvement in Combined Guard-Rails and Chairs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to railway-rail chairs and guard-rails, the same having for its object the production of a combined chair and rail that shall be simple in construction, economical in manufacture, durable in use and easy of application to the railway rail and tie.

A further object of the invention is to produce such a combined structure in which the guard-rail is a bar of steel of rectangular cross-section, so that by simply turning the guard-rail end for end and up-side-down, the same may be re-applied to the chairs, thereby practically doubling the life of the guard-rail.

In the drawings forming a part of this application, Figure 1 is a plan view of the ends of a series of ties, each of the same having a chair applied thereto, said chair supporting a main and a guard-rail; Fig. 2 is a transverse section through Fig. 1 on the line 2—2; Fig. 3 is a plan view of the chair shown in Fig. 2, the main rail and the guard-rail being removed; Fig. 4 is a view similar to Fig. 3 but showing that form of chair at the end of the guard-rail, or at the left-hand end of Fig. 1; Fig. 5 is a view similar to Fig. 4 showing the next adjacent chair, and Fig. 6 is a side elevation of a part of the guard-rail.

At the present time, as far as we are aware, it is the universal practice to make guard-rails out of the ordinary railway rails. The guard-rail, however, should be spaced from the main rail a distance but slightly greater than the thickness of the flange of the car wheel; and, in order to place the guard-rail close enough to the main rail, it is necessary to remove the greater part of the base flange of the guard rail on the side adjacent the main rail. It will be understood that the guard-rail is spiked to the ties, and sufficent space must be provided between the flanges of the main and guard-rail to admit the spikes, thus necessitating a still greater planing or removal of the base flange of the guard-rail. As a consequence, the flange is almost all removed; and, as the latter gradually thickens from the outer edge toward the web of the rail, the part remaining is thick and the spikes cannot penetrate the tie so deeply as where the flange is thinner. Of course, the force exerted against the guard-rail is away from the main rail, and the tendency is to turn over the guard-rail in the direction away from the spikes holding down the planed flange; and, as the spikes holding down the planed side are so close to the web of the rail, the tendency to draw them as the wheels strike the guard-rail is greatly increased. Owing to these facts, the present structure of guard-rail is objectionable, not only from the standpoint of the preparation of the rail, but because of the insecurity with which the rail is held to the ties. Furthermore, these kinds of guard-rails cannot be reversed, and when they are once worn, they must be abandoned.

Taking up a fuller description of our invention by the use of reference characters, 1, 2, 3 and 4 represent portions of adjacent railway ties, each of the same having secured thereto, as by means of spikes, the rail-chairs 5, 6, 7 and 8 respectively. The chairs 6, 7, and 8 are secured to their respective ties by pairs of outer spikes 9, pairs of inner spikes 10 and an intermediate spike 11. The chair 5 is secured to its tie by a pair of outer spikes 9′, a pair of inner spikes 10′, the intermediate spike 11′ and a pair of spikes 12 that engage with the inner base flange of the main rail 13. This main rail is supported upon the chairs toward their outer ends, and the guard-rail is represented at 14.

In Figs. 2 and 3, we have shown the chair 8, that being the one at the right-hand end of Fig. 1, and we shall first describe the construction of that chair.

It will be noted that the guard-rail 14 is rectangular in its cross-section, as shown in Fig. 2, and that this rail lies comparatively near the main rail 13 and substantially parallel thereto throughout that part that is opposite the ties 3 and 4. Beyond the tie 3, or to the left in Fig. 1, the guard-rail diverges at a slight angle from the main rail and continues in a substantially straight line

until it reaches the chair 5 on the tie 1, where the guard-rail takes a sudden outward turn. The chair 8 is formed of a flat base plate 15, through which the apertures 9^a, 10^a and 11^a are provided for the reception of the spikes 9, 10 and 11 respectively. Adjacent the outer end of the plate 15, we provide the latter with a shoulder 16 for the outer edge of the base flange of the main rail 13, the said rail resting on the plate to the right of said shoulder. While the surface of the plate upon which the rail rests may be perfectly plain, we prefer to provide the same with depressions 17, such depressions serving to make the chair lighter. At the right-hand side of the base flange of the rail 13, the plate is provided with an upwardly extending rib or shoulder 18, the same having an outwardly turned flange or bead 19 extending over the adjacent edge of the base flange of the main rail. This rib with its flange not only holds the adjacent side of the main rail against lateral movement, but it also holds that edge of the base flange down, thus avoiding the use of spikes on that side of the rail. This construction is of great advantage, especially with chairs 6, 7 and 8, for the reason that there is comparatively little space between the main and the guard-rails at these points, and insufficient room is allowed for spikes, even if the latter could be conveniently driven. Beyond the rib or shoulder 18, and spaced therefrom a distance just sufficient to receive the guard-rail 14, is a vertically extending web 20, the same being braced by the buttress-shaped members 21 at either side of the plate. The guard-rail 14 rests in a socket between the rib 18 and the web 20, being more firmly secured to the chair by means of a bolt 22, said bolt passing through the web 20 and through the guard-rail and receiving a nut 23 and locking pin 24. As thus constructed, the guard-rail is not only braced by the web 20 and the buttress members 21 against turning outwardly from the main rail at its upper edge, but the lower edge of the guard-rail is also held against movement in the direction of the main rail by the rib or shoulder 18, it being understood that the tendency of said rail is to move away from the main rail at the top and toward the said rail at its lower edge.

The form of chair shown in Fig. 5 differs from that just described only in the fact that the adjacent sides of the rib or shoulder 18^a and of the web 20^a are inclined to the main-rail seat, the angle of inclination corresponding to that of the guard-rail 14 where it passes over said chair.

The chair 5, which is shown in Fig. 4, differs from the chair 6, just described, in that the rib or shoulder 18^b and the web 20^b extend at the same angle as the respective rib and plate 18^a and 20^a of Fig. 5 for a portion of the width of the chair, and then turn at a more acute angle to accommodate the additional bend in the guard-rail 14. This chair 5 is further differentiated by the spike apertures 25 at the edge of the rib 18^b, said apertures being intended to receive the spikes 12 by which the main rail is held to the chair. From an inspection of Fig. 1, it will be seen that the distance between the main rail and the guard-rail at the chair 5 is sufficient to permit the insertion of the said spikes 12 for holding down the main rail. It will be understood, however, that the rib or shoulder 18^b could be provided with the bead or hook for holding the main rail instead of the spikes, if preferred.

From Fig. 2 it will be noted that the bolts 22 do not pass through the horizontal center of the guard-rail, as sufficient space for the wheel flanges must be maintained above the nuts 23.

In Fig. 6, we have shown a short length of the guard-rail having the bolt apertures 26 and 27, said apertures being placed equal distances inwardly from the respective edges of the rail. When the guard-rail becomes worn, the bolts may be removed, the rail turned end for end and inserted, and the bolts re-placed, the same then extending through the other apertures. By this construction, the rail may be reversed and the life of the same be practically doubled.

Having thus described our invention, what we claim is:

1. The combination with a railway-rail chair having a seat for the main rail, of a plain, rectangular bar on the inner side of the main rail, said bar forming a guard-rail and means for securing said bar to the chair.

2. The combination with a railway tie, of a chair resting thereon, a plain, rectangular bar forming a guard-rail, means for securing the bar to the chair and means for securing the chair to the tie.

3. The combination with a railway tie, of a chair resting thereon, a pair of projections extending upwardly from the upper surface of said chair, a rectangularly sectioned bar resting between the said projections, means for securing the said bar to the chair and spikes passing through the chair into the tie for holding the chair in position.

4. In a railway construction, the combination with a plurality of ties, of a railway chair for and secured to each of said ties, a main rail resting upon said chairs and a rectangularly sectioned metallic bar secured to said chairs and extending alongside the main rail, the ends of said bar being turned outwardly from the rail, and means for securing the bar to the said chairs, said means being adapted to permit the bar to be reversed when it becomes worn.

5. In a railway construction, the combination with a plurality of ties, of a chair for and secured to each of said ties, a main rail resting upon said chairs, a pair of projections extending upwardly from each chair on the inner side of the main rail, said projections being spaced apart, a rectangularly-sectioned bar resting on edge between the said projections, and means for securing said bar to one of the said projections.

6. In a railway construction, the combination with a plurality of ties, of a railway chair for and secured to each of said ties, a main rail resting upon said chairs, a pair of projections extending upwardly from each of the chairs on the inner side of the main rail, said projections being spaced apart so as to form a rectangularly-shaped socket between the projections, a rectangularly-shaped bar resting between the said projections and bolts passing through the bar and through one of the projections on each plate for holding the bar in position.

7. In a railway construction, the combination with a plurality of ties, of a railway chair for and secured to each of said ties, a main rail resting upon said chairs, a projection on the chair on the inner side of the main rail, said projection having a hooked portion that extends over the base flange of the main rail, a second projection extending upwardly from each of the chairs, said projections being spaced apart so as to form a rectangularly-shaped socket, a rectangularly sectioned bar resting on its edge within the said sockets, the ends of the bar being bent away from the main rail and the said projections on the different chairs being placed to correspond with the shape of the bar, the said bar being provided with a double series of bolt holes and bolts passing through the holes in one series and through the second projection on the chairs for holding the bar in position, the bar being adapted to be reversed and secured to the chairs by the same bolts passed through the holes in the other series in the bar.

8. The combination with a railway tie, of a main rail, a rectangularly-sectioned bar forming a guard-rail adjacent the main rail, said bar having its ends symmetrical on each side of the center whereby it may be reversed, a chair extending continuously beneath said rail and bar, a shoulder projecting upwardly from the chair between the main rail and the said bar, means for securing the bar to the chair and means for securing the chair to the tie.

9. The combination with a railway tie, of a main rail, a rectangularly sectioned bar forming a guard-rail extending alongside the main rail, a chair resting upon the tie and supporting both the main rail and the guard-rail, a shoulder projecting upwardly between the main rail and the guard-rail, a web projecting upwardly from the chair and spaced from said shoulder a distance substantially equal to the thickness of the guard-rail, the said guard-rail resting between the shoulder and said web, a bolt passing through the web and through the guard-rail and spikes passing through the chair into the tie for holding the chair in position.

10. The combination with a railway tie, of a main rail, a rectangularly sectioned bar forming a guard-rail extending alongside the main rail, a chair resting upon the tie and supporting both the main rail and the guard-rail, a shoulder projecting upwardly between the main rail and the guard-rail, a web projecting upwardly from the base of the chair and spaced from said shoulder a distance substantially equal to the thickness of the guard-rail, the said guard-rail resting between the shoulder and said web, buttress members integral with the web and the base of the chair, said members bracing the web, a bolt passing through the web and through the guard-rail and spikes passing through the chair into the tie for holding the chair in position.

11. The combination with a tie, of a main rail, a chair beneath the main rail and resting upon the tie, a pair of projections extending upwardly from the chair, one of said projections being adjacent the base flange of the main rail, a rectangularly shaped bar forming a guard-rail extending downwardly between the said pair of projections, a bolt passing through one of said projections and the guard-rail and spikes holding the chair and the main rail in position.

12. The combination with a tie, of a main rail, a chair beneath the main rail and resting upon the tie, a pair of projections extending upwardly from the chair, one of said projections being adjacent the base flange of the main rail, a rectangularly shaped bar forming a guard-rail extending downwardly between the said pair of projections, strengthening braces connecting the outer one of said projections with the base of the chair, a bolt passing through one of said projections and the guard-rail and spikes holding the chair and the main rail in position.

13. The combination with a railway tie, of a main rail, a rail chair resting upon the tie and supporting the main rail, a shoulder at one end of the chair, a second shoulder spaced from the first shoulder a distance substantially equal to the width of the base flange of the main rail, said rail resting between the said shoulders, a web projecting upwardly from the chair and spaced from the second shoulder, a rectangularly sectioned bar extending downwardly between the said web and second shoulder, said bar

forming a guard-rail, buttress members bracing the said web, a bolt passing through the web and the guard-rail and means for securing the chair in position.

14. The combination with a railway tie, of a main rail, a rail chair resting upon the tie and supporting the main rail, a shoulder at one end of the chair, a second shoulder spaced from the first shoulder a distance substantially equal to the width of the base flange of the main rail, said rail resting between the said shoulders, a web projecting upwardly from the chair and spaced from the second shoulder, a rectangularly sectioned bar extending downwardly between the said web and second shoulder, said bar forming a guard-rail and being shaped symmetrically on each side of its center so that it may be reversed when worn, buttress plates bracing the said web, a bolt passing through the said web and the guard-rail and means for securing the chair in position.

15. The combination with a railway tie, of a main rail, a chair resting upon the tie and supporting the rail, an outer and an inner shoulder on opposite sides of the base flange of the main rail, the inner shoulder having a flange extending over the base flange of the rail, an upwardly extending web spaced from the inner shoulder, a rectangularly sectioned bar resting in the socket formed between the inner shoulder and the said web, a bolt passing through the guard-rail and through the web and means for securing the chair in position.

16. The combination with a railway tie, of a main rail, a chair resting upon the tie and supporting the rail, an outer and an inner shoulder on opposite sides of the base flange of the main rail, the inner shoulder having a flange extending over the base flange of the rail, an upwardly extending web spaced from the inner shoulder, said web projecting upwardly to substantially the height of the main rail, a rectangularly shaped bar resting in the socket formed between the inner shoulder and the said web, said bar also extending to substantially the height of the main rail, a bolt passing through the guard-rail and through the web and means for securing the chair in position.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

WALTER S. NEWHALL.

Witnesses:
J. B. HULL,
A. J. HUDSON.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

SAMUEL B. ROBERTSON.

Witnesses:
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E. H. KEMMETER.