A. G. LIEBMANN.

RAIL CHAIR.

APPLICATION FILED JULY 8, 1913. RENEWED DEC. 14, 1914.

1,126,507. Patented Jan. 26, 1915.

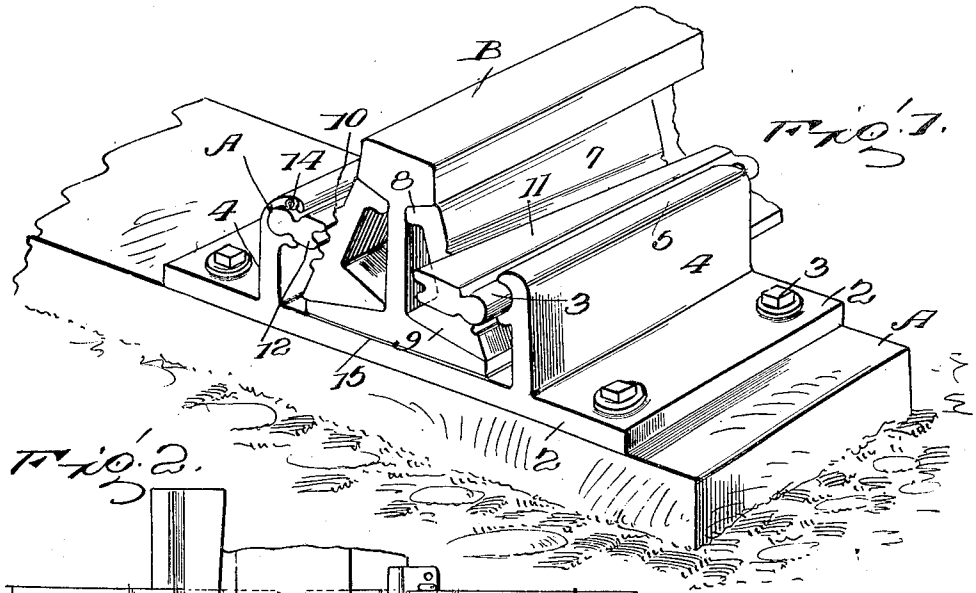


Fig. 1.

Fig. 2.

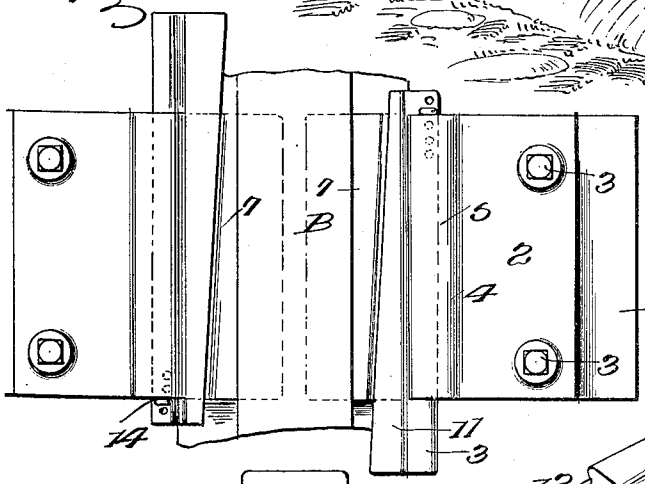
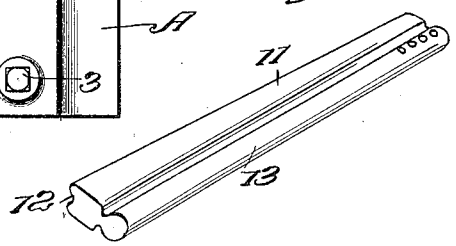


Fig. 4.



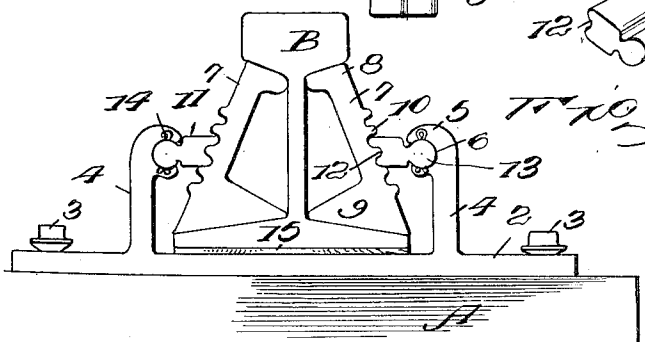


Fig. 3.

Inventor
A. G. Liebmann

Witnesses
Richmond Edey
Jno. Hinnie

By R. H. Parker, Attorneys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C

UNITED STATES PATENT OFFICE.

AUGUST G. LIEBMANN, OF BUTTE, MONTANA, ASSIGNOR TO VIGNOLES RAIL CHAIR COMPANY, OF NEW YORK, N. Y., A CORPORATION OF DELAWARE.

RAIL-CHAIR.

1,126,507. Specification of Letters Patent. Patented Jan. 26, 1915.

Application filed July 8, 1913, Serial No. 777,949. Renewed December 14, 1914. Serial No. 877,274.

To all whom it may concern:

Be it known that I, AUGUST G. LIEBMANN, citizen of the United States, residing at Butte, in the county of Silverbow and State of Montana, have invented certain new and useful Improvements in Rail-Chairs, of which the following is a specification.

This invention relates to track appliances and particularly to rail chairs for supporting and holding the rails in a proper position upon the ties.

The primary object of my invention is to do away with the necessity of attaching the rails to the ties by means of spikes in direct contact with the rail flange. This practice has many disadvantages. The lateral thrust upon the rails tends to cause the spikes to wear in the tie thereby enlarging the spike openings, and the lateral thrust upon the rails further tends to tip the rail upon the edge of one base flange so that the spikes are withdrawn or at least considerably loosened. The main reason for this loosening action of the rails is due to the fact that the spikes only grip the margin of the rail base and that there is nothing to support and buttress the heads of the spikes and rail to prevent the tipping and displacing action.

A further object of my invention is to provide a rail chair so constructed that the rail may be adjusted laterally or vertically and held in this adjusted position.

A still further object of the invention is to provide means of such simple form that the adjustment of the rail, either laterally or vertically, can be achieved by a section hand and with the simple tools which he ordinarily carries.

A further object is to so construct the rail chair and the rail-holding means that creeping of the rail will be prevented and sawing and crushing of ties will be eliminated.

A further object is to provide a rail chair so formed that the lateral thrust exerted upon the head of the rail will be translated into a nearly vertical thrust, thus resisting any tendency to tip.

Other objects will appear in the course of the following description.

The invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a perspective view of a portion of a tie, a rail thereon and my improved rail chair; Fig. 2 is a plan view thereof; Fig. 3 is an end view transverse to the longitudinal axis of the rail; and Fig. 4 is a perspective view of one of the wedging members.

Referring to these drawings, A designates a tie and B a rail. The tie may be of any standard form and is illustrated as of wood. The rail B may have any suitable form, but is illustrated as the standard rail commonly used throughout the United States. The rail is supported upon the tie by means of a base plate designated 2 upon which the rail rests. This base plate is held to the tie by means of screw spikes 3. Inasmuch as the spikes do not have to be withdrawn or redriven, screw spikes should be used. The base plate 2 has a width equal to that of the tie so as to secure a perfectly firm and extended bearing surface, and this base plate is provided adjacent its opposite ends with the upwardly extending abutments 4. These abutments are disposed parallel to each other and are spaced apart a distance greater than the width of a rail base. Each of these abutments at its upper end is enlarged so as to form a bulb 5, this bulb having a longitudinally extending bore 6 opening upon the inside face of the bulb. Disposed against the rail on each face thereof are the rail braces 7. Each of these braces extends downwardly and outwardly and at its upper end is formed with a head 8 bearing against the head of the rail and at its lower end or edge with a basal portion 9, which, in the instance shown, bears against the upper face of the flange of the rail and has the same area as the upper face of the flange. Each of the rail braces 7 is formed with a plurality of longitudinally extending corrugations 10.

Disposed between the rail braces 7 and the abutments 4 are the wedging members 11, one of which is shown in Fig. 4. Each wedging member is longitudinally tapered and is formed upon the face which confronts the rail brace 7 with a longitudinally extending groove 12 which receives any one of the corrugations 10. In other words, the confronting face of the wedging member is corrugated so as to co-act with and engage the corrugations 10 of the rail brace. The back of each wedging member is formed with a longitudinally extending bulb 13 which is adapted to fit within the bore 6. This bulb is, of course, not tapered. The wedging member and the bulb thereof are longer than the abutment 4 and the bulbous

portion 13 of the wedging member is conterminous with the wedging member and provided with openings or perforations for cotter pins 14.

The operation of my invention will be obvious from the drawings and the description above. When it is desired to hold the rail midway between the two abutments, the wedges 11 are adjusted to the position shown in Figs. 1 and 3 so that the wedging members have staggered relation. When, however, it is desired to shift the rail laterally one of the wedging members is shifted in one direction, while the other member is shifted in the opposite direction. One of these members will, therefore, wedge the rail laterally, while the other will permit such wedging of the rail. With the parts so adjusted and in proper position the cotter pins 14 are put in place so as to hold the wedging members in their adjusted position.

It will be noted that there are a plurality of the longitudinal corrugations 10 and that, therefore, the rail may be elevated by means of a shim 15 and that after the elevation of the rail the wedging members may be readjusted so as to still engage with the corrugations of the rail braces 7. It will be seen that the overhanging lip forming the upper wall of the bore 6 engaging the wedging member as it does will prevent any upward rotative movement of this member and, therefore, the rail will be held firmly upon the bed plate. At the same time, the wedging members may be very readily forced out of their wedging engagement and the rail adjusted either laterally or vertically.

The rail chair forming the subject matter of the present case is particularly adapted to the North Central States and the Northwestern States and will permit of wide range of lateral and vertical adjustment. In this region where rock ballasted roadbed is used, my improved rail fastener is particularly advantageous.

The abutments co-act with the wedges and rail braces in such a manner that the fastening compensates for the stresses of the rail when loaded by a slight pivotal movement of the wedges at their point of contact with the abutments. The abutments and braces being of equal length, the load of the rail is distributed in such a manner that in the passing of wheels, one side of the chair is in tension, while the other is in compression, both longitudinally and transversely of the rail. The rail is held down in a manner compensating for strain and avoids impact at any concentrated point, thereby eliminating the sawing of the rail within the chair and eliminating consequent sawing and crushing of the cross ties.

It is to be noted that there will be no shearing action on the rail base in case the rail is raised under the action of frost. If the rail is forced upward by frost, or if there is any other such elevation or depression of the roadbed, the upper wall of the bulb 5 will yield before the rail base will shear and the wedge will rotate slightly within the bore of the abutment.

Attention is particularly called to the official report of the Block Signal and Train Control Board of the Interstate Commerce Commission, dated June 29, 1912, wherein the board referred to the failure to realize and appreciate the overturning movement of the rail due to wheel flange pressure as being a fundamental effect in design. It will be noted that the tilting thrust on the rail is resisted by the downwardly and outwardly inclined rail braces and translated in a nearly vertical thrust upon the base plate. This report further states that "under conditions existing in a large proportion of the railroads in this country the means of adjustment of rail to tie must be such as will permit of blocking up or shimming," and, further, the board says that adequate means should be provided for adjusting the gage, which means should not involve lost motion or change of adjustment. It will be noted that my improved rail chair conforms to all of these requirements and yet retains such simplicity as will permit it to be readily manufactured and easily operated.

What I claim is:—

1. A rail chair having an upstanding abutment, a rail engaging member adapted to engage against the fishing space of a rail, and a longitudinally tapered wedging member disposed between the abutment and the rail engaging member and having interlocking engagement with the abutment and the rail engaging member, the rail engaging member being vertically adjustable with relation to the wedging member whereby to permit the rail to be raised with relation to the chair.

2. A rail chair comprising a bed plate having upstanding abutments spaced from each other a distance greater than the width of a rail base, downwardly and outwardly inclined rail braces adapted to engage on opposite sides of a rail and disposed between the abutments, the outer faces of the rail braces being longitudinally corrugated, and wedging members disposed between the abutments and the braces and each having a corrugated face engaging the corrugated face of the corresponding rail brace, said wedging members having sliding engagement with the abutment.

3. A rail chair comprising a bed plate having upstanding abutments spaced from each other a distance greater than the width of a rail base, each of said abutments being formed with a bulb at its upper end, said bulb

being longitudinally bored, the bore opening upon the inner face of the bulb, rail braces disposed between the abutments and adapted to engage a rail, and wedging members having wedging engagement with said abutments, each of said wedging members having a cylindrical longitudinally extending bulb adapted to be received within and having sliding engagement with the bulb of the corresponding abutment.

4. A rail chair comprising a bed plate having upstanding abutments spaced from each other a distance greater than the width of a rail base, each of said abutments being formed with a bulb at its upper end, said bulb being longitudinally bored, the bore opening upon the inner face of the bulb, rail braces disposed between the abutments and adapted to engage a rail, and wedging members having wedging engagement with said abutments, each of said wedging members having a cylindrical longitudinally extending bulb adapted to be received within and having sliding engagement with the bulb of the corresponding abutment, said bulb on each wedging member having a length greater than the length of the corresponding abutment and being perforated for the passage of holding means.

5. A rail chair comprising a bed plate having upwardly extending abutments spaced from each other a distance greater than the width of a rail base, each of said abutments being enlarged on its upper edge, the enlargement being formed with a longitudinally extending bore opening upon the inner face of the abutment, downwardly and outwardly inclined rail braces disposed between the abutments and adapted to engage with the base and head of a rail, and longitudinally tapered wedging members disposed between the abutments and the rail braces, the contacting faces of the braces and wedging members being longitudinally corrugated and interlocking with each other, each of said wedging members being provided with a longitudinally extending bulb adapted to be received within the bore of the corresponding abutment, the bulb portion of the wedging member being longer than the abutment and being provided with perforations and means disposed in said perforations and locking the wedging members from longitudinal movement.

6. The combination with a tie and a rail, of a bed plate fastened to the tie and having upstanding abutments spaced from each other a distance greater than the width of a rail base, downwardly and outwardly extending rail braces disposed one on each side of the rail, the outer faces of said rail braces being longitudinally corrugated, and a wedging member disposed on one side of each rail brace, each of said wedging members being longitudinally tapered and having a corrugated inner face adapted to engage the corrugations of the rail brace and each of said wedging members having a sliding engagement with the corresponding abutment, and means for detachably holding said wedging members in proper adjusted position with relation to each abutment.

7. In a rail chair the combination with a bed-plate having upstanding abutments, of a rail adapted to rest on the bed-plate or a shim between said abutments and adjustable laterally and vertically of said bed-plate, corrugated rail braces engaging opposite sides of the rail, and means having interlocking engagement with the abutments and braces for shifting the rail laterally and vertically and holding said rail in laterally and vertically adjusted positions.

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

AUGUST G. LIEBMANN. [L. S.]

Witnesses:
WILLIAM I. LIPPINCOTT,
WM. NUSS.

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