

W. T. BENTZ.

TIE PLATE.

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989,321.

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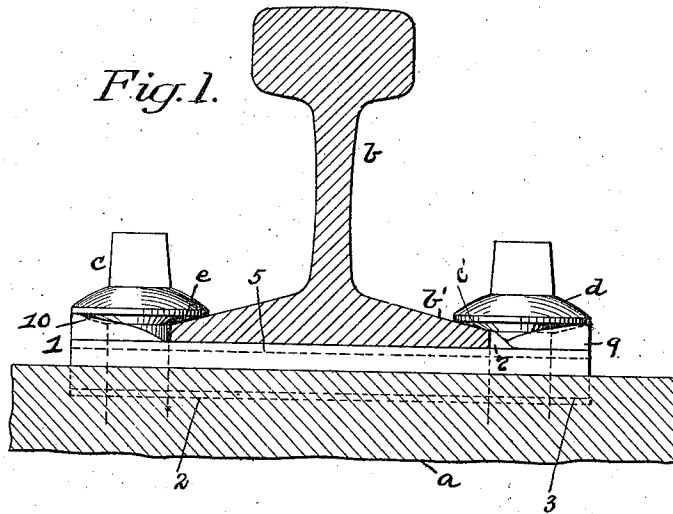
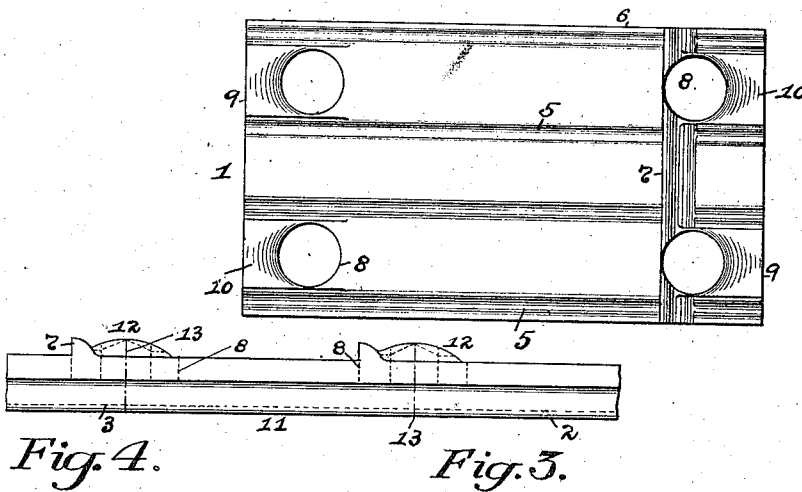


Fig. 2.



WITNESSES

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TIE-PLATE.

989,321.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM T. BENTZ, a resident of Elyria, in the county of Lorain and State of Ohio, have invented a new and useful Improvement in Tie-Plates; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to tie-plates, such as are used in connection with railway rails and for fastening such rails to the ties under the same.

The object of my invention is to provide a cheap, simple and efficient form of a tie-plate for railway rails which can be manufactured by rolling in a rapid, easy and convenient manner, and will provide for the proper supporting of the rail used on such plate, will also hold the plate and rail in proper position, and will provide means thereon for the proper supporting of the head of the spikes employed, as well as what are known as "screw-spikes," if used in connection therewith.

My invention consists, generally stated, in the novel arrangement, construction and combination of parts, as hereinafter more specifically set forth and described and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved tie-plate, I will describe the same more fully, referring to the accompanying drawing, in which—

Figure 1 is a side view of my improved tie-plate showing the same in position on the tie and with the rail and spikes. Fig. 2 is a top plan view of the plate. Fig. 3 is an end view of the same. Fig. 4 is a side view of a portion of the rolled bar for forming my improved tie-plate.

Like symbols of reference herein indicate like parts in each of the figures of the drawing.

As illustrated in the drawing, 1 represents my improved tie-plate, which is preferably formed by rolling from a metal bar or billet, such as steel, and is provided with parallel ribs or flanges 2 extending longitudinally beneath the under surface of the plate and located adjacent to the edges thereof. Between the ribs or flanges 2 are the ribs or flanges 3, which are of less depth than said

ribs or flanges 2, and such ribs or flanges 2 and 3 are wedge-shaped so as to provide for the pointed ends 4 respectively thereon to facilitate their being driven into the grain of the wood of the tie A, as shown in Fig. 1.

The upper surface of the plate 1 is provided with a series of parallel grooves 5, which are preferably arranged above the ribs or flanges 2 and 3, and such plate may, if desired, be provided with the side ribs or flanges 6 extending beyond the ribs or flanges 2. The upper surface of the plate 1 is also provided with the rail abutting shoulder 7 in order to sustain the rail *b*, such as is shown in Fig. 1 and prevent the same from spreading. The outer edge of the flange *b'* of the rail *b* is adapted to engage with the abutting shoulder 7 on the plate 1, and thereby prevent such rail from moving relatively to the plate, as well as preventing the throat cutting of the spikes *c* passing through the holes 8 in such plate and entering the tie *a*, as shown in Fig. 1. The abutting shoulder 7 is in the form of a rib or flange and it extends across the plate 1 and the grooves 5 in the same.

The spike-holes 8 in the plate 1 are shown as being four in number, two located in each end of the plate and between the outer grooves 5 and the next of the said grooves thereon, and the inner portions of such holes on the end of the plate having the abutting shoulder 7 extending across said holes, as shown in Figs. 1 and 2.

Around the outer portions of each of the spike holes 8 in the plate 1 and preferably extending to the ends of the plate, are the reinforcements or bosses 9 for the heads *d* of the spikes *c*, which extend up from the upper surface of the plate and are inclined upwardly from the inner to the outer ends of the same. These bosses 9 are adapted to support the backs of the spikes *c* and spike-heads *d* and the fronts of such heads are supported by the flange *b'* of the rail *b*. In Fig. 1, the spikes *c* are of the screw form which have their heads *d* of circular form with inclined or tapered under-faces *e'*, and the bosses 9 on the plate 1 are preferably concave or grooved on their upper faces and at an upward incline from the inner to the outer ends of the same, as at 10, to conform to the faces *e'*, so that such faces will be

seated within said grooves 10 and thereby give such spike-heads *d* a proper surface contact and support at their backs or outer edges on the sides of the same opposite the rail *b*.

In the rolling operation of forming my improved tie-plate 1, the metal is rolled from the bar or billet into the plate or bar 11 shown in Fig. 4, with the upper roll (not shown) forming the shoulder 7 and bosses 9 for each end or side of the plate 1 in double bosses 12 on the upper surface of said plate, and adjacent to said shoulder, while the flanges 2 and 3 will be formed on the lower surface of the plate 1 by the lower roll (not shown). After the bar 11 has been so formed to shape, it is cut or sheared across and centrally of the double bosses 12 and on the dotted lines, such as is shown at 13 in Fig. 4, to form the plates 1 which will thereby permit each of the two several portions of such bosses 12 on the ends of adjacent plates to form the bosses 9 on opposite sides or ends of such plates. The spike holes 8 can be formed in the bar 11 after such bar is formed or in the plates 1 after being cut from said bar or during the operation of cutting, as desired.

The spike holes with their reinforcements or bosses can be varied in number and their positions on each side of the plate can be changed, while various other modifications and changes in the design and construction of my improved tie-plate may be resorted to without departing from the spirit of the invention, or sacrificing any of its advantages. It will thus be seen that my improved tie-plate will obviate the failure from distortion and bending of the spike under the head from the lateral thrust of the rail and imperfect application and non-support back of such head. The plate will insure a good bearing of the flange or head of the spike and will prevent the spreading of the rail, by reason of the rail abutting shoulder, and such shoulder will prevent the rail base from throat cutting the head of the spike. It will also be seen that the depending flanges on the plate will enable such plate to be securely fastened to the tie, and when such plate is thus in position it has a stronger seat and prevents decay of the tie owing to the arched construction of such flanges. Through the grooves the plate is also made lighter in weight and thereby renders the same more economical and cheaper in construction, while it will possess the required length and will not be liable to creep when position or permit the rails to creep, and will not be liable to wear out the ties on which it is used.

The bar from which my improved tie-plates are formed will enable such plates to be rolled in continuous lengths and then sheared, or cut from such bar, while the

formation of such bar will permit the easy and rapid rolling of the same, and permit the tie-plates to be formed therefrom rapidly and conveniently, so that with the formation of the spike-holes within the same the tie-plates are ready for instant marketing and use with the rails.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A tie-plate having flanges on its under surface extending longitudinally with respect to and adapted to be embedded in a tie, grooves on its upper surface extending parallel with said flanges, a transverse shoulder on its upper surface, and bosses on its upper surface and between said grooves to reinforce the back of the spikes.

2. A tie-plate having flanges on its under surface extending longitudinally with respect to and adapted to be embedded in a tie, grooves on its upper surface extending parallel with said flanges, a transverse shoulder on its upper surface, and bosses on its upper surface and between said grooves to reinforce the back of the spikes, said bosses having their upper faces inclined upwardly and outwardly from the spikes.

3. A tie-plate having flanges on its under surface extending longitudinally with respect to and adapted to be embedded in a tie, grooves on its upper surface extending parallel with said flanges, a transverse shoulder on its upper surface, and bosses on its upper surface and between said grooves to reinforce the back of the spikes, said bosses having their upper faces provided with grooves therein extending upwardly and outwardly at an incline from the spikes.

4. A tie-plate having flanges on its under surface extending longitudinally with respect to and adapted to be embedded in a tie, grooves on its upper surface extending parallel with said flanges, a transverse shoulder on its upper surface, and bosses on its upper surface and between said grooves to reinforce the head of the spikes.

5. A tie-plate having flanges on its under surface extending longitudinally with respect to and adapted to be embedded in a tie, grooves on its upper surface extending parallel with said flanges, a transverse shoulder on its upper surface, and bosses on its upper surface and between said grooves to reinforce the head of the spikes, said bosses having their upper faces inclined upwardly and outwardly from the spikes.

6. A tie-plate having flanges on its under surface extending longitudinally with respect to and adapted to be embedded in a tie, grooves on its upper surface extending parallel with said flanges, a transverse shoulder on its upper surface, and bosses on its upper surface and between said grooves to reinforce the head of the spikes, said bosses having their upper faces provided

with grooves therein extending upwardly and outwardly at an incline from the spikes.

5 7. A rolled tie-plate bar having a series of transversely arranged bosses thereon having their upper faces grooved at an upward incline and adapted when cut through such bosses the plate so formed will have spike

supporting bosses on the ends of the same to support the spike-heads. 10

In testimony whereof, I, the said WILLIAM T. BENTZ, have hereunto set my hand.

WILLIAM T. BENTZ.

Witnesses:

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