

TIE PLATE.

1,060,775.

Patented May 6, 1913.

2 SHEETS—SHEET 1.

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APPLICATION FILED JUNE 17, 1912.

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2 SHEETS—SHEET 2.

Fig. 4.

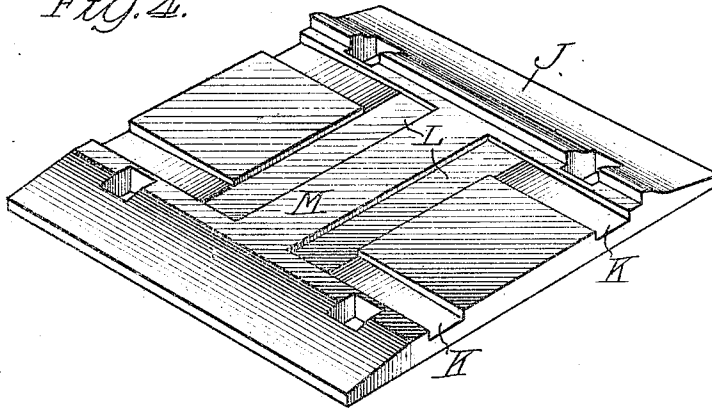


Fig. 5

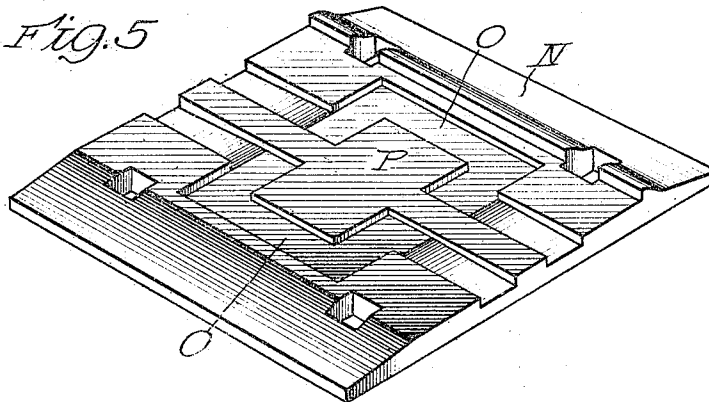
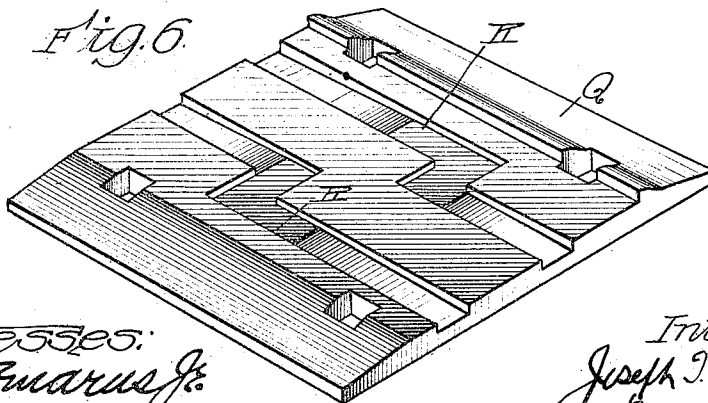


Fig. 6



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TIE-PLATE.

1,060,775.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed June 17, 1912. Serial No. 704,084.

To all whom it may concern:

Be it known that I, JOSEPH T. MARKHAM, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tie-Plates, of which the following is a specification.

My invention relates to railway tie plates and has for its object to provide a novel and improved tie plate in which the distribution of metal is such as to give a maximum of strength and durability at a minimum of manufacturing cost.

A further object is to provide a plate which will be so formed on its upper surface that if water, brine from the brine tanks of the car, or other liquid should work under the rail base it will immediately be drained off the plate instead of remaining there and causing the plate to rust out.

In the production of tie plates the metal is the principal item of cost. As tie plates are used in very large quantities any slight saving in the amount of metal that goes into each plate which can be effected without detriment to the strength, durability and general usefulness of the plate may result in a very considerable saving to the railroad using the type of plate in question. With this in view plates have been produced of various designs involving the recessing or channeling of that portion of the plate which lies under the rail base. So far as I am aware, however, no plates so recessed or channeled have as yet been produced in which the advantage of saving of metal is not equaled or even outweighed by the disadvantages resulting from the existence of the channels in the finished plate. For example, plates have been formed with channels extending from edge to edge of the plate longitudinally with respect to the rail but this construction weakens the plate in the very respect in which it should be strong. A tie plate always has a tendency, well recognized by experienced trackmen to bend on longitudinal lines. The weakening of the plate along longitudinal lines by providing its upper surface with channels increases the likelihood of the plates becoming bent in this way after they have been subjected to use for some little time. It is not practical to run the channels crosswise of the plate from side to side as a tie plate should have a smooth footing for the extreme edges of

the railbase. Otherwise the vibration of the rail will cause pieces to be chipped or broken out of the comparatively thin edges of the base flanges. It has been proposed to form the under surface of the plate beneath the rail base with pockets or recesses separated by ribs having the maximum thickness of the plate and a considerable saving in metal can be effected by this construction. However, if rain or brine from the brine tanks of the cars, or other liquid works in under the base of the rail, which happens not infrequently, it is collected and retained in these pockets or recesses and eventually causes the rusting out of the plate.

The tie plate which I have invented and lay claim to herein provides an arrangement of recesses in the upper surface of the plate which, while making a very considerable saving in metal, in the first place does not materially weaken the plate, and, in the second place, provides for readily draining the upper surface of the plate of any water that may come into contact with it. The channels, according to my invention, extend to the edges of the plate under the rail base so that the plate is properly drained, but are so arranged that a body of metal of maximum thickness is left at the center of the plate which extends transversely across the same so as to prevent any bending along lines longitudinal with respect to the rail.

The invention is illustrated, in certain preferred embodiments, in the accompanying drawings, in which—

Figure 1 is a plan view of one form of plate; Fig. 2, a sectional view taken on line 2—2 of Fig. 1, looking in the direction of the arrows; Fig. 3, a sectional view taken on line 3—3 of Fig. 1, looking in the direction of the arrows, and Figs. 4, 5 and 6 are perspective views of three modifications.

Referring first to Figs. 1 to 3 inclusive, which show a form of tie plate which best embodies my invention, as I now view the matter, A designates a tie plate and B the base flange of the rail supported thereon. The tie plate is formed with the usual shoulder or abutment C and the usual spike holes D. Extending inwardly from the forward and rear edges of the plate are the longitudinally extending recesses E and outwardly from these recesses the transverse recesses F; the arrangement being such as to provide a rib G or body of metal of

maximum thickness in the middle of the plate which extends from side to side thereof. This rib interrupts the lines of relative weakness resulting from the channels E and effectively prevents the plate from being bent under the stresses, well known to trackmen, tending to bend tie plates along lines parallel with the rail. The transverse recesses F preferably fall short of the edges of the rail base as shown so that smooth footings H are provided for the extreme margins of the rail flange to bear upon.

Preferably the L-shaped channels made by the pairs of recesses E, F, gradually deepen as the edge of the plate is approached. This facilitates the draining of the plate under ordinary conditions. The feature is of greater importance when, as often happens, the plate instead of being level is canted up on one side as, for example, when used on a track banked for a curve. In such case if these channels were of uniform depth throughout the inner ends of the channels on one side of the plate would pocket any water that might find its way into them.

Fig. 4 shows a modified arrangement of the recesses or drainage channels. The plate here shown and designated J, is provided with the longitudinally extending channels K each extending inwardly from the edges of the plate and connected by the transverse recesses L so that, as in the other form of plate, a rib of maximum thickness, designated M, is provided which extends across the plate from side to side. These channels have a downward slope from the middle of the plate to its edges.

In the plate N shown in Fig. 5 the channels O extend across the plate from the forward edge to the rear edge but by forming the channels with the angular jogs, as shown, the plate is not weakened on continuous longitudinal lines. In other words, the body of metal P, of maximum thickness, is provided which extends across the plate, though not from one footing to the other, and takes the strains which would otherwise be likely to bend the plate. In Fig. 6 I have shown a somewhat similar arrangement. The plate Q is formed with parallel angular channels R which, while extending from one edge of the plate to the other, do not, because of their angular character, result in undesirable weakness.

I claim:

1. A tie plate formed on that part of its upper surface covered by the base of the rail with recesses extending longitudinally with respect to the rail and terminating at the transverse edges of the plate, and with transversely extending recesses communicating with the longitudinal recesses; said recesses being disposed so as to provide smooth bearings for the edges of the rail base and

so as to provide a body of metal of maximum thickness extending crosswise of the plate at the center and intervening between the longitudinal channels which terminate at one edge of the plate and those terminating at the other edge so as to interrupt and make discontinuous the lines of weakness resulting from the provision of the plate with said longitudinally extending recesses.

2. A tie plate formed on that part of its upper surface which is covered by the base of the rail with a recess extending longitudinally with respect to the rail and terminating at one end at the edge of the plate, and with a transverse recess communicating with said longitudinal recess so as to provide a continuous drain channel extending to the edge of the plate and so that a body of metal of maximum thickness is provided extending transversely of the plate beneath the rail base, said drain channel being shallower at its inner end than at the outer end substantially as described.

3. A tie plate formed on that part of its upper surface which is covered by the base of the rail with a recess extending longitudinally with respect to the rail and terminating at one end at the edge of the plate, and with a transverse recess communicating with said longitudinal recess so as to provide a continuous drain channel extending to the edge of the plate and so that a body of metal of maximum thickness is provided extending transversely of the plate beneath the rail base, said transverse recess being formed so that it slopes downwardly into the longitudinal recess, substantially as described.

4. A tie plate formed on that part of its upper surface which is covered by the base of the rail with pairs of longitudinal recesses extending from the forward and rear edges of the plate, respectively, toward the center thereof, and with transverse recesses extending from said longitudinal recesses toward the sides of the plate, said recesses being so arranged as to provide a central rib of maximum thickness extending across the plate from side to side.

5. A tie plate formed on that part of its upper surface which is covered by the base of the rail with pairs of longitudinal recesses extending from the forward and rear edges of the plate, respectively, toward the center thereof, and with transverse recesses extending from said longitudinal recesses toward the sides of the plate, said recesses being so arranged as to provide a central rib of maximum thickness extending across the plate from side to side, the depth of said transverse recesses being diminished in the directions toward the edges of the plate.

6. A tie plate formed on that part of its upper surface which is covered by the

base of the rail with recesses extending transversely with respect to the rail and, connecting therewith, recesses extending longitudinally with respect to the rail which
5 increase in depth toward their termination at the end of the plate, said recesses being so disposed as to provide bodies of material

of maximum thickness beneath the center of the rail base and beneath the outer edges thereof.

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