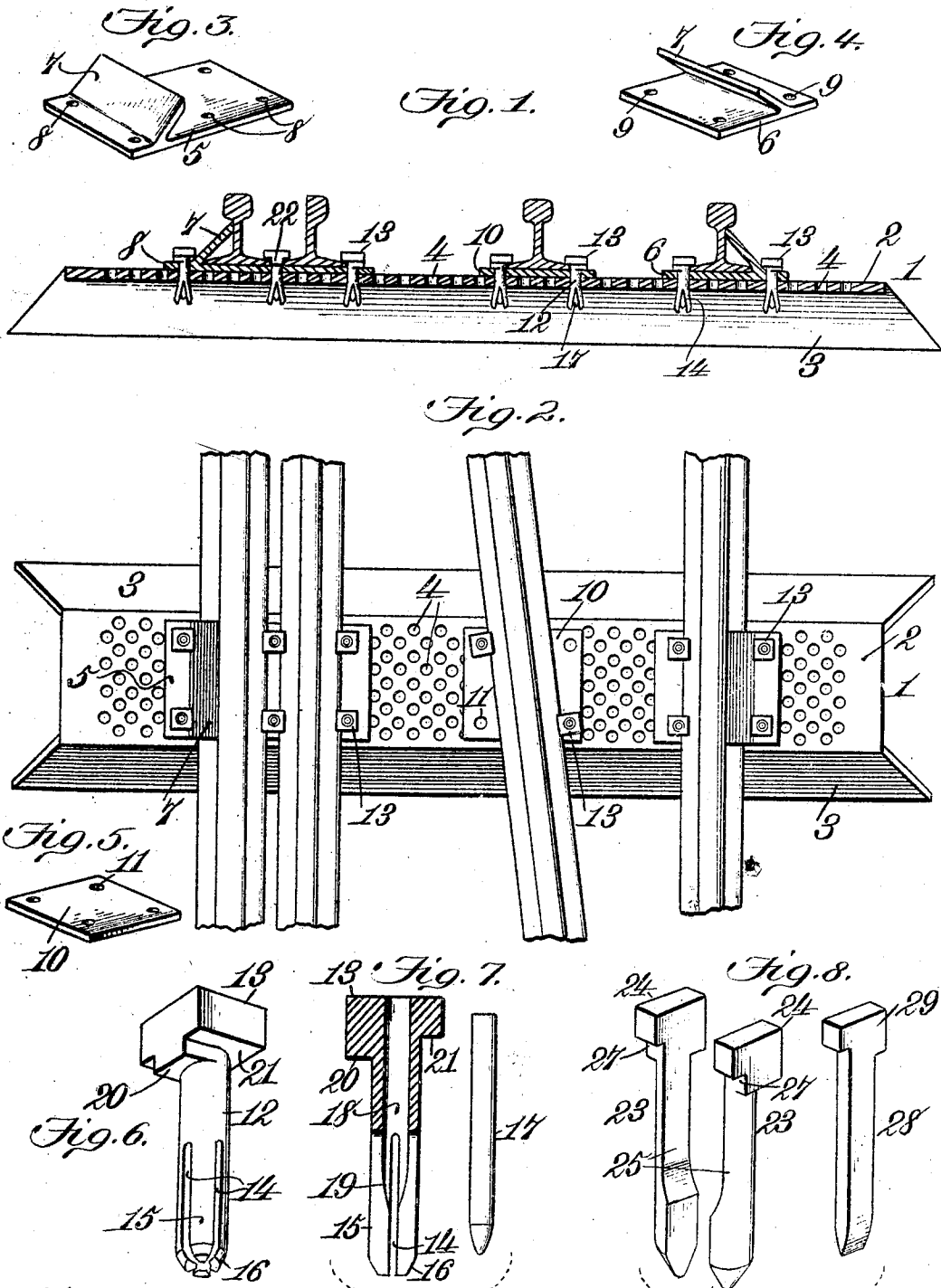


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C. M. REED.
RAILWAY TIE ORGANIZATION.
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RAILWAY-TIE ORGANIZATION.

No. 880,918.

Specification of Letters Patent.

Patented March 3, 1908.

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To all whom it may concern:

Be it known that I, CALVIN M. REED, a citizen of the United States, residing at Sumneytown, in the county of Montgomery and State of Pennsylvania, have invented new and useful Improvements in Railway-Tie Organizations, of which the following is a specification.

This invention relates to a metallic railroad tie, wear plate, and clench-bolt devices, all included in the organization of the tie.

The improved tie has the contour of a flat arch and comprises a flat top with depending side flanges, the said top being formed with a plurality of closely arranged bolt openings fully thereover or almost completely from end to end thereof to facilitate fastening rails thereon at any point and at differing angles as in the use of an ordinary wooden tie. The depending side flanges of the improved tie may be made straight and flare in outward directions, or as in well known tie constructions such flanges may be provided with pressed folds to prevent creeping. The wear plate may consist either of a perfectly flat plate or be provided with an upwardly and inwardly inclined fish plate to bear against the outer side of a rail to prevent the rails at curves from pulling off the heads of the bolts, the wear plates and the rails disposed thereon being secured to the flat top of the tie by means of clench bolts, having keys insertible thereinto to clench the lower extremities thereof and prevent accidental loosening or separation of the rails from the tie and principally to provide means for securing the bolts from the top of the tie.

The improved tie organization is simple and effective in its construction and operation, strong and durable, and may be used on any part of a railroad bed with economy in railroad construction and equipment.

The preferred form of the tie organization is illustrated in the accompanying drawing, and therein, Figure 1 is a longitudinal vertical section of a tie and the wear plates showing rails disposed therein and secured by the improved clench bolts. Fig. 2 is a top plan view of the improved organization as shown by Fig. 1. Figs. 3 and 4 are detail perspective views of wear plates constructed for right or left application, and to receive either one or two rails. Fig. 5 is a detail perspective view of a modified form of wear plate. Fig. 6 is a detail perspective view of one of the clench bolts. Fig. 7 is a detail

section and elevation respectively of the bolt shown by Fig. 6 and the key therefor. Fig. 8 is a detail perspective view of the parts of a modified form of clench bolt.

Similar numerals of reference are employed to indicate corresponding parts in the several views.

The numeral 1 designates the improved tie which has a flat top 2 and outwardly flared side flanges 3 extending full length thereof and projecting beyond the ends of the top 2. These side flanges 3 may be modified at will within the purview of the previous art to prevent creeping and in one construction may be pressed to form folds for this purpose. The top 2 and side flanges 3 by the arrangement specified provide a hollow structure, metal of such thickness being used in the formation of the tie as to render the latter strong and durable. The flat top 2 is formed with a plurality of closely arranged bolt openings 4 extending almost completely from end to end thereof and providing means for securing rails any distance apart or at any angle that may be desired and in a manner similar to the application of rails to ordinary wooden ties. In disposing the improved tie in a railroad bed, the same course may be pursued as to tamping and introduction of ballast as in the use of wooden ties.

With the improved tie and forming a part of the organization thereof wear plates 5 and 6 are used, each having an upwardly and inwardly inclined fish plate member 7 to closely contact with the outer sides of the rails which are disposed on the said plates to prevent the pulling off the heads of the bolts and may serve as a fish-plate when rails meet on the tie. The plate 5 is longer than the plate 6 to adapt the same to receive two rails as shown by Fig. 1, bolt openings 8 being formed in this plate 5 at such distances apart as to accommodate the application of clench bolts between contiguous rails and in engagement with the inner edge of the flange of the innermost rail and also to receive clench bolts at the outer extremity of the plate to prevent movement of the latter and maintain the proper rail gage as well as to serve as a fastening means for the plate independent of the main bolts. The plate 6 is adapted to receive a single rail and also has bolt openings 9 therethrough for clench bolts as shown.

A flat plate 10 is used on the tie to support rails between outermost rails and in constructions where it may be unnecessary to

have the fishplates 7 as shown on the plates 5 and 6, though the plates with the fishplates may be used with intermediate rails, if necessary so that the rails may be bolted to the fish plates and prevent them from extending in front of the locomotive. The plate 10 is provided with bolt openings 11 adjacent to opposite ends thereof.

The function of the plates 5, 6 and 10 is to prevent wear on the flat top of the tie 2.

It is well known that the sand used on a track to overcome a slippery condition of the latter falls to the base of the rails and in ordinary constructions works down under and between the rail flanges and the top portions of the ties and soon sets up an abrasion or disadvantageous wear of the tie top under the rails. The plates hereinbefore set forth largely overcome this disadvantage and greatly prevent the jar on the tie and the tie is by their use rendered more durable.

The improved tie organization also includes special clench bolts which are clenched from the top of the tie, and are shown in detail by Figs. 6, 7 and 8.

Referring particularly to Figs. 6 and 7, each bolt has a tubular shank 12 opening through a head 13, the lower extremity of the shank being formed with longitudinal slots or slot if but two lower members are desired for clenching 14 and the terminals of the members 15 provided by the slots or slot are reduced as at 16 to facilitate the insertion of the bolt shank through the opening of the plates and top of the tie. After the shank of the bolt, shown by Figs. 6 and 7, has been introduced through the openings in the plates and top of the tie, as shown by Fig. 1, the lower slotted extremity of the shank is automatically clenched by the introduction of a key 17 into the head of the bolt, the said key being driven downwardly through the bore 18, the latter being converged at its lower extremity as at 19. As the key 17 is driven downwardly through the bore, the members 15 are clenched under the top of the tie as shown in Fig. 1 and the bolt is tightly wedged or secured in place. The key 17 is of such length that when fully applied its upper end will be below the upper surface of the head 13 and the latter is swaged inwardly over the end of the key to prevent withdrawal of the said key from the top of the bolt.

The bolt head 13 is provided with an under bearing boss 20 which is adapted to contact with either of the plates, said boss depending below the under surface 21 of the bolt head. The under surface 21 of the bolt head is caused to contact either with the top surface of the rail flange or engage the lower outer portion of the fishplate 7, as also shown in Fig. 1. When the bolts are interposed between two rail flanges, the boss 20 will be turned to fit between the contiguous edges of

said flanges, as indicated at 22, Fig. 1. By providing each bolt head 13 with the boss 20 it will be seen that a firm contact with both the plate and the rail flange is had when the bolt is fully inserted and secured.

The form of bolt shown by Fig. 8 comprises two members 23, each carrying a part of a head 24 and having the inner faces of the shank members 25 thereof flat and merging into a lower inwardly curved bevel or clenching surface which is common to each shank member the same cause producing the same effect in clenching as in Figs. 6 & 7, it is merely cut in two to reduce the cost in manufacturing as few of the tubular bolts are needed between rails.

The head parts 24 of the heads are also offset as at 27, or similar in construction to the bolt head shown by Fig. 6 when the two parts of the bolt shown by Fig. 8 are assembled. In applying the two parts of the bolt shown by Fig. 8 they are closely arranged and the lower extremities unitedly inserted through the bolt openings either in the plates or the top of the tie or through both sets of bolt openings of the plates and tie in coincidence; and between the two parts of the bolt a key 28 is inserted, the said key being provided with a head 29 similar in form to the head parts 24. When the two parts of the bolt shown by Fig. 8 are inserted and the key 28 driven therebetween, the bolt members are clenched and securely wedged in place and part of each bolt head is swaged down over the head of the key as in the tubular bolt. In the event that the rails become worn and have to be replaced by others, the bolts may be removed by striking or cutting off the heads thereof and driving the bolt shanks downwardly through the tie. The improved bolts provide means, however, for reliably fastening the rails from the top of the tie, and as the lower extremities of the bolts beneath the top of the tie are inaccessible, the simple mode of clenching the bolts will be found exceptionally convenient and beneficial.

As shown by Fig. 1, guard rails may be very conveniently held in operative relation to the main track rails by the bolts and plates as set forth, or switch rails may be similarly disposed. Furthermore, as illustrated by Fig. 2, it will be seen that intermediate rails may be arranged at angles to the tie and to the remaining rails on the latter, and that the same bolts are employed; and in this instance the flat plate shown by Fig. 5 is preferably used. Many variations in the disposition of the rails on the improved tie may be made owing to the close assemblage of the openings 4, and at any time desired the position of the rails may be changed on the tie without requiring the least modification or alteration in the structure of the tie.

While the preferred fastening means for

the rails and including the plates 5, 6 and 10 and the bolts disclosed by Figs. 6, 7 and 8 have been explained, it will be understood that the tie may be used without these plates 5 and have the rails directly secured on the top thereof, though this arrangement is not as practical as when the plates are used and held to the tie by the form of fastening specified.

10 Having thus fully described the invention, what is claimed as new, is:

1. A metallic railway tie having a flat top provided with a plurality of closely arranged bolt openings, a wear plate disposed 15 on the tie and adjustable to any position with respect to the flat top, and a rail secured on the said plate and connected with the latter to the tie.

2. A metallic railway tie having a flat top 20 provided with a plurality of bolt openings, a wear plate disposed on the top and adjustable to any position with respect to said top, a rail bearing on the plate, and clench bolts inserted through the plate and tie, said 25 clench bolts being self-clenching beneath the top of the tie.

3. A metal railway tie having its bearing

face perforated with a plurality of bolt openings, a wear plate disposed on the bearing face and adapted to receive a rail, 30 and a clench bolt inserted through the wear plate and bearing face and having a key driven downwardly therethrough and clenching the lower extremity thereof beneath the top of the tie to immovably wedge the bolt 35 in secured position.

4. A metal railway tie having its bearing face perforated with a plurality of bolt openings, a wear plate disposed on the bearing face and adapted to receive a rail, and a 40 clench bolt inserted through the wear plate and bearing face and having a key driven downwardly therethrough and clenching the lower extremity thereof to immovably wedge the bolt in secured position, the upper end 45 of the key being secured by swaging a portion of the bolt head thereover.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CALVIN M. REED.

Witnesses:

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