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STREET-CROSSOVER FOR RAILWAYS.

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To all whom it may concern:

Be it known that I, FRANCIS A. BREWER, of Manlius, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Street-Crossovers for Railways, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to improvements in street-crossings for railroads where the street or driveway crosses the railroad at grade, and refers more particularly to a system of crossover plates or bed-pieces running parallel with and at the inner and outer sides of each rail and in close proximity thereto, so as to afford a substantially smooth crossover flush with the surface of the rails.

The common practice is to lay planks of wood upon the ties or over the sleepers with their upper faces flush with the surface of the tracks; but it is well known that the varying climatic conditions cause these planks to swell and warp to such an extent as to loosen their fastenings, and therefore the planks are insecure and are frequently the cause of serious accidents unless frequently repaired. It is also well known that these planks are of short duration and that it is necessary to frequently replace the same with new planks and that owing to the broad bearing on the tie or sleeper the moisture accumulates under the planks and in winter freezes and heaves the planks upwardly, so that their upper faces during the winter season are almost always above the surface of the track and causes the accumulation of snow and ice upon the rail, which is difficult to remove and interferes materially with traffic. My invention is designed to obviate these difficulties by providing metallic plates or bed-pieces which are angular in cross-section and are each provided with a lengthwise flange having its lower edge resting upon the ties or other supports and its upper face disposed in a substantially horizontal plane coincident with the upper surface of the rails. The object, therefore, is to make the bearing of these plates or bed-pieces upon the ties or other supports as narrow as possible in order to prevent the heaving of the same by frost or ice and at the same time produce a light, strong, and durable metal approach which is secured to the ties or other supports and is also braced to the rail, thereby serving not only as a crossover, but also as an additional support for preventing the spreading of the rails.

Other objects and uses will appear in the subsequent description.

In the drawings, Figure 1 is a perspective view of a portion of a railway and street crossing, showing my improved crossover system of plates or bed-pieces. Fig. 2 is a transverse sectional view through one of the rails and the metallic plates or bed-pieces adjacent thereto. Fig. 3 is a perspective view of a portion of one of the angular plates or bed-pieces, showing particularly the manner of bracing the same to the rail. Figs. 4 and 5 are perspective views of a portion of one of the inner angular plates and also a portion of one of the braces, showing the manner of interlocking one with the other. Fig. 6 is a similar perspective view of a portion of one of the outer plates and a portion of one of the braces secured thereto. Fig. 7 is a sectional view similar to Fig. 2, showing a modified form of plate and bracing means as applied to the rail.

Similar reference characters indicate corresponding parts in all the views.

In the drawings I have shown a portion of a railway system at its intersection with the street-crossing and consisting of the rails \(a\), which are mounted upon suitable ties \(b\). At the intersection of the street with each rail are placed bed-pieces 1 and 2, those of each pair being arranged at the outer and inner sides of the rail parallel therewith and in close proximity thereto, with their lower edges resting upon the ties \(b\) and their upper faces disposed in a horizontal plane substantially coincident with the upper faces of the rails. It now appears that these bed-pieces 1 and 2 are of substantially the same height as the rail, and each consists of a cast or wrought iron angle-plate having an upper horizontal flange \(3\) and an upright or substantially vertical flange \(4\), the
latter flange being formed integral with and depending from the outer edge of the flange 3, and its lower edge is provided with an outwardly-projecting lengthwise foot 5, which rests upon the tie and is formed with a series of cut-outs 6 to receive suitable fastening means 7, which are driven into the tie and engage the upper face of the foot 5, thereby holding the bed-pieces or angle-plates from vertical, lateral, or endwise displacement.

The free edges of the flanges 3 of the bed-pieces 1 and 2 are arranged in close proximity to the opposite sides of said rail, and the outer edges of these horizontal flanges are formed integral with and are therefore supported by the upright flanges 4, and it now appears that each of these bed-pieces is composed of a horizontal flange and a vertical flange united at substantially right angles to each other, which forms a light bed-piece and may be readily mounted and placed in operative position along the rails; but it is obvious that instead of making the bed-plate continuous from end to end it may be made up of sections arranged end to end in cases where the street is of considerable width. It is also apparent that the lower bearing-faces of the flanges 4, which rest upon the ties, are comparatively narrow, and therefore afford but little opportunity for the accumulation of ice or frost at such bearings, which might tend to heave the bed-pieces or throw them out of alinement.

In order to protect the inner free edges of the horizontal flanges 3 against crushing loads or strains, I provide a series of braces 8 at intervals throughout the length of each bed-piece, each brace being detachably secured to the edge of the flange 3 adjacent to the rail 2 and also detachably secured to the flange 4, thereby forming a series of diagonal braces supporting the flange 3. These bed-pieces are also braced against the web of the rail by suitable brackets 9, which in this instance are formed integral with the brace 8 and are preferably made of cast-iron or equivalent material, the brace 9 being provided with plates 10, which fit against the web of the rail at its junction with the head and base and may be used as fish-plates at the meeting ends of the rails, if desired. These plates 10 abut against the head and base-flange of the rail and serve to lock the bed-pieces 1 and 2 to their respective rails to keep the upper faces of the bed-pieces always flush with the top of the rails. The edges of the bed-pieces 1 and 2 adjacent to the rail are formed with dovetail sockets 11, which receive dovetail projections 12 in the brackets 8, whereby the bed-pieces and brackets 8 are detachably interlocked with each other to facilitate the manufacture and assembly of these parts. Secured to the flange 4 of each bed-piece are a series of slotted lugs or projections 13, which receive clamping-bolts 14 on the brackets 8, whereby said brackets are firmly secured to the flanges 4. Although I have described these brackets 8 as separate from the bed-pieces in some instances—as, for example, when the bed-pieces are formed of cast metal—said brackets may be cast integral with flanges 3 and 4 to serve the same purpose, and the brace 9 and brace 10 may also be formed integral with the bracket 8 or may be formed from separate pieces secured to said bracket or to any other part of the bed-pieces, the object being to hold the bed-pieces in fixed relation to the rail and at the same time to enable the bed-piece to partially support the rail.

The lugs 13 are secured to the inner faces of the flanges 4 and may be either separate from or integral therewith, and the slots which receive the bolts 14 are preferably open at their inner sides, so that the brackets 8 may be placed in operative position before the bed-piece is secured along the rail.

The edges of the horizontal flanges of the bed-pieces 2 at the inner sides of the rail are depressed longitudinally at 15 beneath the upper face of the rail for forming a longitudinal groove 16 to receive the flange of the car wheel; but otherwise the sections 2 are substantially the same as sections 1.

The upper surfaces of the horizontal flanges 3 are preferably roughened by longitudinal and transverse grooves 17 and 18 to prevent horses from slipping thereon, as it is evident that these intersecting grooves form a series of intervening ribs or projections, as 19, which are adapted to be engaged by the horseshoe to afford a reliable footing. The ends of the bed-pieces 1 and 2 are also formed with brackets 21 to partially close the open ends between the flanges 4 and adjacent sides of the rail, so as to prevent the trackmen or pedestrians from accidentally catching the foot therein.

In Fig. 7 I have shown a slightly-modified form of bed-piece in which the rail-engaging plate, as 10', is formed integral with the upper flange, as 3', and this plate 10' is interlocked with the head and base of the rail and also engaged with the web to support the inner edge of the flange 3', and in this instance the plates 10' and vertical flange, as 4', are braced against inward compression by a tie-rod 5', which is clamped to suitable lugs 25 and 26, formed, respectively, on plate 10' and flange 4'. It will now be seen that when these bed-pieces are assembled along the rails a chamber is formed between each bed-piece and adjacent face of the rail to receive any water or snow which may tend to accumulate.
on the rail, and this moisture is absorbed in the road-bed, which is usually of broken stone or similar material.

The above description of my invention is believed to be sufficient to enable any one skilled in the art to construct and operate the same, and it will be apparent that the parts may be somewhat modified from these referred to in the drawings without departing from the spirit of the invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with one of the rails of a railway, of an angle-plate parallel with and in proximity to the rail and consisting of a horizontal flange in substantially the same horizontal plane as the head of the rail, a vertical flange resting on its lower edge and supporting the horizontal flange, and a bracket secured to one of the flanges and engaged with the head and base of the rail to keep the horizontal flange flush with the top of the rail.

2. The combination with one of the rails of a railway, of an elongated metal flange standing vertically on one of its lengthwise edges and supporting a horizontal flange with its upper face in a plane substantially coincident with the upper face of the rail and a plate bearing against the head and base of the rail and secured to one of said flanges.

3. The combination with one of the rails of a railway, of an elongated metal flange standing vertically on one of its lengthwise edges and supporting a horizontal flange with its upper face in a plane substantially coincident with the upper face of the rail, and a bracket between the rail and plate.

4. The combination with one of the rails of a railway, of an angle-plate parallel with and in proximity to the rail and consisting of a horizontal flange in substantially the same horizontal plane as the head of the rail, and a vertical flange resting on its lower edge and supporting the horizontal flange, and a brace between the vertical and horizontal flanges.

5. The combination with one of the rails of a railway, of an elongated metal flange standing vertically on one of its lengthwise edges and supporting a horizontal flange with its upper face in a plane substantially coincident with the upper face of the rail, and a bracket detachably secured to the plate and seated against the web of the rail.

6. The combination with one of the rails and ties of a railway, metal bed-pieces at the inner and outer sides of the rail each having a horizontal flange in the plane of the head of the rail, and a vertical flange with its lower edge resting on the ties, each bed-piece having means engaging the rail to hold the horizontal flanges in the same plane as the head of the rail.

7. In a street-crossing system for railways, the combination with a rail, of an angle-plate having a horizontal flange and a vertical flange resting on its lower edge and supporting the horizontal flange, and a bracket removably secured to the horizontal and vertical flanges and bearing against the rail.

8. The combination with the rails of a track, of crossover-plates running lengthwise of and parallel with the rails, one at the inside and one at the outside of each rail, each plate consisting of a horizontal flange and a vertical flange, the latter resting on its lower edge and supporting the horizontal flange in the same plane as the head of the rail, each plate having means engaged with the under side of the head of the rail to prevent the vertical movement of the plate independently of the rail.

9. The combination with the rails of a track, of crossover-plates running lengthwise of and parallel with the rails, one at the inside and one at the outside of each rail, each plate consisting of a horizontal flange, and a vertical flange, the latter resting on its lower edge and supporting the horizontal flange in the same plane as the head of the rail and a tie-bar between and above the bases of the rails and connecting the plates at the inner sides of the rails.

10. The combination with the rails of a track, of metal crossover-plates at the inner sides of and parallel with the rails, and tie-bars between and above the bases of the rails and connecting said plates.

11. The combination with the rails of a track, metal crossover-plates at the inner sides of and parallel with the rails, each plate having a horizontal flange and a vertical flange, the latter resting on its lower edge and supporting the horizontal flange, and braces between the flanges of each plate.

12. The combination with the rails and ties of a track of crossover-plates running lengthwise of and parallel with the rails, one at the inside and one at the outside of each rail, each plate consisting of two flanges united at substantially right angles to each other, one flange resting edgewise on the tie and holding the other horizontally, the horizontal flange having ribs on its upper face.

13. The combination with the rails and ties of a track of crossover-plates running lengthwise of and parallel with the rails, one at the inside and one at the outside of each rail, each plate consisting of two flanges united at substantially right angles to each other, one flange resting edgewise on the tie and holding the other horizontally, and braces between each plate and adjacent face of the rail.

14. A crossover-plate for railways consisting of two lengthwise flanges, one being disposed at substantially right angles to the other, and braces between the flanges bearing against the web of the rail.

15. A crossover-plate for railways consist-
ing of vertical and horizontal metal flanges united at one edge, the vertical flange resting on its lower edge and supporting the other flange, and the latter flange having a roughened top surface for the purpose described.

16. A crossover-plate for railways consisting of two metal flanges united at one edge, one flange having a slotted lug and the other a dovetail socket, and a brace fitted in said socket and clamped to the lug.

In witness whereof I have hereunto set my hand this 16th day of January, 1904.

FRANCIS A. BREWER.

Witnesses:

H. E. CHASE,
MILDRED M. NOTT.