July 3, 1934. R. T. BELL 1,965,026

SHEET METAL RAILWAY GRADE CROSSING

Filed May 14, 1930

FIG. 1.

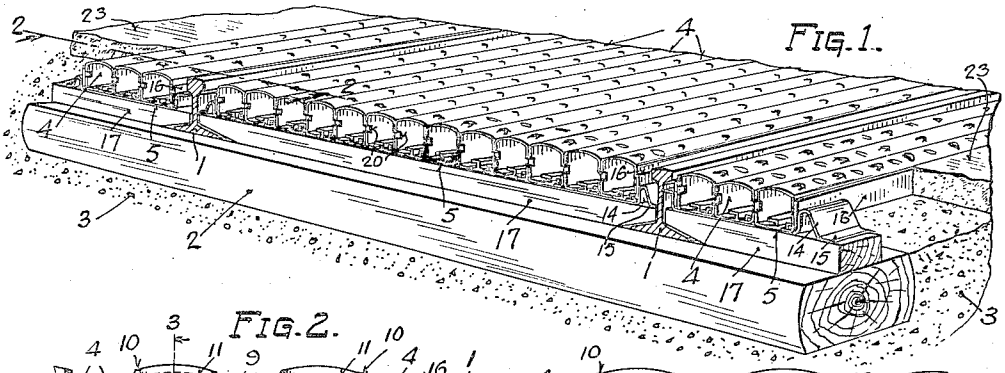


FIG. 2.

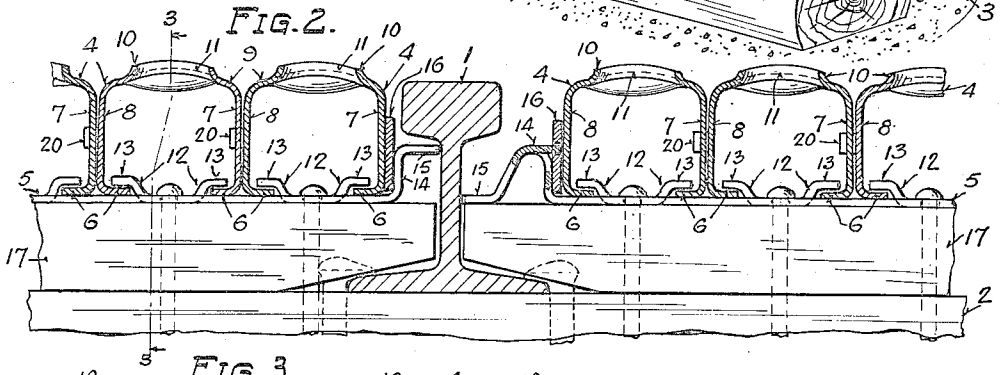


FIG. 3.

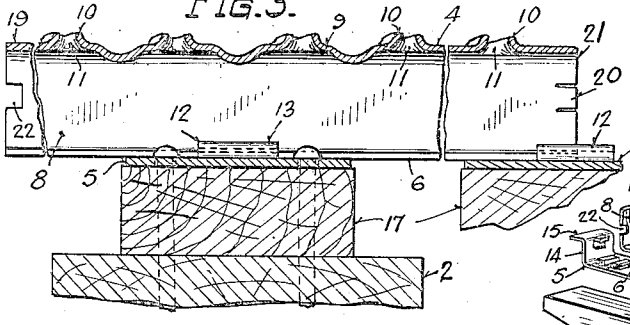


FIG. 4.

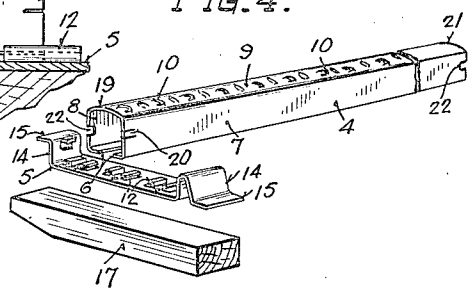
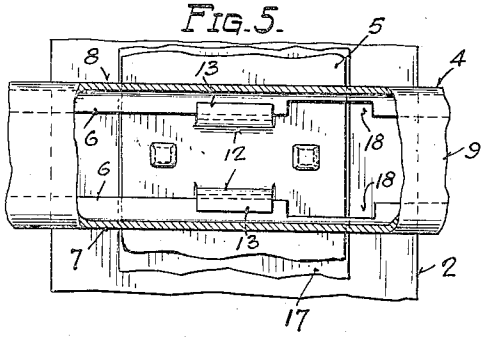


FIG. 5.



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SHEET METAL RAILWAY GRADE CROSSING

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Application May 14, 1930, Serial No. 452,335

30 Claims. (Cl. 238—8)

The present invention relates to an improved sheet metal railway grade crossing adapted to establish a smooth roadway over railways in order that vehicles may pass smoothly thereover.

An object of the present invention is to provide a grade crossing of simple and inexpensive construction and having characteristics of low initial cost and minimum expense for upkeep.

Another object of the invention is to provide a railway grade crossing of light construction which is conducive to rapid installation and which is sufficiently strong to bear heavy traffic.

A further object is to provide a crossing having a low number of standard parts and which may be manufactured in light portable sections to be assembled at the intersections.

The invention will be best understood by referring to the accompanying drawing in which:

Figure 1 is a perspective view of a crossing made in accordance with an embodiment of the present invention showing parts of the bed, rails, and pavement in section.

Fig. 2 is a transverse section of a crossing taken on the line 2—2 of Figure 1.

Fig. 3 is a longitudinal section taken on the line 3—3 of Fig. 2.

Fig. 4 is a view of the parts comprising the crossing made in accordance with the present invention in a position to be assembled.

Fig. 5 is a top view of a channel section having a portion broken away and showing a modified form of inturned flange for interlocking the channel member to the base plate.

The parallel rails 1 of the railway are supported by and secured to cross ties 2 embedded in the road ballast 3. The cross ties 2 are usually of wood, and hence must be periodically replaced. Since frequent replacements are necessary, crossings hitherto have been of more or less temporary construction of planking. Green planking had a tendency to warp when exposed to the sun's heat, and dry planking had a tendency to swell when soaked with water, and the insecure nature of plank crossings constituted an imminent hazard to trains and road vehicles alike.

The crossing made in accordance with the present invention comprises a plurality of metallic channel pieces 4 secured in interlocking engagement with a metallic tie plate 5. The channel pieces 4 lie parallel with the rails 1 of the railroad and may be of any length suitable for easy handling and expeditious installation. For narrow country highway crossings the channels 4 may be of such length as to extend the full width of the roadway. For wide city crossings it may be desirable to use a number of shorter channels 4 to minimize interruption of traffic during installation and repairing operations.

The channel sections 4 are preferably of sheet metal construction fabricated into channel pieces having inturned flanges 6 integral with the vertical side walls 7 and 8 to provide substantial bearing surface for the channels and also to serve as means for securing the channels in position. The upper web 9 is preferably arched or arcuated to give additional strength.

A preferred form of the channel 4 is shown in Figure 1 embodying non-skid features. The upper web 9 is provided with projections 10 struck upwardly from the metal of the web, leaving openings 11 through which dirt may enter. The dirt will have a tendency to deaden and prevent undesirable noises which might arise by reason of the hollow construction of the crossing. The projections 10 may be of any suitable design or shape.

The tie plates 5 are of metallic construction. They may be fabricated from sheet metal, or they may be cast or otherwise formed to provide ears 12 having outwardly disposed flanges 13 adapted to engage the inturned flanges 6 of the channel sections 4 and to secure the channel sections against lateral and vertical movement. Each of the tie plates 5 terminates in an abutment 14 having an outwardly extending flange 15. The flanges 15 of the tie plates 5 lying between the rails 1 rest upon the shims 17 and are adapted to engage the vertical webs of the rails. The flanges 15 of the tie plates 5 lying adjacent the outside edges of the rails 1 extend horizontally from the top of the abutment 14 and engage the vertical web of the rail, while the outer flanges 15 are similar to those of the tie plates lying between the rails. Each abutment 14 is spaced from the adjacent channel member 4 sufficiently to permit the insertion of a vertical brace plate 16 extending the full length of the channel to stiffen and support the abutting side wall of the channel member 4, and the abutments further provide a space between the channel and the rail for receiving the flanges of the wheels on the railway cars.

The channel pieces 4 and the tie plates 5 are preferably fabricated at the factory and transported in a knocked down state to the grade intersection. The vertical height of all channels may be standardized and variations in height of various rails compensated for by means of shims or spacing-members 17 which are adapted to rest upon the cross ties 2 embedded in the road ballast 3. By the use of the spacing members 17 the channels are supported above the cross ties and

road ballast and a saving in material and a corresponding saving in the cost of production of the channel members is effected by the possible reduction in the required depth of the side walls of the channel sections. Also, by this reduction of side wall depth an increase in strength and durability of the channels is obtained. The tie plates 5 are spiked or otherwise suitably secured to the shims 17 and the ties 2.

Each channel 4 is installed by placing the inturned flanges 6 in longitudinal alignment with the flanged ears 12 of the tie plates, and then driving the channel lengthwise so that the inturned flanges pass beneath the flanges of the aligned ears of each of the tie plates.

A modified form of channel member 4 is shown in Fig. 5 of the drawing, and in which gaps 18 are provided in the inturned flanges 6 sufficiently large to permit the entrance of the flanged ears 12 of the tie plate 5. The gaps 18 are spaced apart to correspond with the spaced tie plates 5. The channel 4 shown in the modified form may be installed by inserting the flanged ears 12 in the corresponding gaps 18 and thereafter driving the channel lengthwise sufficiently to lock the inturned flanges 6 beneath said flanged ears.

The side walls 7 and 8 of each of the channel sections 4 are preferably provided with means for interlocking the said channels against vertical or longitudinal movement. The channels are preferably reversible or interchangeable, hence the interlocking means at the opposite ends of the side walls are reversed. An end 19 of the side wall 7 is slit to form an integral tongue 20 and the end 21 is provided with a slot 22 adapted to receive the tongue of the channel next adjacent and to interlock the parts into a unitary structure. The end 19 of the side wall 8 is provided with a similar slot 22 and the end 21 of the side wall 8 is provided with a tongue 20 adapted to be driven into engagement with a corresponding slot 22 of the channel next adjacent. The feature of interchangeability results in locking the channel sections against longitudinal movement in either direction. The interlocking of the channels may be accomplished by bending the tongue 20 into the slot 22 of the laterally adjacent channel with a hammer or other suitable means.

Paving material 23 may then be applied to fill the gap between the roadway and the crossing and to thus provide a substantially continuous surface over which vehicles may pass without jar or interruption.

Having thus described the invention, it is understood that various modifications may be made within the scope of the appended claims.

I claim:

1. In a railway grade crossing a plurality of sheet metal channel sections of substantially rectangular section and disposed side by side longitudinally of the rails in interlocking engagement with a common supporting metallic tie plate, said sections being supported on spaced ties.

2. A railroad crossing comprising a plurality of sheet metal channel sections arranged side by side having vertical side walls and inturned flanges integral with said side walls, and a metallic tie plate having flanged projections in engagement with the inturned flanges of the channel sections.

3. A railway crossing comprising a plurality of sheet metal channel sections having an arcuated upper web, vertical side walls, and inturned flanges, and lying parallel to the rails of the railway, said inturned flanges anchoring said channel sections in interlocking engagement with a transversely disposed sheet metal tie plate.

4. A railway crossing comprising a plurality of spaced tie members extending transversely of the tracks, a plurality of sheet metal channel sections having vertical side walls and arranged parallel to the tracks, and a transverse metallic tie plate in interlocking engagement with said channel sections and supporting the same upon said spaced tie members.

5. A railway crossing comprising a plurality of spaced tie members extending transversely of the tracks, a plurality of sheet metal channel sections having vertical side walls and arranged parallel to the tracks, and a transverse metallic tie plate in interlocking engagement with said channel sections and supporting the same upon said spaced tie members, said channel sections being interlocked with each other to prevent relative displacement.

6. A railway crossing comprising a plurality of spaced tie members extending transversely of the tracks, metallic base plates fastened to said tie members, a plurality of sheet metal channel sections each having arched upper webs, vertical side walls, and inturned flanges integral therewith, said channel sections being arranged parallel to the tracks and lying flush with the roadway and tracks, and said inturned flanges being in interlocking engagement with the base plates.

7. A railway crossing comprising a plurality of spaced tie members extending transversely of the tracks, a plurality of inverted sheet metal channel sections arranged parallel to the tracks and having the upper surface thereof formed to provide an increased traction for vehicles, and transverse metallic tie plates in interlocking engagement with said channel sections and supporting the same upon said spaced tie members.

8. In a railroad crossing a sheet metal channel section having vertical side walls and having an upper web provided with means for increasing the traction of passing vehicles.

9. In a railroad crossing a sheet metal channel section having vertical side walls and having an upper web provided with means for increasing the traction of passing vehicles, comprising upturned flanges integral with the metal of the upper web.

10. A railway crossing comprising a plurality of spaced tie members extending transversely of the tracks, a plurality of channel members having inturned flanges, and a base plate having flanged projections in engagement with the inturned flanges of the channel members, said channel members being arranged parallel to the tracks and lying flush with the roadway and tracks.

11. In a railway crossing a plurality of channel members in interlocking engagement with a common supporting tie plate and in interlocking engagement with each other.

12. In a railway crossing a plurality of channel members in interlocking engagement with each other provided with inturned flanges having openings therein, and a common supporting tie plate having flanged projections adapted to enter the openings in the inturned flanges of the channel members and to engage the said flanges.

13. A sheet metal section for railroad crossings comprising a substantially horizontal upper web portion forming a tread surface and downwardly extending side walls, said side walls hav-

ing their free edge portions disposed substantially horizontal to provide bearing surfaces for supporting the section, there being openings in said free edge portions at predetermined points equally spaced therealong to facilitate installation.

14. In a railroad crossing, a plurality of sheet metal sections each having a substantially horizontal upper web portion forming a tread surface and downwardly extending supporting side walls, and means for securing said sections in juxtaposed position with their respective web portions in substantially the same horizontal plane to provide a substantially continuous tread surface for the crossing.

15. A railroad crossing comprising a plurality of rails, spaced tie members extending transversely of and supporting said rails, and a plurality of sheet metal sections having substantially horizontal upper web portions providing a substantially continuous tread surface and downwardly extending side walls having inturned flanges integral therewith to provide substantial bearing surfaces for supporting said sections.

16. In a railroad crossing having rails extending parallel to each other and ties disposed beneath said rails, a sheet metal tread having downwardly extending supporting walls of less depth than the depth of said rails, and common supporting means for said walls to maintain the tread surface substantially flush with the top of said rails.

17. In a railroad crossing having a plurality of rails and tie members extending transversely of and supporting said rails, a plurality of sheet metal channel sections having upper webs cooperating to provide a substantially continuous tread surface and downwardly extending supporting side walls of less depth than the depth of said rails, and means for supporting said channel sections to maintain said tread surface substantially flush with the top of said rails.

18. A railroad crossing or the like comprising a set of elongated metal channel members located side by side longitudinally of the rails, said members each comprising a top bearing wall and downwardly extending side supporting walls, the supporting walls of adjacent members being located side by side and one thereby reinforcing the other.

19. A railroad crossing or the like comprising a set of elongated metal channel members located side by side, longitudinally of the rails, said members each comprising a substantially horizontal top bearing wall, and downwardly extending side supporting walls of substantial depth, said supporting walls having inturned flanges forming feet, and said members being supported on spaced ties.

20. In a railroad crossing, the combination with the rails and ties on which they are mounted, of carrier bars located on the ties, and a set of elongated metal channel members located side by side transversely on the carrier bars and longitudinally of the rails, said members each comprising a top bearing wall, and downwardly extending side supporting walls, the supporting walls of adjacent members being located side by side and one thereby reinforcing the other, said supporting walls having inturned flanges forming feet.

21. A railroad crossing or the like, comprising a set of elongated metal channel members located side by side, longitudinally of the rails, said members each comprising a substantially horizontal top bearing wall, downwardly extending side supporting walls of substantial depth, said supporting walls having inturned flanges forming feet that rest on spaced transverse carrier bars.

22. In a railway crossing, the combination of spaced rails mounted on spaced ties, and a series of crossing members disposed adjacent said rails, adjacent members of said series being arranged to interlock at one end and having securing means at another end associated with said ties for positioning said members.

23. In a railway crossing, the combination of spaced rails mounted on spaced ties, and a series of crossing members disposed adjacent said rails, adjacent members of said series having interlocking means at one end and having securing means at the opposite end associated with said ties for positioning said members.

24. In a railway crossing, the combination of spaced rails mounted on spaced ties, and metallic crossing members disposed adjacent said rails, adjacent members being arranged to interlock at one end and having means adapted to cooperate with securing means at another end for connecting said members to said ties.

25. In a railway crossing, the combination of spaced rails mounted on spaced ties, and crossing members disposed adjacent said rails, adjacent members having interlocking means at one end and having means adapted to cooperate with securing means at the opposite end for connecting said members to said ties, said members being disposed adjacent said rails but spaced therefrom.

26. In a crossing for railways provided with ties and rails, in combination, a plurality of sheet steel deck members extending transversely of the ties to provide a tread surface substantially level with the rails, a sheet steel member carried by a tie for supporting the deck members, and lugs provided on the sheet steel supporting member for interlocking with the deck members to retain them in position.

27. In a crossing for railways provided with ties and rails, in combination, a plurality of sheet steel deck members extending transversely of the ties to provide a tread surface substantially level with the rails, a sheet steel member interposed between a tie and the deck members, and lugs provided on the sheet steel member for interlocking with the deck members to retain them in position.

28. In a crossing for railways provided with ties and rails, in combination, a plurality of sheet steel deck members extending transversely of the ties to provide a tread surface substantially level with the rails, a sheet steel member interposed between a tie and the deck members, means connecting the sheet steel member to the tie, and lugs provided on the sheet steel member for interlocking with the deck members to retain them in position.

29. In a railway grade crossing, a sheet metal unit of sufficient length to span the distance between two adjacent rail-supporting ties and adapted to be positioned with other like units in side by side relation longitudinally of the rails with their side walls abutting and their adjacent top walls presenting a substantially horizontal tread surface, each said unit comprising a shell of deformed metal having a top tread plate wall and depending side walls, said side walls having inset supporting feet located between the side walls.

30. In a railway grade crossing, a sheet metal unit of sufficient length to span the distance between two adjacent rail-supporting ties and adapted to be positioned with other like units in side by side relation longitudinally of the rails with their side walls abutting and their adjacent top walls presenting a substantially horizontal tread surface, each said unit comprising a shell of deformed metal having a top tread wall and side walls depending from the outer edges of the tread wall, said side walls having inset flanges along their lower edges extending laterally toward each other.

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