May 24, 1949. E. C. OXENRIDER 2,471,167

RAILROAD-HIGHWAY CROSSING CONSTRUCTION

Filed Dec. 15, 1945 2 Sheets-Sheet 1

Fig. 1

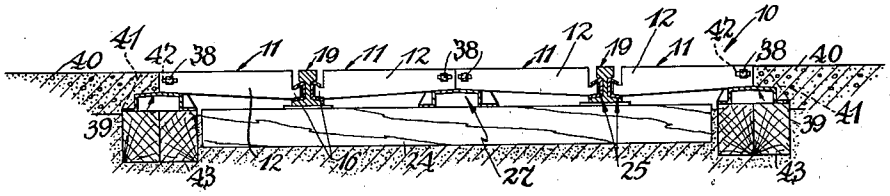


Fig. 2

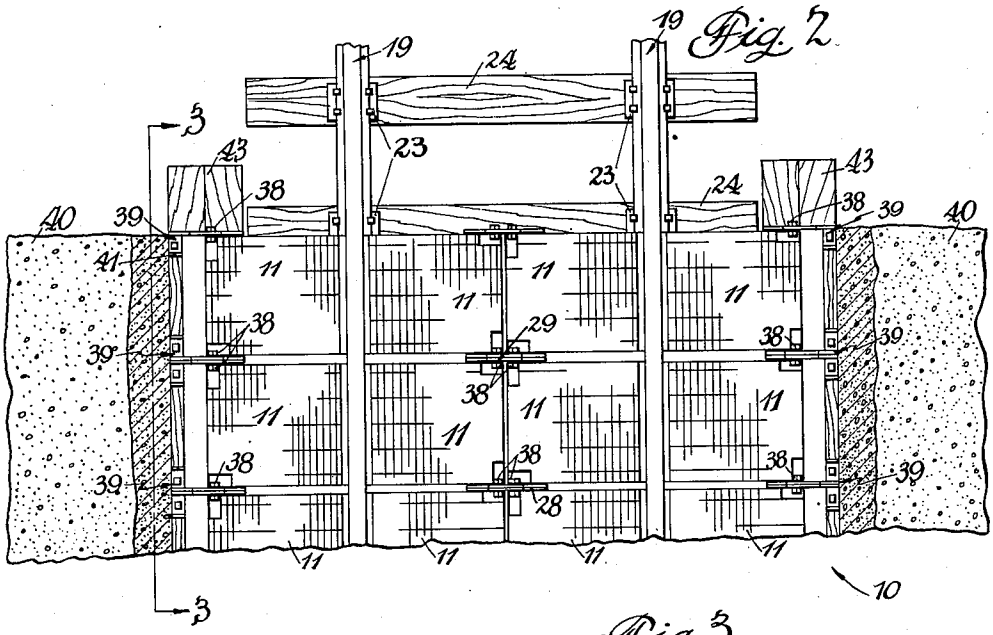
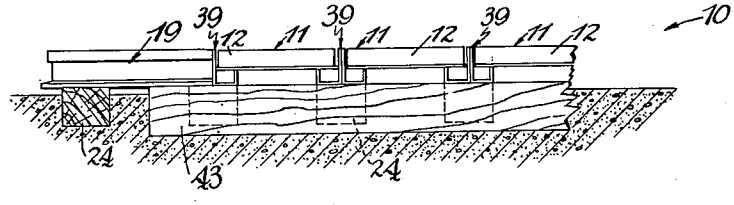


Fig. 3

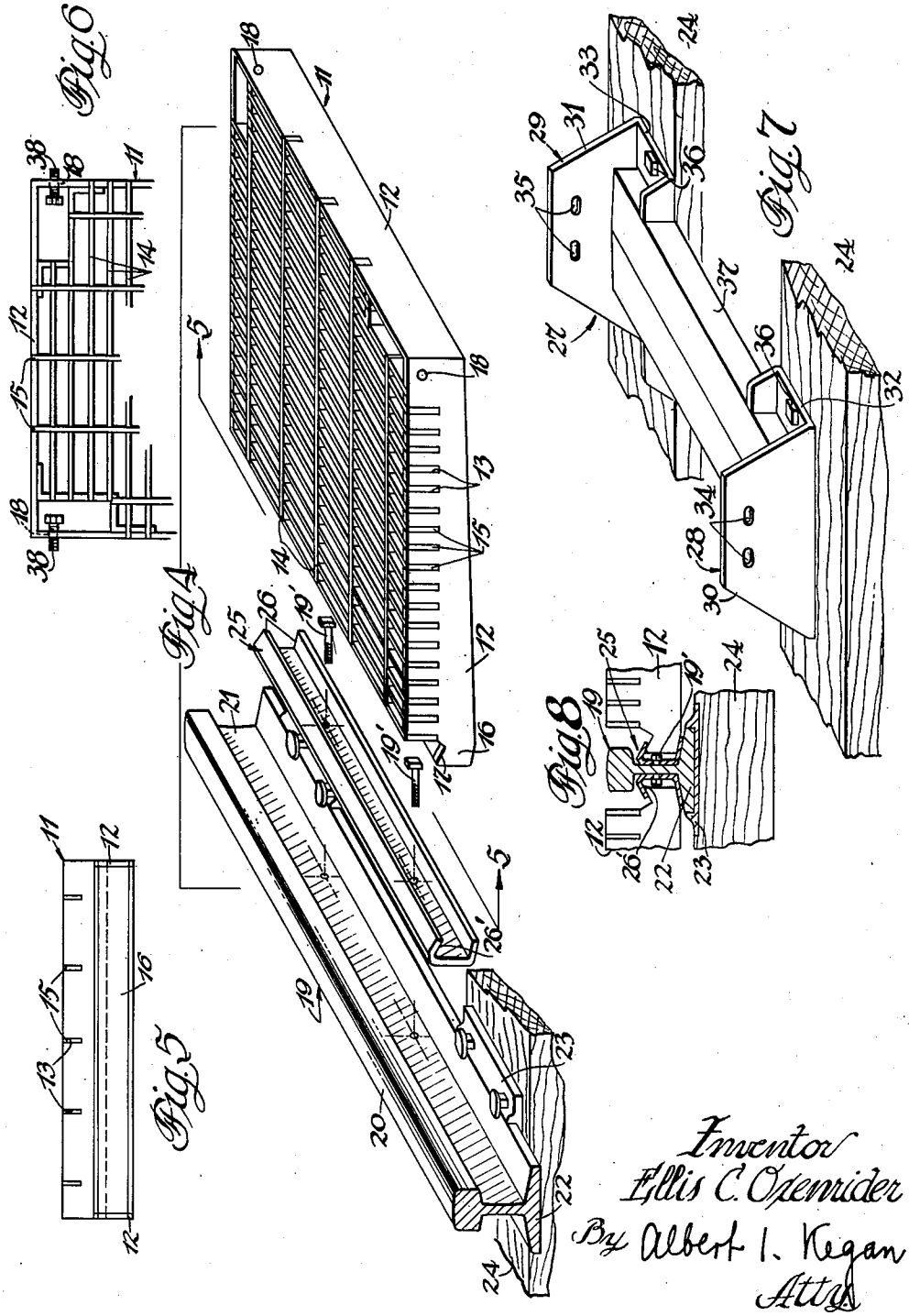


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RAILROAD-HIGHWAY CROSSING CONSTRUCTION

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RAILROAD-HIGHWAY CROSSING CONSTRUCTION

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7 Claims. (Cl. 238—8)

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This invention relates to railway crossings and more particularly to an improved crossing construction for a railroad and highway junction.

Due to the rising and settling of track rails and railroad beds, it is difficult to provide a railway and highway junction which will present an even crossing surface over a long period of time. In the construction of such crossings, it is highly desirable that the sections adjacent to the highway and intermediate the track be supported flush with the tops of the track rails. This is necessary to eliminate excessive wear and possible damage to vehicles traveling over the crossing. This flush or even surface is lost, usually shortly after construction of the crossing, due to shifting of the track rails or the road bed. Ordinary use by heavy cargo carrying vehicles may also cause the crossing to become rough. Consequently, crossings generally require continued maintenance service, at considerable expense to railroad and highway authorities.

This undesirable aspect has to some extent been lessened by providing constructions which are directly supported on the track rails and therefore are free to move vertically with changes in the road bed. In order to provide for greater service these types of crossings are generally of metal construction and therefore contract and expand noticeably with seasonal changes in temperature. Since prior art crossing sections generally are rigidly supported on the track rails and are firmly anchored at other points, such crossings tend to buckle upon expansion and to become loose upon contraction. Various adjustable constructions have been tried such as wedges, etc., but these again require continued maintenance service over a period of time.

An object of this invention is to provide an improved type of railway crossing construction;

Another object is to provide a railway crossing structure which is economical to produce, efficient in service, and which will require a minimum amount of maintenance throughout the period of its use;

Still another object is to provide a railway crossing so constructed as to take into consideration the thermal coefficient of expansion of the metals used, and which does not need adjustment over a period of time;

Another object is to provide a railway crossing formed with a plurality of crossing sections having interlocking engagement with the track rails and which need not be adjusted to the expansion and contraction of the crossing sections;

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Another object is to provide a railway crossing that is constructed of a plurality of small easily handled sections, the sections being so constructed as to attain a high degree of interchangeability;

Yet another object is to provide a railway crossing constructed of a plurality of sections made of steel parts having surfaces with even interstices provided by standard culvert netting or steel grating.

In order that my invention may be more fully disclosed, reference is had to the accompanying drawings which illustrate one form of apparatus embodying the foregoing and such other principles, advantages or capabilities as may be pointed out as this description proceeds, or as are inherent in the present invention. For purposes of clarity in exposition, the following description is explicit, and the accompanying drawings are detailed, but it is distinctly to be understood that said exposition is illustrative only, and that my invention is not restricted to the particular details recited in the specification or shown in the drawings, wherein:

Fig. 1 is an elevational view of a railroad crossing showing the track rails in section;

Fig. 2 is a plan view of a railway crossing;

Fig. 3 is a side elevational view taken along line 3—3 of Fig. 2;

Fig. 4 is an exploded perspective view of a crossing section and its means of support on a track rail;

Fig. 5 is a view taken along line 5—5 of Fig. 4;

Fig. 6 is a detail view of a portion of a crossing section;

Fig. 7 is a perspective view of an intermediate support of a railway crossing; and,

Fig. 8 is a sectional view through a track rail showing the means of attaching a crossing section thereto.

Like reference characters are used to designate similar parts in the drawings and in the description of the invention which follows.

The numeral 10 generally designates a railway crossing. Said crossing 10 consists of crossing sections 11, the number of which will vary with the size of the highway. The crossing sections 11 include end portions 12 forming a substantially rectangular box structure. The end portions 12 have a plurality of vertical slots 13. Vertical plates 14 arranged in a criss-cross pattern have end portions 15 supported in the slots 13 of the end portions 12. The vertical plates 14 and the end portions 12 are usually welded to-

gether and thus form a rigid structure which presents an even surface for the support of road vehicles traversing the crossing.

The rectangular box structure has a projecting portion 16 formed on one end of the end portions 12. This projecting portion 16 has an angled surface 17, the purpose of which will presently be disclosed. Holes 18 are formed in the end members 12.

The plurality of track rails 19 have runner portions 20, vertical webs 21, and base portions 22. Guide plates 23 and cross ties 24 support the track rails 19. A channel section 25 is connected to each track rail 19 by bolts 19'. The channel section 25 has leg portions 26, one of said leg portions 26 being bent inwardly to provide an inner surface 26'. This inner surface 26' conforms to the angled surface 17 of the projecting portion 16, and thereby limits the transverse movement of the crossing section 11.

An intermediate support 27, as shown in Figs. 1 and 7, consists of end members 28 and 29, having vertical portions 30 and 31 and horizontal portions 32 and 33. Slots 34 and 35 are formed in the end members 28 and 29 respectively. The end members 28 and 29 are connected to cross ties 24 by bolts 36. A connecting member 37 extends parallel to the track rails 19, and is suitably joined to the end members 28 and 29. This construction also is preferably made by welding in order to attain an inexpensive and rigid structure. As shown in Figs. 1, 2, and 6, bolts 38 extend through the holes 18 and through the slots 34 and 35, thereby adjustably securing the crossing section 11 to the intermediate support 27.

As shown in Figs. 1, 2, and 3, the supports 39 are similar to intermediate support 27, and are positioned to support the ends of the crossing sections 11, flush and adjacent the highway 40. The supports 39 have end members 41 with slots 42, as best shown in Fig. 1. The slots 42 are similar to the slots 34 and 35 of the intermediate support 27.

The supports 39 are mounted on beams 43 running parallel to the track rails 19. The crossing sections 11 are connected to the supports 39 by bolts 38. Portions of the end members 41 of the supports 39, are embedded in the concrete or asphalt highway 40, as shown in Fig. 1, thereby giving additional rigidity to the structure.

The shape of the channel section conforms to the projection on the crossing section. This construction, in combination with the slots in the intermediate support, and the supports adjacent the highway, provides a railway crossing which is rigid and yet adjusts itself to contraction or expansion resulting from temperature changes. Vertical movement of the track rails with respect to the crossing is eliminated. Transverse movement of the crossing sections is limited, and said sections remain sufficiently rigid to eliminate the need of continuous maintenance.

Since most of the crossing construction can be welded or molded together, and since a minimum of parts is used, the structure is inexpensive to manufacture. In assembling, the crossing sections merely have their projecting portions slid into the channel attached to the track rails, and said crossing sections are then fastened to the intermediate member or to the supports adjacent the highway.

This construction provides an even surface that rises and settles with the track rails. The sections are easily manufactured. Ordinary culvert netting or grating may be utilized as the riding surfaces. Replacement of the sections is a simple expedient, that can readily be accomplished by one man removing the screws through the sections which extend through the intermediate support. Trucks or other heavy duty vehicles may travel over the crossing for long periods of time without disrupting the flush surface presented by the track rails, highway, and crossing sections. It will thus be seen that the objects of my invention have been fully achieved by the construction illustrated and described.

It is to be understood that a preferred embodiment of the invention has been shown and described and that modifications may be made which do not depart from the spirit of the invention as disclosed, nor the scope thereof as defined in the appended claims.

I claim:

1. In a railway crossing having a track including cross ties and main track rails, said track rails comprising runner portions, vertical webs and base portions, the combination with said track rails, of two U-shaped channels secured to said track rails, respectively, abutting the inboard surfaces of said vertical webs, said U-shaped channels including upper and lower legs extending transversely of said track rails, said lower legs abutting said base portions and said upper legs being angled downwardly toward said lower legs; an intermediate support positioned between said track rails, said intermediate support including vertically and horizontally extending portions, said horizontal portions being connected to said cross ties, said vertical portions being perpendicular to said track rails and having slotted openings therein; crossing sections spanning the distance between said intermediate support and said track rails, said crossing sections having load bearing surfaces bearing against said horizontally extending portions, said crossing sections having projecting portions the upper and lower surfaces of which complement the angled inner surfaces of said U-shaped channels for interlocking engagement therewith, said U-shaped channels partially supporting said crossing sections and preventing transversal and vertical displacement thereof; and bolts extending through said crossing sections and said slotted openings for slidably securing said crossing sections to said intermediate support and preventing lateral movement of said crossing sections.

2. A railway crossing including cross ties and main track rails, said track rails comprising runner portions, vertical webs and base portions; a plurality of U-shaped channels connected to said vertical webs, said U-shaped channels including lower legs extending transversely of said track rails adjacent said base portions and upper legs extending downwardly toward said lower legs to provide angled inner surfaces therebetween; an intermediate support positioned between said track rails, said intermediate support including vertical and horizontal portions, said horizontal portions being connected to said cross ties, said vertical portions being perpendicular to said rails and having slotted openings therein; crossing sections spanning the distance between said intermediate support and said track rails, said crossing sections being partially supported by said horizontal portions, said crossing sections having projecting portions and surfaces on said projecting portions conforming to said angled inner surfaces of said U-shaped channels

for interlocking engagement therewith, whereby said crossing sections are partially supported by said U-shaped channels and prevented from deflecting transversally and vertically; and means for adjustably connecting said intermediate support with said crossing sections for preventing lateral movement thereof.

3. A railway crossing comprising a track having cross ties and main track rails, said track rails comprising runner portions, vertical webs and base portions; a plurality of U-shaped channels connected to said vertical webs, said U-shaped channels including upper and lower legs extending transversely of said track rails, one leg of each U-shaped channel being bent inwardly toward the other leg of said channel to provide angled inner surfaces therebetween; a support connected to said cross ties intermediate said rails; crossing sections spanning the distance between said intermediate support and said track rails, said crossing sections having projecting portions and surfaces on said projecting portions conforming to said angled inner surfaces of said U-shaped channels, said U-shaped channels engaging said projecting portions and partially supporting said crossing sections, thereby preventing transversal and vertical displacement of said crossing sections; and means for adjustably supporting said crossing sections at said intermediate support and preventing lateral displacement of said crossing sections.

4. In a railway crossing having a track including cross ties and main track rails, a highway portion flush with the tops of said track rails and comprising a plurality of U-shaped channels connected to said track rails, each of said U-shaped channels having upper and lower leg portions bent inwardly forming inner angled surfaces; a central support member connected to said cross ties intermediate said rails; crossing sections spanning the distance between said intermediate support and said track rails, said crossing sections having projecting portions and surfaces on said projecting portions conforming to said angled inner surfaces of said U-shaped channels, said U-shaped channels grasping said projecting portions, said crossing sections thereby being supported against transversal and vertical displacement relative to said track rails; and means for supporting said crossing sections on said support member so as to both permit transverse displacement and prevent lateral displacement thereof.

5. In a highway-railroad junction, the combination with a railway track including cross ties and a pair of main track rails of at least two channels secured lengthwise to the inboard portions of said track rails, respectively, each of said channels having upper and lower legs bent inwardly relative to each other forming inner angled surfaces therebetween; a crossing section

positioned between said track rails, said crossing section having projecting portions having surfaces conforming to said angled inner surfaces of said channels, said channels engaging and supporting said conforming surfaces of said crossing section, said crossing section thereby being restrained against transversal and vertical displacement; and a support intermediate said rails supporting said crossing section so as to both prevent lateral displacement and permit transversal displacement thereof.

6. In a highway-railway crossing, the combination with a railway track having cross ties and a pair of main track rails, of a channel secured lengthwise to the inboard portion of one of said track rails, said channel including a pair of converging leg portions extending transversally of said rails; a crossing section positioned between said track rails, said crossing section having a projecting portion conforming to said leg portions of said channel, whereby said channel supports said crossing section and prevents transversal and vertical displacement thereof relative to said track rails; and a support between said rails supporting said crossing section so as to both prevent lateral displacement and permit transversal displacement thereof.

7. A railroad crossing which includes: a pair of railroad rails and rail supporting ties therefor; two channel sections secured to said railroad rails, respectively, the back portions and the lower leg portions of said channel sections abutting the inboard surfaces of the web portions and base portions of said rails, respectively, the sum of the included angles between the leg portions and the back portion of each of said channels being less than 180 degrees; a supporting member intermediate said railroad rails, said member including substantially horizontal load bearing surfaces and vertical guide members perpendicular to said rails; and two crossing sections, one edge of each of said sections being supported by and movably locked within said respective channel, the edge of each of said sections opposite said one edge being supported by said bearing surface of said supporting member and slidably secured to said vertical guide member.

ELLIS C. OXENRIDER.

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