May 6, 1958 C. H. SANDBERG 2,833,480

HIGHWAY RAILROAD CROSSING

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Fig-1

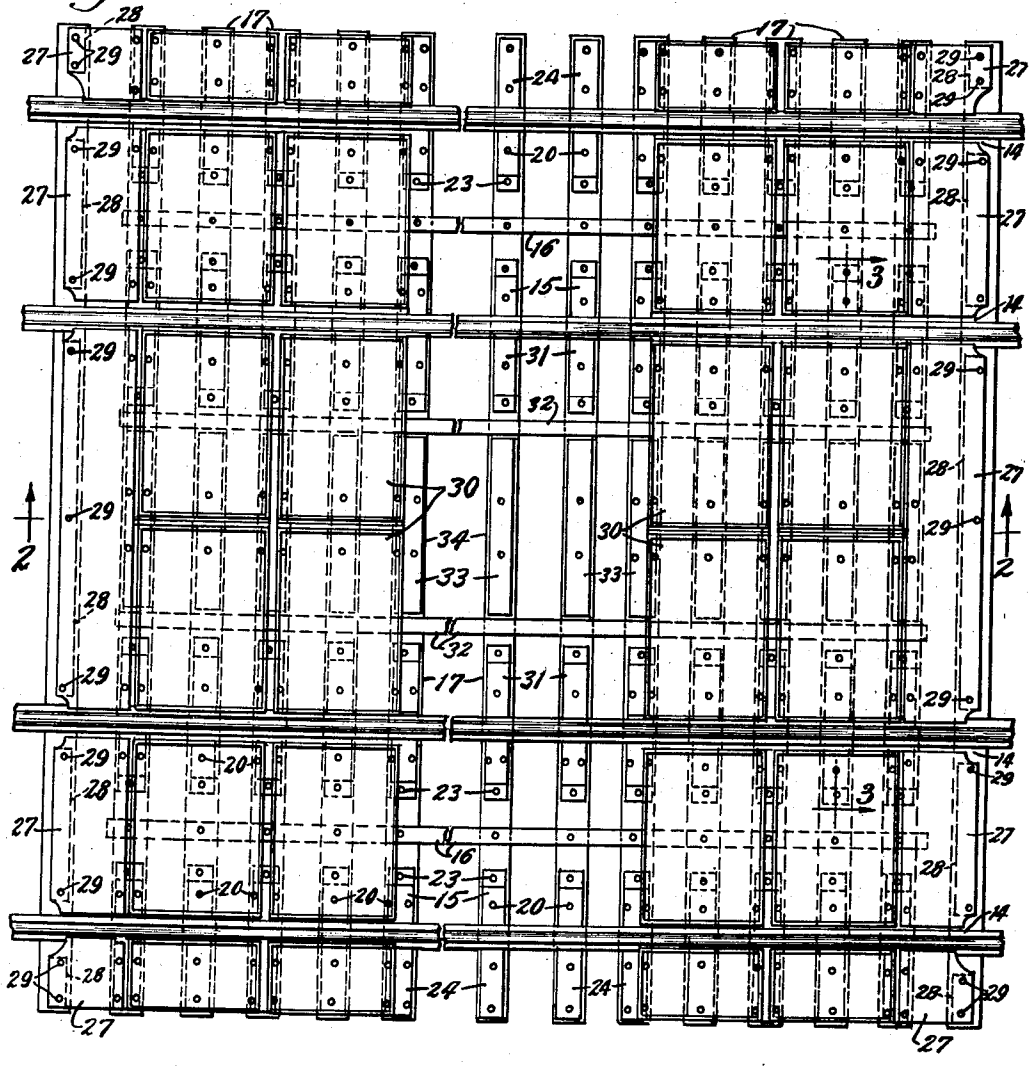
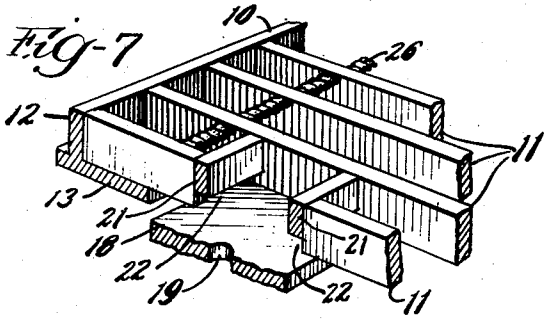


Fig-7



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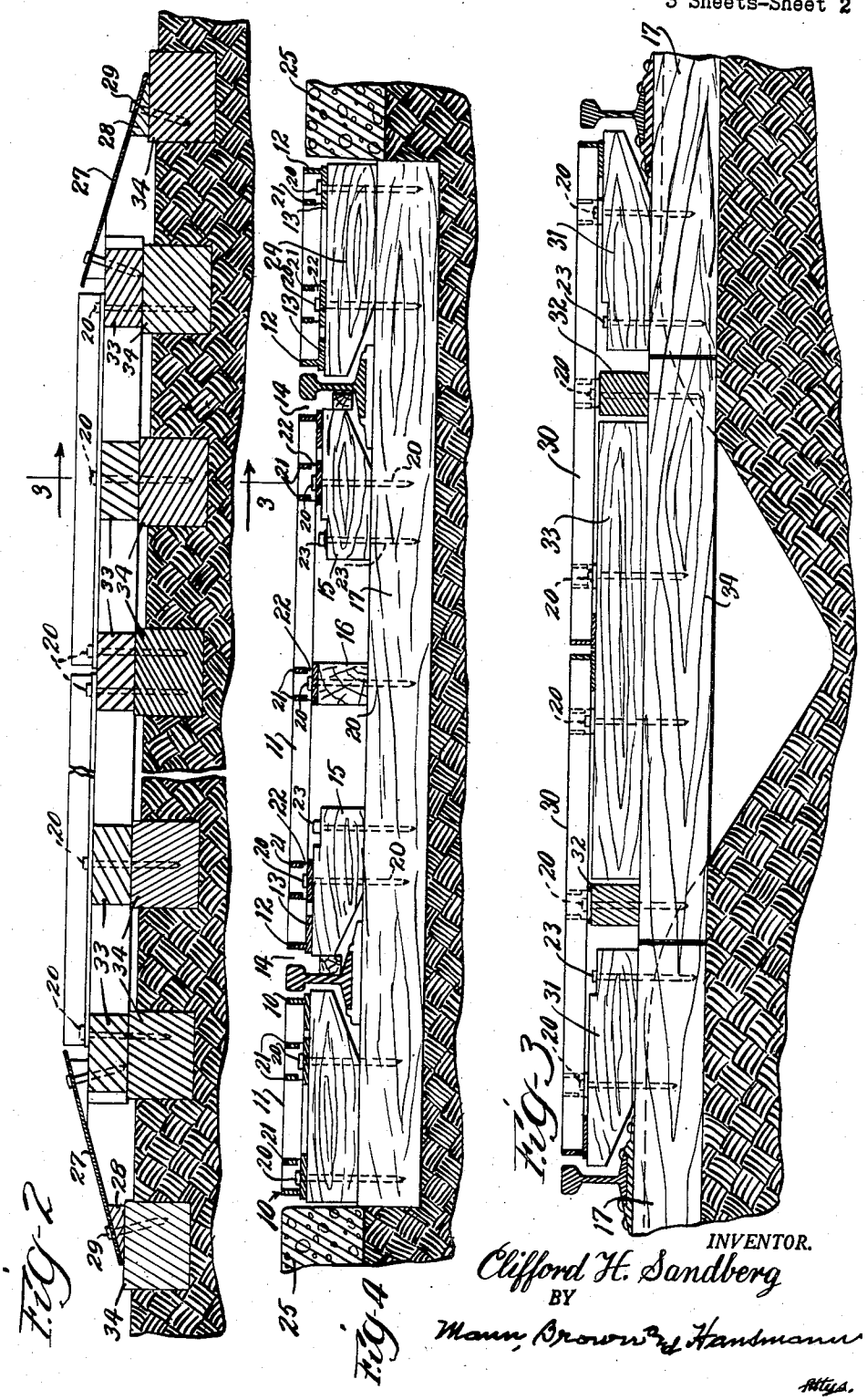

Fig. 2

Fig. 4

Fig. 3

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Fig-5

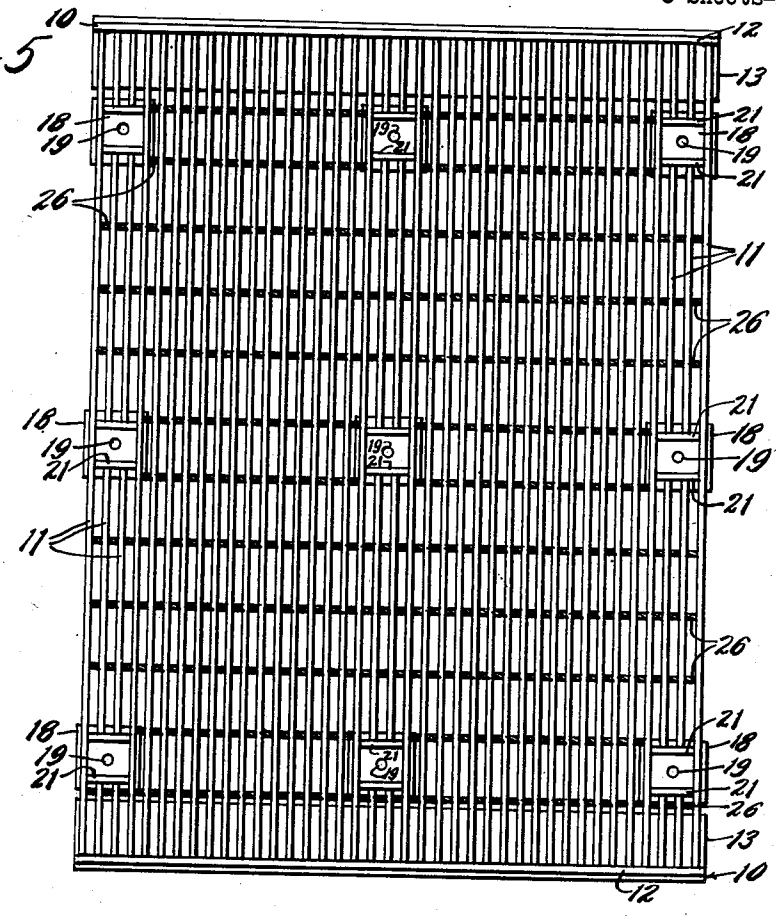
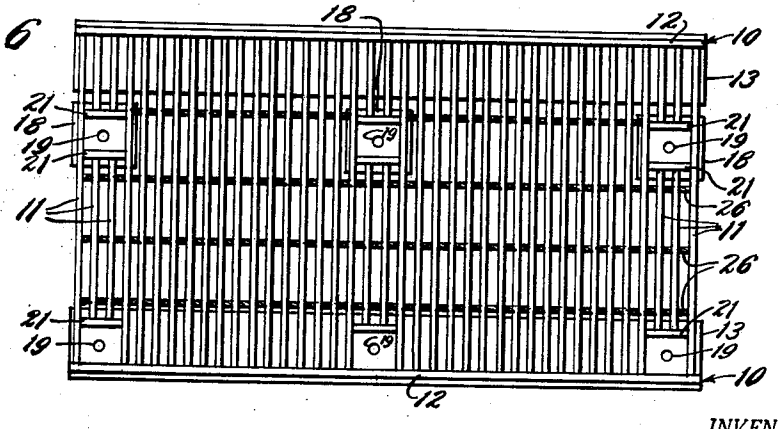


Fig-6



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United States Patent Office 2,833,480 Patented May 6, 1958

2,833,480

HIGHWAY RAILROAD CROSSING

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Application July 10, 1952, Serial No. 298,040

4 Claims. (Cl. 238—8)

This invention relates to highway railroad crossings made up of structural units that are simple to install, self-draining, and are readily removable for track and maintenance operations.

Generally speaking, the crossing is made up of grating panels or structural units, each including spaced longitudinal and transverse elements secured together in intersecting relation to form a grating, the outer marginal longitudinal elements serving as girders for supporting the transverse elements acting as beams or joists.

In this preferred embodiment:

Fig. 1 is a plan view of a highway crossing for double track railroad, the transverse elements of the grating units being omitted for clarity of illustration;

Fig. 2 is a longitudinal section on the line 2—2 of Fig. 1;

Fig. 3 is a transverse section on the line 3—3 of Fig. 1 and Fig. 2 of the crossing structure between tracks;

Fig. 4 is a similar transverse section of a highway crossing for single track;

Fig. 5 is a plan view of one of the structural units for use between rails of the same track;

Fig. 6 is a plan view of one of the structural units particularly suited for the crossing area outside of the rails; and

Fig. 7 is a detailed perspective view of one corner of a structural unit showing the girder form and the self-draining spike plate arrangement.

But these diagrammatic drawings and the corresponding description are used for the purpose of illustrative disclosure only, and are not intended to impose unnecessary limitations on the claims.

Each structural unit includes spaced longitudinal elements generally indicated by **10** and spaced transverse elements **11** secured together in intersecting relation making an open grating of the general form shown in plan in Figs. 5 and 6.

Each main structural unit (Fig. 5), such as used between the rails of the single-track crossing illustrated in Fig. 4, has outer marginal longitudinal elements **10** composed of a vertically disposed bar **12** and a horizontally disposed plate **13** below the vertically disposed bar and together forming a girder supporting the end portions of the transverse elements **11**, which are welded to the bar and the plate. The overall width of the structural element thus made is approximately 4′ 3″ in order to fit between the rails with flange clearance **14** (Fig. 4) on the order of 2¾″.

Such structural units or grating panels are mounted between track rails on timber blocks **15** and **16** resting on ties **17** substantially as shown in Fig. 4.

In order to provide for fastening the structural units to the blocks and the ties, certain of the transverse elements **11** are interrupted or cut away substantially as shown in Figs. 5, 6, and 7 and a spike plate **18** is welded to the interrupted and adjacent transverse elements **11** and provided with spike openings **19** for screw spikes **20**.

Adjacent to the end portions, the interrupted transverse elements are welded to short longitudinal elements **21** having their ends welded to the adjacent transverse elements **11**; but the longitudinal elements **21** are of less vertical height than the transverse elements in order to leave drainage clearance **22** above the plates **18**.

A single spike **20** is sufficient for fastening the intermediate block **16**, but additional spikes **23** are preferably used through the side blocks **15**.

As shown in Figs. 4 and 5, each main structural unit between the rails of track is provided with three transversely spaced sets of aligned spike plates. In contrast with this, the side units (Figs. 4 and 6) have but two transversely spaced sets of spike plates, and the outermost of those is formed by the base or horizontally disposed plate **13** of the girder.

The side units are mounted on timber blocks **24**, and are each made fast by two spikes.

As indicated in Fig. 4, the pavement **25** approaches the side crossing units at approximately the same level.

Intermediate longitudinal elements **26** extend between and connect the transverse elements **11** at suitable spacing.

In one form of construction that has been found satisfactory, the bars **12** are 2¼″ x ¼″ x 3′ 2½″; the plates **13** are 3½″ x ¼″ x 3′ 2½″; the transverse elements are 2¼″ x ¼″ bars spaced .67″ clear; and the intermediate longitudinal members **26** are twisted rods 4″ on center, welded and pressed into the upper portions of the bars **11**. For the outer longitudinal elements of the side units, the plates 13 are 4″ x ¼″ x 3′ 2½″.

At each end of the crossing, the structural units are supplemented by inclined approach plates **27** resting on wedges **28** and spiked to the ties at **29**. These slope plates **27** prevent dragging railway car equipment from tearing up the crossing structure by deflecting such equipment as it is moved toward and over the crossing.

For double tracks or other multiple tracks, the side units and the main units between rails are substantially as described.

For the space between adjacent tracks, the crossing is made up substantially as shown in Figs. 1 and 3, in which two panels or structural units **30** are supported on blocks **31**, **32**, and **33**, carried by the projecting ends of ties **17** and intermediate timbers **34**.

Preferably, the longitudinal and transverse elements are not cut, slotted, or punched, but are forged together by enormous pressure while heated electrically. The pressure and electricity are applied simultaneously, and the elements are forged together to form an integral structure.

The transverse elements **11**, here shown as straight bars, may be replaced by bars of other shape, or by sheets of expanded metal.

I claim:

1. A structural unit for railroad crossings and the like comprising a plurality of transverse elements connected together at each end of the unit by a longitudinal element to form a rigid grating, at least one of said transverse elements being interrupted intermediate its length to form a pocket, and a spike plate of greater dimension than said pocket, positioned therebelow on the bottom surface of the unit and fixed to said interrupted transverse element and to flanking transverse elements, and short longitudinal elements fixed to said interrupted transverse element and said flanking transverse elements, said short longitudinal elements being of less vertical height than said transverse elements, and having their top surfaces level with the top surface of the unit, said spike plates comprising means for fixing said unit in place.

2. In a structural unit of the type described including a plurality of transverse elements connected together at each end of the unit by a longitudinal element, the improvement wherein one of the longitudinal elements

includes a vertical flange abutting the ends of certain of said transverse elements and a horizontally disposed plate fixed to the lower surfaces of said transverse elements, at least one of said transverse elements being interrupted above said horizontally disposed plate and said plate being perforated in the area of said interrupted element, and wherein a short longitudinal element is secured to the end of said interrupted element and adjacent transverse elements, said short longitudinal element being of less vertical height than said transverse elements and having its top surface level with the top surface of the unit.

3. A structural unit for railroad crossings and the like comprising a plurality of parallel transverse bar members connected together at their ends by longitudinal end members to form a grating, said longitudinal members each having a horizontal flange extending inwardly along the bottom of the unit, at least one of said transverse members being interrupted intermediate its length and provided with short, longitudinal, connecting bar members secured to said interrupted transverse member and to flanking transverse members, thereby to form a pocket in said grating, and a substantially flat spike plate of greater plan dimension than said pocket overlapping said interrupted transverse member and flanking transverse members, and rigidly secured thereto, forming a bottom for said pocket with the bottom of said plate being substantially flush with the bottom of said horizontal flanges of the end members, said pocket being provided with drainage openings therein.

4. A structural unit for railroad crossings and the like comprising a plurality of transverse bar members connected together at their ends by longitudinal end members to form a rigid grating, at least one of said transverse members being interrupted intermediate its length and provided with at least one short longitudinal connecting bar member secured to said interrupted transverse member and to flanking transverse members thereby to form a pocket in said grating, and a substantially flat spike plate of greater plan dimension than said pocket positioned therebelow and overlapping said interrupted transverse member and flanking transverse members, and rigidly secured thereto thereby providing a bottom for said pocket, said spike plate being provided with an opening to receive a spike and said pocket being provided with drainage openings therein.

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