Feb. 9, 1932. M. L. ECKHART 1,844,912

METALLIC RAILWAY CROSSING

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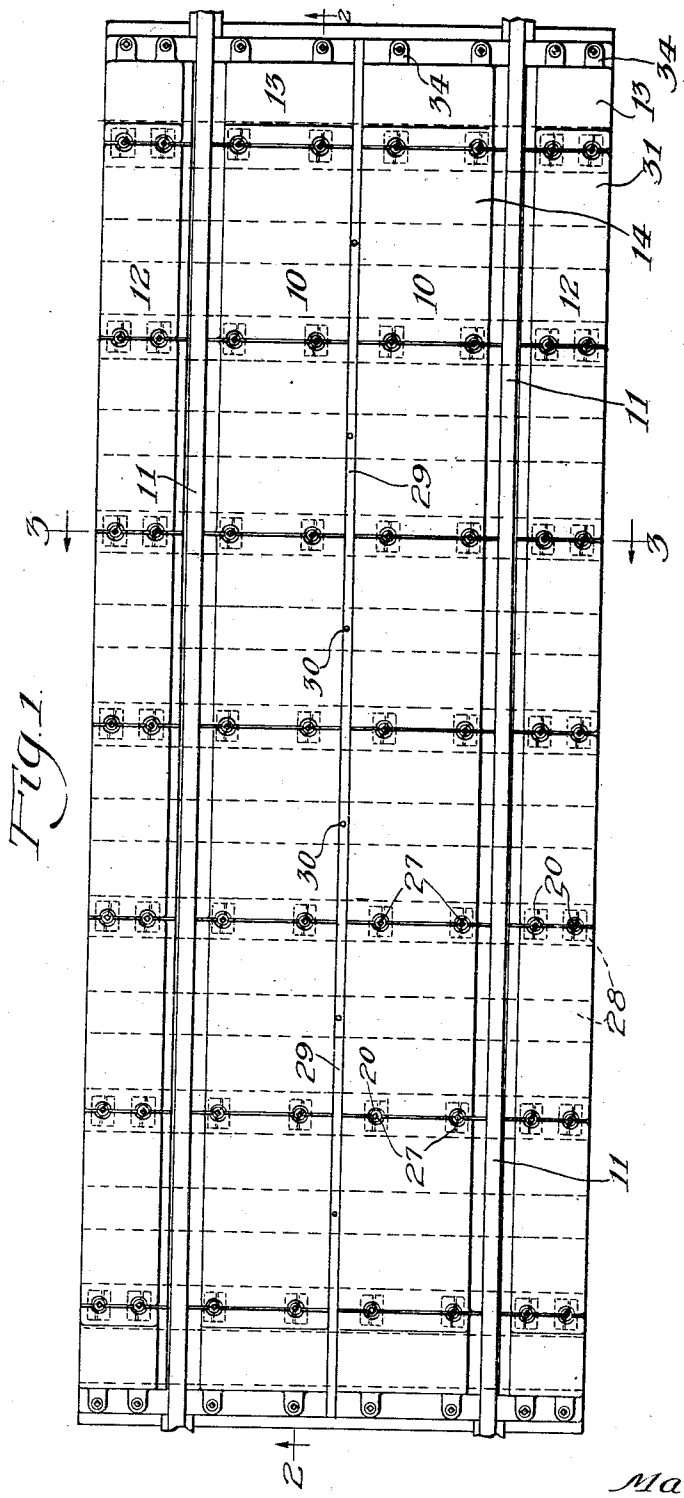


Fig. 1.

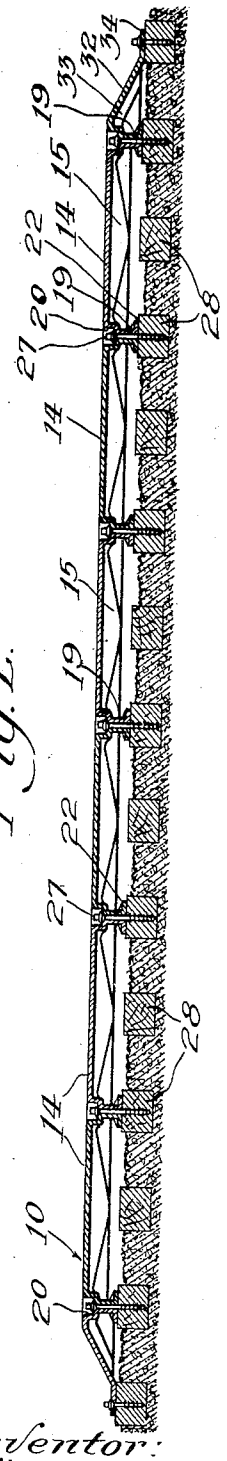


Fig. 2.

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Fig. 3.

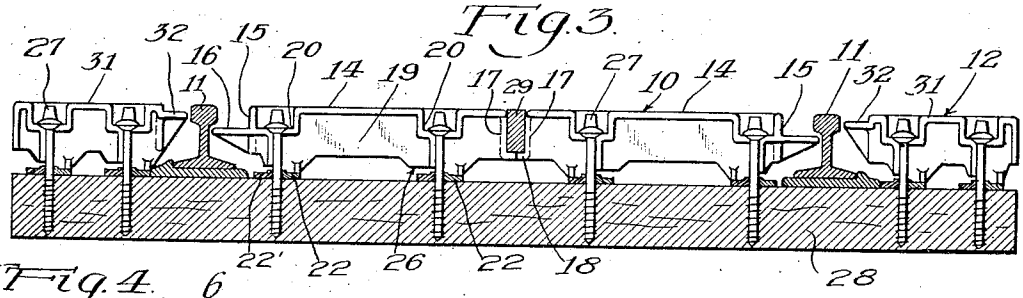


Fig. 4.

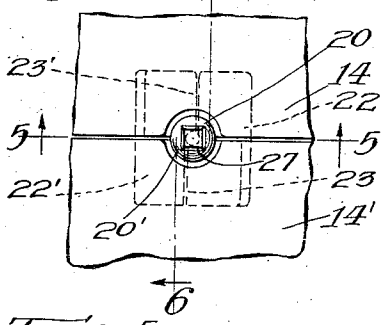


Fig. 7.

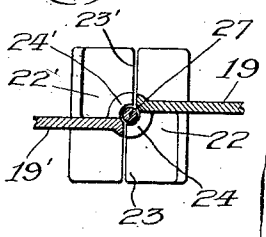


Fig. 10.

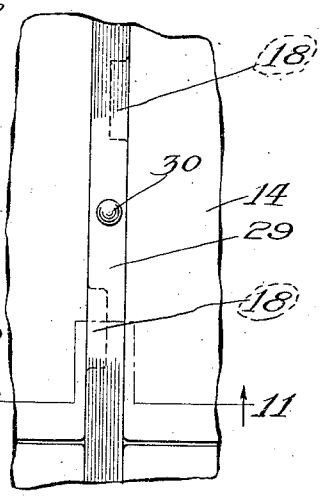


Fig. 5.

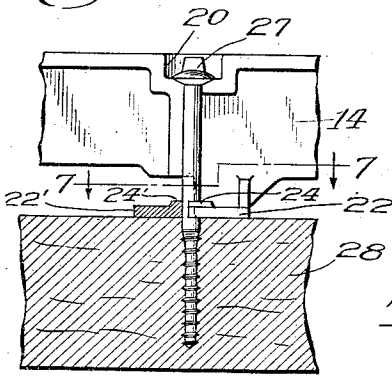


Fig. 8.

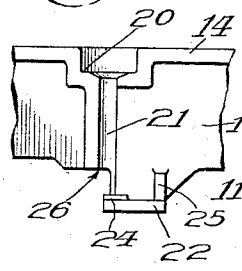


Fig. 9.

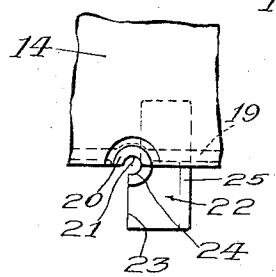


Fig. 6.

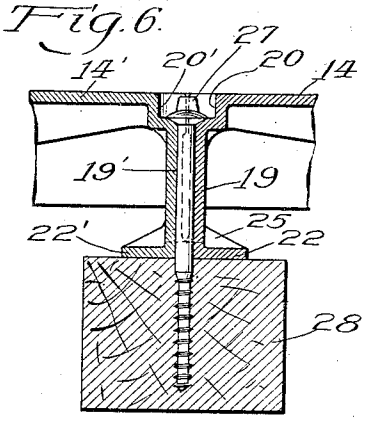
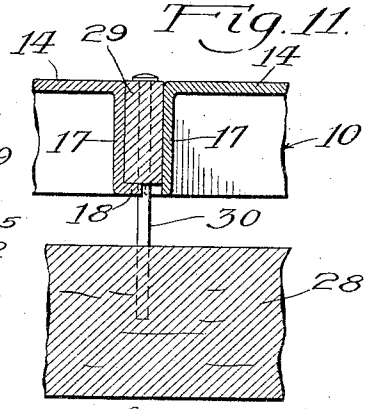


Fig. 11.



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UNITED STATES PATENT OFFICE

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METALLIC RAILWAY CROSSING

Application filed November 16, 1931. Serial No. 575,279.

This invention relates to metallic railway crossings, and particularly to crossings consisting of a plurality of metallic units, in the form of plates and supports, preferably integral, adapted to be assembled together to form a firm, durable noiseless crossing.

One of the objects of the invention is to provide crossing units which are adapted to co-operate with abutting units in such manner that a minimum number of fastening devices are required to firmly secure the crossing units to each other and to the railway ties or other fixed part of the road bed.

A feature of the invention is the provision of means on the ends of abutting units for engaging the devices used for fastening the units to the railway tie, whereby the number of fastening devices required for a certain number of units is one-half of those ordinarily required for efficiently fastening the units to the ties. Furthermore, the construction is such that the units are properly held against both vertical and lateral movement.

Another object is to produce crossing plates and supporting members which are efficient for their intended purposes, and are of such form that they may be produced, as a unit, by casting, steel casting being preferred.

Another advantage of the invention is the provision of novel means for insulating part of the crossing units from other units, for the purpose of insulating one rail from the other rail of the track.

Other objects and advantages will appear from the following specification.

In the drawings:

Fig. 1 is a plan view of metallic railway crossing embodying my invention.

Fig. 2 is a longitudinal, vertical sectional view taken on the line 2—2 of Fig. 1.

Fig. 3 is a transverse vertical sectional view taken on the line 3—3 of Fig. 1.

Fig. 4 is a plan view of a detail of the construction, showing parts of abutting units and the co-operating fastening means.

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4.

Fig. 6 is a vertical sectional view taken on the line 6—6 of Fig. 4.

Fig. 7 is a horizontal sectional view taken on the line 7—7 of Fig. 5.

Fig. 8 is an end elevation of part of one unit.

Fig. 9 is a plan view of the construction of Fig. 8.

Fig. 10 is an enlarged plan view showing part of two adjacent units which are placed side by side between the rails and are insulated from each other.

Fig. 11 is a vertical sectional view taken on the line 11—11 of Fig. 10.

In that embodiment of the invention shown in the drawings, the crossing consists of a plurality of units 10 located between the rails 11, and a plurality of approach units 12 located outwardly of the rails. Any desired number of units 10 or 12 are laid end to end, depending on the width of the crossing, that is, the dimension parallel with the rails; and at each end a plurality of units 13 form inclined ends of ramps for the crossing.

Referring now to the units 10, as shown in the present embodiment, six of said units are shown in end abutment adjacent each rail 11, between the pair of rails. Each of said units comprises a flat, horizontal plate 14, an integral depending side flange 15 carrying a rail abutting, horizontally disposed flange 16, and a depending side flange 17, parallel to the flange 15. Extending outwardly, horizontally, from the lower part of said flange 17 are spaced apart projections 18.

Each plate 14 has depending from each end, a flange or leg 19, part of one leg 19 being shown in end elevation in Fig. 8, and partly in section and partly in elevation in Fig. 3. Adjacent its end margins, the plate 14 is depressed or countersunk as indicated by the semi-circular recess 20, and the wall forming the leg 19 is curved inwardly as indicated at 21 to form a small passageway, semi-circular in cross section, extending from said countersunk portion 20 of the plate, to the bottom of the leg 19. At one side of the curved wall 21, the leg 19 terminates in a foot 22, the longitudinal dimen-

sion of which extends lengthwise of the plate 14 and at right angles to the leg 19.

As best shown in Fig. 9, the foot 22 extends inwardly or under the plate 14 as indicated by the dotted lines, and also extends outwardly of the leg 19 as shown in full lines, and is of increased width at its outer portion due to the lateral extension 23. The reinforced edge 24 of the foot 22, together with the curved wall 21 of the leg 19 form a 295° arc. 25 is a reinforcing web connecting the outer end of the foot 22 to the leg 19. At the side opposite the foot 22, the leg 19 is cut away at its lower portion as indicated at 26 in Fig. 8, for a purpose to be described.

As will be understood by viewing Fig. 3, the leg 19 at one end of a plate 14 preferably is provided with two of the feet 22 and two of the other features of construction described in detail in connection with Figs. 8 and 9, namely, the parts 20 and 21.

In Figs. 4 to 7, inclusive, I have shown the ends of abutting units, one plate being designated 14, as heretofore, and the other 14′. The leg 19′, foot 22′ and extension 23′ of the plate 14′ correspond with the leg 19, foot 22 and extension 23 of the plate 14. The outer end of the foot 22′ is placed under the cut away part 26 of the leg 19 of the plate 14, into the position shown in Figs. 4 and 7, so that the proximate edges of the parts 23′ and 22 are parallel and abutting, and the proximate edges of the parts 22′ and 23 are parallel and abutting. Thus the semi-circular recesses 20 and 20′, and passageways 21 and 21′, in the plates 14 and 14′, respectively, are opposite each other and form a vertically disposed bore for the reception of a headed screw spike 27, long enough to extend from the recess 20′—20′ into the tie 28.

I have used the term "fastening device" herein to indicate the spike 27 or any suitable means, but preferably the screw spike 27 is tapered, its shank increasing in diameter from the screw threaded portion, and exerting a wedging action on the feet 22 which draws the abutting units together.

When the spike 27 has been screwed down as intended, the reinforced, curved margins 24 of the feet members 22, 22′ of abutting units will engage the shank of the spike at opposite sides and function as hooks to retain the feet, and consequently the units, in their intended relative positions, and the heads of the spikes 27 will bear down on the horizontal wall of the recesses 20, 20′, to hold the units down on the tie. In this manner, one fastening device 27 co-operates with two crossing units, and not only holds them firmly down against upward thrust, but retains them in intended positions relatively to each other and to the rails. Instead of requiring four fastening devices, only two are needed, per unit, excepting at one of the ramp ends.

The top of the plates 14 may be provided with anti-slip projections, not indicated herein. The rail abutting flange 16 is shown as flat and horizontally disposed, but obviously its shape may be altered without departing from this invention.

The units 10 are positioned with their rail abutting flanges 16 adjacent a rail 11, their side flanges 17 facing the side flanges 17 of adjacent units, and the projections 18 in staggered relation as shown in Fig. 10 for supporting an insulating strip 29 of any desired material such as wood, asphalt and the like. The insulating strip is fastened to the tie 28 by a bolt or spike 30, which also functions to aid in fastening the unit 10 to the road bed.

The approach units 12 are identical with the units 10 excepting that their plate members 31 may be narrower, and as shown, the rail abutting flange 32 is in a higher plane than the flange 16 of the unit 10.

The end units or ramps 13 comprise inclined plates 32 and side flanges 33, the plates 32 terminating in apertured foot members 34. At their raised ends they are provided with legs 19, feet 22, a recess 20, and curved wall 21, for co-operating with an abutting unit 10 or 12, and fastening device 27, as heretofore described.

Reinforcing ribs may be formed on the inside of the side flanges of the units, as shown in the drawings, and also at the junction of the plates and supporting legs.

A convenient way to assemble the crossing is to secure the ramp units 13, constituting one end of the crossing, to the tie by means of the spikes which extend through the feet 34. Then a transversely extending row of units consisting of approach units 12 and main crossing units 10 will be placed in position in end abutment with the ramp units 13, with the feet 22 of the units 10, 12 adjacent the feet 22 of the ramp units 13 (as shown in Figs. 4 to 7, inclusive), and the fastening devices 27 may be forced into the ties 28, to hold the abutting units down on the tie and to interlock with the feet 22 to hold the units against lateral movement. This operation will be repeated until all the units 10—12 have been properly placed, and then the ramps 13 forming the opposite end of the crossing will be secured in place. However, if desired, the rows of units intermediate the ramps may be first fastened in position and then the ramp units may be secured to the ties.

Changes may be made in details of construction without departing from the scope of my invention and I do not intend to be limited to the exact form shown and described, except as set forth in the appended claims.

I claim—

1. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate provided with means for supporting the plate in raised position on the railway ties, a fastening device extending into a tie, and means on abutting ends of two units for interlocking engagement with said fastening device.

2. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of an integrally cast metal plate provided with means for supporting the plate in raised position on the railway ties, a fastening device extending into a tie, and means on abutting ends of two units for engaging said fastening device.

3. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate provided with means for supporting the plate in raised position on the railway ties, a fastening spike extending into a tie, and means on abutting ends of two units for interlocking engagement with one of said spikes.

4. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, means at each end for supporting the plate in raised position, said supporting means terminating in horizontally disposed feet, and fastening devices, each engaging a plate and a foot, for fastening the units to a tie.

5. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, means at each end for supporting the plate in raised position, said supporting means terminating in horizontally disposed feet, and fastening devices, each fastening device engaging abutting plate members and feet, for fastening the units to a tie.

6. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, means at each end for supporting the plate in raised position, said supporting means terminating in horizontally disposed feet, and spikes extending from the plate into a tie, and engaging said abutting plate members and feet for fastening the units to a tie.

7. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, a depending leg at each end of the plate, a horizontally disposed foot at the bottom of each leg, a recess in the plate adjacent the end, and a fastening spike engaging the recessed plate and the foot and extending into a railway tie.

8. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, a depending leg at opposite ends of the plate, a horizontally disposed foot at the bottom of each leg, a semi-circular recess in the plate adjacent the end, and a fastening spike engaging the recessed plate and the foot and extending into a railway tie.

9. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, a depending leg at opposite ends of the plate, a horizontally disposed foot at the bottom of each leg, a semi-circular recess in the plate adjacent the end, adapted to register with a similar recess in the end of an abutting plate, and forming a circular, countersunk support, and a fastening spike engaging the recessed portion of abutting plates and their feet and extending into a railway tie.

10. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, an integral leg depending from the end of the plate, a foot at the lower end of the leg, extending horizontally both forwardly and rearwardly of the leg, a passageway extending from the plate to the foot, and a fastening device adapted to extend through the passageways of abutting units in engagement with the plates and feet of abutting units, into a railway tie.

11. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, an integral leg depending from the end of the plate, a foot at the lower end of the leg, extending horizontally both forwardly and rearwardly of the leg, a passageway, semi-circular in cross section, extending from the plate to the foot, and registering with a similar passageway on the abutting unit, and a fastening device adapted to extend through said passageway in abutting units in engagement with the plates and feet of abutting units, into a railway tie.

12. A metallic railway crossing comprising a plurality of units assembled together, each unit consisting of a plate, an integral leg depending from the end of the plate, a foot at the lower end of the leg, extending horizontally both forwardly and rearwardly of the leg, and fastening devices extending through the plates and feet of abutting units and into a railway tie.

13. A metallic railway crossing assembly comprising a plurality of crossing units in end abutment adjacent each side of a pair of rails and an insulating strip between longitudinal rows of units, each unit consisting of an integral plate, supporting means for the plate, and a rail-abutting flange at one side of the plate, and each of the units located between the rails being provided, at that side of the plate opposite the rail-abutting flange, with a depending flange carrying spaced apart projections for supporting the insulating strip.

14. In a metallic railway crossing comprising a plurality of units assembled to-

gether, means for insulating the units adjacent one railway rail from the units adjacent the other rail of the track, said means comprising depending flanges, extending parallel with the rails, on the proximate margins of the two sets of units, a series of horizontally disposed projections on said flanges, the projections being in staggered relation when the units are assembled and in a plane below the top of the units and above the road bed, an insulating strip supported on said projections between said units, and means for fastening the insulating material to the road bed.

In testimony, that I, claim the foregoing as my invention, I affix my signature, this 12th day of November, 1931.

MARVIN L. ECKHART.