Sept. 22, 1953 R. F. LANIER 2,652,981

RAILWAY CROSSING

Filed Feb. 23, 1951

Fig. 1.

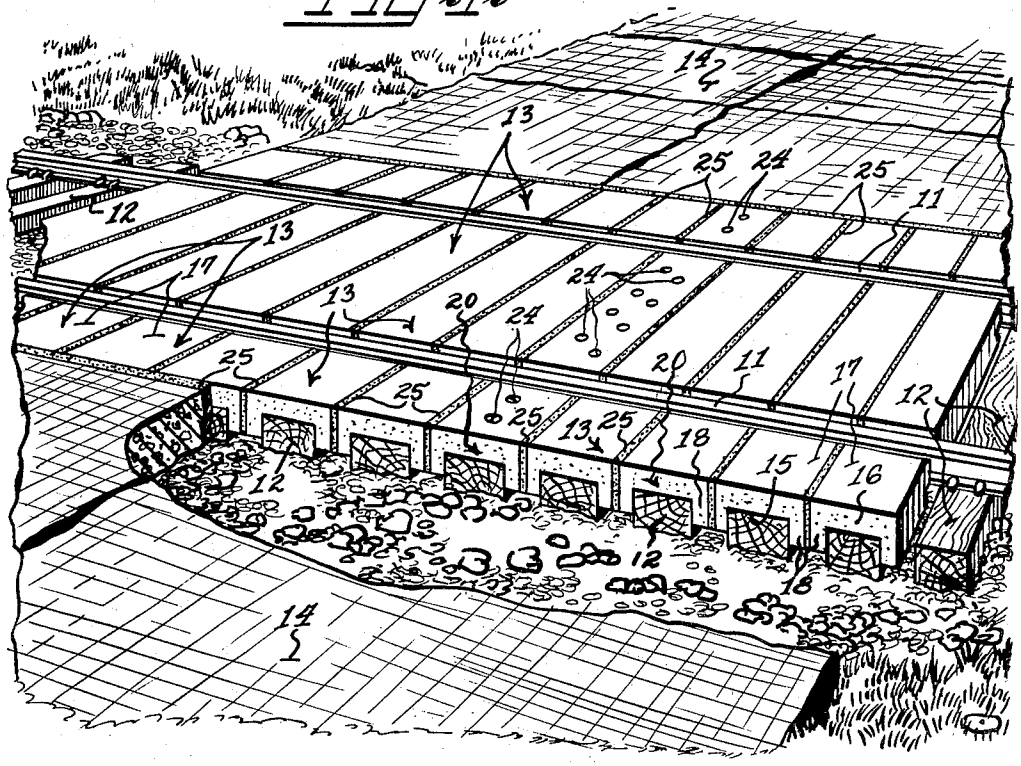


Fig. 2.

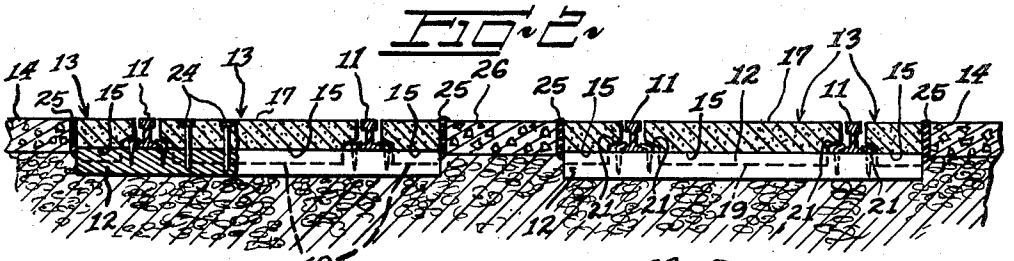


Fig. 3.

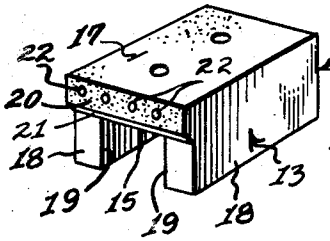
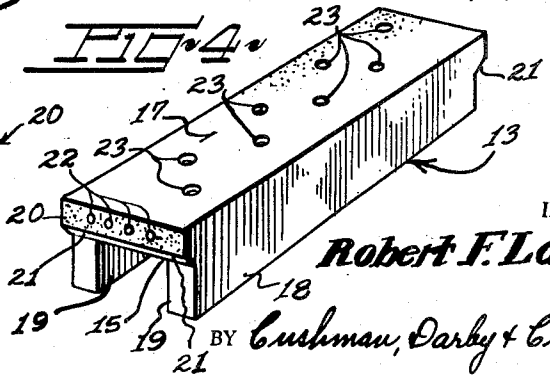


Fig. 4.



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Patented Sept. 22, 1953

2,652,981

UNITED STATES PATENT OFFICE

2,652,981

RAILWAY CROSSING

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Application February 23, 1951, Serial No. 212,351

4 Claims. (Cl. 238—9)

1

The present invention relates to railway crossings at roadways or paved highways and employs individual prefabricated elements or blocks which are removably supported each on a single tie with their upper surfaces flush with each other and the roadway, as well as with the wheel engaging surfaces of the rails.

Heretofore, crossings have been constructed using removable concrete slabs, in which the slabs depend on support by spanning from one crosstie to the next or by spanning several consecutive crossties. These types of slabs or blocks are not satisfactory as structural elements because the wave motion in the railroad tracks or rails, caused by the passing of trains as well as traffic, cracks or breaks the concrete, which has very little elasticity. Another disadvantage in such a slab is that when it becomes necessary to repair a tie or a small portion of track or crossing, a relatively large portion of the crossing must be removed in order that repairs may be made. This not only makes repairs more expensive, but it also increases the time and other maintenance costs.

The present invention eliminates the foregoing objections by providing individual blocks or elements for each tie, i. e., with each tie, a block or element is disposed between the rails of the track and a block is positioned on the outside of each rail of the track, all being supported in alignment directly on the same tie.

It is one of the primary objects of this invention to provide a prefabricated concrete slab or block which acts as a structural element and will withstand the wave motion of the track caused by passing trains and traffic and thus reduce cracking and breaking to a minimum.

A further object of this invention is to provide a prefabricated concrete slab for use in railway crossings in which the simplicity of design makes it economically feasible for general use on all types of railway crossings.

A still further object of this invention is to provide a railway crossing with prefabricated concrete slabs cast or molded with a tie receiving channel, groove or recess, one block being associated with one tie only, thus increasing the load capacity of the crossing.

Another object of this invention is to provide a railway crossing with prefabricated blocks individually removable from the crossties which they overlie, thus decreasing the cost of maintenance of the crossing.

These and other objects of the invention will appear more fully from the following description and accompanying drawings, in which:

Figure 1 is a perspective view of a railway

2

crossing incorporating the improved prefabricated blocks or elements;

Figure 2 represents a cross section of a double track railway, showing the precast blocks overlying the crossties and also showing a precast block between the pairs of rails in a double track line;

Figure 3 is an enlarged perspective view of the improved prefabricated block which overlies that portion of the tie on the outside of said rails, and

Figure 4 is an enlarged perspective view of the improved prefabricated block used to overlie the tie between the rails.

Referring to Figure 1 of the drawings, the railway crossing is comprised of tracks or rails 11, supported by a plurality of equally spaced crossties 12, and a plurality of longitudinally and transversely aligned prefabricated concrete blocks or elements 13 overlying the ties 12. The prefabricated concrete elements or blocks 13 as groups are supported by the ties 12 between the rails and on the outside of the rails, as shown. The construction and shape of the prefabricated blocks will be discussed in detail later in this specification. Means are also provided to take care of the expansion and contraction of the precast concrete blocks between themselves, the adjacent road 14, and the rails or track 11.

Preferably, each precast concrete block 13, as shown in Figures 3 and 4, is substantially rectangular in shape, having a longitudinal channel, groove or recess 15 located on the underside thereof for direct reception of a crosstie 12. The bridge or web 16, defined by the channel 15, of the block 13 is substantially equal in thickness to the height of the rail 11 in order that the top or upper surface 17 of the concrete slab will be flush with the top or wheel engaging surface of the rail and the adjacent roadway 14 when a slab is in place. The depending flanges 18 of the block 13 may be of any length. However, in the preferred form shown in the accompanying drawings, said flanges are of such length that they depend downwardly approximately one-half the height of the tie 12. The channel, groove or recess 15 is of a size to closely hug the tie on which it is disposed, as shown, and enables the blocks to be positioned accurately and firmly on the crosstie, eliminating objectionable lateral movement. By providing the channel with parallel vertical side walls 19 and the horizontal top wall 20 at the under side of the connecting web 16, contiguous with the upper portion of the tie, the block member 13 will take a substantial compression load and objectionable shear and torsional loads will be substantially eliminated. The properties of concrete make it excellent in

compression, but it is of little use in shear or torsion.

Each block 13, as shown in Figure 4, which is disposed between the rails 11, has the web 16 at each end molded or cut away, as shown at 21', so as to provide an enlargement or transverse recess 21 which, as shown in Figure 2, will receive the rail anchors, spikes, tie plates and the like without contacting the same. The cut away portion 21' is suitably inclined, as shown in Figures 2, 3 and 4, and extends throughout the transverse dimension of the web and vertical side walls 19. As shown in Figure 3, only one such recess is needed for the block which overlies the portion of the tie outside of the rails, whereas a recess 21 is needed on both ends of the block, as shown in Figure 4, which overlies the portion of the tie between the rails.

Casting or molding of the blocks 13 is relatively inexpensive because of the simplicity of the design of the mold. However, it is advisable when molding said blocks to provide each block with a standard type of concrete reinforcement. In the preferred form of the invention, the blocks are reinforced by steel rods 22.

Each prefabricated block 13 is provided with a plurality of vertically spaced openings or holes 23 along the longitudinal axis thereof. The openings 23 are provided for the reception of lag screws 24, which anchor the block to the tie, as shown in Figure 2. It is, of course, evident that the head of the lag screw 24 must lie flush or be located below the surface of the block 13.

From the above description the manner in which the prefabricated block or slab 13 is employed is now quite apparent. Essentially, each crosstie 12 directly supports three aligned precast blocks, said tie being disposed in the channel, groove or recess 15 of the blocks. One block overlies the portion of the tie between the rails, while the other two blocks are supported by that portion of the tie which is outside of the rails and adjacent to the road or highway 14. The blocks are placed on the ties and then anchored by means of the lag screws 24. A mastic filler 25 or the like is then inserted between adjacent blocks, between the blocks and the road, and between the blocks and the rails. The filler takes care of any expansion or contraction of the concrete slabs and also provides waterproofing between the joints.

Figure 2 discloses a modified form of the railway crossing where there are double tracks. The crossing in this instance is provided with a permanently affixed concrete or asphalt slab 26 in the space between the crossties of the two track sections. Then, just as in the single track crossings, the removable blocks or slabs 13 are anchored to the ties and the filler 25 is used between the joints.

The terminology used in the specification is for the purpose of description and not limitation, the scope of the invention being defined by the claims.

I claim:

1. A highway crossing for railways comprising separate prefabricated elements, a group of said elements being supported by an individual railway cross-tie, a plurality of said groups being positioned adjacent each other with elements thereof disposed between the rails of the tracks and along the outside of the same, each of said elements being subject only to the movement of the tie on which it is supported.

2. A highway crossing for railways comprising a plurality of separate prefabricated elements, a group of said elements being supported by an individual railway cross-tie, each element having a recess to receive at least the upper portion of the tie, a plurality of said groups being positioned adjacent each other with elements thereof disposed between the rails of the tracks and along the outside of the same, each of said elements being subject only to the movement of the tie on which it is supported.

3. A crossing for railways comprising a plurality of separate prefabricated elements, a group of said elements being supported by an individual railway cross-tie, each element having a recess to receive at least the upper portion of the tie, a plurality of said groups being positioned substantially contiguous each to the other and to the heads of the rails of the railway.

4. A crossing according to claim 3 wherein said elements are disposed between the rails of the tracks and along the outside of the same, each of the elements being subject only to the movement of the tie on which it is supported.

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