

March 27, 1928.

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R. E. COTTER

RAILROAD CROSSING

Filed June 13, 1927

2 Sheets-Sheet 1

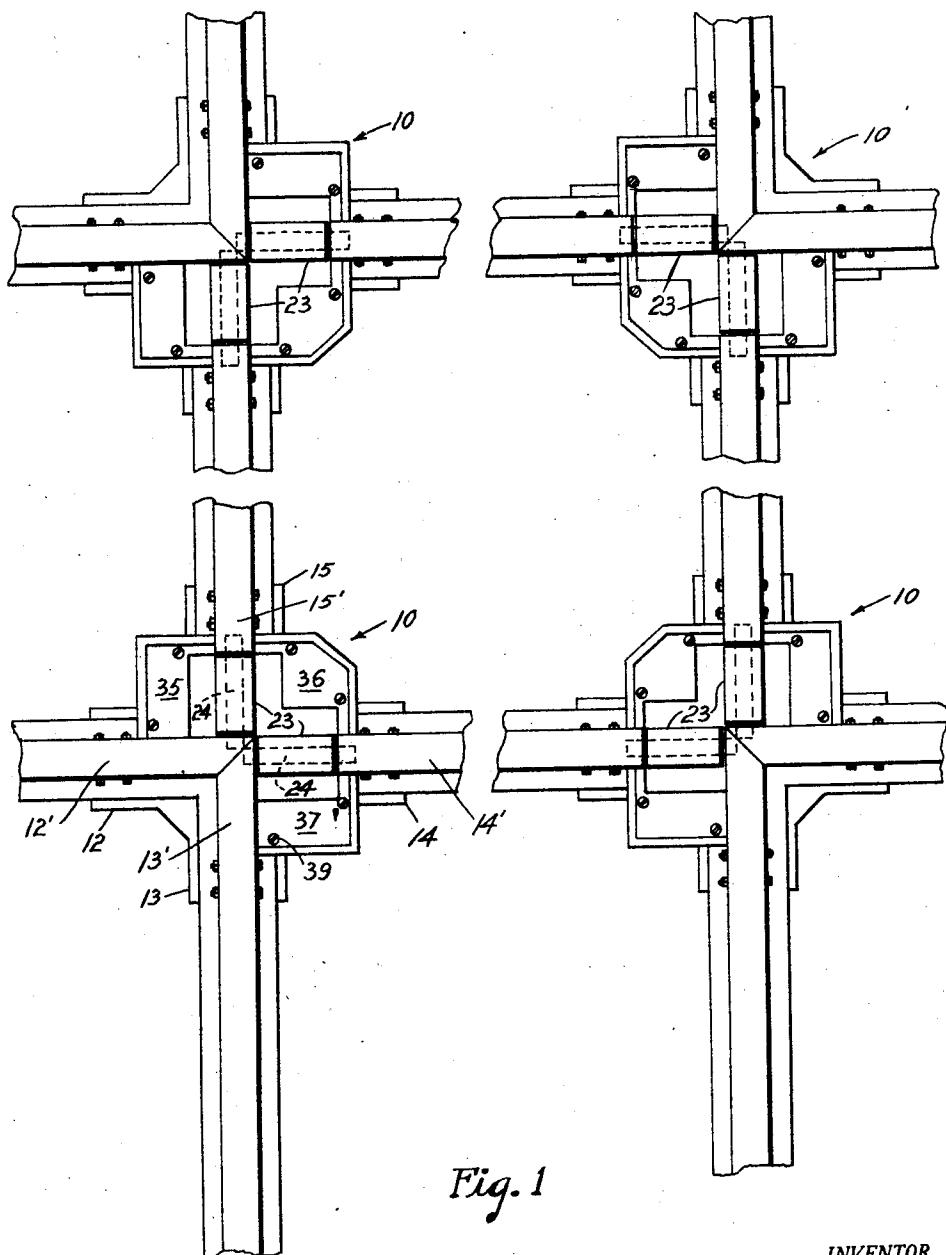


Fig. 1

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2 Sheets-Sheet 2

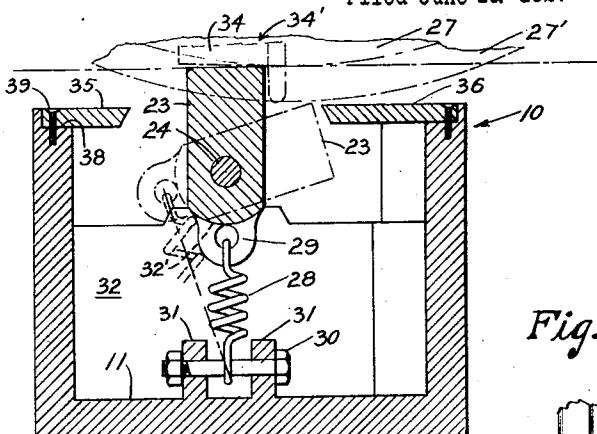


Fig. 3

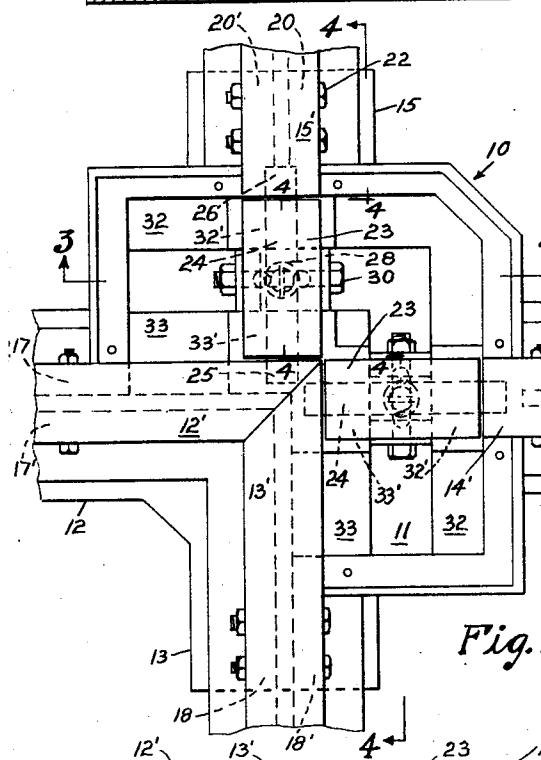


Fig. 2

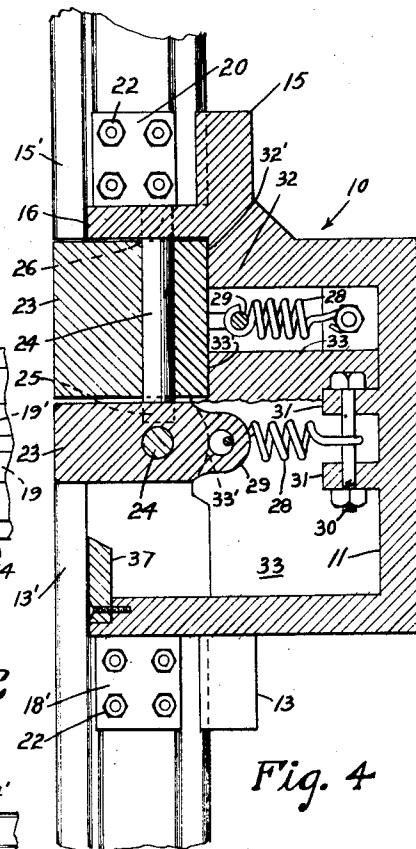


Fig. 4

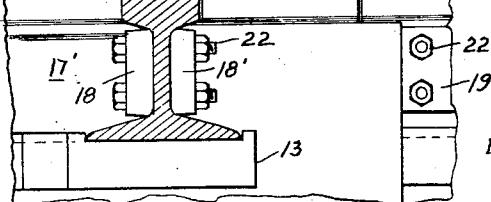


Fig. 5

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# UNITED STATES PATENT OFFICE.

RALPH E. COTTER, OF OAKLAND, CALIFORNIA.

## RAILROAD CROSSING.

Application filed June 13, 1927. Serial No. 198,446.

My invention relates to railroad track construction and more particularly to crossings.

The invention has for one of its objects to provide a novel arrangement of elements or 5 filling-blocks for the gaps formed in the track rails at the points of intersection, so that practically continuous rails will be obtained for a passing train.

Another object is the provision of a continuous crossing of the character designated so as to eliminate the noise and jar as far as possible incident to a train passing thereover.

Another object is the provision of tempered elements at the points of the crossing intersections to reduce wear to a minimum.

A further object of my invention is the provision of a simple, practical and durable track construction of the character referred to, which is thoroughly reliable and efficient 20 in use and entirely automatic in its operation.

A further object of the invention is a track construction of the class designated presenting continuous rail intersections that are adapted to be broken by the flange of the wheel passing thereover and immediately restored to normal continuity again by means directly therebeneath.

30 And a still further object is the provision of a housing at each intersection point of my crossing structure forming the anchor thereat, and which housing is designed to carry the working parts and a lubricant to 35 submerge the said parts.

Other and ancillary objects of my invention will be suggested in the following description and in the use of the device of my invention. Certain of the objects or certain 40 portions or combinations of the objects of my invention may be attained with the use of less than all its advantageous features, or with modifications within its purview. It is petitioned therefore, that my invention 45 be limited only by the claims constituting its final determination.

Referring to the drawings:

Figure 1 is a plan of a railroad crossing embodying my invention.

50 Fig. 2 is an enlarged detail plan of one of the rail intersections.

Fig. 3 is a vertical transverse cross-section along the line 3—3 of Fig. 2, and showing, in full lines, the gap-filling block in normal 55 continuous-rail operative position in one direction, and in dot-and-dash lines the same

block in broken-rail operative position in another direction. A portion of a wheel in each case is indicated by dot-and-dash lines as well as the top surface of a rail.

Fig. 4 is a vertical longitudinal cross-section along the broken line 4—4 of Fig. 2, and showing all parts in normal continuous-rail position; and

Fig. 5 is an end view of the upper portion of Fig. 2, and showing in particular the relative surfaces of the rails and housing block.

Like parts are indicated by similar characters of reference throughout the different figures.

I have illustrated a structure for rendering track rails that intersect at right-angles, continuous. While I have illustrated and will specifically describe a structure adapted to track rails that intersect at right-angles, I do not thereby limit myself to the adaptation of my invention to track rails that intersect at right-angles, for the adaptation of my invention to track rails that intersect at other angles, is obvious.

The numeral 10 indicates, in general, the housing of my invention and as here shown there are four in number. The housings constitute the anchoring blocks for the intersections of the rail crossings. Each housing consists of a walled structure having an open top and a closed bottom 11. To the walls of the housing are cast, in opposed and aligned relation, extensions 12, 13, 14 and 15, adapted to receive in shallow recesses on the top surfaces thereof, the rail ends 12', 13', 14' and 15' respectively.

The flanges of each rail end are bedded in the said recesses of the extensions, the latter being so positioned on the housings that the rail-heads are supported on the top edges of the housings and the rail flanges on the extensions thereof; the ends of the rails 14' and 15' are cut away as at 16 so that the rail head may rest on the top edge of the housing wall. Spaced flanges 17—17', 18—18', 19—19' and 20—20', are formed integral with the housing and are positioned just above the respective extensions. The respective webs of the rails fit within the spaced flanges and through these flanges and the web, bolts 22 are placed to form the securing bond for each rail, the whole forming the fabrication for the railroad crossing structure as illustrated in Fig. 1. The unaligned rail ends 12' and 13' are mitered as

shown in Fig. 2, but otherwise are supported and secured as the remaining pair of unaligned rail ends. The latter terminate with their rail head substantially flush with the inner face of the housing wall, Fig. 4. It will thus be noted, with this construction, that gaps are formed in the rail intersection.

Means are provided to fill the gaps to make a continuous rail formation at the intersection to accommodate trains passing thereover coming from either direction. My preferred means consists of gap-filling elements 23 formed of any suitable metal and tempered to withstand the strains and stresses they will be intermittently subjected to. The elements are pivoted to pins 24 secured in the walls of the housing at predetermined points 25, 26, thereof. The function of the pin is to permit the pivotal movement of the element thereabout when a wheel 27, Fig. 3, approaching the element from a direction transverse to the axis of the pin, contacts the side of the element with its flange 27' and rotatively pushes it clear to break the rail-joint thereat for the passage of the wheel thereover in the plane of the rail surface. Means are provided in the housing for restoring the said element to normal position again immediately after the passing of the said wheel thereover, and which means consists of a suitable coil spring 28 positioned directly therebeneath and hingedly secured to an eye 29 formed lowermost on the gap-filling element 23; the opposite end of the spring encircles a bolt 30 anchored in a pair of lugs 31 projecting from the bottom of the housing and cast integral therewith.

When a train passes over the intersection and gap-filling block, the pin 24 of the latter is designed, preferably, to remain neutral and under no compressive stress. The load and compressive stress due thereto must be borne by the block and transferred to the housing. I accomplish this feature by providing the housing with bearing walls 32 and 33 having cylindrical bearings 32' and 33' concentric with the pins 24, the lowermost surface of the block element 23 being correspondingly cylindrical to engage the said bearings. It will be observed by referring to Fig. 3, that the block may be considered under maximum compression as the body 34 of a wheel 34' is directly thereabove.

To insure workable conditions throughout the year of my crossing construction, I prefer to have the housing somewhat deeper than the depth of the rail to house and secure the working parts therein, and adapt the major portion of the housing to be filled with any lubricating medium suitable for the district in which my railroad crossing is employed.

Covers 35, 36 and 37 are preferably se-

cured flush with the top of the housing in a recess 38 provided for the purpose by any means such as machine screws 39. These covers present a minimum permanent opening governed by the clearance necessary for the broken-rail operation of the gap-filling element 23, Fig. 3.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative and that such changes may be made, when desired, as fall within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent of the United States, the following:

1. In a railroad crossing, a block forming a housing, said housing adapted to support the ends of the rails whereby rail gaps are provided in the block, means carried by the block and filling said gaps to present continuous rail-joints thereat, and said gap-filling means provided with additional means and carried by the block to automatically close the joint after the passage of the said wheel thereover, the housing having a closed bottom and being adapted to receive and return a lubricant for submerging the said last-named means.

2. In combination with the rails of a railroad crossing, a housing block, opposed extensions on the outer sides of the block adapted to receive and support the rail ends of the crossing, one unaligned pair of rail ends meeting in the block and a similar pair terminating at inner faces of the block and providing unaligned rail gaps in the block, movable rail elements supported in the block and filling said gaps whereby a normally continuous crossing is effected, and means within the block to restore the said elements to normal position immediately after being moved.

3. In combination with the rails of a railroad crossing, a housing block, opposed extensions on the outer sides of the block adapted to receive and support the rail ends of the crossing, one unaligned pair of rail ends meeting in the block and a similar pair terminating at inner faces of the block and providing unaligned rail gaps in the block, pivotal movable rail elements supported in the block and filling said gaps whereby a normally continuous crossing is effected, and means within the block to restore the said elements to normal position immediately after being moved, said rail elements and means comprising filler blocks having a

pivotal bearing and a compressive bearing and anchored spring means within the housing block, and said filler blocks adapted to utilize the said compressive bearing when in 5 unmovable service and in compressive stress and the said pivotal bearing when in movable service and in uncompressive stress.

4. In combination with the rails of a railroad crossing, a housing block, having a 10 closed bottom and an open top, opposed extensions on the outer sides of the block adapted to receive and support the rail ends of the crossing, one unaligned pair of rail ends meeting in the block and a similar pair 15 terminating at inner faces of the block and providing unaligned rail gaps in the block, pivotal movable rail elements supported in the block and filling said gaps whereby a normally continuous crossing is effected, and 20 means within the block to restore the said elements to normal position immediately after being moved, said rail elements and means comprising filler blocks having a pivotal bearing and a compressive bearing

and anchored spring means within the housing block, and said filler blocks adapted to utilize the said compressive bearing when in 25 unmovable service and in compressive stress and the said pivotal bearing when in movable service and in uncompressive stress, and 30 said housing block adapted to be filled with a lubricant and a cover for closing said open top.

5. In combination with the rails of a railroad crossing, a housing block, opposed 35 extensions on the outer sides of the block adapted to receive and support the rail ends of the crossing, one unaligned pair of rail ends being coterminous in the block and a 40 similar pair terminating in the block in spaced relation from the first pair to provide unaligned rail gaps in the block, and displaceable rail elements supported in the block and normally disposed to fill said gaps 45 whereby continuous rail crossings are provided.

In testimony whereof, I affix my signature.  
RALPH E. COTTER.