

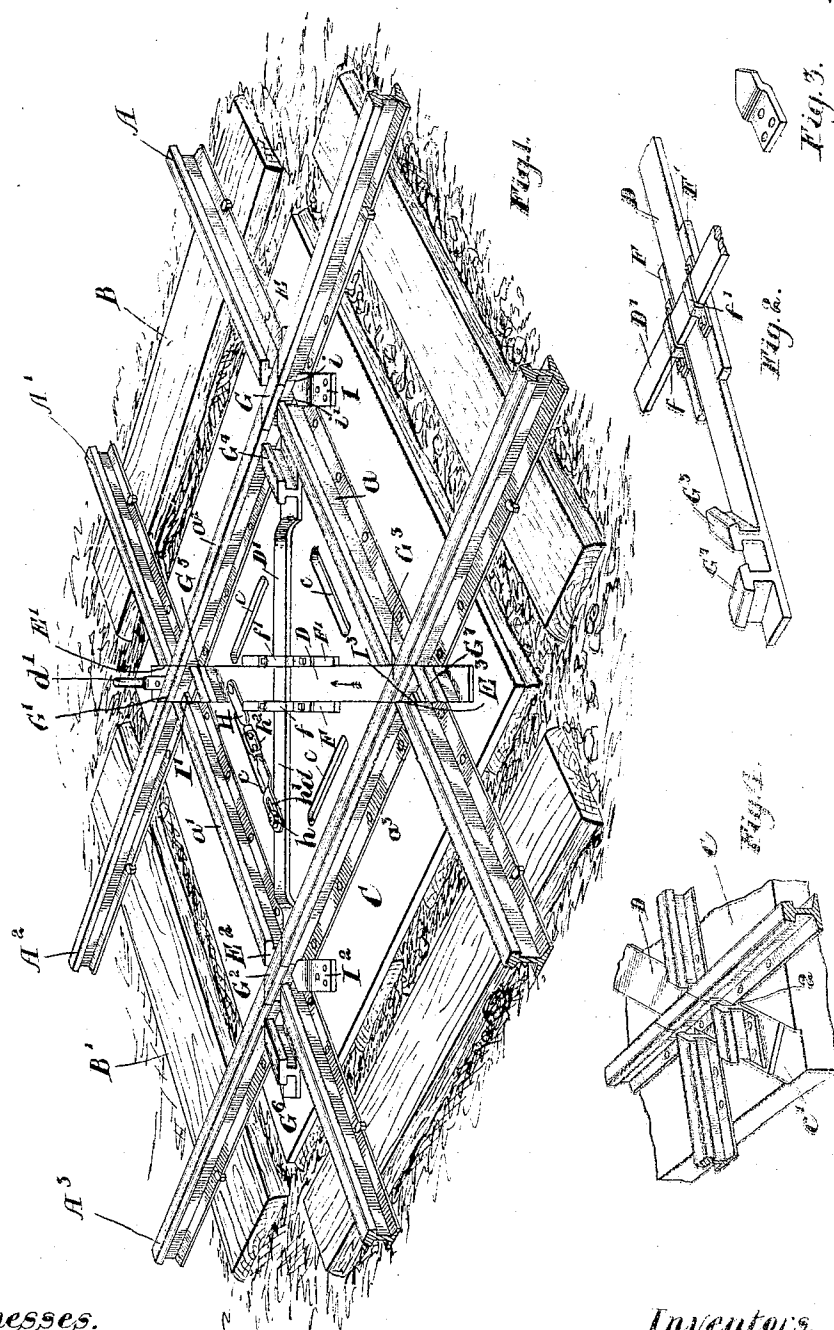
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A. B. INGRAM & T. HEARD.
RAILWAY DIAMOND CROSSING.

APPLICATION FILED OCT. 16, 1903.

NO MODEL.



Witnesses.

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UNITED STATES PATENT OFFICE.

ANDREW B. INGRAM AND THOMAS HEARD, OF ST. THOMAS,
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RAILWAY DIAMOND CROSSING.

SPECIFICATION forming part of Letters Patent No. 764,726, dated July 12, 1904.

Application filed October 16, 1903. Serial No. 177,321. (No model.)

To all whom it may concern:

Be it known that we, ANDREW B. INGRAM, gentleman, and THOMAS HEARD, pattern-maker, of the city of St. Thomas, in the county of Elgin, Province of Ontario, Canada, have jointly invented certain new and useful Improvements in Railway Diamond Crossings, of which the following is a specification.

Our invention relates to improvements in railway diamond crossings, or, in other words, improvements in the construction of a railway at the point where two tracks intersect, whether at right angles or at any other angle; and the objects of our invention are to provide a cheap and simple construction over which the traffic may pass with absolutely no jar or shaking on either of the intersecting tracks, further objects being to avoid the necessity of cutting notches or slots in the rails to permit of the passage of the wheel-flanges, to avoid the necessity of constant supervision, labor, repairs, and renewals, as are required in the present construction of crossings of this kind, and to make the construction such that the complete diamond may be constructed and set up and tested as to its operation in the shops before being sent to the place where it is to be used; and it consists, essentially, of the ordinary rails crossing each other at any angle, openings through the rails being formed at the four corners of the diamond where the rails would intersect, the said openings being in the direction of the diagonals of the diamond, auxiliary splice-rails, and suitable mechanism adapted to be operated to automatically introduce the splice-rails into the openings in one pair of the intersecting rails, whereby a continuous track without break or notch is formed in one direction, and means whereby the auxiliary splice-rails may be removed from the tracks in said first-mentioned direction and other auxiliary splice-rails inserted in the openings in the tracks running in the other direction, suitable stops being provided for limiting the motion of said auxiliary rail-pieces, so as to bring them absolutely in register with the rails of which they are to form parts, the various parts of the device being constructed and arranged in

detail, as hereinafter more particularly described.

Figure 1 represents a perspective view of our invention. Fig. 2 is a detail view of two of the auxiliary splice-rail pieces and part of the mechanism for operating the same. Fig. 3 is a detail of one of the stops. Fig. 4 is an alternative form of the construction of the device to be hereinafter referred to.

In the drawings like letters of reference indicate corresponding parts in each figure.

A A' are the rails of the track running in one direction.

A² A³ are the rails of the track which intersects with the first-mentioned track.

B represents the ties or sleepers for the rails A A', and B' represents the ties or sleepers for the rails A² A³.

C is a base or bed plate which is provided for the support of the structure. This bed-plate may be made in a number of different ways. For example, it might be made of cement or concrete, as shown in Fig. 4, or, as shown in Fig. 1, it might be made of a sheet or plate of metal. For the purpose of drainage grooves or slots *c* may be formed in the base. The ends of the rails A A' A² A³ extend a short distance onto the base or bed plate C and are rigidly secured thereto by spikes, rivets, or other suitable means, and their ends are beveled off in the direction of the diagonals of the diamond.

a a' a² a³ are four rail-sections which form the sides of the diamond or square. The ends of these sections are also beveled off in the direction of the diagonals of the diamond and at such a distance as to leave openings between the outer beveled ends of these central sections and the inner beveled ends of the rails.

D is a beam or sliding carrier which extends diagonally across the diamond or square formed by the intersecting tracks and passes through the openings or notches E' E³ formed by the break in the continuity of the rails at the corners of the diamond. This sliding carrier is prevented from side motion by the longitudinal guides F F', secured to the base and extending beside the sliding carrier D.

D' is a second diagonally-disposed sliding

carrier having a raised central portion d , which passes over the carrier D and through guides f, f' , secured to the guides F F'. The outer ends of the carrier D' rest upon the base C and are adapted to slide in the openings or slots E E' at the other two corners of the diamond.

G G' G² G³ are four removable splicing-rails, the splicing-rails G' and G³ being secured to or formed integral with the carrier D and located in proximity to the opposite ends thereof and the splicing-rails G and G² being secured to or formed integral with the carrier D' and located near the opposite ends thereof. These splicing-rails G G' G² G³ are placed on the carriers D and D' at such an angle that when the carriers are moved diagonally to the proper position the splicing-rails will fill the four breaks in the rails A² A³, thereby establishing the continuity of the rails A² A³, as shown in Fig. 1, so that the train can pass the crossing on these tracks without the perception of any more jar than is felt at a juncture between the ordinary rails.

To the opposite ends of the carriers D and D' are secured, respectively, a second series of auxiliary splicing-rails G⁴ G⁵ G⁶ G⁷, and these splicing-rails are located at such an angle and are of such shape and arrangement as to fill the breaks in the rails A and A' when the carriers are moved diagonally with respect to the diamond to the proper position. It may here be noted that the auxiliary splicing-rails G⁴ G⁵ G⁶ G⁷ are brought into position to establish the continuity of the rails A and A'. The splicing-pieces G G' G² G³ will be simultaneously removed from their position, as shown in the drawings, thereby leaving the openings in the rails A² A³, which will permit of the passage of the flanges of the wheels running on the tracks A A'.

We have further devised a simple means whereby the carriers D and D' are operated simultaneously, and this consists in a connecting-bar H, which is pivotally secured to the carrier D' at its opposite end, preferably by means of a bolt h , which passes through a slot h' , and a turnbuckle h'' is provided intermediate of the ends of this connecting-bar H, whereby the length thereof may be adjusted. The length of this bar having been adjusted and the position of the auxiliary splicing-rails on the carriers D and D' having been properly arranged, it will be seen that when the carrier D is drawn in the direction indicated by the arrow thereon by any suitable device, such as a switch-lever or the like attached to the bar d' , the continuity of the rails A and A' will be established, and when the reverse operation takes place the continuity of the rails A² A³ will be established. In order to make sure that the auxiliary splicing-rails register properly with the rails A A' A² A³, we have provided the stops I I' I² I³. These stops are of the form shown in Fig. 3

and are adapted to be secured in a suitable manner to the base C and to overlap the flanges of the rails, their beveled edges i, i' being adapted to suitably limit the motion of the auxiliary splicing-pieces. These stops further serve the purpose of holding down rigidly the inner ends of the rails and the central connecting-rails, and their inner ends extend over and serve as guides for the slidable carriers.

Referring now to Fig. 4, an alternative form is here shown, in which the base C is formed of cement, and in this construction of the device a groove c' is formed for the carrier D to slide in, and, further, this groove and the carrier are slightly wider than the opening in the rails, so that the edges of the carrier slide beneath the rails, as shown at 2.

It will now be seen that we have devised an extremely convenient railway diamond crossing which does away with the jar and shaking which has been an essential part of such crossings in the past and which also does away with the consequent wear and tear on the construction and the rolling-stock. The device is of a permanent nature and may be completely constructed and tested in the railway-shops before it is set in place. By means of the turnbuckle and connecting-bar extending between the carriers it will be seen that an absolute adjustment of the relative positions of the two carriers may be obtained, whereby the splicing-pieces will be brought correctly into register with the rails.

It is to be understood that the splicing-pieces are not to be made of such a tight fit as to entirely fill up the breaks in the rails, but the usual allowance will be made for contraction and expansion due to change in temperature. It is further to be understood that we do not wish to limit ourselves when putting our device into practical use to the actual form of the various parts as herein shown and described; but we wish to be able to make such departures therefrom which would lie within the scope of mechanical skill and would not involve a departure from the spirit of our invention.

What we claim as our invention is—

1. In a device of the class described the combination with the intersecting rails having diagonally-extending openings therein at the angles of intersection, of a pair of diagonally-disposed sliding carriers, auxiliary rail-splicing pieces on said carriers, a connecting-bar pivotally secured at its ends to the two sliding carriers, means for operating said carriers to bring one set of splicing-pieces into the four openings of the rails running in one direction and means for operating said carriers to remove said splicing-pieces and introduce the other set of splicing-pieces into the openings in the rails running in the other direction as and for the purpose specified.

2. In a device of the class described the combination with the intersecting rails having di-

agonally-extending openings therein at the angles of intersection, of a pair of diagonally-disposed sliding carriers, guides between which said carriers are adapted to slide, a set of auxiliary splicing-pieces secured near the ends of said carriers and adapted to fill the openings in the rails running in one direction and a set of splicing-pieces secured near the ends of said carriers and adapted to fill the openings in the rails running in the other direction, a connecting-bar pivotally secured to the two slidable carriers, a length-adjusting turnbuckle on said connecting-bar as and for the purpose specified.

3. In a device of the class described the combination with the intersecting rails having the diagonally-extending openings at their angles of intersection, the simultaneously-operated sliding carriers and the auxiliary splicing-pieces carried thereby, of stops secured to the base at the four angles of the diamond, said stops having faces extending parallel with both sets of rails whereby the extent of the motion of said sliding carriers is limited and the auxiliary splicing-pieces are brought into correct register with the rails as and for the purpose specified.

4. In a device of the class described the combination with a base-piece, of two pairs of parallel rail-sections secured thereto inclosing a diamond or square-shaped space, diagonally-disposed openings being left at the four corners of said space, diagonally-extending carriers slidably mounted on the base and extending into said openings, guides for the carriers secured to the base, auxiliary splicing-pieces secured to the carriers, a connecting-bar pivotally secured at its ends to said slidable carriers, a length-adjusting turnbuckle on said connecting-bar, stops secured to the base, said stops having faces extending parallel with both sets of rails and adapted to limit the extent of the motion of the auxiliary splicing-pieces, so as to bring said splicing-pieces into correct register with the ends of the rails as and for the purpose specified.

Signed at the city of St. Thomas, in the Province of Ontario, this 10th day of October, 1903.

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THOMAS HEARD.

Witnesses:

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