

Jan. 20, 1931.

J. I. REA

1,789,689

ROAD RAIL

Filed March 20, 1929

2 Sheets-Sheet 1

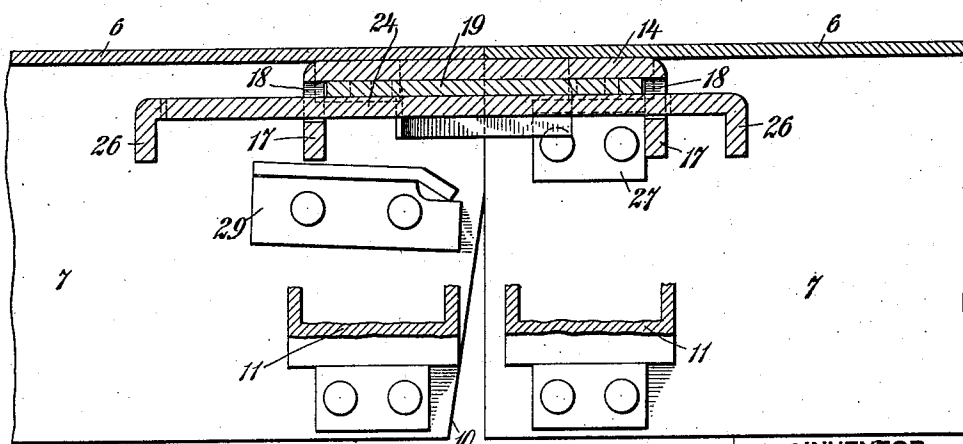
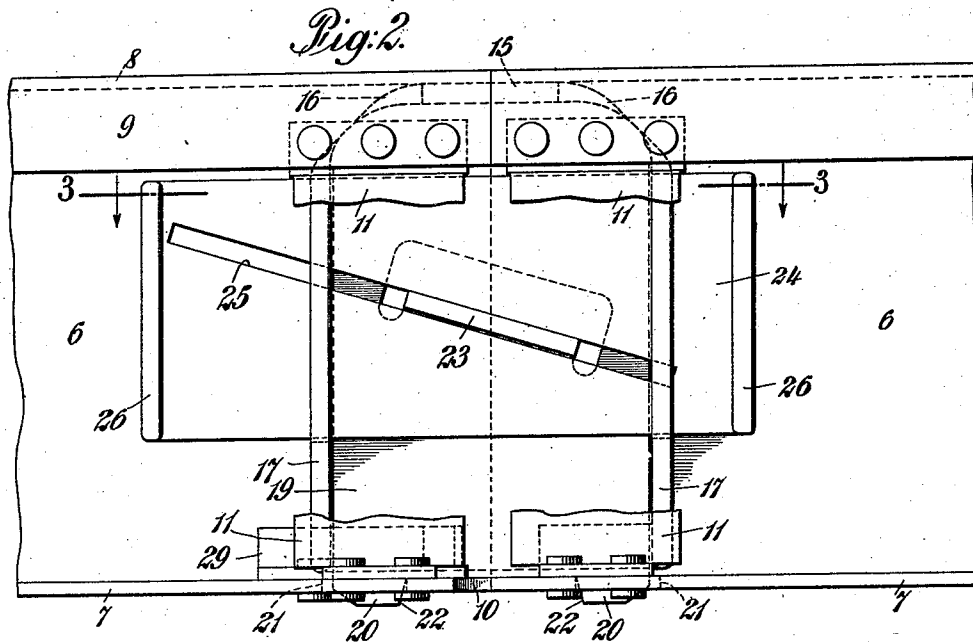
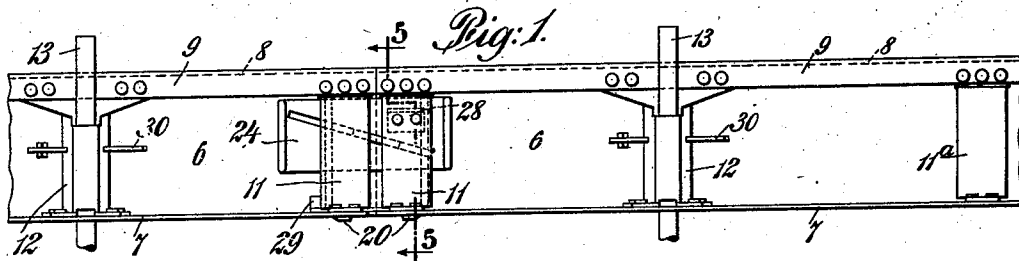


Fig: 3.

INVENTOR
John Brown Rea.
BY
Symonds & Selmer
ATTORNEYS

Jan. 20, 1931.

J. I. REA

1,789,689

ROAD RAIL

Filed March 20, 1929

2 Sheets-Sheet 2

Fig. 4.

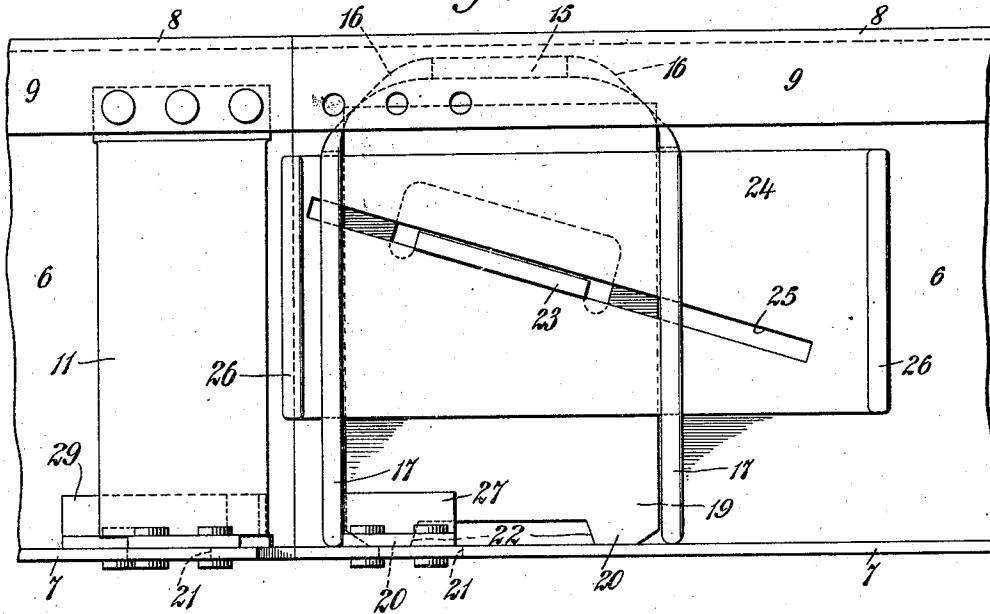
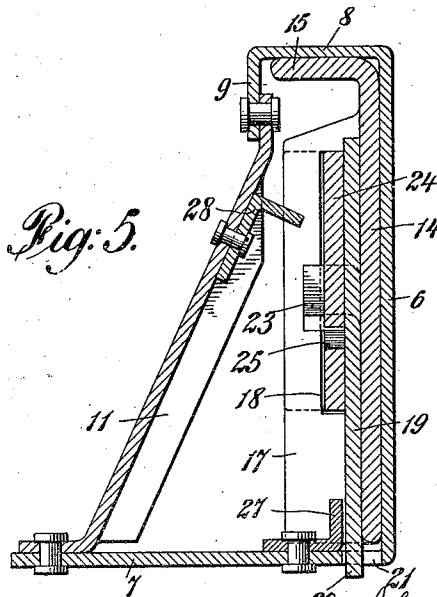


Fig. 5.



INVENTOR

John Ivin Rea

BY

Symonds & Selmes
ATTORNEYS

UNITED STATES PATENT OFFICE

JOHN IRVIN REA, OF ASPINWALL, PENNSYLVANIA, ASSIGNOR TO BLAW-KNOX COMPANY, OF PITTSBURGH, PENNSYLVANIA, A CORPORATION OF NEW JERSEY

ROAD RAIL

Application filed March 20, 1929. Serial No. 348,371.

This invention relates to road rails, particularly to coupling devices or securing means to be used in connection with the abutting ends of road rails when the rails are positioned at the edges of a road bed as a form or mold for road building material such as concrete.

Generally considered, the primary object of the invention is the provision of a joining or securing device for use at the abutting or adjacent ends of rails, the said device being adjustable with the greatest possible ease and providing the strongest possible joint irrespective of the normal variations in the angle at which adjacent rails extend to each other.

Some of the specific objects are as follows:

The provision of a rail joining device which serves to draw the ends of adjacent rails into abutting relation when the device is tightened into its position; the provision of a rail joining device which is permanently attached to, or associated with, one end of a rail in order that the device will not become lost or damaged when the rails are transported from place to place; the provision of a rail joining device or mechanism which may be telescoped within the end of a rail in order to facilitate the arranging or positioning of an adjacent rail; and the provision of a joining device or mechanism which will effectively align and strengthen the rail in general and its top flange in particular regardless of the variations in the relative angles at which adjacent rails must be set when they are employed for building roads around curves or over hills.

How the foregoing together with such other objects and advantages as may hereinafter appear are obtained will be clear from a consideration of the following description taken with the accompanying drawings which illustrate the preferred embodiment of the invention.

Of the drawings:

Figure 1 is an outside elevational view of the adjacent ends of a pair of rails secured together by the joining device of the present invention;

Figure 2 is a view similar to Figure 1 but

on an enlarged scale and with certain of the reinforcing braces broken away in order to show the joining device more clearly;

Figure 3 is a section taken substantially on the line 3—3 of Figure 2;

Figure 4 is a view similar to Figure 2, but showing the joining device telescoped within the end of the rail with which it is associated; and

Figure 5 is a sectional view taken substantially as indicated by the line 5—5 of Figure 1.

By reference to the drawings, it will be seen that the rails 6—6 are provided with lower or base flanges 7 and upper flanges 8, the latter having downturned edges 9 (see Figure 5 particularly). At one end of each rail its lower flange is cut away, as most clearly indicated in Figure 3 by the reference character 10, in order to permit the rails to be angled with respect to each other in a horizontal plane without unduly separating their webs or upper flanges 8. At their ends the rails are strengthened or stiffened by means of the braces 11 which may advantageously take the form of angled or channeled members as shown in the drawings extending between and secured to the lower flange 7 and the downturned portion 9 of the upper flanges 8. Similar braces 11a are preferably provided intermediate the ends of the rails as indicated at the right of Figure 1. It will also be seen from inspection of Figure 1 that I have provided straps 12 and wedges 30 for engaging the stakes 13 and supporting the rails therefrom although it is to be understood that any of the well known stake strap or rail supporting mechanisms might be employed. The braces 11 and 11a and also the stake straps 12 may be secured to the rails in any suitable manner as, for example, by welding or, as shown in the drawings, by means of rivets.

Generally considered, the joint device of the present invention comprises three parts which cooperate in producing a vertical expanding or wedging action between opposed abutment means associated with the rails, in this case the upper and lower flanges of the rails. One of the members (14) is arranged

to lie against the web of the rails and is provided with a flange 15 at its upper end for engaging the under side of the upper flanges 8 of the rail bodies. It might also be noted that the flange 15 is tapered off somewhat at each end as indicated at 16 in Figures 2 and 4. The member 14 is also provided with vertically extending flanges 17 at each side thereof, the same being apertured at 18 (see Figures 3 and 5). A second member (19) is positioned against or next to the member 14 between the flanges 17 of the latter and has lugs or projections 20 extending downwardly from its lower edge, the said lugs being spaced to register with the slots or apertures 21 formed in the lower flanges 7 of the rails near the ends thereof. The opposed edges of the lugs 20 are preferably cut away or angled as indicated at 22 for reasons which will appear more clearly hereinafter. The member 19 is further provided with an outwardly projecting flange 23 which is inclined with respect to the horizontal. The third member of the securing device is in the nature of a flat plate 24 in which is provided the diagonally extending slot 25 adapted to engage the flange 23 of the member 19. From inspection of the drawings, particularly Figures 3 and 5, it will be seen that the member 24 extends through the apertures 18 in the flanges 17 of the member 14 and is itself provided with flanges 26 at its ends.

A stop member 27 is secured to one end of the lower flange of each rail and serves to limit the movement of the joining device in the rail in a manner to be pointed out hereinafter. Another stop, numbered 28, (see Figs. 1 and 5) is secured to the brace numbered 11 at the end of the rail and serves to prevent the joining or aligning device from becoming disengaged from the rail with which it is associated. At the end of each rail which is not associated with one of the joining devices, I have arranged a guide member 29 for aiding in aligning the parts when the rails are being assembled end to end.

When rails of the type herein disclosed are to be set up end to end at the sides of a road bed, the following procedure is preferably carried out:

One rail, for example, the right hand rail of Figure 1, is secured in position, this procedure including the driving of the stakes 13 into the ground through the stake receiving sockets usually provided in stake straps such as I have illustrated at 12. The rail is then rigidly secured to the stakes 13 by means of the wedge members 30 which extend through suitable apertures in the stake straps and react between such straps and the stakes 13. With one rail so positioned and the aligning or joining device associated therewith telescoped into the end of the rail as indicated in Figure 4, another rail is brought into posi-

tion so that its end is adjacent to the rail already fixed. The aligning device is now preferably moved outwardly until it occupies the position indicated in Figures 2, 3 and 5, that is, until half of it is housed within each of the rails. At this point the member or plate 24 which has previously occupied its right-hand position is driven toward the left to the position indicated in the Figures 2 and 3. This movement of the member 24 causes a vertical displacement of the members 14 and 19, the same being effected by virtue of the engagement of the flange 23 in the slot 25 and the reaction of the upper edge of the member 24 against the top ends of the slots 18 provided in the flanges 17 of the member 14. As a result of the relative vertical displacement of the members 14 and 19, the flange 15 at the top of the member 14 is forced against the lower side of the flanges 8 of the rails and the lugs 20 of the member 19 move downwardly into and thru the apertures 21 in the lower flanges 7.

It should here be noted that if the rails are somewhat separated the angled edges 22 of the lugs 20 will bear on the inner ends of the slots 21 and thus serve to draw the rails together. In this connection it might be observed that I prefer to space the slots 21 in the flanges 7 at a distance from the ends of the rails such that the lower edge of the plate 19 will contact with the flanges 7 before the rails are actually in abutting relation. Such a spacing is advantageous in view of the fact that it facilitates the aligning and securing of the rails, particularly where the rails, on account of the contour of the road bed, must extend somewhat upwardly from each side of the joint. It is also advantageous that the lower edge of the member 19 should contact with the flanges 7 when the parts are in the tightened position in view of the fact that with such a contact the joining device may serve much more effectively as a strengthening member. If the lower member 19 reacted against the flanges 7 solely thru the inclined surfaces 22 of the lugs 20, such inclined surfaces would quickly become worn and disfigured and obviously could not serve as an adequate bearing or base from which to support the upper flanges of the rails. The joining device of the present invention, therefore, completely overcomes certain difficulties which have been encountered heretofore in connection with the shearing strain produced by the movement or travel of the wheels of a finishing machine from rail to rail. Such machines are of considerable weight and heretofore have frequently caused loosening of rail joints and even disengagement thereof. The arrangement of the parts of my aligning and joining device with the relatively wide flange 15 adapted to bear on the flanges 8 of the rails and the adequate bearing of the member 19 on the lower flanges 7 of the rails

lends an amount of stability and strength to the rail flanges under the influence of the the rail joint which is sufficient to completely wedging action, even when the rail itself is overcome the difficulties heretofore encountered in connection with shearing strains.

It is also to be observed that the flange 15 at the top of the member 14 has a relatively loose fit within the upper portion of the rail (see Figure 5). The looseness of the fit and also the rounded edges 16 (see Figures 2 and 4) have been provided in order that the joining device may serve to rigidly and effectively secure adjacent rail ends in position regardless of the normal variations in the relative angles at which the rails extend in building curved as well as hilly roads.

In connection with the adjustment of the device, it should be noted that no special tools or instruments are required. A hammer serves very effectively for driving the parts into and out of their rail joining position as well as for tightening or loosening the mechanism. The flanges 17 and 26 of the members 14 and 24, respectively, provide suitable surfaces to receive the blows of the hammer. Furthermore, it should be noted that the device is extremely simple to adjust, in which connection note that the stop member 27 is arranged to limit the outward movement of the device when the latter is being slid within the rail from the position indicated in Figure 4 to that indicated in Figure 2. Thus when effecting such movement it is only necessary to strike the right-hand flange 17 with the hammer until the movement to the left is arrested by the stop 27. The stop 27 also serves to limit the movement of the device into the rail with which it is associated by engagement with the left-hand flange 17. The stop member 28 secured to the brace 11 together with the stop 27 serves to prevent the joining device from becoming detached from the rail. Thus the device is always in position and ready for immediate use, as the result of which considerable time and trouble in assembling the parts are avoided. The device, however, never interferes with the positioning of an adjacent rail in view of the fact that it may very readily be moved entirely within the rail with which it is associated.

It should also be noted that the aligning of an adjacent rail is also facilitated by the guide member 29, the same cooperating with the joining device when the latter is moved to the left from the position indicated in Figure 4 as hereinbefore described.

The placing of angle braces 11 at the ends of the rails may be advantageous in connection with the use of the joining device of the present invention in certain installations where the vertical wedging action between the flanges of the rails is of such force as to require additional rigidity. The additional strength afforded by the angled or channeled braces effectively prevents any spreading of

In conclusion it should be observed that

the present invention provides a rail structure of such strength and rigidity that a finishing machine weighing even as much as several thousand pounds can pass over the joints without deflecting the rails appreciably. Furthermore, the arrangement provides the maximum of convenience and simplicity in assembling and making adjustments. Finally it should be noted that each rail constitutes a complete unit in itself for the coupling of which with similar rails no additional parts or members are necessary.

What I claim is:—

1. A device for aligning adjacent ends of road rails having flanges at top and bottom including a pair of members adapted to be vertically displaced with respect to each other between the rail flanges.

2. A device for aligning adjacent ends of road rails having flanges at top and bottom including a pair of members adapted to be vertically displaced with respect to each other between the rail flanges and wedged means for effecting the displacement.

3. A device for aligning adjacent ends of road rails having flanges at top and bottom including a pair of members adapted to be vertically displaced with respect to each other between the rail flanges and vertically operating wedge means for effecting the displacement.

4. In combination with adjacent road rails having flanges at top and bottom, an aligning device for the rails including wedging means reacting in a vertical direction between the rail flanges.

5. In combination with adjacent road rails having flanges at top and bottom, an aligning device for the rails including wedging means reacting in a vertical direction between the rail flanges and means associated with said device for retaining the ends of said rails in juxtaposition.

6. In combination with adjacent road rails having flanges at top and bottom, an aligning device for the rails including wedging means reacting in a vertical direction between the rail flanges and means associated with said device and operated by said wedging means for retaining the ends of said rails in juxtaposition.

7. In combination with adjacent road rails having flanges at top and bottom, means for drawing the ends of said rails into abutting relation including a member adapted to engage both rails and means reacting between the rail flanges to urge said member to its rail engaging position.

8. In combination with adjacent road rails having flanges at top and apertured flanges at bottom, means for drawing the rails into

abutting relation including a member provided with projections adapted to engage an aperture in the bottom flange of each rail.

9. In combination with adjacent road rails having flanges at top and apertured flanges at bottom, means for drawing the rails into abutting relation including a member provided with angled projections adapted to engage an aperture in the bottom flange of each rail.

10. The combination of adjacent road rails having flanges at top and bottom and an aligning device therefor including a member adapted to engage the top flanges, a member adapted to engage the bottom flanges and means for urging said members to their flange engaging positions.

11. The combination of adjacent road rails having flanges at top and bottom and an aligning device therefor including a member adapted to engage the top flanges, a member adapted to engage the bottom flanges and wedging means reacting between said members for urging the latter to their flange engaging positions.

12. The combination of adjacent road rails having flanges at top and bottom and an aligning device including a pair of members adapted to engage the top and bottom flanges, respectively, when displaced with respect to each other and a third member associated with the pair, said third member and one member of the pair being provided with cooperating tongue and groove engagement means for effecting the said displacement.

13. The combination of adjacent road rails having flanges at top and bottom and an aligning device including a pair of members adapted to engage the top and bottom flanges, respectively, when vertically displaced with respect to each other and a third member horizontally movable with respect to the pair, said third member and one member of the pair being provided with inclined cooperating tongue and groove engagement means and said third member and the other member of the pair being provided with vertically abutting surfaces, whereby the relative vertical displacement of the members of the pair may be controlled by horizontal movement of the third member.

14. A road rail adapted to be positioned and aligned with respect to another similar rail including an aligning device secured as against detachment to one end thereof but movable into and out of aligning position.

15. In combination, a pair of road rails positioned end to end and means for securing the adjacent ends in position, said means being secured as against detachment to one of the rails and adjustable into and out of securing position.

16. In combination, a pair of road rails positioned end to end and means for securing

the adjacent ends in position, said means being adjustable into and out of securing position, together with stop means associated with one of said rails and cooperating with said securing means to prevent detachment of the securing means therefrom.

17. A road rail having an aperture adjacent an end thereof, an aligning and securing device at the opposite end of the rail including a member movable endwise into aligning relation with the apertured end of a similar adjacent rail, and another movable member reacting, upon movement, with said first mentioned member to force it into engagement with the aperture of the adjacent rail.

18. In combination with adjacent road rails, an aligning device for the rails including a pair of members adapted to be vertically displaced with respect to each other and react between upper and lower portions of the rails.

19. In combination with adjacent road rails, opposed abutment means associated with upper and lower portions of the rails and an aligning device including a pair of members adapted to be vertically displaced with respect to each other and reacting between the opposed abutment means.

20. In combination with adjacent road rails, opposed abutment means associated with upper and lower portions of the rails and an aligning device including wedging means reacting in a vertical direction between the opposed abutment means.

21. In combination with adjacent road rails, opposed abutment means associated with upper and lower portions of the rails and an aligning device including a pair of members adapted to be vertically displaced with respect to each other and reacting between the opposed abutment means, together with means associated with said device for retaining the ends of the rails in juxtaposition.

In testimony whereof I have hereunto signed my name.

JOHN IRVIN REA.