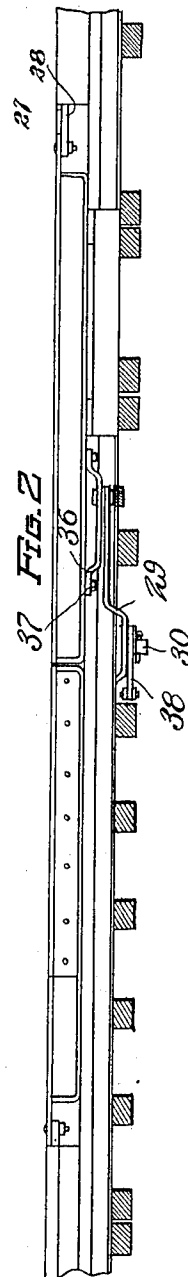
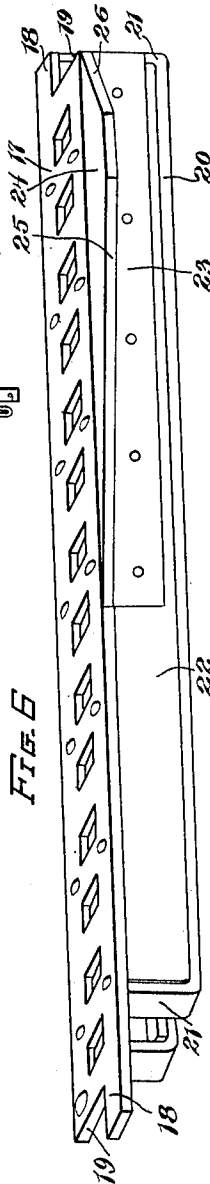
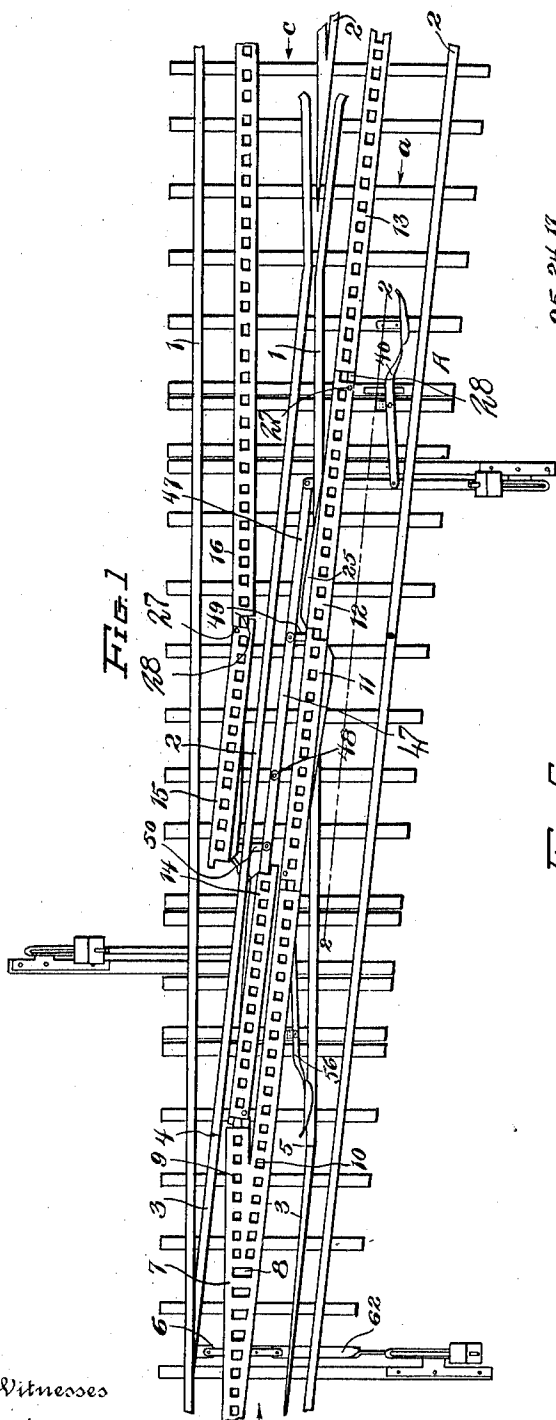


1,066,444.

O. W. ASHLEY.
RAILWAY SWITCH.
APPLICATION FILED DEC. 19, 1911.

Patented July 1, 1913.

3 SHEETS—SHEET 1.



Witnesses

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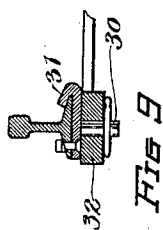
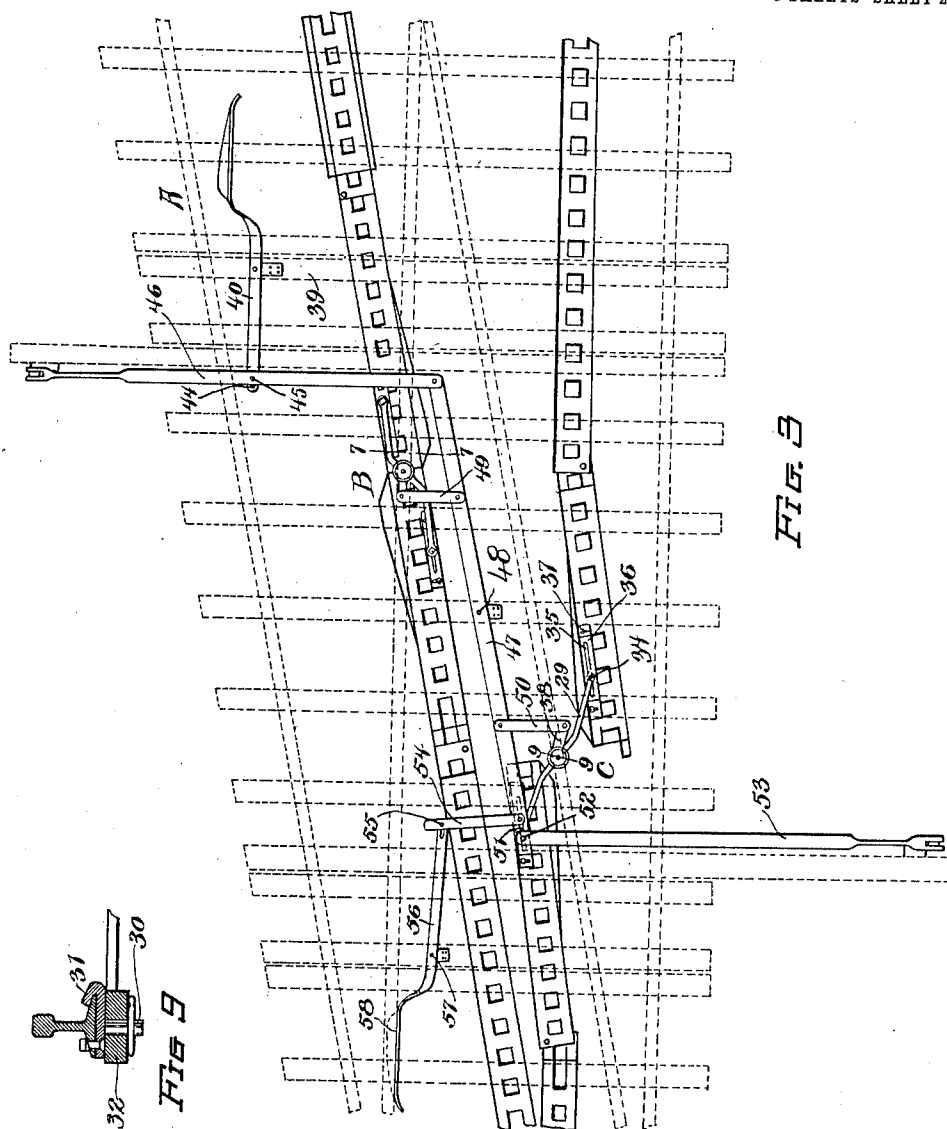
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3 SHEETS-SHEET 2.



Witnesses
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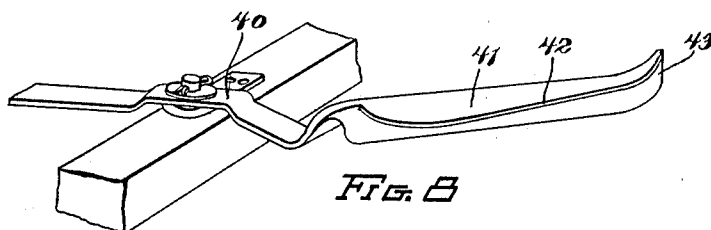
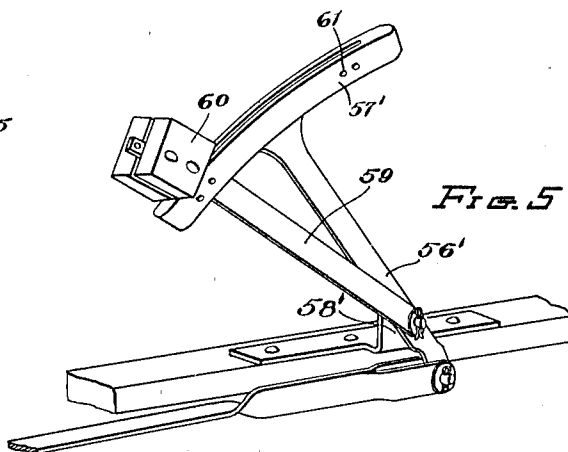
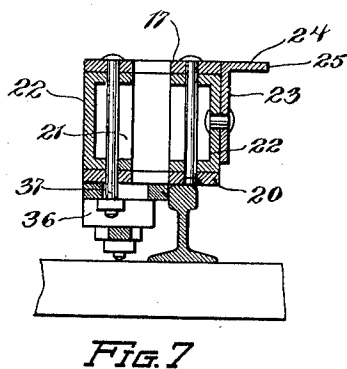
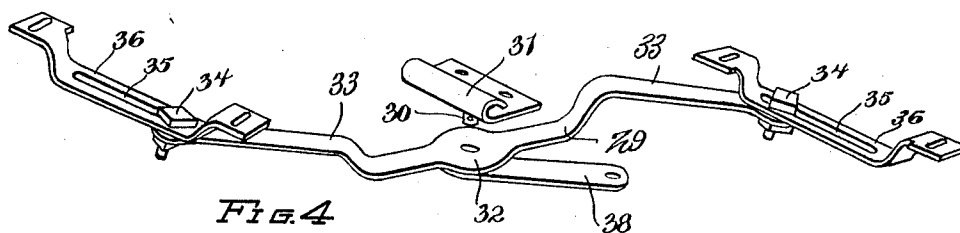
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

OSCAR W. ASHLEY, OF RALEIGH, WEST VIRGINIA.

RAILWAY-SWITCH.

1,066,444.

Specification of Letters Patent.

Patented July 1, 1913.

Application filed December 19, 1911. Serial No. 666,854.

To all whom it may concern:

Be it known that I, OSCAR W. ASHLEY, a citizen of the United States, residing at Raleigh, in the county of Raleigh and State of West Virginia, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

This invention relates to certain novel and useful improvements in railways of the character employing a rack rail, and has particular application to means for automatically switching the rack rail at the junction of the main line and branch line of the railroad.

As is usual in railways of this character it is imperative that the driving mechanism of the truck should have continuous engagement with the rack rail, especially while passing over a switch or at the junction of the main and branch lines. Consequently, the rack rails extend over the switching rails to provide for such continuous passage, either along the main or branch line, and as a result such overlying sections of the rack rail must be shifted at predetermined times to permit the truck to travel along a selected line. Ordinarily the switching sections of the rack rails are either lifted and shifted manually, or are thrown by a simple form of switch throwing mechanism requiring the personal attention of the operator. In either event, considerable loss of time and labor results, in addition to the liability of the operator failing to throw the switch at the proper time, which failure, frequently results in disastrous accidents and wrecks.

In the present instance, it is my purpose to provide an arrangement whereby the switch may be thrown automatically to permit the motor to travel in the direction desired without requiring or relying upon the personal attention of an operator.

Still another object of my invention is to provide a novel form of rack rail which will embody in its construction the desired features of strength, durability and efficiency.

Further objects of this invention will appear as the following specific description is read in connection with the accompanying drawing, which forms a part of this application, and in which—

Figure 1 is a top plan view. Fig. 2 is a section on the line 2—2 of Fig. 1. Fig. 3 is a bottom plan view with a portion of

the parts removed. Fig. 4 is a detail perspective view of one of the spreader bars and their associated parts. Fig. 5 is a perspective view of the counter-weight locking mechanism. Fig. 6 is a perspective view of one of the pivoted rack rail sections. Fig. 7 is a section on the line 7—7 of Fig. 3. Fig. 8 is a detail perspective view of one of the tripping levers. Fig. 9 is a section on the line 9—9 of Fig. 3.

Referring more particularly to the drawings, the numerals 1—1 indicate the main line rails, while the numerals 2—2 indicate the branch line rails which communicate with the main line rails through a switch whose rails are indicated at 3—3 shown to be in the nature of switch points which are pivoted at 4 and 5 to one of the switch track rails and to one of the main line rails. These switch points or rail sections 3—3 are connected by a spreader bar 6 and it will, of course, be understood that when they are swung in one position as, for instance, into the position shown in Fig. 1, the branch track is clear for the train to pass thereover, while when such switch points are swung to the opposite position, the train will be carried directly through on the main line rail.

Arranged between the main line rails at a point adjacent the switch is what may be termed a rack rail frog 7 which consists of a metal plate having a plurality of openings 8 therein of gradually increasing length so as to merge into the diverging series of openings 9 and 10. The former series of openings is parallel with the main line rails, while the latter series of openings is parallel with the branch line rails. The end of the frog having the series 10 therein is considerably longer than the end having the series 9 therein and has pivotally connected to its terminal one of a pair of rack rail sections 11 and 12. The latter rack rail section is pivotally connected to the branch line rack rail 13 and has its free end abutting the free end of the section 11, as will be hereinafter described, the point of connection between the two being immediately over the center of the main line rail, as will be hereinafter described. The end of the frog having the series 9 therein has pivoted to it one of a pair of pivoted rack rail sections 14 and 15, the latter of which is pivoted to the main rack rail 16 and has its free end abutting the free end of the pivoted section

14, the junction between the two occurring immediately over the center of the branch line rail 2, as will be hereinafter described. These pivoted rack rail sections or throw

5 rail sections are all similar in construction and, therefore, under the circumstances, a description of one will suffice for all.

Referring now to Figs. 6 and 7, wherein the throw rail is shown in detail, it will be

10 seen that such rail section comprises a top rack member 17 cut to a predetermined size and having its ends provided with extensions 18 and shoulders 19 for a purpose to be hereinafter described. The bottom of the

15 rail is also formed of a section of rack rail 20 cut to the proper size and having its ends bent up, as shown at 21. The top and bottom sections are connected together by separate pieces of channel iron 22 which are inserted between the upper and lower rack

20 rails 17 and 20, the whole being secured together by rivets or in any other suitable manner, whereby each rack rail section comprises a unitary structure. Secured to one

25 side of each section is a tripping plate 23 which is provided with a horizontally projecting web 24 having the cam faces 25 and 26 formed thereon. The throw rail sections are pivoted at 27 to extensions 28 formed on

30 the main and branch line rack rails 13 and 16, as shown, and when their free ends abut each other, the extensions 18 engage the shoulders 19 in such a manner that the pull exerted upon the throw rail sections will be

35 communicated directly through the extensions and shoulders to the main rack rails. At the same time, a practically continuous rail is produced owing to the fact that the throw rail sections are limited by the rail,

40 as will be hereinafter described, and the extensions produce an opening between the two for a spur gear tooth to enter.

In order that the throw rail sections may be automatically opened up or have their

45 free ends separated to provide a clear track over the main or branch rails, each set or pair of throw rails 11 and 12 or 14 and 15 are connected by spreader bars 29 which are pivotally mounted upon studs 30 depending

50 from rail clips 31 which are secured to the base flanges of the rails. These spreader members comprise a pivoting head 32, through which the stud 30 extends and oppositely extending arms 33 integral with the head and having upward bends so as to

55 bring their ends into position to engage the free ends of the throw rail section. The free ends of the spreader arms carry adjustable pivoting bolts 34 which slidably engage longitudinal slots 35 in pivoting

60 strips or plates 36 which are adjustably connected to the under side of the throw sections, these plates having raised ends, as shown in Fig. 4, which are slotted so as to

65 adjustably receive the attaching bolts 37,

whereby the plates may be adjusted transversely across the throw sections. This adjustment is made in order that the free ends of the separate throw sections may properly register with each other when alined, the

70 plates abutting the rails, over which the throw sections extend to properly limit their movement. Each spreader arm also comprises an operating lever 38 to be hereinafter described. These spreader arms are

75 pivoted to separate the free ends of the throw sections by means of suitable mechanism to be now described.

Pivoted to one of the supporting ties 39 is a trip lever 40 having a laterally extending web 41 which overlies the rail when set for operation and is provided with a cam face 42 to be engaged by the wheel flange of the first truck passing over the rail. The

80 ends of these trip levers are bent laterally on a curve as shown at 43 so as to insure proper engagement of the wheel flange with the cam face 42. The lever shown at A for the branch line has the end opposite the web 41 provided with a slot 44 to engage a

90 pivotal bolt 45 secured to the central portions of a bridle bar 46. This bridle bar has its inner end connected to an operating lever 47 which is centrally pivoted, as shown at 48, to one of the ties. On the side

95 of the lever adjacent the lever A is pivotally connected a link 49 which in turn is pivotally secured to the arm 38 of the spreader bar as shown at B. The opposite side of the lever is connected by a link 50 to the arm 38

100 of the spreader bar, shown at C. At the opposite end of the lever from the lever A, a slot 51 is formed in which is received the pivot bolt 52 which connects the bridle bar 53 to said lever. There is also pivoted to

105 this end of the lever 47 a link 54 which is provided at its opposite end with a pivot bolt 55 engaged with the slotted end of a tripping lever 56 which is pivoted upon a tie, as shown at 57, and is provided with

110 the usual flange engaging web 58 at its end, the levers 56 and 40 being identical. Each bridle bar is connected at its outer end to a lever 56' provided with a slotted T-head 57' and pivoted to a bracket 58' carried by

115 one of the ties. Pivoted to this lever by the same pivot bolt which connects the same to the bracket is a counter-weight arm 59 having a weight 60 arranged on its outer

120 upper end. This arm 59 is limited in its movement by the end walls of the slot in the T-head and may be adjustably limited by inserting pins in the holes 61 formed in the T-head therefor. The spreader bar 6 is

125 shown connected to a bridle bar 62 which is provided with a similar locking mechanism, as described previously for the bridle bar 46 at B.

In the operation of the device, we will assume that the throw rails have been set

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to the position shown in Fig. 1 by a train passing in the direction of the arrow *a* and that it is desired to pass a train along the main line rails in the direction of the arrow *b*. The switch is then thrown so that the far point will be separated from the main line rail and the near point engaged with the switch rail, as is readily understood. A car passing over the switch point of the main line rail would then have the first wheel of its truck engage the lever 56 and through the link 54, lever 47, link 49, and spreader arm B turn the spreader arm upon its pivotal point and separate the free ends of the throw rails 11 and 12. If the train were traveling in the direction indicated by the arrow *c*, the cam surface 25 of the web 24 on the throw rail section 12 would be engaged by the wheel so as to throw this section toward the left and through the spreader bar, throw the section 11 toward the right. Either of these operations would throw the lever 40 against the track so that a train traveling over the branch rails in the direction of the arrow *a* would operate upon said lever and through the bridle bar 46, the lever 47, and link 50, operating the spreader bar, shown at C, to throw the switch points 14 and 15 to the position shown in Fig. 1. In case the wheel does not strike the cam surface of the web 24 on the throw section 12 with sufficient force to operate the parts, the flange of the wheel will engage the cam surface 26 upon the adjoining throw section 11 to fully operate the parts. The T-heads 57 on the levers 56 are only thrown to a position sufficiently far to carry the lever 59 beyond center so that the weight will drop to the opposite end of the slot or to the other stop and lock the parts in operative position. If the throw rails have been properly alined by the action of the lever mechanism, the weights when dropped will cause a proper alinement of the same so that the spur gear wheels on the motors can not by any possible means, run off the rack rails.

What is claimed is:—

1. The combination with the main and branch track rails, and switch track rails, of a rack rail for each pair of track rails, said rack rails each embodying two pivoted sections, mechanism connecting the two pivoted sections of each rail, and means carried by each pivoted section adapted when contacted with by the wheels of a car or the like to actuate the mechanism to spread the sections.

2. The combination with the main and branch track rails, and switch track rails, of a rack rail for each pair of track rails, each rack rail being formed of sections, two sections of each rail being pivoted to be movable in opposite directions, throwing mechanism connecting the two adjoining sections,

and means at the side of each section of the rack rails adapted when contacted with by the wheels of a car traveling along the track to operate said throwing mechanism to cause the movement of the rack rail sections.

3. The combination with the main and branch track rails and the switching track rails, of a rack rail for each pair of track rails, each of said rack rails embodying two pivoted sections adapted to be moved toward and from each other, a spreader bar connecting the two rack sections, and means carried by each of the movable rack sections adapted when contacted with by the wheels of a passing car to actuate said spreader bar, and means connected to the spreader bar to hold the pivoted rack rail sections to permit the passage of the car.

4. In a railway of the class described, the combination with the track rails, a rack rail extending therealong, said rack rail including two pivoted sections, a spreader bar connecting the sections, a bridle bar connected to said spreader bar, a lever mechanism connected to the bridle bar, and means carried by the pivoted rack sections adapted when contacted with by a passing car to cause the movement of the spreader bar and connecting mechanism to spread the rack sections.

5. In a railway of the class described, a rack rail comprising a top rack bar, a bottom rack bar having upturned end portions, a channel bar interposed between the top rack bar and the bottom rack bar, and a tripping bar fastened to the side of the channel bar.

6. The combination with the main and branch track rails and the switching track rails, of a rack rail embodying a plurality of movable sections, the abutting ends of said sections being shouldered to form a continuous unbroken rack, a support fastened to one of the track rails beneath the rack rail sections, a spreader bar provided with arm portions engaging with the under sides of said pivoted rack rail sections, a bridle bar connected to said spreader bar, a segmental member pivotally connected to the bridle bar, and a weighted lever pivoted to said segmental member.

7. The combination with main and branch track rails, and switch rails, of a rack rail for each pair of track rails, said rack rails each embodying two pivoted sections, mechanism connecting the two pivoted sections of each rail, means carried by each pivoted section for operating said mechanism when contacted by the wheels of the car, and other mechanism for actuating the connecting mechanism of the pivoted sections.

8. The combination with main and branch track rails, a rack rail for each pair of track rails, said rack rails each embodying two pivoted sections, a separating member pivotally connected to the free end of the piv-

oted sections, and lever mechanism actuated by the wheel of a car or the like to actuate said separating mechanism.

9. The combination with main and branch 5 track rails, of a rack rail for each pair of track rails, said rack rails each embodying two pivoted sections, spreader mechanism connecting the pivoted sections of each rack rail, a common operating lever for said 10 mechanism, means connecting the opposite ends of said lever for actuating the separate mechanisms, and means for holding the mechanism in operated position.

10. The combination with main and 15 branch track rails, of a rack rail for each pair of track rails, said rack rails each embodying two pivoted sections, spreader mechanism connecting the pivoted sections of each rack rail, a common operating lever for 20 said mechanism, pivoted in its center wheel operated levers connected to opposite ends of said common operating lever, and means for holding the mechanisms in operated position.

25 11. The combination with main and branch track rails, of a rack rail for each pair of track rails, said rack rails each embodying two pivoted sections, spreader

mechanism connecting the pivoted sections of each rack rail, a common operating lever 30 for said mechanism, pivoted in its center, wheel operated levers connected to opposite ends of said common operating lever, and counter-weights connected to said independent levers and to the common lever for 35 holding the parts in operated position.

12. The combination with main and branch track rails, of a rack rail for each pair of track rails, said rack rails each embodying two movable sections, said movable 40 sections being pivoted to have their free ends abut at a point over the rail which they cross, mechanism for connecting the free ends of the pivoted sections, means for pivotally connecting the connecting mech- 45 anism to the pivoted sections, said means being adjustably connected to the pivoted sections and adapted to engage the rails to limit their alining movement.

In testimony whereof I affix my signature 50 in presence of two witnesses.

OSCAR W. ASHLEY.

Witnesses:

E. EDMONSTON, Jr.,
M. FROTHINGHAM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."