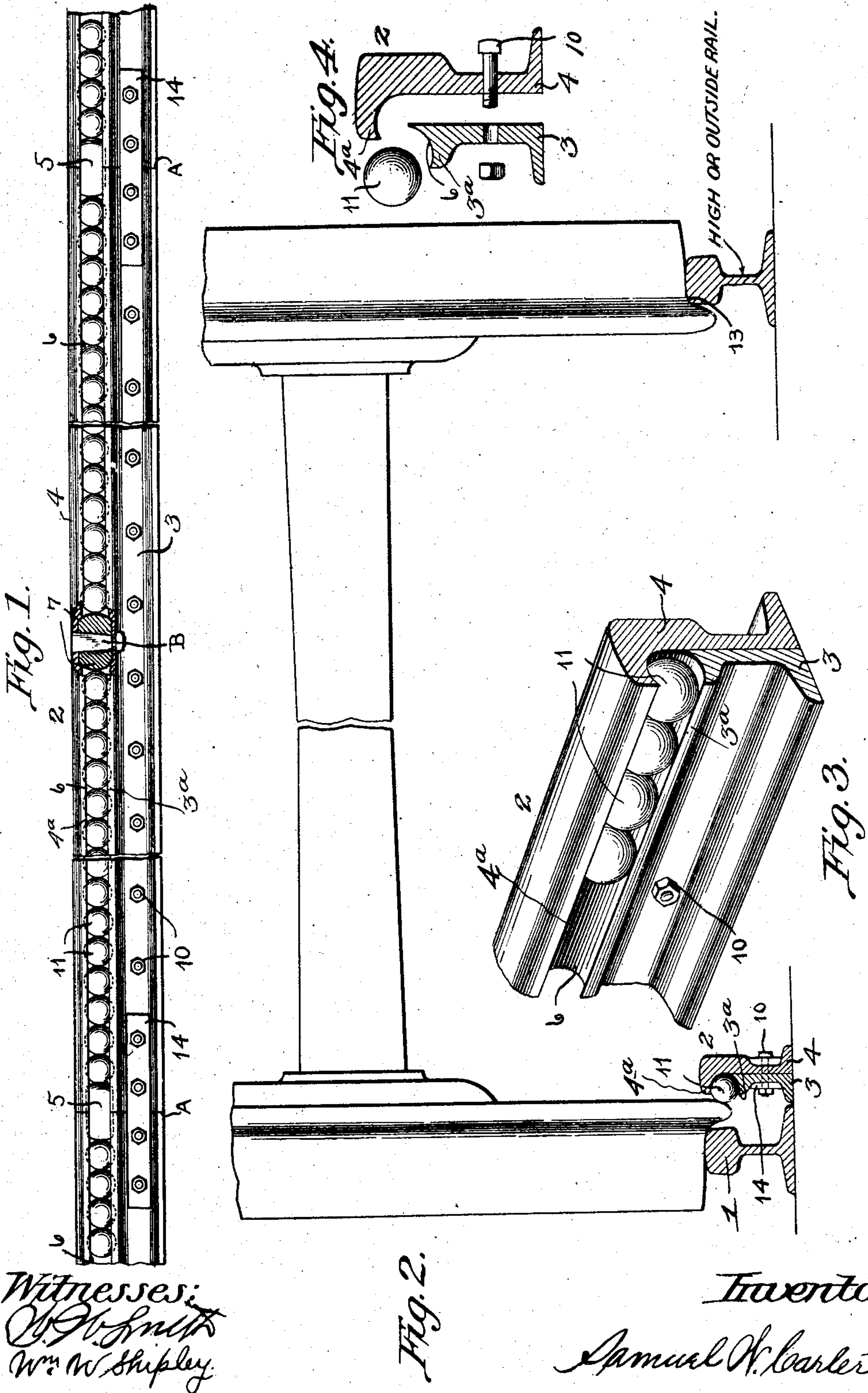


No. 833,919.

PATENTED OCT. 23, 1906.

S. W. CARTER.  
RAILROAD RAIL.

APPLICATION FILED FEB. 16, 1906.



Witnesses:  
Wm W Shipley

Fig. 2.

Inventor,  
Samuel W. Carter.



# UNITED STATES PATENT OFFICE.

SAMUEL W. CARTER, OF OMAHA, NEBRASKA.

## RAILROAD-RAIL.

No. 833,919.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed February 16, 1906. Serial No. 301,519.

*To all whom it may concern:*

Be it known that I, SAMUEL W. CARTER, of Omaha, in the county of Douglas and State of Nebraska, have invented a new and useful Improvement for Railroad-Rails; and I do hereby declare that the following is a full, clear, and plain description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form part of this specification.

This invention relates to improvements in pilot-rails for reducing friction on railroad curves.

The object of the invention is to provide a pilot-rail having arranged therein a series of antifriction devices, whereby the friction and wear on the flanges of the car-wheels and on the track will be reduced to a minimum.

Another object is to provide means whereby the space between the ends of the rails, due to the contraction of the latter, will be covered and the antifriction devices prevented from dropping or being caught in said spaces.

A further object is to provide means whereby the antifriction devices will be prevented from running together and binding or cramping on downgrades or at the lower ends of long curves.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of parts, as will be hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side view of a portion of a pilot-rail constructed and arranged in accordance with the invention. Fig. 2 is a vertical cross-sectional view through a pair of track-rails and the pilot-rail, showing the position of the car-wheels when passing over the same. Fig. 3 is a fragmentary perspective view of a portion of the pilot-rail, showing the arrangement of the antifriction devices therein; and Fig. 4 is a detail cross section of the pilot-rail, showing the parts of the same separated.

Referring more particularly to the drawings, 1 denotes the inside or lower track-rail, adjacent to the inner side of which and suitably spaced therefrom is a pilot-rail 2. The pilot-rail 2 is preferably formed in two sections 3 and 4, which are bolted together by bolts 10, as shown. The section 3 of the pi-

lot-rail is provided on its upper edge with a laterally-projecting flange 3<sup>a</sup>, in the upper side of which is formed a continuous groove or channel forming part of a raceway 6, the other part of which is formed by a continuous groove or channel formed in the under side of a laterally-projecting overhanging flange 4, formed on the upper edge of the section 4 of the pilot-rail.

In the raceway 6, formed by the flanges 3<sup>a</sup> and 4<sup>a</sup> of the pilot-rail, is disposed a series of antifriction devices, which are here shown and are preferably in the form of steel bearing-balls 11, said balls being of such size and so arranged in the raceway 6 that they project beyond the sides or inner edges of the flanges 3<sup>a</sup> and 4<sup>a</sup> a sufficient distance to be engaged by the flange of the wheels traveling on the adjacent track-rail 1, as clearly shown in Fig. 2 of the drawings. The engagement of the flange on the wheels traveling on track 1 will prevent the flanges of the wheels on the opposite, high, or outside track-rail 13 from engaging said rail, as will be understood.

In the raceway 6 at each joint A of the pilot-rails is arranged a steel dividing bar or block 5. Said bars are cylindrical in cross-section and have the same diameter as the balls 11 to fit within the raceway and project beyond the flanges 3<sup>a</sup> and 4<sup>a</sup> the same distance as the balls. The ends of the bars or blocks 5 are rounded to correspond with the peripheries of the adjacent balls which bear against said ends. The bars or blocks 5 serve to separate the balls into sections and also to cover the space between the adjacent ends of the pilot-rails caused by the contraction of the rails, thus preventing the balls from being caught or dropping into said spaces. In addition to the bars or blocks 5 I provide stop or retaining bars or blocks 7, which are similar in construction to the blocks 5 and are arranged in the raceway 6 at certain intervals to prevent the balls from running together and jamming at the lower ends of curves or on downgrades. The bars or blocks 7 are of slightly greater diameter one way than the distance between the flanges 3<sup>a</sup> and 4<sup>a</sup> of the raceway, said flanges being recessed to provide a seat for the bars, as shown in Fig. 1. The ends of the recesses in the flanges form shoulders against which the ends of the bars bear, thereby holding the latter against longitudinal movement and also permitting the bars or blocks to be removed



from the side of the pilot-rail. The bars 11 are further held in place by a wedge-shaped bolt or key B, which is passed through alined apertures in the flanges 3<sup>a</sup> and 4<sup>a</sup> and in the bar, as shown in Fig. 1. The bolt or key B is provided with a reduced and threaded lower end to receive a retaining-nut. By providing for the removal of the bar or block 7 the balls 11 may be quickly removed from and replaced in the raceway, thus facilitating the taking out of a broken ball or foreign matter from the raceway. The pilot-rails are held together at their ends by fish-plates 14 or other suitable fastening devices, through which the bolts 10 are passed.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention as defined by the appended claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A pilot-rail having a raceway, spherical antifrictional bearing devices arranged in said raceway, and means to prevent the jamming or running together of said antifrictional devices, substantially as described.

2. A pilot-rail having a raceway, antifrictional bearing devices arranged in said raceway, and means to prevent said bearing devices from catching or falling in between the adjacent ends of the rail-joints, substantially as described.

3. A pilot-rail having a raceway, antifriction bearing-balls arranged in said raceway, a removable stop bar or block to prevent the crowding or jamming of said balls, and means to prevent the latter from catching or falling in the space between the ends of the rails, substantially as described.

4. A pilot-rail having a raceway, antifriction bearing-balls arranged in said raceway, a

removable stop bar or block to prevent the crowding or jamming of said balls, and a dividing-block arranged in said raceway over the joint of the rails to separate said balls into series or sections and to prevent the same from catching or falling in the space between the ends of the rails at said joint, substantially as described.

5. A pilot-rail having a raceway, antifriction bearing-balls arranged in said raceway, a removable stop bar or block to prevent the crowding or jamming of said balls, said bar or block being adapted to fit in a shouldered recess in said raceway, a bolt to removably hold said bar in place, and a cylindrical dividing bar or block having rounded ends corresponding to the periphery of said balls, the side of said bar projecting from the raceway after the manner of said bearing-balls, substantially as described.

6. A pilot-rail having a raceway, antifriction bearing-balls arranged in said raceway, a cylindrical stop bar or block having rounded ends, said bar being adapted to fit within a shouldered recess in said raceway and to project from the same at the side after the manner of said bearing-balls, a retaining-bolt to hold said bar in place, and a dividing bar or block arranged at the joint of the pilot-rails to separate said balls into series and to prevent the latter from dropping or catching into the space between the ends of said rails at said joints, substantially as described.

7. A pilot-rail formed in two sections which when secured together in contact form a raceway, and antifriction bearing devices arranged in said raceway, substantially as described.

8. A pilot-rail formed in two sections, laterally-projecting flanges formed on said sections to form a raceway, antifrictional bearing devices arranged in said raceway, and means to prevent the crowding and jamming of said balls, substantially as described.

SAMUEL W. CARTER.

Witnesses:

EUGENE MORGAN,  
J. FRANK WHITE.