

May 29, 1945.

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2,377,273

RAILWAY TRACK ASSEMBLY

Filed July 29, 1942

3 Sheets-Sheet 1

FIG. 1.

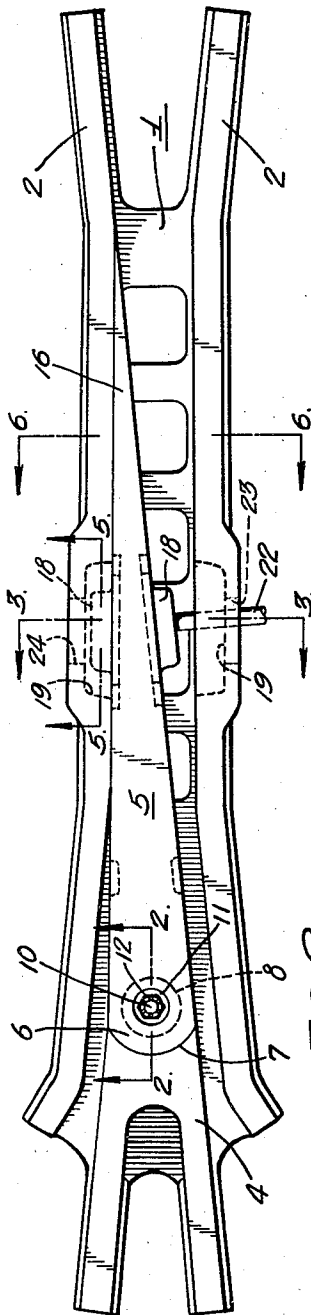


FIG. 2.

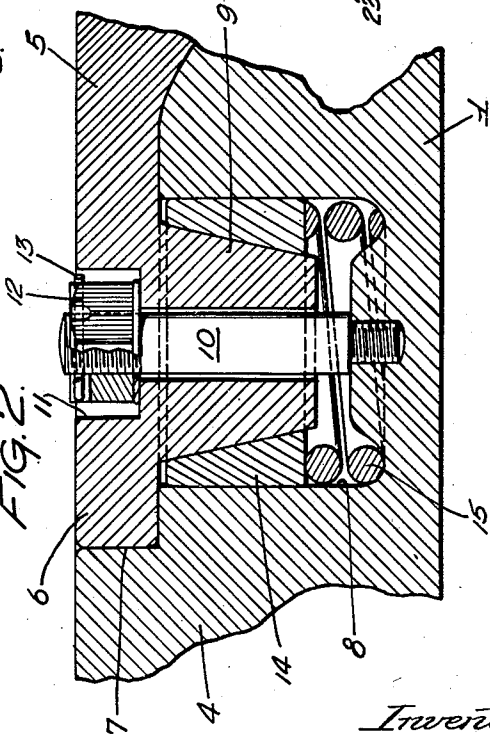
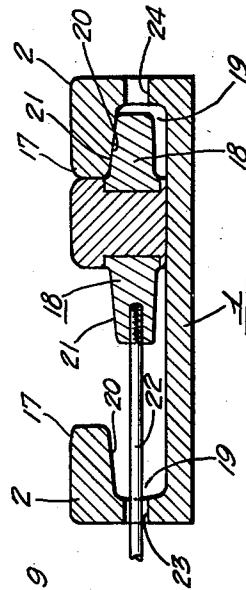


FIG. 3.



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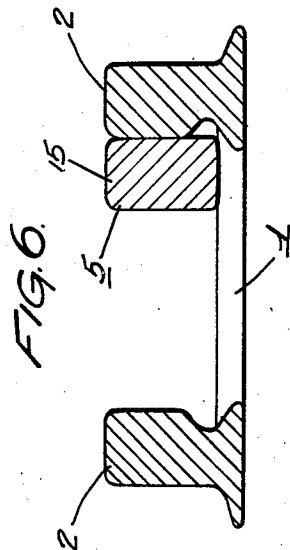
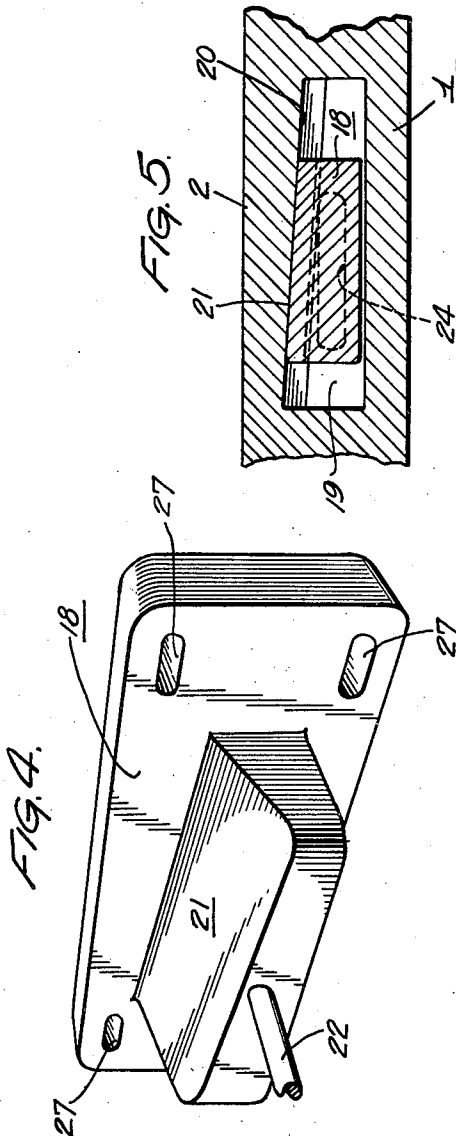
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3 Sheets-Sheet 2



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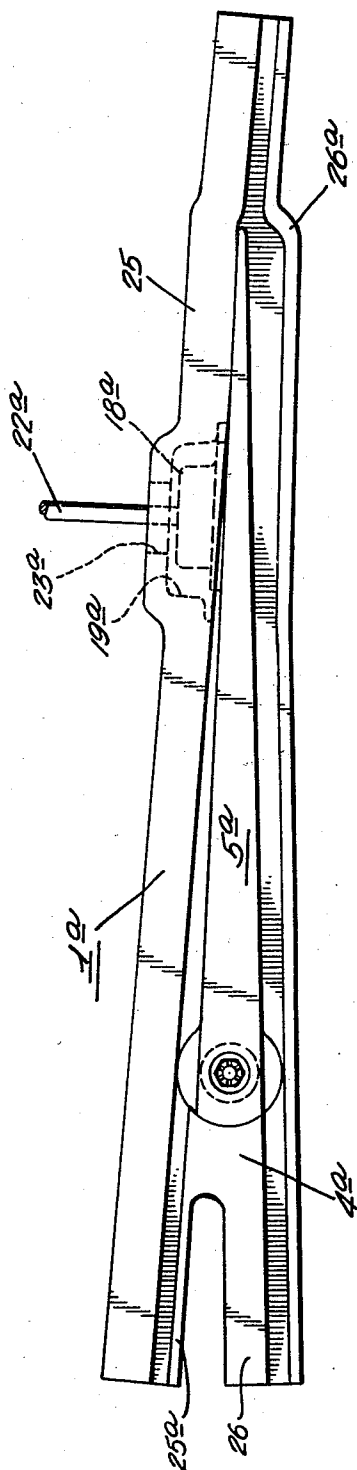
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RAILWAY TRACK ASSEMBLY

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FIG. 7.



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UNITED STATES PATENT OFFICE

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RAILWAY TRACK ASSEMBLY

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Application July 29, 1942, Serial No. 452,771

11 Claims. (Cl. 246—275)

This invention relates to new and useful improvements in railway track assemblies and more particularly to railway frogs and switches of the type having a tongue or blade which is movable between and cooperable with the adjacent rail elements of a frog or switch.

One object of the invention is to provide a railway frog or switch of the type described embodying a novel construction and arrangement of parts whereby the thrust of the car wheels passing thereover operates to hold the movable tongue or blade in position against an adjacent fixed rail element.

Another object of the invention is to provide a railway frog or switch of the character set forth which is substantially free from vibration and is so constructed and arranged that the movable tongue or blade will not elevate or open under traffic.

A further object of the invention is to provide a railway frog or switch of the stated type which is constructed and arranged to provide for relatively easy replacement and adjustment of its movable parts as the result of continued use, wear, and the like.

These and other objects of the invention and the various features and details of the construction and operation thereof are hereinafter fully set forth and described, and shown in the accompanying drawings, in which:

Figure 1 is a view in plan of a railway track assembly, exemplified by a frog, embodying the present invention.

Figure 2 is an enlarged fragmentary view in section taken on line 2—2, Figure 1.

Figure 3 is an enlarged view in section taken on line 3—3, Figure 1.

Figure 4 is an enlarged detached view in perspective of one of the rail engaging members carried by the movable tongue or blade.

Figure 5 is an enlarged view in section taken on line 5—5, Figure 3.

Figure 6 is an enlarged view in section taken on line 6—6, Figure 1; and

Figure 7 is a view in plan of a track assembly in the form of a switch embodying the present invention.

Referring now more particularly to the drawings, in Figures 1 to 6 there is shown a railway track assembly, in the form of a frog, made in accordance with the present invention. As shown, such a frog may comprise a unitary base 1 having wing-rail members 2 and a converging terminal or end portion 4 for the running rails integral therewith. This unit is adapted to be

secured to the rail bed ties by means of spikes in the conventional manner.

Journalled for horizontal pivotal movement between limits defined by the wing-rail members 2 of the frog is a tongue or blade 5. As best shown in Figure 2 of the drawings, the tongue or blade 5 has a rounded heel end portion 6 which seats in a recess formed in the terminal rail portion 4 by the shoulder 7 therein which, it will be observed, has a curvature corresponding to that of the heel end 6 of said tongue 5.

Depending from the underside of the heel end 6 of the tongue 5 and extending into a socket 8 formed in the rail terminal portion 4 is an annular boss or hub portion 9 which is disposed concentrically with respect to the radius of curvature of the tongue heel end 6 and the shoulder 7.

Threaded or otherwise secured in the base of the socket 8 is a pivot or stud 10 which extends upwardly through the annular hub portion 9 of the tongue 5 and through the latter into a countersink 11. The tongue 5 is held in position with respect to the pivot or stud 10 by means of a nut or the like 12, and a suitable locking device such as, for example, a cotter pin 13.

As shown in Figure 2, the depending boss or hub portion 9 of the tongue 5 is of inverted frusto-conical configuration and is journalled in a correspondingly tapered sleeve or bushing 14 disposed within the socket 8. This sleeve or bushing 14 is spring-biased upwardly by means of a relatively heavy coil spring 15 positioned between said bushing and the base or bottom of the socket 8, and the cooperating complementary tapered surfaces of said hub portion 9 and bushing 14, together with the upward bias of the spring 14 against holding action of the stud 10 and nut 12, operate to maintain a tight, snug fit between the bushing 14 and hub 9 at all times with the result that vibration of the heel end 6 of the tongue 5 and its pivotal mounting, under traffic conditions, is substantially eliminated. Too, it will be observed that some clearance is provided between the hub 9 and the stud 10, which passes therethrough, with the result that the latter is not subjected to shear.

As shown in Figure 1, the tongue 5 extends from its heel portion 6 longitudinally between the wing-rail 2 and diminishes gradually along its length terminating in a point at the extremity of its free or toe end portion 16. As previously stated, pivotal movement of the tongue 5 is limited by the spacing of the wing-rail members 2, the head portions 17 of which are arranged to engage or bear against the oppositely disposed gauge sides

of said tongue as best shown in Figure 3 of the drawings.

For the purpose of preventing vertical movement or elevation and vibration of the toe or free end portion 16 of the tongue 5 under traffic when in either of its terminal positions against one or the other of the wing-rail members 2, there is secured to opposite sides of the tongue 5, below the rail bearing gauge sides thereof and approximately midway therealong, laterally projecting blocks or like members 18 (see Figure 4) which are arranged so that, in each terminal position of the tongue 5, the block 18 adjacent the wing-rail member against which the tongue bears, engages within a recess or the like 19 formed in such wing-rail member below the head 17 thereof in the manner shown in the drawings.

Referring particularly to Figures 3 and 5 of the drawings, it will be observed that the top wall surface 20 of the wing-rail member recesses 19 and the upper surface 21 of the blocks or members 18 decline both laterally outward from the tongue (Figure 3) and longitudinally of the tongue in a direction away from the pivotal mounting, or toward the free end thereof, (Figure 5). By reason of this construction of the blocks or members 18, it will be noted that when the tongue 5 is moved to one of its terminal positions against one of the wing-rail members 2, the adjacent block 18 engages within the recess of such rail with a wedge-like action which, under the thrust of traffic, operates to maintain and hold the tongue in place abutting the wing-rail member and also prevents the tongue from elevating or vibrating.

Actuation of the tongue 5 between its two limit positions against the wing-rail members 2 may be effected by means of a throw rod 22 which extends through a slot or aperture 23 in the outer wall of the recess 19 of one of the wing-rail members 2 and has its end connected to the outer face of the adjacent wedge block 18 carried by the tongue 5 as shown in Figure 3 of the drawings. In order to eliminate any problem of right or left hand frogs a similar slot or aperture 24 may be provided in the outer wall of the recess 19 of the opposite wing-rail member 2 thereby permitting the frog to be operated from either side thereof.

It will be obvious, of course, that in lieu of providing the recesses 19 in the rail members, as described, said recesses, together with the angularly disposed top surface, may be provided in stop members such as blocks which may be provided independently of or in addition to the rail members, the essential requirement being that the angularly disposed surfaces on the tongue 5 cooperatively engage said recess surfaces in the terminal positions of the tongue thereby to prevent elevation and vibration of the tongue in its terminal positions.

Referring now to Figure 7 of the drawings, the invention is there shown as embodied in a railway track switch assembly of the type more commonly employed in street railways, although used to some extent by the regular or so-called "steam" railroads. As in the case of the frog previously described, the switch assembly shown in Figure 7 comprises a unitary base 1a having integral therewith a running rail 25, guard rail 26a and the terminal or end portion 4a of the running rail 26 and guard rail 25a of the straight and turn-out branches respectively of the switch.

A tongue or blade 5a is journaled in the terminal rail portion 4a for pivotal movement between limits defined by the rail member 25 and

guard rail member 26a. The construction of the blade 5a and its mounting may be substantially the same as that shown and described above in connection with the railway frog assembly and hence it is not necessary again to describe said blade and its pivotal mounting.

Secured to the side of the blade 5a, at the side thereof that bears against the running rail 25, is a block 18a arranged (as in the case of the blocks 18 in the frog) so that in the terminal position of the blade 5a against the running rail 25, the said block 18a engages within a recess 19a formed in said rail 25 below the head thereof. The construction and arrangement of the block 18a and its recess 19a is substantially the same as described in connection with the frog assembly and operates with a similar wedge-like action to maintain and hold the blade 5a in place abutting or bearing against the running rail 25, and also to prevent said blade from elevating or vibrating. Actuation of the blade 5a may be accomplished by a throw rod or the like 22a which extends through a slot or opening 23a in the outer wall of the rail recess 19a.

Of course, instead of providing the blocks or members 18 and 18a in the form of independent elements which are attached to the tongues or blades 5 and 5a, it will be obvious that these blocks may be formed integral with the tongues or blades, that is—the said tongues or blades 5 and 5a may be provided with portions integral therewith having laterally sloping surfaces forming the functional counterpart of the block upper surfaces and arranged for engagement with correspondingly formed surfaces on the adjacent rail element. I prefer, however, to employ separate blocks 18 and 18a and to secure them in place on the tongues 5 and 5a by means of bolts or the like (not shown) which may be passed through elongated slot-like openings 27 and 27a in said blocks thereby permitting of adjustment of the blocks 18 and 18a lengthwise of the tongue or blade and with respect to the angularly disposed top wall surface of the recesses 19 and 19a in the rail elements so as to permit of regulation of the extent or degree of the wedging action that takes place between the cooperating upper surfaces of the blocks and the top walls of such recesses.

From the foregoing, it will be observed that the present invention provides an improved railway frog of the movable tongue type which provides a continuous running surface for the wheels of railway rolling stock, and which embodies novel features of construction and arrangement whereby the movable tongue is firmly held in bearing against a terminal position member substantially free from any tendency to elevate or vibrate under traffic. The novel construction and arrangement of the present invention also permits of the easy replacement and adjustment of the movable parts of the device as may be required from time to time as the result of continued use or wear.

While a particular embodiment of the invention has been illustrated and described, it is not intended that the invention be limited to such disclosure but that changes and modifications may be made and incorporated within the scope of the claims.

I claim:

1. A railway track assembly comprising a pair of relatively spaced members, a tongue pivotally mounted between said members for selective movement between terminal positions bearing against one or the other of the members, means providing an angularly disposed surface on at

least one of said members, and means providing a corresponding angularly disposed surface at the adjacent side of the tongue, said angular surfaces on the member and tongue declining both laterally outward and longitudinally toward the free end of said tongue and being constructed and arranged so that when the tongue is in its terminal position bearing against said one member the angular surface of the latter is cooperatively engaged by the angular surface of the tongue thereby holding said tongue in such terminal position against elevation and vibration.

2. A railway track assembly in the form of a frog comprising a pair of relatively spaced members, a tongue pivotally mounted between said members for selective movement between terminal positions bearing against one or the other of the members, means providing an angularly disposed surface on each of said members, and means providing corresponding angularly disposed surfaces at opposite sides of the tongue, said angular surfaces on the members and tongue declining both laterally outward and longitudinally toward the free end of said tongue and being constructed and arranged so that when the tongue is in either of said terminal positions the angular surfaces of the wing-rail against which said tongue bears is cooperatively engaged by the angular surface on the adjacent side of the tongue thereby holding said tongue in such terminal position against elevation and vibration.

3. A railway track assembly comprising a pair of relatively spaced rail elements, means providing a socket between said rail elements adjacent one end thereof, a tongue having a depending hub portion of inverted frustro-conical shape pivotally mounted in said socket for selective movement between terminal positions bearing against one or the other of the rail elements, a stud securing the hub portion of said tongue in the socket, a bushing in said socket having its interior shape to correspond to the shape of said hub portion and in which the hub portion of the tongue is journaled, spring means upwardly biasing said bushing against the retaining action of said stud to maintain the pivotal mounting of said tongue substantially free from vibration, and complementary angularly disposed surface portions on the tongue and rail elements constructed and arranged for cooperative engagement when said tongue is in at least one of said terminal positions thereby holding the tongue in such terminal position against elevation and vibration.

4. A railway track assembly comprising a pair of relatively spaced rail elements, means providing a socket between said rail elements adjacent one end thereof, a tongue having a depending hub portion of inverted frustro-conical shape pivotally mounted in said socket for selective movement between terminal positions bearing against one or the other of the rail elements, a stud securing the hub portion of said tongue in the socket, a bushing in said socket having its interior shape to correspond to the shape of said hub portion and in which the hub portion of the tongue is journaled, spring means upwardly biasing said bushing against the retaining action of said stud to maintain the pivotal mounting of said tongue substantially free from vibration, means providing an angularly disposed surface on at least one of said rail elements, and means providing a corresponding angularly disposed surface at the adjacent side of the tongue, said angular surfaces on the rail element and tongue

declining both laterally outward and longitudinally toward the free end of said tongue and being constructed and arranged so that when the tongue is in the terminal position against said one rail element the angular surface of the latter is cooperatively engaged by the angular surface on the adjacent side of the tongue thereby holding said tongue in such terminal position against elevation and vibration.

5. A railway track assembly in the form of a frog comprising a pair of relatively spaced wing-rails, each having an elongated recess therein provided with an angularly disposed top wall surface, means providing a socket of inverted frustro-conical shape between said wing-rails adjacent one end thereof, a tongue having a correspondingly shaped depending hub portion pivotally mounted in said socket for selective movement between terminal positions bearing against one or the other of the wing-rails, a stud securing the hub portion of said tongue in the socket, a bushing in said socket in which the hub portion of the tongue is journaled, spring means upwardly biasing said bushing against the retaining action of said stud to maintain the pivotal mounting of said tongue substantially free from vibration, and means providing projecting corresponding angularly disposed surfaces at opposite sides of the tongue, said angular surfaces on the wing-rails and tongue declining both laterally outward and longitudinally toward the free end of said tongue and being constructed and arranged so that when the tongue is in either of said terminal positions the angular surface of the wing-rail against which said tongue bears is cooperatively engaged by the angular surface on the adjacent side of the tongue thereby holding said tongue in such terminal position against elevation and vibration.

6. A railway switch assembly comprising relatively spaced running and guard rail elements, a tongue pivotally mounted between said rail elements for selective movement between terminal positions bearing against one or the other of said running and guard rail elements, means providing an angularly disposed surface on the running rail element, and means providing a corresponding angular surface on the side of the tongue adjacent said running rail element, said angular surfaces on the running rail and tongue declining both laterally and longitudinally toward the free end of the tongue and being constructed and arranged so that when the tongue is in its terminal position bearing against the running rail the angular surface of the latter is cooperatively engaged by the angular surface of the tongue thereby holding said tongue in such terminal position against elevation and vibration.

7. A railway track assembly comprising a plurality of "running" rail elements of which one element terminates short of a second and a tongue at the terminal end of the said one rail and adjustable laterally between terminal positions in one of which the said tongue is operative to establish a juncture between said elements, the said second rail element having an extension providing a stop for the tongue in said operative position, and interlocking means on said tongue and extension for holding the tongue when in the operative position against elevation and vibration, said means comprising interengaging surfaces of which at least one is inclined to the plane of movement of the tongue so as to afford a wedging action between said tongue and extension.

8. A railway track assembly comprising a plurality of "running" rail elements of which one element terminates short of a second and a tongue at the terminal end of the said one rail and adjustable laterally between terminal positions in one of which the said tongue is operative to establish a juncture between said elements, the said second rail element comprising an extension forming a stop for the tongue in said operative position and having an undercut recess, and a projection on the side of said tongue arranged when the tongue is in the operative position to occupy said recess, said tongue and recess having interengaging surfaces of which at least one is inclined to the plane of movement of the tongue so as to afford a wedging action to retain the tongue when in the operative position against both elevation and vibration.

9. A railway track assembly comprising a pair of "running" rails at each end converging towards an intersection and a tongue at the terminal ends of one pair of rails and adjustable laterally between terminal positions wherein the said tongue is operative to establish a juncture between the corresponding rails of said pairs respectively, one pair of said rails being extended and providing a stop for the tongue in the respective terminal positions, and interlocking means on said tongue and said extensions for holding the tongue when in the said terminal positions against both elevation and vibration, each of said means comprising interengaging surfaces of which at least one is inclined to the plane of movement of the tongue so as to afford a wedging action between said tongue and said extensions.

10. A railway track assembly comprising a "running" rail, a second "running" rail converging toward the first and a tongue at the terminal end of said second rail and adjustable laterally between terminal positions in one of which the said tongue is operative to establish a juncture between said rails, said first rail providing a stop for the tongue in the said operative position, and interlocking means on said tongue and first rail for holding the tongue when in the operative position against both elevation and vibration, said means comprising interengaging surfaces of which at least one is inclined to the plane of movement of the tongue so as to afford a wedging action between said tongue and first rail.

11. A railway track assembly comprising a plurality of "running" rail elements of which one element terminates short of a second and a tongue at the terminal end of the said one rail and adjustable laterally between terminal positions in one of which the said tongue is operative to establish a juncture between said elements, the said second rail element comprising an extension forming a stop for the tongue in said operative position and having an undercut recess in the side thereof, a projection on the side of said tongue adapted when the tongue is moved into the operative position to enter said recess, the said top surfaces of said recess and tongue being formed for wedging engagement of the tongue in the recess when the tongue occupies said operative position thereby to retain the tongue in such position against both elevation and vibration.

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