Feb. 17, 1925. 1,527,053

J. McGINNIESS

RAIL JOINT

Filed May 23, 1924

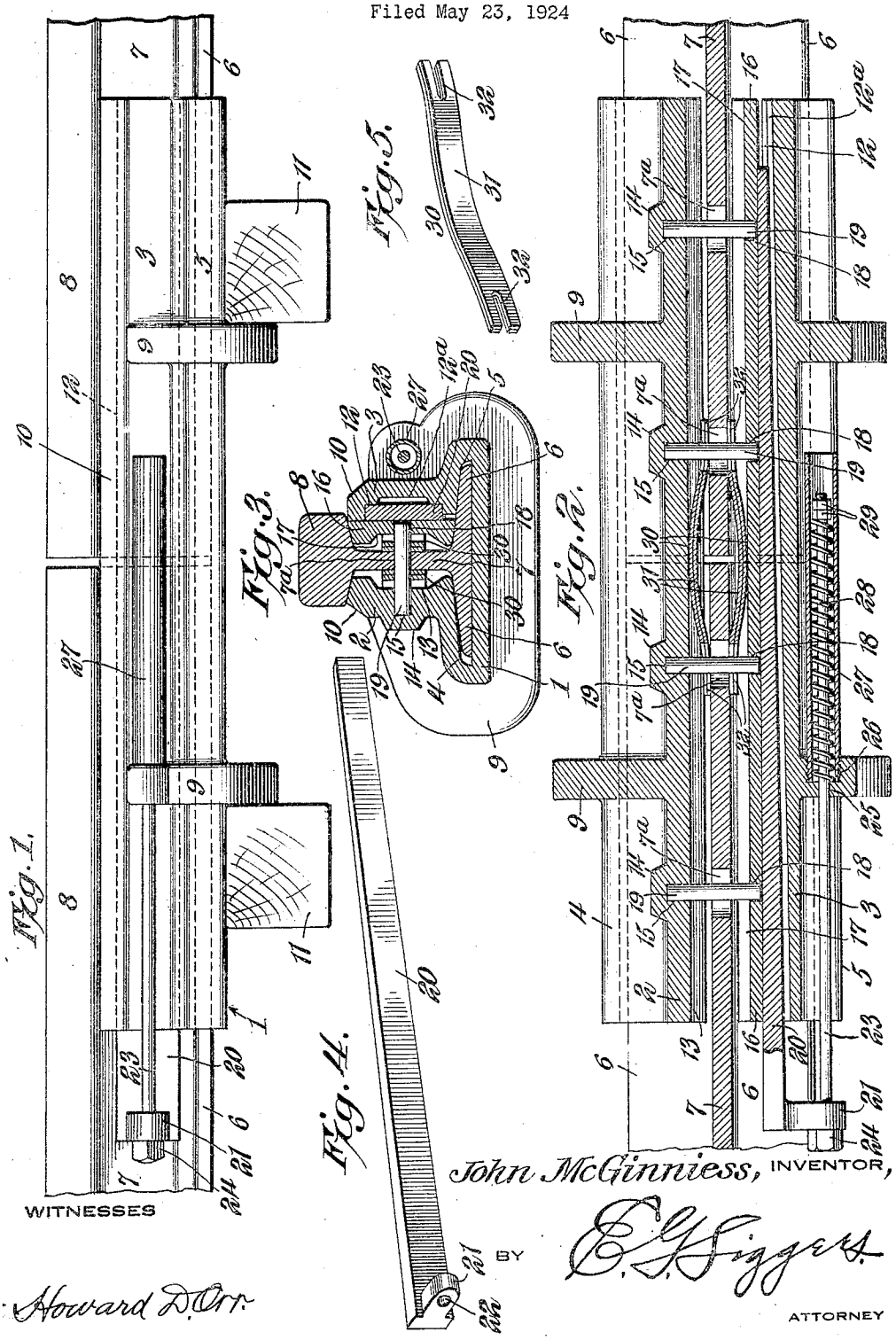


Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

WITNESSES

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JOHN McGINNIESS, OF RIVER ROUGE, MICHIGAN.

RAIL JOINT.

Application filed May 23, 1924. Serial No. 715,376.

To all whom it may concern:

Be it known that I, JOHN McGINNIESS, a citizen of the United States, residing at River Rouge, in the county of Wayne and State of Michigan, have invented a new and useful Rail Joint, of which the following is a specification.

This invention relates to rail joints, and is designed as an improvement on the structure shown and described in Patent Number 1,069,970 issued to me August 12, 1913 on a rail joint.

The object is to provide a rail joint, in the form of a chair having means for engagement with the ties of a railway, and means for connecting the chair to the abutting ends of two rails, whereby the rails are prevented from creeping longitudinally on the ties, but may partake of the usual expansion and contraction due to atmospheric changes.

Another object is to provide a joint of this character especially adapted for use on a double track system, particularly interurban electric systems wherein the cars all move in one direction on a given track, the joint being so constructed and arranged as to depend somewhat on the direction of rolling movement of the wheels of the cars to assist in maintaining certain tightening means and automatic wear take-up means in proper cooperative relation, the present invention being thus properly termed a "One-way joint," though the same may be used on a one-track system.

A further object is to provide a joint wherein a single fish plate is utilized thus effecting a great saving, and which may be properly applied to and associated with the abutting ends of the rails without the use of bolts, so that there are no bolt heads, threads or nuts to rust and wear out, the rail joint being much lighter than that shown in said patent, and capable of manufacture at a reduced cost.

A final object is to provide means in the improved joint for conducting electric current from one rail to the other in a positive manner without depending on the chair, said means being completely housed and protected within the chair and capable of permitting the rails to expand or contract without deranging the same.

A full and complete understanding of the invention may be obtained from a consideration of the following detailed description, taken in connection with the accompanying drawing forming a part of this specification; it being understood that while the drawing shows a practical form of the invention, the latter is not to be confined to strict conformity with the showing thereof, but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention, as specifically pointed out in the appended claims.

In the drawing, in which similar reference characters designate corresponding parts throughout the several figures:

Figure 1 is a side elevation of the improved rail joint applied to a track.

Figure 2 is a horizontal section through the same.

Figure 3 is a transverse sectional view thereof.

Figure 4 is a detail perspective view of the tightening wedge used in the joint.

Figure 5 is a detail perspective view of one of the bonding springs for conducting electric current from one rail to the other.

Referring to the drawing in which one embodiment of the invention is illustrated, there is shown a rail joint including a chair, formed of suitable cast metal, having a bottom wall 1 and spaced, upstanding side walls 2 and 3 formed integrally with the bottom. At the point of juncture with the bottom, the side walls are provided with outwardly-extending pockets 4 and 5 respectively, for the reception of the rail flanges 6, and the chair is so formed that when said rail is seated within the same, the side wall 2 is located closer to the web 7 of the rail, than the other side wall 3, as clearly shown in Figure 3 of the drawing, the upper end of said wall 2 being bevelled to fit beneath the head of the rail 8 and to bear firmly at its inner edge upon the flange 6.

Outstanding flanges 9 are formed integrally with the chair and extend across the bottom thereof and up the side walls, exterior to the same, the upper edges of the latter being bevelled, as at 10, to prevent catching and holding water or moisture. These flanges are spaced from the ends of the chair, and are adapted to fit between two ties 11 and to abut against the same, to prevent the chair and the rails from bodily creeping, as will be clearly understood.

The side wall 3, which is spaced farthest from the web of the rail, is preferably lo-

cated at the outside of said rail, and is provided on its inner, vertical face with a longitudinal runway 12 which is tapered from one end to the other, as shown in Figure 2, the entrance end of said runway being spaced farther from the web of the rail than the other end thereof. The longitudinal, central portion of said runway is provided with a depression or channel 12ª so as to provide upper and lower track surfaces for a purpose to be explained.

The opposite side wall 2 is provided on its inner, vertical face with a longitudinal depression 13, so as to provide a longitudinal space between the wall and the web of the rail, and the said wall is also provided on its outer face with a series of bosses 14, equally spaced apart, there being two between the flanges 9 and one between each of the same and the respective ends of the chair. Bores or sockets 15 are formed in the inner face of the wall 2 opposite the bosses 14 so that the latter provide walls closing the bottoms of the sockets.

The upper, inner corner edge of the outer side wall 3 normally comes closely adjacent to the lower corner of the ball or head of the rail, as shown in Figure 3, to exclude moisture, and between the same and the web of the rail there is interposed a fish plate 16 of equal length with the chair and having its upper and lower ends bevelled to conform to the bevelled lower face of the ball of the rail and the bevelled upper face of the adjacent base flange thereof, so that the said fish plate serves, by such contact, with the inner side wall 2, to support the ball or head of the rail on both sides.

The fish plate 16 is provided with an inner longitudinal channel or depression 17 extending from end to end thereof and providing a space corresponding to the aforesaid space formed by the depression in the inner face of the side wall 2; these spaces serving to lighten and cheapen the structure without detracting materially from the strength of the same, and at the same time providing necessary spaces for a purpose to be explained.

The web 7 of the rail is provided with the usual slots 7ª formed therein substantially midway of its height, and spaced from the ends of the rail sections a distance to correspond with the aforesaid sockets 15 in the inner side wall, said openings being in the form of slots to provide for the expansion and contraction of the rails under the influence of heat and cold. The fish plate 16 is likewise provided with apertures 18 alined with the slots 7ª and the sockets 15.

Transverse pins 19 are located in the alined openings, the outer ends of said pins being disposed slightly short of the outer face of the fish plate, so that pressure brought to bear against the outer face of the fish plate will not be taken up by said pins. The pins 19 serve to secure the rails to the chair, and since the latter is firmly anchored by the flanges 9 between the railway ties 11, the said rails are prevented from creeping to any material extent, except as limited by the expansion slots 7ª, through the action of the rolling wheels of cars all moving in one direction.

Located in the tapered runway 12 is a correspondingly tapered wedge 20 of substantially the same length as the chair, though, by reason of the shape of the runway, said wedge projects at its larger end beyond the end of the chair, as shown in Figure 2, and is there provided with an integral, outstanding head 21 having an aperture 22 formed therein, said aperture being adapted to receive the end of a rod 23, provided with a head 24 bearing against the aforesaid head 21.

The rod 23 passes through an aperture 25 formed in the adjacent transverse flange 9 on the outer side of the chair and extends to a point somewhat beyond the joint between the rail sections. The said flange 9 is further provided with a counterbore 26 having screw threads for the reception of the threaded end of a tubular housing 27, open at both ends and normally extending beyond the free end of the rod 23.

Surrounding the rod 23 and within the tubular housing 27, there is a coiled spring 28 having one end bearing against the wall forming the bottom of the counterbore 26 and the other end extending nearly to the end of the rod, which is threaded for the reception of adjusting nuts 29, which bear against said end of the spring and may be adjusted to increase the tension upon the spring as may be required through the wearing of the parts.

The pressure of the spring 28 constantly exerts an inward pull on the wedge 20 which in turn, by reason of the inclined or tapering runway, causes an inward pressure upon the fish plate 16 towards the web 7 of the rail, and as the contacting parts of the device may become worn by the heavy strain of passing trains or cars, it will be seen that such wear is compensated for, and the inner side wall 2, as well as the fish plate 16 are held in tight engagement with the flanges 6 and the lower bevelled faces of the ball of the rail. The pocket 4 of the inner side wall is somewhat longer than the adjacent flange 6 so that such take up of the parts may be effected. The housing 27 serves to protect the rod and the spring 28 from water and from drippings from refrigerator or similar cars and prevents rust and corrosion, thus prolonging the life of said parts.

Mounted within the spaces provided at each side of the web of the rail between the same and the side wall 2 and fish plate 16

respectively, are elongated leaf springs 30 preferably formed of steel and having a lining 31 of brass or copper to provide a suitable conductor for electric current, said springs serving as a bonding element between the adjacent ends of the rails, the brass or copper lining bearing on the sides of the webs by the pressure of the same, while the central portion of the spring, which is bowed, as shown in Figures 2 and 5, bears against the inner face of the wall 2. The ends of the bonding springs are slotted, as at 32, to receive the innermost transverse pins 19 which thus serve to support the springs at the proper elevation.

From the foregoing it will be seen that a strong and durable device for this purpose has been provided, which may be manufactured at a low cost and that the action of the rolling wheels of cars, all moving in one direction, which direction is from the large to the small end of the wedge, will thus serve to hold the latter in place in addition to the action of the spring.

What is claimed is:

1. A rail joint including a chair having a bottom, side members carried thereby, one of said side members being provided with spaced sockets, the other side member having a runway, a fish plate interposed between the last-named side member and the rail, said fish plate having openings, pins each having one end seated in a socket and the other end in an opening of the fish plate and traversing the expansion slots in the web of the rail, a wedge seated in the said runway and bearing against the fish plate, and means for pulling the wedge into the runway.

2. A rail joint including a chair having a bottom, integral side members carried thereby and provided with seats for rail flanges, one of said side members bearing beneath the ball of the rail at the top thereof and upon the rail flange at the bottom and being provided with spaced sockets, the other side member having a longitudinally disposed runway, a fish plate interposed between the last-named side member and the web of the rail and bearing at the top and bottom against the ball and flange of the rail respectively, said rails being provided with expansion slots said fish plate having openings in alinement with the said sockets, pins each having one end seated in a socket and the other end in an opening of the fish plate and traversing the expansion slots in the web of the rail, a longitudinally disposed wedge seated in the said runway and bearing against the fish plate, and means for pulling the wedge into the runway to bind the fish plate and the opposite wall of the chair to the rail.

3. In combination with the abutting ends of two rails, a chair comprising a bottom wall and spaced side walls and adapted to receive the web and flanges of said rails, automatically-adjusted means for taking up wear between the chair and the rails, means for locking the chair to the rails to permit expansion of the rails, and transverse flanges carried by the chair to abut the ties and prevent longitudinal creeping of said chair and rails.

4. In combination with the ends of two adjoining rails having expansion slots in the ends thereof, a chair adapted to receive the rails and span the joint, said chair having side walls and a bottom wall joining the same, one side wall fitting under the ball of the rail and bearing on the rail flange and having sockets in alinement with the said expansion slots, the other side wall being spaced from the rail and having a longitudinally tapered runway, a fish plate located between the last-named side wall and the web of the rail and fitting under the ball of the rail and bearing on the rail flange and having openings in alinement with said expansion slots, pins seated in the alined openings, slots and sockets, a tapered wedge longitudinally movable in the said runway, and means for exerting a constant inward pressure on the wedge to force the fish plate inwardly to take up wear of the parts.

5. In combination with the ends of two adjoining rails having expansion slots in the ends thereof, a chair adapted to receive the rails and span the joint, said chair having side walls and a bottom wall joining the same, one side wall fitting under the ball of the rail and bearing on the rail flange and having sockets in alinement with the said expansion slots, the other side wall being spaced from the rail and having a longitudinally tapered runway, a fish plate located between the last-named side wall and the web of the rail and fitting under the ball of the rail and bearing on the rail flange and having openings in alinement with said expansion slots, pins seated in the alined openings, slots and sockets, a tapered wedge longitudinally movable in the said runway, said wedge having at it larger exposed end an offset head, a longitudinal rod secured to said head and extending exterior and parallel to the wall of the chair, and a spring mounted on said rod so as to pull the wedge into the runway to tighten the parts.

6. In combination with the ends of two adjoining rails having expansion slots in the ends thereof, a chair adapted to receive the rails and span the joint, said chair having side walls and a bottom wall joining the same, one side wall fitting under the ball of the rail and bearing on the rail flange and having sockets in alinement with the said expansion slots, the other side wall being spaced from the rail and having a longitudinally tapered runway, a fish plate lo-

cated between the last-named side wall and the web of the rail and fitting under the ball of the rail and bearing on the rail flange and having openings in alinement with said expansion slots, pins seated in the alined openings, slots and sockets, a tapered wedge longitudinally movable in the said runway, transverse flanges formed exterior to the side walls and bottom of the chair and adapted to abut against railroad ties, an outwardly extending head formed on the outer end of the wedge, a longitudinal rod connected to the head and having a sliding bearing in the adjacent transverse flange, an open-ended tubular housing mounted at one end in said transverse flange and surrounding the free end of the rod, a coil spring surrounding the rod within the housing and bearing at one end against said flange and a nut threaded on the end of the rod and bearing against the other end of the spring to regulate the tension on the same.

7. A rail joint including a chair having a bottom wall connected to spaced side walls adapted to receive the rails between the same, one side wall bearing beneath the ball of the rail and on the base flange thereof, and having a longitudinal channel providing a space between the same and the web of the rail, the other wall being further spaced from the web and having a longitudinal runway, a fish plate having a longitudinal channel interposed between the second side wall and the web and bearing beneath the ball of the rail and on the base flange, transverse pins having their ends seated in the first wall and the fish plate and traversing the expansion slots of the web, a wedge mounted in the runway and forcing the fish plate inwardly, means for exerting an inward pressure on the wedge, and bowed bonding springs mounted in the channels of the side wall and fish plate and having their ends slotted to straddle the innermost pins and bearing against the opposite rail webs to conduct electric current.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature.

JOHN McGINNIESS.