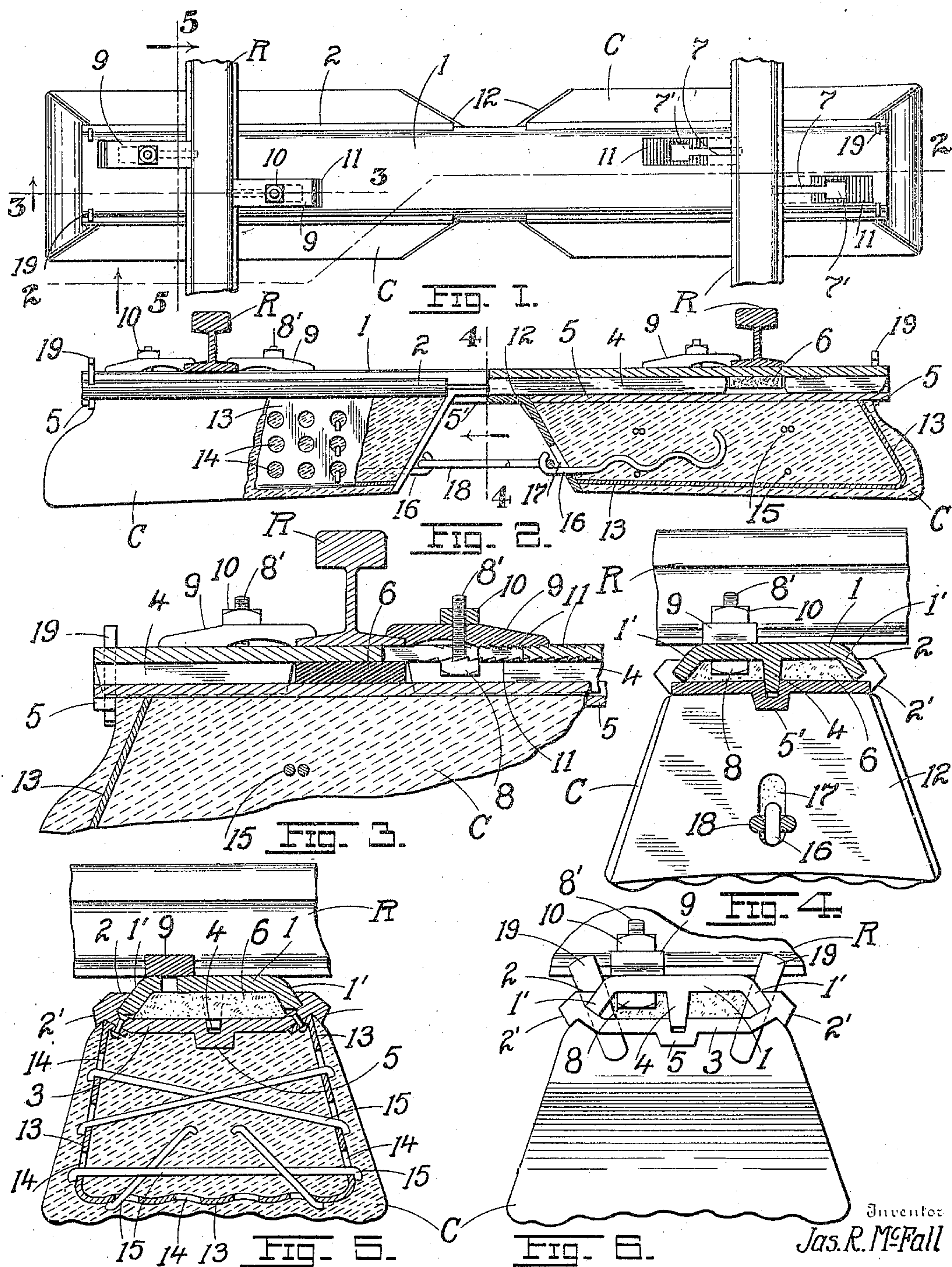


No. 790,911.

PATENTED MAY 30, 1905.

J. R. McFALL.  
RAILWAY TIE.  
APPLICATION FILED NOV. 10, 1904.



Witness

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# UNITED STATES PATENT OFFICE.

JAMES R. McFALL, OF ST. LOUIS, MISSOURI.

## RAILWAY-TIE.

SPECIFICATION forming part of Letters Patent No. 790,911, dated May 30, 1905.

Application filed November 10, 1904. Serial No. 232,212.

*To all whom it may concern:*

Be it known that I, JAMES R. McFALL, a citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Railway-Ties, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention has relation to improvements in composite railway-ties; and it consists in the novel construction of tie more fully set forth in the specification and pointed out in the claims.

In the drawings, Figure 1 is a top plan of the tie, showing rails fastened thereto. Fig. 2 is a combined longitudinal section and elevation on the broken line 2 2 of Fig. 1. Fig. 3 is an enlarged vertical longitudinal section on line 3 3 of Fig. 1. Fig. 4 is a transverse section on line 4 4 of Fig. 2. Fig. 5 is a transverse section on line 5 5 of Fig. 1, and Fig. 6 is an end view of the tie.

The present invention is a qualification of the construction of tie described and shown in my pending application for improvements in railway-tracks, filed October 17, 1904, Serial No. 228,800, and while contemplating the general advantages of the latter the present modification insures a firmer bond for the concrete or cement portion of the tie, makes special provision against disintegration of the cement, allows for the ready adjustment of the rail-clamps, and presents further and other advantages better apparent from a detailed description of the invention, which is as follows:

Referring to the drawings, 1 represents a stringer or rail-supporting member, the same being provided with longitudinal inclined flanges 1' 1', which are embraced by corresponding upturned flanges 2 of the saddles or base-plates 3, disposed on either side of the center of the tie. Disposed the length of the stringer 1 on the under side thereof is a rib or tongue 4, which rests in corresponding recesses of the grooved ribs 5, formed in the saddles. The construction described results in the formation of a chamber or space between the stringer and base-plates, said space

admitting the insertion of a filling of yielding material, such as wood or wood fiber 6, immediately beneath the rail R, a section of the rib 4 being removed for a length corresponding to the width of the rail-flange, Fig. 3, to permit the filling to occupy the entire transverse dimension of the space or chamber referred to. The section shown in Fig. 5 shows the base of the rib 4 not quite reaching the base of the groove of the rib 5, the space thus left permitting for the necessary compression of the filling 6 when a heavy load passes over the rails directly superposed thereover.

Formed in the stringer 1 on either side of where the flange of the rail would rest upon it are longitudinal openings or ways 7, terminating at the ends removed from the rails in enlarged openings 7' for the free insertion of the heads 8 of the clamping-bolts, the openings 7 being of a width to freely admit the stems 8' of said bolts, Fig. 3. After a bolt is inserted into the opening 7' and its stem passed through the opening of the rail-clamping block 9 (to accomplish which the bolt must be moved toward the rail sufficiently to bring the head 8 out of alinement with the opening 7', so as to straddle the sides of the longitudinal opening 7, as shown in Figs. 1 and 3) the said block is held permanently against the rail-flange by the nut 10, passed over the stem of the bolt, the block and bolt being jointly prevented from shifting their position by the engagement of their serrated surfaces or teeth 11 with the corresponding serrations 11, formed on the faces of the stringer.

Disposed at the bottom of the center of the tie is a truss member or arch 12, the top wall of which is provided with a grooved rib 5', in which rests the rib 4 of the stringer 1, the adjacent ends of the saddles 2 abutting against the upper edges of the inclined walls of said arch. Secured along the longitudinal sides of the saddle 3 on each side of the arch 12 is a sheet-casing 13, whose side walls and bottom are provided with openings 14 for the purpose of insertion of a series of rods 15, hooked over the edges of said openings, those engaging the sides being disposed in cross-planes, as best shown in Fig. 5. This casing is filled and surrounded by a body of cement or con-



crete C, there being a section of such concrete on either side of the center spring arch or truss 12. Embedded near the base of each concrete section is a longitudinally-disposed anchor rod or bar 16, whose outer terminal hooked ends pass through openings 17, formed in the side walls or wings of the arch, said hooked ends being coupled by a link or tie 18. The concrete sections are preferably undulating or longitudinally scalloped at the bottom, so as to prevent lateral creeping of the tie on the road-bed. To prevent longitudinal shifting of the stringer and saddles, these parts are preferably made to overhang the outer ends of the concrete sections and a locking-key 19 passed therethrough which engages the ends of the concrete, as shown, Figs. 2, 3, 6. To prevent flaking off of the concrete or cement, the upper edge of the latter is protected by the depending flanges 2' of the saddles 3.

The center arch or truss 12 imparts elasticity to the tie, the inclined walls thereof yielding under a weight and then springing back to their original position. In this they are assisted by the links 18, acting in conjunction with the anchors 16, which prevent separation of the concrete sections, firmly tying them together. The concrete, too, is well tied and bound together by the transversely-disposed rods 15, as is obvious, rendering the whole construction compact and durable. The filling 6 imparts an immediate cushion to the rolling-stock passing over the rails.

The details herein shown may of course be considerably modified without departing from either the spirit or nature of my invention.

Having described my invention, what I claim is—

1. A tie comprising a suitable stringer for the support of the rail, a concrete body portion of two independent sections, and a center arch or truss for supporting the adjacent ends of the concrete sections, substantially as set forth.

2. A tie comprising a suitable stringer for the support of the rails, saddles for the stringer, two independent sections of concrete carried by the saddles, a center arch or truss for the support of the stringer, the sides of the arch forming abutments for the concrete sections, substantially as set forth.

3. A tie comprising a suitable stringer for the support of the rails, saddles for the

stringer, the said parts being separated for a portion of their width by a suitable space or chamber, a filling in said chamber located under the rail carried by the stringer, and concrete sections disposed below and on either side of the center of the tie, substantially as set forth.

4. A tie comprising a stringer having depending side flanges, saddles embracing the edges of the flanges, a longitudinal bottom rib formed on the stringer, and a ribbed groove formed in the saddles for the reception of the rib, a center arch or truss having outwardly-inclined walls, and having a top groove for receiving the rib of the stringer, a sheet-metal casing having its ends secured to the longitudinal edges of the saddles, a concrete or cement filling confined within and surrounding said casing, a series of reinforcing-rods disposed throughout the concrete and hooked into the openings formed in the walls of the casing, anchors embedded in the concrete and projecting through the inclined walls of the center arch, and a link coupling said anchors, substantially as set forth.

5. In a tie, a suitable stringer, a saddle supporting the same on the sides and spaced apart from the main body of the stringer, the latter being provided with openings having enlarged terminals for the free passage of the head and shank of a bolt, the surfaces of the stringer being serrated about said openings, and a rail-clamping block having a similar serrated bottom for engaging the upper serrations of the stringer, the bolt-head having serrations for engaging the bottom serrations of the stringer, substantially as set forth.

6. In a tie, a stringer having a bottom rib, and a saddle having a groove for receiving said rib, the rib having sections removed therefrom at points opposite the rails for the insertion of a suitable filler, substantially as set forth.

7. In a tie, suitable terminal concrete or cement sections, casings for confining said sections, and a center abutment for the inner ends of said concrete sections, substantially as set forth.

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

JAMES R. McFALL.

Witnesses:

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M. B. BELT.