

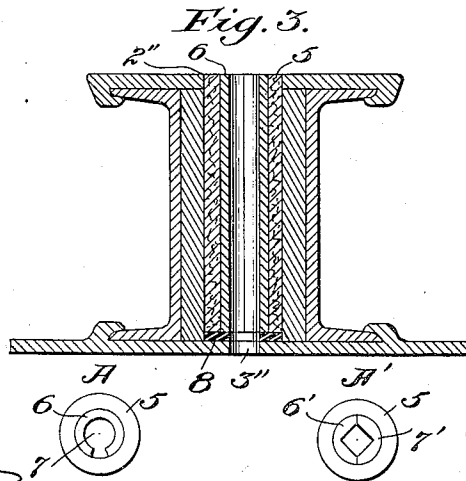
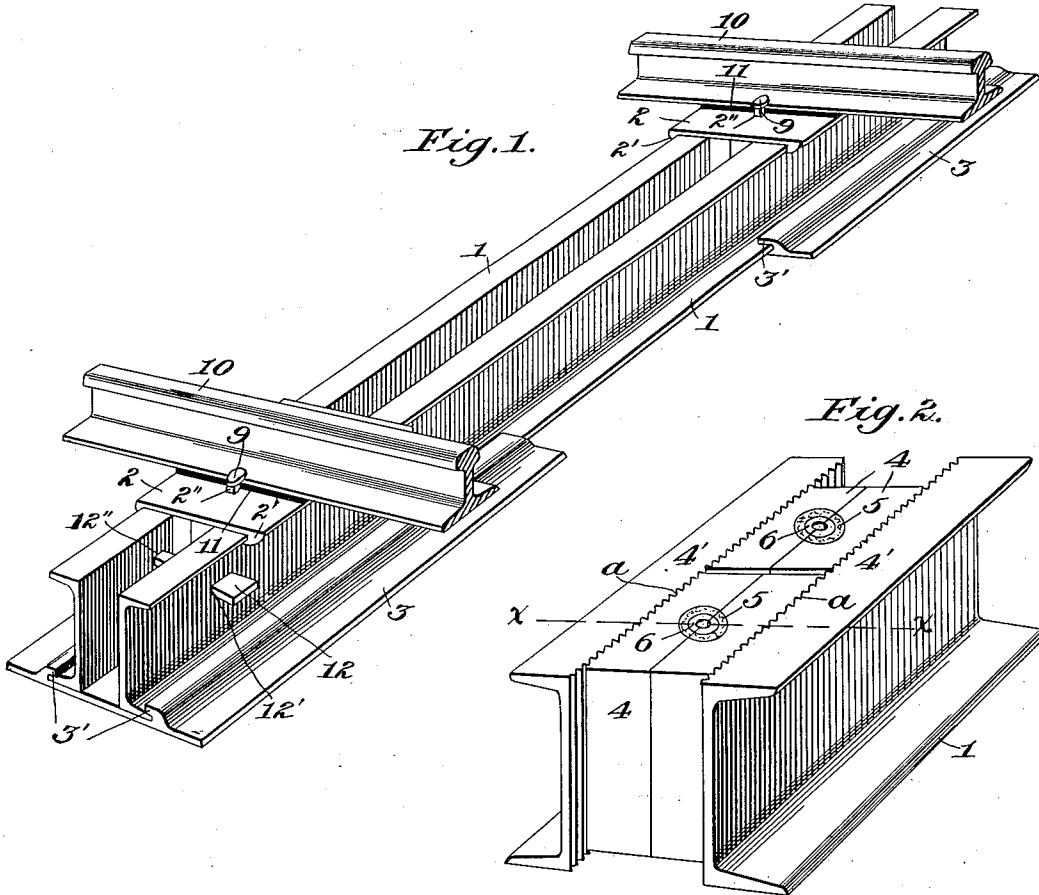
W. D. FORSYTH.
METALLIC RAILWAY TIE.

APPLICATION FILED MAY 6, 1909. RENEWED JULY 23, 1910.

977,179.

Patented Nov. 29, 1910.

2 SHEETS—SHEET 1.



Witnesses:
A. B. Schiller
M. E. Thomas

Inventor:
W. D. Forsyth

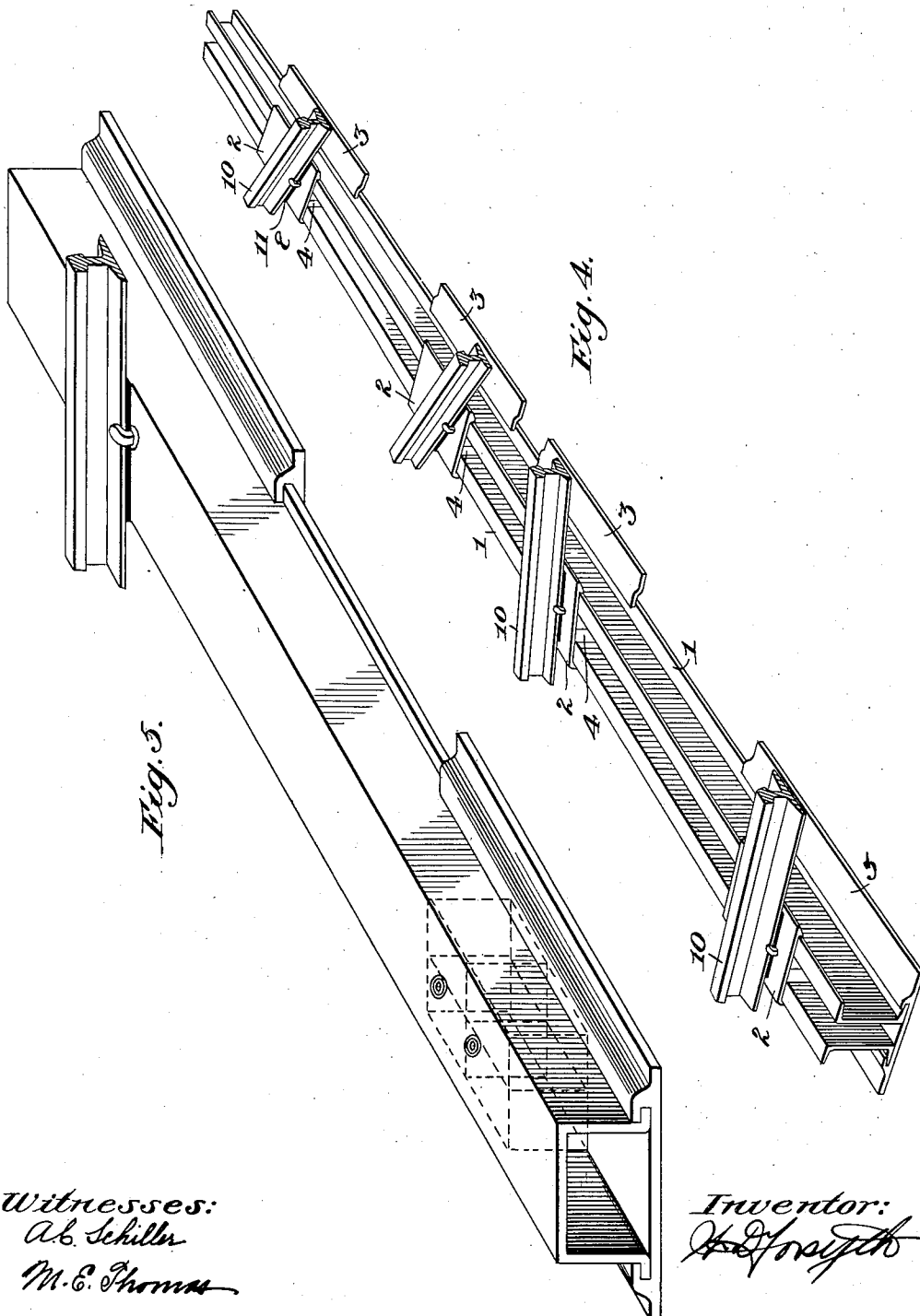
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UNITED STATES PATENT OFFICE.

WILLIAM D. FORSYTH, OF YOUNGSTOWN, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO A. M. NEEPER, OF PITTSBURG, PENNSYLVANIA.

METALLIC RAILWAY-TIE.

977,179.

Specification of Letters Patent.

Patented Nov. 29, 1910.

Application filed May 6, 1909, Serial No. 494,430. Renewed July 23, 1910. Serial No. 573,537.

To all whom it may concern:

Be it known that I, W. D. FORSYTH, a citizen of the United States, residing at Youngstown, in the county of Mahoning, in the State of Ohio, have invented new and useful Improvements in Metallic Railway-Ties, of which the following is a specification.

My invention relates to improvements in metallic railway ties, and the object of the same is to provide a metallic railway tie which shall have the following means, capacities, and advantages, to-wit:—Bases which will properly distribute the loads of trains crossing over the railway in the construction of which said ties enter; cross pieces which, together with said base pieces and other members, form the body of said tie, which is elastic, resilient, flexible enough to bend to passing loads and of sufficient resiliency to recover its normal position and shape after the passing of trains; said tie having solid load supporting devices between the bottoms of the rails and the base plates of said tie, so as to transmit the weight of the load passing over the rails to the ballast or roadbed without crumpling or deforming the cross pieces or any member of said tie; rail fastening means which permit the driving and withdrawing of spikes to fasten the rails placed thereon with greater frequency than spikes can be driven in and withdrawn from wooden ties, without injury to said fastening means; pieces and members entering into the construction of said ties that can be rolled by the processes of rolling mills as now operated; members which when fabricated or rolled can be assembled at the mill where produced or on the roadbed of the railway where constructed, without skilled labor and without the use of machinery; means of insulating rails resting thereon where necessary for signaling purposes; general construction which is cheaper in cost of construction and installation, and lighter in weight than metallic ties heretofore made, which will last and can be made use of for five to six times as long as wooden ties and at the end of that period of use have a value as scrap metal; which can be made of any length so as to accommodate switches and special work when furnished with a sufficient number of rail fastening devices; and having an adjustable rail fasten-

ing device so that rails can be placed thereon for any gage of rails, switches and special work.

In the accompanying drawings which illustrate my invention, Figure 1 is a perspective view of my improved railway tie with sections of rails affixed thereto. Fig. 2 is a perspective view of the channels forming the cross pieces of my tie and the grooved blocks forming the rail fastening device used with said tie. Fig. 3 is a vertical cross section of Fig. 2 on the line X—X; A and A' being plans of the ends of bushings inserted in Fig. 2 for a bushing when a round spike is used and when a square spike is used respectively. Fig. 4 is a perspective view of my improved tie with means of fastening more than two rails thereto, to be used in connection with special work and switches. Fig. 5 is another form of my improved railway tie.

Similar reference characters refer to like parts throughout the several views.

In the following description the term "spike" is employed to designate any form of spike driven into the rail fastening device, whether the same have a shank of round, square or other cross section, or whatever may be the shape of its head.

In Fig. 1, 1—1 are the cross pieces of my improved tie preferably made of rolled shapes known as channels, but may be made of any shapes capable of being held between the top and base plates hereinafter referred to.

2 is a top plate having lugs 2' and a hole 2'' and adapted to engage the flanges of cross pieces 1—1.

3 is a base plate having lugs 3' and a hole 3'', said lugs being capable of engaging the bottom flanges of the cross pieces 1—1.

In Fig. 2, 4—4 are blocks of metal, or other solid material. If metal, the same are rolled in bars with the groove being a half-circle, and when blocks 4—4 are placed so that the grooves register, they form an aperture into which the bushing 5, made of resilient material (preferably of fiber), fits closely. Inside of bushing 5 a metallic bushing, 6, is placed. If the shank of the spike be of round cross section, then the bushing 6 should be a metallic slit sleeve, as shown at A in Fig. 3. If the shank of the spike used to fasten the rails be of square

cross section; then bushing 6 is formed of two half-round metallic rods, having a V shaped groove in them, as shown at A', in Fig. 3. As the shank of the spike is round or square, the apertures 7 and 7' are formed in the metallic bushing as shown in A and A'.

8 is an insulating washer of fiber or other insulating material, placed in the aperture formed by the grooves in blocks 4—4 on top of the base plate.

9 is a spike which in cross section is slightly larger than the aperture 7 and 7' in bushing 6 and 6' respectively.

10 is a rail of ordinary cross section.

11 is a sheet of insulating material of any desired composition adapted to be placed between the rail 10 and the top plate 2.

12 is a key placed in two key-holes 12' and 12'' in channels 1—1. The key is placed in the channels to retain blocks 4—4 in position and to resist any tendency of the rails to spread on curves or at any other point in the railway line where force is applied to them laterally to cause such separating. Blocks 4—4 may be made in single pairs, in which case two half-circle grooves will be rolled in each block; or said blocks 4—4 may be used in two pairs, in which case each block 4 will have a single groove rolled in it. The separation into pairs is shown by line 4'—4' in Fig. 2. The inside of the channel may be serrated, as shown at a, Fig. 2, in which case the outside of the blocks 4—4 should be corrugated or ribbed, so as to be held more firmly in a given position by the channels 1—1.

In assembling my improved tie, the channels 1—1 are inserted in the lugs of the base plates, 3—3. The blocks 4—4 are placed approximately at the gage of the rails to be fastened to the ties and the grooves in said blocks 4—4 are adjusted so as to form a round aperture. In this aperture, if the rail is to be insulated, washer 8 is placed so as to rest upon base plate 3. Then there is inserted in the aperture formed by the grooves in blocks 4—4 the resilient bushing 5 and inside of the resilient bushing, the metallic bushing 6. While the metallic bushing is shown in the drawings as a slit sleeve, it may be formed of a spiral spring or any metallic, cylindrical construction which is elastic and will give and its motion be limited by the sides of the resilient bushing when the spike is driven into said metallic bushing. When the bushings are thus in place, the top plates 2—2 are placed on the cross pieces 1—1, so as to engage the top flanges thereof, and so that the hole 2'' in said top plates shall permit of the passage of the spike to be driven into the metallic bushing in such a way that the spike shall not be in contact with the sides of said hole 2. A sheet of insulating material is then

placed on top of the top plate and the rail to be carried by my improved tie is placed on the insulating material and the spike 9 to hold the rail in position is driven into the metallic bushing 6 and because of the larger cross section of the spike than the aperture in the elastic metallic bushing, the bushing is spread and becomes wedged and firmly fixed in the resilient bushing 5, with the effect that the spike is held therein firmly and effectively, the force of the grip of the bushing upon the same being limited only by the area of the cross section of the spike. Practice will indicate the proper cross section of the spike, and when of the proper cross-section the spike can be repeatedly driven in and withdrawn without breaking the shanks thereof, or substantially affecting the bushing into which said spike is inserted. When the spike is thus driven into the bushing it may be withdrawn and again driven in repeatedly and hold the rail in position with the same force and effect substantially as when first driven. In the event that the head shall be broken or sheared off of the spike it can be driven into the road-bed of the railway by driving the same through aperture 3'' in base plate 3. If the aperture in the metallic bushing becomes filled with dirt or gravel or other foreign material, the same can, with the proper punch or tool, be driven out of the aperture 3'' in the base plate 3.

The blocks 4—4 when placed between the base plates and the top plate should fit snugly between said plates and rather loosely between the channels 1—1, so that there will be a continuous metallic support from the top plate to and through the base plate to the roadbed below the base plate.

The key 12 is placed through suitable holes in the channels 1—1 at points where there is a tendency of the rails to spread on account of lateral stress applied to them and this tendency can thus be checked.

While I have shown the specific forms of base and top plates and cross pieces and blocks exhibited in the drawings forming part of this specification, I do not wish to be limited in the fabrication of my improved tie to the shapes and forms shown. The different members of my improved tie can be formed in any manner so long as the principles of my invention and the functions of said members are preserved.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a metallic railway tie consisting of cross-pieces, a rail fastening device consisting of grooved members adjustable to each other and the cross pieces of said tie; adjustable bushings having an aperture of similar but slightly smaller cross section than the rail fastener to be driven therein; and a resilient bushing containing said ad-

justable bushing, adapted to be entered and held in the aperture formed by the grooves of said grooved member.

2. In a metallic railway tie consisting of cross-pieces, a rail fastening device consisting of grooved members adjustable to each other and the cross pieces of said tie; adjustable bushings having an aperture of similar but slightly smaller cross section than the rail fastener to be driven therein; a resilient bushing containing said adjustable bushing, adapted to be entered and held in the aperture formed by the grooves of said grooved members; and means for limiting the motion of said grooved members along the said cross pieces.

3. In a metallic railway tie consisting of cross-pieces, a rail fastening device consisting of pairs of grooved members adjustable to each other and the cross pieces of said tie; adjustable bushings having apertures of similar but slightly smaller cross section than the rail fastener to be driven therein; and resilient bushings containing the adjustable bushings, adapted to be entered and held in the apertures formed by the grooves of said grooved members.

4. In a metallic railway tie consisting of cross-pieces, a rail fastening device consisting of pairs of grooved members adjustable to each other and the cross pieces of said tie; adjustable bushings having apertures of similar but slightly smaller cross sections than the rail fastener to be driven therein; and resilient bushings containing the adjustable bushings, adapted to be entered and held in the apertures formed by the grooves of said grooved members; and means for limiting the motion of said grooved members along said cross pieces.

5. In a metallic railway tie consisting of cross-pieces, a rail fastening device consisting of grooved members adjustable to each other and the cross pieces of said tie; adjustable bushings having an aperture of similar but slightly smaller cross section than the rail fastener to be driven therein; a resilient bushing containing said adjustable bushing, adapted to be entered and held in the aperture formed by the grooves of said grooved members; and means for insulating said adjustable bushing.

6. In a metallic railway tie consisting of cross-pieces, a rail fastening device consisting of grooved members adjustable to each other and the cross pieces of said tie; adjustable bushings having an aperture of similar but slightly smaller cross section than the rail fastener to be driven therein; resilient bushings containing said adjustable bushings, adapted to be entered and held in the apertures formed by the grooves of said grooved members; means for insulating said adjustable bushings; and means for limiting

the motion of said grooved members along said cross pieces.

7. In a metallic railway tie a rail fastening device consisting of grooved members adjustable to each other; adjustable bushings having an aperture of similar but slightly smaller cross section than the rail fastener to be driven therein; a resilient bushing containing said adjustable bushing, adapted to be entered and held in the aperture formed by the grooves of said grooved member; means for holding said grooved members in such position that their grooves shall form an aperture for the reception of said resilient bushings; means for insulating said adjustable bushings; means for limiting the motion of said grooved members when the rail fastener is driven into said adjustable bushing; and means for insulating said adjustable bushings.

8. In a metallic railway tie a rail fastening device consisting of pairs of grooved members adjustable to each other; adjustable bushings having an aperture of similar but slightly smaller cross section than the rail fastener to be driven therein; a resilient bushing containing said adjustable bushing, adapted to be entered and held in the aperture formed by the grooves of said grooved members; means for holding said grooved members in such position that their grooves shall form an aperture for the reception of said resilient bushing; means for limiting the motion of said grooved members when the rail fastener is driven into said adjustable bushing; and means for insulating said adjustable bushings.

9. A metallic railway tie consisting of cross pieces, base plates, and top plates, forming the body thereof; blocks adapted to be placed between said cross pieces and said top and base plates, adjustable to each other and said cross pieces; resilient bushings adjustable in said blocks, and adjustable bushings insertible in said resilient bushings and having apertures of similar but slightly smaller cross sections than the rail fastener to be driven therein.

10. A metallic railway tie consisting of cross pieces, base plates, and top plates, forming the body thereof; blocks adapted to be placed between said cross pieces and said top and base plates, adjustable to each other and said cross pieces; resilient bushings adjustable in said grooved blocks, adjustable bushings insertible in said resilient bushings and having apertures of similar but slightly smaller cross sections than the rail fastener to be driven therein; and means for insulating said adjustable bushings from the remainder of said tie.

11. A metallic railway tie consisting of cross pieces, base plates, and top plates, forming the body thereof; blocks adapted

to be placed between said cross pieces and
said top and base plates, adjustable to each
other and said cross pieces; resilient bush-
ings adjustable in said blocks, adjustable
5 bushings insertible in said resilient bushings
and having apertures of similar but slightly
smaller cross section than the rail fastener
to be driven therein; means for insulating
said adjustable bushings from the remainder
10 of said tie; and means for insulating the
rails of the railway from said tie.

12. A metallic railway tie comprising
parallel main members, blocks adjustable

relative to each other between said main
members and provided with vertical grooves, 15
bushings mounted in said grooves and
adapted to grip the rail-fastening devices,
and means to hold the main member of the
tie from separating.

In testimony whereof, I have signed my 20
name to this specification in the presence of
two subscribing witnesses.

WILLIAM D. FORSYTH.

Witnesses:

A. M. NEEPER,

A. C. SCHILLER.