

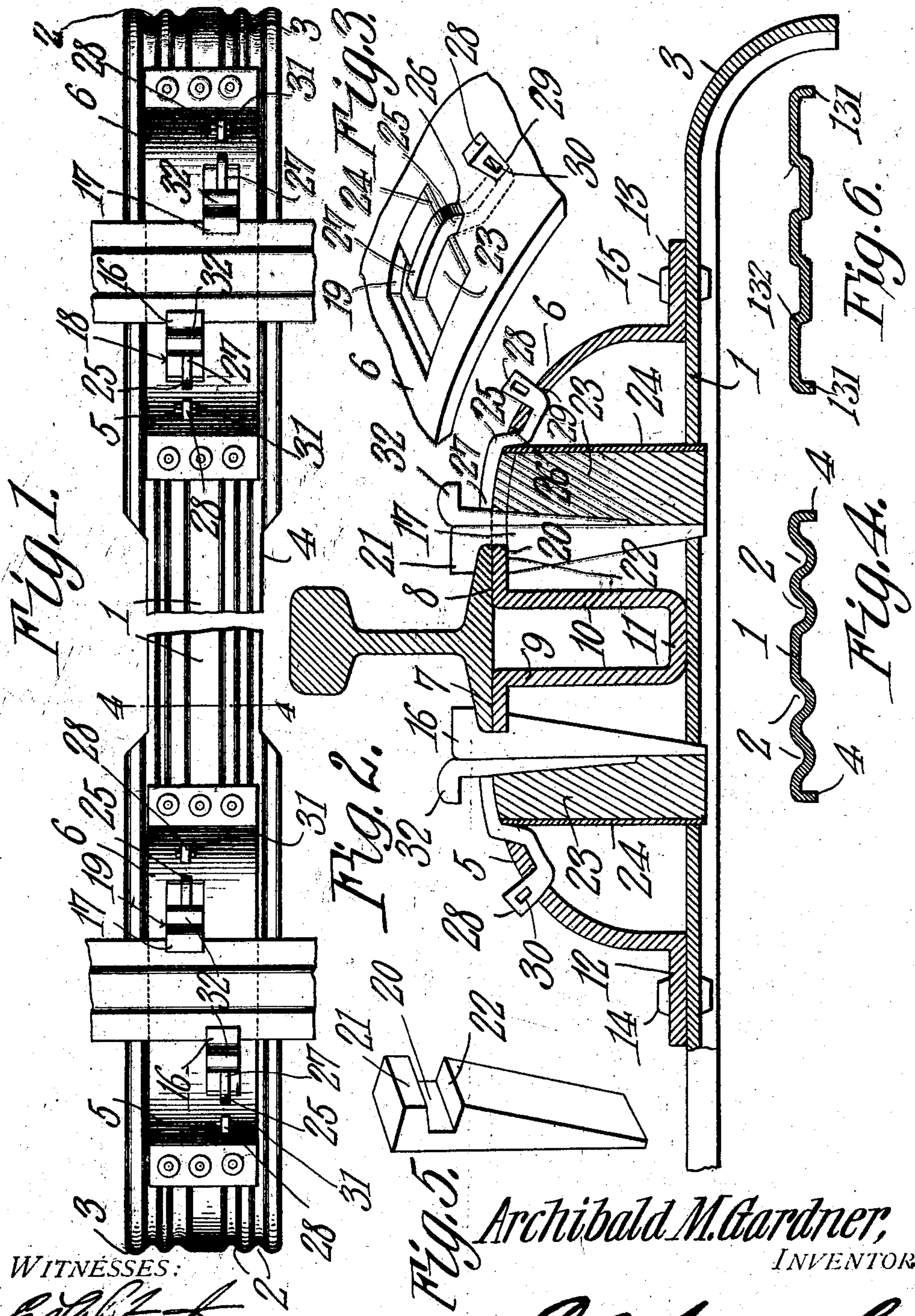
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A. M. GARDNER.

METALLIC RAILWAY TIE AND RAIL FASTENER.

APPLICATION FILED APR. 20, 1907.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## METALLIC RAILWAY-TIE AND RAIL-FASTENER.

No. 859,809.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed April 20, 1907. Serial No. 369,311.

*To all whom it may concern:*

Be it known that I, ARCHIBALD M. GARDNER, a citizen of the United States, residing at Sibley, in the county of Osceola and State of Iowa, have invented  
5 a new and useful Metallic Railway-Tie and Rail-Fastener, of which the following is a specification.

The present invention relates to improvements in ties or sleepers for supporting the track rails of rail-roads, and it has for its object to provide a device of  
10 this character that is more durable and serviceable than those ordinarily made of wood, and which may be made almost wholly of rolled or sheet steel in such shapes as to insure the maximum rigidity and anchorage in the ballast or road-bed, enabling the ties  
15 to be made at a reasonable cost, the rails being mounted on rail supports that provide sufficient resilience between the rail and tie as to minimize the shocks on the tie and the rolling stock.

It has for a further object to provide improved rail  
20 securing devices that are adapted for use on metal ties of various constructions, and serving to positively lock the rail in place to prevent its displacement, although permitting relative longitudinal movement thereof to compensate for temperature variations.

25 To these and other ends, the invention comprises the various novel forms of construction and combination and arrangement of parts, which will be hereinafter more fully described, and pointed out particularly in the claims appended hereto.

30 In the accompanying drawings, Figure 1 is a plan view of a railway tie constructed in accordance with my present invention, the middle portion thereof being broken away. Fig. 2 is a longitudinal section through one end of the tie showing the relative arrangement of the rail and the pedestal supporting it.  
35 Fig. 3 is a perspective view showing the locking device for retaining the wedges in place. Fig. 4 is a transverse section of the base of the tie on the line 4-4 of Fig. 1. Fig. 5 is a perspective view of one of the rail blocks. Fig. 6 represents a cross section of another form of base plate for the tie.  
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Corresponding parts in the several figures are indicated throughout by similar characters of reference.

The railway tie shown in the present embodiment  
45 of my invention comprises a base 1 composed preferably of relatively stiff steel plate of a suitable thickness and having a series of longitudinally arranged corrugations 2 extending preferably from end to end thereof, the ends of the plate being turned down-  
50 wardly to form the spades or anchors 3 adapted to be embedded in the ballast or road bed to prevent relative longitudinal movement of the ties. In order to stiffen that portion of the tie extending between the rails, it is preferable to turn down the opposite longi-

tudinal edges of the middle portion of the tie to form  
55 a pair of stiffening flanges 4, the latter having their flat sides extending in a direction substantially perpendicular to the plane of the base.

On opposite ends of the base are mounted rail supports or pedestals which, in the present instance, are  
60 arranged on the upper side of the base and are composed, preferably, of sheet metal of a suitable thickness to enable the pedestals to sustain the weight imposed upon the rails. These pedestals, in the present instance, embody the oppositely arranged bowed portions 5 and 6, the proximate ends thereof being flat-  
65 tened, as at 7 and 8, to form rail receiving surfaces, and they are connected by an intermediate portion which extends into proximity to or rests upon the upper side of the base, this portion, in the present instance,  
70 being of substantially U-shaped form, the uprights 9 and 10 extending substantially vertically between the proximate ends of the curved portions and the base and the horizontal connecting portion 11 joining the lower ends of the uprights to form a rigid connection  
75 between them, and, in cases where the rails to be supported are under heavy surface conditions, this connecting portion may rest upon the upper side of the base, as shown, forming a post or supplemental support for those portions of the pedestal that are im-  
80 mediately below the rail. The pedestals are secured to the base by means of outwardly extending lugs 12 and 13 formed at the outer ends of the bowed portions of the pedestal, rivets, bolts, or other suitable means 14 and 15 being employed as securing devices.  
85

Any suitable devices may be employed for securing the rail on the pedestals, although it is preferable to employ the devices shown in the present embodiment of the invention for the reason that they positively lock the rail in place and avoid the use of bolts  
90 that are subject to loosening by reason of the vibrations due to passing vehicles. These rail securing devices embody, in the present instance, a pair of locks 16 and 17 fitting into slots 18 and 19 formed in the pedestal and base at opposite sides of the rail,  
95 the locks being each provided with transversely extending recesses 20 adapted to receive the peripheral edge of the base flange of the rail and forming shoulders 21 and 22 adapted to engage above the base flange of the rail and the under side of the pedestal, respec-  
100 tively. These locks are inserted through the slots at either side of the rail, and are held in cooperative relation with the rail and pedestal by means of wedges 23 which are preferably composed of wood or other similar material, these wedges extending between the  
105 pedestal and the base and being provided with casings 24 which engage the walls of the slots and thereby minimize the wear on the wedges due to vibratory



movements between the pedestals and the base. These wedges, if so desired, may be locked in place, the locking devices shown in the present instance comprising dogs having intermediate fulcrum portions 25 resting in slots 26 on the upper side of the pedestal, the inner end 27 being adapted to rest above the upper end of the wedge 23 and its outer end extending beneath the upper side of the pedestal and having an upturned end 28 projecting through an aperture 29 in the upper surface of the pedestal and provided with an eye 30 adapted to receive a wedge or other retaining device 31. In order to take up any looseness that may occur between the wedges and the respective locks, a pair of supplemental wedges 32 are provided, these wedges being adapted to engage between the main wedges and the respective rail locks and, when driven, serve to force the rail locks firmly into engagement with the edges of the rails. As the rail locks are held in coöperative relation with the rail by means of the wedges backing them, and the shoulders upon the locks engaging the base flange of the rail and the underside of the pedestal serve to prevent relative vertical movement of the rail, displacement of the rail cannot occur, although it will be capable of a relative longitudinal movement to compensate for temperature variations.

Instead of employing a corrugated base plate for the tie, as shown in Figs. 1 and 4, a substantially flat or plain base may be employed, that is to say, the stiffening corrugations may be omitted, as shown in Fig. 6, the lateral flanges 131 in such a case extending preferably throughout the length of the longitudinal edges of the base, and one or more shallow longitudinal grooves 132 may be provided, if desired, to stiffen the base plate.

It will be understood, of course, that the rail locking or fastening devices, while they are particularly adapted for use in connection with a tie of the construction shown, are capable of being employed on ties of various other constructions, and that I claim the fastening devices when used in connection with ties of various constructions other than those shown, and these rail fastenings are capable of firmly securing the rail without the use of bolts or other devices that are liable to loosen.

What is claimed is:—

1. A railway tie embodying a base composed of sheet metal and provided with longitudinally extending corrugations, downturned stiffening flanges formed at the longitudinal edges of the base, the ends of the latter being turned downwardly to form spades adapted to engage the ballast of the track, and rail supporting pedestals permanently secured to the base at its opposite ends and having their sides toward the longitudinal edges of the base open to receive ballast.

2. A rail supporting pedestal embodying a pair of oppositely arranged bow-shaped portions adapted to be attached at their lower outer ends to a tie or other support and having their upper inner ends arranged in alinement

and forming rail supporting surfaces, and a yieldable intermediate portion connecting the said inner ends.

3. In devices for locking railway rails upon ties and other supports, the combination with a rail supporting portion adapted to be secured to the tie and provided with slots arranged at opposite sides of the base flange of the rail, of rail locks adapted to fit into the said slots and having portions arranged to engage respectively the upper side of the base flange of the rail and the underside of the rail supporting portion, wedges for retaining said locks in operative position, and retaining devices for the wedges.

4. In a railway tie, the combination with a suitable base, of a pair of rail supporting pedestals arranged on the upper side thereof, each pedestal being supported at its ends and having rail supporting portions spaced above the base of the tie, and an intermediate post connecting the rail supporting portions of the pedestal and the base.

5. In a railway tie, the combination with a suitable base, of a pair of rail supporting pedestals arranged on the upper side thereof each embodying oppositely arranged bow-shaped portions having their outer ends secured to the base, and a yoke-shaped intermediate portion connecting the proximate ends of the bow-shaped portions.

6. In a railway tie, the combination with a suitable base, of a pair of rail supporting pedestals each composed of sheet metal and embodying oppositely arranged bow-shaped portions springing inwardly and upwardly from the upper surface of the base and having their outer ends secured thereto, the proximate portions of the bowed ends forming rail receiving surfaces, uprights extending from the proximate ends of the bowed portions toward the base, and a connecting portion joining the lower ends of the uprights.

7. In a railway tie, the combination with a suitable base, and rail supporting pedestals thereon having slots therethrough, of rail locks adapted to fit into said slots and having shoulders to engage the base flange of the rail on the underside of the pedestal, and wedges fitting into said slots in rear of said blocks for retaining them in coöperative relation with the rail.

8. In a railway tie, the combination with a suitable base, and rail supporting pedestals mounted thereon, slots being formed in the pedestals and in the base, of rail locks adapted to fit into the slots of the pedestal and base and each having shoulders arranged to engage the base flange of the rail and the under surface of the pedestal adjacent thereto, wedges fitting into the slots of the pedestal and base, and devices for preventing removal of the wedges.

9. In a railway tie, the combination with a suitable base, and rail supporting pedestals thereon, the pedestals and base being provided with registering slots, of rail locks adapted to fit the slots in the pedestals and base and extending between the latter, said locks having shoulders adapted to engage the base flange of the rail and an adjacent portion of the pedestal, and a dog for securing the wedges in place embodying a portion extending over the upper edge of the wedge, a portion extending beneath the upper surface of the pedestal and having an outturned end projecting above the upper surface of the pedestal and provided with an eye, and a device engaging the said eye for preventing displacement of the dog.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ARCHIBALD M. GARDNER.

Witnesses:

J. F. MATTERT,  
C. R. YOUNG.