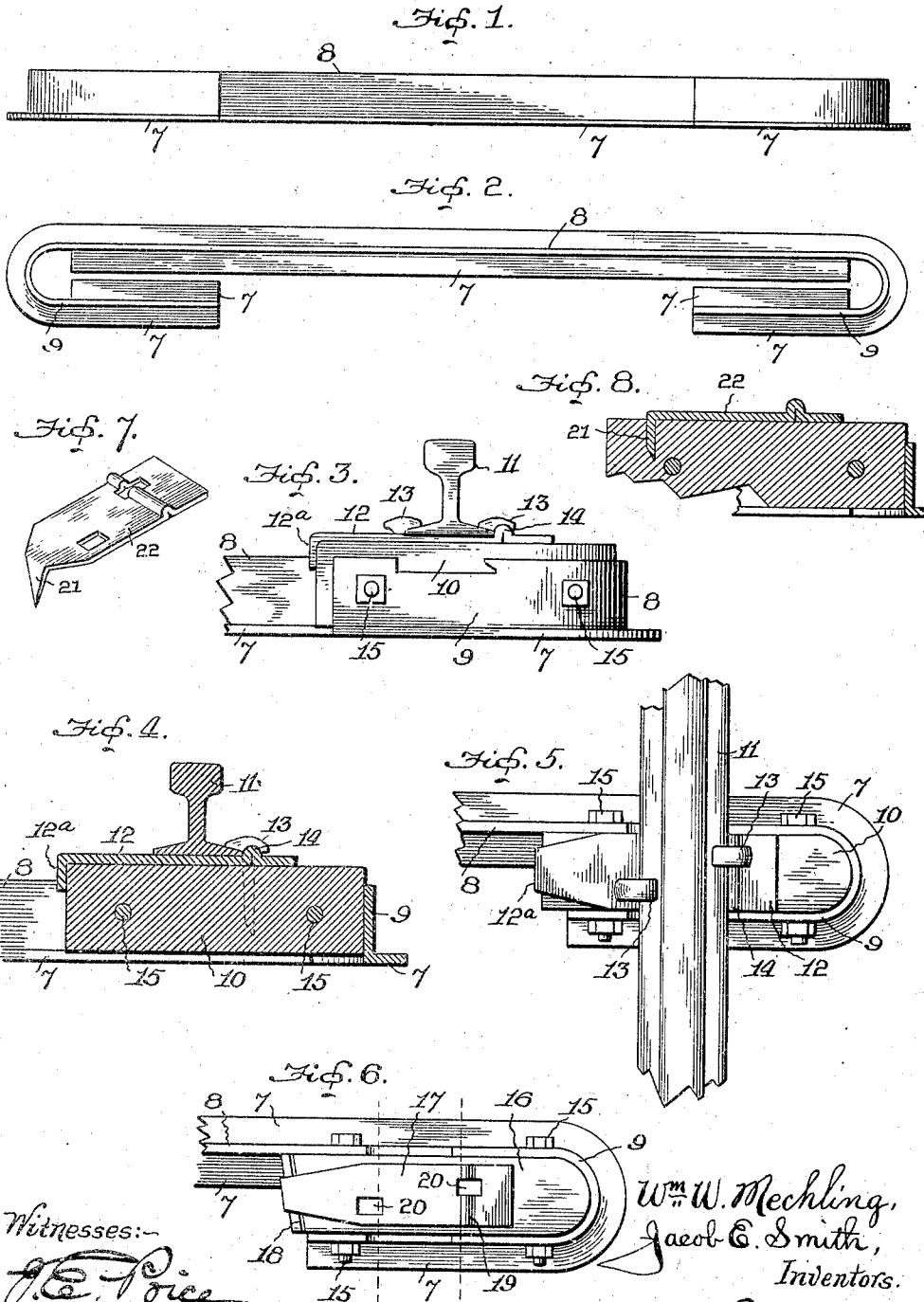


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 METAL RAILROAD TIE.  
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928,529.

Patented July 20, 1909.



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# UNITED STATES PATENT OFFICE.

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## METAL RAILROAD-TIE.

No. 928,529.

Specification of Letters Patent.

Patented July 20, 1909.

Application filed November 17, 1908. Serial No. 462,993.

*To all whom it may concern:*

Be it known that we, WILLIAM W. MECHLING and JACOB E. SMITH, citizens of the United States, and residing at Munhall and 5 Homestead, respectively, in the county of Allegheny and State of Pennsylvania, have invented a Metal Railroad-Tie, of which the following is a specification.

Our invention is an improvement in railroad ties, and relates more especially to the class of metal ties which are adapted to take the place of the ordinary wooden ties.

The primary object of our invention is to provide a metal railroad tie which is light 15 and comparatively cheap in construction, and in which the integral parts or members thereof are so disposed as to give the required ground bearing or grip in the road-bed so that the tie will be rigidly held and thereby 20 firmly support the rails.

A further object of our invention is to provide a metal tie with means for supporting the rails in connection therewith, such means in the present instance serving not only to 25 insulate the rails in the same thorough manner as the ordinary wooden ties, but also provide a similar bearing for said rails.

A further object of our invention is to provide an improved form of rail fastening 30 means, whereby the rails are securely held in place upon the tie and possibility of lateral movement or displacement reduced to a minimum.

Other objects and advantages of our invention will hereinafter appear, and what we claim as new in the art, and desire to protect by Letters-Patent, is more specifically set forth in the appended claims.

In the accompanying drawings, which 40 form a part of this specification: Figure 1 is a side elevation of a metal railroad tie, showing the construction of the tie. Fig. 2 is a top plan view thereof. Fig. 3 is an enlarged side view of one end of the tie, including the 45 means for supporting and fastening a railroad-rail thereon. Fig. 4 is a vertical longitudinal sectional view through the parts shown in Fig. 3. Fig. 5 is a plan view of the same. Fig. 6 is a detail plan view, showing 50 a slight modification of the rail supporting

and fastening devices. Figs. 7 and 8 are detail views illustrating a second modification of the rail supporting and fastening devices.

Like numerals of reference indicate like 55 parts in all the figures of the drawings.

In carrying out our invention the tie is made from a metal bar or beam T-shape in cross-section disposed with the lateral flanges 7 lowermost to form the base portion of the 60 tie, and the vertical flange 8 rising from said lateral base flanges to form the upper portion or body of the tie; said T-beam being bent upon itself at its ends in the form of loops 9, which latter increase the bearing capacity of 65 the tie and provide the means for connecting thereto the rail supporting and fastening devices hereinafter described. For the purpose of bending the T-beam to form the end loops 9 it is necessary to cut away one of the 70 base flanges 7 for a short distance, as shown in Fig. 2, said flange being cut away at the inner side of the connecting portion of each loop. By constructing a metal tie from a 75 T-beam, as herein shown and described, we are able to produce a very light metal tie having sufficient bearing surfaces for efficient engagement with the road-bed, inasmuch as the loops at the ends, with the opposite base flanges thereof, increase the bearing 80 qualities at those points where needed and without adding materially to the weight of the tie.

For the purpose of supporting the railroad-rails in connection with the metal tie herein 85 before described we employ wooden blocks 10, of such shape as to fit within the loops and rest upon the inwardly-projecting base flanges 7 thereof, and of such length as to project only a slight distance beyond the end 90 of the free member of the loop. These blocks are preferably of such height as to project a short distance above the upper edge of the metal tie, to thereby locate the railroad rails, 11, as well as the bracing-plates, 95 hereinafter described, away from said tie for the purpose of insulation. In some instances the rails 11 may be supported directly upon the wooden blocks, and spiked thereto in the usual manner, but in order to 100

more securely fasten said rails, and prevent lateral movement or spreading of the same, we employ in connection with each block a metal plate 12, which is placed upon the block below the rail 11 and is provided at its inner end with a lip 12<sup>a</sup> turned downwardly to engage the inner end of said block and prevent movement of the plate toward the end of the tie. This plate is provided with holes through which the spikes 13 pass, and is also provided with a rib or flange 14, disposed at the outer edge of the base flange of the railroad rail, whereby said plate, in connection with the spikes, firmly and securely fasten the rail and thoroughly brace the same against outward movement. The wooden blocks 10 are rigidly secured within the loops of the metal tie by means of bolts 15, though, of course, other fastening means may be employed for the purpose.

In Fig. 6 we have shown a slight modification of the wooden block and bracing plate. In this instance the inner end of the wooden block, 16, is beveled, and the inner end of the bracing-plate 17 having the downwardly-extending engaging lip is correspondingly shaped, whereby said plate may be adjusted longitudinally to increase or diminish the gage between the rails. In making this adjustment the plate 17 is moved laterally so that the engaging lip thereon will travel upon the beveled end of the block and move said plate longitudinally. If desired the wooden block may be provided with a transverse recess or saw-kerf, as 18, for the engagement of the lip, instead of having said lip project down the inner end of the block, inasmuch as in the latter instance it may enter the earth or material in which the tie is embedded and thus affect the insulation of the rails. In this modification the bracing-plate is also provided with the engaging rib or flange, as 19, and with holes 20 for the spikes, as in the other form of bracing plate.

As a further modification the downwardly-projecting end or lip of the bracing-plate may be in the form of a sharpened point or spur, as 21 (Fig. 7), so as to be driven into the block, as shown in Fig. 8, and in this instance the plate is shorter to provide that the said point or spur will enter the block a suitable distance from the inner end thereof. In each instance, therefore, the bracing plate is provided with an integral portion adapted to engage the block to prevent outward movement of said plate and consequently outward movement of the rail supported thereon.

From the foregoing description, in connection with the accompanying drawings, it will be seen that we provide a combined metal and wood railroad tie of the required strength and bearing capacity, and possessing greater durability than an ordinary wooden tie with the many advantages in-

herent in the latter; together with means whereby the rails are firmly and securely fastened in place upon the tie.

Having described our invention, we claim:

1. A metal railroad tie formed from a T-beam bent upon itself at its ends to form loops having opposite base-flanges and vertical walls rising therefrom, the flange at the inner side of each loop being cut away at the connecting portion of said loop; substantially as shown and for the purpose set forth. 70
2. A metal railroad tie formed from a T-beam bent upon itself at its ends forming loops having opposite base flanges and vertical walls rising therefrom, blocks secured within the loops and resting upon the inner base flanges thereof, and means for securing the rails upon the blocks. 80
3. A metal railroad tie having loops formed at the ends thereof and inwardly projecting flanges at the lower sides of the loops, blocks secured within the loops and resting upon the inwardly-projecting flanges thereof, and means for securing the rails upon the blocks. 85
4. A metal railroad tie having loops formed at the ends thereof and inwardly-projecting flanges of the lower sides of the loops, wooden blocks within the loops and seated upon the inwardly-projecting flanges thereof, bolts fastening the blocks to the loops, and means for securing the rails upon the blocks. 90
5. A metal railroad tie, comprising a T-beam bent upon itself at its ends forming loops having opposite base flanges and vertical walls rising therefrom, wooden blocks secured within the loops and seated upon the inner base flanges thereof, plates on the blocks to receive the rails each having a lateral flange or rib bearing against the rail, and means for securing the rails and plates upon the blocks. 100
6. A metal railroad tie, comprising a T-beam bent upon itself at its ends to form loops having inwardly projecting base flanges, wooden blocks secured within the loops and seated upon the inwardly-projecting base-flanges, plates on the blocks each having a flange or rib engaging the rail and a lip engaging the block, and means, as spikes, for securing the rails and plates upon the blocks. 110
7. A metal railroad tie, comprising a T-beam bent upon itself at its ends forming loops having base-flanges, wooden blocks secured within the loops and seated upon the inwardly projecting base flanges, plates on the blocks to receive the rails each having a flange or rib engaging the rail and a depending lip engaging the inner end of the block, and means, as spikes, for securing the rails and plates on the blocks. 115
8. A metal railroad tie, comprising a beam bent upon itself at its ends forming loops having lateral base flanges, wooden blocks secured within the loops and seated upon the 120

inwardly projecting base flanges, said blocks  
being beveled laterally at their inner ends,  
plates on the blocks to receive the rails each  
having a rib or flange engaging the rail and  
5 a lip engaging the beveled end of the block,  
and means, as spikes, for securing the rails  
and plates on the blocks, substantially as  
herein shown and described.

In testimony whereof we have signed our  
names to this specification in the presence of 19  
two subscribing witnesses.

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Witnesses:

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