No. 897,580. PATENTED SEPT. 1, 1908.

G. T. BRIDWELL.

METALLIC RAILWAY TIE.

APPLICATION FILED MAR. 28, 1908. 2 SHEETS—SHEET 1.

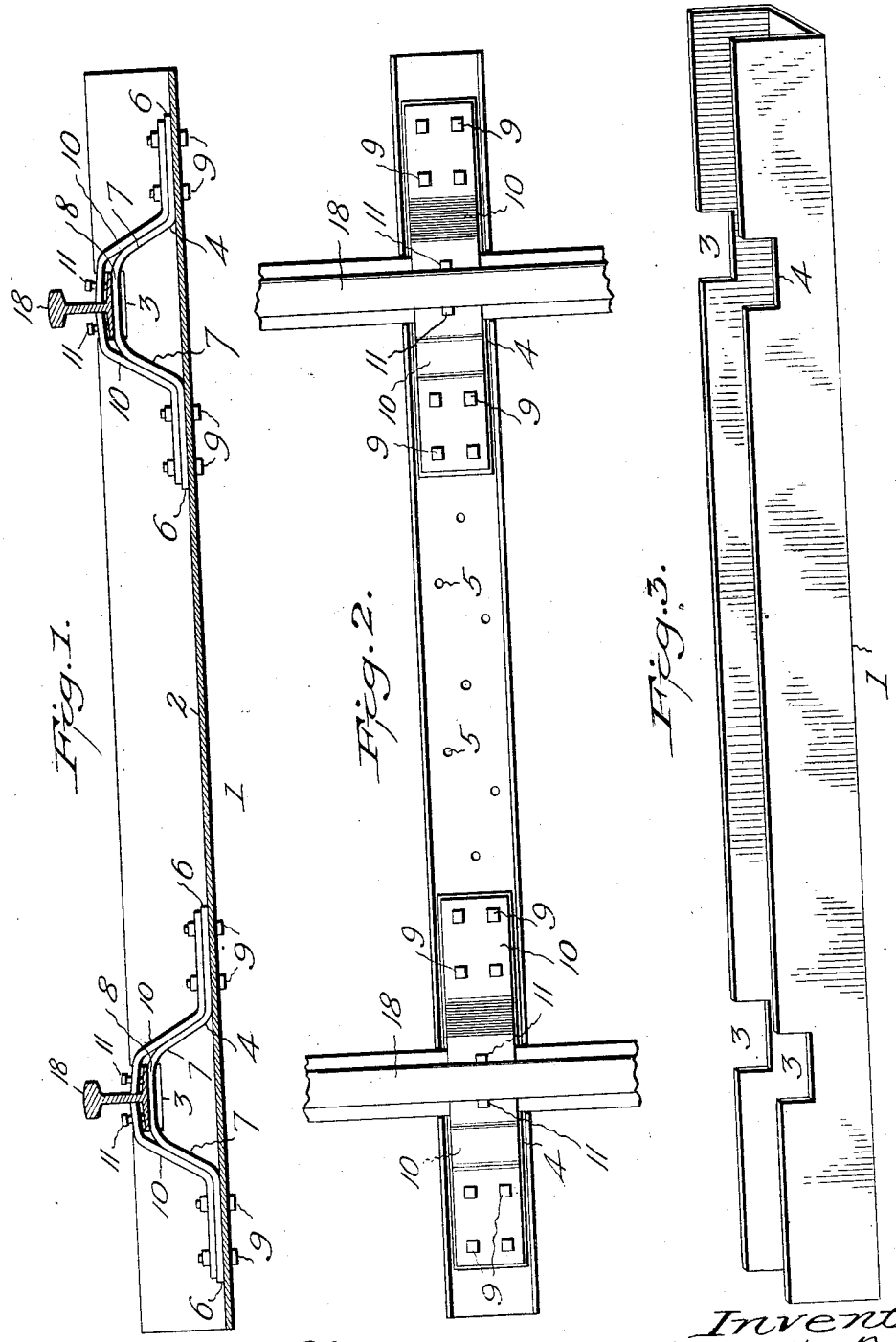

Fig. 1.

Fig. 2.

Fig. 3.

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Fig. 4.

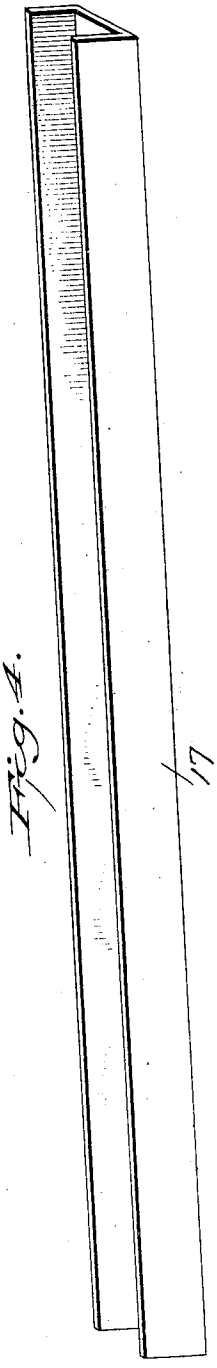


Fig. 7.

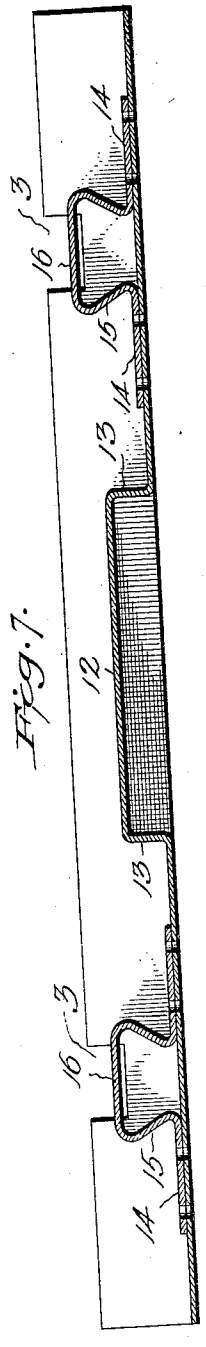


Fig. 6.

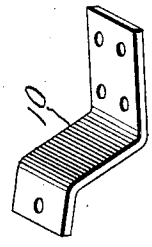
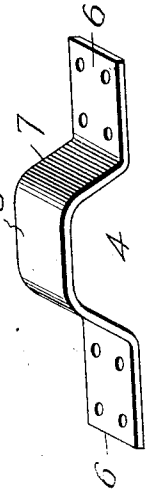


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE T. BRIDWELL, OF DENVER, COLORADO.

METALLIC RAILWAY-TIE.

No. 897,580. Specification of Letters Patent. Patented Sept. 1, 1908.

Application filed March 28, 1908. Serial No. 423,857.

To all whom it may concern:

Be it known that I, GEORGE T. BRIDWELL, a citizen of the United States of America, residing at the city and county of Denver and State of Colorado, have invented a new and useful Metallic Railway-Tie, of which the following is a specification.

My invention relates to improvements in metallic railway cross ties or sleepers, commonly called ties; and the objects of my invention are: First, to provide a railway tie that is provided with independent resilient saddles, upon which the rails rest and are secured, and that are adapted to receive the weight of passing trains independent of the main body of the tie, but at the same time act coöperatively with it in the support of the rails. Second, to provide a flexible tie that is arranged to resist strains that would tend to move it longitudinally of its length on its road bed, and that will resiliently yield under heavy fast moving loads sufficient to prevent crystallization. And third, to provide a metallic tie that can be stamped out of any suitable sheet metal or if desired be made in the form of a steel casting. I attain these objects by the mechanism illustrated in the accompanying drawings, in which:

Figure 1, is a longitudinal vertical sectional view through a metallic railway tie constructed in accordance with my invention, showing the rails secured to spring saddles which are bolted to the bottom of the tie. Fig. 2, is a plan view of the same. Fig. 3, is a perspective view of the tie, showing the recesses in the sides of the tie, in which the rails lie. Fig. 4, is a perspective view of the form of tie employed where a switch occurs. Fig. 5, is a perspective view of one of the rail-supporting saddles. Fig. 6, is a perspective view of one of the rail clamps. And Fig. 7, is a sectional view of a modified form of tie, a modified form of saddle being shown in connection therewith.

Similar numerals of reference refer to similar parts throughout the several views.

Referring to the drawings, the numeral 1, designates the shell or body of my tie. This shell or body portion comprises a rectangular trough shaped section of the length of the standard tie, and of sufficient depth and width to form a firm holding foundation for the rails and trains. These ties are embedded in the road bed with their horizontal members 2, down, and their sides extending vertically upward. The top edges of these sides are provided with rail holding recesses 3, which are adapted to receive the lower flange of the rails, but where these ties are used at switches these rail holding recesses can not be used. Consequently my invention contemplates this box-shaped tie made both with and without the rail holding recesses, but preferably with them, as they form a rigid abutment to the sides of the lower flange of the rail against lateral thrust of the rails under heavy loads in either direction. These recesses are made deep enough to permit of a slight free vertical movement in them of the rails which rest on spring saddles 4, and not on the sides of the ties at the bottoms of these recesses. The bottom portion as well as the central portion of my tie may be made in any desired manner, but I preferably provide the bottom portion with a number of perforations 5, through which water may drain out of the interior of the tie, and if desired, a number of rods may be driven through the holes 5, into the road bed to prevent endwise movement of the ties.

Within each tie on its bottom portion and between the rail holding recesses, I place the resilient saddles 4, which comprise flat bars of spring steel, bent to form foot portions 6, and converging upright members 7, which terminate in horizontal members 8. I preferably make these spring saddles just wide enough to fill in between the sides of the tie loosely so that they will yield under loads independently of the effect of the load on the tie.

The foot portions of the saddle rest on the bottom of the tie and are secured there by any suitable means, preferably by bolts or rivets 9. The top portion of the saddle is flat, and its upright members 7 extend far enough above the bottom floor of the tie to bring its flat top portion 8, a sufficient distance above the bottom of the rail recesses in the sides of the tie to permit the saddle to resiliently yield under passing heavy loads, but not to such an extent as to permit the rails secured thereon to rest upon or contact with the bottoms of the recesses 3, which recesses are intended solely as abutment guides for the sides of the rails. The rails are secured to the tops of the spring saddles by clamping plates 10, which are bolted to the foot portions of the saddle and to the tie, by the bolts 9, and extend beyond its top portion and over the tie flange of the rail, against which they exert a clamping pressure by means of

cap screws 11, which are threaded in the clamping plates, and are screwed down against the top surface of the rail flange, which acts to cause these clamping plates to bear with a resilient clamping pressure against the tie flange of the rail.

In Fig. 7, I have illustrated a modification of the tie, and in this form of tie the central portion of the bottom is elevated as shown at 12, to form a chamber having abrupt, vertical ends 13, which act as abutments to prevent the tie from slipping lengthwise under heavy loads, especially on curves where the tracks are given an inclined pitch, which tends to cause them to creep laterally upon the road bed. When the tie is set, the material composing the road bed fills the chamber, and the ends of the chamber contacting with this body of material holds the tie from endwise movement, as above stated. In connection with Fig. 7, I have also illustrated a modification in the form of saddle, and in this form the saddle comprises foot members 14, from which extend diverging upright members 15, which terminate in horizontal rail-receiving members 16, this construction affording a more resilient support than the saddle illustrated in the other views.

In Fig. 4, I have illustrated the form of tie used at points where switches occur. This tie 17, is formed with plain sides, the recesses 3, being omitted.

In operation the tie is embedded in the ground, as is customary, with the spring saddles secured in their proper places to it. The rails 18, are then laid across the ties in the recesses of the ties on the saddle, and are clamped to the saddles by the clamping plates. The rails are thus firmly bedded in the recesses in the sides of the ties, and are thus firmly held against lateral movement and are also rigidly secured to the spring saddles, which are made strong enough to resist any load that may pass over the rails, and at the same time form a slight resilient yielding cushion to the weight that will relieve the tie of the rigidity common to metallic ties and prevent their crystallization. The shouldered abutments in the bottom of the tie also prevent the tie from slipping laterally as they form square bearing walls against the ground. The inner box portion of the tie is adapted to be filled with dirt and such water as works into the tie can readily run out through the perforations in the bottom of the tie.

My invention is simple and of a form that is easy and inexpensive to make, and will make practical elastic railway ties.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a railroad tie as specified, the combination with a channel beam, having oppositely arranged rail-receiving recesses in its sides, of resilient rail-supporting saddles secured to said channel beam, in line with said recesses, comprising foot portions from which extend upright members which terminate in horizontal members on a higher plane than the bottoms of the said recesses; plates secured upon the foot portions of the saddles, which extend above the tops of the saddles, and terminate in inwardly projecting ends, and set screws in said inwardly-turned ends.

2. In a railway tie as specified, the combination with a channel beam having oppositely-arranged rail receiving recesses in its side members, of resilient saddles secured to the bottom of the beam, in line with the recesses, the tops of the saddles being above the bottoms of the recesses; rail clamps secured upon the lower ends of the saddles, and extending above and over the tops of the saddles, and set screws in the upper end of the clamps.

3. In a railway tie as specified, the combination with a channel beam having oppositely positioned rail receiving recesses in its upright members, of rail supporting saddles in line with said recesses, comprising foot portions which rest upon the bottom of the beam, and inclined upright members which terminate in a horizontal bridge, which is above the level of the bottoms of the rail receiving recesses; rail clamps having foot portions which rest upon the corresponding portions of the saddles; upright members which run parallel with the corresponding members of the saddles, and terminate in inwardly projecting ends; set screws in said ends, and bolts extending through the foot portions of the saddles and clamps and through the bottom of the channel beam.

4. In a railroad tie as specified, the combination with a channel beam having opposite rail receiving recesses in its side members, and a raised portion in its bottom, terminating in abrupt vertical ends, of saddles secured to the bottom of the channel beam in line with the opposite recesses, having horizontal rail supporting bridge members on a plane above the level of the bottoms of the recesses; clamps secured upon the saddles, having upright members which terminate above the bridge members in inwardly projecting ends, and set screws in said ends.

5. In a railroad tie as specified, the combination with a channel beam, of resilient rail supporting saddles secured to the bottom of said beam between its side members; rail clamps which extend above the tops of said saddle and terminate in inwardly turned ends, and set screws in the said ends.

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

GEORGE T. BRIDWELL.

Witnesses:
G. SARGENT ELLIOTT,
ADELLA M. FOWLE.