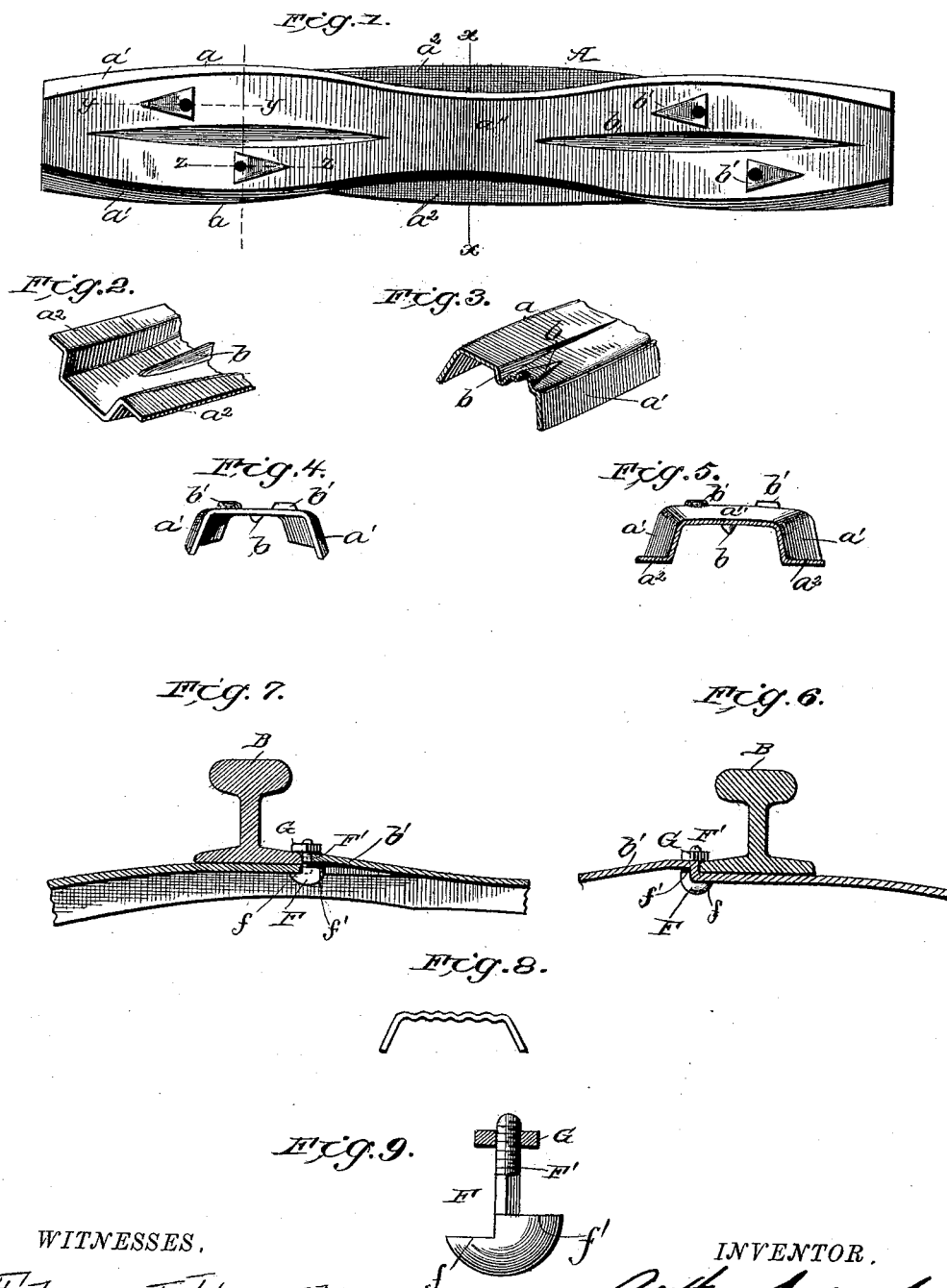


(No Model.)

A. DURAND.
RAILROAD TIE.

No. 386,389.

Patented July 17, 1888.



WITNESSES,

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UNITED STATES PATENT OFFICE.

ARTHUR DURAND, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO
M. A. BALLINGER, OF SAME PLACE.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 386,389, dated July 17, 1888.

Application filed October 22, 1887. Serial No. 253,097. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR DURAND, a citizen of the Republic of France, residing at Washington, in the District of Columbia, have
5 invented certain new and useful Improvements in Railroad-Ties, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention pertains to certain new and
10 useful improvements in railroad ties or sleepers.

The object of the invention is the provision of a metallic tie of approximately inverted-U shape throughout its entire length, the ends
15 thereof being open, whereby an elasticity is obtained and the ballast always held firm and secure, said tie or sleeper being widened at the portions where the rails are secured and provided with gutters or inverted arches and with
20 a corrugated or waved surface, to add to the strength thereof.

To these ends the invention consists in the formation and arrangement of the parts, substantially as hereinafter fully set forth, and
25 particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my invention. Figs. 2 and 3 are detail views thereof. Fig. 4 is an end view. Fig. 5 is a central cross-sectional view
30 on the line *xx*, Fig. 1. Fig. 6 is a longitudinal section taken through the line *zz* of Fig. 1. Fig. 7 is a longitudinal section taken through the line *yy* of Fig. 1, showing the slight inclination given the end portions of the tie. Fig.
35 8 is a detail view of the tie or sleeper, showing the surface thereof corrugated or waved; and Fig. 9 is a detail.

In carrying out my invention I make the tie or sleeper A of sheet-iron or steel of the desired texture. This tie or sleeper throughout
40 its length is made of approximately inverted-U shape, the sides of the end portions, *a a*, commencing at points equal distances from the center, being bent and flared downwardly
45 and outwardly on an incline, as shown at *a'*, the ends of the tie or sleeper being left open or the inclined sides unconnected, and said end portions are slightly inclined, as shown in Fig. 7.

50 The central slightly-inclined portion of the tie or sleeper carries out or observes the incli-

nation of the end portions and has a narrowed connecting-neck, *a''*, from the lower edges of the flared sides of which project continuous horizontal webs or flanges *a²*, as shown in 55 Fig. 1.

In the center of each end portion, *a*, of the tie or sleeper is formed a longitudinal narrow gutter or approximately inverted arch, *b*, stamped in or struck out from the metal, 60 whereby the strength of the tie or sleeper at these points is greatly augmented and means provided for preventing melted snow or water from remaining on the tie or sleeper, the same being caused to readily run off from the gut- 65 ters by reason of the inclination given the end portions of the tie or sleeper. On either side of each gutter or inverted arch *b* are formed raised portions or flanges *b'*, of approximately V shape, the same being struck up from the 70 metal and provided each with an aperture at the center of its widest edge. The opposite wide ends of these V-shaped flanges *b'* are on a line parallel with each other and sufficiently far apart to permit of the placing of a rail, B, 75 thereinbetween, said rail being held in position on the upper surface of the tie or sleeper by means of fastening-bolts F of a peculiar construction. These bolts are formed with a screw-threaded shank, F', having a bottom 80 head provided with two shoulders, *f* and *f'*, arranged at different heights, as is shown in the drawings. The shank F' is passed through the aperture in the flange *b'* and a nut, G, applied to its upper end bearing upon the bot- 85 tom flange of the rail and serves to clamp the same down upon the metal tie or sleeper. As shown in Figs. 6 and 7, the lower shoulder, *f*, of the fastening-bolt rests in contact with the lowermost portion of the flange *b'* on the metal 90 tie, and the other shoulder, *f'*, bears against the under surface of the flange or raised portion of the tie. In this manner by screwing down the nut on the bolt a very secure fastening of the rail is attained. 95

The object of the V-shaped flanges is to additionally hold the rails in position and to serve as guides in inserting the fastening-bolts.

By reference to Fig. 1 it will be seen that the 100 end portions, *a a*, of the tie or sleeper are made wider at the points where the rails rest there-

on, so as to increase the bearing surface therefor.

I have shown the horizontal slightly-inclined surface of the U-shaped tie or sleeper as being plain or smooth, but do not restrict myself thereto, because when it is desired to add strength to said tie or sleeper, so as to make the same more durable and lasting, I make said surface corrugated or waved longitudinally, as shown in Fig. 8. By thus corrugating the plain or smooth portions of the upper surface of the tie or sleeper the same is rendered extremely strong and durable, and thereby made capable of standing great pressure; and, further, by means thereof the tie or sleeper is the better embedded in the earth surface or ballast.

From what has been said it will be seen that my invention is extremely simple and far more durable and lasting than the wooden ties now in use; that the inverted-U shape gives to the tie the advantage of packing and retaining the ballast by reason of its flared sides; that having the ends of the tie open or unconnected an elasticity is produced that gives in the passing of the train; that by means of the gutters or inverted arches the strength of the tie or sleeper is greatly increased, and that the tie or sleeper being in practice so completely buried in the road-bed prevents the displacement which is produced by trains running over short curves at a high rate of speed, or consequent upon rains.

It is well known that wooden ties, which are placed generally in holes made therefor, after a severe rain always shake the ballast, whereas in my invention, by reason of the formation given the tie or sleeper, the weakening of the road-bed is prevented.

There is another important advantage in my invention—namely, that in the shipping of the tie from the place of manufacture the fastening-bolts are placed in position and loosely secured by the nuts, so as to prevent the loss thereof in shipping, whereby when the rail is to be placed in position the nuts are removed and replaced after the rail is laid.

I claim as my invention—

1. A railroad tie or sleeper formed of sheet metal or steel plate having an approximately inverted-U shape throughout its length and having an inclination at its end and central portions, as shown and described.

2. A railroad tie or sleeper formed of a sheet metal or steel plate provided with an approximately inverted-U shape throughout its entire length and slightly inclined on its upper surface, and having its sides flared, and open at its ends and throughout its length, as shown, and for the purpose stated.

3. A metallic railroad tie or sleeper of approximately inverted-U shape throughout its length and having central inclined connecting-neck and horizontal webs or flanges projecting therefrom, as shown and described.

4. A metallic railroad tie or sleeper having gutters or approximately inverted arches in its upper surface and running longitudinally the length of the tie in the end portions thereof, substantially as shown, and for the purpose stated.

5. The combination, with a metallic tie or sleeper having V-shaped oppositely-disposed flanges or raised portions, of the fastening-bolts having threaded shanks and bottom heads provided with upper and lower shoulders, the former being designed to bear against the under side of said flanges and the latter in contact with the lowermost portion thereof, and the retaining-nuts, substantially as shown and described.

6. The herein-described railroad tie or sleeper, consisting of the metallic plate of approximately inverted-U shape having the downwardly-projecting sides flared and open at the ends, the longitudinal gutters or inverted arches formed in the end portions of said tie or sleeper, the upwardly-projecting V-shaped flanges having apertures, the connecting neck, and the horizontal webs or flanges, all constructed and arranged substantially as shown and described.

7. A railroad tie or sleeper formed of a sheet metal or steel plate of approximately inverted-U shape having a corrugated or waved upper surface running longitudinally the length of the tie or sleeper, as and for the purpose stated.

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

ARTHUR DURAND.

Witnesses:

J. NOTA MCGILL,
WEST STEEVER.