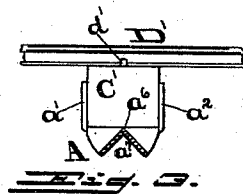
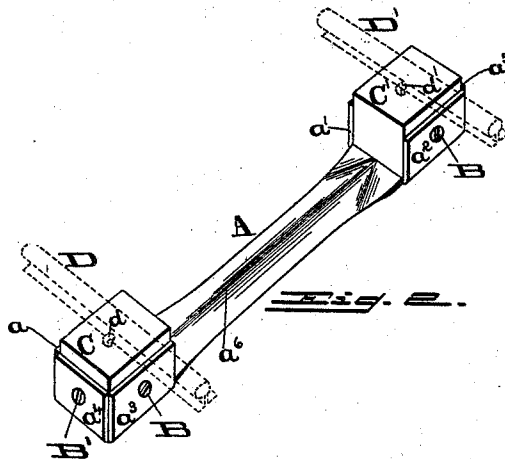
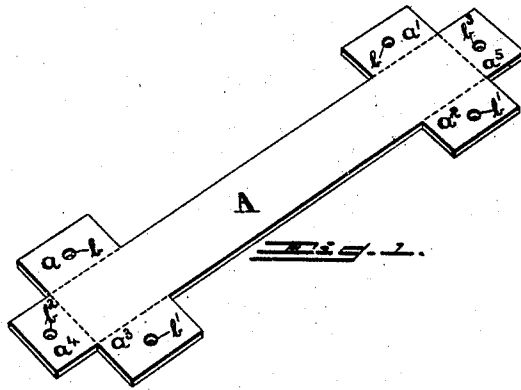


(No Model.)

F. A. BYRAM.
RAILWAY CROSS TIE.

No. 475,999.

Patented May 31, 1892.



WITNESSES:

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UNITED STATES PATENT OFFICE.

FRANK A. BYRAM, OF PHILADELPHIA, PENNSYLVANIA.

RAILWAY CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 475,999, dated May 31, 1892.

Application filed August 31, 1891. Serial No. 404,318. (No model.)

To all whom it may concern:

Be it known that I, FRANK A. BYRAM, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Railway Cross-Ties, of which the following is a specification.

My invention has relation to railway cross-ties, and has for its object the provision of a tie of simple, cheap, and efficient form, the same combining within itself the elasticity of wood and the durability of iron.

My invention consists of a tie composed of a rectangular sheet or plate of wrought metal (preferably steel) rolled, stamped, or otherwise formed with lateral wings adjacent to each of its ends, the central or main portion of said sheet being depressed gradually from its center toward each edge, imparting to the sheet an inverted-V shape in cross-section. The wings above mentioned are bent upwardly into vertical positions, as are also the ends beyond said wings, forming at each end of the sheet three sides of a hollow square. In each square is placed a wooden block, upon which are sustained the rails, said blocks being secured in position by screws passing through said wings and ends and into the blocks, the result being the production of a tie of great strength, while comparatively light, which, owing to its peculiar shape, becomes thoroughly bedded and resists all tendency toward lateral motion, the broadest part of the same being lowermost and serving to brace the tie against strain at the rail-bearing points, while the wooden blocks, in addition to their affording an elastic bottom or base for the rails, can be readily removed when worn out or otherwise incapacitated and replaced by new ones without disturbing the main portion of the tie at all.

My invention is more particularly described and claimed hereinafter, and is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a perspective view of the plate or blank from which the tie is formed. Fig. 2 is a perspective view of the tie complete, and Fig. 3 is a vertical transverse section through the center of the same.

In said drawings, A represents a sheet or

plate of wrought metal provided with the lateral wings or extensions a a' a^2 a^3 and the ends a^4 a^5 , the latter being outside of or beyond said wings, and each of the same having therein the screw-holes b b' b^2 b^3 , said sheet or plate forming the blank for the completed tie, such blank being produced in the manner found to be most desirable.

The portion of the sheet or plate A intermediate the wings a a' and the wings a^2 a^3 is depressed at its edges, as shown in Figs. 2 and 3, forming the longitudinal ridge a^6 and the inverted-V-shaped cavity a^7 thereunder. By this means the blank is rendered very much stronger than it would be were it allowed to remain in its original flat condition. At the same time such strength does not amount to absolute rigidity, but permits of the retention of a certain amount of elasticity, sufficient to conduce to the attainment of the desired result.

As shown in Fig. 2, the wings and ends above mentioned are bent upwardly on the dotted lines of Fig. 1 into vertical positions, forming rectangular recesses for reception of the similarly-shaped wooden blocks C C', which latter are of such depth as to permit of their projecting some distance above the upper edges of the sides of the recesses. Said blocks are secured in position by the wood-screws B B', which pass through the holes in the sides and ends of said recesses and are coated with pitch or other preservative, as is also the metallic portion of the tie. Said screws, while being shown as provided with the ordinary round slotted heads, will in practice be formed with bolt-heads to facilitate their being screwed into the blocks, the same embedding themselves in the wood of the latter and serving to maintain them rigidly in position, such maintenance being assisted by the close relation of the walls of the recesses and the sides and ends of the blocks.

D D' represent the rails, which may be secured on the blocks C C' in any convenient or preferred manner—for instance, by spiking, as usual, and as shown at d d' in Figs. 2 and 3. In the event of the ties being employed for the support of switch-rails all that is necessary is the lengthening inwardly of the blocks for the accommodation thereof.

The advantages of the employment of wrought, as distinguished from cast, iron are that the ties can be subjected to any amount of rough usage without the slightest danger of breakage, are unaffected by any condition of the ground—as, for instance, frost—are more elastic, and can be made very much lighter, owing to this freedom from breakage. The peculiar shape of the main portion of the tie results in the covering of such portion and its protection from the weather by the road-ballast, the impact of which serves to help to keep the tie in position, while the earth in the V-shaped cavity assists the tie in resisting tendency toward lateral displacement.

What I claim as my invention is as follows:

1. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, for the purpose specified.

2. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, for the purpose specified.

3. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, the portion of said sheet or plate intermediate said recesses being depressed longitudinally from its center toward each edge, for the purpose specified.

4. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses for reception of the rail-supports, the portion of said sheet or plate intermediate said recesses being depressed longitudinally from its center toward each edge, imparting to the same an inverted-V shape in cross-section, for the purpose specified.

5. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof ad-

jacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, for the purpose specified.

6. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, for the purpose specified.

7. A railway-tie composed of a sheet or plate of wrought metal provided with lateral wings or extensions on each side thereof adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, the portion of said sheet or plate intermediate said recesses being depressed longitudinally from its center toward each edge, for the purpose specified.

8. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks for the support of the rails, the portion of said sheet or plate intermediate said recesses being depressed longitudinally toward each edge, imparting to the same an inverted-V shape in cross-section, for the purpose specified.

9. A railway-tie composed of a sheet or plate of wrought metal having integral therewith lateral wings or extensions on each side thereof and adjacent to its ends, said wings and ends being bent upwardly and forming recesses, in which latter are secured wooden blocks by the passage of screws through the walls of said recesses and into said blocks, the portion of said sheet or plate intermediate the recesses being depressed longitudinally from its center to each edge, imparting to the same an inverted-V shape in cross-section, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 28th day of August, A. D. 1891.

FRANK A. BYRAM.

Witnesses:

R. DALE SPARHAWK,
WM. H. POWELL.