B. C. DOZIER.

ELEVATED RAILWAY CONSTRUCTION.

APPLICATION FILED AUG. 31, 1911.

1,009,489. **Patented Nov. 21, 1911.**

Fig. 1

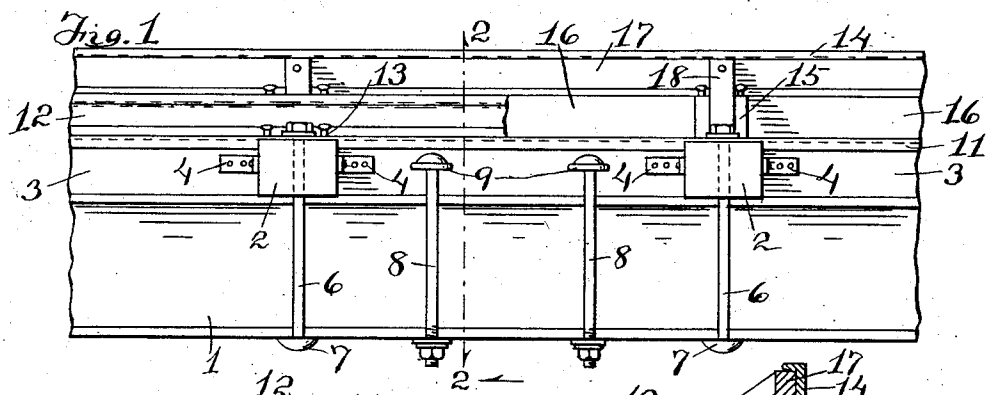


Fig. 2.

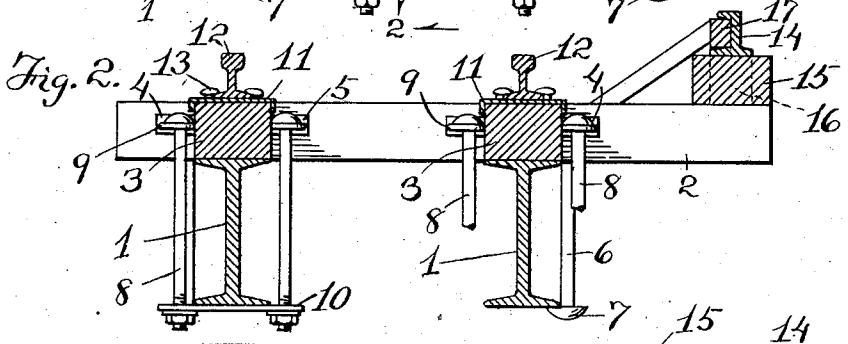
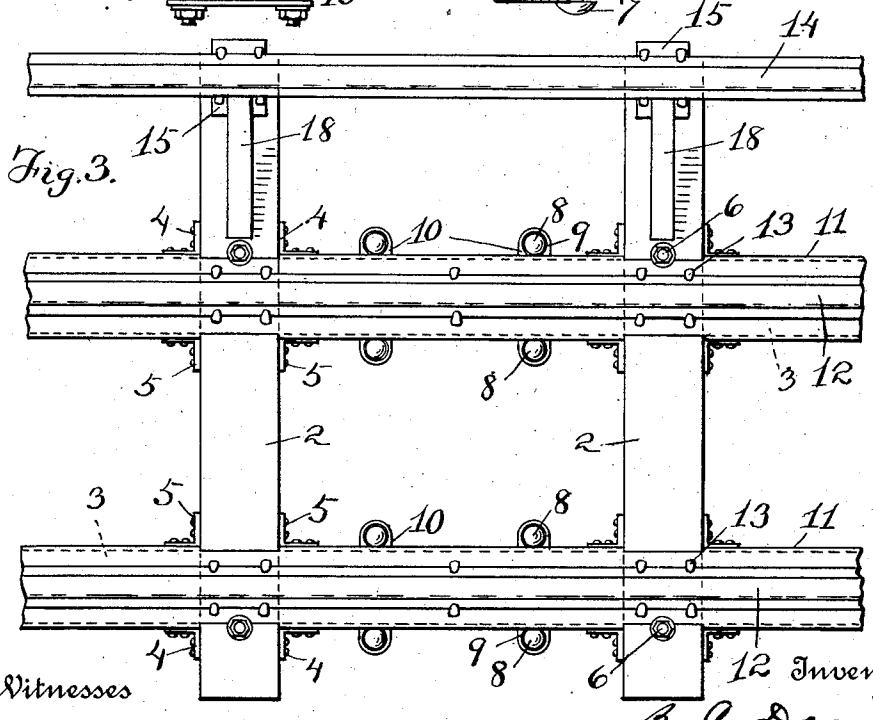


Fig. 3.



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ELEVATED-RAILWAY CONSTRUCTION.

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To all whom it may concern:

Be it known that I, BYRON C. DOZIER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Elevated-Railway Construction, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to railway road beds and is more especially intended for elevated railway structures.

The principal object of the invention is to provide improved means for reducing the sound caused by passing trains.

Another object is to provide a road bed having unusual strength and rigidity.

As now ordinarily constructed the road beds of elevated railway structures are more or less loosely connected with the framework and there is considerable opportunity for noise producing shock and vibration. The rails are supported at intervals on more or less loosely secured wooden ties and the vibration of the rails arising from the pounding of the wheels of cars and locomotives is transmitted directly to the atmosphere in the form of sound.

By my invention I provide improved means for supporting the rails throughout their entire length on shock absorbing anti-vibration material. The rails are in my improved construction rigidly supported and secured at all points, and the road bed as a whole, including the shock absorber medium, is rigidly secured to the main elevated framework in such a way that vibration of the rails apart from the framework itself is reduced to a minimum. I am aware that it has been heretofore proposed to support railway rails throughout their entire lengths and I am also aware that it has been proposed to interpose between rails and their supports shock-absorbing or anti-vibratory material such as soft metal, wood or canvas. However, I believe myself to be the first to provide in combination with longitudinal metallic road bed supporting stringers, a rigid wooden framework rigidly secured to the metallic stringers and having longitudinal elements on top of the stringers, a supplemental noise deadening layer on top of the longitudinal wooden elements and rails secured to the wooden framework on top of the supplemental noise-deadening layer.

In the accompanying drawings, which form a part of this specification, I have illustrated that form of my invention which I now deem preferable, but it will be understood that various modifications or changes may be made within the scope of the appended claims.

Of the drawings, Figure 1 is a side elevation of a section of road bed and road bed support embodying my invention; Fig. 2 is a cross sectional view taken along the line 2—2 of Fig. 1; Fig. 3 is a plan view.

Referring to the drawings, 1, 1 represent two longitudinal metallic girders forming a part of a metallic elevated railway structure. These girders have been indicated as consisting of I-beams, but it will be understood that my invention is adapted for any of the forms of girders ordinarily used in structures of this character.

2, 2 represent wooden cross-ties laid across the metallic girders 1, 1. These cross-ties are preferably placed farther apart than in the usual road bed construction heretofore used. In fact, the distance between ties may, if desired, be several feet. The ties are of uniform thickness so that they can rest firmly upon the supporting girders without filler blocks or wedges.

Interposed between each pair of adjacent cross-ties 2, 2 are two short longitudinal wooden stringer sections 3, 3. These stringers are placed directly on top of the girders 1, 1 and are of the same thickness as the ties 2, 2. The cross-ties and the stringers are very securely and rigidly fastened together. I prefer to fasten them by means of angle-irons, 4, 4 and 5, 5, screwed and bolted to the cross-ties or to the stringers. In the drawing I have shown two of these angle-irons, at the end of each stringer section 3, but it will be understood that the angle irons 4 or the angle irons 5 may be omitted in cases where unusual strength is not deemed necessary.

The wooden framework, which consists of the cross-ties 2 and the stringers 3, is rigidly tied to the girders 1, 1 of the elevated structure. This anchoring of the wooden framework may be accomplished in any one of a number of ways. However, that which I prefer is indicated in the drawings. As illustrated, 6, 6 are bolts extending downward through suitable apertures near the ends of the ties and provided at their lower ends with enlarged heads or

flanges 7 which engage with the under sides of the bottom flanges of the I-beams. 8, 8 are bolts extending downward through the eyes of eye-bolts 9, 9, which are screwed into the sides of the stringers. The bolts 8 are fastened at their bottoms to the bottoms of the girders 1, preferably by means of cross-plates or clips 10, through apertures in which they extend at their lower ends. Preferably the stringers 3 are provided with eyebolts and anchor bolts at both sides. When the nuts on the bolts 6 and the bolts 8 are tightened and the bolts tensioned, a very strong and rigid connection of the wooden framework to the metallic framework is provided and vibration of the wooden framework with respect to the metallic framework is eliminated.

On top of the wooden stringers 3, 3 and preferably extending also over the cross-ties 2, 2 are strips or layers 11, 11 of soft anti-vibration material. Preferably this material is a soft metal such as lead, but other equivalent material may be used if desired. I prefer to have the strips extend the full width of the stringers 3, 3 and down a short distance at the sides of the stringers in order to protect them from the weather, but so far as the shock-absorbing and noise-deadening functions of my invention are concerned this is immaterial. On top of the layers of lead, or other material, are placed the ordinary track rails 12, 12. These can be secured to the stringers and to the cross-ties by spikes 13, 13 in the usual manner.

It will be observed that by my invention I have provided a construction of which all parts are very positively and securely fastened together so that one part cannot vibrate with respect to another. Between the track rails, which receive the initial shocks of passing trains, and the main metallic structure upon which the shocks must ultimately be taken there is interposed a shock absorbing structure which consists not only of the heavy wooden stringers and cross-ties but also of a layer especially adapted for absorbing and preventing the transmission of sound and shock. In case a third rail construction is to be used I prefer to also provide means for eliminating and deadening the sound caused by the engagement of the electric shoe with the rail. In the drawing I have illustrated one means of mounting the third rail.

In the construction illustrated 14 represents the third rail. This is mounted on the ends of the cross-ties 2, 2, blocks 15, 15 being interposed to give the required height. The rail may be secured to the blocks in any usual manner as, for instance, by means of spikes. In order that rail 14 may be supported throughout its entire length, I provide short wooden stringers 16, 16 which extend between the blocks 15, 15. These stringers 16 are supported upon the ties and engage the under surface of the rail 14.

The construction which I have described prevents vibration of the rail in vertical planes and in order to prevent vibration in horizontal planes, blocks or stringers 17 are provided between the top and bottom flanges of the rail at the inner side. These stringers 17 are held in place and secured against lateral movement by means of braces 18, 18 which extend diagonally downward and inward and are secured to the cross-ties 2, 2 or to one of the stringers 3, 3.

It will be observed that the construction which I have just described gives a very rigid support for the rail and reduces sound to a minimum.

What I claim as my invention is:

1. In an elevated railway structure the combination of two parallel continuous longitudinal metallic road bed supporting girders, a wooden road bed framework mounted on said metallic girders, comprising cross-ties and longitudinal stringers superposed on the metallic girders and rigidly connected with the cross-ties, continuous wooden rail supports being thus provided above the girders, means for rigidly securing the wooden framework to the metallic girders, layers of anti-vibratory, shock-absorbing, sound-deadening material superposed on the rail supporting parts of the wooden road bed framework and car wheel supporting rails resting upon the said layer and firmly secured to the wooden framework.

2. In an elevated railway structure the combination of two parallel continuous longitudinal metallic girders, a series of transverse ties mounted on the metallic girders, a series of longitudinal stringers superposed on the girders between the ties, the ties and stringers together providing continuous wooden rail supports, means for connecting the cross-ties and the stringers to bind them together into one rigid framework, means for rigidly securing said framework to the said metallic girders, layers of water-proof anti-vibratory shock-absorbing sound-deadening material superposed on the rail supporting parts of the wooden framework and serving to protect the said parts from weathering and car wheel supporting rails resting upon the said layers and firmly secured to the rail supporting parts of the wooden framework, the whole construction being adapted to prevent the transmission of sound and shock from the car wheel supporting rails to the metallic girders.

3. In an elevated railway structure the combination of two parallel continuous longitudinal metallic girders, a wooden framework rigidly secured to the girders and comprising transverse ties and longi-

tudinal stringers superposed on the girders between the ties, the stringers and the ties serving to provide continuous wooden rail supports, car wheel supporting rails mounted upon the rail supporting parts of the wooden framework, a continuous longitudinal wooden support mounted at one side of the structure at the ends of the ties, a third or electric conductor rail resting upon the said continuous support, means for securing the rail to the support to prevent vibration in vertical planes and a means for bracing the rail from the wooden framework to prevent vibration in horizontal planes.

In testimony whereof I have affixed my signature, in presence of two witnesses.

BYRON C. DOZIER.

Witnesses:
MICHAEL GUTTING,
EUGENE HERRMANN.