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LAMINATED RAILROAD CROSSING

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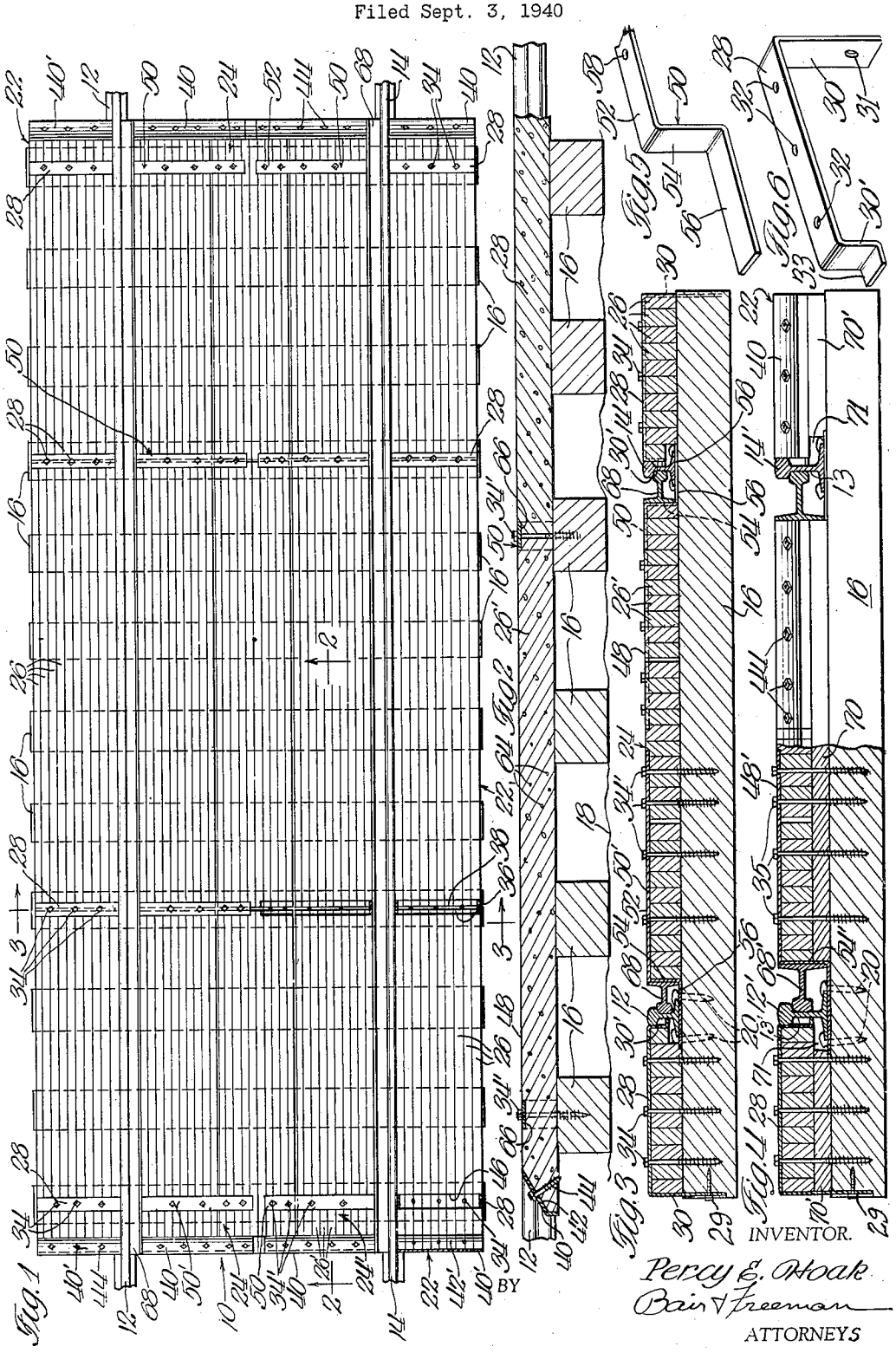

Fig. 1

Fig. 3

Fig. 4

Fig. 5

Fig. 6

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LAMINATED RAILROAD CROSSING

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6 Claims. (Cl. 238—8)

My invention relates to crossings of the sort adapted to provide a roadway over railroad beds. Among the objects of my invention is the provision of a new and improved crossing which is simple in construction, easy to install and capable of withstanding wear over a long period of time.

Another object of my invention is the provision of a new and improved laminated crossing for railroad tracks which is built in units so that it can be installed unit by unit in such size as may be suitable for any given location, and which includes improved means for holding the parts of each laminated unit firmly in position.

Still another object of my invention is the provision of a new and improved laminated railroad crossing built up of individual units which are positioned end to end alongside of and between the tracks, with a strap at the adjoining ends of adjacent units positioned so as to secure the ends of the units to the railroad tie and also to hold the laminated elements of each unit together.

Also among the objects of my invention is the provision of a new and improved highway structure which features a laminated unit plank construction for bridging the gap between railroad rails comprising a plurality of units placed side by side and secured to the ties by straps which underlie the rails to provide an anchor and which overlie the laminated elements comprising the unit so as to hold them down against the railroad tie and also to hold them in position side by side. The laminated structure is especially adapted to provide a certain amount of give so that even though portions are depressed while a train is passing on the track, there will be no distortion of the unit elements as such since all are bound together and likewise bound to the ties which support the rails.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in the accompanying drawing. Although the invention is susceptible of a variety of embodiments, it is unnecessary to fully describe and illustrate more than one in order to give a full understanding of the invention both from its structural and functional standpoints. Accordingly, I have illustrated a preferred and desirable embodiment of the invention in the accompanying drawing, in which:

Figure 1 is a plan view of my laminated railroad crossing showing units positioned end to end in groups of three across the right of way.

Figure 2 is a longitudinal section drawn to a larger scale, taken on the line 2—2 of Figure 1.

Figure 3 is a cross section drawn to a larger scale, taken on the line 3—3 of Figure 1.

Figure 4 is a cross sectional view of a modified form of my invention showing its application to rails of a greater depth.

Figure 5 is a fragmentary perspective view of one of the straps used in the center portion of the crossing; and

Figure 6 is a perspective view of one of the straps used on the outside units of the crossing.

In the building of railroad crossings which are ordinarily designed to carry a highway across a railroad right of way, one of the principal requirements is that the crossing have a certain amount of flexibility so that it will shift slightly as the track and ties give during the passing of a heavy train, but which will return to a firm even surface after the train has passed without causing any of the anchoring means to work loose, eventually causing disintegration or misalignment of the crossing. If a rigid structure were used it would not ordinarily follow the give of the ties, and although initially providing a firm smooth surface, the securing means of whatever sort might be selected, would eventually work loose and cause the crossing to deteriorate. By providing a laminated structure, each element is permitted a limited amount of temporary displacement without the necessity of shifting the entire crossing to conform with it. Likewise of advantage is the ability to make up crossing units at the mill so that they can be quickly installed at the crossing while trains are frequently passing without causing any interruption in the service.

In the drawing there is shown a railroad right of way indicated generally by the character 10 having tracks 12 and 14 supported by ties 16 which in turn rest upon a road bed 18 of gravel or cinders. The tracks 12 and 14 are spiked to the ties 16 by use of the usual railway spikes 20.

The laminated crossing consists of outside units indicated generally by the character 22 and inside units indicated generally by the character 24.

The outside units are constructed of individual planks 26 set on edge, as shown particularly in Figure 3, extending along the outer ends of the ties 16. Ten of these planks are shown in the embodiment selected for the purpose of illustration placed side by side with the innermost plank adjacent the rail shortened so that the surface

of the unit can be brought up snug against the rail while maintaining a smooth upper surface. The planks are normally spiked together, the spikes being shown in cross-section at 64 in Figure 2. In addition, there is provided a strap 28 bent to a U-shape so that a long leg 30 of the strap overlies the outermost side of the planks comprising the unit, and extends downwardly over the end of a tie to which it is secured by a lag screw 29, inserted in the aperture 31. A shorter leg 30' overlies the innermost plank of the unit, thereby holding the planks in their position side by side with relation to each other. Moreover, at the end of the shorter leg 30' there is a projection 33 which extends under the head and into contact with the web of the adjacent rail, as shown in Figures 3 and 4. The straps are likewise provided with bolt holes 32 and through these holes are inserted lag screws 34 extending clear through the planks into the ties 16. As shown particularly in Figure 1, the unit at the lower left-hand end has an end 36 abutting an end 38 of the middle unit at the lower side and it is to be noted that these ends 36 and 38 adjoin each other at the center line of a tie. The U-shaped strap 28 lies half over the end 36 and half over the end 38 so that lag screws inserted through the bolt holes extend downwardly past the ends of the units into the tie without necessarily being embedded completely within the planks of one unit or another. At the other end of the unit 22, at the lower left of Figure 1, another strap 28 is attached a short distance inwardly from the free end and is positioned to bind the elements of the laminated structure together side by side as above described. In this case, the lag screws 34 pass through the bolt holes and through the crack adjacent the planks and thence into the railroad tie. The lag screw here likewise provides a direct connection between the strap and the tie without passing through the body of any of the planks even though not located opposite a free end of the unit.

At the free end of the laminated unit 22, at the lower left-hand end of Figure 1, there is provided a beveled angle 40' which fits over the beveled end 42' of the laminated units completely sheathing them. Screws or lag screws 44 are used to attach the beveled angle to the ends of the planks. By providing such a beveled angle at the free ends, the likelihood of their being ripped up by objects carried by a railroad train is minimized since the beveled surface of the angle has a tendency to ward off such objects and preserve the crossing intact. See also Figure 2 showing a cross section at the ends of the units located between the rails.

It should be further noted that the straps 28 are positioned in recesses 46 so that the upper surfaces of the straps are substantially level with a top surface 48 of the units. The laminated units 24 are built up in widths somewhat less than one third of the distance between the rails, three units being placed side by side as shown in Figures 1 and 3.

For securing the units 24 to the railroad structure, there is provided what may be termed a double L-shaped strap 50, the end of which is shown in Figure 5. The strap 50 has an upper portion 52 designed to overlie the unit, a mid portion 54 and a lower portion 56. The upper portion is provided with bolt holes 58.

To install the units 24, one unit identified by the character 24', is positioned adjacent the rail 14. This unit consists of planks 26' positioned on edge on the ties and face to face with respect to the other planks in the unit, the planks being spiked together by spikes 64 to hold the planks together. The double L-shaped strap 50 is positioned in a groove 66 so that the mid portion 54 overlies the outside surface of the plank immediately adjacent the rail. The lower portion 56 of the strap lies under the rail where it is free to shift slightly as the crossing is adjusted to its position. For strength and rigidity an auxiliary supporting rail 68 is placed with the base against the mid portion 54 of the double L-shaped strap and the top portion positioned against the web of rail 14, for example, on the right side as viewed in Figure 3, or the rail 12 on the left-hand side. A similar double L-shaped strap 50' is used for the unit on the opposite side of the center portion of the right of way between the tracks and is secured in a similar manner. The center unit 24 is then put in place.

In each case, lag screws 34' inserted through the bolt holes 58 pass the adjacent ends of the planks comprising the units, except the lag screws near the free ends which pass only between adjacent planks inwardly from the ends. The free ends 42 of the units 24 are beveled and sheathed with a beveled angle 40 as described in connection with the units 22 and as shown at the left end of Figure 2.

It is of consequence to note that the upper portions 52 of the double L-shaped straps are longer than the width of the units 24 so that they completely span the width of each unit adjacent the track and extend part way over the width of the centermost units. The same is likewise true of the beveled angles 40 since they likewise completely span the units adjacent the track and overlap the centermost units. As shown in Figure 1 straps 50 on opposite sides of the track have their upper portions extending in a direction towards each other, but do not abut one against the other, there being a short space between them equal more or less to the width of a plank. Built in this manner there is no opportunity for a strain upon one of the double L-shaped straps acting to displace another one of the straps as the road bed yields to the passing of a heavy train.

In the modified form shown in Figure 4 railroad tracks 12' and 14' are shown having a height greater than the rails shown in Figure 3. This necessitates building the crossing up so that its upper surface 48' lies flush with the top of the higher rails. In order to accomplish this, shims 70 are positioned lengthwise with respect to the ties 16 and crosswise with respect to the planks comprising the units. The shims are made of a thickness sufficient to lift the upper edges of the planks to a plane level with the tops of the rails 12' and 14'. With this construction longer lag screws 35 are used so that they extend from the upper portions of the straps through both the planking and the shims into the railroad ties. Likewise in connections of this kind, the double L-shaped straps will be provided with the longer mid portion 54' in order to accommodate the greater height of plank and shim combined. In other respects the double L-shaped straps are the equivalent of those first described. It should be noted that the shims 70 located between the rails have a length equal to the combined width of the three units positioned therebetween, but that shims 70' located on the outside of the rails are somewhat shorter than the width of the units 22 providing pockets

71 to accommodate the edges of the rail base and the heads of the spikes which hold the rails in place. Rail spacers of equivalent size having webs 63' to provide a trough for the flanges of wheels rolling on the tracks are positioned between the webs 13' of the tracks and the flat side adjacent plank 26'.

There has thus been provided a laminated railroad crossing capable of being built in units at the mill and quickly and efficiently installed unit by unit at the crossing to provide a roadway over the railroad right of way of whatever width may be desired and one which will maintain its unitary construction and a surface even with the tops of the track throughout long periods of use.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents, which may be reasonably included within their scope.

I claim as my invention:

1. A laminated highway structure for bridging railway ties and rails comprising a series of laminated units including planks free from interlocked engagement respectively with each other positioned face to face and resting edgewise on the ties with the long cross sectional dimension extending veritically, a row of said units being positioned endwise relative to each other in parallel rows covering portions of the ties between the rails, means for securing the ends of said units comprising a set of plates for each end each having an upper element extending over the full width adjacent the ends of said respective units lying next to the rails wherein the ends of the upper elements lie adjacent and spaced from each other, an intermediate portion of said plate overlying the flat vertical side of a plank adjacent the rail, and a lower leg positioned beneath the rail the plates having fasteners extending through said plates and ties respectively to hold the units in place.

2. A laminated highway structure for bridging railway ties and rails comprising a series of laminated units including planks fastened face to face resting edgewise on the ties, a row of said units located endwise with respect to each other extending over portions of the ties at the outside of the rails, means for securing the ends of said units in place comprising plates having a mid portion overlying the plank edges and ends engaging the outermost planks of each unit for binding them together and fasteners projecting through the plates extending into the ties securing said plates together with the adjacent plank ends to the ties, and a second plurality of plank units positioned endwise relative to each other in parallel rows covering portions of the ties between the rails, means for securing the ends of said units comprising a second set of plates for each end each having an upper element extending over the full width adjacent the ends of said respective units lying next to the rails wherein the ends of the upper elements lie adjacent and spaced from each other, an intermediate portion of said second plate overlying the vertical flat side of a plank adjacent the rail, and a lower leg positioned beneath the rail the plates having fasteners extending through said plates and ties respectively to hold the units in place.

3. A laminated highway structure for bridging railway ties and rails comprising a series of laminated units including planks fastened together face to face resting edgewise on the ties, a row of said units being located endwise with respect to each other covering portions of the ties at the outside of the rails, means for securing the ends of said units in place comprising plates having a mid portion overlying the plank edges and ends engaging the innermost and outermost planks of each unit for binding them together, recesses at the ends of the planks for reception of the mid portions of the plates and fasteners projecting through the plates extending into the ties securing said plates, together with the adjacent plank ends, to the ties, and a second plurality of plank units positioned endwise relative to each other in parallel rows covering portions of the ties between the rails, means for securing the ends of said units comprising a second set of plates each having an upper element extending over the full width of the adjacent ends of units lying next to the rails and over a portion of the width of other units intermediate rows of said last units wherein the ends of said upper elements lie adjacent and spaced from each other, an intermediate portion of each of said second plates overlying the vertical flat side of a plank adjacent the rail, and a lower leg of each of said second plates positioned beneath the rail, recesses at the ends of planks in said units adapted to receive the second plates, and fasteners extending through said plates and ties respectively to hold the units in place.

4. A laminated highway structure for bridging railway ties and rails comprising a series of laminated units including planks attached together face to face resting edgewise on the ties, a row of said units located endwise with respect to each other extending over portions of the ties from a point at the outside of the rails to the ends thereof, means for securing the ends of said units in place comprising substantially U-shaped plates, recesses at the ends of the planks for reception of the mid portions of the U-shaped plates, the legs of said U-shaped plates overlying the outermost innermost planks at each side and fasteners projecting through the plates past the ends of said planks extending into the ties securing said plates, together with the adjacent plank ends, to the ties, and a second plurality of plank units positioned endwise relative to each other in parallel rows covering portions of the ties between the rails, means for securing the ends of said units comprising substantially double L-shaped plates having an upper leg extending over the full width of the adjacent ends of said respective units lying next to the rails and over a portion of the width of other units intermediate rows of said last units, an intermediate vertical portion of each said L-shaped plates overlying the flat vertical side of a plank adjacent the rail, and a lower leg of each said double L-shaped plate positioned beneath the rail, a spacer positioned between said portion and the adjacent track rail, recesses at the ends of planks in said units adapted to receive the double L-shaped plates, and fasteners extending through said plates and ties respectively to hold the units in place.

5. A laminated highway structure for bridging railway ties and rails comprising a series of laminated units including planks attached together face to face resting edgewise on the ties, a row of said units being located endwise with respect to each other covering portions of the ties

from a point at the outside of the rails to the ends thereof, means for securing the ends of said units in place comprising substantially U-shaped plates, recesses at the ends of the planks for reception of the mid portions of the U-shaped plates to a level flush with the surface of the plank, the legs of said U-shaped plates overlying the outermost planks at each side and lag screws projecting through the plates extending into the ties securing said plates, together with the adjacent plank ends, to the ties, and a second plurality of plank units positioned endwise relative to each other in parallel rows extending over portions of the ties between the rails, means for securing the ends of said units comprising substantially double L-shaped plates having an upper leg extending over the full width of the adjacent ends of said respective units lying next to the rails and over a portion of the width of other units intermediate rows of said last units, an intermediate vertical portion of each said L-shaped plate overlying the vertical flat side of a plank adjacent the rail, a spacer positioned between said portion and the adjacent track rail, and a lower leg of each said double L-shaped plate positioned beneath the rail and terminating beneath the side wall of the plank adjacent the rail on the opposite side thereof, recesses at the ends of planks in said units adapted to receive the double L-shaped plates to a depth flush with the surface of said planks, and lag screws extending through said plates and ties respectively to hold the units in place.

6. A laminated highway structure for bridging railway ties and rails comprising a series of laminated units including planks spiked together face to face resting edgewise on the ties, a row of said units being located endwise with respect to each other extending over portions of the ties from a point at the outside of the rails to the ends thereof, means for securing the ends of said units in place comprising substantially U-shaped plates, recesses at the ends of the planks for reception of the mid portions of the U-shaped plates at a level flush with the surface of the plank, the legs of said U-shaped plates overlying the outermost planks at each side and lag screws projecting through the plates extending into the ties securing said plates, together with the adjacent plank ends, to the ties, and a second plurality of plank units positioned endwise relative to each other in parallel rows covering portions of the ties between the rails, means for securing the ends of said units comprising substantially double L-shaped plates having an upper leg extending over the full width adjacent the ends of said respective units lying next to the rails and over a portion of the width of other units intermediate said last units, a vertical intermediate portion of said L-shaped plate overlying the vertical flat side of a plank adjacent the rail, a spacing rail positioned sidewise between said portion and the adjacent track rail, and a lower leg of said double L-shaped plate positioned beneath the rail, recesses at the ends of planks in said units adapted to receive the double L-shaped plates to a depth flush with the surface of said planks, lag screws extending through said plates and ties respectively to hold the units in place, and angle plates independent of the ties in said road bed fastened only to said units and covering beveled exposed ends of the endmost units.

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