S. W. LYMAN.

ROAD BED.

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969,966.

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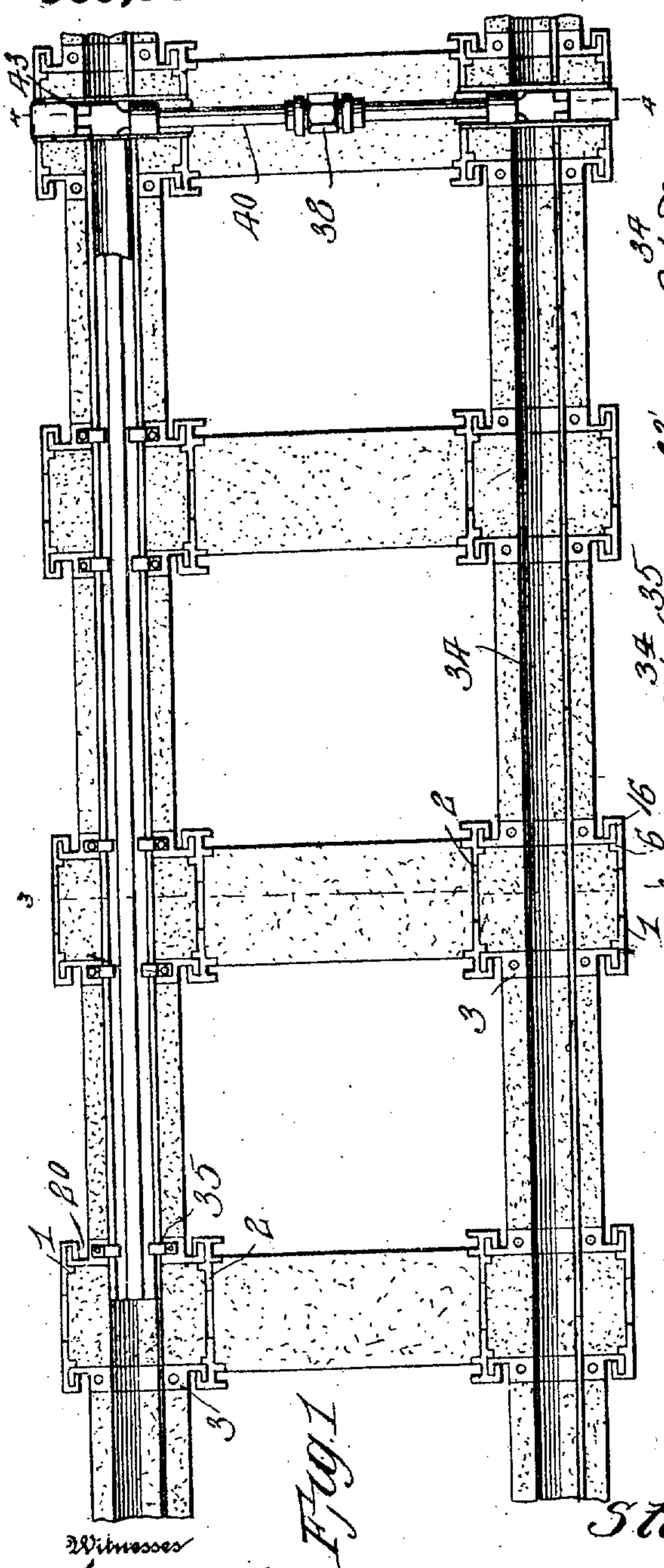

Fig. 1.

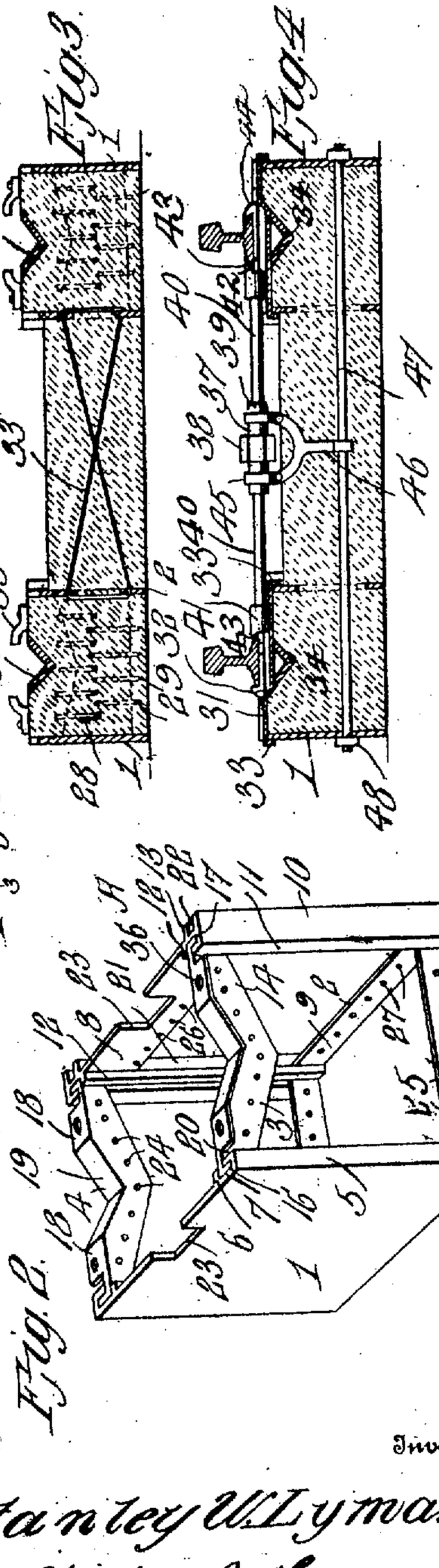

Fig. 3.

Fig. 4.

Fig. 2.

Witnesses

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ROAD-BED.

969,966. Specification of Letters Patent. **Patented Sept. 13, 1910.**

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To all whom it may concern:

Be it known that I, STANLEY W. LYMAN, a native-born citizen of the United States, residing at Roberts, in the county of Carbon and State of Montana, have invented new and useful Improvements in Road-Beds, of which the following is a specification.

The invention relates to an improvement in road bed structures for railroads, and is particularly directed to a concrete or other composite road bed in which the rails are supported throughout their lengths and connected by cross ties.

The main object of the present invention is the provision of a metallic structure in the use of which the road bed of this invention may be quickly and economically constructed, the metallic structures forming a substantial support for the rails and being tied together to reinforce the concrete structure and to prevent independent movement of said metallic structures.

The invention will be described in the following specification, reference being had particularly to the accompanying drawings, in which:—

Figure 1 is a plan view of a road bed constructed in accordance with my invention. Fig. 2 is a detail perspective of one of the metallic structures or boxes. Fig. 3 is a section on line 3—3 of Fig. 1. Fig. 4 is a section on line 4—4 of Fig. 1.

Referring to the drawings, my improved road bed comprises in addition to the material forming the composite portion of the structure a series of metallic structures or boxes A designed to be respectively arranged at the opposing ends of each cross tie of the road bed. These boxes are of identical structure and are in effect molding boxes for receiving and forming a portion of the composite material and permitting the use of ordinary elements for the forming of the remainder of said material.

The detailed structure of the boxes is more particularly shown in Fig. 2, from which it will be seen to comprise side walls 1 and 2, and end walls 3 and 4, the side wall 1 being designed to form the outer end of the cross tie and for this purpose is preferably solid, the remaining side wall and the end walls being of skeleton formation to permit the disposition of the composite material through said walls to provide an integral structure.

The end edges of the side wall 1 are formed with inturned flanges 5 and on the inner surface immediately in rear of the terminals of said flanges with vertically extending ribs 6, said ribs and flanges forming sockets 7 on the inner surface of the wall 1. The side wall 2 is of skeleton form including the top and bottom bars 8 and 9 and side bars 10, said latter bars extending across the end edges of the bars 8 and 9 and projecting beyond the respective surfaces of said bars. The inner edge of each side bar 10, or that edge next the wall 1, is formed with an inwardly projecting flange 11, extended in parallel relation with the bars 8 and 9 and, together with a rib 12, extending throughout the height of the wall immediately in rear of the terminal of the flange 11, forming a socket 13 corresponding to and arranged directly opposite the flange 7 of the wall 1.

The end walls 3 and 4 are of identical structure, each including an upper bar 14 and a lower bar 15. The respective upper and lower bars of the end walls are spaced apart a distance equal to the spacing of the bars 8 and 9 of the side wall 2, so that an uninterrupted opening is provided in the respective walls except the outer side wall 1. The upper and lower bars of each end wall are connected at their edges by vertically arranged forwardly extending flanges 16 and 17 adapted to snugly fit within and throughout the lengths of the respective recesses 7 and 13, so that the end walls are arranged for slidable connection with the side walls in assembling the box. The upper bar 14 of each end wall is formed with an outwardly extending projection 18, in the form of a supporting flange, which at its central point is depressed to provide a V-shaped socket 19 for a purpose which will presently appear. The upper bars 14 of the end walls are preferably of V-shape in side elevation to provide the necessary strength of material opposing the sockets 19. The flanges 18 are of less length than the bars 14, terminating in spaced relation with the proximate surfaces of the flanges 5 and 11, whereby sockets 20 are provided at each end of each bar 14, for a purpose which will presently appear. The relatively outer surfaces of the bars 8 and 9 of the side wall 2 are provided with ribs 21 extending throughout the height of the wall and in spaced parallel relation to that portion of the end bars 10 projecting beyond the outer surface of the

bars 8 and 9, whereby sockets 22 are formed for a purpose which will presently appear. The relatively upper edge of the side wall 1 and the upper edge of the bar 8 of the side wall 2 are formed with alined notches 23 to receive a rail holding member hereinafter to be described.

The bars 14 of the end walls are formed with a series of apertures 24, the bars 15 being formed with similar apertures 25. The bars 8 and 9 of the side wall 2 are formed with apertures 26 and 27 respectively, said apertures serving to tie the boxes together in the formation of the road bed, as will presently appear. The respective boxes are arranged in series longitudinally of the road bed, being disposed so as to present opposing pairs at the points to be occupied by the cross ties. The longitudinal series of boxes are tied in their respective positions by tie wires 28 and 29, which extend longitudinally of the box and diagonally therefrom to the adjacent box, that is, one series of wires will be passed through the alined apertures of the upper bars 14 of one and then projected diagonally of the next adjacent box and through the alined apertures 25 of the lower bars 15, being, of course, projected from these bars upwardly to and through the apertures of the bars 14 of the next adjacent box.

The respective opposing pairs of the boxes are tied together by tie wires 33′, which extend through the apertures 26 of the upper bar 8 of one side wall downward through the apertures 27 of the lower bar 9 of the side wall 2 of the opposing box, then upwardly within the box, then through the apertured bar 8 of said box and diagonally transverse the structure to and through the apertures of the bar of the first mentioned box and upwardly within said box and connected to the wire terminal within said box. The tie wires which may be in any number are thus effective for tying the boxes in fixed relation longitudinally and transversely of the road bed. With the boxes thus assembled the form or molding frame of the road bed is completed by board or partition structures which are inserted in the alined recesses 22 of the opposing boxes and in the alined recesses 20 of the successive boxes. These respective recesses support the partition in parallel relation to form in effect sides of mold boxes extending longitudinally and transversely of the road bed. The form thus presented is then filled with the composite mixture as concrete, the same being securely tamped in place. In connection with such of the boxes, as use the rail tie member hereinafter described, I provide a supporting member 31, preferably a strip of metal having in its bottom wall at a point intermediate its ends an inclined portion 32 offsetting the respective ends of the strip. The ends of the bottom are bent to provide depending flanges 33, and said strip is arranged to be inserted in the notches 23, the inclined portion 32 alining with the relatively outer inclined surfaces of the depressions 19, thereby forming a box-like receptacle in which the rail tie members are inserted and which serves to prevent encroachment of the concrete filling on said rail tie members. The rail tie members are thus supported to permit their normal operation when desired without interference from the concrete filling.

In conjunction with the road bed I use a rail structure, which is more particularly described and claimed in a copending application. As a part of the rail structure I include a base or chair member 34 which is of approximately V-shape in cross section, the lower inclined surfaces of which are shaped to fit the depression 19 in the end walls of the box. To further secure the rail in place I provide holding clamps 35 adapted to be secured to the box by bolts passing through the clamps and through openings 36 formed in and adjacent each end of the flange 18 of the end walls, as clearly shown in Figs. 1 and 3.

At determinate points throughout the lengths of the road bed, and preferably overlying certain of the ties I provide a rail tie member including a central coupling 37 formed with an angular body 38 for the application of a wrench or other operating member and having sleeves 39 projecting from said member. The sleeves are interiorly threaded for the reception of tubular members 40, which at their ends are provided with blocks 41 formed on their relatively outer edges with an overhanging lip 42. Clamp rods 43 extend through members 40 and are threaded in a bore of the body 38 of the coupling, the ends of said rods projecting beyond blocks 41 and having hook ends 44 to coöperate with the overhanging lips 42 of the blocks to engage the rail. In the road bed structure the rail tie is secured in place by a yoke 45 loosely engaging the sleeve extensions 37 of the coupling and having its depending arm 46 formed with a terminal eye to receive a rod 47 passed longitudinally through the tie structure and through the end walls 1 of the boxes forming the terminals of the particular tie structure, securing nuts 48 fixing the parts in applied position. In their passage through the blocks 41 the rods 43 are preferably squared in cross section and fit similarly formed apertures in said blocks, whereby the rotation of the coupling will adjust said rods with relation to each other without permitting a revolution of the rods to interfere with the proper position of the hooks 44.

The road bed thus constructed is an integral composite structure throughout, the

rails being directly supported by longitudinal members of stringer type extending the full length of the road bed and connected at appropriate intervals by cross ties, the longitudinal stringers at the junctures of the cross ties therewith being reinforced by metallic boxes which throughout the entire road bed are interconnected to prevent independent movement of said boxes and also to provide a reinforce for the composite structure between the boxes.

If desired the concrete reinforce may be in part substituted by wood in order to increase the resiliency of the supporting member.

Having thus described the invention what is claimed as new, is:—

1. A railroad road bed including composite ties and longitudinal members, and boxes fitting the members and forming the terminals of the ties.

2. A composite road bed including longitudinal members and connected cross ties, and boxes forming the terminals of the ties and arranged for the extension of the longitudinal members through them.

3. A road bed including a series of boxes arranged longitudinally of the bed and in opposing pairs transversely thereof, and tie members uniting the longitudinally disposed members of the transverse pairs.

4. A road bed including a series of boxes arranged longitudinally of the bed and in opposing pairs transversely thereof, and tie members uniting the longitudinally disposed members of the transverse pairs, said tie members extending diagonally from one box to the other.

5. A road bed including a series of connected metallic boxes arranged in spaced relation longitudinally of the bed, said boxes being formed to support mold forming walls extending longitudinally of the bed between the boxes.

6. A road bed including boxes arranged in spaced relation transversely of the bed, said boxes being formed to receive and support mold forming walls to bridge the space between the boxes.

7. A molding box for use in constructing railroad road beds including four walls, means for slidably connecting the walls to form a box structure, the opposing end walls of the box being formed with rail receiving recesses.

8. A molding box for use in constructing railroad road beds including four walls, means for slidably connecting the walls to form a box structure, the opposing end walls of the box being formed with rail receiving recesses, and means adjustable for securing the rails together.

9. A molding box for use in constructing railroad road beds including four walls, means for slidably connecting the walls to form a box structure, the opposing end walls of the box being formed with rail receiving recesses, the side walls being formed with recesses, and a rail retaining member arranged to fit in said recesses and formed with an offset portion to engage and limit movement of the supported rail in one direction.

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

STANLEY W. LYMAN.

Witnesses:

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