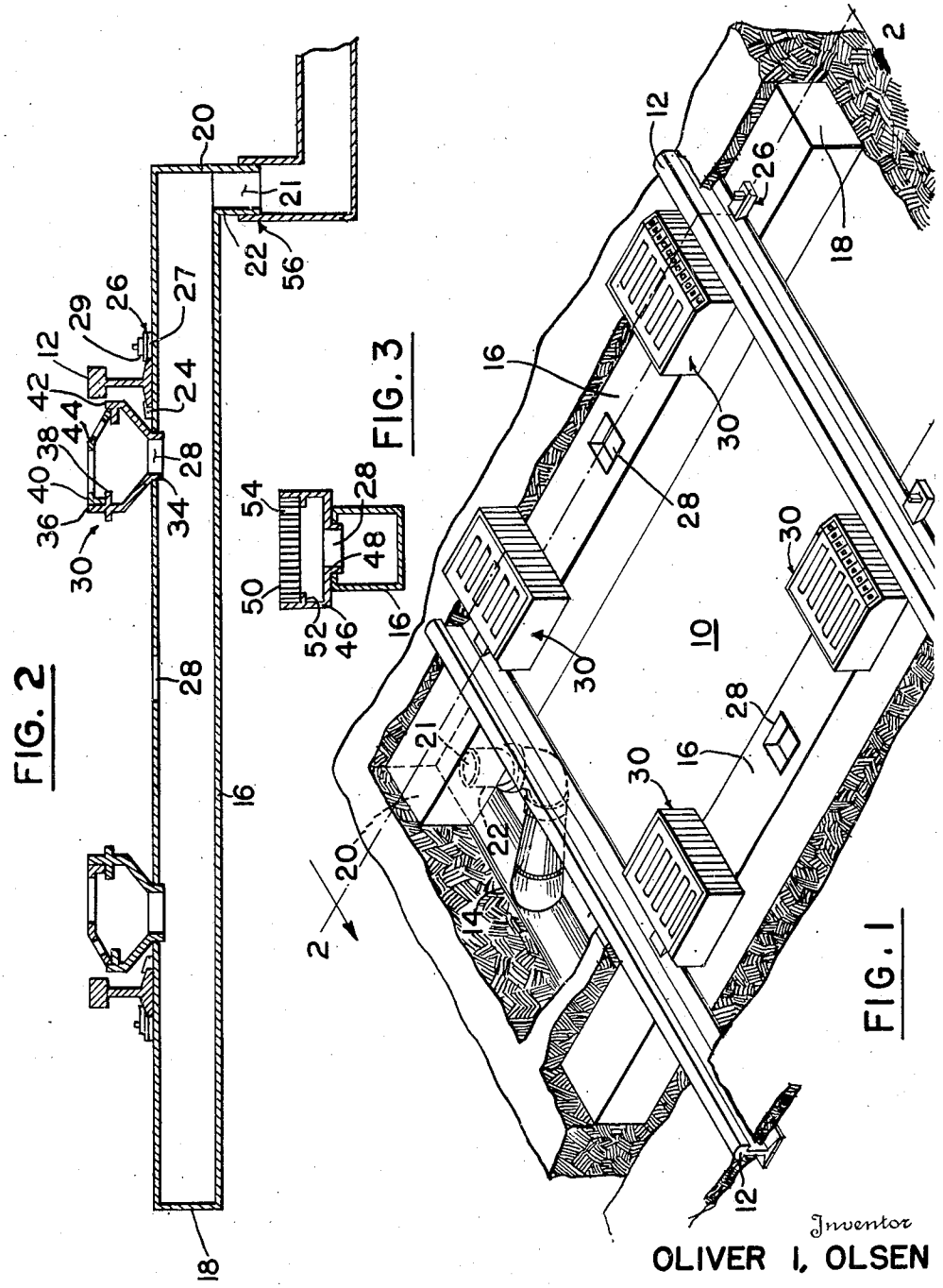
Dec. 27, 1949 O. I. OLSEN 2,492,177

COMBINATION RAILROAD TIE AND DRAINAGE SYSTEM

Filed Jan. 31, 1945 2 Sheets-Sheet 1



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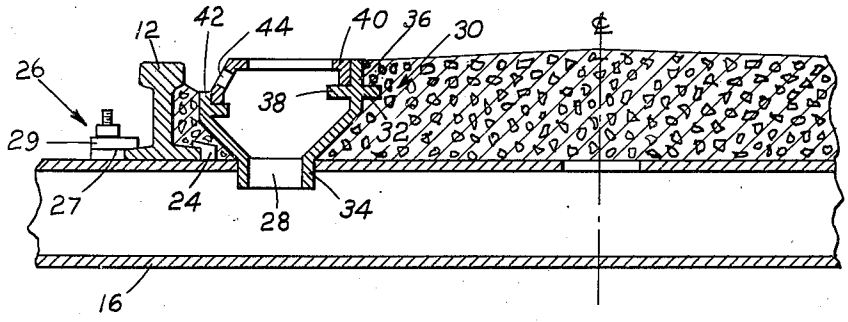


FIG. 4

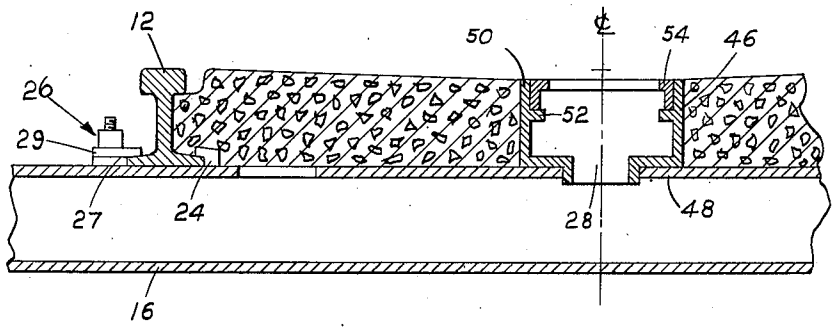


FIG. 5

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COMBINATION RAILROAD TIE AND DRAINAGE SYSTEM

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4 Claims. (Cl. 238—7)

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1

This invention relates to a structural member to be used in the construction of railroad beds, and more especially, to means for supporting the rails and for providing drainage for the road bed.

In providing for the proper drainage and disposal of surface water, particularly in paved areas such as large industrial plants, navy yards, etc., where railroad tracks are set into concrete paving, it is usual to place drains between the ties and to connect these to disposal conduits buried along side of the track. The drains or catch basins for the same are usually set into concrete blocks. The weight of the locomotive and of equipment being hauled over the tracks tends to cause the track to settle, leaving the drains between the tracks projecting upwardly to such an extent that the under-carriage of the locomotive and cars may strike the same and break them up or force the concrete blocks around the drains downwardly to such an extent as to break the cast iron disposal conduit to which they are attached. When this occurs, it is necessary to remove the tracks and to excavate the entire drainage system in order to replace the damaged piping, and this is expensive and involves a loss of time and a waste of material.

It is an object of this invention to provide means for use in draining surface water from railroad beds which may removably be associated with the track so that it may be removed without disrupting the rails or the entire drainage system in the event that it is necessary to replace a part of it due to some damage.

In one aspect invention resides in a hollow structural member of sufficient strength to support railroad tracks and the load imposed thereon by the passage of railway equipment over the same, the structural member having means therein through which water in the bed may flow into the member and laterally of the road bed. As illustrated, the hollow structural member is adapted to serve as a tie and has means for securing the track thereto so that it will move with the track if the latter settles under the impressed load. The aforesaid means through which the water passes into the tie, comprises a hollow member open at its bottom and having a flange surrounding the same adapted to be rigidly connected to the top of the tie. The top of the aforesaid hollow member is also open and is so designed that it terminates at about the surface of the road bed and there is disposed in the open end thereof a grate which permits the passage of water, but not of ballast. In another aspect, the invention resides in drainage systems in which ties, as heretofore described, are used for supporting the rails, each tie having an outlet or discharge conduit in one end which extends below the body of the tie and is adapted to be connected by a slip joint to a disposal conduit which is arranged to run along the track at one side thereof.

2

The invention will now be described with reference to the accompanying drawing, in which:

Fig. 1 is a perspective view of a section of track showing the novel ties arranged in position beneath the rails and attached thereto;

Fig. 2 is a section through my novel tie longitudinally thereof substantially on the line 2—2 as indicated on Fig. 1; and

Fig. 3 is a cross section of the tie with the center drain in place, as employed in Fig. 5.

Fig. 4 shows the desirable relation of the surface of the pavement or road bed, in the employment of the side drains without the middle drain as indicated by Fig. 1.

Fig. 5 shows the desirable relation of the surface of the pavement or road bed, in the desirable use of the middle drain of the apparatus.

Referring to Fig. 1, there is shown in perspective, a railroad bed 10, rails 12, a disposal conduit 14 buried along side of the road bed for carrying away water which accumulates on the track bed, and the combination tie and drain 16 which forms the subject matter of the present invention, connected to the disposal conduit 14, the road bed being excavated between two adjacent ties in order to illustrate their disposition and connection to the disposal conduit. The tie and drain 16, as shown in Figs. 2 and 3, is a hollow rectangular structural member, preferably made up of sheet metal welded into the proper shape, the ends of which are closed at 18 and 20. At one end, that is, at the end 20, there is formed a conduit or discharge opening 21 on the bottom side of the tie which is surrounded by a cylindrical neck 22. On the upper surface of the tie there are welded, or otherwise secured, rail fastening means 24 and 26. These fastening means 24 consist of blocks fixed to the upper surface of the tie having undercut portions adapted to receive an edge of the flange at the base of the rail 12 in the usual manner. The fastening means 26 consists of blocks 27 fixed to the tie and plates 29 bolted to the blocks so that they overlie the opposite edge of the flanges at the base of the rails. Adjacent to the rails 12, and also midway between them, are formed openings 28, and into the openings adjacent to the rails there are disposed drains 30. The drains 30 are substantially rectangular in shape, are hollow and are provided with constricted neck portions 34 adapted to fit snugly into the opening 28 formed in the top of the tie. Any suitable means may be employed for securing the drains in place. Each drain 30 is so dimensioned that its upper peripheral edge 36 will lie substantially flush with the surface of the road bed, that is, as shown in Figs. 2 and 4, adjacent the plane of the top surface of the rails. Internally of the drain 30, adjacent to its upper edge 36, there is formed a peripheral ledge 38 upon which there is disposed a grate 40. The drain is shaped next to the rail so that the edge 42 terminates below the

rail head and the grate is sloped or beveled at 44. The drain which is adapted to occupy the middle opening 28 does not need to be sloped and consists of a rectangular hollow box-shaped member 46, necked down at 48 to fit into the recess 28. Its upper edge 50 is adapted to be flush with the road bed surface, as shown in Fig. 5, and internally thereof is formed a ledge 52 adapted to support a grate 54.

The combination drain and ties described herein, are employed in the building of the railroad in place of the usual wooden ties and when the track is fastened to them and the ballast is packed around them, there will be no opportunity for the ties to move with respect to the tracks, or vice versa, since they are fastened together and will move only as a unit. Hence, when a heavy load passes over the track and tends to cause the tracks and ties to settle into the ballast, the drains which are fixed to the ties, will be carried down with the track and will not protrude so as to be struck by any part of the undercarriage of the train.

In order to dispose of the water which gains access to the hollow ties through the drains 30, there is provided a slip coupling 56 between the neck 22 and the disposal drain 14 at the side of the track. This slip coupling will permit movement of the tie under the pressure of a passing train without applying pressure to the disposal drain 14, and hence, there will be no danger of fracturing the disposal drain.

It is apparent that with the construction set forth above, if any part of the tie itself is accidentally broken, it will only be necessary to remove the ballast immediately around this tie, withdraw the tie from beneath the rails and replace it by a new tie. This reduces the amount of labor and time in repair work, since it eliminates any necessity for excavating down to the drain 14 at the side of the tracks and making replacements therein or new connections thereto.

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

What is claimed is:

1. In combination, a railroad tie comprising a hollow structural member adapted to support the rails, said tie having hollow box-shaped drain means mounted on its upper side and extending above the hollow structural tie member between the rails, said hollow tie having aperture means in its upper side communicating with said hollow drain means, said drain means extending upwardly from said tie and being adapted to be substantially flush with the surface of the road bed and being open at the upper end thereof to receive and convey water into the hollow tie from the road bed between the rails, the surface of the road bed being substantially at the elevation of the top surface of the rail heads, and means for discharging the water from the hollow tie.

2. In combination, a railroad tie comprising a hollow structural member adapted to support the rails, said tie having hollow box-shaped drain means mounted on its upper side and extending above the hollow structural tie member between the rails, said hollow tie having aperture means in its upper side communicating with said hollow drain means, said drain means extending upwardly from said tie and being adapted to be substantially flush with the surface of the road bed and being open at the upper end thereof to receive and convey water into the hollow tie from the road bed between the rails, the surface of the road bed being substantially at the elevation of the top surface of the rail heads, and means for discharging the water from the hollow tie, said aperture means in the upper surface of said tie being disposed adjacent to a rail and said upwardly extending drain means being disposed close to the inside of the rail.

3. In combination, a railroad tie comprising a hollow structural member, adapted to support the rails, said tie having hollow box-shaped drain means mounted on its upper side and extending above the hollow structural tie member between the rails, said hollow tie having aperture means in its upper side communicating with said hollow drain means, said drain means extending upwardly from said tie and being adapted to be substantially flush with the surface of the road bed and being open at the upper end thereof to receive and convey water into the hollow tie from the road bed between the rails, the surface of the road bed being substantially at the elevation of the top surface of the rail heads, and means for discharging the water from the hollow tie, said hollow box-shaped drain means having a depending flange received in said aperture means in said tie and being removable from said tie, and removable grate means received in the open upper end of the drain means and permitting ingress of water while excluding ballast or the like, said hollow tie having a discharge conduit at an end thereof, and a disposal conduit having a slip joint connection with the discharge conduit of the tie and disposed substantially vertically permitting slip movement at the joint in accordance with the load on the tie or settling thereof.

4. In combination, a railroad tie comprising a hollow structural member adapted to support the rails, said tie having hollow box-shaped drain means mounted on its upper side and extending above the hollow structural tie member between the rails, said hollow tie having aperture means in its upper side communicating with said hollow drain means, said drain means extending upwardly from said tie and being adapted to be substantially flush with the surface of the road bed and being open at the upper end thereof to receive and convey water into the hollow tie from the road bed between the rails, the surface of the road bed being substantially at the elevation of the top surface of the rail heads, and means for discharging the water from the hollow tie, said aperture means in the upper surface of said tie comprising an aperture disposed substantially at the middle of the road bed between the rails, and said upwardly extending drain means comprising a hollow box-shaped drain received in said middle aperture.

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