No. 819,081.

PATENTED MAY 1, 1906.

J. W. SCHAUB.

CONCRETE ROAD BED FOR RAILWAYS.

APPLICATION FILED JAN. 22, 1906.

2 SHEETS—SHEET 1.

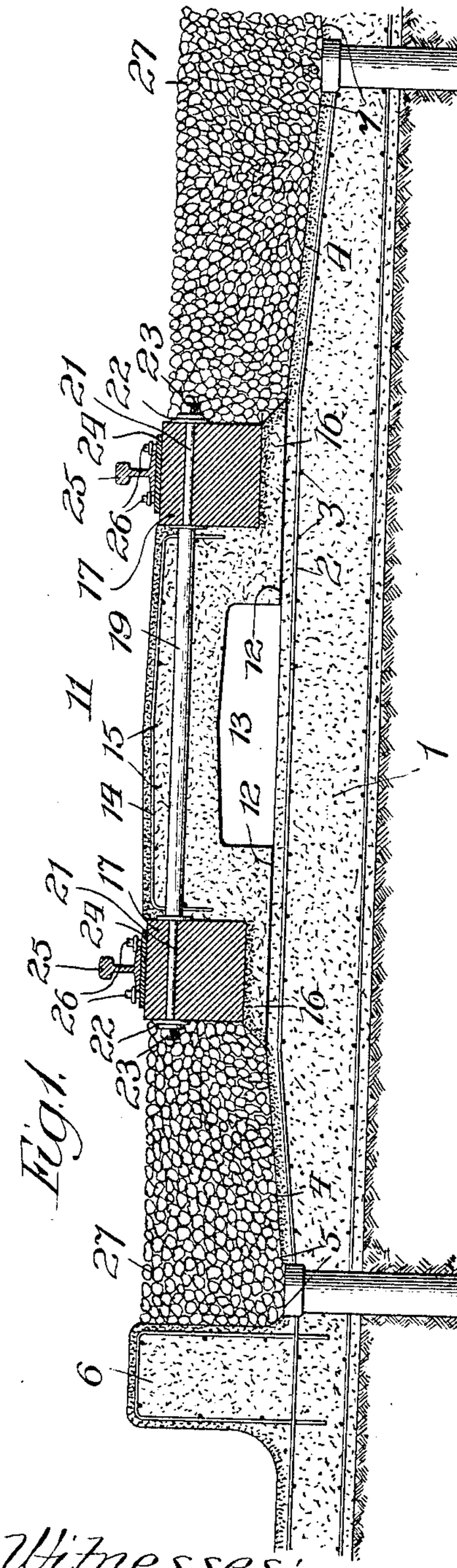

Fig. 1.

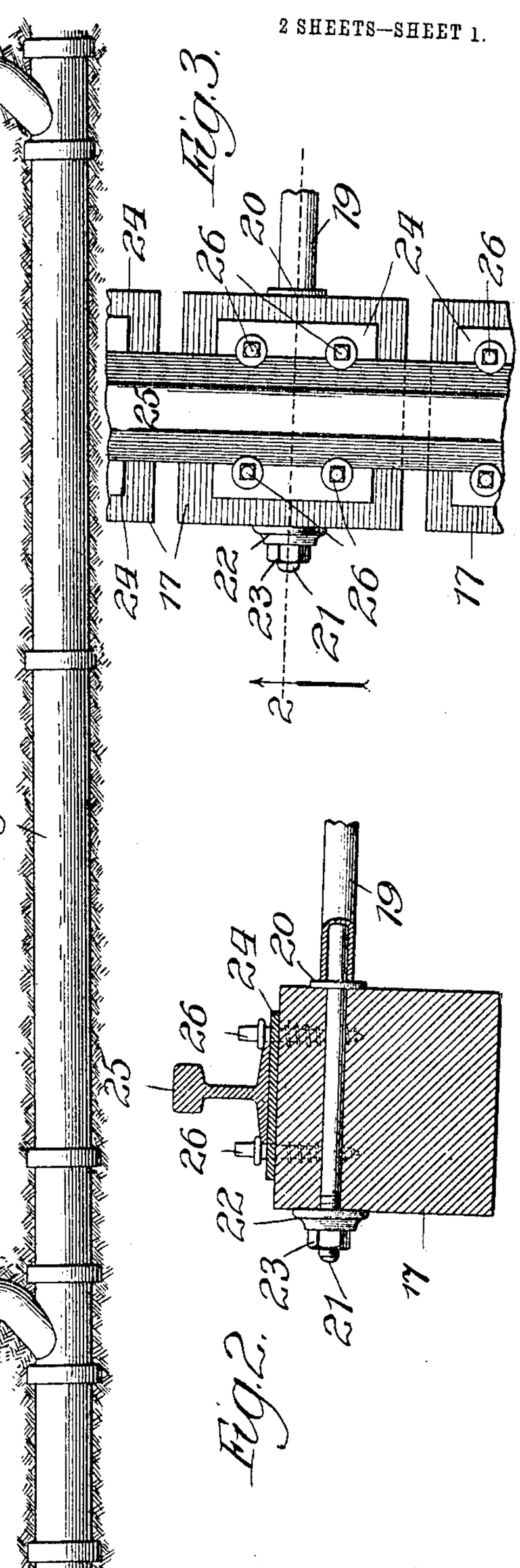

Fig. 3.

Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 4.

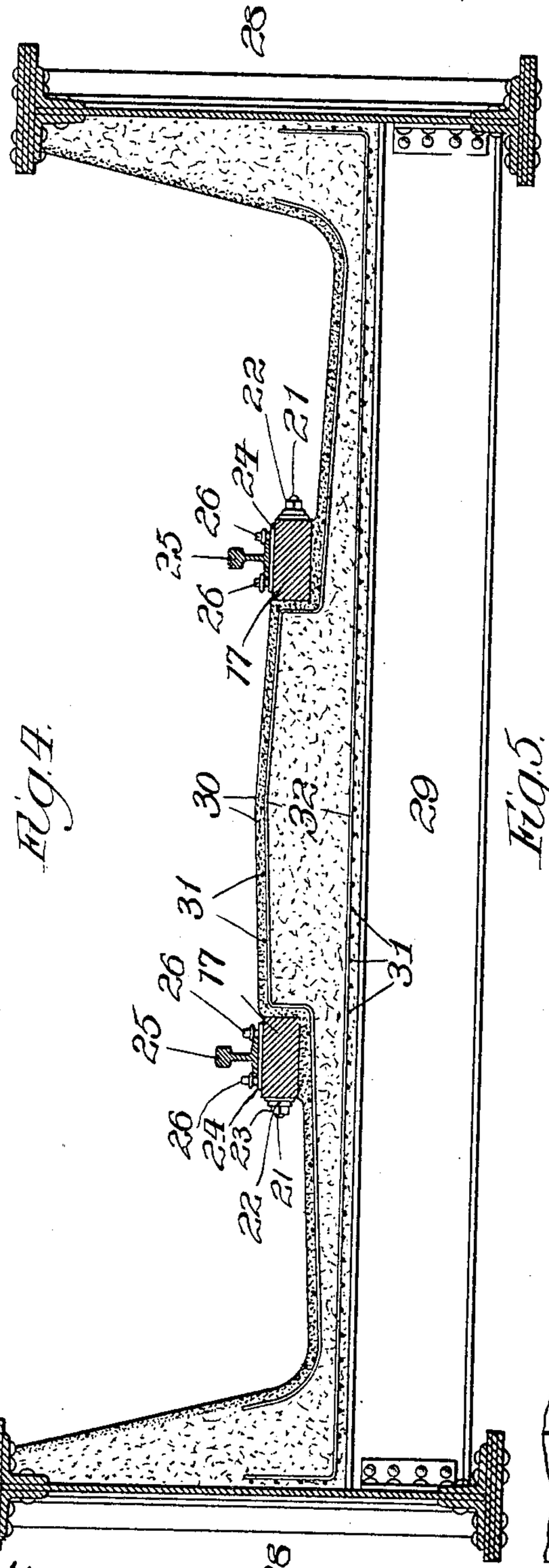
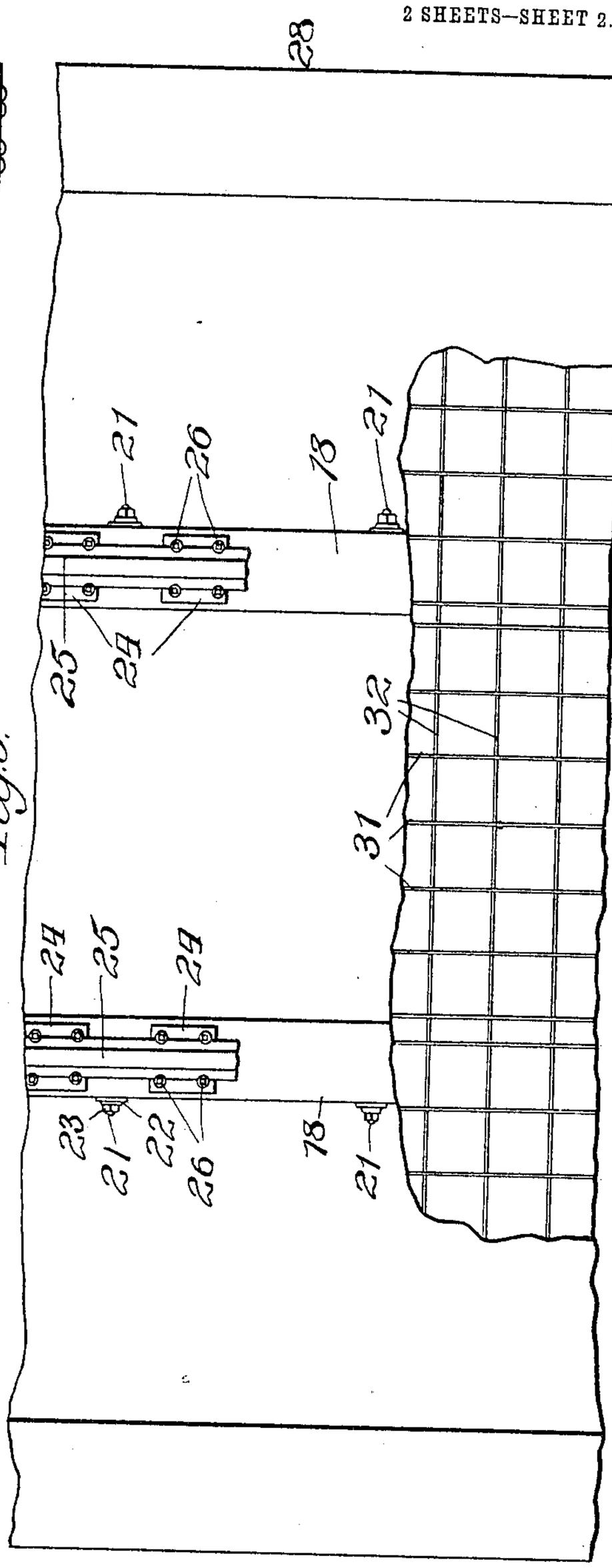


Fig. 5.



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CONCRETE ROAD-BED FOR RAILWAYS.

No. 819,081. Specification of Letters Patent. Patented May 1, 1906.

Application filed January 22, 1906. Serial No. 297,298.

To all whom it may concern:

Be it known that I, JULIUS W. SCHAUB, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new, useful, and Improved Concrete Road-Bed for Railways, of which the following is a description, reference being had to the accompanying drawings, forming a part of this specification, in which corresponding numerals of reference in the different figures indicate like parts.

The primary object of my invention is, generally stated, to so construct a road-bed for railways from concrete, preferably reinforced in any approved manner, that the rails may have a solid and rigid foundation with such vertical and lateral support that both the rails and road-bed may exert a unitary action in resisting strains.

A further object is to so construct said road-bed that that portion thereof which primarily forms the vertical and that which forms the lateral support may be integral, while at the same time the rails or the elements upon which they are directly placed may be detachably and by preference adjustably attached to said laterally-supporting portion and through that to each other.

Moreover, it is my purpose to provide means for thoroughly and completely draining every portion of said road-bed, so that no upheaval or unevenness can occur as a result of alternate freezing and thawing, all of which is hereinafter more particularly described, and definitely pointed out in the claims.

In the drawings, Figure 1 is a transverse vertical sectional view of a railway road-bed embodying the features of my invention. Fig. 2 is a like view in detail of one of the rail-supports, showing a portion of a tie-rod. Fig. 3 is a plan view thereof; and Figs. 4 and 5 represent modifications of a said invention, being a transverse vertical sectional and a plan view, respectively, of a bridge having my improved concrete road-bed applied thereto.

Referring to the drawings, 1, Fig. 1, represents a concrete substructure laid upon the ground of the full width of the road-bed, whether the latter is intended to provide for one or a plurality of tracks. Said substructure should be made of such thickness as may be necessary to insure the requisite solidity, usually about twelve inches in the thickest portion, and I prefer that it should be reinforced by means of longitudinal and transverse steel rods 2 3 of such dimensions and placed at such distances from each other as may be found most desirable, or other recognized forms of metal reinforcement may be adopted. That portion of the substructure 1 which is intended to lie beneath the railway-tracks and their supports is made level, as shown, from whence it is sloped downwardly in opposite directions, as indicated at 4 4, Fig. 1, for the purpose of drainage, as hereinafter described, the lowermost portion forming a gutter 5, adjacent to which, as shown upon the left-hand side of the figure, is located a curb 6, made integral with the substructure 1. While the drawings show but one track, the fact that it is broken upon the right is intended to indicate a duplication of the part shown, the lowest depression of the substructure between the two forming a gutter 7.

A series of transverse inclined drain-pipes 8, one of which is shown in Fig. 1, are located beneath the substructure at suitable intervals along the way and connect with the longitudinal drains 9, upon one or both sides of the roadway. Down-pipes 10 10, leading from the gutters, serve to carry the drainage therefrom, the whole serving to maintain the earth beneath the substructure in a relatively dry and uniform condition and immune from the exigencies of heavy rains and low temperature.

Extending along and above the surface of the substructure 1 I form a raised portion, (generally designated by 11,) which I term the "superstructure" and which may or may not be integral with the substructure 1, although I prefer that they should be built separately rather than at the same time and that there should be a distinct line of cleavage or demarcation between the top of the substructure and the bottom of the superstructure for the purposes hereinafter stated. Such a line of separation may be made by means of a sheet of paper or other suitable material, as indicated by the heavy line 12. A hollow space or chamber 13 may also be formed in said superstructure for the purpose of saving material, or it may be made solid. The superstructure is also preferably reinforced by means of steel rods 14 15 or otherwise.

The main body of the superstructure 11 is intended to lie between the track-rails, the surface thereof being substantially flush with the bottom of said rails and slightly rounded on top or inclined laterally from the center

line, so as to drain readily. The sides of the main body of said superstructure are made vertical, and laterally-extended ledges or benches 16 16, having flat or horizontal top surfaces, are formed upon opposite sides of and integral with said superstructure for the reception of longitudinal rail-supports 17, which may be either made in short lengths, as shown in Fig. 3, or continuous, as shown at 18 18 in Fig. 5. Said rail-supports are preferably formed from wood or other suitable elastic material, but may be made of concrete, as may be found most available.

Embedded in the raised portion of the superstructure at suitable distances apart, preferably about twenty-four inches, are a series of hollow metal pipes 19, Figs. 1, 2, and 3, against the ends of which are placed flat-faced washers 20, which are flush with the vertical faces of said superstructure. Tie-rods 21 are extended through said pipes and through bores in the rail-supports 17, said tie-rods being provided with suitable washers 22 and nuts 23. Said pipes are located so as to enable the tie-rods to pass through the rail-supports near the top, and upon tightening the nuts the rail-supports may be drawn firmly and securely against the vertical side faces of the superstructure. Tie-plates or shims 24 are placed upon the parts 17 over said tie-rods, upon which are laid the usual track-rails 25 25, which are secured in place by means of collar-screws 26, passing through said tie-plates into the parts 17. These tie-plates serve a double purpose—viz., to permit any water between the rails to drain beneath them and at the same time to properly distribute the load upon the longitudinal supports which carry the rails.

It will be seen from the foregoing that both lateral and vertical support is given to the parts 17 by means of the intervening superstructure 11 and its lateral ledges 16. As a further lateral support to the parts 17 I prefer to place in the gutter portions of the substructure between the curb 6 and the track or superstructure, as well as between the superstructures supporting any two tracks, a ballast 27 of loose rock, gravel, or sand, the top of which shall be flush with that of the track-supports, thereby permitting free drainage and providing a substantially level surface across the entire road-bed, or said area may be paved.

In order to preserve uniformity throughout the length of the road, I apply my improved superstructure to bridges. In Figs. 4 and 5 I have shown a modified construction, in which 28 indicates generally a well-known form of bridge having cross-girders 29, upon which a superstructure 30, corresponding in all essential particulars to that above described, is laid, the only difference being that it is extended laterally to the main bridge-girders. Reinforcing-rods 31 32 are likewise employed, as in the above-described structure.

While I prefer to use the means described for insuring a line of cleavage between the substructure and superstructure, I do not wish to be confined thereto, as it is well known that if fresh concrete be placed upon that already hardened the two will not unite with great firmness, and breakage will first occur upon the line of juncture.

One prominent advantage in making the superstructure independent of the substructure is that portion may be more readily removed for purposes of repair or for putting in switches, frogs, or crossings; but it is obvious that where no changes are contemplated or repairs likely to be needed the entire structure may be made integral.

The advantages of my improved road-bed are that it will largely eliminate maintenance and renewals common to the present construction, will insure an easier-riding track, reduce repairs to rolling-stock, lessen the power required to haul trains, and add to the safety and comfort of passengers. Moreover, by reason of the tie-rods the gage of the track may be maintained much more readily and with greater accuracy and certainty than is possible with the use of lateral wood ties and spikes heretofore employed.

Having thus described my invention, I claim—

1. A road-bed for railways having longitudinal rail-supports, said road-bed consisting of a body of concrete located between and beneath said rail-supports, and means for detachably anchoring said rail-supports to each other as well as to that portion of said body lying between them.

2. A road-bed for railways having longitudinal rail-supports, said road-bed consisting of a body of concrete located between and beneath said rail-supports, and means for rigidly connecting said rail-supports to and through said body of concrete.

3. The combination with a railway having longitudinal rail-supports, of a road-bed comprising a body of concrete located beneath and between said rail-supports, the portion between said supports being provided with transverse openings, and tie-rods arranged to pass through said openings and rail-supports to bind the latter to said road-bed.

4. The combination in a road-bed having longitudinal rail-supports, of a concrete substructure, a superimposed concrete structure arranged to extend beneath and between said rail-supports to afford lateral and vertical support thereto, a line of cleavage being formed between said substructure and said superimposed structure, and means for detachably anchoring said rail-supports to that portion of said superimposed structure lying between them.

5. A road-bed for railways having longitu-

dinal rail-supports, said road-bed comprising a body of concrete having portions located between and beneath said rail-supports, means for detachably anchoring said rail-supports to each other as well as to that portion of said body lying between them, means for securing lateral drainage and means for conveying said drainage away from the road-bed.

6. A road-bed for railways having longitudinal rail-supports, said road-bed consisting of a concrete substructure laid upon the ground, longitudinal gutters therein communicating with suitable drain-pipes for preventing water from entering the ground beneath, a superimposed concrete structure arranged to extend beneath and between said rail-supports, a line of cleavage being formed between said substructure and said superimposed structure, means for detachably anchoring said rail-supports to that portion of said superimposed structure lying between them, and plates upon said rail-supports to receive the rails, whereby drainage between the rails may pass between them to said gutters and the load be distributed upon said supports.

7. The combination with a railway having longitudinal rail-supports, of a road-bed comprising a body of concrete located beneath and between said rail-supports to give lateral and vertical support thereto, the portion between said supports having a series of transverse pipes embedded therein, and tie-rods arranged to pass through said pipes and track-supports to bind the latter to said road-bed.

8. A road-bed for railways having longitudinal rail-supports, said road-bed comprising a body of concrete having portions located between and beneath said rail-supports, means for detachably anchoring said rail-supports to each other as well as to that portion of said body lying between them, and means for laterally supporting said rail-supports from the outside.

9. The combination with a railway having longitudinal rail-supports, of a road-bed comprising a body of concrete located beneath and between said rail-supports, said concreted bed extending outwardly and downwardly from said rail-supports to form drainage-gutters, means for detachably anchoring said rail-supports to the middle concrete portion between them, means for draining said middle portion laterally into said gutters and loose ballast in said gutters for giving lateral support to the outer faces of said rail-supports.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 19th day of January, 1906.

JULIUS W. SCHAUB.

Witnesses:
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CARRIE E. JORDAN.