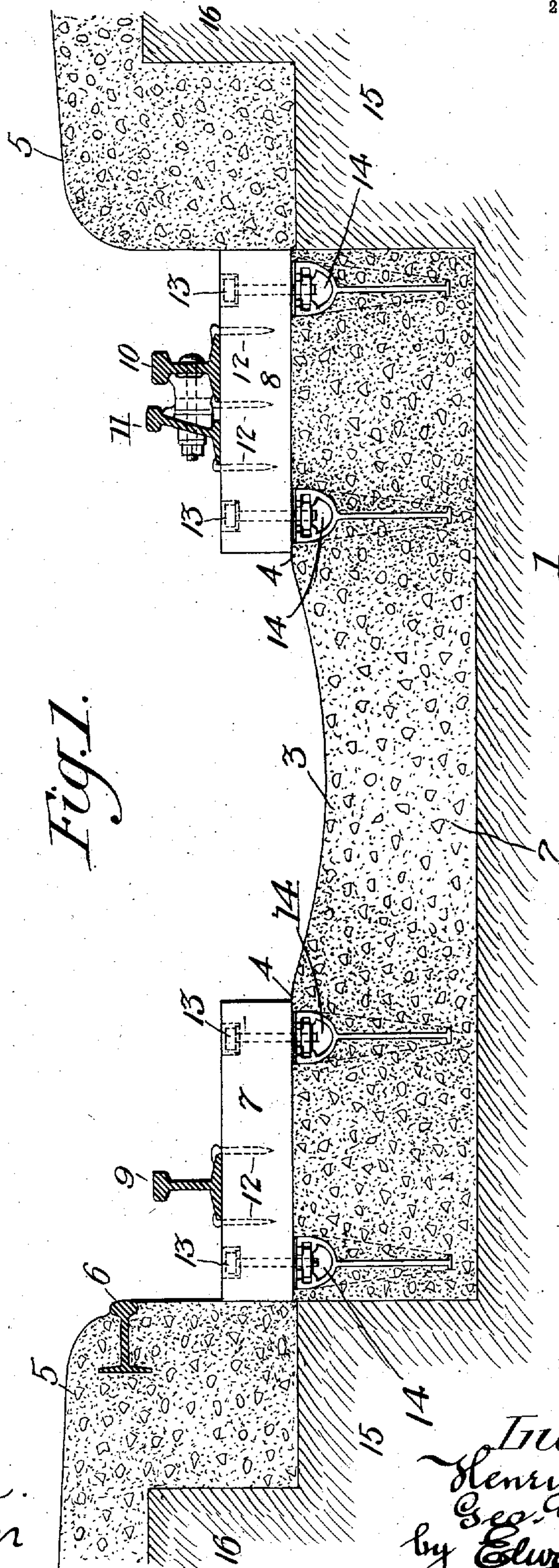


H. B. NICHOLS & G. B. TAYLOR.
RAILWAY TRACK CONSTRUCTION.
APPLICATION FILED MAR. 2, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
D. W. Edlin.
James H. Mann

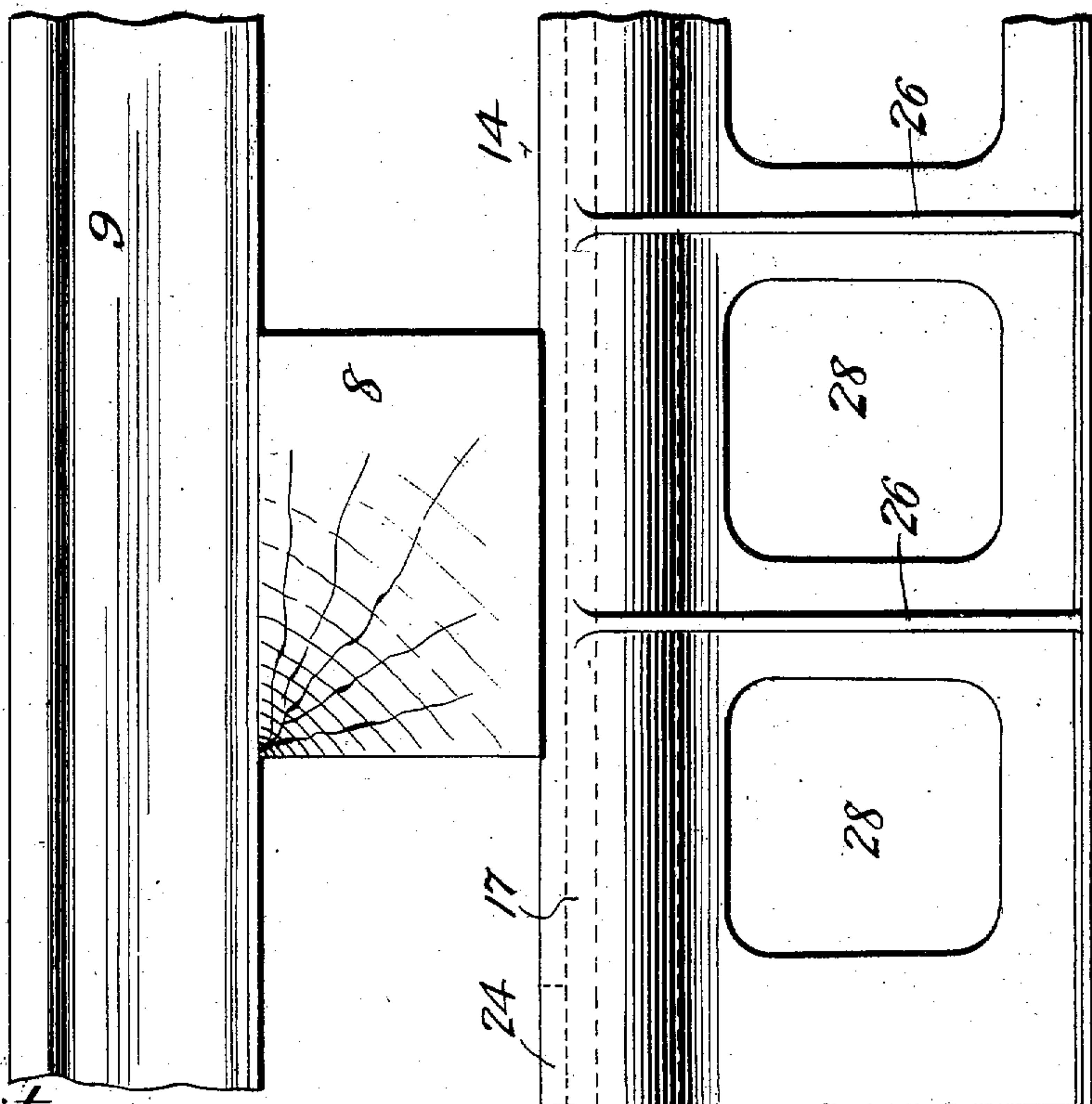
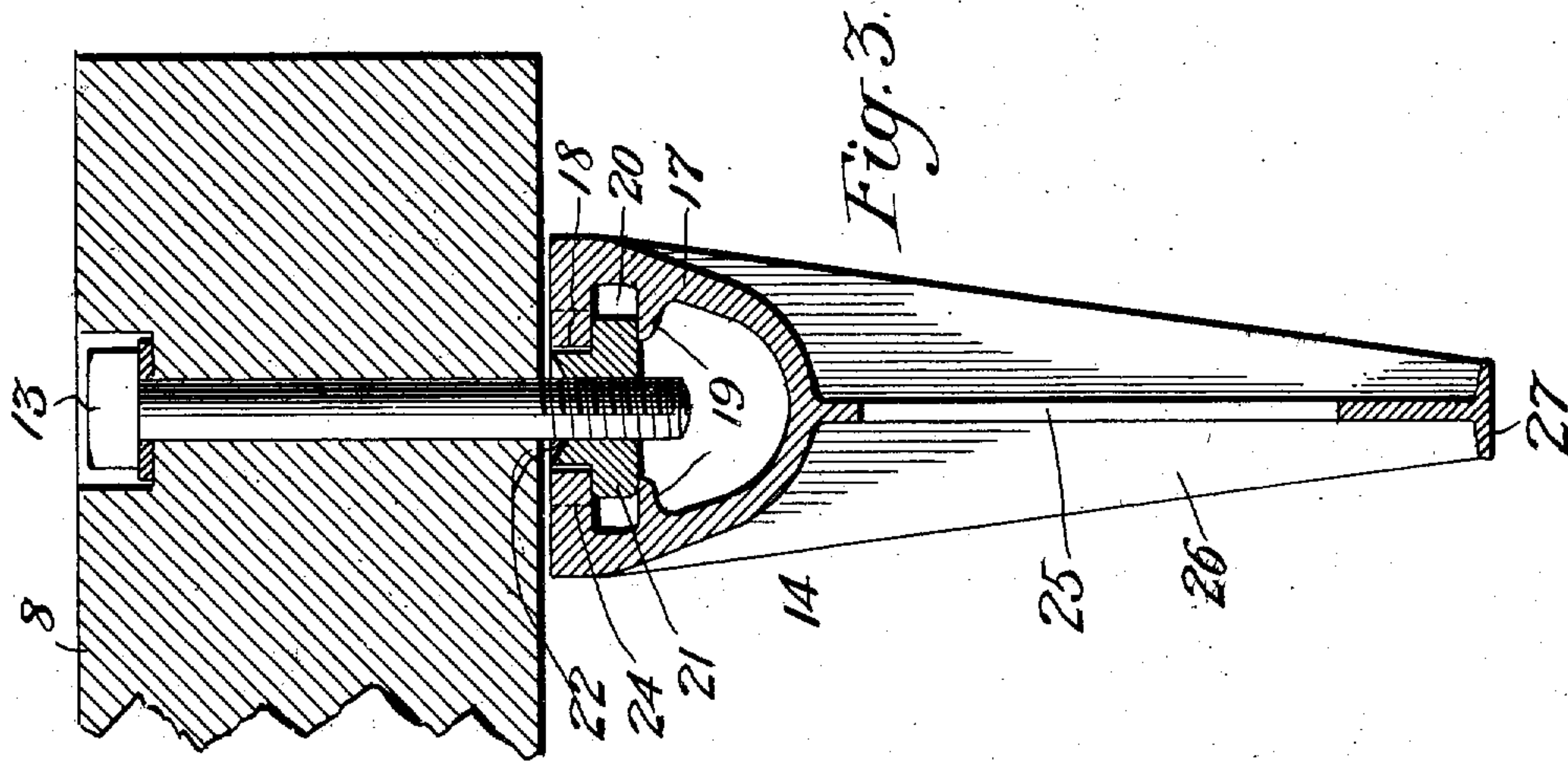
Inventors
Henry B. Nichols
Geo. B. Taylor
by Edward E. Bennett

No. 860,558.

PATENTED JULY 16, 1907.

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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY B. NICHOLS AND GEORGE B. TAYLOR, OF PHILADELPHIA, PENNSYLVANIA.

RAILWAY-TRACK CONSTRUCTION.

No. 860,558.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed March 2, 1906. Serial No. 303,852.

To all whom it may concern:

Be it known that we, HENRY B. NICHOLS and GEORGE B. TAYLOR, citizens of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Railway-Track Construction, of which the following is a specification, reference being had therein to the accompanying drawing.

Our invention relates to railway track construction, and has for its object the improvement of what are known as monolithic road-beds. Such road-beds are usually constructed of concrete, suitably braced and reinforced, upon which the rails are supported, being held down by suitable anchoring devices which themselves support no weight.

Our present invention is particularly applicable to curves, although it is by no means limited thereto.

It contemplates the use of short ties carrying the rails and themselves carried on the concrete bed. These ties are held down by anchor irons of peculiar design, which we shall claim, and the rails are spiked or otherwise held in place. The anchor-irons are made in continuous lengths, the cross-section showing a hollow slotted head to receive bolts from the ties, a long web cut out in rectangles to permit the concrete to pass through from side to side, stiffening flanges at intervals along the web, and a narrow foot flange. A shape of this kind may be bent as much as curves of ordinary radius require, without injury to the figure, the only precaution found necessary being the insertion of a strip in the slot to keep it from closing.

Our invention is illustrated in the accompanying drawings, in which

Figure 1 is a sectional view of a road-bed and rails laid in accordance with our invention. Fig. 2 is a side view of one of the anchor-irons, a tie and a rail, on a somewhat enlarged scale and partly broken away. Fig. 3 is a cross-section to the same, on a still larger scale.

Referring to Fig. 1, 1 is the earth or other foundation upon which the road-bed is laid. We excavate a trench in this with side abutments or steps, 15—16. Along each side of the trench between the abutments 15, we carry the continuous anchor-irons, 14, carrying nuts to receive the bolts, 13, through the ties, 7 and 8, whereby the latter are held down upon the concrete, 2, with which the trench is filled up to the level, 4, so as completely to embed the irons. In surfacing this concrete we preferably lay brass or other cover strips over the slots in the irons, and gage the upper face of the concrete flush with these; then when these strips are removed, the concrete is left projecting somewhat above the top of the irons. The ties, 7 and 8, rest upon the concrete and not upon the irons. The side steps or trenches within the walls, 16, are also filled with concrete as shown at 5, which becomes particularly impor-

tant on curves, serving to confine the wheels in case of accidental derailment. At such points we also provide a guard rail, 11, beside the inner rail, 10, of the curve, and a fender, 6, beside the outer rail, 9, the same consisting of a T rail embedded in the concrete, 5.

The details of our holding devices for the ties are best seen in Figs. 2 and 3. The anchor, 14, we prefer to make of cast malleable iron, with a hollow head, 17, having a longitudinal slot, 18, inwardly projecting lips, 19, transverse strengthening flanges, 26, extending across the long vertical web, 25, and finally a short transverse foot flange, 27. The bolt, 13, passes down through the tie, 8, and enters the slot, 18, in the anchor, wherein it is secured by the nut, 21. The design of this nut and of the hollow head we have found of importance, since the bolt must be introduced from above, and the nut must resist the vertical pull. In order to take the thrust of the bolt as it comes down, and to carry the weight of the nut at all times, we provide the lip, 19. The nuts may be introduced from one end of the anchor by sliding them into the slot, 18, and the space, 20, above the lips, 19, or we may and preferably do provide enlargements in the slots at intervals, as shown at 24, through which the nuts may be dropped onto the lips, 19, and then pushed along. The upper part of each nut is dished out or concaved to guide the end of the bolt when it is inserted.

In laying track according to our method, the trench, 2, is first excavated as already stated. The anchor-irons or girders, 14, are then temporarily supported in place, with the spacing strips on their upper faces, and the concrete filled completely into the trench. It passes freely from side to side through the openings, 28, cut in the webs of the girders, and so when it hardens they are held positively and irremovably. In surfacing off, due allowance is made for the shrinkage of the concrete when it sets. The surfacing strips are then removed, and ties, 7 and 8, are laid upon the hardened concrete. The nuts, 21, have previously been introduced into the hollow heads, 17, and pushed along opposite their respective ties. The bolts are then introduced from the top, and after final adjustment of the ties they are set up tightly and we have found they remain tight for an indefinite period. As we use this construction very largely in sub-ways and the like, where the air is always more or less charged with moisture, conditions are of course favorable.

Drainage is provided for by the intermediate gutter, 3, so that the anchor-irons are kept free from flooding.

The value of this invention will be apparent when its applicability to curve construction is considered. Great difficulty has heretofore been met with in attempting to adjust ties, or in fact any fastening devices, on curves over a concrete bed. The anchors being

embedded cannot move, and wherever iron anchors are provided with drilled holes it is impossible to set the ties radially. We obviate these difficulties by using our slotted construction, which permits the ties to be set at any angle. It should be remarked that the nuts are squared to prevent turning in the slots.

Having thus described our invention what we claim and desire to secure by Letters Patent is:—

1. In railway track construction, a monolithic composition supporting body, an anchor having a hollow head and embedded in said body, a rail supported on the monolith, and securing means for the rail attached within the hollow head of the anchor.

2. In railway track construction, a monolithic composition supporting body, an anchor embedded therein and provided with a slotted head, a rail supported on the monolith, and securing means for said rail engaging the anchor through the slot, whereby said means may be shifted for purposes of adjustment while the anchor remains stationary.

3. In railway track construction, a monolithic composition supporting body, a rail supported thereon, and means for holding the rail down upon the body, said means being freely movable in the direction of the length of the rail.

4. In railway track construction, a base and a rail support carried thereby, of anchors in the base, and means carried by the rail support adapted to cooperate with the anchors to secure said rail support in adjusted position.

5. In railway track construction, a monolithic composition supporting body, anchor-irons or girders having longitudinally slotted heads, nuts within said heads, rails upon the monolith, and bolts for securing the rails to said nuts through the slots.

6. In railway track construction, a monolithic composition supporting body, anchor-irons or girders having longitudinally slotted heads, embedded in said monolith, cross-ties resting upon the latter, nuts within the slotted heads and bolts passing through the ties and engaging said nuts, together with rails secured upon said ties.

7. An anchor-iron or girder for railway rails, comprising an extended body having a perforated vertical web with transverse stiffening flanges, a longitudinal foot flange and a hollow slotted head, together with means within said head to support nuts or other securing devices in proper relation to the slot.

8. In railway track construction, a rail, a supporting base, anchors permanently attached to said base, and securing means engaging said anchors and having free longitudinal adjustment with respect thereto.

9. In railway track construction, a monolithic body, a rail support mounted thereon, anchors embedded in said

monolithic body, and means carried by each end of the rail support for engagement with the anchors whereby relative adjustment of either end of said support with respect to said monolithic body may be had.

10. In railway track construction, a monolithic body, rail supports thereon, anchors embedded in said monolithic body, and securing means for the rail supports engaging said anchors and having free longitudinal adjustment with respect thereto.

11. In railway track construction, a road bed having longitudinally arranged rail supports, said road bed consisting of a body of concrete extending beneath said rail supports, and means for detachably anchoring said rail supports to said body of concrete.

12. In railway track construction, a road bed, longitudinally arranged rail supports thereon, said road bed consisting of a monolithic body located between and beneath said rail supports, and means independent of the supports for rigidly anchoring them to said body.

13. In railway track construction, a concrete road bed, a plurality of rail supports extending along said bed, rails mounted upon said supports, independent means to anchor said supports rigidly to the concrete road bed, and means to secure the rails upon the supports.

14. In railway track construction, a concrete road bed, a plurality of rail supports resting thereon, means independent of the supports for detachably anchoring them to the concrete road bed, and means for securing the rails upon the supports.

15. In railway track construction, a concrete road bed, a plurality of rail supports arranged thereon in parallel lines, rails extending along and carried upon said supports, independent means for anchoring the supports to the concrete, and means for securing the rails to the supports, the arrangement being such that the gage of the supports and hence the gage of the rails is determined by the spacing of the supports on the concrete.

16. In railway track construction, a concrete road bed, longitudinally arranged supports carried thereon, anchors therefor embedded in the concrete, and rails carried upon said supports.

17. In railway track construction, a monolithic body, rail supports thereon, separated anchors embedded in the concrete, and means for detachably securing each end of the supports to its respective anchor whereby flexibility of adjustment is obtained.

In testimony whereof we have affixed our signatures in presence of two witnesses.

HENRY B. NICHOLS.
GEORGE B. TAYLOR.

Witnesses:

C. B. VOYNOW,
W. F. KUNKEL.