A. STARK.

CONCRETE RAILWAY TRACK SUPPORT.

APPLICATION FILED JAN. 17, 1910. RENEWED OCT. 7, 1910.

991,906. **Patented May 9, 1911.**

Fig. 1.

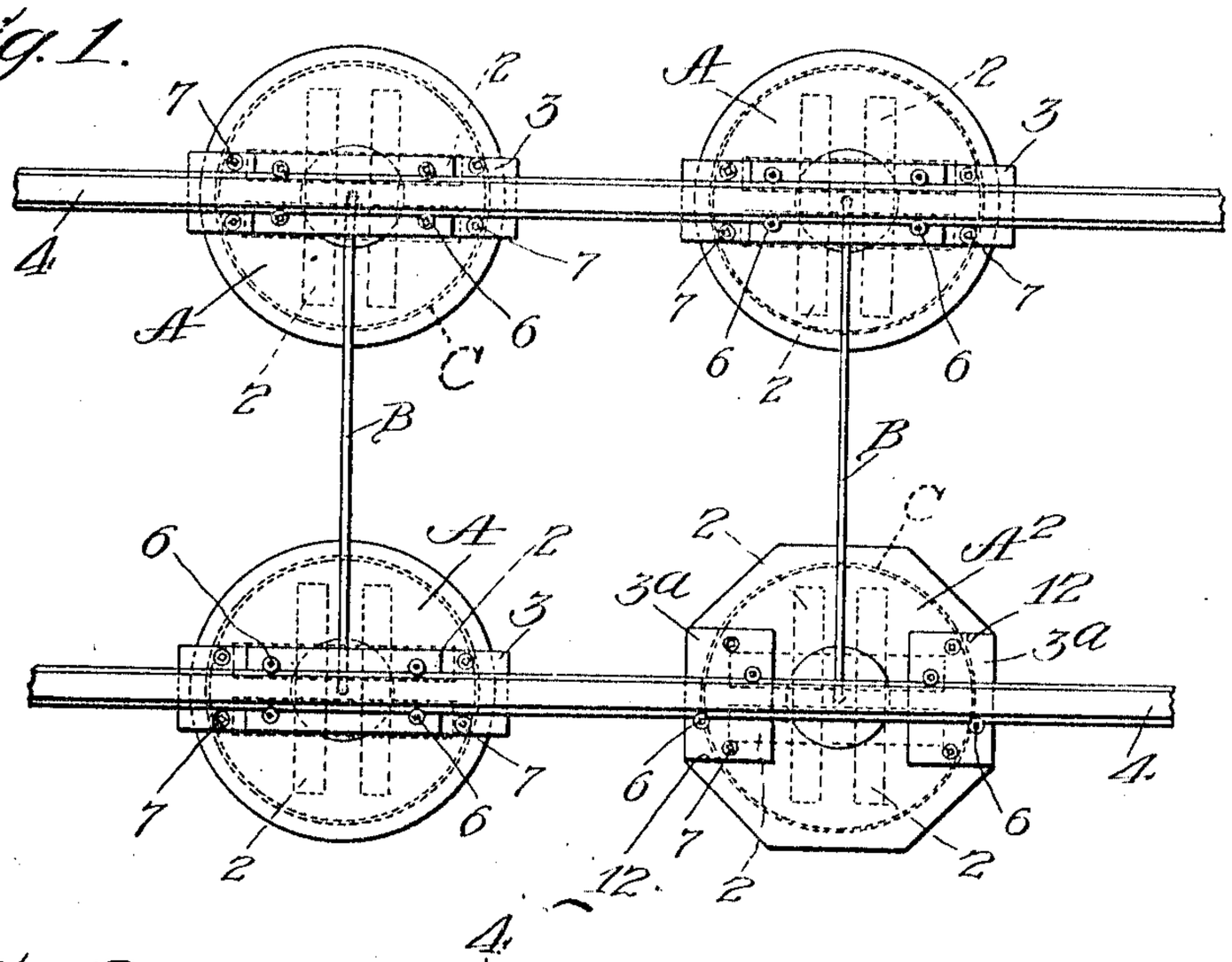


Fig. 2.

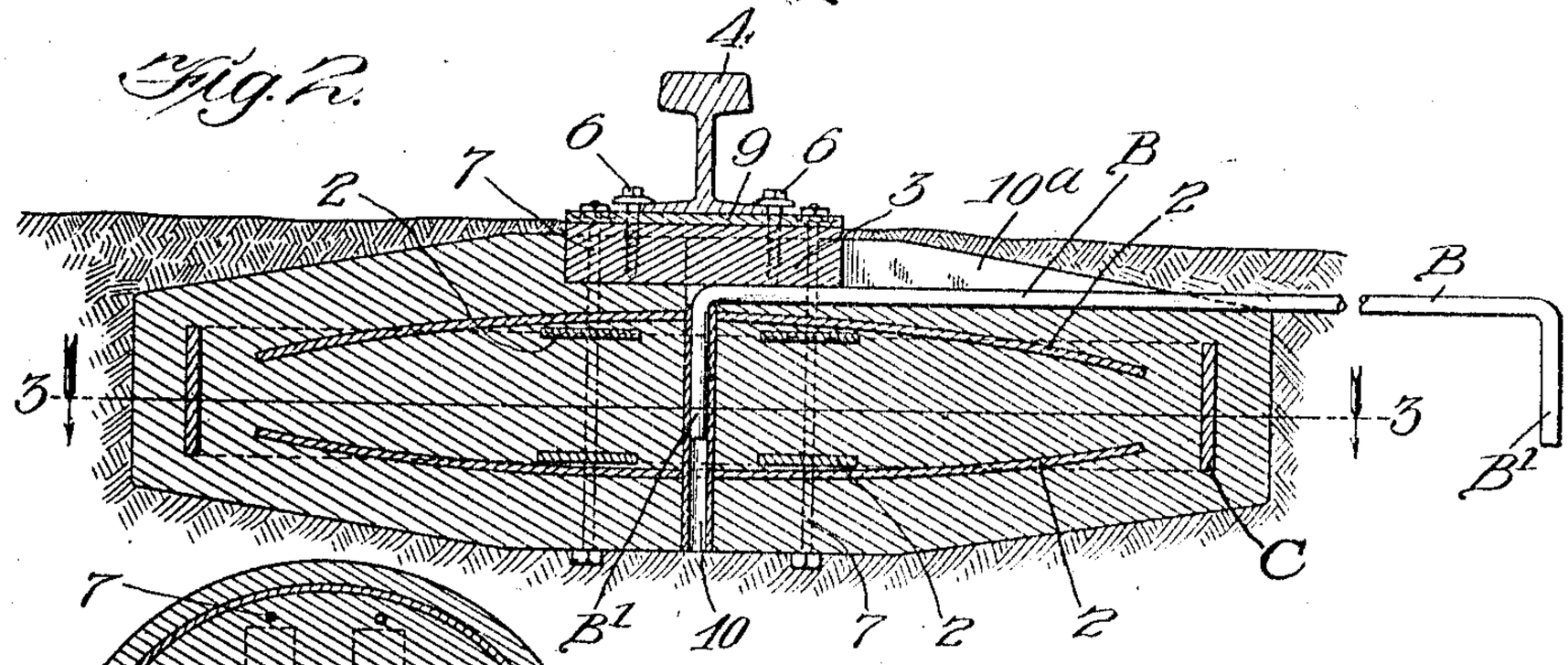


Fig. 3.

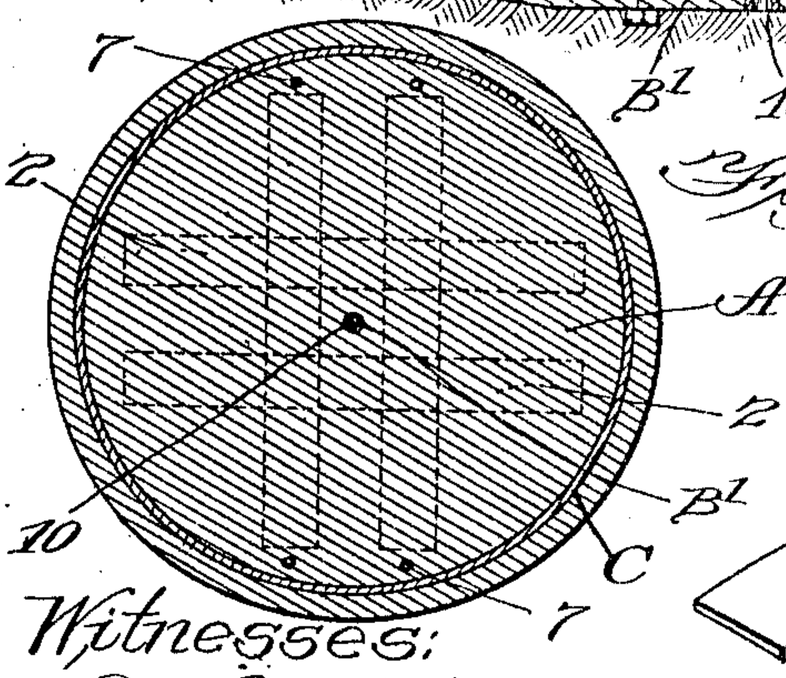
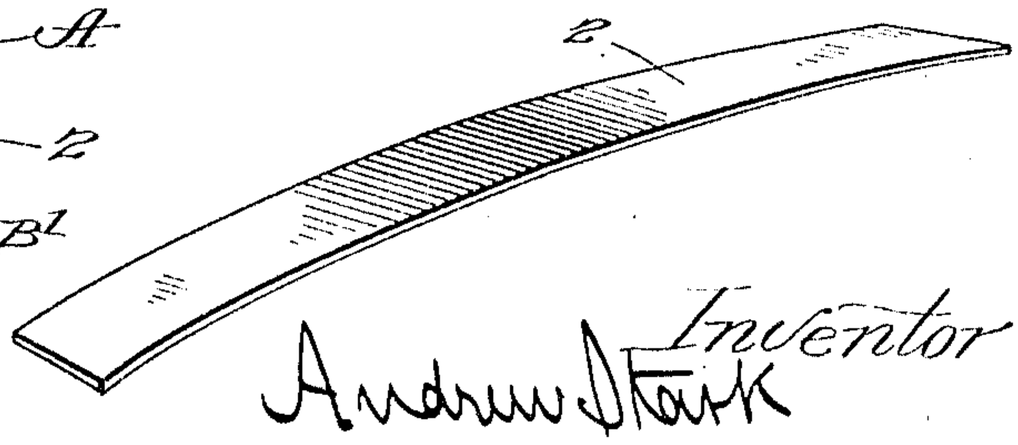


Fig. 4.



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CONCRETE RAILWAY-TRACK SUPPORT.

991,906. Specification of Letters Patent. Patented May 9, 1911.

Application filed January 17, 1910, Serial No. 538,524. Renewed October 7, 1910. Serial No. 585,891.

To all whom it may concern:

Be it known that I, ANDREW STARK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Concrete Railway-Track Supports, of which the following is a specification, reference being had to the drawings forming a part thereof.

The purpose of this invention is to provide an improved form of support for railway tracks in lieu of ties of the ordinary construction.

It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings: Figure 1 is a plan view of a section of the railway track having track supports embodying this invention. Fig. 2 is a detail section at the line 2—2 on said Fig. 1. Fig. 3 is a horizontal section of one of the supports at the plane indicated by the line 3—3 of Fig. 2, but on a smaller scale. Fig. 4 is a perspective view of one of the reinforcements.

This invention contemplates supporting the rails of a railway track by metal-reinforced cement blocks or anchors, positioned opposite each other under the two rails and a short distance apart along each rail, the opposite anchors or blocks being connected together by any convenient form of tie-rod to maintain the proper spacing between the rails. The concrete block may be either circular or polygonal as seen in Fig. 1 where both forms are shown. It is in general of disk form, preferably thickest at the middle and tapering off in all directions to the periphery. The reinforcement comprises a metal band C, preferably endless and substantially circular about a vertical axis through the thickest part of the block, such band being positioned a short distance inward from the periphery, so as to be fully protected by the cement concrete of the block in which it is completely embedded. Other desirable reinforcement comprises bars, 2, 2, positioned transversely with respect to each other, preferably approximately radially flexed approximately to the taper of the block from center to periphery. Two pairs of such bars are shown positioned near the lower side and flexed upward at their ends, and two pairs of similar bars being positioned near the upper side and flexed downward at their ends, as seen in Fig. 2. The block is formed with a recess in the upper side extending entirely across the block at the middle and deep enough to accommodate a plank, 3, which is designed to form a cushion to seat the rail, 4, and afford engagement for the rail-screwing spikes, 6.

It will be understood that the cement blocks, A, are positioned in the road bed with said recess and the planks therein extending longitudinally of the rails as seen in Fig. 1. The blocks may be molded with vertical apertures inside the annular reinforcing band C, for suitable fastenings, as bolts, 7, by which the planks, 3, are secured in said recesses; and preferably, in order to offset the tendency of the rail extending lengthwise of the grain of the plank to split the plank, metal plates, 9, are interposed between the rail and the planks, the plates extending entirely across the width of the plank to afford greater bearing thereon than is afforded by the base flange of the rail. The screw spikes, 6, preferably take through this plate as shown. The polygonal form in which one of the blocks is shown in Fig. 1, has the advantage of offering more resistance to rotation or turning in the road bed than the cylindrical or strictly circular block, and may be preferred for this reason.

Provision for connecting together the opposite blocks, A, A, is preferably of the form illustrated, consisting in forming the block with a vertical central aperture which is produced in molding by lodging a vertical thimble, 10, in the mold at the center and forming in the upper side of the block a groove, 10^a, extending to the periphery in the direction directly transverse to the recess which accommodates the plank, 3, such groove extending below the bottom of said recess a sufficient depth to accommodate the diameter of the coupling, B, which consists of a rod having its end portions, B^1, bent at right angles to the remainder of the rod and parallel to each other and adapted thereby to be engaged in the central apertures of two opposite blocks, A, A. This rod can be fully protected by the ballast of the road bed which will cover it, a finer portion of the ballast filling the grooves, 10^a. The rod will be readily accessible by excavating the ballast whenever it is necessary to remove the rod.

In order to accommodate the thimble and

permit the easy formation of the axial aperture for the coupling, the transverse reinforcing bars are preferably positioned so that they cross each other a little aside from the center, and preferably also are in pairs, the two of each pair being spaced apart and at opposite sides of the center, two pairs crossing each other at the upper side and two pairs similarly crossing each other at the lower side, thus encompassing the central aperture and the thimble therein, and giving the concrete block the necessary transverse reinforcement both longitudinally and transversely of the track. An important advantage is obtained by this particular expedient for coupling together the opposite blocks, A, A, in that the axial aperture lying within the thimble, 10 is adapted to receive a rod which is thrust through it, and used as a handle for rolling—or, if necessary, for lifting and carrying the block from point to point in construction.

In either the circular or polygonal form it may sometimes be deemed advantageous, in order to diminish the weakening of the block which is caused by the channel in which the plank, 3, is lodged extending entirely across the block, A, and also in order to render it more convenient to have the rail cushioning block positioned with its grain transverse to the rail to form instead of the diametric channel for the plank, 3, two notches or pockets, 12, 12, at diametrically opposite positions in the upper side of the block and lodge in them blocks, 3^a, 3^a, somewhat thicker than the depth of the channel so that they protrude above the intervening central portion of the block, A^2, such intervening portions thus constituting a tie across what would otherwise be a continuous diametric channel in the top of the block. These notches or pockets may be made somewhat longer than the width of the channel in the other form, and the blocks lodged within them may have their grain extending transversely of the rail; and in this case the metal plate preferably employed in the other form to prevent splitting the plank, 3, may be dispensed with. The form of the block on the under side, tapering from the midlle to the edges, greatly facilitates tamping the ballast under the block and tends to insure firm support in the road bed. The tapering form of the upper surface, besides resulting in the saving of material which would not add appreciably to the strength tends to cause water to drain off from the top of the block and thereby to be drawn away from the wooden plank.

It will be obvious that actual continuity of the reinforcing band is not essential to its effectiveness, though it will preferably be made continuous; but the adhesive grasp of the concrete upon the band at all points when the band is embedded as described, supplements the tenacity of the band itself, so that the value of the metal in the band for the purpose of rendering the entire disk rigid in the manner in which a wheel is rendered rigid by the encompassing tire, is not dependent upon the continuity of the band to any such extent as rigidity of the wheel is dependent upon the continuity of its tire.

Obviously so far as the strength of the block is concerned, for carrying the load and resisting fracture, it is not necessary that it should be tapered or diminished in vertical dimension from center to periphery, but it is of importance that the encompassing band should be or extend at a level lower than that at which the load is imposed, whether or not extend up to that level and whether or not the concrete is sloped from the center outward as shown. The value or importance of the taper or slope from center to periphery of the concrete block is as to the lower side, that it facilitates tamping, and as to the upper side facilitates drainage,—and that in this form the quantity used is only what contributes to strength.

I claim:

1. A railway track support consisting of a cement concrete block, having an annular reinforcing band positioned within the concrete near the periphery, and transverse reinforcing bars positioned respectively near the top and bottom of the disk.

2. A railway track support consisting of a cement concrete block of disk form thickest in the middle and tapering therefrom to the periphery, having an annular reinforcing band positioned within the concrete near the periphery, and metal reinforcing bars extending transversely near the top and bottom of the disk and oppositely flexed to approximate the radial taper.

3. A railway track support consisting of a concrete block of disk form thickest in the middle and tapering therefrom to the periphery, having an annular reinforcing band positioned within the concrete near the periphery, and transverse reinforcing bars within the concrete near the top and bottom of the disk.

4. A railway track support consisting of a concrete block of disk form thickest in the middle and tapering therefrom to the periphery, having an annular reinforcing band positioned within the concrete near the periphery, and transverse metal reinforcing bars near the top and bottom of the disk oppositely flexed to approximate the radial taper of the concrete disk.

5. A railway track support consisting of a concrete block, having an annular reinforcing band positioned within the concrete near the periphery; transversely extending metal reinforcing bars positioned respectively near the top and bottom of the disk

crossing each other a little aside from the center, the concrete block having a vertical aperture at the center.

6. A railway track support consisting of concrete cement blocks oppositely positioned under the respective rails, and a coupling which connects them, each block being of disk form and having an embedded metal reinforcing band encompassing the axis near the periphery and vertically extending apertures within the band, the coupling consisting of a rod having its ends bent at an angle to the intermediate portion parallel to each other and engaged in said vertical apertures of the opposite concrete blocks.

7. A railway track support consisting of concrete cement block oppositely positioned under the respective rails, and couplings which connect such oppositely positioned blocks; each block being of disk form having an embedded metal reinforcing band encompassing the axis near the periphery, a vertical aperture located within the band and a groove in the upper surface extending from said aperture to the periphery; the coupling consisting of a rod having its end portions bent at an angle to its intermediate portion and parallel to each other and engaged within said vertical aperture, the intermediate portion being lodged in the grooves.

8. A railway track support consisting of concrete blocks oppositely positioned under the respective rails, each block being of disk form having an embedded metal reinforcing band encompassing the axis near the periphery, a recess in the upper surface and a vertical aperture at the center opening into the bottom of said recess, and a groove leading from the upper end of such vertical aperture to the periphery transversely to the said recess; cushioning blocks lodged in the recesses of the opposite concrete blocks, and a coupling connecting each two opposite concrete blocks consisting of a rod having its ends bent at right angles to the intermediate portion and parallel to each other engaged in said vertical recesses and lodged in said grooves under the cushioning blocks.

9. A railway track support consisting of a cement concrete block having an annular reinforcing band positioned within the concrete near the periphery, and reinforcing bars extending from near the axis outward toward the periphery.

10. A railway track support consisting of concrete blocks oppositely positioned under the respective rails, each block having a metal reinforcing band encompassing its vertical axis near the periphery, and a recess leading from one surface vertically within the band and a coupling connecting the oppositely positioned blocks, having its ends adapted for engagement within said recesses.

11. A railway track support consisting of concrete blocks oppositely positioned under the respective rails, each block having a metal reinforcing band encompassing its axis near the periphery, couplings connecting the oppositely positioned blocks and means for engaging the couplings with the blocks inside the bands.

12. A railway track support consisting of a cement concrete block of disk form having a metal reinforcing band encompassing the axis, embedded in the concrete near the periphery.

13. A railway track support consisting of a cement concrete block having a metal reinforcement consisting of a relatively wide band positioned vertically edgewise embedded in the concrete near the periphery.

14. A railway track support consisting of a cement concrete block having a metal reinforcement consisting of a short upright cylinder embedded in the concrete near the periphery of the block.

15. A railway track support consisting of a cement concrete block having a metal reinforcement consisting of a short upright cylinder embedded in the concrete near the periphery of the block, and transverse reinforcing bars embedded in the concrete positioned respectively near the top and near the level of the top and bottom of said reinforcing cylinder.

16. A railway track support consisting of a cement concrete block having an annular reinforcing band positioned within the concrete near the periphery, and having in its upper side a recess for seating a rail-cushioning block, and bolt apertures extending through the concrete block within the area of said recess and inside the annular reinforcing band.

17. A railway track support consisting of a cement concrete block having an annular reinforcing band positioned within the concrete near the periphery, and having in its upper surfaces recesses or pockets extending in from the edge at opposite sides for receiving cushioning blocks, and bolt apertures extending from the bottoms of such pockets through the concrete block within the reinforcing band.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 4th day of January, 1910.

ANDREW STARK.

Witnesses:
C. J. CHRISTOFFEL,
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