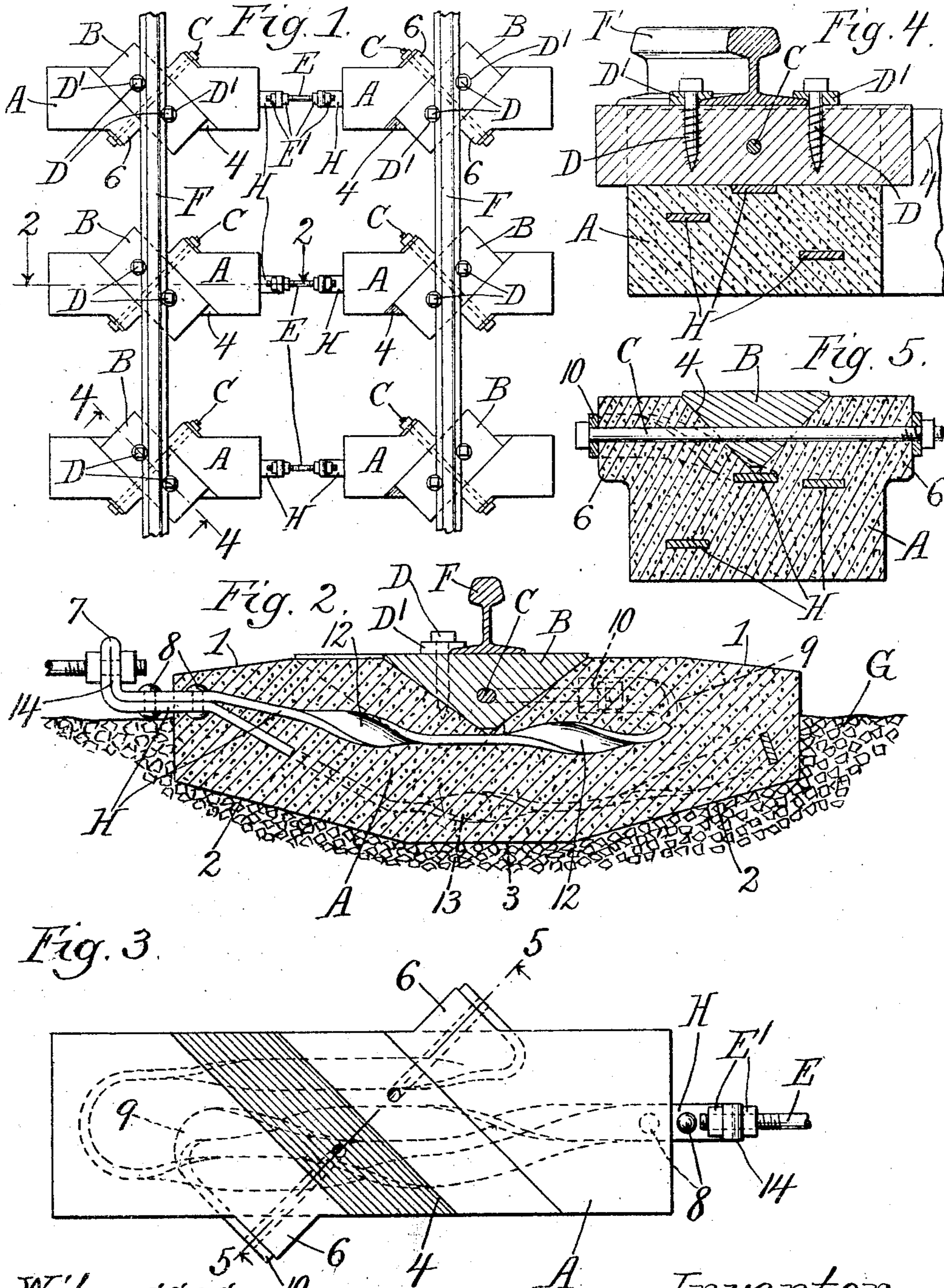


A. STARK.  
RAILWAY TRACK STRUCTURE;  
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923,453.

Patented June 1, 1909.



Witnesses.  
Edward F. Wray.  
M. Gertrude Ady

Inventor.  
Andrew Stark  
by Burton & Burton  
his Attys

# UNITED STATES PATENT OFFICE.

ANDREW STARK, OF CHICAGO, ILLINOIS.

## RAILWAY-TRACK STRUCTURE

No. 923,453

Specification of Letters Patent.

Patented June 1, 1909.

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*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 Railway-Track Structures, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved structure for railway tracks and road-beds, embodying, in lieu of the common timber tie, a substitute in which the substantial element of stability is a cement or concrete rail support.

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

In the drawings:—Figure 1 is a plan view of a short section of railway track embodying this invention. Fig. 2 is a detail section at the line 2—2 on Fig. 1 on an enlarged scale. Fig. 3 is a plan view of the cement block employed as a base for the rail seat. Fig. 4 is a section at the line 4—4 on Fig. 1. Fig. 5 is a section at the line 5—5 on Fig. 3 with the rail-seating block in position.

The elements which constitute a track structure embodying this invention are (1) reinforcing cement or concrete pillow blocks, A, A, alined with each other transversely of the track under the rails respectively; (2) a wooden rail-seating block, B, lodged in a transversely V-shaped channel in the upper side of the cement pillow block, extending obliquely there-across; (3) a retaining bolt, C, taking through the cement pillow block across the V-shaped channel and through the wooden rail-seating block, B, transversely thereof and obliquely with respect to the cement pillow block; (4) lag bolts or screwspikes, D, with their washers, D<sup>1</sup>, taking into the wooden rail-seating block and engaging the rail flanges; (5) adjustable coupling bolts, E, connecting the opposite alined cement pillow blocks. These elements cooperate with the track rails, F, and road-bed, G, with which they associate, as will now be more particularly described.

The cement pillow blocks, A, are in general of oblong rectangular form in plan view, being preferably reduced in thickness toward the ends by slightly sloping off the upper surfaces at 1, 1, and to a greater extent, similarly sloping off the under surfaces at 2, 2, the middle portion, 3, of the length of the

lower surface directly below the position of the rail, F, being flat. The slope of the under side of the block at the ends is especially designed to afford opportunity for tamping in the ballast, after the block is in substantially or approximately correct position on the road bed. In the upper surface of the pillow block, extending obliquely there-across, preferably at an angle of about forty-five degrees to the length, there is formed an angular or V-shaped channel, 4, the two converging surfaces of which are preferably approximately at right angles to each other, as most clearly indicated in Fig. 5. In this rectangular channel there is lodged the correspondingly shaped wooden rail-seating block, B. This block is made of practical and convenient dimensions by ripping diagonally a 7" by 7" timber, which results in a diagonal face about ten inches wide, which forms the seat of the rail when the block is in position in the channel, 4. All three angles of the block may be blunted to reduce the risk of splintering.

The pillow block is formed with lateral bosses, 6, 6, at the opposite sides, in line diagonal with respect to the pillow block at right angles to the channel, 4, the outwardly facing shoulders of the bosses being parallel to the channel; and the entire pillow block is apertured at right angles to the said channel through the bosses to receive the bolt, C, which traverses the V-shaped channel, 4, and penetrates the rail-seating block, B, lodged therein for retaining it in position in the channel and on the pillow block. The pillow block is provided with metal reinforcement which may consist of a flat metal bar, H, folded closely upon itself, intermediate the ends at 7, the two limbs extending from the fold being secured in close contact for a few inches by rivets, S, S, and thence diverging a short distance so that one ply extends longitudinally within the pillow block at a level a little below the bottom of the channel, 4, to a point beyond the width of that channel, being then reflexed in a bend, 9, to cause the end, 10, to protrude out through one side of the pillow block at the plane of the outer end or face of the boss, 6, at that side, so that it forms a heading or sheath for the head of the boss to prevent the latter from being crushed or cracked in the tightening of the bolt thereon. The other ply or limb of the reinforce bar, H, extends longitudinally within the pillow block

at a little distance above the lower side thereof, nearly to the end opposite that at which the folded portion protrudes, and is then reflexed and extended back past the other boss, 6, and then bent so as to emerge along the face of said boss. Both limbs are preferably spirally twisted, as shown, at the portions, 12 and 13, respectively, to increase their engagement with the cement of the pillow block and also to diminish the danger of cracking the pillow block by vibration of the reinforce bar, which, if the bar were flat, would perhaps have a slight tendency to split or crack the cement in the plane of the width of the bar. The folded end of the reinforce bar protrudes from the inner end of the pillow block; that is, the end intermediate the rails, and this folded end is up-bent to form the upstanding lug portion, 14. This lug portion is bored to receive the coupling bolt, E, and the two opposite alined pillow blocks are thus connected by the coupling bolt whose nuts, E<sup>1</sup>, can be adjusted to draw the pillow blocks together or spread them, as may be necessary for accurate spacing of the rails when seated and secured as hereinafter described. The rails, F, lodged upon the rail-seating wooden blocks, B, extend diagonally there-across, and therefore diagonally in the opposite direction with respect to the bolts, C. These wooden blocks afford opportunity for securing the rails, which is preferably done by spikes, D, which are provided with washers, D<sup>1</sup>, cut away on the under side at the inner edge to lap on the base flange of the rail, as seen in Fig. 4. The two spikes which secure the rail at each pillow block are preferably located at the opposite sides of the rail in the oblique line of the center of the wooden block, B, so that the spikes have the maximum depth of that block for engagement and are also at the farthest point possible consistent with this from the transverse bolt, C.

The following characteristics of this track structure above described result from the features of construction above described:—

First: Any tendency to spread the rails involving a side pressure results in a longitudinal tendency of the rail-seating block, B, in the diagonal V-shaped channel of the cement block; and since such longitudinal movement would necessarily be oblique to the rail, it would involve movement longitudinally as well as transversely with respect to the rail, and being resisted by the bolt, C, which is engaged both with the pillow block and with the rail, all resistance of the pillow-block rail and road bed to such longitudinal movement operates to resist the transverse or spreading movement. That is to say, the resistance of the rail and road-bed for a very considerable distance is available at each pillow block for assisting to resist any tendency to spread the rails.

Second: The diagonal position of the seating blocks, B, with respect to the rail adapts a block of the given width to afford about fifty per cent more seating surface to the rail than if the block extended transversely.

Third: The oblique relation of the wooden seating block, B, to the cement pillow block, A, operates to prevent the tendency of the longitudinal stresses operating on the rail to roll the pillow block in the road-bed.

Fourth: In case of deterioration of the wooden rail-seating blocks, such block is easily removed and replaced without disturbing the pillow block or the road-bed, for the bolts, C, and the spikes being withdrawn, the block, B, can be driven out endwise from its seat and a new block driven in place and secured in the same manner as the old one.

Fifth: The track is at all times easily leveled by tamping the ballast under the sloped ends of the pillow blocks.

Sixth: The wearing on the inner edge of the rail by the flange of the wheels of the rolling stock is at all times easily compensated by adjusting the coupling bolts, E, to draw the pillow blocks near together.

Seventh: The swelling and shrinking of the wooden rail-seating blocks, B, does not cause either the rupture of the cement pillow blocks or the loosening of the wooden blocks in their seats, because such swelling and shrinking is automatically accommodated at the sloping surfaces of contact and seating of the wooden block on the cement pillow block.

The term "pillow block", as used in this specification, is not to be understood in contra-distinction from a cross-tie or sleeper, as the latter terms are commonly applied to track construction. And it will be observed that the functions of the specific features of the structure described, except as to the capacity for adjustment to correct the spread of the rails or effect re-alignment of the track, are not dependent upon the employment of separate pillow blocks for the two rails, as distinguished from a continuous cross-tie.

It will be observed also that the function of the specific form of the depressed seat for the rail-seating block and of the block corresponding to that seat, consisting in the downwardly converging sides, is independent of the oblique relation of such depressed seat and seating block to the track and pillow block, and that these two features of construction are therefore not necessarily associated.

I claim.—

1. In a railway track, in combination with a concrete pillow block having an obliquely extending channel in its upper face; a rail-supporting block lodged in and fitting such

channel; a track rail supported by and secured to said block, and means securing the block against longitudinal movement in its seat on the pillow block.

2. In a railway track, in combination with a concrete pillow block having in its upper surface an obliquely extending channel with downwardly converging sides; a rail-seating block lodged in such channel, the rail secured to such seating block, and means securing the seating block against movement longitudinally in the channel of the pillow block.

3. In a railway track, in combination with a concrete pillow block having an obliquely extending channel in its upper face; a rail-supporting block lodged in and fitting such channel; a track rail secured to such supporting block, the pillow block having lateral shoulders parallel to the channel and oblique to the track and pillow block, and a bolt taking through said shoulders and through the rail-supporting block for securing the latter against longitudinal displacement in its seat.

4. In a railway track, in combination with the track rails, metal-reinforced concrete pillow blocks alined transversely of the track under the rails respectively; adjustable means connecting the metal-reinforcing elements of such alined pillow blocks, each pillow block having in its upper surface an obliquely extending depressed seat; a rail-supporting block lodged in such oblique seat; means securing the rail-supporting block against longitudinal movement in its seat, and means securing the rails to the respective supporting blocks.

5. In a railway track, in combination with the rails, concrete pillow blocks alined transversely of the track under the rails and means for adjustably connecting them, each pillow block having in its upper surface an obliquely extending depressed seat with converging sides; a rail-supporting block lodged in such oblique seat; means securing the rail-supporting block against longitudinal movement in its seat, and means securing the rail to the respective supporting blocks.

6. In a railway track, in combination with

concrete pillow blocks alined transversely of the track under the rails respectively; adjustable means for connecting the pillow blocks in alinement, each pillow block having in its upper surface an obliquely extending depressed seat; a rail-supporting block having downwardly converging sides lodged in such obliquely extending seat; means securing the rail-supporting block against longitudinal movement in its seat, and means securing the rails to the respective supporting blocks.

7. In a railway track, a metal-reinforced concrete pillow block having in its upper surface a depressed seat; a rail-supporting block lodged in such seat; said pillow block having at its opposite sides shoulders parallel to the block seat, the pillow block being apertured through such shoulders, a bolt taking through the apertured shoulders and the depressed seat engaging the rail-supporting block, the metal reinforcement of the pillow block being a flat bar having one end protruding along one of said shoulders.

8. A metal-reinforced concrete pillow block for a railway track having in its upper surface a depressed seat, a rail-supporting block lodged in such seat, the pillow block having shoulders alined transversely of the seat and supporting block, the metal-reinforcement of the pillow block emerging on such shoulders, and a bolt taking through said emerging ends and shoulders transversely of the depressed seat and engaging the supporting block therein.

9. In a railway track, in combination with a concrete pillow block having in its upper surface a depressed seat with converging sides; a rail-seating block having its under sides converging lodged in such seat, the rail secured to such seating block, and means securing the latter against movement longitudinally in the seat.

In testimony whereof, I have hereunto set my hand at Chicago, Illinois, this 20th day of August, A. D., 1908.

ANDREW STARK.

Witnesses:

J. S. ABBOTT,

M. GERTRUDE ADY.