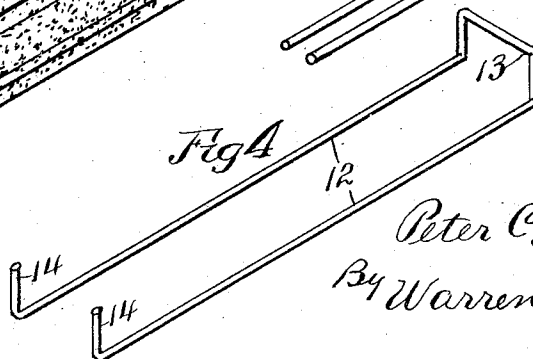
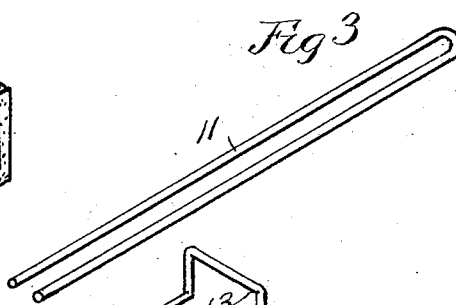
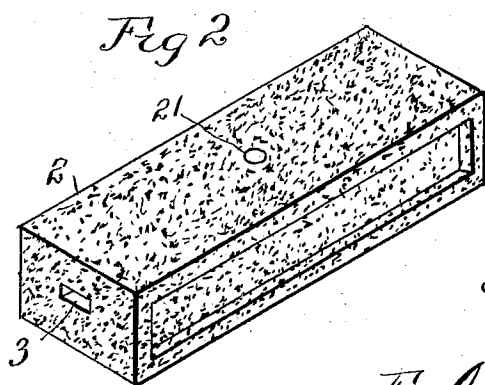
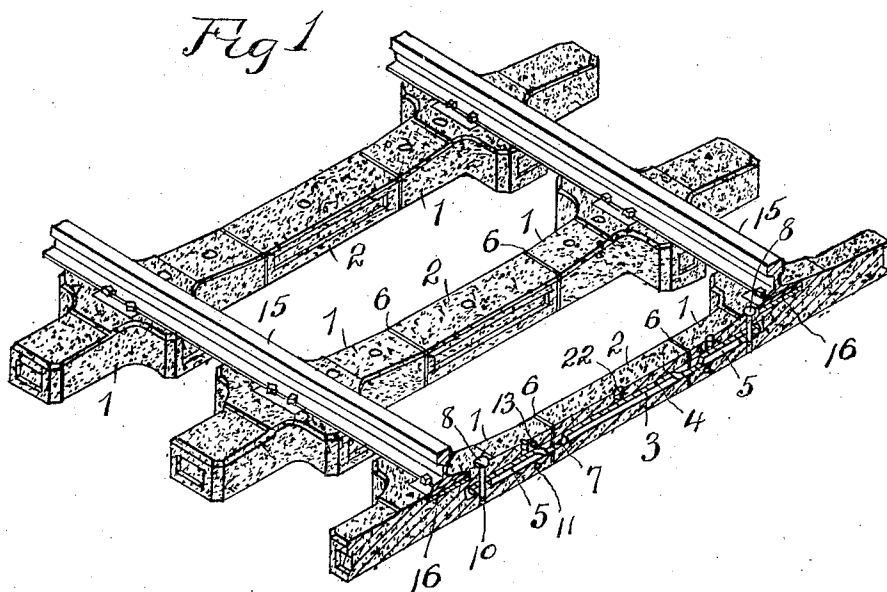


1,410,185.

P. C. ICKES.  
CONCRETE TIE.  
APPLICATION FILED SEPT. 1, 1921.

Patented Mar. 21, 1922.  
3 SHEETS—SHEET 1.



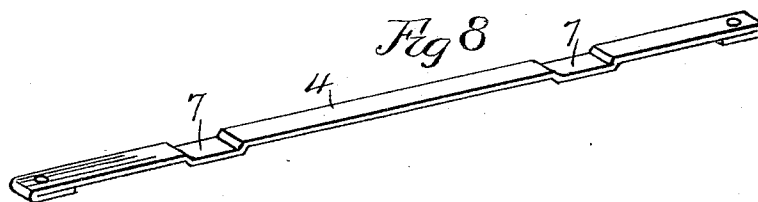
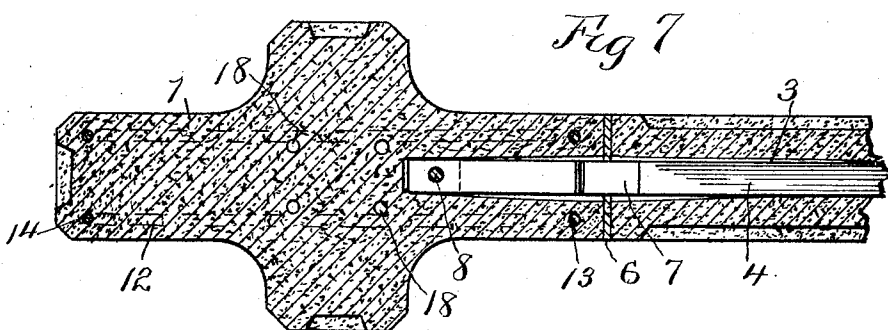
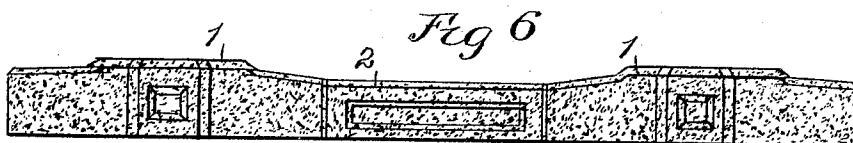
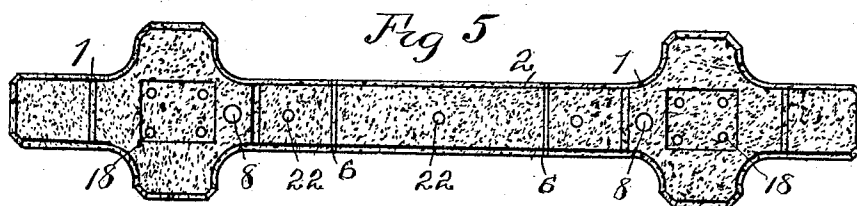
Witness:  
*R. Hamilton*

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*Peter C. Ickes,*  
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Witness:

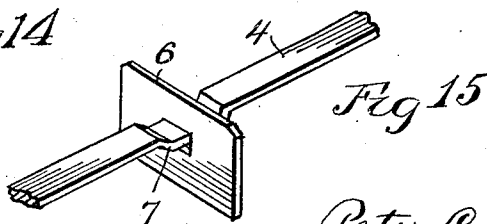
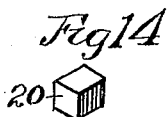
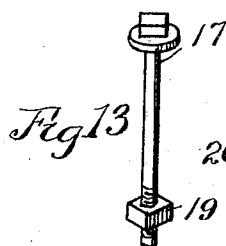
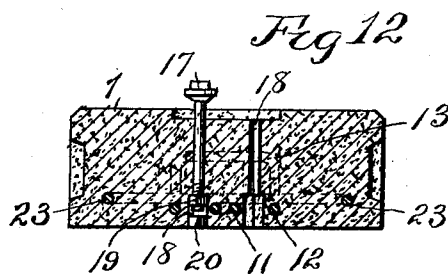
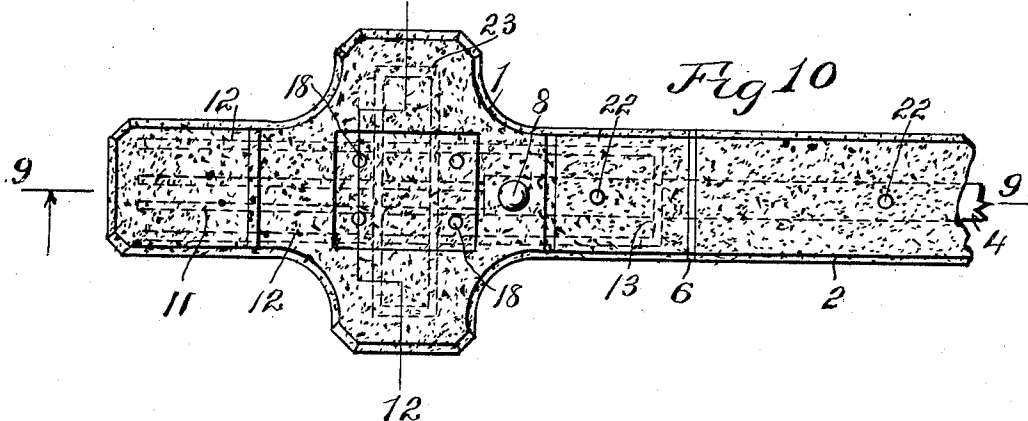
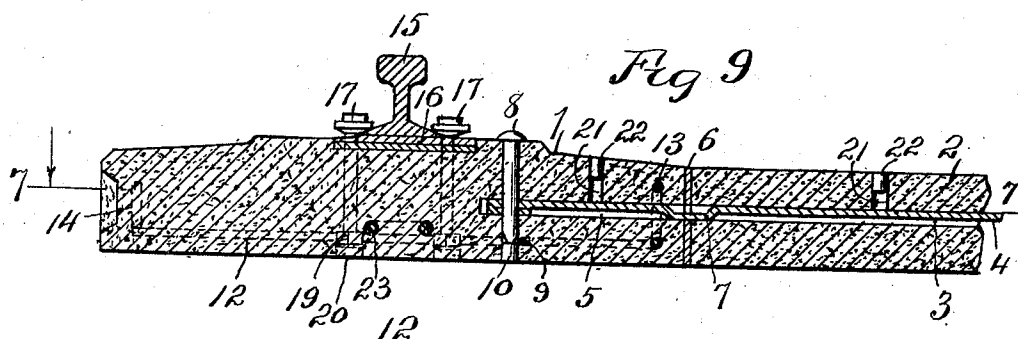
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3 SHEETS—SHEET 3.



Witness:  
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His Attorney

# UNITED STATES PATENT OFFICE.

PETER C. ICKES, OF KANSAS CITY, MISSOURI.

## CONCRETE TIE.

1,410,185.

Specification of Letters Patent. Patented Mar. 21, 1922.

Application filed September 1, 1921. Serial No. 497,462.

*To all whom it may concern:*

Be it known that I, PETER C. ICKES, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented a certain new and useful Improvement in Concrete Ties, of which the following is a specification.

My invention relates to improvements in concrete ties.

One of the objects of my invention is to provide a tie, which is simple, cheap to make, which is durable and not liable to get out of order, which has a certain amount of flexibility and which may be quickly and securely attached to the rails.

A further object of my invention is to provide novel means for attaching a rail to a concrete tie by means of bolts and nuts and which will permit the ready replacement of broken bolts.

My invention provides further novel means for attaching together with a tie bar, a plurality of concrete sections disposed end to end, whereby the sections are flexibly connected but retained in their operative relationship to each other.

My invention provides still further novel means for re-enforcing a rail supporting concrete section in a manner such as will prevent splitting off or spawling of the inner end of the section where it abuts against an adjoining section.

My invention provides further novel means by which the connecting tie bar mounted in different concrete sections may be lubricated to avoid rusting and to facilitate the operation of the tie bar.

My invention provides further a novel tie bar so fitted in abutting concrete sections of a tie as to firmly hold the sections together while providing for flexibility of the tie.

The novel features of my invention are hereinafter fully described and claimed.

In the accompanying drawing which illustrates the preferred embodiment of my invention,

Fig. 1 is a perspective view, reduced, of a plurality of my improved ties being attached to rails, one of the ties being shown in longitudinal section.

Fig. 2 is a perspective view of the central concrete section.

Fig. 3 is a perspective view of one of the re-enforcing bars of a rail supporting section.

Fig. 4 is a perspective view of another of the re-enforcing bars of a rail supporting section.

Fig. 5 is a plan view of my improved tie.

Fig. 6 is a side elevation of the same.

Fig. 7 is an enlarged horizontal sectional view on the line 7-7 of Fig. 9.

Fig. 8 is a perspective view of the tie bar.

Fig. 9 is a vertical sectional view on the line 9-9 of Fig. 10.

Fig. 10 is an enlarged plan view of a portion of my improved tie.

Fig. 11 is an end view of the same.

Fig. 12 is a vertical sectional view on the line 12-12 of Fig. 10.

Fig. 13 is a perspective view of one of the rail securing bolts.

Fig. 14 is a perspective view of one of the plugs, which are fitted in the lower ends of the bolt holes of the rail supporting sections.

Fig. 15 is a perspective view of a portion of the tie bar and a wear plate mounted thereon.

Similar reference characters designate similar parts in the different views.

The tie may be composed of two end or rail supporting sections 1, which at their inner ends abut respectively against the end of a central concrete section 2 through which is provided a longitudinal hole 3, through which extends a vertically flexible resilient longitudinal tie bar 4, opposite ends of which are respectively mounted in longitudinal holes 5, provided one in the inner end of each end section 1.

Mounted on the tie bar 4 are two wear plates 6, composed preferably of pliable material having some resiliency, such as felt, sheet rubber, paper or asbestos.

As shown in Fig. 9, the tie bar 4 has less vertical thickness than the vertical dimension of the holes 3 and 5. This permits of a limited flexure vertically of the bar, and in order that the latter may hold the sections in their proper relationship to each other, the bar 4 is provided with two downwardly extending off-sets 7, respectively extending across the joints between the sections 1 and 2. The off-sets 7 are substantially of the same vertical height as the vertical dimension of the holes 3 and 5. The flexibility of the bar 4 at the angles of the off-sets 7, permits relative vertical movement of the sections 1 and 2. The off-sets

7 extend at some distance at each side of each joint, so that the liability of the inner ends and upper portions of the sections 1 being split off into spawls, when the inner  
 5 ends of the sections 1 are depressed under heavy loads, is avoided.

The outer ends of the tie bar 4 are doubled over and have respectively extending through them vertical locking pins 8 respectively  
 10 mounted in vertical holes 9, Fig. 9, extending through the sections 1 respectively. Plugs 10 are mounted removably in the lower ends of the holes 9 to prevent entrance of water.

15 Each end section 1 may have embedded in it a longitudinal U shaped re-enforcing bar 11. For re-enforcing each section 1, there may also be provided in each section an embedded U shaped re-enforcing bar the parallel arms 12 of which are disposed longitudinally in a horizontal plane different,  
 20 preferably below the hole 5. The inner end of the bar extends upwardly at opposite sides of the hole 5 and above and across the  
 25 hole 5, as indicated by 13.

The outer end of each arm is turned at right angles, preferably upwardly, as indicated at 14.

The upwardly turned ends of the U shaped  
 30 bar 12 holds the bar against longitudinal movement in the section 1. The inverted U shaped portion of the bar at 13 re-enforces the inner end and upper side of the section 1 and assists in preventing spawls being  
 35 broken off from the section at this point, due to downward movement of the inner end of the section 1 under heavy loads.

For securing the rails 15 to the upper sides of the sections 1, the rails rest upon  
 40 plates 16 supported on the sections 1 and through which extend vertical bolts 17 the heads of which bear against the base of the adjacent rail. The bolts 17 respectively extend into vertical holes 18 provided in each  
 45 section 1 and which extend through the section, and each of which at its lower end is other than circular in cross section, the holes 18, in the drawings being shown as having square lower ends. In the lower ends  
 50 of the holes 18 are respectively fitted similarly shaped nuts 19, which are thus held from turning, and which are protected from water by plugs 20 respectively removably fitted in the holes 18. In case a bolt 17  
 55 breaks, it may be removed, and the adjacent plug 20 also being removed, so that the nut may be withdrawn and a new bolt and nut substituted for the ones removed.

As shown in Figs. 9, 10 and 12, a horizontal rectangularly formed re-enforcing bar  
 60 23, may be embedded in each section 1 below and parallel with the rail 15.

In order that the tie bar 4 may be lubricated to prevent its rusting and also to permit of ready slight operative movement in

the sections when there is flexure of the tie, each of the sections 1 and 2 may be provided in its upper side with a vertical hole 21 which at its lower end communicates with the adjacent hole 3 or 5 as the case may be.  
 70 Oil or other lubricating material may be poured into the sections 1 and 2 through the holes 21. Plugs 22 may be removably fitted in the upper ends of the holes 21 respectively to prevent entrance therein of dirt or water. The oil in the holes 21 will seep  
 75 along and around the tie bar 4. Sufficient oil may be thus inserted to fill the holes 3 and 5. The plates 6 in addition to serving as wear plates also perform the function of  
 80 gaskets for excluding moisture and for preventing the leakage of oil from the holes 3 and 5.

I do not limit my invention to the structure shown and described, as many modifications, within the scope of the appended  
 85 claims, may be made, without departing from the spirit of my invention.

What I claim is:—

1. A tie comprising a plurality of concrete sections disposed end to end, one being  
 90 a rail supporting section, a tie bar mounted in and connecting said sections, and a re-enforcing member embedded in the rail supporting section and extending longitudinally therein in a plane below the tie bar  
 95 and adjacent to the inner end of said section extending upwardly and over the tie bar, substantially as set forth.

2. A tie comprising a plurality of concrete sections disposed end to end, one section being a rail supporting section, a tie  
 100 bar mounted in and connecting said sections, and a re-enforcing member embedded in the rail supporting section and extending longitudinally in a plane below the tie bar, and  
 105 adjacent to the inner end of said section extending upwardly and over the tie bar, the outer end of the member being turned at right angles to the longitudinal portion,  
 110 substantially as set forth.

3. A tie comprising a plurality of concrete sections disposed end to end, one being a rail supporting section, a tie bar mounted in and connecting said sections, and a re-  
 115 enforcing member embedded in the rail supporting section and comprising a U-shaped member the arms of which are disposed longitudinally in a plane below said tie bar, the inner end of said member extending upwardly and over the tie bar, and  
 120 the outer ends of the arms being turned at right angles to the longitudinal portions thereof, substantially as set forth.

4. A concrete rail supporting section of a tie having a longitudinal hole adapted to  
 125 receive a tie bar, and a U shaped re-enforcing member embedded in said section, the arms of said member extending longitudinally in a different horizontal plane from  
 130

the plane of the hole, the inner end of said member extending vertically at opposite sides of said hole to a plane at the other side thereof and in the latter plane crossing said hole, the outer ends of said arms being turned at right angles to the longitudinal portions thereof, substantially as set forth.

5 5. A concrete section of a tie having a longitudinal hole adapted to receive a tie bar, and having an oil hole communicating with said tie bar hole, and a removable plug fitted in the oil hole, substantially as set forth.

10 6. A concrete tie section having a longitudinal hole and an oil hole communicating therewith, a tie bar secured in said longitudinal hole, and a removable plug adapted to be fitted in said oil hole, substantially as set forth.

20 7. Two concrete tie sections disposed end to end, each having a longitudinal hole registering with the hole in the other section, and a tie bar mounted in said holes and connecting said sections and having less vertical thickness than the vertical dimensions of said holes, the tie bar having a vertical off-set portion having substantially the same vertical height as the vertical dimension of said holes, substantially as set forth.

25 8. Two concrete tie sections disposed end to end, each having a longitudinal hole registering with the hole in the other section, and a tie bar mounted in said holes and connecting said sections, and having less vertical thickness than the vertical dimension of said holes, and at the abutting ends of said sections having a downwardly extending off-set portion substantially fitting said holes, substantially as set forth.

30 9. Two concrete tie sections disposed end to end, one being a rail supporting section, each having a longitudinal hole, a tie bar mounted in said holes and connecting said sections and having a less vertical thickness than the vertical dimension of said holes, and at the abutting ends of said sections having a downwardly extending off-set portion substantially fitting said holes, and a re-enforcing member embedded in the rail supporting section and having a U shape, the arms of said member extending horizontally longitudinally in a plane below said hole in said rail supporting section, the member at its inner end adjacent to said off-set portion extending vertically at opposite sides of said hole and then transversely across said hole, the outer ends of said arms being turned at right angles to the longitudinal portions thereof, substantially as set forth.

10. A concrete tie comprising sections disposed end to end, a tie bar mounted in and connecting the sections, and means for lubricating the tie bar, substantially as set forth.

11. Two concrete tie sections disposed end to end, a tie bar mounted in and connecting said sections, a gasket encircling the tie bar and against which the sections bear, and means for lubricating the tie bar, substantially as set forth.

12. Two concrete sections of a tie disposed end to end each having a longitudinal hole, and each having an oil hole communicating with the adjacent longitudinal hole, a tie bar mounted in the longitudinal holes for connecting said sections, and a gasket encircling the tie bar and bearing against the adjacent ends of said sections, substantially as set forth.

In testimony whereof I have signed my name to this specification.

PETER C. ICKES.