M. E. CHAMBERLAIN.

RAIL TIE.

APPLICATION FILED JUNE 19, 1922.

1,431,631. Patented Oct. 10, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

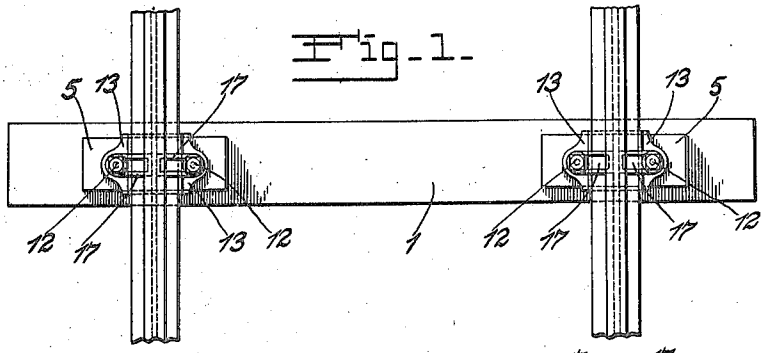


Fig. 2.

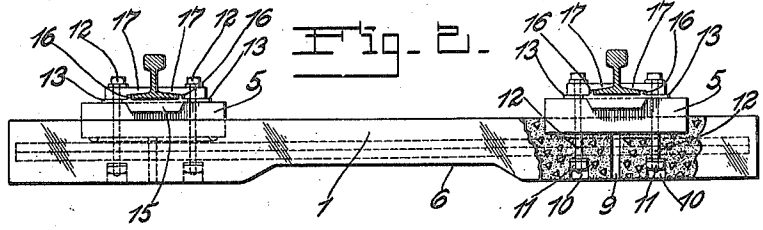


Fig. 3.

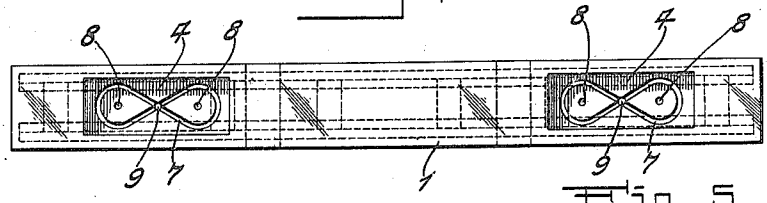


Fig. 4.

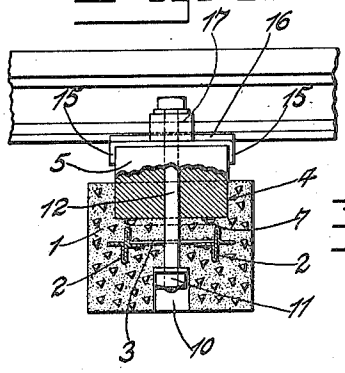


Fig. 5.

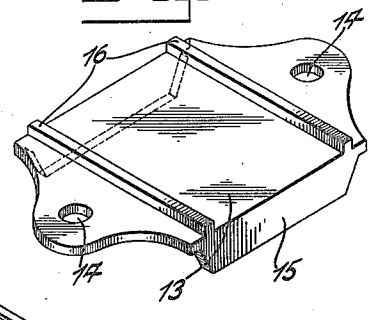
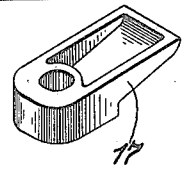


Fig. 6.



Inventor.
Minor E. Chamberlain,
by Ripley & Kingsland,
His Attorneys.

M. E. CHAMBERLAIN.

RAIL TIE.

APPLICATION FILED JUNE 19, 1922.

1,431,631. Patented Oct. 10, 1922.

2 SHEETS—SHEET 2.

Fig. 7.

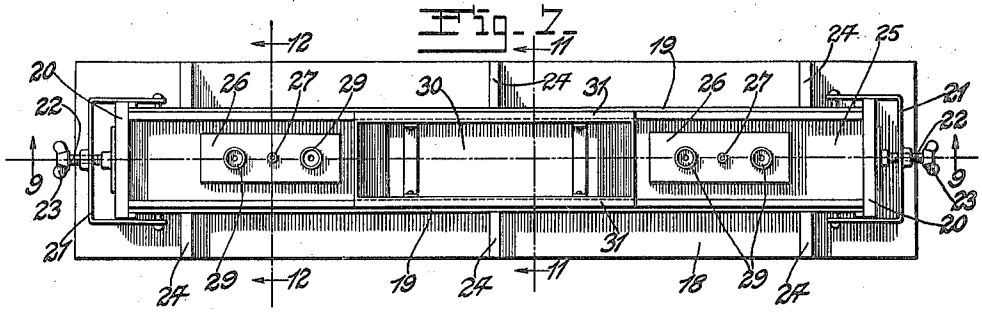


Fig. 8.

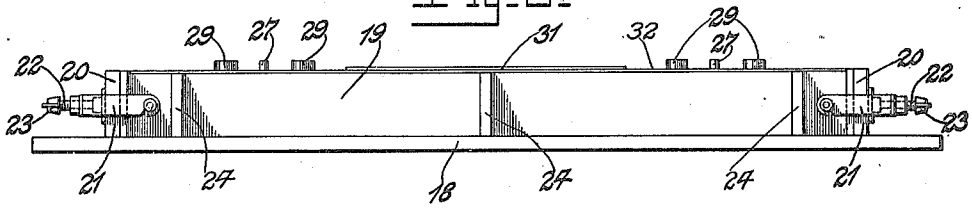


Fig. 9.

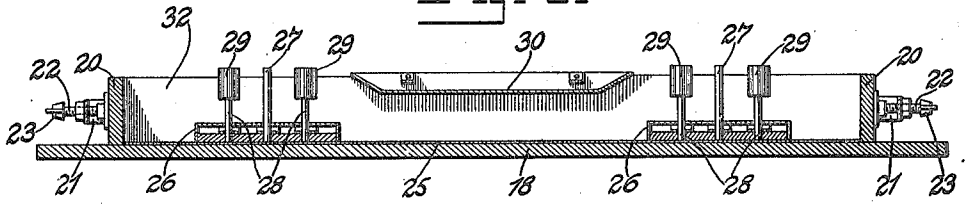


Fig. 10.

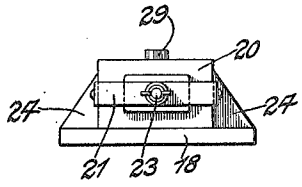


Fig. 11.

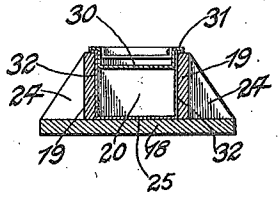
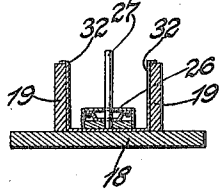


Fig. 12.



Inventor.
Minor E. Chamberlain,
by Pippey & Knigeland.
His Attorneys.

Patented Oct. 10, 1922. 1,431,631

UNITED STATES PATENT OFFICE.

MINOR E. CHAMBERLAIN, OF ST. LOUIS, MISSOURI.

RAIL TIE.

Application filed June 19, 1922. Serial No. 569,304.

To all whom it may concern:

Be it known that I, MINOR E. CHAMBERLAIN, a citizen of the United States, residing at St. Louis, Missouri, have invented a new and useful Rail Tie, of which the following is a specification.

This invention relates to rail ties, and it has special reference to ties composed of concrete and provided with metallic reinforcements and detachable means for securing the rails to the ties.

An object of the invention is to provide various improvements in a monolithic concrete tie, such improvements relating specially to the form of the tie and the means for securing the rails in connection with the tie.

Another object of the invention is to provide an improved reinforced concrete tie having cavities therein for receiving the wooden rail supporting blocks, and improved means for draining the cavities.

Another object is to provide an improved design and type of mold for forming the ties.

Other objects will appear from the following description, reference being made to the drawings in which—

Fig. 1 is a plan view of my improved tie with the rails secured thereto.

Fig. 2 is a side elevation of the tie with a part of one end thereof in section.

Fig. 3 is a plan view of the tie with the rail supporting blocks removed.

Fig. 4 is a cross sectional view of the tie disclosing features of the present invention.

Fig. 5 is a perspective view of the rail base plate.

Fig. 6 is a perspective view of one of the devices by which the rails are held in position.

Fig. 7 is a plan view of the mold by which the tie is formed.

Fig. 8 is a side elevation of the mold.

Fig. 9 is a longitudinal sectional view of the mold on the line 9—9 of Fig. 7.

Fig. 10 is an end elevation of the mold.

Figs. 11 and 12 are cross sectional views on the lines 11—11 and 12—12 respectively of Fig. 7.

In a general sense the present improvements in the tie are embodied in a monolithic reinforced structure having reinforcements imbedded therein as disclosed in my Patent No. 1,149,632, dated August 10, 1915.

The tie consists of a monolithic concrete body 1 in which are imbedded two parallel metallic reinforcements 2. Each of the reinforcements 2 is composed of sheet metal folded to provide four wings, two of which are of a double thickness and the remaining two of which are of a single thickness of the sheet. Preferably the wings of double thickness extend in vertical planes and the wings which are of single thickness extend in horizontal planes. The inwardly extending wing of single thickness on one reinforcement is connected with the adjacent wing of single thickness on the other reinforcement by metallic connections 3. In the upper side of the tie near each end thereof a recess 4 is formed of suitable size to receive a rail supporting block 5 of wood or other appropriate material. The blocks 5 are above the reinforcements 2.

At this point the structure departs from the disclosure of my said Patent No. 1,149,632. The tie embodying the present invention has a central arch 6, leaving the vertical thickness of the tie above the arch 6 less than the vertical thickness of the ends of the tie. This results in a saving of material and also permits the tie to obtain better engagement with the road bed and, I have found by experience, that it does not materially weaken the tie.

In the bottom wall of each of the recesses 4 construction is provided for draining water therefrom, the same comprising in each recess a substantially 8-shaped groove or channel 7 between the loops of which the bolt holes 8 are formed. A hole 9 opens downwardly through the tie body from the central or uniting portion of the drain grooves so that any accumulation of water in the drain grooves may pass out through the drain outlet openings 9.

The bolt holes 8 open into enlarged polygonal recesses 10 in the under side of the tie body. The recesses 10 are designed and adapted to receive nuts 11 on the lower ends of the bolts 12, which pass through the holes 8 and through the blocks 5. The recesses 10 are of sufficient depth to contain the nuts 11. A rail base plate is mounted upon each of the blocks 5, the same comprising a plate portion 13 provided with holes 14 through which the bolts 12 extend. The plate 13 has two depending flanges 15 which engage opposite sides of the block 5 and cooperate with the bolts 12 to retain the plate in position on the support. The rail is

seated between two vertical flanges 16 on the base plate and is retained in position thereon by metallic arms 17 held in place by the bolts 12.

The mold for forming my improved tie is shown in Figs. 7 to 12 inclusive. As there shown the mold comprises a base 18, mold side walls 19 and removable end walls 20. A bail 21 is pivoted to each end of the mold. Each of the bails 21 supports a screw bolt 22 provided with a manually engageable handle 23 whereby the screw bolt may be operated to press the end walls 20 against the ends of the side walls 19, or to release the end walls, as desired. If desired, the side walls may also be removable from the base and retained in vertical position thereon by supporting brackets 24. The base 18 of the mold supports a smooth or polished plate 25 to which are secured cores or blocks 26 for forming the recesses 4 near the ends of the tie. A rod 27 extends upwardly from each of the cores 26 to form the drain opening 9, while rods 28 are provided to form the bolt holes 8. The upper ends of the rods 28 have heads 29 for forming the recesses 10.

The upper portions of the side walls 19 support a member 30 for forming the arch 6 of the tie. The member 30 may be removable, in which case it may be supported by side flanges 31 resting upon the upper edges of the side walls. Preferably, also, the side walls 19 have lining plates 32 for forming finished surfaces on the tie.

From the foregoing it will be seen that my improved tie obtains all of its intended objects and purposes and that it may be readily produced by the form of mold disclosed.

I do not restrict myself unessentially, but what I claim and desire to secure by Letters Patent is:—

1. A tie, comprising a concrete body having a block receiving recess in the upper side thereof near each end; longitudinal metallic reinforcements imbedded in the concrete body in spaced relationship; said concrete body having vertical bolt holes therethrough opening into said block receiving recess between said reinforcements, said recesses having grooves in their bottom walls encircling said bolt holes respectively and intersecting each other between the bolt holes, and said body having holes therethrough between said reinforcements from the intersection of said grooves; a block seated in each of said recesses; and bolts passing through said bolt holes and through said blocks.

2. A tie, comprising a concrete body having a block receiving recess in the upper side thereof near each end; longitudinal metallic reinforcements imbedded in the concrete body in spaced relationship, said concrete body having vertical bolt holes therethrough opening into said block receiving recess between said reinforcements, said recesses having grooves in their bottom walls encircling said bolt holes respectively and intersecting each other between the bolt holes, and said body having holes therethrough between said reinforcements from the intersection of said grooves; a block seated in each of said recesses; bolts passing through said bolt holes and through said blocks; said concrete body having recesses in its under side into which said bolt holes open; and detachable nuts on the lower ends of said bolts in said last-named recesses.

3. A tie, comprising a concrete body having a block receiving recess in the upper side thereof near each end, and having bolt holes through the body and opening into said recesses, and having grooves in the bottom walls of said recesses and having a hole opening downwardly through the body intersecting each groove in each recess; metallic reinforcements imbedded in the body between said bolt holes and the vertical sides of the concrete body; blocks seated in said recesses; rail holding devices upon said blocks; and bolts passing through said bolt holes and through said blocks and engaging and holding said rail holding devices in rigid position.

MINOR E. CHAMBERLAIN.