

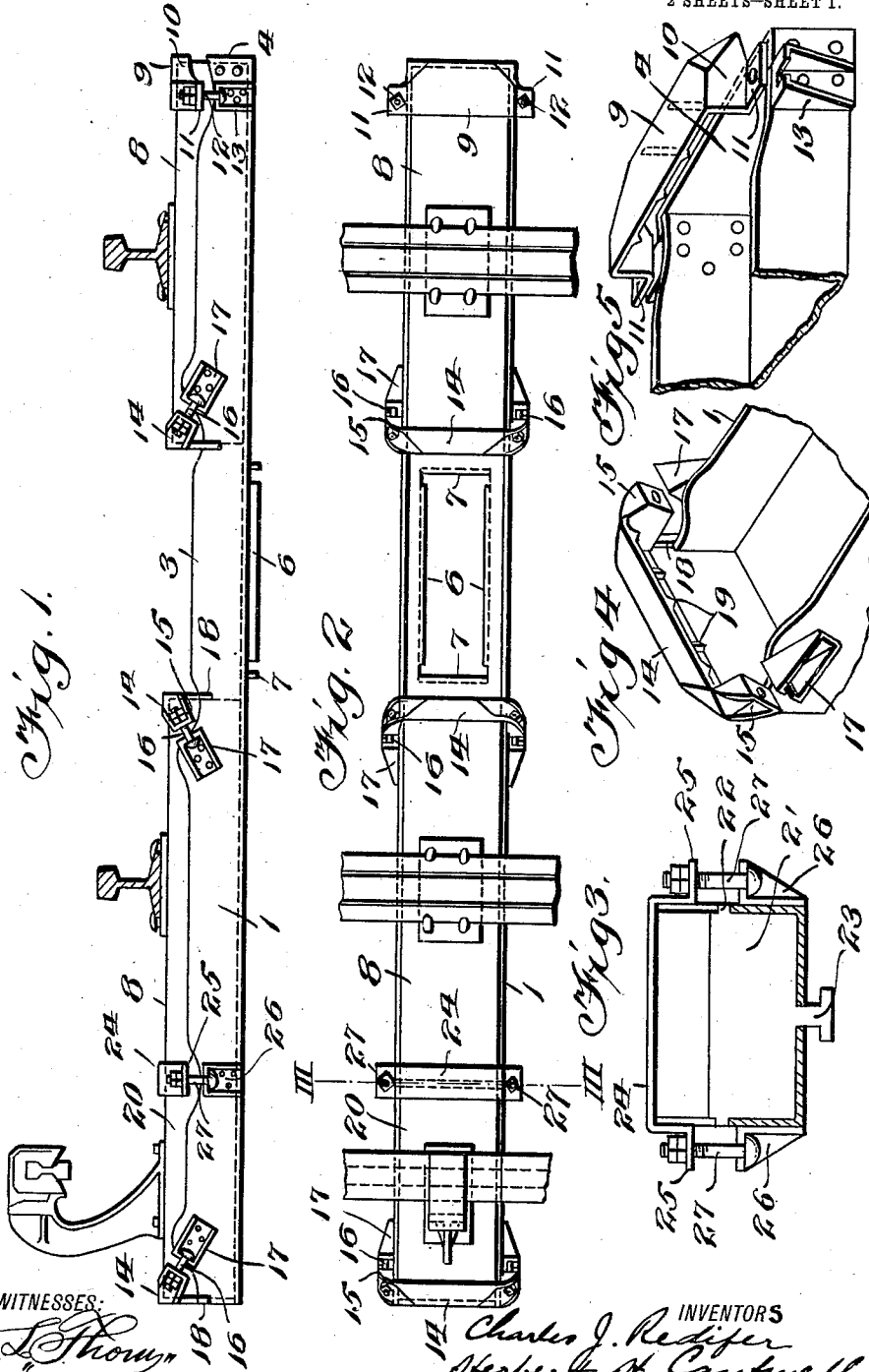
C. J. REDIFER & H. H. CANTWELL.
RAILROAD TIE.

APPLICATION FILED JULY 24, 1911.

1,041,670.

Patented Oct. 15, 1912.

2 SHEETS-SHEET 1.



WITNESSES:

Geo. L. Thomas
J. R. Miller

INVENTORS

Charles J. Redifer
Herbert H. Cantwell
BY
Daniel Davis
their ATTORNEYS

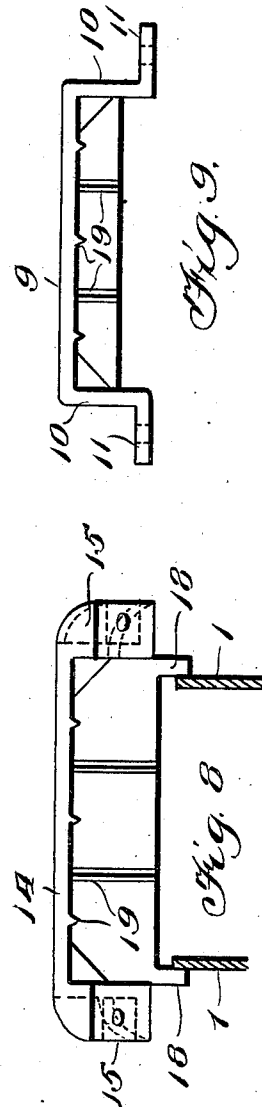
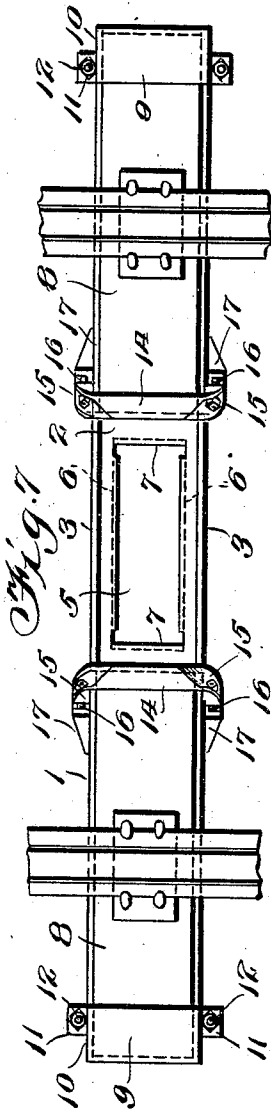
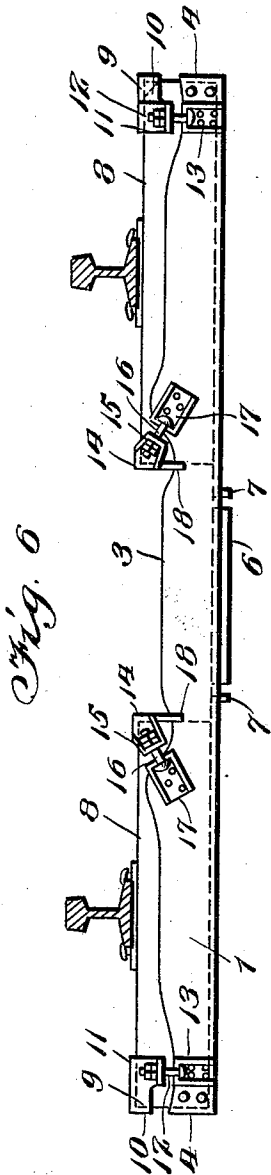
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UNITED STATES PATENT OFFICE.

CHARLES JACOB REDIFER, OF KINGS BRIDGE, AND HERBERT HERLUIN CANTWELL,
OF CROTON-ON-HUDSON, NEW YORK.

RAILROAD-TIE.

1,041,670.

Specification of Letters Patent.

Patented Oct. 15, 1912.

Application filed July 24, 1911. Serial No. 640,093.

To all whom it may concern:

Be it known that we, CHARLES J. REDIFER and HERBERT H. CANTWELL, both citizens of the United States, the said CHARLES J. REDIFER residing at Kings Bridge, county of New York, State of New York, and the said HERBERT H. CANTWELL residing at Croton-on-Hudson, county of Westchester, State of New York, have invented certain new and useful Improvements in Railroad-Ties, of which the following is a specification.

The main object of this invention is to provide a tie consisting of a main part formed of metal and extending the full length of the tie (said tie being approximately the length of the ordinary wooden tie) and blocks of wood approximately the same width and breadth of the usual wooden tie and secured in the main part and to which the rails are fastened. The rails are to be fastened to the wooden blocks in the usual way with tie plates and spikes, or they may be secured by any other suitable means. The wooden blocks for supporting the rails on the road bed will give the same wood bearing or cushion effect under the rails as is secured by the present practice and will also give the same depth of transverse and lateral pressure against the ballast.

Another object of the invention is to form the main part of the tie of a metal trough or channel part and to secure therein near each of its ends a wooden block, said blocks being secured by clamping devices which hold them against thrusts tending to move them longitudinally, said clamps being so arranged that their securing means will be below the upper surfaces of the wooden blocks.

Another object of the invention is to so construct the clamps that some of them serve as means for bracing the sides of the main body of the tie.

A further object of the invention is to so construct the tie and the blocks that by removing the clamping means, either one, or both, of the wooden blocks may be readily removed from under the rails without changing the position of the main part of the tie or disturbing the road bed around said main part in the slightest degree. It is manifest that by this means we reduce the cost of renewing and replacing ties.

Another object of the invention is to pro-

vide a wood and metal tie so constructed that the space between one rail and the inner end of the opposite rail block will be greater than the length of the block so that the block may be drawn inwardly between the tracks and thereby freed from its rail. This is of great advantage for the reason that in many places it is extremely difficult, and sometimes impossible, to remove the ordinary tie endwise from under the track rails.

Another object of the invention is to provide a tie for use as a "third-rail tie", an extra wooden block being provided to serve as a support for the third rail which carries the electric current for the operation of the trains, the main body of the tie being increased in length to receive this extra block.

Other important objects and advantages of the invention will appear hereinafter.

In the drawings, Figure 1 is a side elevation of the tie complete; Fig. 2 a plan view of the tie; Fig. 3 a transverse sectional view on the line III—III of Fig. 2; Fig. 4 a detail perspective view of the clamp for engaging the outer ends of the third rail block, as shown in Fig. 1; Fig. 5 a detail perspective view of the clamp for securing the outer end of the rail blocks; Fig. 6 a side elevation showing the invention applied as an ordinary tie; Fig. 7 a plan view of the tie shown in Fig. 6; Fig. 8 a side elevation showing the inner side of the clamp for the inner ends of the wooden rail blocks; and Fig. 9 a similar view of the clamp for the outer end of the wooden rail blocks.

Referring to the various parts by numerals, 1 designates the main body of the tie which is preferably of sheet steel and is in the form of a trough or channel. As shown in Figs. 1 and 2 this trough consists of the bottom 2 and the vertical sides 3. One end of this trough or channel is closed by an end strap 4 which is bent around the outer sides of the side pieces 3 and rigidly secured thereto and forms a rigid brace therefor. At or near the center of this trough the bottom thereof is open as at 5, the metal being turned downwardly around the edges of said opening to form the stiffening and anchoring flanges 6 and 7. The flanges 6 run longitudinally of the tie and prevent side-wise or lateral displacement thereof and tend to prevent the track "creeping"; and the flanges 7 run transversely of the tie and aid or assist in preventing the tie moving

longitudinally, that is, transversely of the railroad track and tend to prevent the track getting out of line. The opening in the tie is of considerable size and extends substantially between the ends of the wooden blocks, to be hereinafter described, and the object of it is to permit the ballast, that is to say the material which is tamped under the tie, to lift or move upwardly into the tie and thereby prevent the tie becoming what is known in railroad building as "center bound". Should the ballast or tamping material become solid and rigid under the center of the tie, that is, midway between the rails, the tie under the weight and strains of the passing trains, will oscillate vertically on the said center ballast, and, is then what is known as "center bound". The strain of passing trains on ties thus bound in the center often breaks them. When this occurs in the use of the ordinary wooden tie the center ballast or tamping must either be dug out and softened or loosened, or the track raised and newly tamped, so that the tie will rest solidly on the ballast under the rails. It is, therefore, manifest that it is of great advantage to form an opening in the tie frame of substantial area, at a point midway between the rails to prevent the workmen tamping the ballast hard at that point.

The trough or channel forming the main part of the tie when placed in the track will not extend up to the base of the rail but will be somewhat below it so that it will be practically covered with ballast and thoroughly protected by it, thereby insuring it against damage. The main part of the tie will protect the wood parts so that said wood parts cannot be damaged by the tamping.

In that end of the tie frame provided with the rigid end wall, is placed a short wooden block 8, said block substantially filling the trough of the tie transversely and extending a suitable distance above the upper edges of the sides thereof to insure proper insulation for signal currents. This block preferably abuts against the end of the tie frame and extends inwardly approximately three feet, and is secured in position by means of angle iron clamping devices. These clamps are of special design and are secured in place by connections with the sides of the tie, so that no part of the block-securing means passes through the wooden block, thereby facilitating and simplifying the process of renewing the wooden block (so that it can be done by the ordinary track man) and preventing the weakening of the block. The outer end of this block is held down in the trough preferably by means of a clamp 9. This clamp 9 embraces the outer upper corner of the rail block and is formed with sides 10 which fit over the sides of said block. It is also formed at its inner lower

corners with the brackets 11 through which the securing bolts 12 extend. These brackets are sufficiently far below the upper surface of the clamp to permit of the use of securing bolts and nuts without said bolts and nuts extending above the upper surface of said wooden block, as clearly shown in Fig. 1 of the drawings. The object of keeping said bolts below the upper surface of the rail block is manifest, it being obvious that should said bolts project above the block, they would be liable to be engaged by any chain or brake-bar or other device which may by accident be dragging from the train; or should a train become derailed the wheels will run along the top of the ties and will not come in contact with the bolts. On the outer sides of the main body of the tie are brackets 13 which receive the heads of the bolts 12.

To hold the inner end of the rail block down in the tie frame and to thrust said block outwardly against the end wall thereof, a clamp 14 is used. This clamp embraces the upper inner edge of the rail block and the corners of said block are cut off, as shown in Fig. 2 of the drawings, and fit snugly within the correspondingly shaped corners of the clamp. This clamp is also formed with outwardly extending brackets 15, said brackets being below the upper surface of the clamps and of the rail block. Extending through the brackets and inclining outwardly and downwardly are the clamping bolt 16, the headed ends of said bolts being engaged in brackets 17 on the outer sides of the tie frame. The bolts are arranged on an angle as shown and described in order that the thrust or strain brought upon the clamp will be downwardly and outwardly so that said clamp serves the double function of holding the rail block down and also thrusting it against the end wall of the tie frame. The brackets 15 are so arranged that the securing bolts and nuts are wholly below the upper surface of the rail block.

The tie frame is provided with a transverse abutment plate 21, located a suitable distance inwardly from the end of the frame opposite the closing strap 4 for a purpose that will hereinafter appear. The sides of the frame are vertically notched to receive side extensions 22 of said plate so that it is locked to the frame against longitudinal movement in the frame. This abutment plate is also formed with a depending headed lug 23 which fits an opening in the bottom of the tie frame and assists in holding the plate against longitudinal movement. The bottom of the tie is formed with a longitudinally extending slot through which the headed lug 23 of the abutment plate may be passed and the plate then turned at right angles or transversely of the tie, in order to

lock the headed lug to the tie. A second rail block 8 is arranged in the tie frame so that its outer end contacts with the said abutment plate. To thrust said block outwardly, and to hold it down in the frame, its inner upper corner is embraced by a second clamp 14 precisely like the clamp engaging the inner end of the other rail block 8 so that both of said blocks are held downwardly at their inner ends and forced outwardly by the said clamps 14.

The rails are secured to the rail blocks in the usual way by tie plates and spikes as shown in the drawings, or by any other suitable fastening means, the spikes or other securing means passing into the wooden blocks. The blocks are preferably three feet long and extend eighteen inches on each side of the vertical center of the rails. The space between the inner end of a block and the opposite rail is sufficient to permit the blocks to be moved inwardly to free them from the rails, after, of course, the clamping means have been removed. This space is filled with ballast which being heavier than wood will hold the track solidly in position. The blocks may be removed without disturbing the ballast under the tie frames but, of course, the material within the main frame between the ends of the blocks must be first removed. The clamps serve as effective means for protecting the ends of the rail blocks. They to a large extent keep moisture from reaching said ends, and prevent the blocks splitting.

The inner end clamps 14 are formed with depending extensions 18 which engage the outer surfaces of the sides of the main frame and prevent said sides spreading or being forced outwardly. This is desirable as it assists in rendering the main frame rigid throughout its length.

It is manifest that by providing a tie in which comparatively short wooden blocks may be used a great saving in wood is effected; and also that a great quantity of wood which is not available for use as ties may be formed into short blocks suitable for use in connection with our tie frame and clamps. The good parts of the ties taken from track may be utilized in our tie frame and clamps.

The clamps 9 and 14 are provided on their inner surfaces with sharp ribs 19 which are driven into the tie to prevent any lateral or transverse movement of the rail blocks in the tie frame.

In the end of the tie frame beyond the abutment plate 21 is arranged a short third-rail block 20, the adjacent end of the tie frame being left open so that said block may be withdrawn from the frame through said open end. This third-rail block may be lifted out of the frame by taking off the third-rail support.

To hold the adjoining ends of the rail

block 8 and of the third-rail block 20 down in the tie frame, a clamp 24 is employed. This clamp extends over the said blocks and the abutment plate and is formed with brackets 25 at its ends which project outwardly from the sides of said clamp. On the sides of the tie frame are brackets 26, a clamp bolt 27 connecting said brackets 26 to the brackets 25 of the clamp. To hold the third-rail block against the abutment plate another clamp 14 is employed, said clamp being connected to brackets 17 by bolts 16. This clamp is also formed with depending extensions 18 which engage the outer surfaces of the sides of the main frame and prevent said sides spreading or being forced outwardly.

In Figs. 6 and 7 our invention is shown as applied to an ordinary railroad tie: In this arrangement both rail blocks are secured in position by clamps 9 and 14 which are constructed precisely like clamps 9 and 14 shown in Fig. 1. In this arrangement the tie frame is provided with an opening 5 surrounded by the flanges 6 and 7 precisely as shown in Figs. 1 and 2, said opening being located at a point midway between the rails, precisely as in Figs. 1 and 2.

From the foregoing it is manifest that we provide a tie of very simple construction which will be very efficient in service and by which a great amount of wood which is now useless as ties may be used as rail blocks. The rail blocks as constructed receive the full strain brought on the tie by the train and will give the same bearing on wood as is obtained on the present wooden cross-tie.

The tie is approximately of the same dimensions as the present wooden cross-tie and may be installed in renewals with blocks formed from the discarded wooden cross-ties, the track laborers cutting out the good parts of the ties taken from tracks and using them in connection with our tie frame and clamps, thereby saving valuable wood and making a new tie out of wood which has been heretofore burned. This tie may be used on steel structures and concrete road beds, as well as in any kind of ballast. Other forms of blocks may be used instead of wood blocks in connection with the metal frame and fastenings, if so desired.

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

1. A railway tie comprising a metal channel frame formed of a bottom and vertical sides and an end wall at one end thereof, a rail block fitting in one end of the said main frame and abutting against the end wall, an angle iron clamp engaging the outer upper corner of said rail block, securing means connecting said clamp to the main

frame, an angle iron clamp for the inner upper corner of the said rail block, securing means for said clamp to draw the rail block downwardly and to thrust it outwardly against the end wall.

2. A railway tie comprising a metal channel frame formed of a bottom and vertical sides, short wooden rail blocks secured within said frame near each end thereof, means for holding the outer ends of said rail blocks, angle iron clamps for the inner ends of said blocks, means for connecting said clamps to the main frame said means thrusting said blocks outwardly, and abutments contacting with the outer ends of said blocks and receiving the thrust of said securing means.

3. A railway tie comprising a metal channel frame formed of a bottom and vertical sides and a wall at one end, a removable abutment plate near the other end of said frame, a rail block at one end of said frame and abutting against the end wall thereof, a rail block near the other end of said frame and engaging the inner surface of the abutment, means for clamping said rail blocks in position and thrusting them outwardly, a third-rail block contacting with the abutment on the opposite side thereof from one of the railblocks, means for thrusting said third-rail block inwardly against the abutment, and means for clamping the adjoining ends of the rail block and the third-rail block, the end of the frame adjoining the third-rail block being open to permit of the removal of said third-rail block.

4. A railway tie comprising a metal channel frame formed of a bottom and vertical sides and a wall at one end thereof, a block fitting in said frame and abutting against the end wall, a clamp engaging the outer end of said rail block and carrying brackets at its sides said brackets being below the upper surface of the clamp, brackets on the sides of the main frame, securing means connecting said main frame brackets to the brackets of the clamp, said securing means being wholly below the upper surface of the clamp, a clamp embracing the inner corner of said rail block and formed with brackets on its sides, securing means connected to said brackets and extending downwardly and outwardly, means for connecting said securing means to the sides of the main frame, said securing means being wholly below the upper surface of the clamp and serving to draw the rail block downwardly and outwardly and to thrust it against the end wall of the tie.

5. A railway tie comprising a metal channel frame formed of a bottom and vertical sides and a wall at one end thereof, a wooden rail block fitting in one end of the main frame and abutting against the end wall and extending above the sides of the

frame, a clamp engaging the outer end of said rail block, securing means for said clamp connected to the sides of the main frame, a clamp for the inner end of said rail block, securing means for said clamp serving to draw the rail block downwardly and outwardly whereby said block will be thrust outwardly against the end wall and means carried by this latter clamp engaging the sides of the frame to brace said sides.

6. A railway tie comprising a metal channel frame formed of a bottom and vertical sides and a wall at one end thereof, a wooden rail block fitting in one end of the main frame and abutting against the end wall and extending above the sides of the frame, a clamp engaging the outer end of said rail block, securing means for said clamp connected to the sides of the main frame, a clamp for the inner end of said rail block, securing means for said clamp serving to draw the rail block downwardly and outwardly whereby said block will be thrust outwardly against the end wall, and outwardly extending lugs carried by the latter clamp and engaging the outer surfaces of the sides of the main frame.

7. A railway tie comprising a metal channel frame formed of a bottom and vertical sides and a wall at one end thereof, a wooden rail block fitting in one end of the main frame and abutting against the end wall and extending above the sides of the frame, a clamp engaging the outer end of said rail block, securing means for said clamp connected to the sides of the main frame, a clamp for the inner end of said rail block, securing means for said clamp serving to draw the rail block downwardly and outwardly whereby said block will be thrust outwardly against the end wall, and ribs formed on the inner surfaces of the said clamps adapted to engage the upper and end surfaces of the rail block.

8. A railway tie comprising a metal channel frame formed with a bottom and vertical sides, a pair of rail blocks secured in said frame, a third-rail block adjoining the outer end of one of said rail blocks, and means for clamping said third-rail block in the frame and means carried by the channel frame for holding the abutment plate in position therein.

9. A railway tie comprising a metal channel frame, a pair of rail blocks secured therein, a third-rail block in said frame adjoining the outer end of one of said rail blocks, means for clamping said third-rail block in position, and means between said third-rail block and the adjoining rail block to maintain the rail block in position when the third-rail block is removed.

10. A railway tie comprising a metal channel frame formed of a bottom and vertical sides, short wooden rail-blocks within

said frame near each end thereof, said blocks
extending above the sides of the said frame,
clamping irons extending across the ends of
said blocks, clamping adjustable devices
5 connected to the outer ends of the clamping
irons below the upper surfaces of the rail-
blocks, and means whereby said clamping
devices will be connected to the outer sur-
faces of the sides of the channel frame and
10 serve to force the blocks downwardly in the
frame.

11. A railway tie comprising a metal
channel frame formed of a bottom and ver-
tical sides, short wooden rail-blocks within
15 said frame near each end thereof, said blocks
extending above the sides of the said frame,

clamping irons extending across the ends of
said blocks, adjustable clamping devices con-
nected to the outer ends of the clamping
irons, and means whereby said clamping de- 20
vices will be connected to the outer surfaces
of the sides of the channel frame and serve
to force the blocks downwardly in the frame.

In testimony whereof we hereunto affix
our signatures in the presence of two wit- 25
nesses this 19th day of July 1911.

CHARLES JACOB REDIFER,
HERBERT HERLUIN CANTWELL.

Witnesses:

ROBERT A. MORTON,
JOHN SCHUELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."