No. 794,138. PATENTED JULY 4, 1905.

A. C. CHENOWETH.

RAIL TIE AND FASTENER.

APPLICATION FILED NOV. 5, 1904.

Fig. 1.

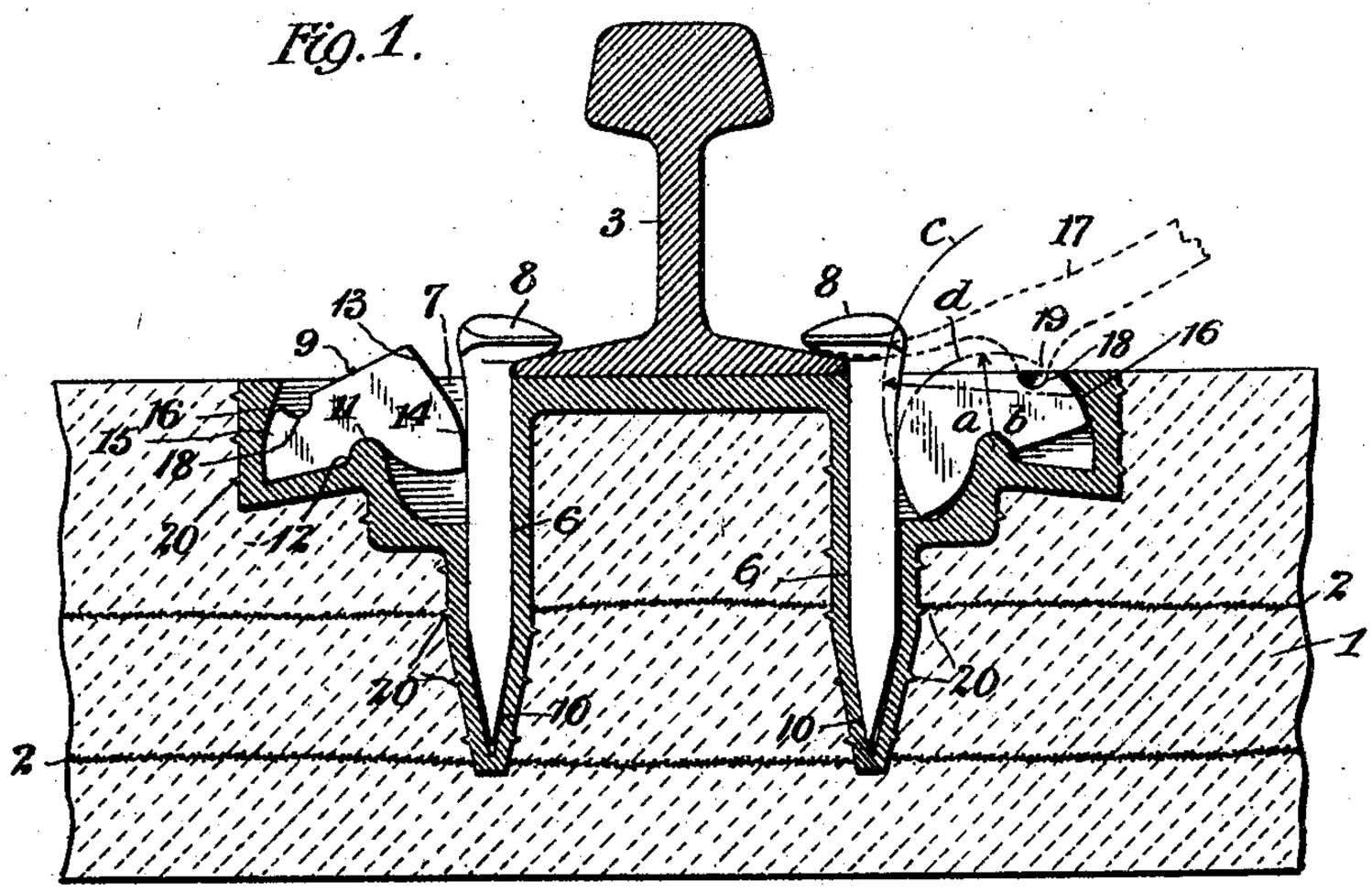


Fig. 2.

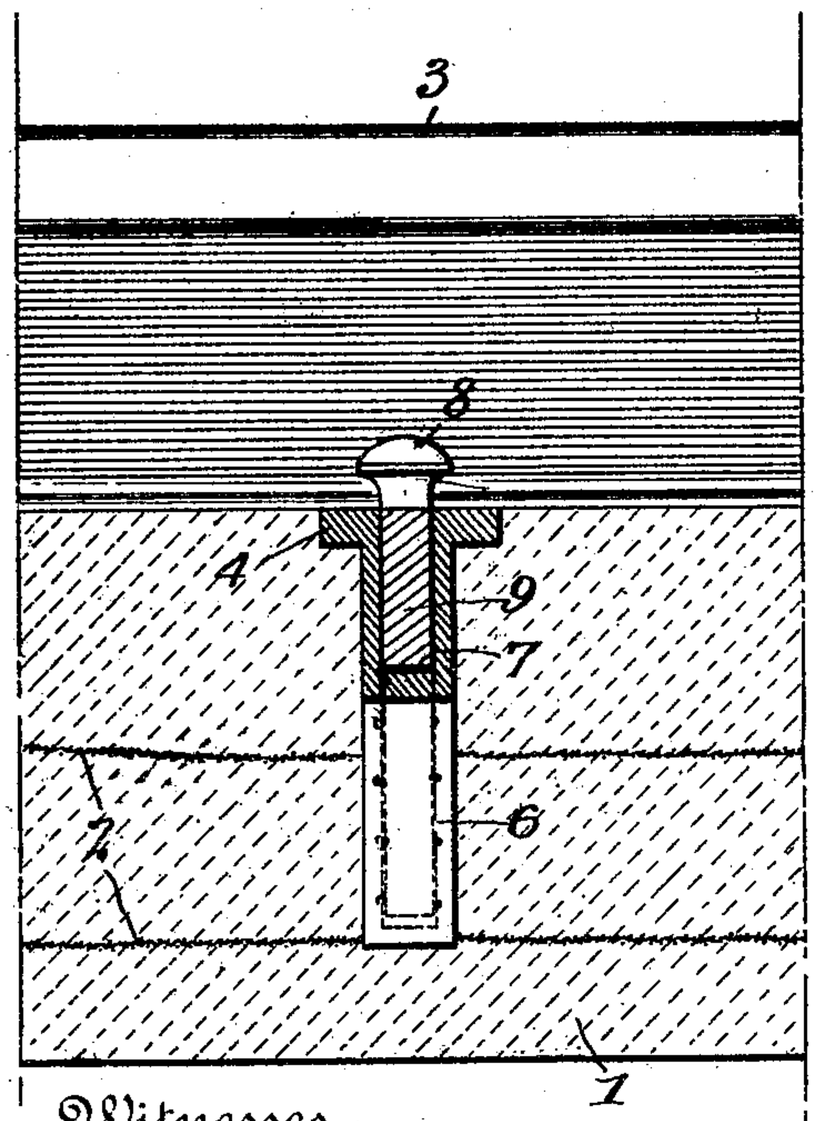
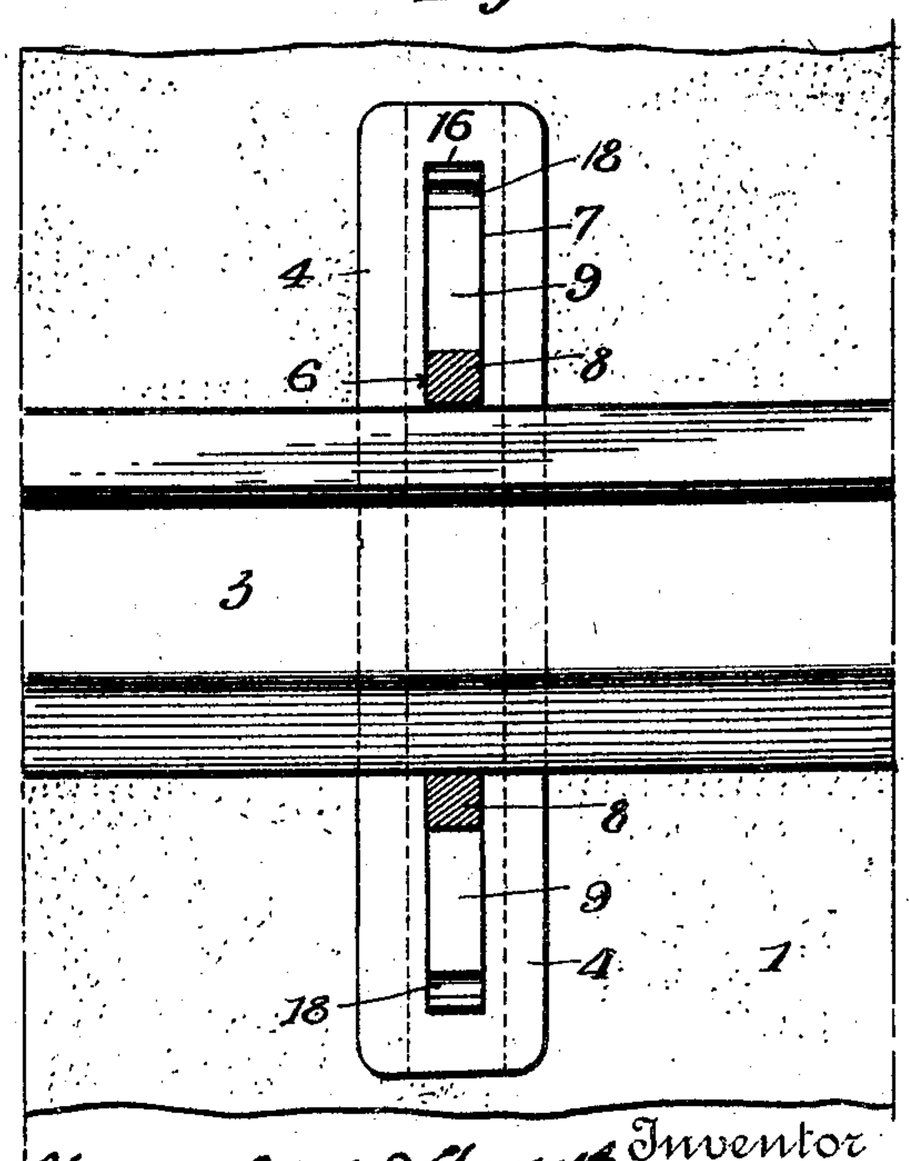


Fig. 3.



Witnesses

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No. 794,138. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

ALEXANDER CRAWFORD CHENOWETH, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO JOHN McNAMEE, OF BROOKLYN, NEW YORK.

RAIL TIE AND FASTENER.

SPECIFICATION forming part of Letters Patent No. 794,138, dated July 4, 1905.

Application filed November 5, 1904. Serial No. 231,498.

To all whom it may concern:

Be it known that I, ALEXANDER CRAWFORD CHENOWETH, a citizen of the United States, residing in the borough of Manhattan, New York city, county and State of New York, have invented certain new and useful Improvements in Rail Ties and Fasteners, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an improved railway-rail tie in which he tie proper is made of molded or shaped plastic material or composition, upon which is mounted or in which is embedded a suitable fixture for fastening the rail thereto; and the invention further relates to a fastener for securing the rail to the tie.

The invention consists in the various novel combinations and arrangements of the particular parts, all as hereinafter fully set forth and then pointed out in the claims.

I have illustrated types of my invention in the accompanying drawings, wherein—

Figure 1 is a vertical cross-sectional view of my improved rail tie or bed and fastener, together with a rail mounted thereon, the plane of the section being crosswise the rail. This view shows a rail-fastener at each side of the rail at opposite points, the one at the right hand being shown in its normal locking position in full lines, while the one at the left-hand side shows the locking wedge or lever depressed or tilted in position to release the spike. Fig. 2 shows a vertical sectional view of the parts shown in Fig. 1, the plane of the section being at right angles to that of Fig. 1 and extending through the tilting wedge or lever. Fig. 3 is a plan view with the two holding-spikes at opposite points of the rail in cross-section.

Referring to the drawings, in which like numbers of reference designate like parts throughout, 1 is a suitably-shaped tie or bed made of plastic material or composition, such as concrete or cement, in which is preferably incorporated a sheet of wire gauze or netting (indicated at 2) and serving as a reinforce and strengthening member.

At suitable points on the composition tie or bed 1 are mounted fasteners for securing the rail 3 in fixed position upon such part. These fasteners comprise suitable bed or socket plates, which are securely embedded in the composition and provided with tilting wedge blocks or levers for engaging and locking a rail-spike to the bed-plate when the spike is driven home against the rail. In the construction shown the fastener-plate 4 is made considerably longer than it is wide in order to lie beneath the base of the rail 3 and to extend well to each side thereof. Near the respective ends of the plate are formed integral therewith suitably-shaped sockets, comprising a deep recess or pocket 6 and a shallower pocket 7, communicating with the recess 6, the pocket 6 being adapted to receive the shank of the spike 8, while the pocket or recess 7 is adapted to receive the tilting wedge block or lever 9, which engages and locks the spike. The pocket or recess 6 is made just large enough in cross-section to receive the shank of the spike and has the bottom thereof pointed or tapering at 10 to correspond with the point on the spike.

Within the recess 7 is mounted the peculiarly-shaped tilting wedge block or lever 9, which has its under side provided with a rounded cavity 11, which rides upon the rounded fulcrum-point 12 in the bottom of the recess 7, so that under certain conditions the lever or block 9 may be tilted from the position shown at the right hand of Fig. 1 into that shown at the left-hand side thereof. The inner end of the block or lever 9 has a straight portion 13 extending down a slight distance and then an inwardly-curved portion 14, the two together forming a continuous and unbroken surface, which engages the back or outside of the spike 8. The outer end of the tilting lever or block 9 is formed with a curved surface 15, having a curvature of an arc, of which the small arrow *a* indicates the radius, while the outer end of the recess or pocket 7 is curved on the same arc 16 as the end of the

lever, this arc, as just stated, being struck from the fulcrum-point 12 on the radius *a*, the curved part 14 of the inner end of the lever 9 being struck substantially on an arc of which the large arrow *b* (at the right of Fig. 1) is the radius, the center of the arc being taken at a point on the curved outer end 16 of the socket at a point some little distance within the outer end, as indicated in the drawings, this point being the foot of the arrow *b*. As the curved surface 16 at the outer end of the pocket 7 presents substantially an undercut part, the tilting block or lever 9 is dropped into place before the spike 8 is driven in its socket, and as the spike is driven in the block has its inner end tipped downwardly, and when the spike is driven home the block finally assumes the position shown in full lines at the right-hand side of Fig. 1, in which position it engages with its substantially straight part an extended surface along the back of the spike and binds the same securely in its socket. Under this condition any lifting force that may be exerted upon the head of the spike—for instance, by the movement of the rail—tends to lift the inner end of the lever upwardly on its outer end 15, which then bears against the surface 16 as a fulcrum, which action would tend to cause the inner curved end 14 of the lever or block 9 to move on the large arc *c* described by arrow *b* as a radius. Such action thus transforms the lifting force into a holding force of the wedge on the back of the spike, and thereby retains it immovably in the position as shown in Fig. 1 at the right-hand side thereof. This locking and wedging action to retain the spike in position against a lifting force is thus brought about by the tendency of the wedge block or lever 9 to move on its greatest length on the arc *c* when bearing against the surface 16 at the outer end of the socket 7, which occurs in the attempt to raise the inner end of the lever by force applied thereto. When, however, it is desired to unlock the wedge lever or block 9 from the spike, this may be readily done by applying a depressing force to the outer end of such lever, whereupon the block will tilt on the fulcrum 12 and its curved locking end 14 will then move on an arc (indicated at *d*) described by the radius *a*, as shown at the right hand of Fig. 1. In thus revolving no wedging action occurs and the straight surface 13 at the locking end of the lever moves rapidly away from the back of the spike, while the curved surface 14 slides up the same until the wedge block or lever assumes the full-line position shown at the left hand of Fig. 1, and as there is no binding action then upon the spike the spike may be drawn out of its socket and removed. The removal of the spike 8, as just described, may be accomplished by the use of a claw-bar 17, which is shown in dotted lines at the right hand of Fig. 1 as being applied to the head of the spike and also to the outer end of the wedge-block 9, which is provided with a depression 18 for receiving a projection 19 upon the under side of the claw-bar 17, the projection 19 serving as a fulcrum. In order to draw the spike, the claw-bar 17 is placed with its end under the spike-head, as is shown in Fig. 1, and with the fulcrum 19 engaging the outer end of the wedge-block 9, so that in depressing the outer end of the claw-bar 17 the drawing force on the spike first depresses the outer end of the block 9 and revolves it into the position shown at the left hand of the figure because of the block revolving on its fulcrum 12, and when this is accomplished the continued drawing force will then serve to pull the spike out of its socket.

The exterior surface of the sockets formed in the fastener-plate 4 is provided with a series of ribs or suitable projections 20 for the purpose of more securely retaining the metallic fixture within the material of the tie or bed 1, into which the fixture is forced or set while the material is in plastic condition. However, any other means of securely fastening this device to the tie or bed may be adopted. The fastener-plate may be provided, if preferred, with but one of the fasteners; but it is preferable for obvious reasons to have the same provided with two fasteners at opposite points, so as to engage the rail at opposite points, thereby holding the same more securely in place. This duplication of the fastener causes it to better retain its fixed position in the tie or bed 1 than might otherwise be the case.

While I have shown the rail-fastener as used in conjunction with a rail tie or bed made of molded plastic material or composition, I wish to be understood as not limiting the fastener itself to such particular use, as it is obvious that it may be employed in connection with an all-metal tie, in which use the fastener-plate and its socket can be formed integral with the body of the metal tie. It will also be observed that the peculiar tilting wedging block or lever and the manner of mounting it is not restricted to use with a rail-spike, but, on the contrary, may be employed to fasten a member or part which it is desired to lock against endwise movement in one direction.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of a rail tie or bed made of suitably shaped or molded plastic material, a metallic fixture provided with a socket and embedded in and secured to said tie, a spike, and means within said socket for binding or locking the spike therein when driven home, substantially as and for the purpose set forth.

2. A fastener for securing a rail or the like, the same comprising a socket, a spike adapted

to enter said socket and engage the rail, and a tilting wedging block or lever mounted within the socket and engaging the shank of said spike, said block or lever being adapted to bind itself against said spike when a lifting force is applied to the latter, but to be tilted on its fulcrum when force is applied to the opposite end of the block or lever from that which engages the spike and thereby release the spike, substantially as and for the purpose set forth.

3. A fastener for securing a rail or the like, the same comprising a socket having a recess therein for receiving a spike and also a recess for a tilting wedging block or lever and the latter recess being provided with a fulcrum for the block or lever to rock on and an abutment for the outer end of the lever to bear against, a spike, and a tilting wedging block or lever mounted in its said recess on the fulcrum therein and having its inner end adapted to engage said spike when entered in its socket and to hold the same against endwise-pulling force, but to release the spike when the outer end of said block or lever is depressed, substantially as and for the purpose set forth.

4. The combination of a rail tie or bed, a fastener for securing the rail thereto and comprising a suitable plate formed with a socket having a recess therein for receiving the spike and also a recess for the tilting wedging-block, the latter recess being provided with a fulcrum for said block or lever to rock on and a fixed abutment for the outer end of said block or lever to bear against, the said latter recess communicating with the one for receiving the spike, and a tilting wedging block or lever mounted upon the fulcrum in its recess with its outer end adapted to bear against the abutment and having its inner or locking end adapted when depressed to engage and lock the spike against endwise movement in an outward direction, but releasing said spike when the outer end of said block or lever is depressed, substantially as and for the purpose set forth.

5. The combination of a member or part adapted to be locked against endwise movement in one direction, a tilting or wedging block or lever 9 provided with a fulcrum 12 and a fixed abutment against which the outer end 16 of the said block or lever bears, the inner or locking end of said block or lever being provided with a straight part 13 and a curved part 14 for engaging the side of the said part or member, substantially as and for the purpose set forth.

6. A locking device for holding a member against endwise-pulling force and comprising a socket, a member adapted to be placed or driven in said socket, and a tilting wedging block or lever engaging with its locking end one side of said member and with its other end a fixed abutment on which it may rock when the locking end of the lever is raised, said lever being provided with a fulcrum between said ends on which it may rock when the outer end of said lever is depressed, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of the two subscribing witnesses.

ALEXANDER CRAWFORD CHENOWETH.

Witnesses:
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C. J. HEERMANCE.