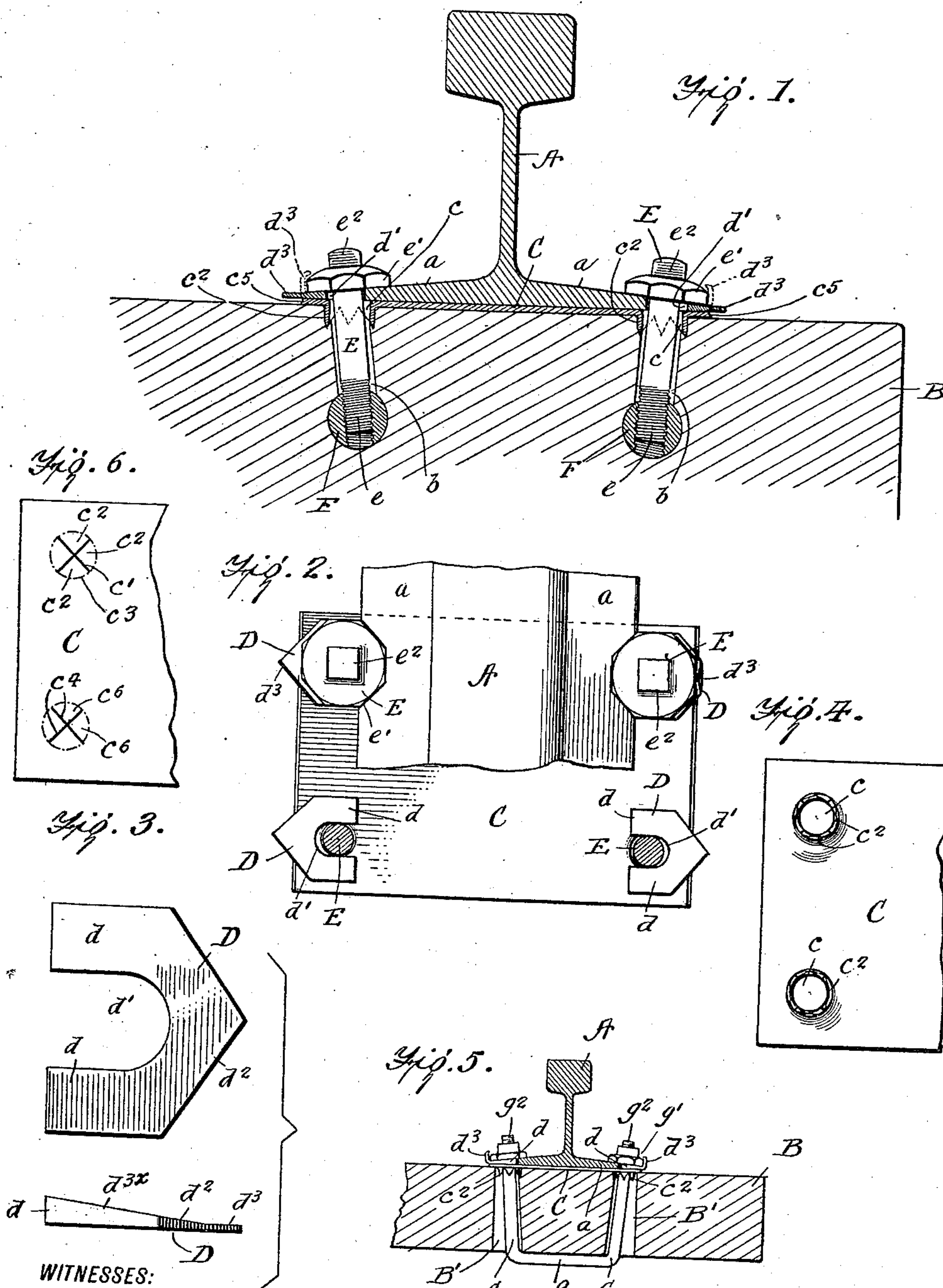


H. W. CASE.
RAILWAY RAIL FASTENING MECHANISM.
APPLICATION FILED NOV. 9, 1910.

997,750.

Patented July 11, 1911.



WITNESSES:
L. H. Schmidt
H. E. Stonebraker.

INVENTOR
HOMER W. CASE,
BY
C. J. Brauer
ATTORNEYS.

UNITED STATES PATENT OFFICE.

HOMER W. CASE, OF SAN FRANCISCO, CALIFORNIA, ASSIGNOR OF ONE-HALF TO
CHARLES CARTER NICHOLS, OF SAN FRANCISCO, CALIFORNIA.

RAILWAY-RAIL-FASTENING MECHANISM.

997,750.

Specification of Letters Patent. Patented July 11, 1911.

Application filed November 9, 1910. Serial No. 591,416.

To all whom it may concern:

Be it known that I, HOMER W. CASE, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Railway-Rail-Fastening Mechanisms, of which the following is a specification.

The general object of my invention is the provision of a novel and improved type of railway-rail fastening mechanism.

More specifically stated, the objects are:

1. To provide a railway-rail fastening mechanism which shall embody a minimum number of parts with the maximum of efficiency,—a device which, by reason of its great simplicity of structure, may be readily assembled, with exceeding celerity, by even unskilled labor, and which may as quickly and easily be removed, when desired, as for repairs, or the like. 2. To provide a railway-rail fastening mechanism in which possibility of the clamping-bolt and, thus, the rail working loose shall be absolutely eliminated. 3. To provide a unique form of so-called "tie-plate", having simple, but very efficient, means, peculiarly formed, to hold the tie-plate on the tie without creeping.

With these objects in view, the invention, briefly stated, resides in a peculiar form of screw-bolt, provided, preferably, with a hexagonal head, or any other form of polygonal head.

The invention also resides in a peculiar form of washer provided with a locking tongue or extension to be bent up on one side of the bolt-head, thus locking the screw-bolt against working or jarring loose.

The invention also comprehends the provision of an improved form of metallic tie-plate, having holes for bolts punched therein, in such a manner that all of the metal is used and none taken out to make said holes, thus providing, as it were, strong reinforced shoulders for the bolts to rest against, and, also, forming prongs to engage in the bolt-openings in the tie, and thus to hold the plate in place on the tie, against creeping, without any other device being necessary for this purpose.

For a fuller understanding of the invention, reference will now be had to the drawing accompanying and forming part of this specification, and in which like letters of

reference denote corresponding parts throughout the several views.

In the drawing, I have exhibited one form of embodiment of my invention capable of carrying out the underlying or basic principles thereof, and in this drawing: Figure 1 is a transverse sectional view through a railway-rail and a tie, showing my improvements in position for use, the screw-bolts being shown in elevation and the remainder of my improvements in section; Fig. 2 is a top plan view of the parts of Fig. 1; Fig. 3 is a collective detail view, in top plan and in side elevation, respectively, of my novel form of washer; Fig. 4 is a fragmentary bottom plan view of my novel type of tie-plate; Fig. 5 is a transverse sectional view through a railway-rail and tie, showing my improvements in connection with a slightly modified form of bolt, dispensing with the plugs shown in Fig. 1; Fig. 6 is a plan view, in the nature of a diagram, showing the tie-plate before the holes are punched, the plate being scored or marked with lines indicating the method of making the holes.

Referring, now, in detail to the drawing: A represents a railway-rail, and B a tie, both of ordinary and conventional construction, and forming no part of my invention. Seated upon the top of the tie is my novel tie-plate C, which is, desirably, constructed of metal and, advantageously, for my purposes, of a length to extend beyond the outer ends of the bottom-flanges *a, a* of the rail, and is, advantageously, beveled at its ends, as at *c⁵, c⁵*, for a purpose presently appearing. Said tie-plate C is punched or stamped, or otherwise cut to provide a plurality of round or square bolt-holes *c*, and these holes are formed in a peculiar manner, so as to use all the metal and not take out any in making the holes. The diagrammatic view, Fig. 6, illustrates the method of making these holes. In this figure, the plate is scored or marked for holes to be cut, and these holes are desirably formed by slitting or cutting the metal of the tie-plate along the two intersecting and crossing, straight lines *c⁴* (the slits, or cuts, thus made, forming, as it were, the letter X), and then bending out the four segments *c⁶* in any suitable manner, along the circular line *c³*, as by a plunger circular in cross section and of a diameter approximating the diameter

of the hole which it is desired to form in the tie-plate, thus forming the four prongs c^2 . Thus, all the metal of the plate is used, and none sacrificed to make the hole; and, moreover, strong bearing-shoulders are formed by the prongs, at the points where they merge into the body of the tie-plate, for the bolts to rest against. The prongs, engaging the tie, hold the tie-plate against creeping. Disposed on top of said tie-plate C are my novel washers D, each of which is formed with two parallel legs d , d , spaced apart to form therebetween an opening d' , through which the screw-bolt (presently to be described) passes; desirably, at one end, with a V-shaped extension d^2 , whose pointed end d^3 forms a lip extending beyond the ends c^5 , c^5 of the tieplate, for a purpose presently appearing; and with a top surface d^{3*} inclined in conformity to the inclination of the top surface of the bottom flange a of the rail A. It is to be noted, also, that the depth of the washers D at the free ends of the feet or legs d , d , or at that part of the washers which bears against the rail-flange a , is the same as that of the rail-flange a where said washers bear thereagainst; the top of the rail-flange a and the top of the washers thus forming, together, a surface in one, single plane, against which the head of the bolt (presently to be described) will bear flatly, squarely, and evenly.

The screw-bolt of the type illustrated in Figs. 1 and 2 is represented by E, and has a threaded lower portion e screwed into a transverse, threaded opening in a horizontally-disposed, elongated, preferably metallic plug F, desirably circular in transverse cross section, driven transversely into the tie from one side thereof. Said bolt E carries, preferably integral therewith, a large head e' , desirably hexagonal in horizontal cross section, surmounted by a smaller head e^2 , desirably square in horizontal cross section. When the bolt E is in position in the tie (as shown in Fig. 1), the head e' bears forcibly upon the top of the rail-flange a , as well as upon the washer D, thus clamping the rail A and the washer D against movement.

The advantage of having the slot d' in the washer D open at one end, as shown, is that, if a washer should break in use, it may be removed from beneath the bolt-head e' by simply unscrewing said bolt slightly and then pulling away the washer, without removing the bolt E from the tie. This would not be possible, if the slot d' were entirely inclosed on all sides.

The beveled ends c^5 , c^5 of the tie-plate C form a bearing surface for a chisel, or other tool, to be inserted beneath the lips d^3 of the washers D, in the operation of bending up said lips d^3 against one side of the hexagonal head e' , to lock the screw-bolt E against un-

screwing and, thus, working loose. In Fig. 1, the ends or lips e^3 of the washers D are shown, in dotted lines, turned up against a side of the bolt-head e' .

Fig. 5 shows a slightly modified form of bolt, in this instance a U-shaped bolt, *i. e.*, a bolt with two, approximately vertical arms G, G united at the bottom by a horizontal cross-piece g , the latter lying beneath the tie B and the former extending up through openings B' , B' , in the tie. Hexagonal nuts g' , g' are screwed on the threaded ends g^2 , g^2 of the bolt-legs G, G, and the washers shown in the other figures of the drawing are employed, with the lips d^3 thereof turned up against one side of the hexagonal nuts, to lock them in position against working loose. The tie-plate C shown in Figs. 1, 2, 4, and 6 is also employed in connection with the device of Fig. 5. In the device of Fig. 5, by reason of the peculiar structure of the bolt, *i. e.*, U-shaped, the employment of the plugs F, of the device of Figs. 1 and 2, is dispensed with.

Having thus fully described my invention, what I claim as new and desire to secure by Letters-Patent is:

1. The combination with a tie-plate formed with anti-creeping means, of a bolt passing through said plate and carrying a head, a washer adapted to be disposed between said head and said plate, and having an inclined top and a lip, the latter being bendable to engage the side of said head.
2. The combination with a tie-plate provided with bolt-openings formed by slitting the material of said plate along two intersecting and crossing straight lines, and bending said slit portions to form prongs, of a bolt passing through said holes in the plate and carrying a head, a washer adapted to be disposed between said head and said plate, and having an inclined top and a lip, the latter being bendable to engage the side of said head.
3. The combination with a tie-plate formed with anti-creeping means, of a bolt passing through said plate and carrying a head, a washer adapted to be disposed between said head and said plate, and having a slot therein open at one end, and having an inclined top and a lip, the latter being bendable to engage the side of said head.
4. The combination with a tie-plate provided with beveled ends and with anti-creeping means, of a bolt passing through said plate and carrying a head, a washer adapted to be disposed between said head and said plate, and having an inclined top and a lip, the latter being bendable to engage the side of the head.
5. The combination with a tie-plate formed with beveled ends and with bolt-openings formed by slitting the material of said plate along two intersecting and

crossing straight lines, and bending said slit portions to form prongs, of a bolt passing through said holes in the plate and carrying a head, a washer adapted to be disposed between said head and said plate, and having an inclined top and a lip, the latter being bendable to engage the side of said head.

6. For use on a railway-tie, a tie-plate provided with bolt- or spike-openings, 10 formed by slitting the material of said plate along two intersecting and crossing straight

lines and bending said slit portions to form prongs, thus utilizing all of the material of the plate.

In testimony whereof I have hereunto set 15 my hand in presence of two subscribing witnesses.

HOMER W. CASE.

Witnesses:

E. J. CASEY,
FRANCIS M. HEFFERNAN.

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