(No Model.)

D. HARRINGTON & M. A. KEANE.

COMBINED TIE, CHAIR, AND FISH PLATE.

No. 381,238. Patented Apr. 17, 1888.

Fig. 1.

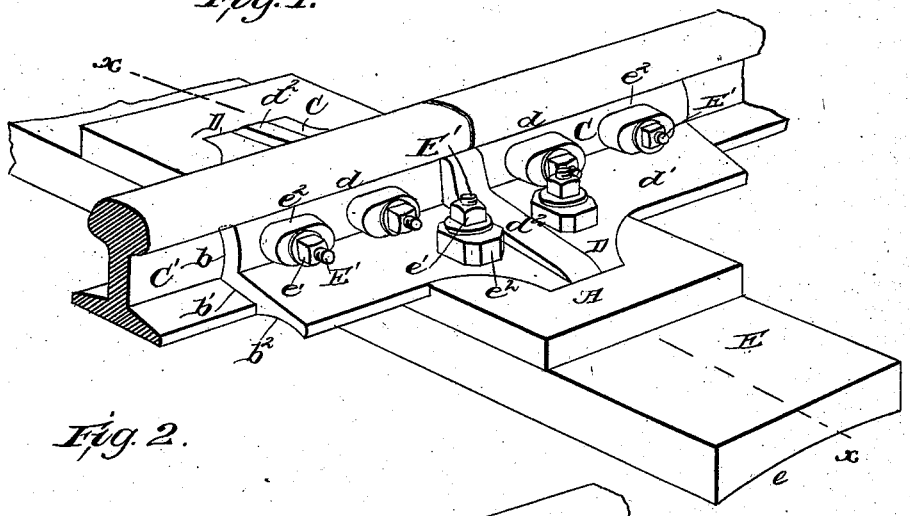


Fig. 2.

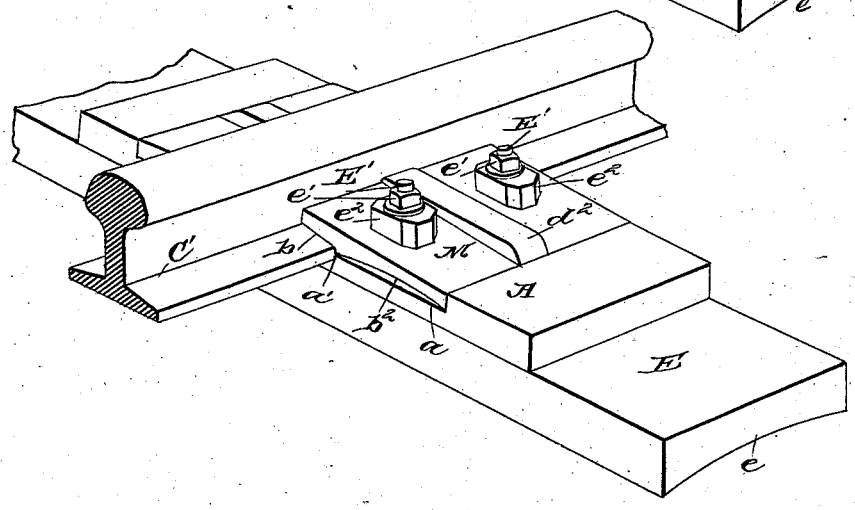
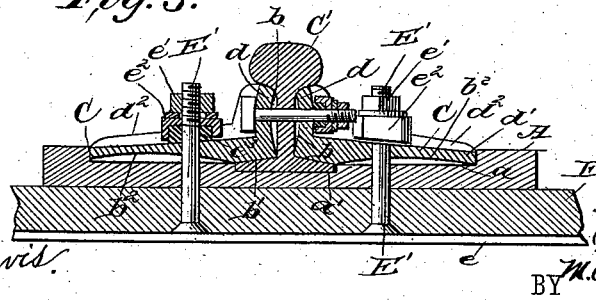


Fig. 3.



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UNITED STATES PATENT OFFICE.

DANIEL HARRINGTON AND MORRIS A. KEANE, OF NEW BRUNSWICK, NEW JERSEY.

COMBINED TIE, CHAIR, AND FISH-PLATE.

SPECIFICATION forming part of Letters Patent No. 381,238, dated April 17, 1888.

Application filed December 29, 1887. Serial No. 259,303. (No model.)

To all whom it may concern:

Be it known that we, DANIEL HARRINGTON and MORRIS A. KEANE, of New Brunswick, in the county of Middlesex and State of New Jersey, have invented a new and Improved Combined Tie, Chair, and Fish-Plate, of which the following is a full, clear, and exact description.

Our invention relates to an improved combined tie, chair, and fish-plate, and has for its object to simplify the construction of such and provide an effective means for holding the approaching ends of railway-rails in position, and likewise for clamping the rails to the ties at their ends or at any point in their length.

The invention consists in the construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the device applied at the abutting ends of the rails. Fig. 2 is a similar view of the device when used upon a rail between its ends, and Fig. 3 is a transverse section taken on line *x x* of Fig. 1.

In carrying out the invention, A represents a rectangular chair, preferably of a width corresponding to the width of the sleeper E, the said chair being provided with a central recess, *a*, adapted to receive the horizontal member of the fish-plate C. Centrally in the lower wall of the recess *a* a second recess, *a'*, is formed, extending transversely the chair, which latter recess is so shaped as to neatly receive the base or flange of the rail C', as illustrated in Fig. 3.

The fish-plates C are made of angle-iron. The outer faces of the vertical members *d* are perpendicular and the inner faces, adapted to engage and clamp the web of the rail, are concaved, as illustrated at *b* in Figs. 1 and 3. The horizontal members *d'* of said fish-plates are provided centrally their longitudinal edge with an integral projection or wing, D, the recess *a* being shaped to receive said wing, as illustrated in Fig. 1. The purpose of the wing is to impart strength to the plates, which are also additionally braced and strengthened by means of a rib, d^2, extending transversely the central portion of the horizontal member upon its outer face, and likewise upon the outer face of the vertical member.

The upper and outer face of the horizontal member *d'* is inclined from its intersection with the vertical member outward, the inclination being gradual and such that the outer edges of the plates will be flush, or nearly so, with the upper surface of the chair, as best shown in Fig. 3.

That portion, *b'*, of the under face of the horizontal member *d'* which has a bearing upon the flange of the rail is conformed to the contour of the flange, so that it may be compactly seated thereon, and the remaining portion of the said under surface is concaved, as illustrated at b^2, Figs. 1 and 3.

The chair having been placed in position upon the sleeper E, which is also provided with a concaved under surface, *e*, the rail having been seated in the recess *a'*, and the fish-plates positioned in the recess *a*, bolts E' are passed through the vertical members of the plates and through the web of the rail, and the former are brought in secure and decided contact with the latter by nuts *e'*, screwed upon the threaded ends of the bolts. Between the plates and the nuts *e'* a cushion-nut, e^2, is intervened, which nuts are U-shaped in cross-section, as illustrated in Fig. 3, and the cavity therein is filled with a rubber block, e^3, which cushion and likewise the nut are apertured to receive the bolts E'. The cushion is also made to project beyond the surface of the nut. By this means expansion and contraction are provided for and the plates may be drawn up tight to the rail. The concave bearing-surfaces impart to the plates a spring-like action. Similar bolts E' are passed through the horizontal members of the plates, and also through the sleeper, the nuts being above and made to bear against cushioned nuts e^2, as in the attachment to the rails. The sleeper may be constructed of any suitable material; but iron is preferred.

In Fig. 2 we illustrate our device applied as a chair. In this event the tie-plate M does not differ materially in construction from the central portion of the aforesaid fish-plates, the only essential difference being that in the tie-

plate the vertical member found in the fish-plate is omitted.

The vertical members *d* of the fish-plates C may, if preferred, be longitudinally recessed to allow for the seating of the cushion-nuts therein, so as to prevent said nuts from turning and to insure their direct impact on the web of the rail.

Having thus fully described our invention, we claim as new and desire to secure by Letters Patent—

1. The combination, with a railway-chair provided with the compound recess *a a'* and a rail fitted in the recess *a'*, of an angular fish-plate, C, having its vertical member concaved upon its inner bearing-surface and the horizontal member fitting into the recess *a*, having its under surface partially conformed to the contour of the rail-flange and partially concaved, and means, substantially as shown and described, for binding the fish-plate to the rail and said plates to the chair, substantially as set forth.

2. The combination, with a tie having a concaved under surface, a chair upon said tie provided with a compound recess, *a a'*, and a rail fitted in the recess *a'*, of angular fish-plates C, having the inner bearing-surfaces of their vertical members concaved and the under surface of their horizontal members entering the recess *a*, partially conformed to the contour of the rail-flange and partially concaved, and bolts, substantially as shown and described, passing through the fish-plates, chair, and tie, and through said fish-plates and rails, as and for the purpose herein set forth.

3. The combination, with a railway-chair provided with a compound recess, *a a'*, and a rail fitted in the recess *a'*, of an angular fish-plate, C, having its vertical member concaved upon its inner bearing-surface and the horizontal member provided with a centrally-integral projection or wing, D, adapted to fit in a correspondingly-shaped portion of the recess *a*, and having its under surface partially conformed to the contour of the rail-flange and partially concaved, and means, substantially as shown, for binding said fish-plate to the rail and said plates to the chair, substantially as shown and described.

4. In a railway chair and fish-plate, essentially as shown and described, the fastening or clamping bolt E', provided with a nut, e^2, U-shaped in cross section and having its cavity filled with an elastic contact-block, e^3, and provided with a nut, e', at its outer end, said nut adapted to lock the nut e^2 securely upon the bolt E', substantially as herein shown and described.

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