No. 675,578. Patented June 4, 1901.

D. O. WARD.

RAILWAY RAIL JOINT.

(Application filed Dec. 10, 1900.)

(No Model.)

Fig. 1.

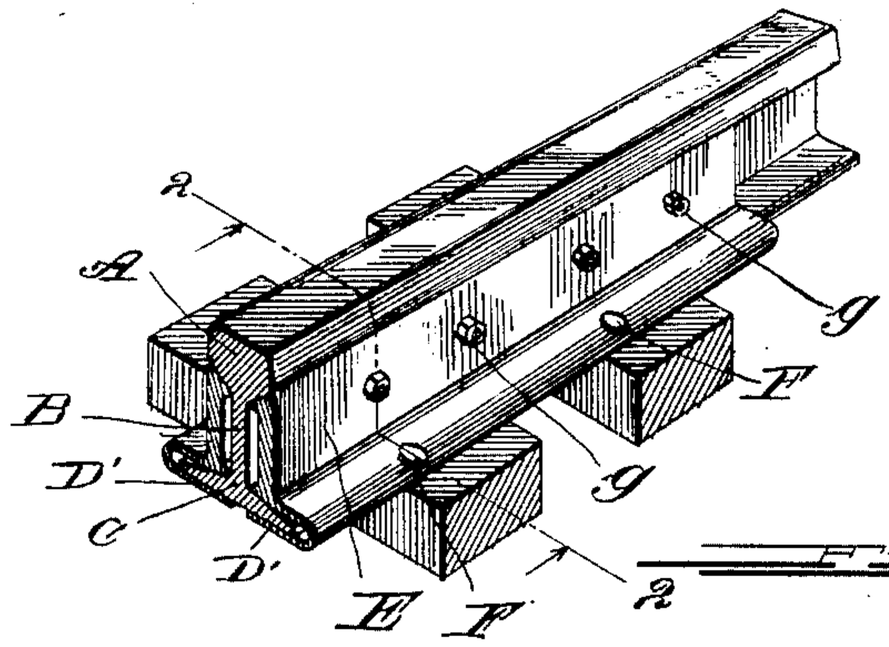
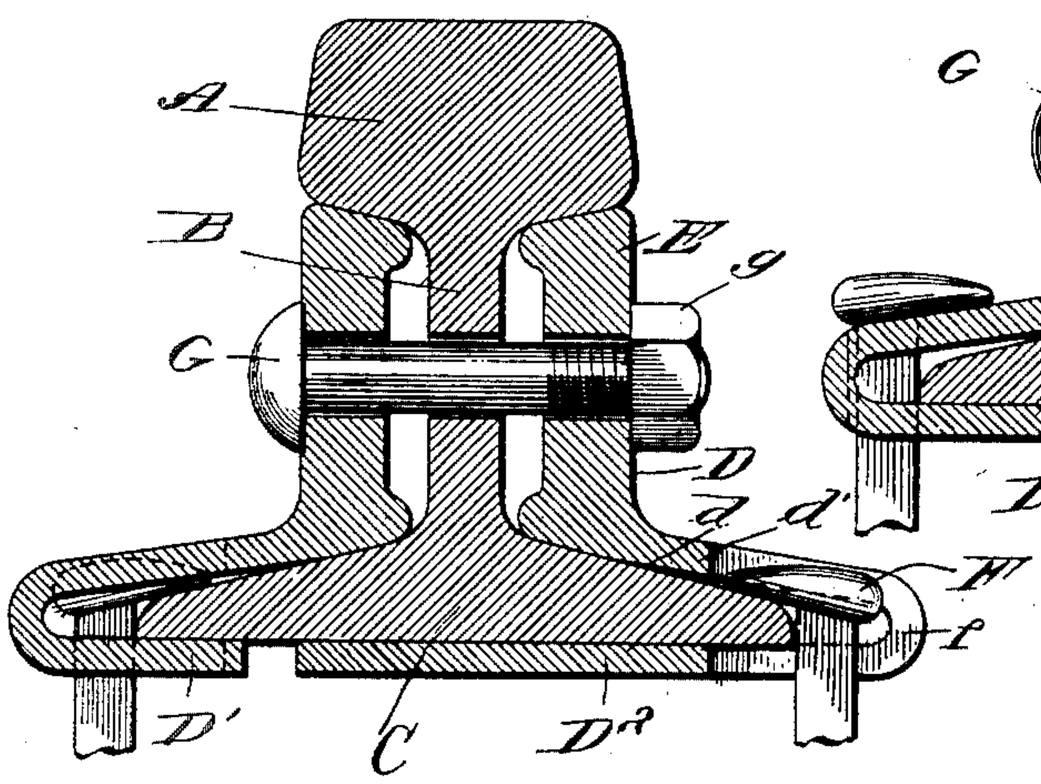


Fig. 2.

Fig. 3.



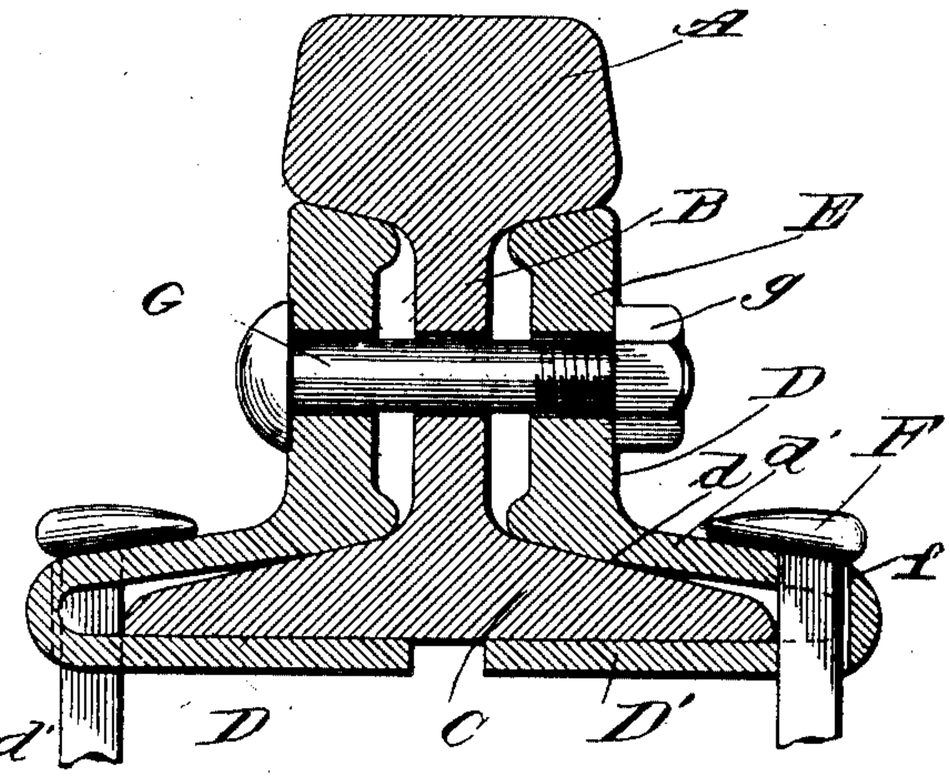
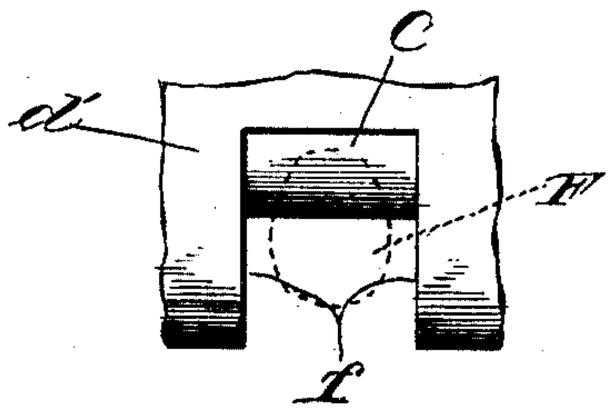


Fig. 4.



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DANIEL O. WARD, OF OAKPARK, ILLINOIS.

RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 675,578, dated June 4, 1901.

Application filed December 10, 1900. Serial No. 39,267. (No model.)

To all whom it may concern:

Be it known that I, DANIEL O. WARD, a citizen of the United States, residing at Oakpark, Cook county, Illinois, have invented a certain new and useful Improvement in Railway-Rail Joints, of which the following is a description.

My invention belongs to that class of rail-joints in which the proximate ends of the rails are embraced by two angle-bars, one on either side of the rail, of substantially the same form, each of which is provided with a fish-plate section positioned within the fishing-space of the rail, and from the lower part of which a section extends outward over the base of the rail and thence downward and backward to form a partial seat or plate, upon which the ends of the rails rest. As heretofore constructed the extension from the lower part of the fish-plate section has been formed on a plane of substantially the same inclination as the upper surface of the rail-base, the two being parallel, and thus when the parts are assembled this extension contacts with the upper surface of the base of the rail, which, resting upon the sole-plate extension, causes the base of the rail to be so closely embraced and bound by the angle-bar extension as to render it difficult to assemble or disconnect the parts and sometimes necessitates the use of a sledge in that operation. In addition to the added expense and labor caused by this construction it also seriously interferes with the operation of the joint. In joints in which the bases of the rails are embraced from each side by closely-fitting angle-bar extensions of this kind the natural expansion and contraction of the rails at the joints are seriously interfered with. Thus when the rail expands the flange or base is so tightly bound in its seat that a high joint is created, or, in other words, the rail-surface at the joint is elevated or bent up. The defective operation, taken in connection with the difficulty of rolling the long inclined bearing-surfaces with sufficient accuracy to permit the assembling of the parts, renders it necessarily an expensive as well as an unsatisfactory construction.

The object of my invention is to obviate the objectionable features referred to and at the same time retain all the supporting force of a properly-fitting angle-bar of the ordinary rigid form, together with the lower supporting extension-plates upon which the rail ends freely and firmly rest, and also permit the expansion and contraction of the rails without interference with the efficiency of the joint.

To this end my invention consists, broadly, first, in constructing the angle-bar with a section corresponding to the rigid type of fish-plate which shall closely fit the fishing-space in the rail vertically and having its edges constructed to properly contact with the under surface of the head and the upper surface of the base of the rail as in ordinary use; second, extending the angle-bar from the point where it ceases to act as a fish-plate proper out beyond the rail-base a sufficient distance to permit the formation of spike-notches in a plane at an angle different from that of the upper surface of the base of the rail, as shown in the drawings, so that there cannot by any possibility be any contact of the extension with the upper surface of the rail-base beyond the point mentioned, and, third, bending the extension downward and backward toward the vertical center of the rail a sufficient distance to form an effective seat or plate upon which the rail ends rest.

My invention also consists in such other novel construction, arrangement, and combination of parts as are shown and described and as are more particularly pointed out in the claims.

In the drawings, wherein like reference-letters indicate like or corresponding parts, Figure 1 is a perspective view of my improved joint. Fig. 2 is a transverse section in line 2 2 of Fig. 1. Fig. 3 is a similar section of a modified form, and Fig. 4 is a partial plan view showing the spike-notches formed in the plate shown in Fig. 3.

In the drawings, A is the head of the rail, B its web, and C its base.

D is an angle-bar provided with a fish-plate section E, adapted to closely fit the fishing-space of the rail and preferably to form a wedging contact with the under surface of the head A and the upper surface of the base C. In the preferred form the fish-plate section closely fits between the under surface of the head and the upper surface of the base, but is formed to leave a space between the plate and the web, as shown. Where I have used the term "closely fitting" I wish to be

understood as including such form. From near the point *d* where the fish-plate section ceases to act as a fish-plate proper the angle-bar extends, as at *d'*, at an angle of inclination different from that of the upper surface of the base of the rail, as shown. This section extends a sufficient distance beyond the base of the rail to permit of the formation therein of spike-notches *f* for the reception of the spikes F. From this point the angle-bar is bent downward to pass beneath the base of the rail, as at D', thus forming a plate upon which the ends of the rails rest, as shown. The section D' may extend to a point near the vertical center of the rail, as shown in Figs. 1 and 2, care being taken that they be of such a length that when the parts are assembled there is sufficient space between the proximate edges of the two angle-bars on opposite sides of the rail to permit of proper adjustment to compensate for the wear of the several parts, or one of said plates may be extended a greater distance than the other, as shown at D^2 in Fig. 3. In the latter form, which is preferred, the longer base-plate D^2 terminates at a point beyond the vertical center of the rail substantially in the line of direction of the wheel-blows from above. This gives practically a continuous bearing, commencing at a point under the head of the rail on one side circumscribing the web and base and terminating under the base of the rail on the opposite side of the vertical center, thus forming a continuous bearing at all exposed or stress points. In this form the opposite bar has a correspondingly shorter base-plate, as shown.

G is the usual bolt provided with a nut *g* for forcing the fish-plates into close contact with the head and base of the rail in the usual manner and retaining the parts in such position.

The spike-notches may be formed wholly within the metal of the extension, as shown in Figs. 1 and 2, or they may be formed as shown in Figs. 3 and 4, the latter construction being preferred. The spike-notches may also be formed of a size to permit the nose of the spike to rest directly upon the angle-bar extensions, as shown in Figs. 1 and 2; but in the preferred construction the notches are made of such size and form to permit the nose of the spike to rest directly upon the base of the rail, as shown in Figs. 3 and 4. By this means all the advantages are secured that would be had by using a much longer spike.

It will thus be seen that my invention consists of a combined angle-bar and base-plate in which all the desirable functions of each are retained, while the undersirable features found by practical use to exist are eliminated.

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

1. A combined angle-bar and base-plate, comprising an ordinary rigid supporting angle-bar adapted to fit the fishing-space of a railway-rail, and with the usual bolt-holes formed therein, and having its lower part extended in a plane at an angle different from that of the upper surface of a rail-base and to be out of contact therewith to a point beyond the edge of the rail-base and thence downward and in a substantially horizontal plane to terminate and be positioned between the lower face of the rail-base and the upper face of the tie, said extensions having spike-notches formed therein, substantially as described.

2. A combined angle-bar and base-plate comprising an ordinary rigid supporting angle-bar adapted to fit the fishing-space of the railway-rail to form a wedging contact with the lower surface of the head and the upper surface of the base of the rail and having the usual bolt-holes formed therein, said angle-bar having its lower part extended in a plane at an angle different from that of the upper surface of a rail-base and to be out of contact therewith to a point beyond the edge of the rail-base and thence downward and in a substantially horizontal plane to terminate and be positioned between the lower face of the rail-base and the upper face of the tie, said extension having spike-notches formed therein, substantially as described.

3. A combined angle-bar and base-plate comprising an ordinary rigid fish-plate adapted to fit the fishing-space of a rail and having the usual bolt-holes formed therein, said fish-plate having its lower part, as at *d'* extended in a plane at an angle different from that of the upper surface of the rail-base and out of contact therewith, to a point beyond the edge of the rail-base and thence downward and backward beneath the rail to form a sole-plate for the same, said extensions having formed therein spike-notches constructed to permit the nose of the spikes positioned therein to rest directly upon the base of the rail, substantially as described.

4. A combined angle-bar and base-plate comprising an ordinary rigid fish-plate adapted to fit the fishing-space of a rail and form a wedging contact with the under surface of the head and the upper surface of the base, and having the usual bolt-holes formed therein, and also having said lower part extended in a plane at an angle different from that of the upper surface of the rail-base to a point beyond the edge of the same and thence downward and backward beneath the rail to form a sole-plate therefor, said extension having spike-notches therein constructed to permit the nose of the spike to rest upon the base of the rail, substantially as described.

5. A combined angle-bar and base-plate, comprising an ordinary rigid supporting angle-bar adapted to fit the fishing-space of a railway-rail, and with the usual bolt-holes formed therein, and having its lower part extended in a plane at a different angle from that of the upper surface of the rail-base and

out of contact therewith to a point beyond the edge of the rail-base and thence downward and backward to extend beneath and to come into contact with the under surface of the base of the rail to a point beyond the vertical center thereof to form a sole-plate, said extensions having spike-notches formed therein, substantially as described.

6. A combined angle-bar and base-plate comprising a rigid angle-bar adapted to fit the fishing-space of the rail to form a wedging contact with the lower surface of the head and upper surface of the base thereof and having the usual bolt-holes formed therein, said angle-bar having its lower part extended in a plane at an angle different from that of the upper surface of the rail-base and out of contact therewith, to a point beyond the edge of the rail-base, and thence downward and backward to extend beneath and to come into contact with the under surface of the base of the rail to a point beyond the vertical center thereof to form a sole-plate, said extensions having spike-notches formed therein, substantially as described.

7. A combined angle-bar and base-plate comprising an ordinary fish-plate adapted to fit the fishing-space of a rail and having the usual bolt-holes formed therein, said fish-plate having its lower part extended in a plane at an angle different from that of the upper surface of the rail-base and out of contact therewith, to a point beyond the edge of the rail-base and thence downward and backward beneath the rail to a point beyond the vertical center thereof to form a sole-plate, said extensions having formed therein spike-notches constructed to permit the noses of the spikes positioned therein to rest directly upon the base of the rail, substantially as described.

8. In a railway-joint the proximate ends of two rails constructed with the usual head A, web B, and base C in combination with two substantially similar combined angle-bars and base-plates D, each comprising the fish-plate E having the usual bolt-holes formed therein, said fish-plate being provided with a section d' extending from near the point d, in a plane at an angle different from that of the upper surface of the base C and out of contact therewith, to a point beyond the edge of the rail-base and thence downward and backward, in a substantially horizontal plane to terminate and be positioned beneath the lower face of the rail-base and the upper face of the tie to form a sole-plate D′ for the same, said extensions having spike-notches formed therein and fish-plate bolts G, provided with nuts g, substantially as described.

9. In a railway-joint, the proximate ends of two rails constructed with the usual head A, web B and base C, in combination with two substantially similar combined angle-bars and base-plates D each comprising the fish-plate E having the usual bolt-holes formed therein, said fish-plate being provided with a section d' extended from near the point d in a plane at an angle different from that of the upper surface of the base C and out of contact therewith, to a point beyond the edge of the rail-base, and thence downward and backward beneath the rail to form a sole-plate for the same, one of the sole-plates, as D^2 being extended beyond the vertical center of the rail, said device having spike-notches formed therein, and fish-plate bolts G provided with nuts g to secure the parts together in the usual manner, substantially as described.

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