

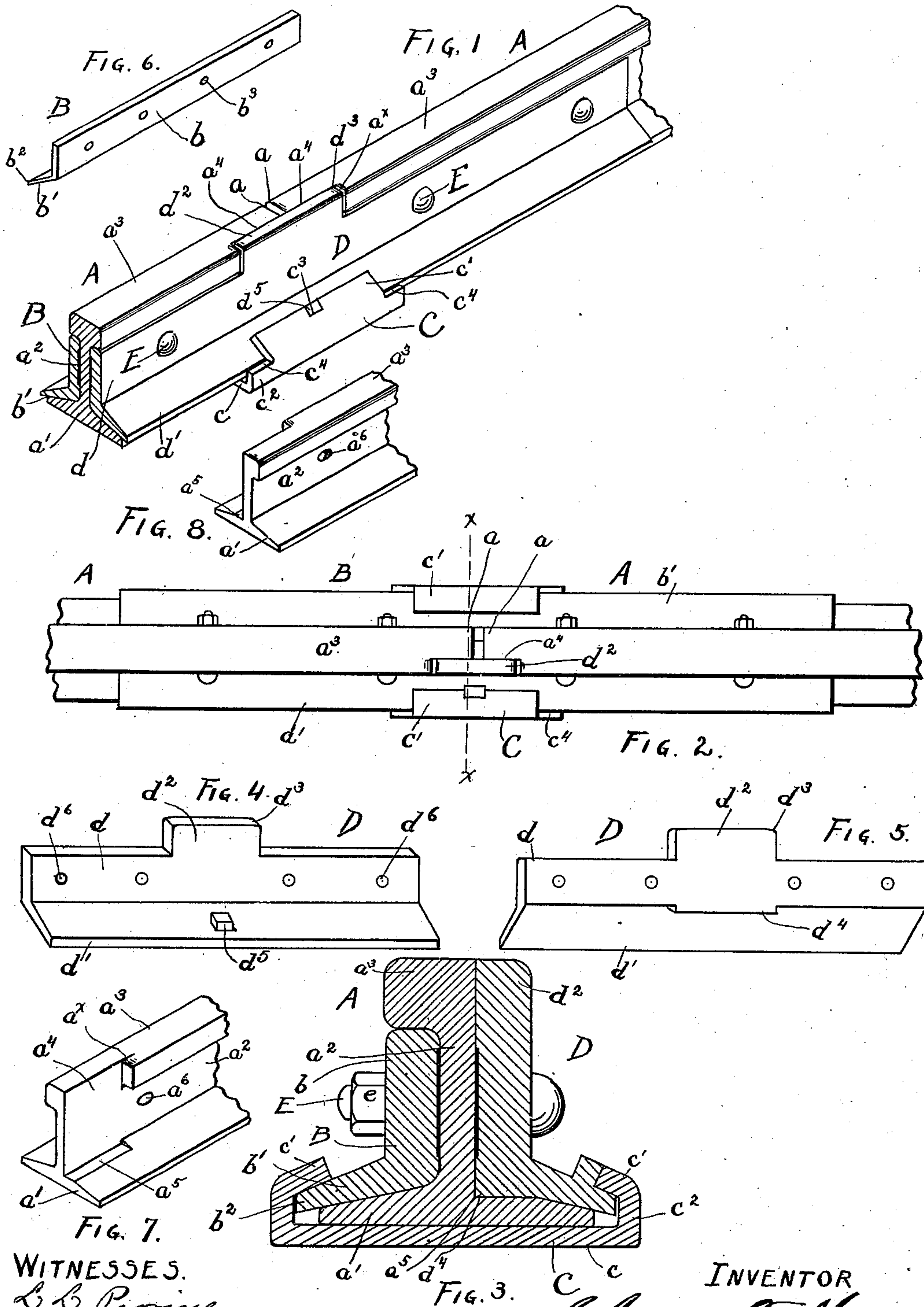
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Patented Nov. 6, 1900.

C. F. MEAD.  
RAIL JOINT.

(Application filed Mar. 13, 1900.)

(No Model.)



WITNESSES.  
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# UNITED STATES PATENT OFFICE.

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## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 661,150, dated November 6, 1900.

Application filed March 13, 1900. Serial No. 8,534. (No model.)

*To all whom it may concern:*

Be it known that I, CLARENCE F. MEAD, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Rail-Joints; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The objects of my invention are, first, to prevent the jar resulting to the car-wheel and transmitted to the vehicle in passing over the rail-joint; second, to obviate the necessity of welding the track-rails in street-railways, and, third, the securing of the rail-chair from longitudinal movement.

The invention consists in the novel construction and combination of parts, such as will be first fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of portions of separate longitudinal track-rails endwise in position, showing the invention applied thereto. Fig. 2 is a plan view of the invention as seen in Fig. 1. Fig. 3 is a vertical sectional view taken upon the line X X of Fig. 2. Fig. 4 is a detail view from the outer side of the improved splice-bar or fish-joint, also showing the lug for the recess in the rail-chair. Fig. 5 is a detail view from the rear side of the fish-joint as seen in Fig. 4, showing the downward extension or heel. Fig. 6 is a detail view of the ordinary splice-bar upon the outer side of the track-rails. Fig. 7 is a detail view in perspective of an end portion of one of the track-rails, showing the recessed portion; and Fig. 8 is a detail view of the end portion of the other track-rail, showing its recessed side portion.

Similar letters of reference indicate corresponding parts in all the figures.

Referring to the drawings, A A represent separate longitudinal T track-rails of well-known construction arranged endwise in position, and  $a$   $a$  the ends of said rails, which are at slight distances apart from each other.  $a'$  represents the flanged base,  $a^2$  the web, and

$a^3$  the flanged head or tread of each of said rails.

B represents the fish-joint or splice-bar upon the outer side of the track-rails, which is of the ordinary construction, as seen in Fig. 6, and consists of the longitudinal flat plate  $b$ , which comes into contact with the outer side of the web  $a^2$  and extends from the under side of the tread  $a^3$  of the track-rail to the upper inclined side of the flanged base  $a'$  of the said rail, and of the inclined portion  $b'$ , which rests upon the said upper inclined portion of the base  $a'$ , and the outer edge  $b^2$  of said portion extended a short distance beyond the outer edge of said flanged base.

C represents the rail-chair at the junction of the rails A A, which is similar in construction to that in ordinary use, and consists of the bed-plate  $c$ , upon the upper surface of which the ends of the rails A A are placed in position, and of the flanged portions  $c' c'$  of said plate, which are bent at right angles to the plate  $c$  and the bent portions extended upwardly a short distance, as at  $c^2$ , and thence bent inwardly in the direction of the webs  $a^2$  of the rails A A and downwardly upon the upper surface of the flange  $b'$  of the fish-joint B upon one side of the track-rails A A and upon the upper surface of the flange  $d'$  of the reinforcing joint-bar D upon the other side of the track-rails in the completion of laying the track-rails. In the present instance and for the purposes of the invention the base-plate  $c'$  of chair C is made in excess of the width of the flange  $a'$  of rail A and so far as is necessary for the introduction of the improved combined rail-reinforcing fish-joint or splice-bar D, which consists of the flat upright portion  $d$ , which is of the same width and length as the portion  $b$  of the fish-joint B, and of the outwardly - extended and downwardly - inclined portion  $d'$ , which is of the same width as the portion  $b'$  of said joint or bar B.

Upon the upper horizontal edge of the portion  $d$  of the bar D at a point equidistant from the ends of said bar is an upward extension  $d^2$  of the said portion  $d$  of said bar, which is equal to the combined length of the recesses  $a^4 a^4$  in the rails A A and to the thickness vertically of the head or tread  $a^3$  of the said rails and laterally to the width of



the portion of the said head outside of the web  $a^2$ , and which extension  $d^2$  forms a continuation of the heads of said rails. Said extended portion  $d^2$  of rail D is rectangular in shape and extends the proper distance in the direction of the ends of the bar  $d$  as is necessary to break joints with the ends  $a a$  of the track-rails A A. Near the ends  $a a$  and extending from said ends a short distance in the direction of the other ends of the rails in the portion of the heads  $a^3$  of said rails are the recesses  $a^4 a^4$ , the inner surfaces of which recesses vertically are in the plane of the surfaces of the webs  $a^2$ , the ends of said recesses being at right angles to the web  $a^2$ , and in which recesses extends the reinforcing plate or extension  $d^2$  of the fish-joint or bar D. The ends of the plate  $d^2$  are curved in a slight degree, as at  $d^3$ , and the bearing-surface of the ends of the rails and the ends of the recesses, as at  $a^x$ , are slightly depressed.

Upon the inner side of the bar D and upon the under side of the portion  $d$  of said bar in a vertical line with the plate  $d^2$  is a downward extension  $d^4$  (see Fig. 5) of the same length as the plate  $d^2$ . In the upper inclined surface of the flanged base  $a'$  of the rails A A are the horizontal depressions  $a^5$ , which receive the extension  $d^4$  of the bar D. Upon the upper inclined surface of the flange  $d'$  of the bar D is a lug  $d^5$ . In the edge of the flanged portion  $c'$  of the chair C, extending over the flange  $d'$  of bar D, is a recess  $c^3$ , which receives the lug  $d^5$  and prevents longitudinal movement of the bar D. In the web  $a^2$  of the rails A A are the transverse bolt-openings  $a^6$ , slightly elongated, and in the portion  $d$  of bar D are the openings  $d^6$ , and in the upright portion  $b$  of bar B are the transverse openings  $b^3$ , which openings  $d^6$  and  $b^3$  register with the openings  $a^6$  in the rails A A.

In the assemblage of the rails A A and the joint-bars B and D within the chair C the base  $a'$  of the ends  $a a$  of said rails are placed upon the upper surface of the base  $c$  of chair C, near the portion  $c^2$  on the outer side of the chair C, and the improved joint D placed in position against the web on the inner side of said rails, the flange  $d'$  passing beneath the inner flange  $c'$  of the joint-chair C and the reinforcing-plate  $d^2$  inserted within the recesses  $a^4 a^4$  at the end of each rail A A, the heel or extension  $d^4$  on the inner side of the bar D resting upon the horizontal surface in the recess  $a^5$  of the base  $a'$  of the rails and the lug  $d^5$  extended within the recess  $c^3$  in the flange  $c'$  of the chair C, the ends  $a a$  of the rails A A being spaced apart the proper distance for the usual expansion of the rails. In this position of the rails A A and bar D the fish-joint or bar B is placed upon the outer side of the rails A A, parallel in position with the web  $a^2$  and with the end of the flanged portion  $b'$  beneath the flange  $c'$  of the joint-chair C, and the said bar forced by a sliding movement in position with its end equidistant from the chair, this action causing the

base  $a'$  of the rail A to move to a position equidistant from the portions  $c^2 c^2$  of the chair C and the outer edge of the flange  $d'$  to come into contact with the inner side of the chair and wedging the base of the rails A A between the flange  $d'$  and the plate  $c$  of the chair C. The screw-bolts E are then inserted through the respective openings  $d^6$  and  $b^3$  in the respective bars D and B and through the openings  $a^6$  in the rails A A and the nuts  $e$  fitted upon the screw-threaded end of said bolts. The wheels of the car or locomotive in passing over the track-rails A A and in approaching the joint between the contiguous ends  $a a$  of the separate rails upon reaching the end of the reinforcing-plate  $d^2$  first presented will bear wholly upon that part of the tread  $a^3$  of the rail over the web, and upon reaching the space between the ends of the rails will bear wholly upon said reinforcing-plate, and in passing off the other end of the plate will bear wholly on the tread  $a^3$ , the bearing-surface at the ends of the rails A A and the ends of the recesses in the rails and the ends of the reinforcing-plate  $d^2$  being depressed sufficiently to accomplish this result, thus preventing the jar incident to a car-wheel in passing over the space between the rails, which not only tends to flatten the wheel, but transmits the jar to the vehicle, and loosening all the bolts upon the vehicle and endangering its safety.

In my invention where applied to street-railways the necessity of welding the ends of the rails together, which is incurred with great cost, is obviated. The longitudinal movement of the chair C is prevented by the lug  $d^5$  and obviously is of great importance in a continuous track where the chair is unsupported. In order to secure the chair to the ties, portions of the plate  $c'$  of the chair at each end are cut away, as at  $c^4$ , which admits of the grasp of the head of the spike upon the portion  $c^2$  of the chair which is presented to the bolt. In case the fish-bar D is rigidly connected with one track-rail without play, the recess  $c^3$  in the flange  $c'$  of the chair C will be made large enough to admit of the movement of the lug  $d^5$  in said recess resulting from the expansion of the said rail.

I have shown the bearing-surface at the ends of the rails and the ends of the recesses in the rails and the ends of the surfaces of plate  $d^2$  slightly curved or depressed, so as to remove the liability of any wear resulting from the tread of the car-wheel in passing over said ends, it being evident that the bearing-points of a car-wheel the surface of which is slightly inclined will vary, especially in describing curves in a track; but these surfaces of the reinforcing-plate may be in the same plane as the head of the rail. Other modifications may be made within the scope of the invention.

Having fully described my invention, what I now claim as new, and desire to secure by Letters Patent, is—



1. The combination with track-rails having  
recesses in the sides of the flanged heads of  
the contiguous end portions of separate rails,  
of a rail-joint chair having its base extending  
5 beyond the edge of the flanged base of said  
rails, and upwardly-extended, inwardly-bent  
flanged portions of said chair, a fish-plate  
upon the sides of said rails having a laterally-  
extended, downwardly-inclined flange upon  
10 its lower edge, and an upwardly-extended  
rail-reinforcing plate upon its upper edge and  
within the recesses of said rails, and a fish-  
plate upon the other side of said rails, and an  
outwardly-extended, downwardly-inclined  
15 flange upon the lower edge of said fish-plate,  
adapted to wedge the track-rails in position,  
substantially as described.

2. The combination with the track-rails  
having recesses in the sides of the flanged

heads of the contiguous end portions of sepa- 20  
rate rails, of a rail-joint chair having its base  
extending beyond the edges of the flanged  
base of said rails, and upwardly-extended, in-  
wardly-bent flanged portions of said chair, a  
fish-plate upon the sides of said rails, having 25  
a laterally-extended, downwardly-inclined  
flange upon its lower edge, an upwardly-ex-  
tended rail-reinforcing plate supported by  
said fish-plate and within the recesses of said  
rails, and a fish-plate upon the other side of 30  
said rails, and an outwardly-extended, down-  
wardly-inclined flange upon the lower edge of  
said fish-plate, adapted to wedge the track-  
rails in position, substantially as described.

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Witnesses:

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