

J. MEEHAN.
Rail-Joint.

No. 217,394.

Patented July 8, 1879.

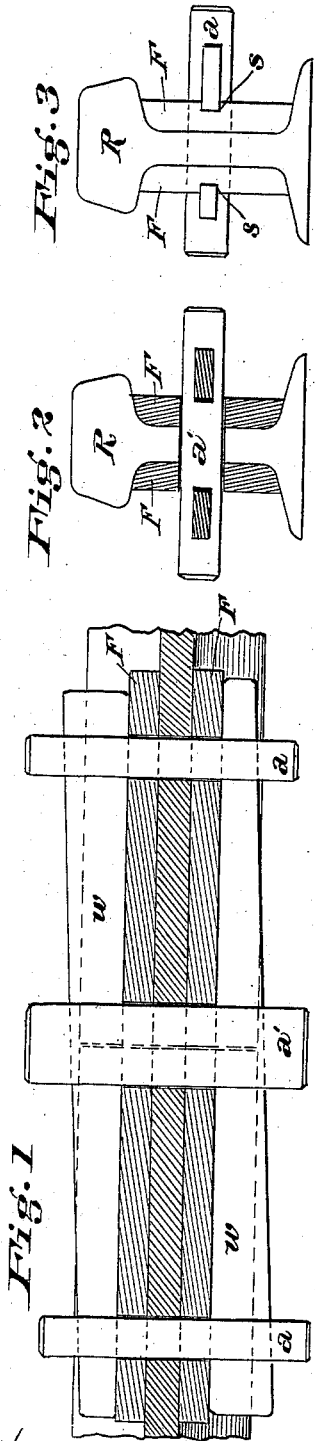


Fig. 1

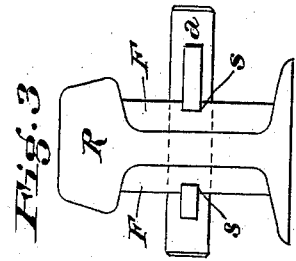


Fig. 2

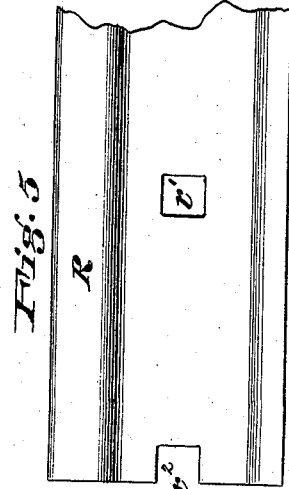


Fig. 3

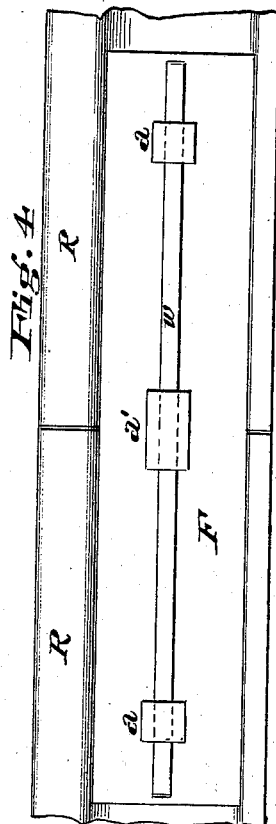


Fig. 4

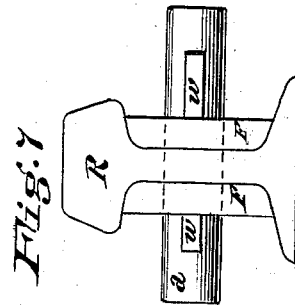


Fig. 5

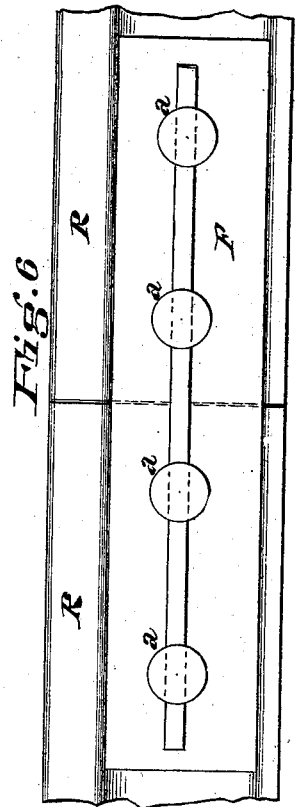


Fig. 6

Attest
Edgar F. Cross
J. M. Grant.

Inventor
James Meehan
by Noice & Ellsworth
Attorneys.

UNITED STATES PATENT OFFICE.

JAMES MEEHAN, OF NEWPORT, KENTUCKY.

IMPROVEMENT IN RAIL-JOINTS.

Specification forming part of Letters Patent No. **217,394**, dated July 8, 1879; application filed January 31, 1879.

To all whom it may concern:

Be it known that I, JAMES MEEHAN, of Newport, Campbell county, Kentucky, have invented a new and useful Improvement in Coupling-Joints for Railways, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

My invention relates to that class of coupling-joints for uniting the contiguous ends of rails constituting the track, commonly known as "fish-joints," in which short plates or bars fitting against the web or "body" of the rail between the head and base, and projecting beyond and covering the meeting ends of two contiguous rails, are placed upon opposite sides, and are secured by appropriate fastenings passing through the plates and rails to secure the whole firmly together to form a continuous track.

Heretofore it has been usual to secure the joint by screw-threaded bolts and nuts; but this construction is subject to many disadvantages, owing to the liability of the threads of the bolts or nuts to give way or "strip" under pressure, and the tendency of the nut to work loose or to drop off altogether under the jar and vibration caused by the passage of trains. By reason of these defects constant supervision, labor, and consequent expense are necessary to maintain the joints so constructed in serviceable condition.

The object of my invention, therefore, is to provide a joint capable of being used with joint-plates and rails already adapted to receive the ordinary fish-joint without removing or displacing the rails in use, and which will obviate the disadvantages before mentioned, and furnish a better joint in being more durable, stronger, and in requiring less attention to maintain, besides being far more easily and quickly put down or removed.

To this end, therefore, my invention consists in a joint-coupling for the proximate ends of rails forming a railway or track, formed by joint-plates secured together with the interposed rails by slotted coupling-bolts and wedges passing horizontally through the coupling-bolts upon the outer sides of the plates,

driven in opposite directions relatively to each other; and also in a novel construction of the joint, in combination with rails recessed at their proximate ends, whereby certain marked advantages are secured, as will be hereinafter set forth.

In the drawings herewith I have shown, in Figures 1 to 5, inclusive, an illustration of my invention as used in connection with recessed rails, as before mentioned, and in Figs. 6 and 7 the invention as applied to rails and joint-plates already adapted to the ordinary fish-joint. Fig. 1 is a plan view upon a horizontal plane cut through the web or body of the rails between the head of the rails and the coupling-bolts; Fig. 2, an end elevation of one of the contiguous rails with joint-plates and keys in section. Fig. 3 is an end elevation of the same with all parts. Fig. 4 is a side elevation of my improved coupling. Fig. 5 is a side elevation of the rail at its end with connecting parts removed; Fig. 6, a side elevation of the joint as adapted to replace the ordinary fish-joint; and Fig. 7 is an end elevation of the same.

R R are contiguous rails, to whose proximate ends the invention is applied.

F F are the joint or fish plates used to form the joint and clamp the rails together in line.

a a are the ties or coupling-bolts, and *w w* the wedges used to form the clamp.

The rails *R* are of the ordinary **T** form, having a vertical web or body connecting a head and base. The web is perforated for the passage of the coupling-bolts, the perforations having sufficient longitudinal enlargement to permit the expansion and contraction of the rails under the influence of heat and cold without affecting the coupling-bolts, and being oval or rectangular, according to the form of coupling-bolts used.

The proximate ends of the rails may be recessed, as at *r²*, for the reception of the central coupling-bolt where but three of the latter are used to form a joint, as will be hereinafter explained.

The coupling-bolts *a a* are of circular or rectangular section, the latter form being preferred, and perforated laterally by two slots,

as indicated in Figs. 2, 3, and 7, for the insertion of the wedges, as hereinafter explained.

Where but three coupling-bolts are used in forming the joint, the central bolt, a' , is made of greater width, as shown in Figs. 1 and 4, and passes through the opening formed by the proximate recesses r^2 in the ends of the rails, where it not only serves the purpose of a tie-bolt or coupling, but also to support the end of each rail and transmit the vertical strain upon one to the other, and to more perfectly preserve the surface alignment of the two rails.

The joint-plates $F F$ are short flat bars rolled to conform on one side to the side contour of the rail, and perforated to receive the coupling-bolts and register with the perforations of the rail. The perforations in the joint-plates are not enlarged, however, but are intended to fit the coupling-bolts snugly; and I prefer to construct the plates with a longitudinal shallow groove, s , upon the outside, crossing the bolt-perforations, for the reception of the wedge, as hereinafter explained.

The wedges $w w$ or keys are each of sufficient length to pass through the slots upon one side of the entire set of bolts used in forming the joint, and are in the general form, in section, of right-angled triangles, and rest in the slots of the coupling-bolts with the base against the joint-plates and the inclined sides outward.

As the wedges, one upon each side of the joint, are driven to their seats in relatively opposite directions, their outer edges are thus parallel to each other, thus obviating the disadvantage of securing the fastenings or coupling-bolts upon surfaces inclined to each other; and as the inclination of one wedge-surface with respect to its contiguous joint-plate is exactly the reverse of that upon the opposite side of the rail, any movement of the rail or joint tending to draw out the wedge upon one side of the joint is counteracted by the resistance offered by the wedge and connecting parts upon the opposite side.

This construction also enables the construction of the coupling-bolts by a uniform standard as to size.

When fitted together in actual use, the wedges or keys w form contiguous bearings alongside of the joint-plates; and when the plates are grooved, as before described, the edges of the keys rest in the said grooves, and by means of the bearing thus formed by the sides of the grooves against the wedges the strength of the wedges is added to the strength of the joint-plates to resist vertical strain upon the joint.

The continuous bearing of the wedge against the joint-plates also strengthens the joint-plates and joint laterally, and entirely prevents the possibility of puckering, as often occurs with the screw-bolt fastening. In other words, the pressure of the key being thus distributed along the entire length of the joint-

plate, it gives the same strength as would be derived from increasing the number of screw-bolts in the old fastening without the disadvantage of weakening the rail and plate by additional perforations, and with the additional advantage of possessing increased resistance to vertical or lateral flexion. The strength of each coupling-bolt being thus distributed by means of the wedge throughout the entire joint, this multiplied strength exists at every point where a strain might be brought to bear.

It will be apparent from these facts that lighter joint-plates could be used where considerations of economy prevail, and also that all the parts—plates, bolts, and wedges—can be stamped from metal bars previously rolled to the desired size without the labor and expense attendant on cutting screw-threads on bolts and nuts, or of forming the heads upon the bolts.

As already indicated, my invention may be applied either to the fish-plates and rails in ordinary use, using cylindrical slotted bolts and wedges to clamp the rails between the plates, as shown in Figs. 6 and 7, or by using rails with square or rectangular perforations, with perforations in the joint-plates to correspond with the cross-section of the bolts, square coupling-bolts may be used, and the clamp be made thereby stronger by reason of the form of the bolts.

As shown in Figs. 1 to 5, inclusive, the number of bolts in the joint may be reduced to three, in which case the rail is to be recessed at the end for the reception of the central coupling-bolt, which should be of sufficient additional width to allow for the expansion and contraction of the rails longitudinally.

I have ascertained by actual test and use of the invention that the jarring and vibration of a joint constructed as herein set forth by the passage of trains does not loosen the wedges, and that the joint remains perfect for a long period without attention, and is practically unaffected by the ordinary causes of injury.

I am aware that bolt-wedges and slotted bolts have been used before in railway-joint couplings, and therefore do not claim, broadly, the use of either; but I am not aware that double-slotted bolts have been used, nor the joint formed as I have herein described.

Having fully described my invention, I claim—

1. The combination, in a railway-joint coupling, of the following instrumentalities, viz: two joint-plates, two or more coupling-bolts having a slot near each end for the insertion of wedges, and two wedges adapted to pass in opposite directions, one upon each side of the joint, through the entire series of bolts, substantially as and for the purpose specified.

2. The headless double-slotted bolt a , adapt-

ed to be used in combination with joint-plates and wedges for forming a railway-track joint, substantially as specified.

3. In combination with rails having end recesses r^2 , joint-plates F, and double-slotted bolts a , the double-slotted rectangular bolts a' , adapted to pass through said recesses and engage at opposite sides of the joint upon wedges w , passing through the entire series

of bolts upon each side of the joint, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand.

JAMES MEEHAN.

Witnesses:

L. M. HOSEA,

E. A. ELLSWORTH.