(No Model.)

# J. H. JOHNSON.

## RAIL JOINT.

No. 589,175. Patented Aug. 31, 1897.

Fig. 1.

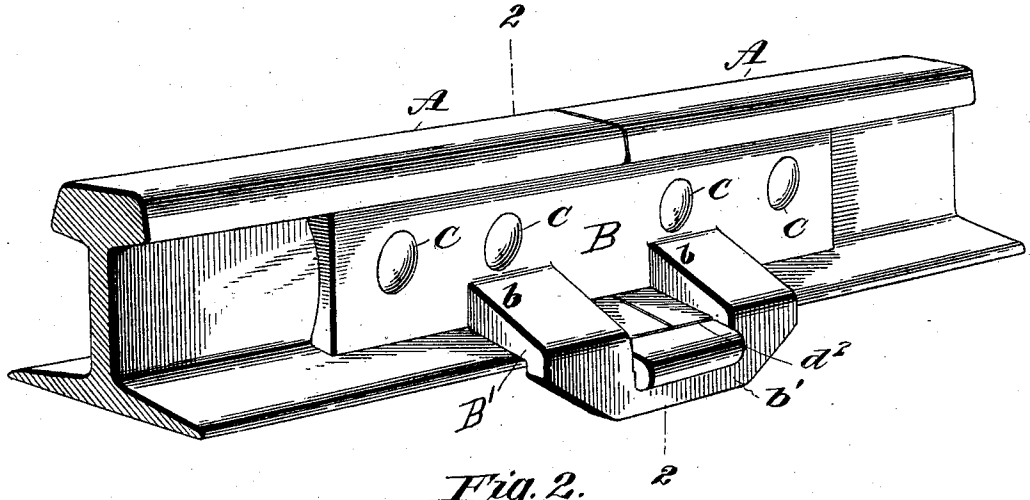
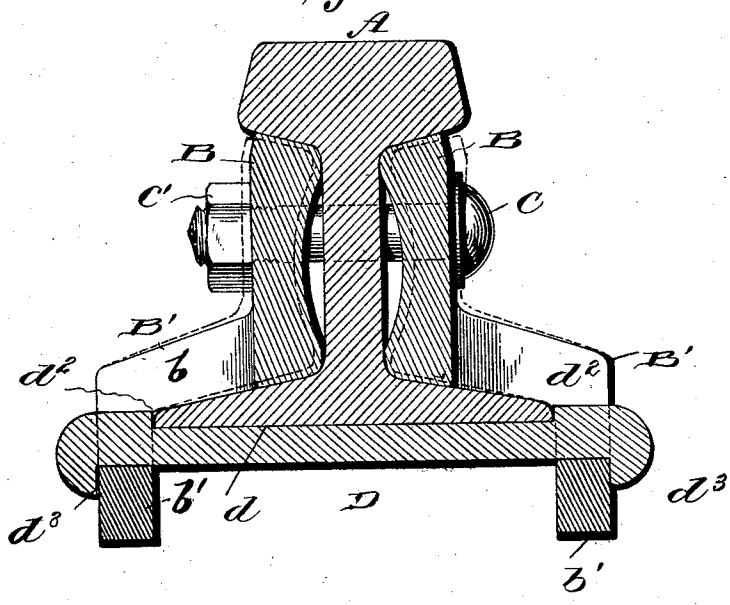



Fig. 2.




Witnesses:
L. C. Hills.
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by E. B. Stocking
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

# UNITED STATES PATENT OFFICE.

JOHN H. JOHNSON, OF ALLENTOWN, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO SILAS A. LENTZ AND A. D. HENSINGER, OF SAME PLACE.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 589,175, dated August 31, 1897.

Application filed March 17, 1897. Serial No. 627,966. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN H. JOHNSON, a citizen of the United States, residing at Allentown, in the county of Lehigh, State of Pennsylvania, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention has relation to railroad-rail joints; and it has for its object the provision of means rendering the joint as rigid as a solid portion of the rail. It is well known that when there is a downward yielding of the end of a rail at a joint at the time of the passage of a wheel the end of the adjacent rail of the joint is soon battered and in a short time an objectionable depression is formed and the fish-plates and bolts become loosened. By my invention these and other well-known defects are overcome, as I secure a rigidity at the joint which prevents individual movement of the rails at the joint, and this by means which at the same time exert a constant spring-pressure against the heads and nuts of the bolts employed in the joint, so that no loosening of them occurs and extraneous or separate nut-locking devices are not required.

My invention consists in the devices hereinafter described, and particularly pointed out in the claim.

Referring to the drawings, Figure 1 represents in perspective a rail-joint constructed in accordance with my invention. Fig. 2 is a section of the same, taken on the line 2 2 of Fig. 1.

Like letters indicate like parts in both figures of the drawings.

A A represent end portions of rails abutting each other and connected with fish-plates B B and bolts C, provided with ordinary nuts $c'$. Each of the fish-plates B comprises a body portion which spans the joint in the usual manner, but which is of such a width as to very nearly extend from the top of the base to the under surface of the tread of the rail, and which is also slightly thicker at its upper and lower edges or concave on its inner surface, in either case leaving a vacant space between said face and the rail, so that in tightening the bolts C the fish-plates, one or both of them, is or are drawn from its or their normal position, (shown by dotted lines, Fig. 2,) to contact firmly with the flange-base and tread of the rail at both sides of the joint.

The construction and operation of the parts thus far described are such that there is a yielding or spring pressure against the heads and particularly against the nuts $c'$ of the bolts C, that the nuts will not become loose, and thus the necessity of employing extra means for locking the nuts is avoided.

Each of the fish-plates is provided with a laterally and downwardly projecting loop B', comprising arms $b$ and a depending arm-connecting portion $b'$. The arms $b$ are placed one upon each side of the joint and are shaped and proportioned to nearly or loosely rest upon the rail-base when the fish-plates are not under the strain of the bolts, as shown by dotted lines in Fig. 2. This being the normal condition of the arms, they assume when the bolts are tightened a firm bearing upon the rail-base and thus serve to intensify and maintain the spring nut-locking function of the fish-plates B.

The arms $b$ are united at their outer ends by a depending portion $b'$, which extends below the rail-base sufficiently to receive, support, and retain a cross-bar D, having a recess $d$ in its upper face to receive the bases of the rails, while the end walls $d^2$ of said recess retain the edges of the rail-bases at the joint in line with each other. The cross-bar D is also provided with shoulders $d^3$, which embrace the outer faces of the loops $b'$ of the fish-plate arms, so that when the bolts are tightened all parts are drawn firmly together and the required rigidity of the joint is secured.

It will be noted that the portions $b'$ of the loops exert a lifting function as the fish-plates are drawn firmly to place, and thus the cross-bar is brought firmly against the lower surface of each rail, while the shoulders $d^3$ prevent lateral movement of the cross-bar and of the loops $b'$. By providing the cross-bar with upper and lower recesses, one for the rail-base and the other for the loops, it is retained in place without the use of extraneous securing devices.

The construction of the entire appendage of my rail-joint is exceedingly simple, but two pieces besides the bolts being required—to wit, a fish-plate having a loop and a cross-bar having upper and lower recesses—and these are capable of assemblage without the use of any special tool. They may be made of cast, or rolled, punched, and shaped material. The cross-bar D is especially adapted to be made by the rolling process in a continuous strip, which, severed crosswise, produces individual cross-bars. The fish-plates having loops integral therewith may also be rolled in continuous strips, which may be severed crosswise, punched, and bent to the shape of individual plates. These features render the simplicity and minimum of cost of manufacture prominent points of advantage in addition to the readiness of application to use and firmness of construction when in use.

What I claim is—

In a rail-joint, fish-plates adapted to bear at their top and bottom edges against the under surface of the rail-tread and the upper surface of a rail-base and yieldingly at their central portions, a securing-nut to compress said plates, vertically-depending loops from said fish-plates at the sides thereof, and an independent cross-bar having a recess for the rail-base and shoulders for the loops of the fish-plates, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. JOHNSON.

Witnesses:

J. E. JOHNSON,

J. H. VON NIEDA.