

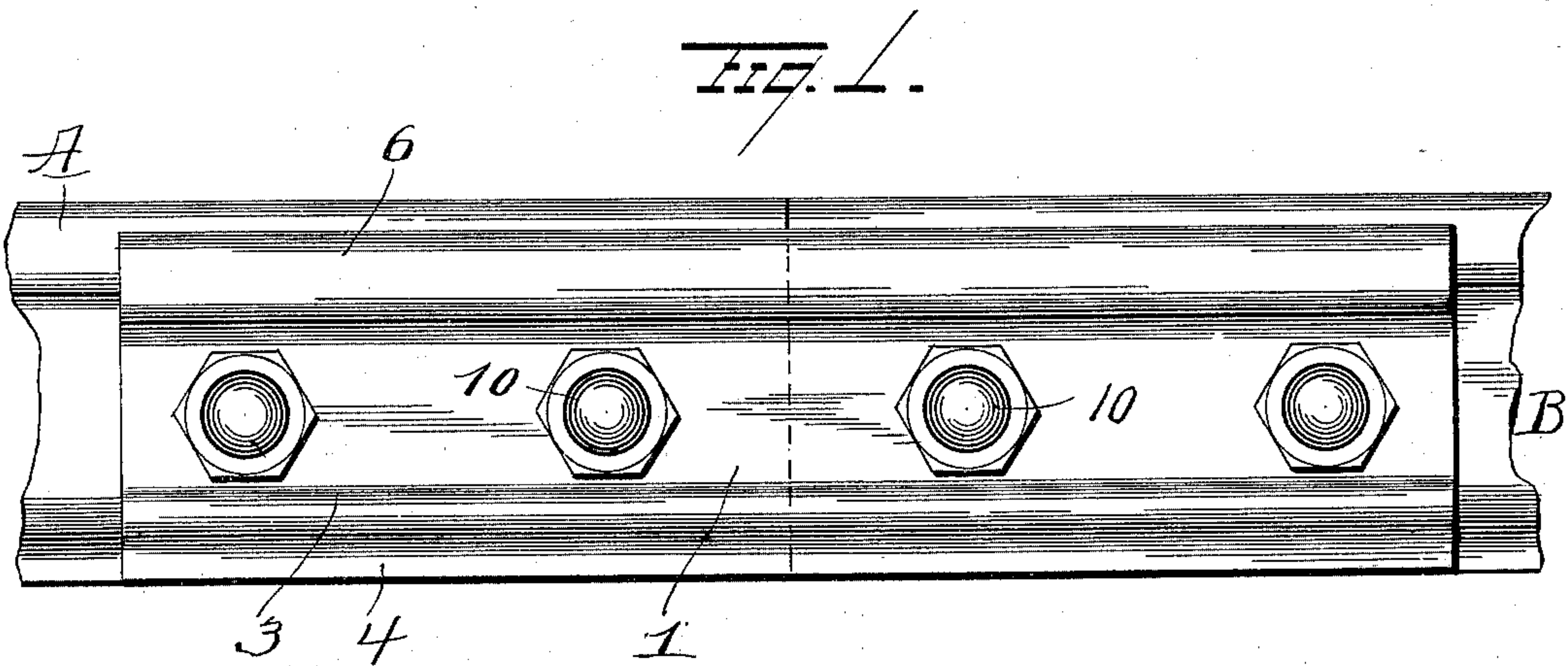
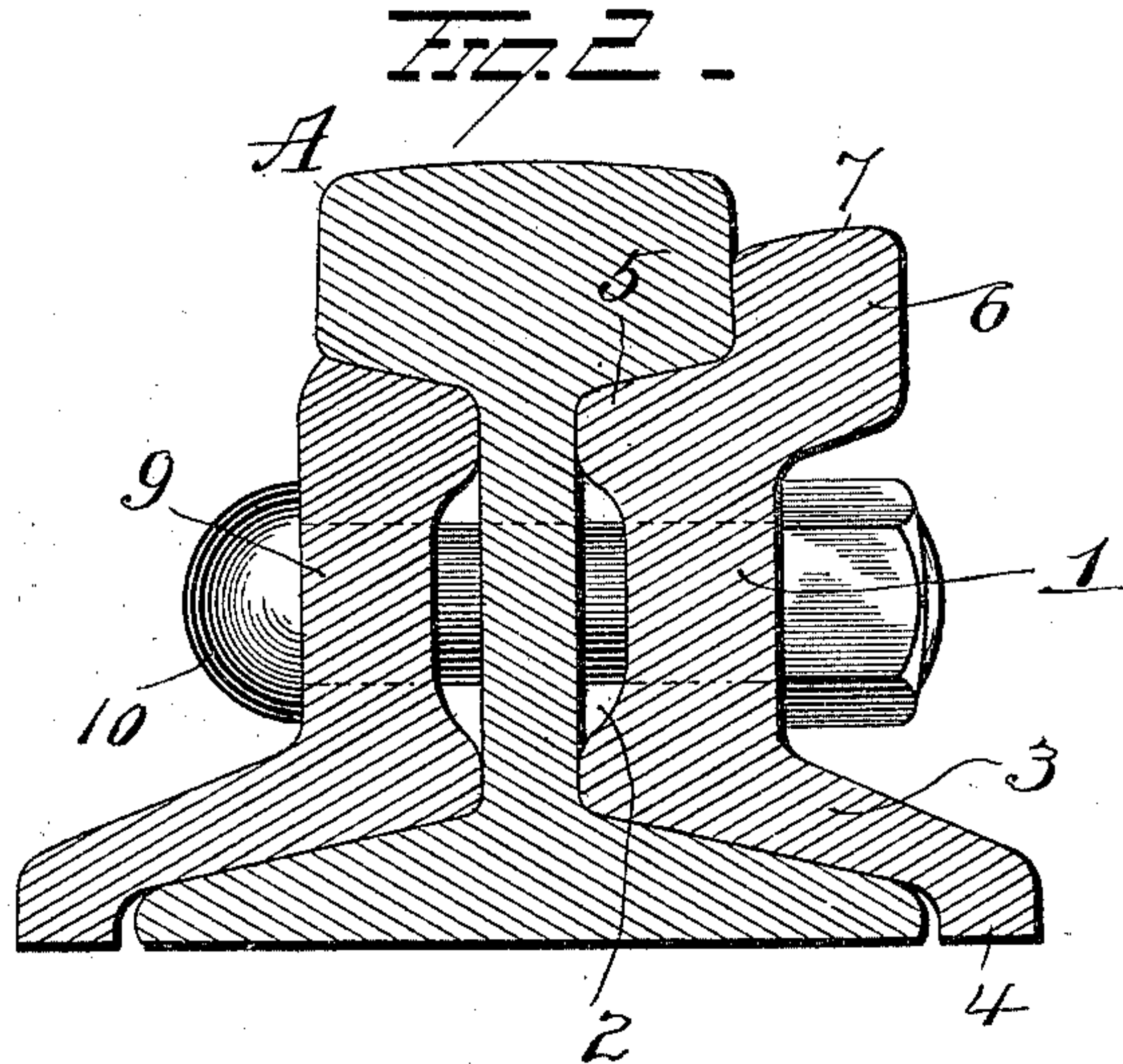
No. 612,891.

Patented Oct. 25, 1898.

N. BENJAMIN.  
RAIL JOINT.

(Application filed Dec. 1, 1897.)

(No Model.)



WITNESSES  
E. J. Nottingham  
G. F. Downing

INVENTOR  
N. Benjamin  
By H. A. Seymour  
Attorney



# UNITED STATES PATENT OFFICE.

NEWTON BENJAMIN, OF ELMIRA, NEW YORK.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 612,891, dated October 25, 1898.

Application filed December 1, 1897. Serial No. 660,408. (No model.)

*To all whom it may concern:*

Be it known that I, NEWTON BENJAMIN, a resident of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Rail-Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in rail-joints, and more particularly to such as are adaptable for use with rails of steam or similar railroads with which heavy cars and locomotives are employed.

Heretofore it has been the usual custom to provide fish-plates formed of angle-iron and so made as to terminate at their upper edge under the head of the rail and so as to project at their lower edge over the flange of the rail. In some cases fish-plates have been so constructed as to be disposed parallel with the web of the rail, terminating at the upper edge under the head and at the lower edge above the flange of the rail without extending over the latter.

Practical experience has demonstrated that fish-plates constructed and applied in the ways above mentioned are open to very serious objection, owing to their inability to withstand the immense strain to which they are subjected. It is a matter of common knowledge among those familiar with the practical operation of railroads that on account of the strain to which the fish-plates are subjected at the meeting ends of the rails they are liable to break or become strained, and this has become a source of great annoyance, expense, and danger. It has also been proposed to construct fish-plates so that their upper edge will terminate flush with the tread of the rail, and some have formed the upper edge with an enlargement the entire upper surface of which has been made flush with the tread of the rail, so as to form a continuous rolling surface for the wheels over the meeting ends of the rails. Such construction is wholly impractical, because it is evident that when the wheels become grooved (as they will do in the course of a comparatively short time on account of being made to rotate on the rails without rolling thereon when too great amount of steam is ap-

plied in starting or pulling a train, particularly with a heavy load and especially when the rail is wet or slippery) they will forcibly strike the upper edges of the fish-plates, with the result that the latter will be liable to be broken, or, which is equally as probable, to cause the breakage of the bolts which secure the fish-plates to the rail, in either case rendering the replacing of the plates with new ones or the provision of new bolts necessary and in the meantime endangering the safety of travel over the road.

It is to overcome these defects and objections without appreciably adding to the cost of construction and application of fish-plates that constitutes the object of my present invention; and with this object in view the invention consists in certain novel construction of a rail-joint, as will be hereinafter specifically set forth, and pointed out in the claim.

In the accompanying drawings, Figure 1 is a view illustrating my invention. Fig. 2 is a sectional view.

A represents one rail-section, and B another, the two being united by means of my improvements, of which 1 illustrates an angular fish-plate, preferably having its inner face next to the web of the rail grooved, as at 2. The base portion 3 rests upon the flanges of the abutting rail-sections and extends over the same, terminating at its outer edge in a depending flange or lip 4. The upper portion of the body of the plate forms a shoulder, which is disposed under and in contact with the head of the rail. The upper edge of the fish-plate is provided with an enlargement or head 6, preferably of steel, which abuts the full length of the plate against the side faces of the heads of abutting rail-sections. The head or enlargement 6 is so made as to terminate below the tread of the rails, so as to be entirely out of reach of the wheel of the cars and locomotives, and its upper face is preferably beveled inwardly, as at 7. The enlargement or head 6 is of a diameter substantially equal to one-half the diameter of the head of the rail. By providing the fish-plate with the head of steel extending from end to end thereof the plate will be strengthened and breakage thereof by the strain brought to bear thereon will be effectually obviated, and the additional amount of metal



distributed in the head and depth of plate  
obviates the possibility of allowing the joints  
to work or become low. In other words, it is  
possible for the rail to be as rigid and stiff at  
5 the joint as at any other part. Furthermore,  
said head or enlargement bearing against the  
sides of the heads of the abutting rail-sections  
will prevent the latter from getting out of line  
with each other. Again, by my improved  
10 construction I am able to secure greater depth  
of fish-plate than any now in use.

The fish-plate above described will be dis-  
posed on the outside of the rail-sections, and  
against the inner faces of the webs of said  
15 rail-sections I prefer to place a plate 9 and to  
connect this with my improved fish-plate by  
means of bolts 10, passing through them and  
the webs of the rail-sections.

My improvements are simple, but they ob-  
20 viate a serious defect which has been the cause  
of great annoyance in the practical operation  
of railroads and which, so far as I am aware,  
has never before been effectually overcome.

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

In a rail-joint, the combination with two  
rails, of a fish-plate bolted to the adjacent  
ends thereof for securing them together, said  
fish-plate having a large head of metal at its 30  
upper edge engaging the lower side face of the  
head of the rail below the tread thereof and  
out of reach of the car-wheel treads and pro-  
jecting a distance beyond the side face of the  
head of the rail insufficient to permit injury 35  
thereto by the car-wheels should the latter  
leave the track, said head of metal on the fish-  
plate being of a diameter substantially equal  
to one-half the diameter of the head of the  
rail, whereby to enlarge and reinforce the up- 40  
per edge of the fish-plate and prevent the  
cracking of the latter when subjected to  
pounding strain caused by the engagement  
of the car-wheels with the far ends of the rails  
with which the fish-plate is connected. 45

In testimony whereof I have signed this  
specification in the presence of two subscrib-  
ing witnesses.

NEWTON BENJAMIN.

Witnesses:

H. A. MILFORD,

H. B. CLEVELAND.