

O. HELSING.
RAIL JOINT.
APPLICATION FILED AUG. 11, 1908.

973,193.

Patented Oct. 18, 1910.

Fig. 1.

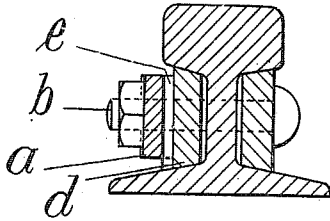


Fig. 3.

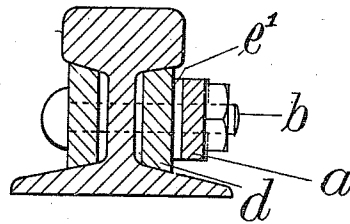


Fig. 2.

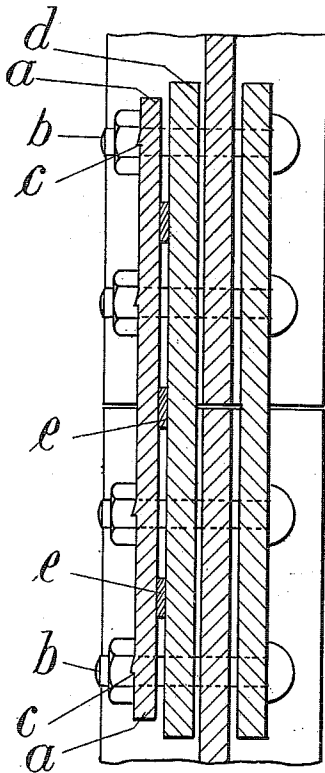
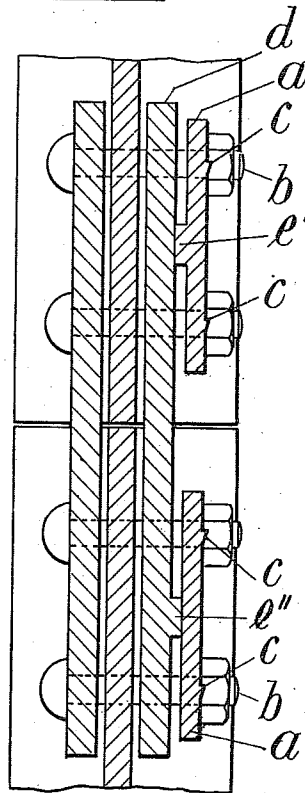


Fig. 4.



WITNESSES

E. J. Dillon
N. J. Dillon

Olof Helsing
INVENTOR.

by *C. A. Brownlee*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

OLOF HELSING, OF SANDHEM, SWEDEN.

RAIL-JOINT.

973,193.

Specification of Letters Patent.

Patented Oct. 18, 1910.

Application filed August 11, 1908. Serial No. 448,069.

To all whom it may concern:

Be it known that I, OLOF HELSING, a subject of the King of Sweden, residing at Sandhem, in the country of Sweden, have invented a new and useful Rail-Joint of which the following is a specification.

This invention relates to a rail joint and consists in the novel construction and arrangement of its parts as hereinafter described and claimed.

In order to better appreciate the objects and aim of the present invention a brief description of the form of rail joint to which it is to be applied will be given. It is a common practice at the present time to connect the adjacent ends of the rails by means of fish-plates which overlap the end portions of the adjacent rails and which are wedged at their upper and lower edges against the under sides of the heads and the upper sides of the bases of the rails. The inner sides of the fish-plates are spaced from the webs of the rails and securing bolts pass transversely through the fish-plates and the webs of the rails and are provided with nuts designed to securely hold the fish-plates in the wedged relation with respect to the heads and bases of the rails as indicated. Under normal conditions such an arrangement has proved to be satisfactory and in fact ideal, for if the parts are maintained in such relation the upper or tread surfaces of the heads of the rails are maintained in proper planes or alinement and consequently there is no jarring or wear upon the rolling stock or roadbed as the said stock passes over the joint. However, it has been made manifest that upon variations in climatic conditions the securing bolts elongate and contract and when they elongate the fish-plates are not securely held in wedged condition under the rail heads, and consequently the joint is loose and as the rolling stock passes over the joint there is an unevenness at the tread surfaces of the heads of the rails which results in wear both to the rolling stock and roadbed.

It is the object of the present invention to provide a simple and an effective device adapted to be applied to a rail joint of the character as set forth which will compensate for the elongation and contraction of the securing bolts and at all times maintain the members of the rail joint in proper relation irrespective of variations in climatic conditions.

A further object of the invention is to pro-

vide means adapted to operate as indicated, which, in its application to the rail joint does not require that any of the component parts thereof shall be altered or changed in their construction or arrangement.

In view of the premises stated and the objects mentioned the essential feature of the present invention consists of a bar (preferably of steel) which is rendered hard and extremely rigid or renitent. This bar is supported at a point intermediate its ends upon the outer side of one of the fish-plates and the securing bolts pass transversely through the spaced ends of the bar and the securing nuts are screwed tightly against the spaced ends of the bar whereby the said bar is distorted (to such a degree as to be almost imperceptible) and the stress thus created is distributed longitudinally of the bar and is maintained notwithstanding the fact that the said bolt should elongate, as indicated. In other words the bar is made in the form of a lever with one or more fulcrum points located at its intermediate portion and the bar is distorted in order that its leverage action upon the bolts may be continuous and while the frictional contact between the end portions of the bar and the nuts may be sufficient to have a tendency to prevent the said nuts from unscrewing the device is in no sense a nut lock but any virtue that it may possess in this direction is merely secondary.

In the accompanying drawings;—Figure 1 is a transverse sectional view of one form of the rail joint. Fig. 2 is a horizontal sectional view of the same. Fig. 3 is a transverse sectional view of another form of the rail joint. Fig. 4 is a horizontal sectional view of the form of rail joint illustrated in Fig. 3.

The rails to which the present joint is to be applied are of usual form and configuration having heads, bases and connecting webs. As illustrated in the drawings, the fish-plates *d* are of the usual pattern and overlap the adjacent end portions of the rails and have their upper and lower edges wedged against the under sides of the heads and the upper sides of the bases of the rails. The inner surfaces of the plates *d* are spaced from the sides of the webs of the rails. Securing bolts *b* pass transversely through the fish-plates *d* and the webs of the said rails and are provided at their ends with nuts of usual pattern.

The compensating device consists of a bar *a* which is spaced at its ends from the outer sides of the adjacent fish-plate *d* and which at a point intermediate its ends bears directly against the side of the adjacent fish-plate *d*.

In the form of the invention as illustrated in Figs. 1 and 2 of the drawings the supporting means for the bar *a* consists of separate blocks *e* inserted between the bar and the adjacent fish-plate *d* while in the form of the invention as illustrated in Figs. 3 and 4 the spacing means for the bar *a* consists of a lug *e'* or *e''*, fixed to either the bar *a* or the adjacent fish-plate *d* and performing the function described.

In any of the forms however it will be seen that when the nuts carried by the bolt *b* are screwed up tight against the spaced end portion of the bar or bars *a* the said bars will be slightly distorted at their end portions out of true parallel relation with the adjacent fish-plate *d* and the bending of the bar *a* will occur upon the means which spaces and supports the bar against the side of the adjacent fish-plate *d*. The bar *a* is relatively thick in transverse section and is preferably made of steel hardened to a maximum degree and is thereby deprived in so far as possible of the natural elasticity of the metal.

When the parts are thus assembled and the nuts carried by the bolts *b* are screwed up tight against the unsupported end portions of the bars *a* the fish-plates *d* are held in proper positions under the heads of the rail and maintain the tread surfaces of the rail in proper planes of alinement.

Thus it will be seen that when the bolts contract longitudinally (in consequence of excessive cold) the end portions of the bar *a* may move toward the outer side of the adjacent fish-plate *b*. It is of course to be understood that such contraction is very slight and the movement of the end portions of the bar *a* is also slight but that such contraction and expansion does actually occur is a matter that has been positively determined. On the other hand, should the bolts *b* elongate in consequence of the presence of protracted heat the distorted end portions of the bars *a* will attempt to assume their original and normal relation and consequently the bolts cannot become loose in the fish-plates or webs of the rails and by reason of the fact that the intermediate portions of the bars *a* are supported directly

against the side of the adjacent fish-plate the upper and lower edges of the fish-plates at both sides of the rail will be maintained in their proper wedged condition between the heads and bases of the rails.

As illustrated in the accompanying drawing, the bars *a* are provided with tangs *c* which may be formed thereon by means of a punch or other tool and which are designed to prevent the nuts carried by the bolts *b* from unscrewing but this feature is not essential to the proper operation of the present invention, but may be used if considered desirable or advantageous.

It will be seen that in the application of the bar or bars *a* to the rail joint the fish-plates and bolts and the nuts as generally used are not altered or disfigured in any manner whatsoever and that the compensating device may be easily and quickly applied to the joint and when in position occupies minimum space.

Having described the invention what I claim as new and desire to secure by Letters Patent is:—

In combination with alined rails having heads and bases and connecting web portions, a rail joint comprising fish-plates wedged at their upper and lower edges between the under sides of the heads and the upper sides of the bases of the rails, said fish-plates overlapping the ends of both rails and having their inner sides spaced from the webs of the rails, bolts passing transversely through the webs of the rails and fish-plates, a device for compensating for the longitudinal elongation and contraction of the bolts and comprising inelastic renitent bars located upon the fish-plate at the opposite sides of the meeting ends of the rails, said bars having their end portions spaced from the adjacent fish-plate and bearing at points intermediate their ends against the adjacent fish-plate, said bolts also passing through the unsupported end portions of the bars and exerting stress against the outer sides of the end portions of the bars and the outer side of the fish-plate the more remote from said bars.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

OLOF HELSING.

Witnesses:

J. G. JOHANSSON,
F. O. TORNQUIST.