No. 853,090. PATENTED MAY 7, 1907.

E. B. KILLEN.

RAIL JOINT.

APPLICATION FILED FEB. 17, 1906.

Fig. 1.

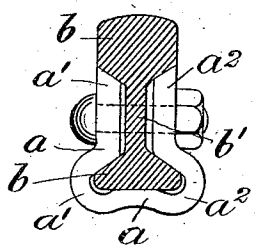


Fig. 2.

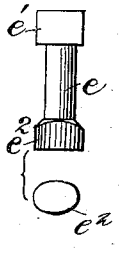


Fig. 3.

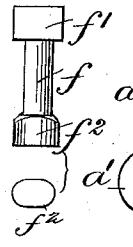
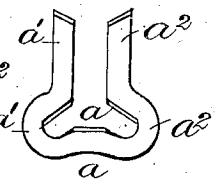


Fig. 4.



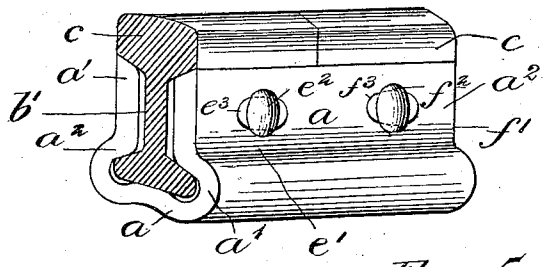


Fig. 5.

Fig. 6.

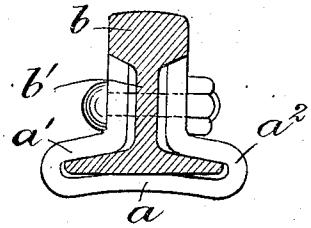


Fig. 7.

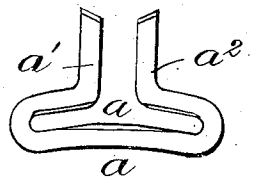
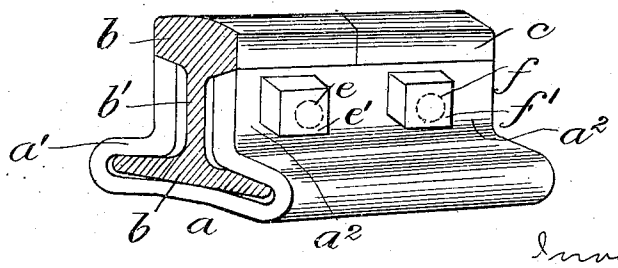


Fig. 8.



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UNITED STATES PATENT OFFICE.

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RAIL-JOINT.

No. 853,090. Specification of Letters Patent. Patented May 7, 1907.

Application filed February 17, 1906. Serial No. 301,660.

To all whom it may concern:

Be it known that I, EDWARD BRICE KILLEN, a resident of 52 Queen Victoria street, London, England, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

In order to enable the ends of steel rails to be connected together fish plates have been formed something after the design of a shoe platform.

My invention also relates to such a shoe platform, but in my shoe platform I have made and always have in use five contact bearing points only, four being the same bearing contact points as the present standard fish plates and the other bearing point is formed at the extreme base of the steel rail. These five bearing contact points are automatically brought into their correct position by the driving on the fish-plate on its steel rail, the ends of the fish-plate being tapered or so shaped at each of its five contact bearing points that the fish-plate can be easily fitted over the steel rail, and then when driven home on the steel rail it makes automatically the required five contact bearing points without using screw or other bolts. My shoe platform is also rigidly held in position on the steel rails by means of suitable bolts, the threads of which bolts or the bolts themselves are not strained to bring the five bearing points into position or slackened or strained when the train passes over said fish plate because said platform arms have a tendency to come together under train load thereby keeping the five bearing points in correct position the fish plate being really formed into a strong box or the equivalent of a strong square box having five contact bearings points always in use automatically and giving many advantages in construction.

In order that my invention may be properly understood and readily carried into effect, reference is made to the accompanying drawings, in which

Figure 1 is a transverse section of a rail forming part of a permanent way with the method and means constituting a yielding shoe platform or case with five distinct and separate automatic contact points for clamping and locking the sections in position and embodying my invention. Fig. 2 is an elevation and plan respectively of a double headed screwless bolt which clamps and locks the automatically made five bearing contact points of the shoe or case with the rails rigidly in position. Fig. 3 is a similar view of a slightly modified form of head. Fig. 4 is an end view of the shoe or case detached from the rails, showing metal cut away at the five bearing points for ease of steel rail entering before driving the fish plate home. Fig. 5 is a perspective view of the shoe or case showing the five bearing points and rails and bolts in their proper working position. Fig. 6 is a view corresponding to Fig. 1 of a modified form of the shoe platform or case. Fig. 7 is a view corresponding to Fig. 4 of the shoe or case detached. Fig. 8 is a view corresponding to Fig. 5 of the respective parts in their normal position all hereafter more fully referred to and described.

In carrying out my invention I provide an angled metal shoe platform or case a having two (right and left) suitable angled metal arms a^1 a^2 extending upward from its base and all of a suitable thickness of material throughout. This shoe platform with arms embraces the web or waist b^1 and lower portions of the rails b, c, in such a manner that there are only five distinct and separate automatically made contact bearing surfaces, namely, one more contact bearing point than the present fish plates have, resting (1st) on the two bottom angled portions of head of rail, same as the present fish plates, (2nd) on the two top flanges of the base of the rail, same as the present fish plates, and (3rd.) on the one giving or elastic center point during driving on the fishplate over the steel rail on the extreme bottom of the base of the rail as shown in Figs. 1 and 6. This shoe platform a is capable of being easily driven backward and forward over either of the ends of the two steel rails b, c, to be fastened together the five contacts points automatically assuming their correct positions without using screw bolts. In this shoe platform a the two ends of the steel rails b, c, lie and they can be bound and locked in position by using either the ordinary screw bolt and nut as in Figs. 1 and 6 two suitable doubleheaded screwless bolts e, f, such as are shown in Figs. 2 and 3 or the equivalent of these bolts last maned, which bolts when in their proper position form a direct and rigid binding connection between the right and left angled arms a^1 a^2 of said shoe platform a thereby forming said angled metal platform a into the equivalent of a flanged angled metal platform box, strong box, or grip box having two open properly

shaped ends and having the equivalent with the bolts in position of four strong rigid metal sides. In this shoe platform or case *a* or what may be designated a strong box, the ends of the said steel rails *b*, *c*, are suitably incased, being not only bound, but locked in position in said grip box. This angled metal gripping box in which the ends of the two steel rails meet, need not be as long as the fish plates presently in use, but the tendency of backward and forward movements of the gripping platform, becomes absolutely impossible once the aforesaid doubleheaded screwless bolts *e*, *f*, or equivalents rigidly connect the right and left flanged arms a^1 a^2 of the shoe platform *a*. This new steel rail end connection described as aforesaid gives enormous lateral and perpendicular strength and yet has the necessary required flexibility. This shoe platform *a* is made to rapidly, easily and efficiently take inside it the two ends of the steel rails through its two open suitably-shaped ends and envelop them with its strong gripping metal flanged arms and its five automatically made contact points as per drawings, and it is to be noted that the arms of this shoe platform or case have a tendency to come together as the train passes over the fishplates and therefore this fishplate does not strain the heads and threads of the bolts of the fish plates as in all the present fishplate bolts, thus the rail and shoe or case become practically integral giving the required elasticity as a whole, and without any fear of distortion of the metal.

The double-headed bolts *e*, *f*, have each a large and a small and fixed head e^1 f^1 e^2 f^2 as illustrated in Figs. 2 and 3, and the smaller head e^2 f^2 is elongated and can pass straight through suitable holes formed in the shoe flanged arms a^1 a^2 which elongated holes e^3 f^3 are made exactly similar in shape or suitable in size to enable the small head of the bolt to pass through them and also through the holes in the web or waist b^1 near the ends of the said steel rails.

To efficiently bind and lock in position the two flanged gripping arms a^1 a^2 together, I only require to pass the smaller heads e^2 f^2 of the double headed bolts *e*, *f*, through the holes which are similar in the angled grip arms a^1 a^2 and the ends of the steel rails *b*, *c*, (which similar holes are brought into line with each other) and then I give the large square heads e^1 f^1 of the bolts—say—a quarter turn round, when the connection between the ends of the steel rail becomes an ideal-locked connection, or I can use screw bolts presently in use, in the ordinary way without their threads being strained or stretched in use when they remain screwed up. This shoe platform *a* has no necessary direct support from the ground, but is automatically supported in position by incasing the base and web or waist of the ends of the two steel rails with its grip arms, at the five bearing points see accompanying drawings, and on account of its shorter length it is capable of being driven endwise entirely over either of the steel rail ends and driven back again without necessarily coming in contact with the chairs and sleepers and its suitably flanged construction gives it the required lateral and perpendicular strength when gripping the steel rails, as the train passes over it, without slackening the fishplate bolts or stretching the threads of the screw bolts and this fishplate stops individual depression of the steel rail ends.

Any space caused by the wear and tear on the upper ends of the metal arms a^1 a^2 of the shoe platform or case *a* is taken up automatically and is locked in position by the screwing or tightening up of the bolts.

The shoe platform, double-headed bolts, or screw bolts can be made in all suitable shapes and dimensions and of suitable materials, and if required the large heads of the double-headed bolts can be rigidly and suitably stapled to the flanged arm of the shoe platform or locked in any other suitable way and in connection with these double-headed bolts suitable washers can be used when required.

Of course it is to be understood that my improvements are applicable to all sizes and shapes of steel rail ends.

Claims.

The combination with a rail, of a fish plate comprising a curved base on which the foot of the rail rests, and a pair of arms extending upwardly from the base and having elongated openings therein, and bolts passing through said openings and through openings in the web of the rail; each of said bolts having an elongated head adapted to pass freely through the openings in said arms to lock the arms together when the bolts are turned; each arm having an inclined lower portion resting on the upper surface of the foot of the rail, and a vertical straight upper portion extending parallel to the web of the rail and spaced therefrom throughout its length; said upper portion having an inclined upper surface on which the head of the rail rests and the side of the upper portion being flush with the side of the head of the rail.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

EDWARD BRICE KILLEN.

Witnesses:

JOHN LIDDLE,

JOHN TRAIN LIDDLE.