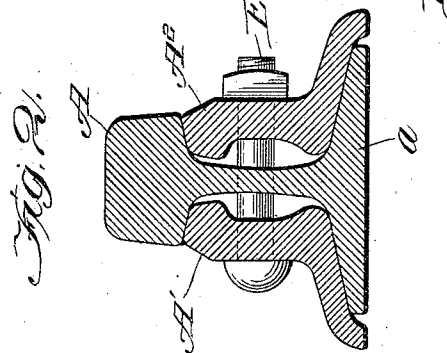
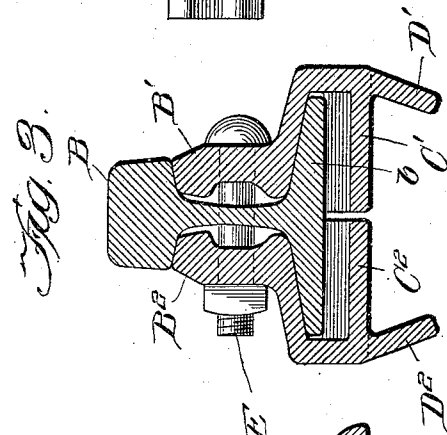
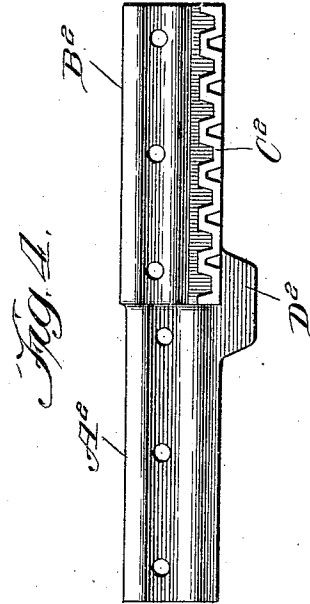
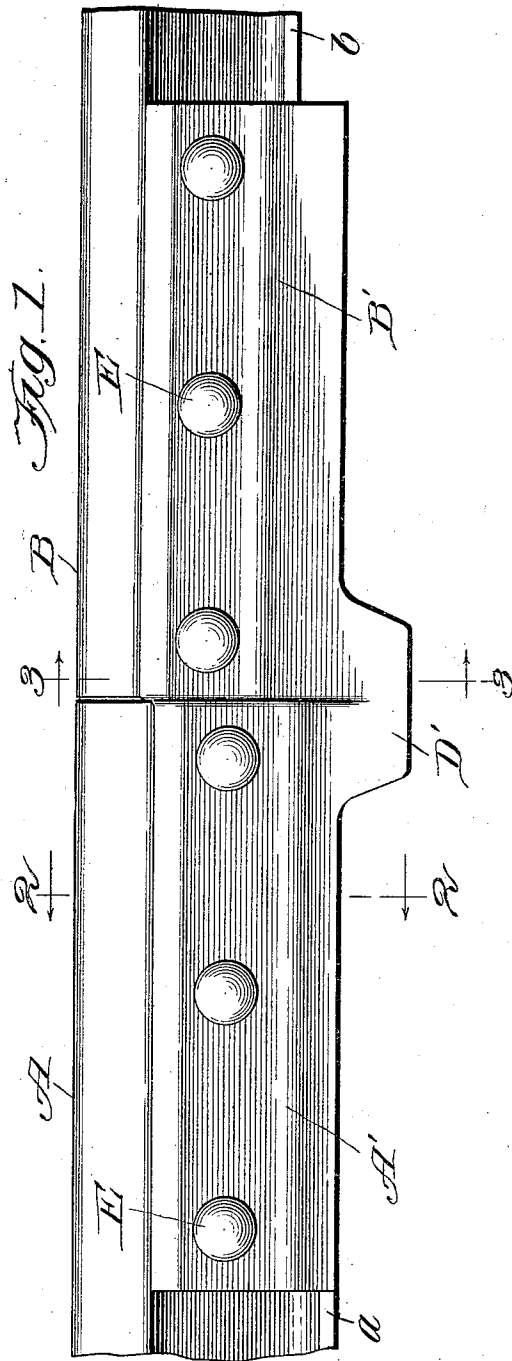


J. H. ALLEN.
STEP JOINT FOR RAILS.
APPLICATION FILED MAR. 25, 1907.

943,057.

Patented Dec. 14, 1909.



Witnesses:
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UNITED STATES PATENT OFFICE.

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STEP-JOINT FOR RAILS.

943,057.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed March 25, 1907. Serial No. 364,313.

To all whom it may concern:

Be it known that I, JOHN H. ALLEN, a citizen of the United States, residing at East Orange, county of Essex, State of New Jersey, have invented a certain new and useful Improvement in Step-Joints for Rails, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates in general to rail joints, and more particularly to a joint for connecting rails of different heights.

In laying tracks it sometimes occurs that the adjoining rails are of different cross-section and consequently it is impossible to use the ordinary joint plates. Such an occurrence is incident to the replacing of portions of tracks by rails larger in cross-section than the old rails forming the portions of the tracks at each side of the renewed portion. In such event it is desirable that joint plates should be employed which will securely unite, and at the same time so support the adjoining ends of the rails, that their tread surfaces will accurately aline.

The primary object of my invention is to provide a rail joint for connecting the ends of rails of different heights which will support the base of the smaller rail at a higher level than the base of the larger rail so that the tread surfaces will be in the same horizontal plane, and which will also resist the downward strain at the joint incident to the passage of trains.

A further object of my invention is to provide a rail joint plate for uniting the ends of adjoining rails of different heights, which will be simple in construction, inexpensive in manufacture, and will possess great structural strength.

The embodiment of my invention herein disclosed may be generally described as consisting of a pair of joint plates each plate comprising an upper chord or fish plate of two different heights so as to fit snugly between the heads and bases of the united rails and conforming to the shape of the base flanges of the rails, a lower chord depending from the upper chord and extending below the bases of the rails, and a flange underlying and supporting the base of the smaller

rail, at a higher level than the base of the larger rail.

My invention will be more fully described hereinafter with reference to the accompanying drawing in which the same is illustrated as embodied in a convenient and practical form, and in which:

Figure 1 is a side elevation; Fig. 2 a cross-section on line 2—2 Fig. 1; Fig. 3 a cross-section on line 3—3 Fig. 1; and Fig. 4 an inside elevation of one of the splice bars disconnected from the rails.

The same reference characters are used to designate the same parts in the several figures of the drawing.

Reference letters A and B designate the ends of adjoining rails which are to be connected, the rail A being larger in cross-section than the rail B.

Reference characters A' and B' designate the portions of a splice bar which engage the rail ends A and B respectively. The splice bar comprises vertical webs adapted to fit snugly between the heads and bases of the adjoining rails, the vertical web of the portion A' being wider than the vertical web of the portion B' to correspond with the difference in heights of the united rails. The splice bar comprises an outwardly and downwardly extending flange at the lower edge of the web adapted to fit over the bases of the united rails. The vertical web and the outward and downward extending flange on the portion B' of the splice bar are stepped up with respect to the web and flange of the portion A' of the splice bar in order that the two portions of the splice bar may correspond to the differences in dimensions of the united rails.

A second splice bar comprising portions A² and B² is provided to engage between the heads and bases of the united rails on the opposite side of their webs from the splice bars A' and B'. The portions A² and B² of the second splice bar correspond to the portions A' and B' of the first splice bar above described so that the portions A' and A² of the two splice bars will closely engage between the head and base of the larger rail A while the portions B' and B² of the splice bars will closely fit between the head and base of the smaller rail B. Bolts E are provided for tightly securing the splice bars on the opposite sides of the united rails, such

bolts extending through registering holes in the splice bars and rail webs.

Extending inwardly from the lower edges of the outward and downward extending flanges on the portions B' and B² of the splice bars are base supporting flanges C' and C² adapted to underlie and support the base b of the smaller rail thereby supporting the base of the smaller rail at a higher level than the base A of the larger rail. The inwardly extending base supporting flanges are preferably corrugated so as to secure the requisite strength and stiffness and to raise the smaller rail the necessary distance without requiring the use of as much metal in the base supporting flanges as would be required if such flanges were not provided with corrugations.

In order that the downward strain to which the splice bars are subjected may be resisted, downwardly extending portions, or lower chords, D' and D² are provided at the lower edges of the outwardly and downwardly extending flanges of the splice bars. It is obvious, however, that the lower chords may be omitted if desired, but they are preferably provided upon the splice bars in order to impart to them greater strength at the points where they are subjected to the greatest downward strain, namely beneath the ends of the united rails where there is a tendency of one rail to move with respect to the other as the wheels pass from the tread of one rail to the tread of the adjoining rail. From the foregoing description it will be observed that I have invented an improved rail joint for securely uniting the ends of rails of different cross-sections, and which is so constructed as to withstand the strain to which the splice bars are subjected.

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

1. A step-joint for railway-rails comprising a pair of splice-bars adapted to be secured to opposite sides of the adjoining ends of rails of different cross-sectional area, each of said splice-bars being formed of a substantially vertical rail-supporting web enlarged or stepped up vertically for substantially half its length to support the head of the smaller rail, and with a downward and outward inclined flange along the lower edge of said vertical web, an inward-extending base-support adapted to extend under one of the rails, said base-support terminating substantially midway between the ends of the bars, and a lower chord projecting downwardly from the outer edge of the inclined flange midway between the ends of the bars.

2. A step-joint for railway-rails comprising a pair of splice-bars adapted to be secured to opposite sides of the adjoining ends

of rails of different cross-sectional area, each of said splice-bars formed with a substantially vertical rail-supporting web enlarged or stepped up vertically for substantially half the length to support the head of the smaller rail, and along the lower edge of said web with a downward and outward inclined flange adapted to extend over the base of the rails, one of said splice-bars being formed with an inward-extending base-support adapted to lie under the end of one of the rails, said base-support terminating substantially midway the ends of the splice-bar, and a lower chord projecting downwardly from the outer edge of the inclined flange midway between the ends of the bars.

3. A step-joint for railway-rails comprising a pair of splice-bars adapted to be secured to opposite sides of the adjoining ends of rails of different cross-sectional area, each of said splice-bars formed with a substantially vertical rail-supporting web enlarged or stepped up vertically for substantially half the length to support the head of the smaller rail and along the lower edge of said web with a downward and outward inclined flange adapted to extend over the base of the rails, one of said splice-bars being formed with an inward-extending base-support adapted to lie under the end of one of the rails, said base-support terminating substantially midway between the ends of the splice-bars, said base-support being corrugated, and each of said splice bars having a depending lower chord midway between the ends thereof.

4. A step-joint for railway-rails comprising a pair of splice-bars adapted to be secured to opposite sides of the adjoining ends of rails of different cross-sectional area, each of said splice-bars being formed of a substantially vertical rail-supporting web enlarged or stepped up vertically for substantially half its length to support the head of the smaller rail and with a downward and outward inclined flange along the lower edge of said vertical web, a base-support extending inward under the base of the rail below the enlarged part of the vertical web and substantially equal in length to the enlarged part of the web, whereby said base-support extends under and carries the smaller rail and being arranged to bring the upper surface of the said rail flush with the upper surface of the larger rail, and a lower chord depending from each of said splice bars between the ends thereof.

In testimony whereof, I sign this specification in the presence of two witnesses.

JOHN H. ALLEN.

Witnesses:

GEO. L. WILKINSON,
HARRY S. GAITHER.