S. RAY.

RAILROAD RAIL-JOINT.

No. 186,623. Patented Jan. 23, 1877.

Fig. 1.

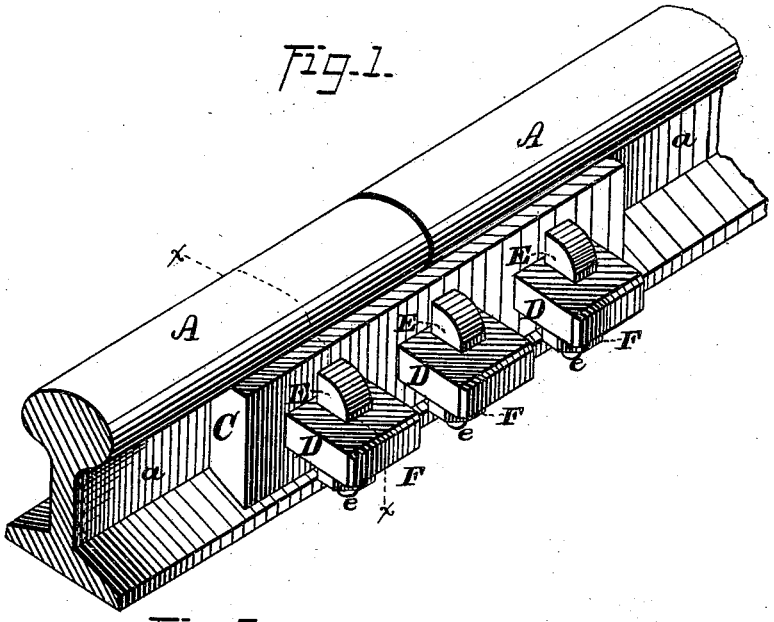


Fig. 2.

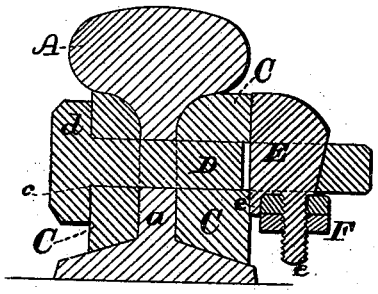


Fig. 3.

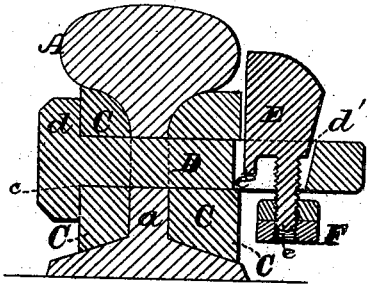
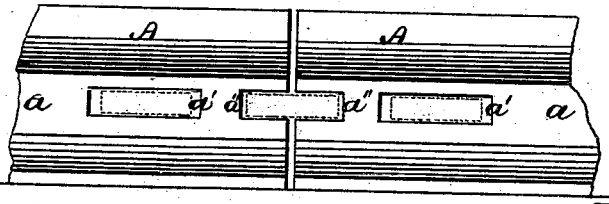


Fig. 4.



WITNESSES.

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INVENTOR.

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Prindle & Co his Attys

UNITED STATES PATENT OFFICE.

SAMUEL RAY, OF ALLIANCE, OHIO, ASSIGNOR TO HIMSELF, W. A. NIXON, OF SAME PLACE, AND PRINDLE & CO., OF WASHINGTON, D. C.

IMPROVEMENT IN RAILROAD-RAIL JOINTS.

Specification forming part of Letters Patent No. **186,623**, dated January 23, 1877; application filed May 19, 1876.

To all whom it may concern:

Be it known that I, SAMUEL RAY, of Alliance, in the county of Starke and in the State of Ohio, have invented certain new and useful Improvements in Splice-Bars for Railway-Rail Joints; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of a rail-joint formed by my improved fastenings. Figs. 2 and 3 are cross-sections of the same upon line *x x* of Fig. 1, and show, respectively, the tightening-key drawn downward to a firm bearing, and loosened for removal; and Fig. 4 is a side elevation of the ends of two rails in position for the fastenings.

Letters of like name and kind refer to like parts in each of the figures.

The design of my invention is to increase the strength and durability of the joints between the ends of railroad-rails; and to this end it consists, principally, in combining, with each of the horizontal keys named, a vertical key, which passes through a corresponding opening in the point of the former, and is drawn downward by means of a nut upon its lower threaded end, so as to confine the splice-bars and rail-ends between said vertical key and a head upon the opposite end of said horizontal key, substantially as hereinafter shown.

It consists, further, in the construction and combination of the horizontal keys, key-bolt, and splice-bars with the slotted ends of the rails, substantially as and for the purpose hereinafter set forth.

In the annexed drawings, A and A represent the ends of two railroad-rails, each of which is provided, in and through its web *a*, midway between its head and foot, and near its end, with a horizontal slot, *a'*, that is rectangular in form, is about three-fourths of an inch in height, and has a length of about two and one-half inches. At the end of each rail is formed a second slot, *a''*, which has the same vertical dimensions as the slot *a'*, and about one-half its length, is placed in line with the latter, and is open at its outer end. Fitted to or within each side of the rail-ends A and A is a spliced bar, C, which has a vertical outer face, and at its inner side is made to fit closely to the concavity of said rails. At points that correspond to the positions of the slots *a'* and *a''* within said rails similar slots, *c*, *c*, and *c* are provided within said splice-bars, and within each slot is placed a key, D, that closely fills the same in a vertical direction, but horizontally does not quite fill the space. Upon one end each key D is provided with a head, *d*, while within its opposite end, which projects considerably beyond the splice-bar of that side, is formed a slot, *d'*, that has its greatest length in a line with said key, has vertical walls at its sides and rear end, while its front or outer end wall inclines downward and inward. The length of said slot *d'* is such as to cause its inner end to be within the line of the spliced bar. Within the slot *d'* of each key D is fitted a key, E, which corresponds in shape to the form of said slot, but has somewhat less dimensions than the same from front to rear, so that when moved downward said key E shall, at its inner edge, bear against the outer face of the splice-bar C, and at its outer edge upon or against the outer wall of said slot, and, in consequence of its tapering form, shall force said splice-bar, and draw the opposite splice-bar firmly against the sides of the rail, so as thereby to bind the latter rigidly together in relative lateral and vertical positions.

In order that the keys E and E may be moved to, and secured in, longitudinal position, the lower end of each is provided with a threaded shank, *e*, that projects below the lower side of the key D, and receives a nut, F, by the rotation of which nut said key may be drawn downward. As the inner edge of the key E bears only upon the face of the splice-bar C, it is necessary that said edge should have a bearing below as well as above the slot *d'*, in order that said key may maintain its vertical position, and be enabled to perform its office efficiently. To insure such bearing, the shank *e* is placed sufficiently near the front side of the key E to enable a lip, *e'*, to be formed upon the rear portion, which lip projects vertically downward from, and forms a continuation of, the rear edge or bearing-surface of

said key, and bears upon the face of the splice-bar C below the key D, some distance in advance of the upper end of the shank *e*. As thus arranged, it will be seen that if the key E is caused to fill the slot *d'* when the lip *e'* just bears upon the lower portion of the splice-bar, there will still be left for draft a length of the threaded portion of the shank *e* equal to the vertical dimensions of said lip. This method of securing together the rail-ends renders the joint as firm and rigid vertically and laterally as any portion of the rail, while, in consequence of the large and upper and lower bearing-surfaces of the horizontal keys, and of the position of the center-key, one-half of which is in each rail end, it is impracticable for said rail ends to change their relative vertical position, whether the joint is supported from beneath, or is without such support.

Having thus fully set forth the nature and merits of my invention, what I claim as new is—

1. In combination with each key D, which passes transversely through the rails A and A, and splice-bars C and C, and is provided at one end with a head, *d*, and near its opposite end with a vertical opening, *d'*, the key E, fitted within said opening, and provided with a screw-shank, *e*, bearing-lug *e'*, and nut F, substantially as and for the purpose shown.

2. In combination with the rails A and A, provided with the openings *a'* and *a''*, the splice-bars C and C, having the transverse slots *c* and *c*, the keys D, *d*, and *d'*, the keys E, *e*, and *e'*, and the nuts F and F, said parts being constructed and arranged in the manner and for the purpose substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 13th day of May, 1876.

SAMUEL RAY.

Witnesses:
R. W. H. DAVIS,
D. J. QUINN.