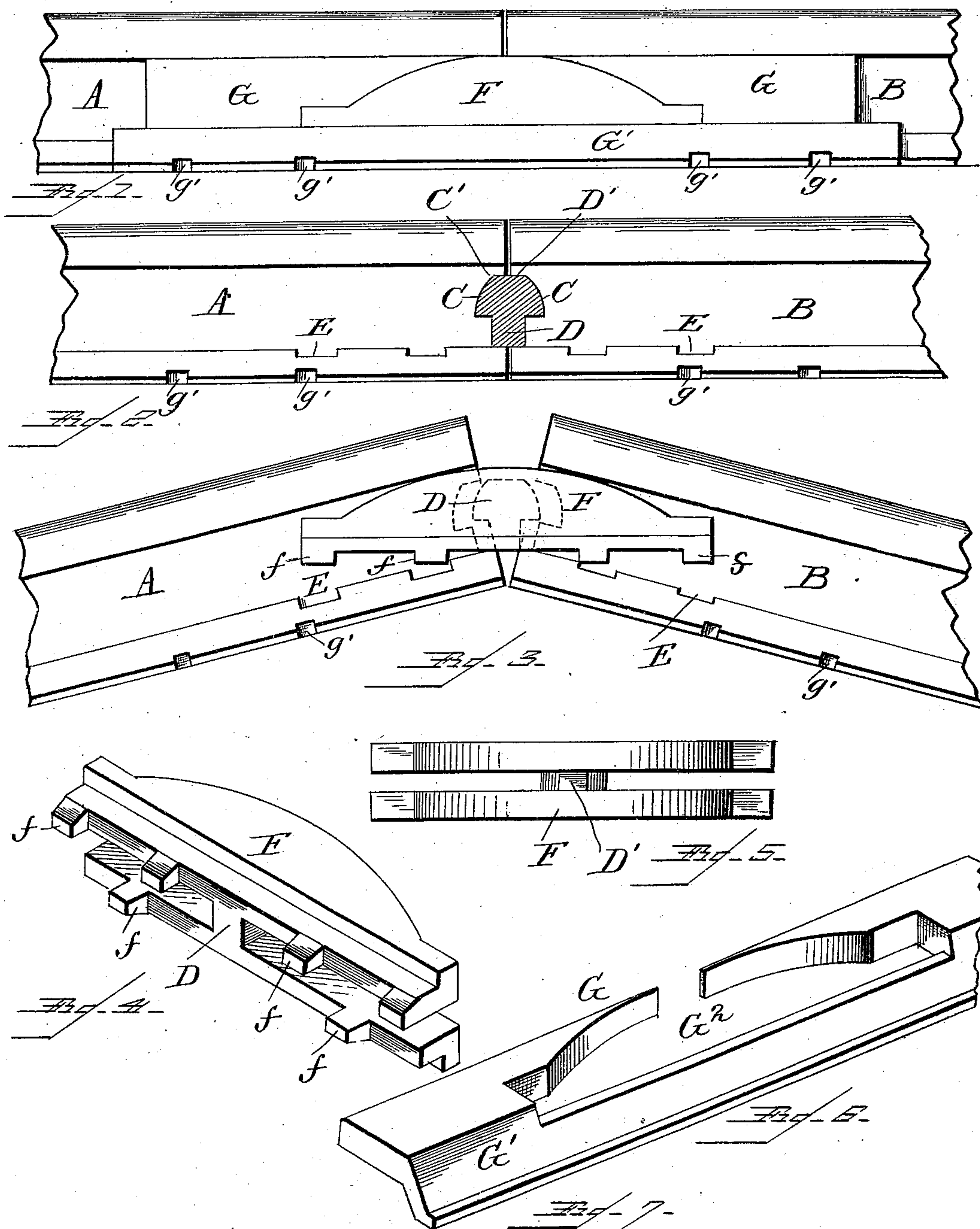


(No Model.)

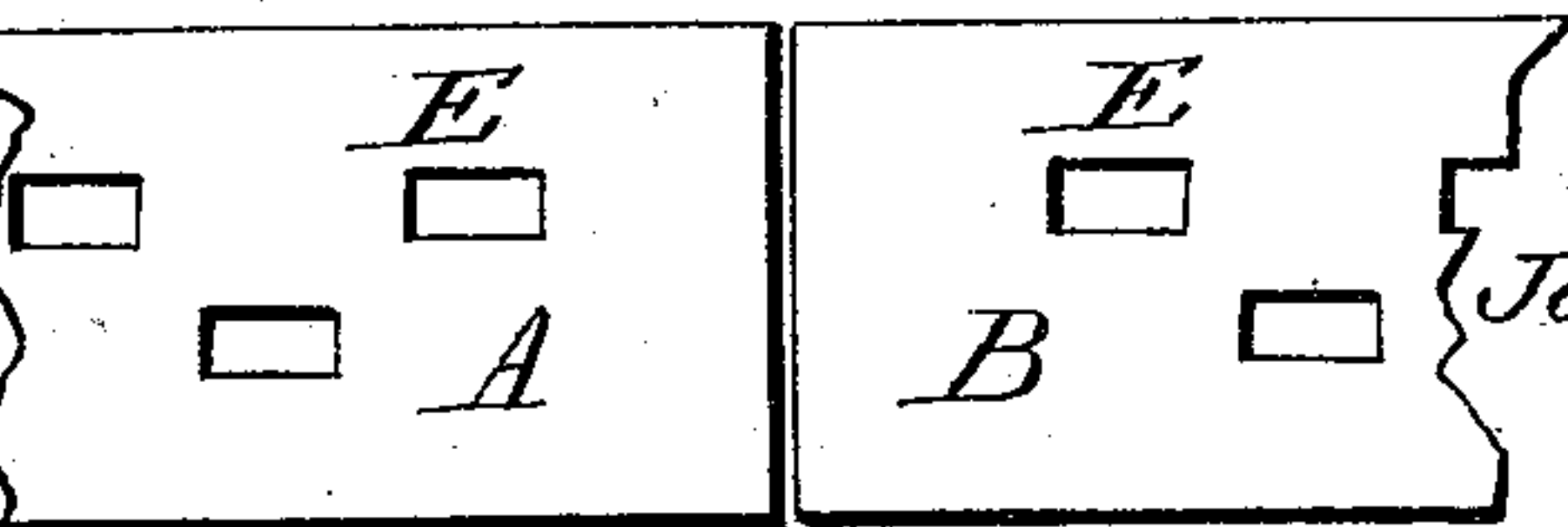
J. E. SMITH.
FASTENING FOR RAILWAY RAILS.

No. 549,616.

Patented Nov. 12, 1895.



WITNESSES
H. L. Ouraud.
Jos. Gregory



INVENTOR:
Jacob E. Smith
by J. Fred. Kelly,
Attorney.

UNITED STATES PATENT OFFICE.

JACOB E. SMITH, OF HOMESTEAD, PENNSYLVANIA, ASSIGNOR OF TWO-THIRDS TO JOHN OSBORNE AND EDWIN F. ROWSE, OF SAME PLACE.

FASTENING FOR RAILWAY-RAILS.

SPECIFICATION forming part of Letters Patent No. 549,616, dated November 12, 1895.

Application filed March 4, 1895. Serial No. 540,493. (No model.)

To all whom it may concern:

Be it known that I, JACOB E. SMITH, a citizen of the United States, residing at Homestead, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Fastenings for Railway-Rails; 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.

This invention relates to fastenings for railroad-rails, street-car rails, T-rails, and in fact for all rails and beams used for any purpose for traffic and in the construction of buildings, bridges, and wherever it is required to use iron beams and couple the ends together. It is particularly well adapted for rails designed to support rolling-stock, as it practically makes a continuous rail and obviates independent vibration of the opposing ends of two rails on the approach and passage of the wheels of a loaded car, thus preserving the road-bed at the joints of the rails by preventing the usual vibration and jarring of the rail ends, this preservation of the road-bed at the rail-joints being an important practical advantage of my invention, as it has heretofore required more labor to keep up the road-bed at rail-joints than at any other points of the road. The jolt or jar incident to the wheels of a train passing over the joints between the rails is too well known by the traveling public to require an extended description of the same, and the inconvenience and annoyance caused by such jolting has frequently been complained of and deterred persons in ill health from traveling by rail.

The present invention aims to provide a splice or coupling between the ends of rails or beams which will make them practically continuous and when applied to railroad and street-car rails will wholly obviate any jolt or vibration of the ends of the rails when the wheels of the car are passing thereover. This independent vibration of the rails is the chief cause of the loosening of the fastenings at the joints or fish-plates, thereby necessitating the employment of men to walk the tracks and tighten the nuts of the fastening-bolts. By my invention the vibration is reduced to

a minimum and the fastenings are not so quickly loosened. Hence the track-walker can cover at least twice the amount of ground as heretofore. Suppose the distance previously covered by one track-walker by the old method of laying the rails to be about two miles. By my invention the same person in the same time—say one day—will cover about four miles or twice the distance heretofore covered; hence the advantage of the invention, viewed from an economical point of view, not to say anything of the ease and convenience to the traveler by the absence of the jolt and jar, now so common.

The preferred form of coupling is T-shaped, or approximately so, and is adapted to enter or be fitted into notches in the ends of the rails, said notches being provided in the web portion of the rail ends.

The improvement also consists of side pieces or segments to overlap the joint between the rails and hold the coupling in place, said segments being secured to or forming an integral part of the coupling, as found most convenient, the latter construction being preferable. These segments have depending lugs at their ends to interlock with slot-openings formed in the foot of each contiguous end of the rails, thereby forming a firm and efficient joint to effect the desired result, while the said slots permit of the expansion and contraction of the rails.

The improvement further consists of splice-bars to be used in connection with the coupling to strengthen the joint and brace the same firmly and securely. These splice-bars are arranged one on each side of the web portion of the rails and have a portion intermediate of their ends removed to receive the segments of the coupling.

The improvement consists, furthermore, of the details of construction and novel features, which will be referred to hereinafter, and which are shown in the accompanying drawings, in which—

Figure 1 is a side elevation of a rail, showing the application of the invention. Fig. 2 is a side view of the coupling, showing it fitted in the notches formed in the adjacent ends of two rails. Fig. 3 is a detail view showing the manner of placing the coupling

in place. Fig. 4 is a perspective view of the coupling. Fig. 5 is a top plan view of the same. Fig. 6 is a detail view of one of the splice-bars. Fig. 7 is a bottom plan view of the adjacent rail ends.

The invention is shown in its more general application in the annexed drawings, in which—

A and B represent railroad-rails of ordinary construction, the ends being provided with notches C to receive the coupling D and having elongated openings or slots E in the foot or base flange a short distance from the ends to receive lugs *f*, pendent from the lower edge of the side pieces or segments F. This coupling may have various forms and shapes so long as it will interlock with the ends of the rails and cause them to move together as one piece, but is preferably formed, as shown, of a substantially T shape, the head of the coupling being formed with a perfectly-flat horizontal top D', and the notches C in the ends of the rail-webs are of corresponding shape to receive and form a close joint with the said coupling, having the horizontal top shoulders C', which rest upon the horizontal top D' of the coupling-block. It will be seen that by this construction, when the rails contract the straight horizontal shoulders C' will always keep in the plane with and rest upon the flat horizontal top D' of the coupling-block, thus giving a solid bearing to the rail ends, both when expanded and contracted, so that it will be impossible for the rail ends to give down at any time under the pressure of the wheels passing over them, which might, during contraction of the rails, occur were this bearing a curved instead of a perfectly-horizontal one.

The parallel side pieces or segments F F overlap the joint between the ends of the rails, fitting snugly on each side of the rail-webs, and have lugs *f*, pendent from their lower edges to enter the slot-openings E, and are provided one for each side of the rail, and are formed preferably integral with the coupling-block D. The segments may, however, be formed separate, when desired, and secured to the coupling-block by bolts, rivets, or in any desired manner. The lower edges of the segments rest upon the foot-flange of the rails and their upper edges curve from the middle toward each end, the segment on the inner side of the rails being formed with two lugs at each end extending down from its lower edge and passing through two corresponding slot-openings E in the base-flange on the inner side of the rail, while the outer segment has one lug depending from each end and entering a corresponding opening in the outer base-flange, or two lugs at each end, when desired. By this arrangement the openings in the rail-flanges are not directly opposite each other, thereby preventing any weakening of the rails at that point. The number of lugs employed may, of course, be varied according to the length which the segments are made,

as the nature of the rails, the purpose for which they are intended, may direct. The lower horizontal edges of the segments rest upon the base-flanges of the rails and their upper edges curve from the middle toward each end, the lower outer part of each segment being rabbeted at F' to receive the inner edge of the horizontal lower portion of the splice-bar G.

The coupling is placed in position by elevating the ends of the rails to be coupled, as shown in Fig. 3, sufficient to admit of the T-head of the coupling entering the deepest portion of the notches formed in the ends of the rails. After the coupling is properly positioned the elevated ends of the rails are lowered, when the coupling will enter the notches in the ends of the rails and the parallel segments will come one on each side of the web of the rail. This operation also admits of the proper entry of the lugs *f* into the elongated openings E. The coupling D, fitting in the notched ends of the rails and the parallel segments extending on each side of the web of the meeting rail ends, with their horizontal lower edges resting upon the base-flanges and their bottom lugs *f* seated in the openings in said flanges, form a coupling device which of itself will secure the ends of the rails together firmly and securely, while additional strength and solidity are secured by the splice-bars G, which will be now described; also, the bottom lugs *f* are inclined or beveled on their outer sides, so that when the weight of the car-wheels is passing over them tending to press them down farther in the openings E, these inclined faces will operate to bring the two parallel segments F closer together as they are pressed down, as will be readily understood.

The splice-bars G, one for each side of the rails, have their middle portion cut away to exactly receive the segments and have each a horizontal base portion G', which rests upon the rail-flange and is spiked to the ties at *g'* in the usual manner. The bodies of the splice-bars are rectangular, their upper edges fitting against the under side at the head and foot of the rails and bracing the joint against vertical stress, and in this respect supplements the action of the coupling. When the coupling D F F has been seated in position and the splice-bars G G secured in position, their openings G² exactly receiving the segments F, the outer faces of which lie flush with the outer faces of the splice-bars, a joint is thus formed at the ends of the rails which is absolutely firm and solid, preventing all vibration of the rail ends and making the rails practically continuous, while the rails are actually stronger and will resist more strain at these joints than at any intermediate points of their lengths.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The herein-described improved rail coupling, comprising two parallel side-pieces or segments, a T-shape web or bar connecting said side pieces or segments, and means for preventing displacement of said coupling, as set forth.

2. The herein-described improved rail coupling, comprising two parallel side-pieces or segments having lugs or projections on their lower edges, a T-shape web or bar connecting said side pieces or segments, and means for engaging said lugs and preventing displacement of said coupling, as set forth.

3. The herein-described improved rail coupling, comprising two parallel side-pieces or segments, a T-shape web or coupling bar connecting said side pieces or segments, means for preventing displacement of said coupling, splice bars inclosing said segments, and means for securing said splice-bars in position, substantially as set forth.

4. The herein-described improved rail coupling, comprising two parallel side-pieces or segments of approximately semi-circular form, a T-shape web or coupling bar connecting said side-pieces or segments, means for preventing displacement of said coupling, splice-bars having approximately semi-circular recesses designed to receive said side-pieces or segments, and means for securing said splice bars in position, substantially as set forth.

5. An approximately T-shaped coupling having seats in the adjacent ends of two rails, and side pieces secured to the coupling and having positive engagement with the foot of the rails, substantially as set forth.

6. The combination with two rails or beams having notches in their ends, of a coupling fitted in the notches, segments secured to the sides of the coupling and having depending lugs to enter elongated openings in the foot of the rails, and rectangular splice bars having their intermediate portions cut away to receive the segments, and having a horizontal portion to rest upon the foot of the rails, substantially as specified.

7. A rail coupling, comprising two parallel side pieces or segments, a T-shape web or coupling connecting said segments and provided with a flat upper surface, means for preventing displacement of said segments, splice bars, and means for securing the same in position, in combination with two rails provided with notches in their ends designed to receive said web or coupling and having projecting portions designed to rest on the flat upper surface of said coupling, substantially as set forth.

8. A rail coupling, comprising two parallel side-pieces or segments, having lugs projecting from their lower edges, a T-shape web or coupling connecting said segments and provided with a flat upper surface, splice bars, and means for securing the same in position, in combination with two rails provided with recesses designed to receive the lugs of said segments and also having notches in their ends designed to receive said T-shape web or coupling, projecting portions of said rails being designed to rest on the flat upper surface of said coupling, substantially as set forth.

9. A rail coupling, comprising two parallel side pieces or segments of approximately semi-circular form having lugs projecting from their lower edges, a T-shape web or coupling connecting said segments and provided with a flat upper surface, splice-bars having approximately semi-circular recesses designed to receive said segments, and means for securing said splice bars in place, in combination with two rails provided with recesses designed to receive the lugs of said segments and also having notches in their ends designed to receive said T-shape web or coupling, projecting portions of said rails being designed to rest on the flat upper surface of said coupling, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

JACOB E. SMITH.

Witnesses:

JOS. H. BLACKWOOD,
ELIZABETH S. POOLE.