

(No Model.)

2 Sheets—Sheet 1.

C. A. MILLER.
RAILWAY RAIL JOINT.

No. 309,399.

Patented Dec. 16, 1884.

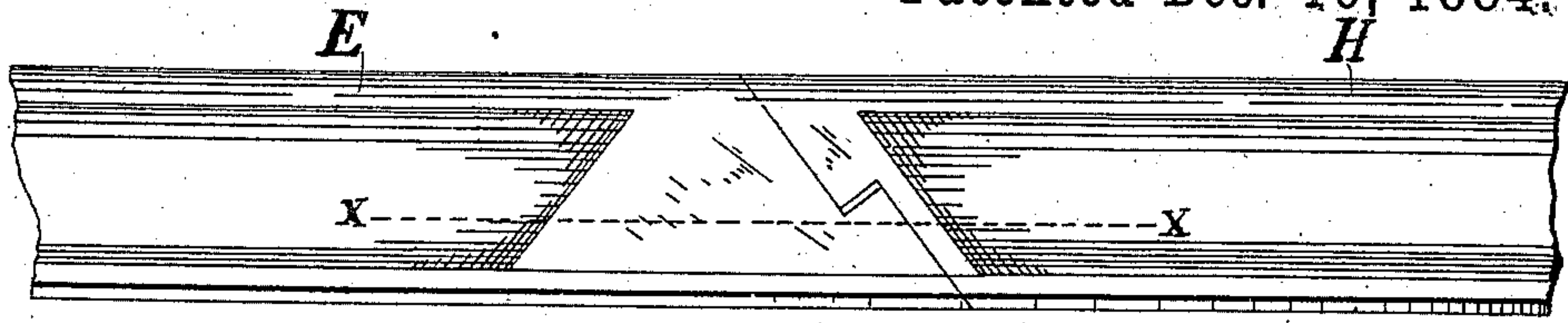


FIG. I.

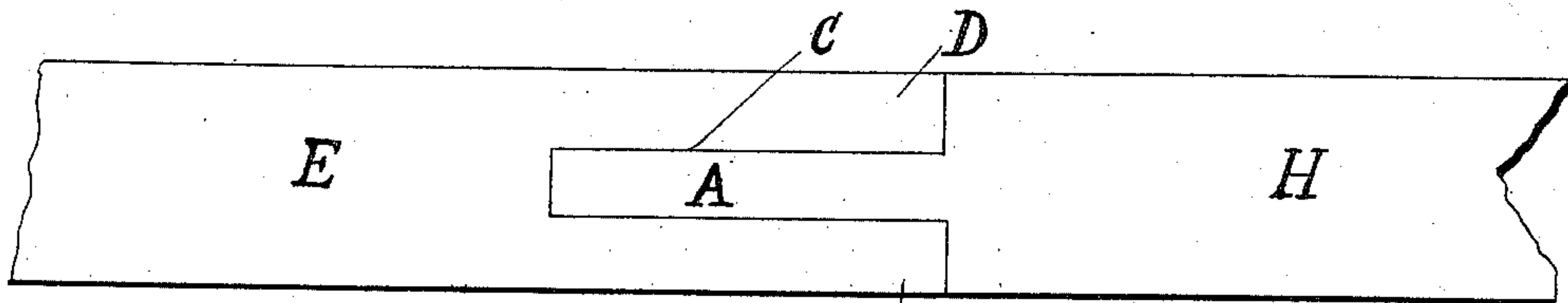


FIG. II.

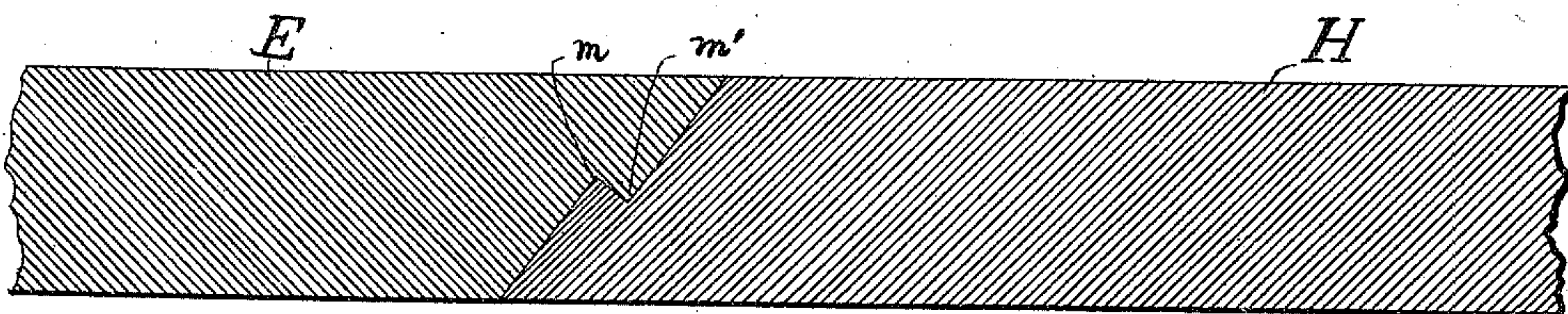


FIG. III.

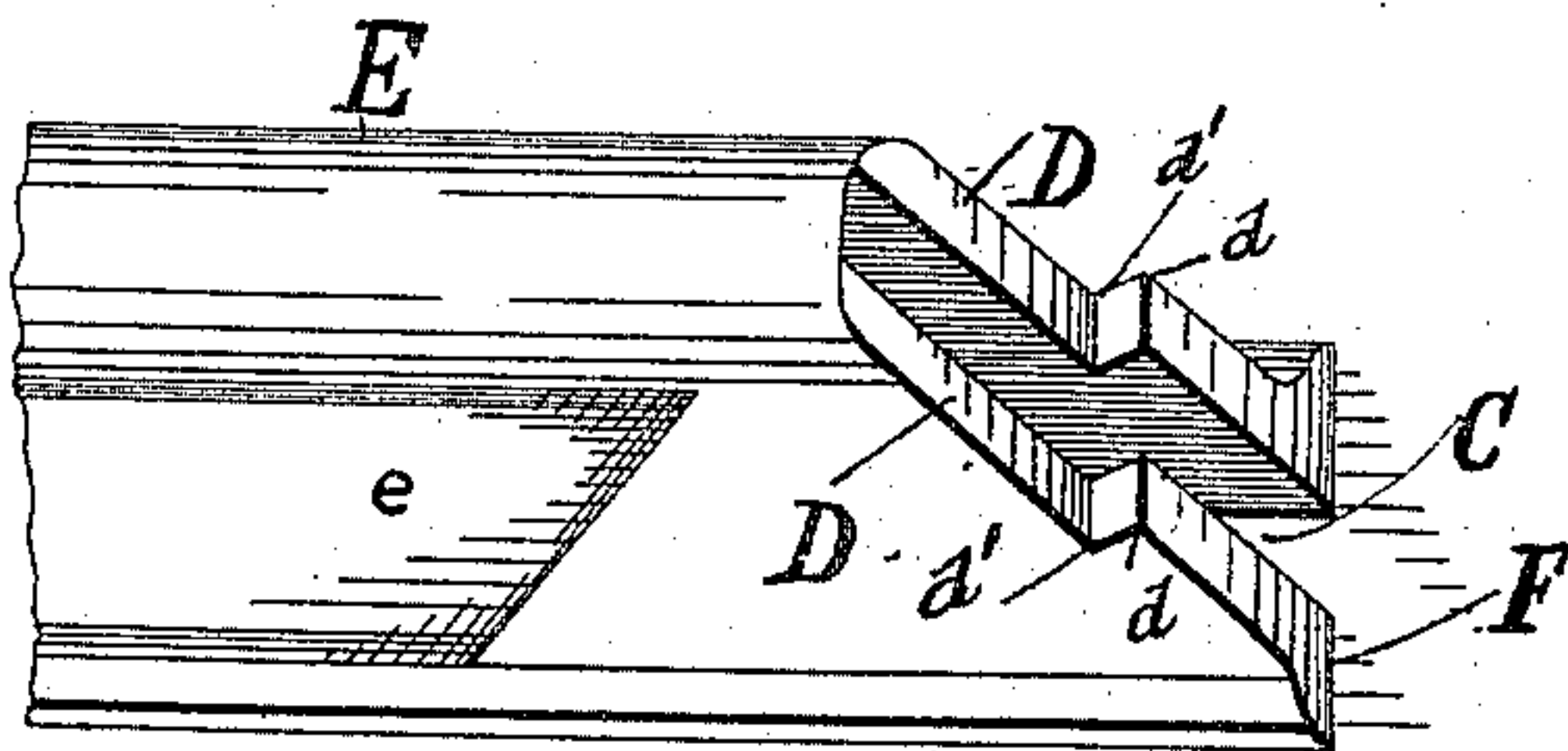


FIG. IV.

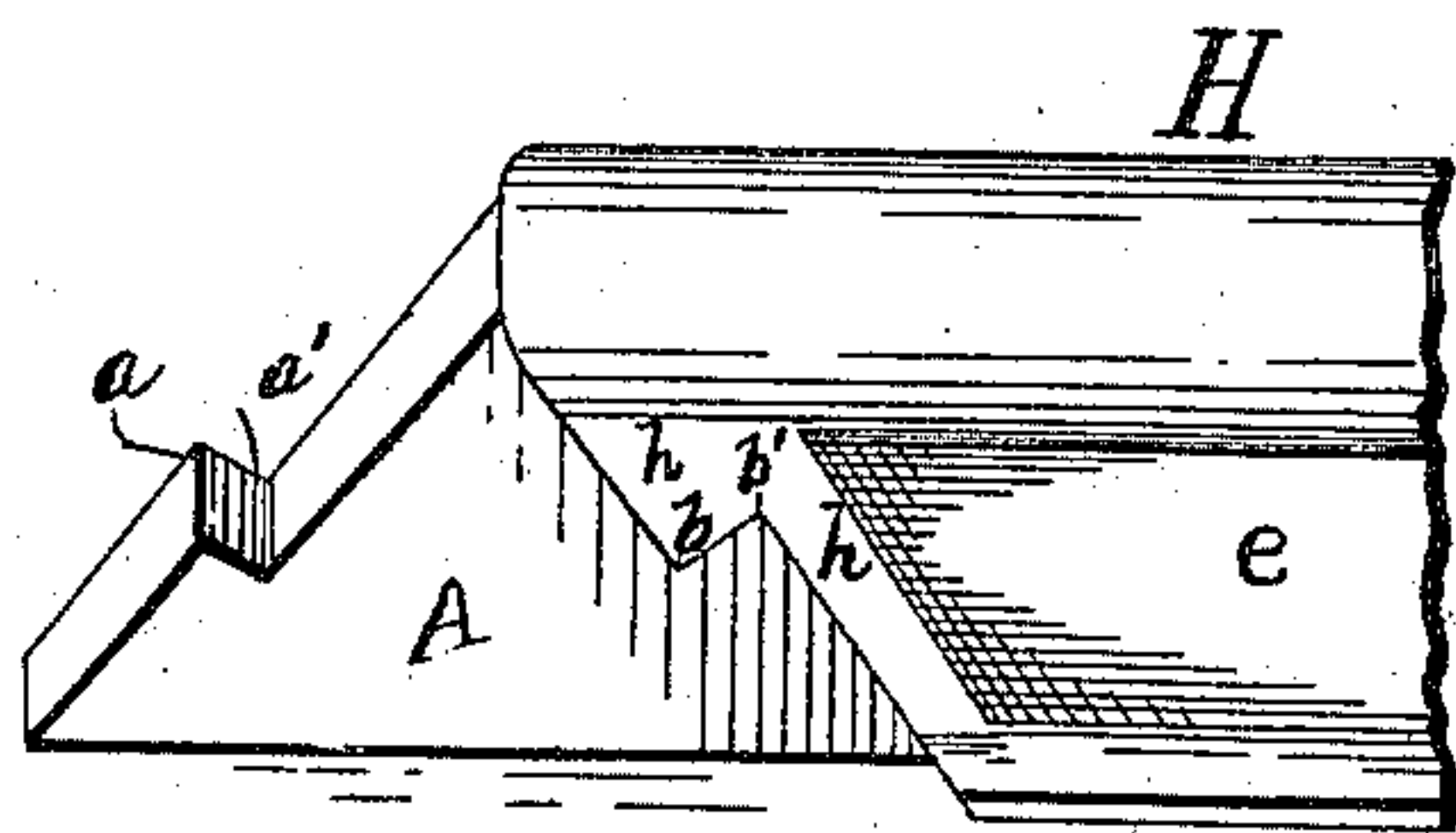


FIG. V.

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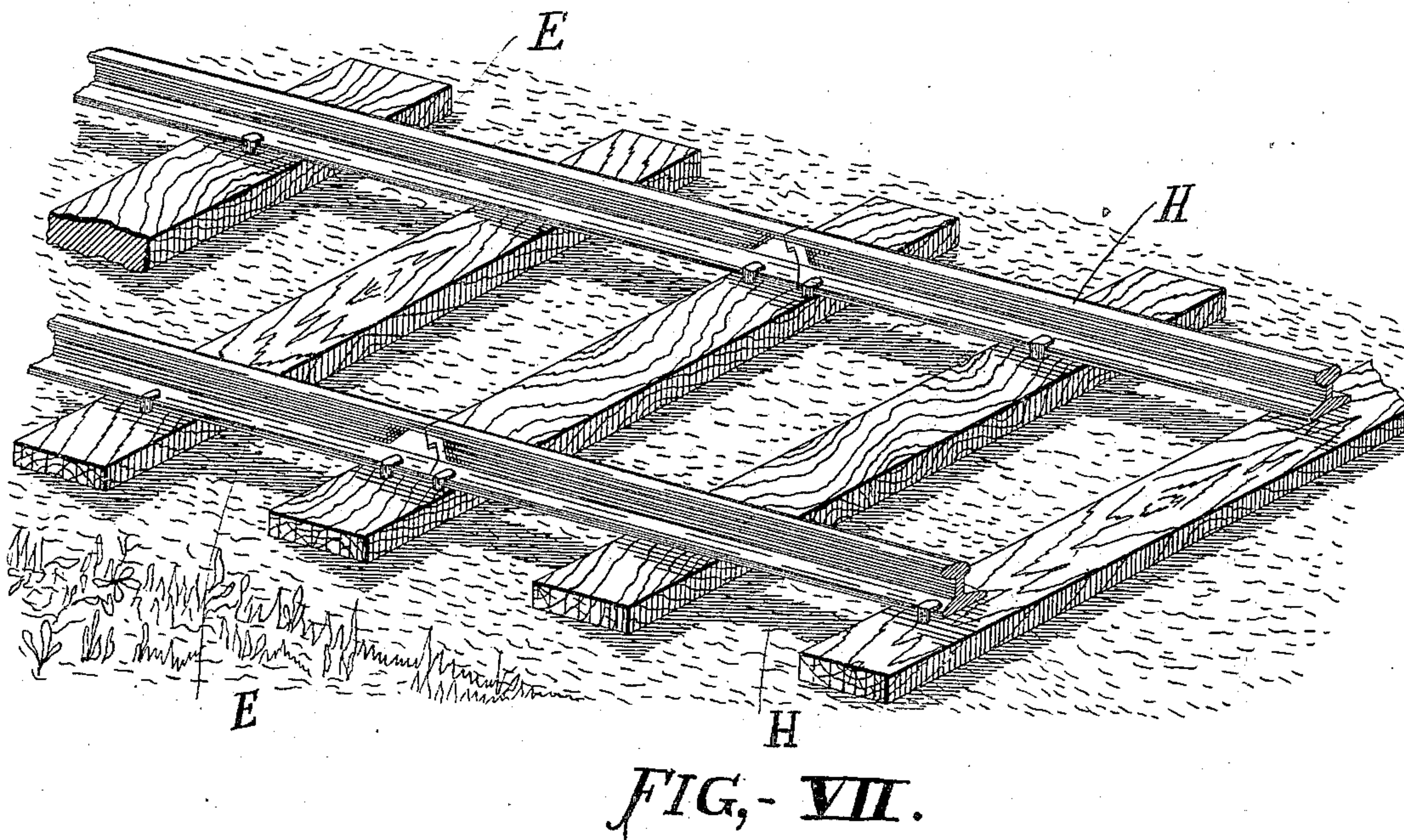
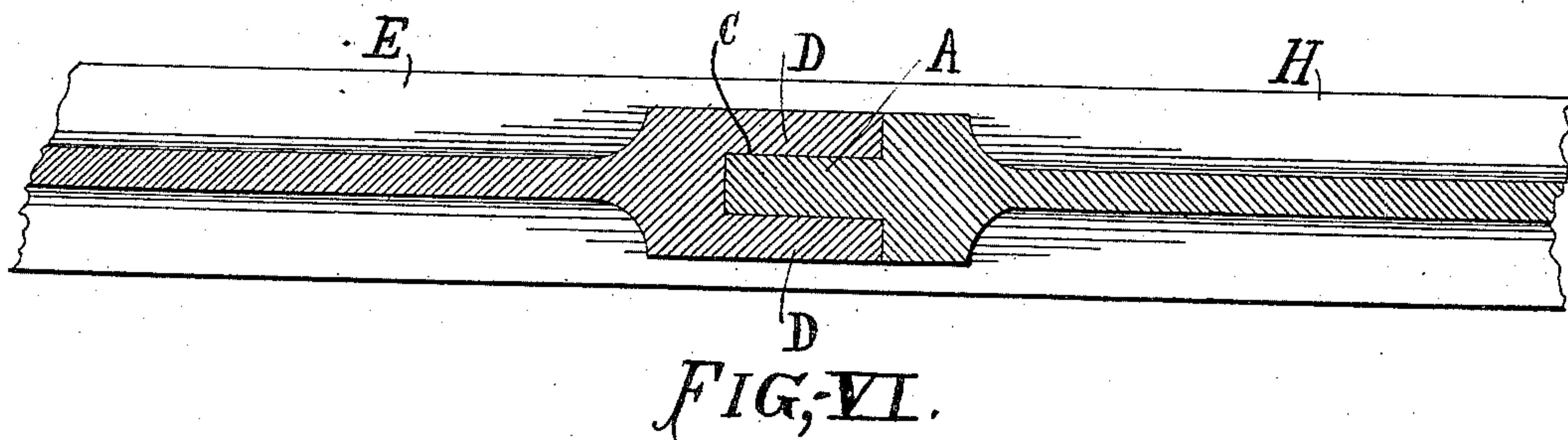
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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

CHARLES A. MILLER, OF CARTHAGE, OHIO.

RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 309,399, dated December 16, 1884.

Application filed November 23, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. MILLER, a resident of the town of Carthage, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Railway-Rail Joints, of which the following is a specification.

The several features of my invention, and the various advantages resulting from their use conjointly or otherwise, will be apparent from the following description.

In the accompanying drawings, Figure I represents a side elevation of portions of two rails provided with the respective portions of an interlocking-joint illustrating my invention, the rails being shown thereby united. Fig. II represents a bottom view of the rails shown in Fig. I. Fig. III represents a vertical central longitudinal section of the same. Figs. IV and V show in perspective the portions of the rails of Fig. I as unlocked and separated. Fig. VI, Sheet 2, represents a horizontal longitudinal section through the dotted line *xx* of Fig. I, and Fig. VII, Sheet 2, represents in perspective a preferred mode of securing to the ties or road-bed the rails united or locked together.

The rail by my invention may be of any suitable shape. On the end of one rail, as H, a tongue, A, is formed, and in the adjoining end of the adjacent rail, as E, a notch, recess, or mortise, C, is formed, into which the tongue A is received. In this manner the rails are so united that the lateral movement of the end of one rail upon or in relation to the adjoining end of the adjacent rail is prevented, and a continuous rail is formed, and the wheel of the vehicle is at all times supported by the rail. Where the web *e* of the rail is thin, as is the case in the ordinary T-rail, it is desirable that the said web be thickened at and in the vicinity of the joint, in order to allow the recess, mortise, or notch to be sufficiently wide to accommodate a tongue of some width in a direction transverse to the vertical plane of the rail, and yet remain sufficiently strong to support the weight of the vehicle passing over and on the rail. With this joint I preferably combine a suitable device for enabling the meeting ends of the rails to be so locked or united as to securely resist all

attempts to pull them asunder, in other words, to separate them by a force or tension exerted in the direction of their length. A preferred form of such locking device consists as follows, viz: The edges of the side or sides, (indicated by D,) of the recess or mortise C are made to taper obliquely downward and forward, and are provided with V-shaped notch or recess *d'*, and tooth or lug *d*. For the purpose of interlocking with said notch *d'* and tooth *d* immediately back of tongue A on rail H, and preferably on each side of the tongue, are shoulders *h*. Should the web *e* be thin, it is here thickened to form the said shoulders. These shoulders are made to fit the edges of the sides D. Thus where the edge of one of the sides D slants obliquely, as shown, and is provided with a notch and depression, the opposing shoulder *h* inclines obliquely downward and backward, and is provided with notch or recess *b'* and tooth *b*, and both shoulders *h* are thus inclined and provided with notch *b'* and tooth *b* when the edges of both sides D are inclined and formed as aforementioned. When the rails E and H are united the tooth *b* of shoulder *h* enters recess *d'* of the side D, and tooth *d* of side D enters recess *b'* of shoulder *h*. As the rear edge of tooth *b* and the front edge of recess *d'* are correspondingly inclined at an angle to the horizontal, the rails, after the teeth *d* and *b* have entered their respective opposing recesses, are securely locked, so that they cannot be longitudinally separated so long as rail H is not lifted from the ties or rail-bed, and at the same time the tongue prevents lateral displacement of the rails in relation to one another. When desired the tongue A and the inner end of recess or mortise C may be formed so as to interlock to prevent longitudinal separation of the rails. A preferred mode of such lock is shown in the drawings, and consists as follows: The forward end or edge of the tongue inclines downward and forward, and is provided with a tooth, *a*, and notch or recess *a'*. The inner end of recess or mortise C is inclined obliquely downward and backward, as shown, and is provided with notch *m'* and tooth *m*. When the rails are united the tooth *a* of the tongue A fits into recess *m'* of rail E, and tooth *m* of rail E fits into recess *a'* of tongue A. The rear edge of

tooth *a* and the rear edge of tooth *m* are correspondingly inclined at an angle to the horizontal. Thus the rails are securely locked together, and will securely resist separation longitudinally until rail E is lifted. So long as the notch or mortise C has a roof and the upper edge of the tongue fits closely under and up against said roof, the lifting of rail E will not separate or unlock the joint.

The locking devices of the shoulder or shoulders *h*, and side or sides D, may be used without the locking devices formed on the tongue A and on the end of recess C; so, also, the locking devices of the tongue A and end of recess C may be employed without the locking devices of the said shoulder or shoulders and side or sides; but these locking devices are preferably conjointly employed, and when thus employed the positions of the teeth and recesses are preferably such (as shown) as that the rails when interlocked cannot be separated except by elevating either one of the rails at the end opposite to where the said locked joint is located. Thus when the rails are horizontal the teeth *d* and *b* prevent separation of the rails by longitudinal force, or by lifting the rail E at the end where the locked joint is, and the tongue when it fits closely in recess C without locking devices, or when it has a suitable locking device, as tooth *a*, fitting a suitable notch, as *m'* in recess C, will prevent the separation of the rails by longitudinal force. When the rails are locked together the lock prevents their being pulled apart, as well as prevents any up or down movement of either. The tongue and the flanges prevent any lateral motion of either rail. The one rail, when the recess C has a roof and the tongue fits closely up against said roof, is supported in part on the tongue and in part on the sides D, while the other rail rests on the tongue and sides D and their bottoms or feet F, and thus the parts form a mutual support. In this manner is formed a union which prevents the rails from being separated or moved in any direction. The rails are easily joined and the union is firm and strong. The track produced is smooth and durable.

One or more of the meeting edges may be suitably cut back so as to allow, if desired, of provision for expansion and contraction of the rails. All fish-plates may be dispensed with. So, also, all chairs may be dispensed with, and ordinary bolts alone be used.

Fig. VII, Sheet 2, illustrates a preferred mode of securing the rail to the ties when the rails are united by my improved joint. In practice where a continuous rail is to be employed each end of each rail will preferably be interlocked with the adjacent end of its adjacent rail by means of a feature of the features of my invention. Each rail may have at one end the notch or recess, &c., and at the other end the tongue; or one rail may have at each end a tongue, and the next rail have at each end a notch-recess.

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. A rail-joint the one rail thereof provided with a vertical tongue and the other rail provided with vertical notch or recess having closed sides, the outer edge of the tongue and the inner end of the notch or recess being formed to interlock, the sides of the tongue being everywhere embraced by the sides of the notch or recess, the tongue being formed on and being integral with the end of the one rail, and the notched portion being formed on and integral with the end of the meeting rail, and not on chairs or pieces intervening between the meeting ends of said rails, substantially as and for the purposes specified.

2. In a rail-joint, the combination of rail H, having tongue A, provided with tooth *a* and notch *a'*, and notch or recess C, having at its inner end the notch *m'* and tooth *m*, substantially as and for the purposes specified.

3. In a rail-joint, the combination of rail H, having tongue A, provided with tooth *a* and notch *a'*, and also having shoulder *h*, and rail E, having notch or recess C, provided at its inner end with the notch *m'* and tooth *m*, the outer surface of the sides extending laterally beyond the sides of the web, substantially as and for the purposes specified.

4. In a rail-joint, the combination of rail H, having vertical tongue A, and shoulder having notch *b'* and tooth *b*, and rail E, having vertical notch or recess C, and sides D, having notch *d'* and tooth *d*, substantially as and for the purposes specified.

5. In a rail-joint, the combination of the rail H, having vertical tongue whose front edge is inclined and provided with tooth *a* and notch *a'*, and rail E, having vertical recess C, having inclined inner end having notch *m'* and tooth *m*, substantially as and for the purposes specified.

6. In a rail-joint, the combination of the rail H, having vertical tongue and shoulder *h*, the front edge of the shoulder being inclined and provided with tooth *b* and notch *b'*, and rail E, having sides D, side D having vertical notch *d'* and tooth *d*, substantially as and for the purposes specified.

7. In a rail-joint, the combination of the rail H, having vertical tongue and shoulders *h*, the front edge of the shoulders being inclined and provided with tooth *b* and notch *b'*, and rail E, having sides D, inclined and provided with notch *d'* and tooth *d*, substantially as and for the purposes specified.

8. In a rail-joint, the combination of the rail H, having vertical tongue whose front edge is inclined and provided with tooth *a* and notch *a'*, and having shoulders *h*, the front edge of one or both shoulders being inclined, and provided with tooth *b* and notch *b'*, and rail E, having vertical recess C, having its inner end inclined, and provided with notch *m'* and tooth *m*, and having sides D, one or both sides being inclined, and provided with the notch *d'* and

tooth *d*, substantially as and for the purposes specified.

9. In a rail-joint, rail H, having a vertical tongue, and rail E, having a vertical notch or recess to receive said tongue, the said tongue and recess having an interlocking joint, and the rail E outside of the recess and the rail H outside of the tongue being also provided with an interlocking joint, substantially as and for the purposes specified.

10. In a rail-joint, the combination of rail H, having a vertical tongue having its free edge or end inclined and long at bottom, and a rail, E, having a recess long at bottom and inclined within to fit the inclination of the tongue, substantially as and for the purposes specified.

11. In a rail-joint, the combination of rail H, having a vertical tongue and inclined shoulders inclining upward and forward toward the end of the rail, and a rail, E, having a vertical notch or recess to receive said tongue, the sides of the recess being inclined downward and forward toward rail H, and fitting the inclination

of said shoulders, substantially as and for the purposes specified. 25

12. In a rail-joint, the combination of the rail H, having a vertical tongue, the free end of the latter being inclined forward and downward, and long at bottom, the rail H also having shoulders inclining upward and forward toward the same end of the rail, and the rail E, having a recess long at bottom, and having its rear end inclined upward toward the rail H and inclined to fit the end of the said tongue, the sides of the recess of rail E being inclined from the upper portion of rail E forward and downward toward rail H, and fitting the inclination of said shoulders, substantially as and for the purposes specified. 30 35 40

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

CHARLES A. MILLER.

Witnesses:

S. A. MILLER,
NATHANIEL CALDWELL.