

(No Model.)

2 Sheets—Sheet 1.

M. C. NILES.  
RAIL JOINT.

No. 432,552.

Patented July 22, 1890.

Fig. 1.

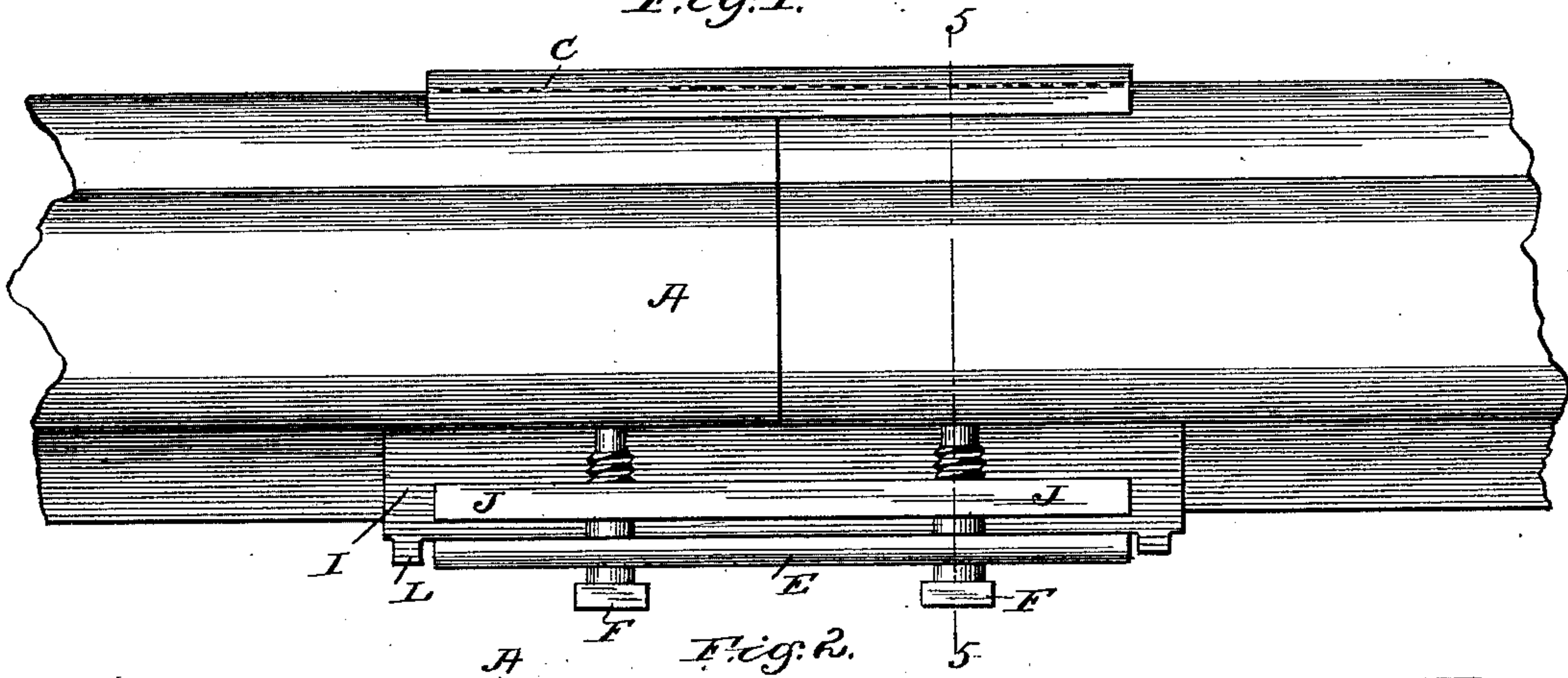


Fig. 2.

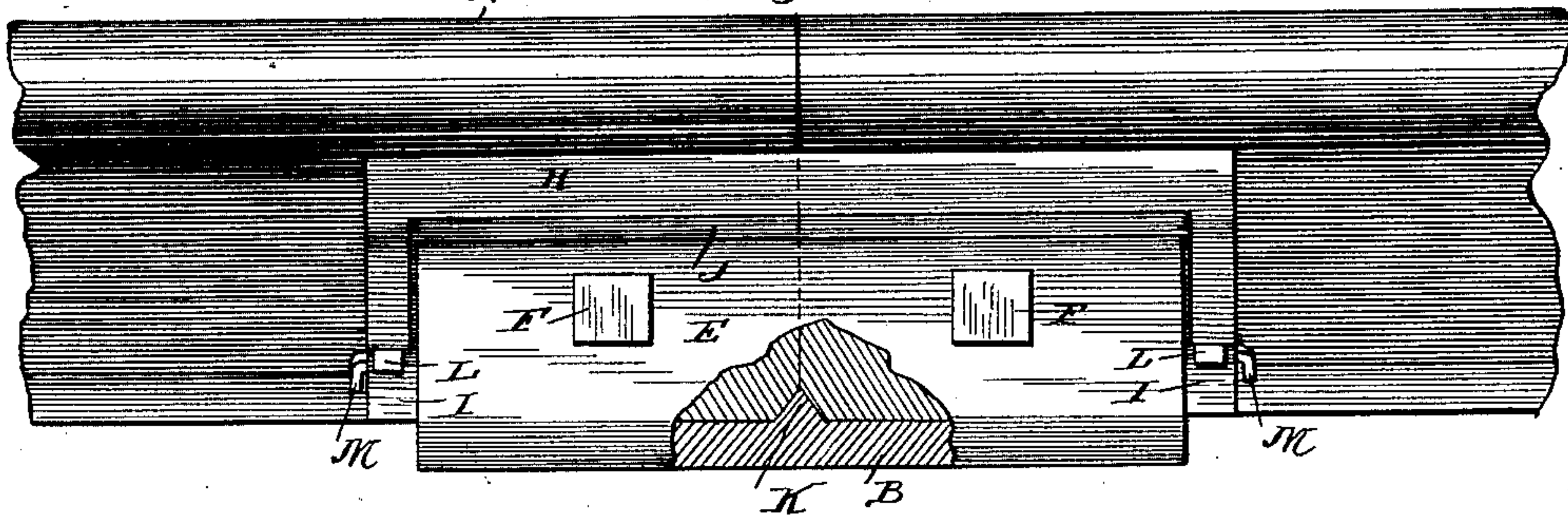


Fig. 3.

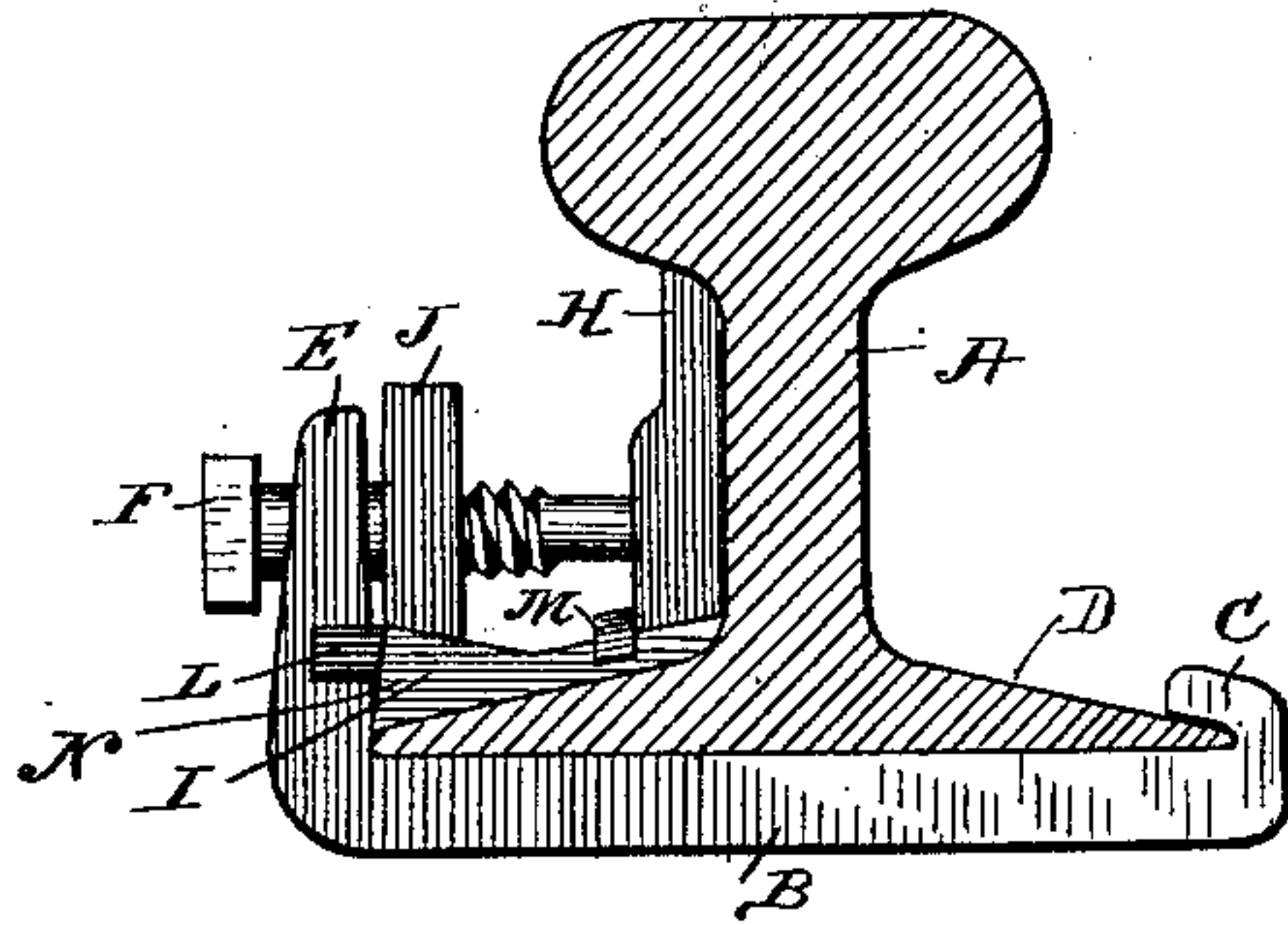
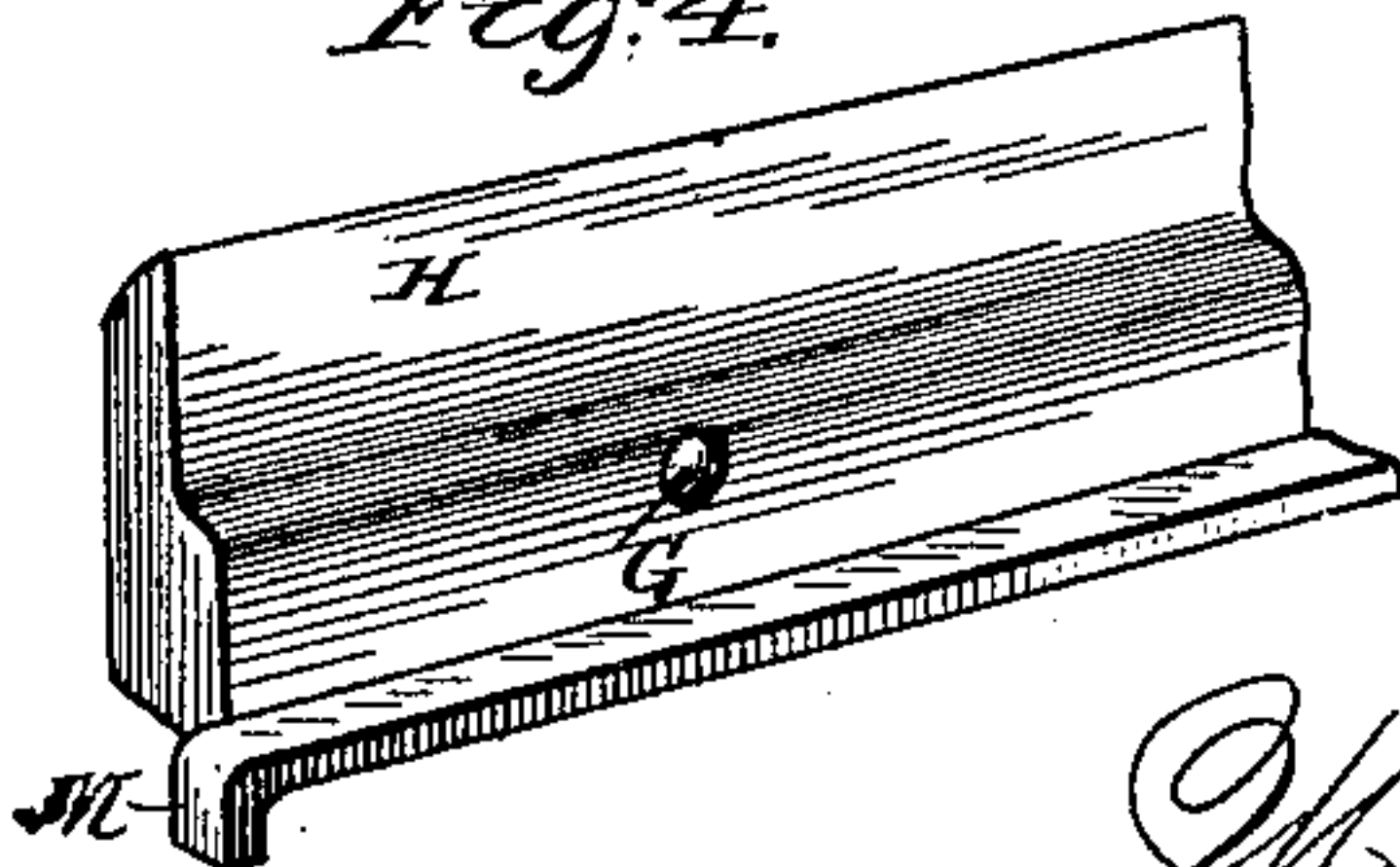


Fig. 4.



Witnesses.

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Inventor

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(No Model.)

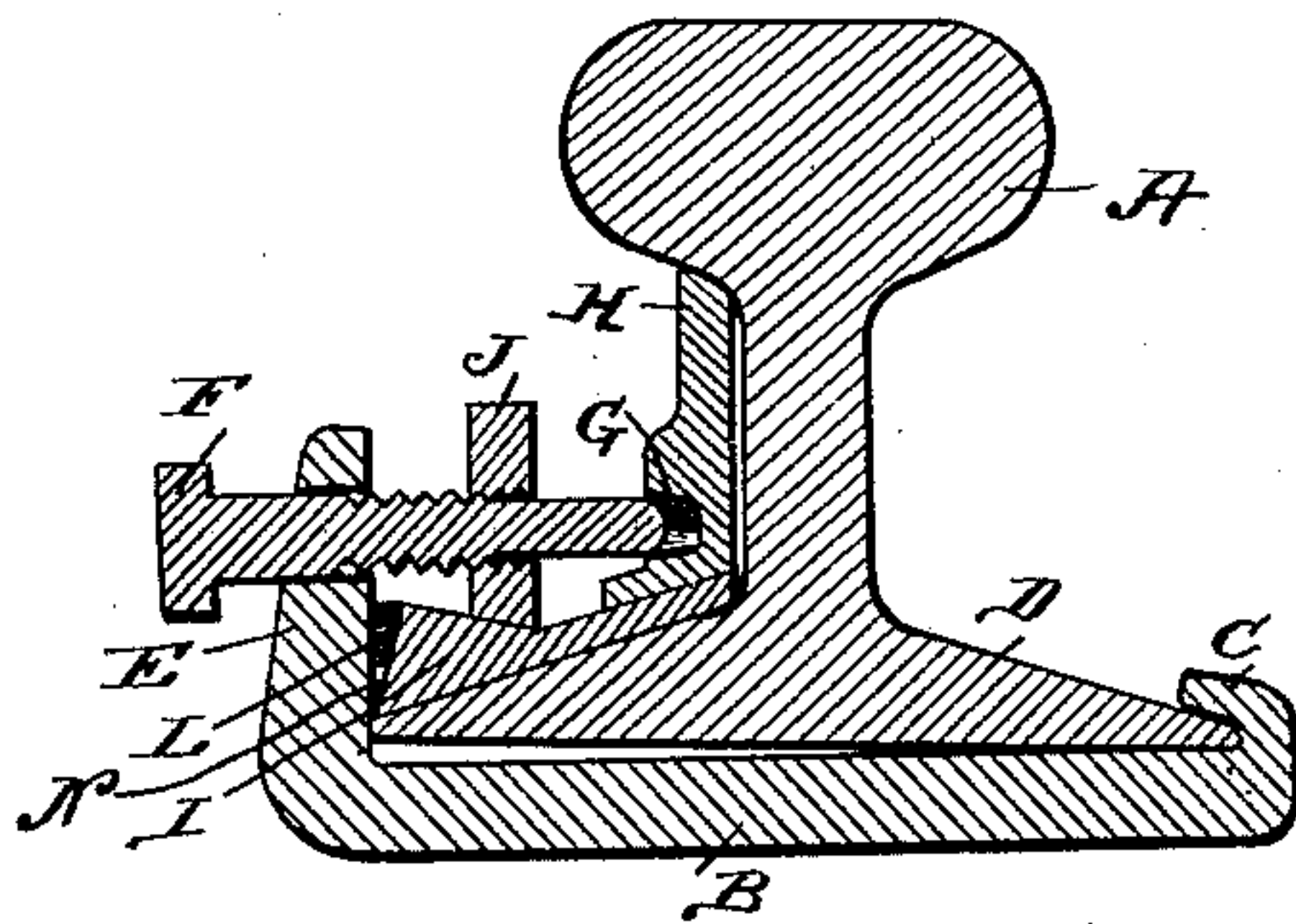
2 Sheets—Sheet 2.

M. C. NILES.  
RAIL JOINT.

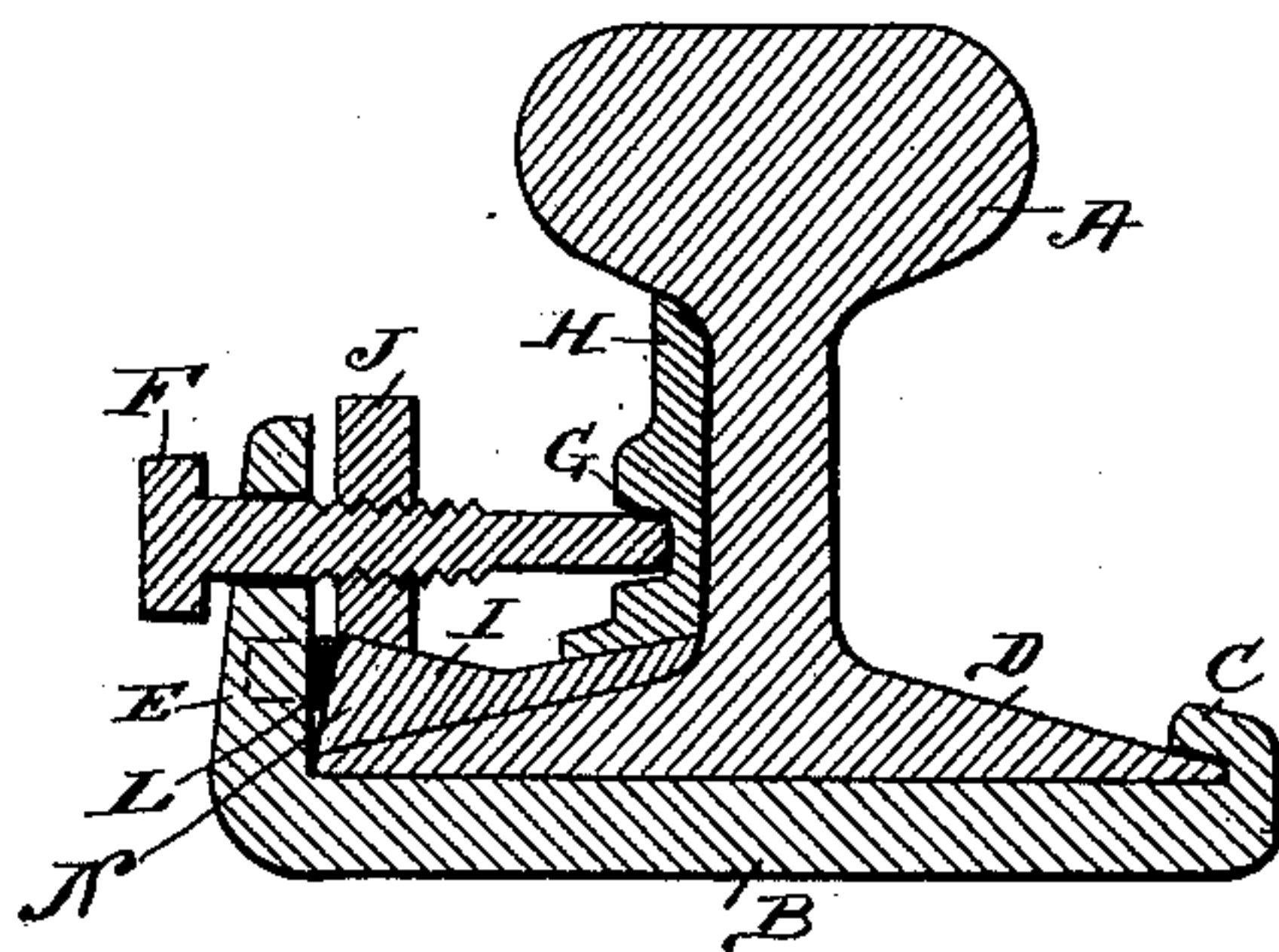
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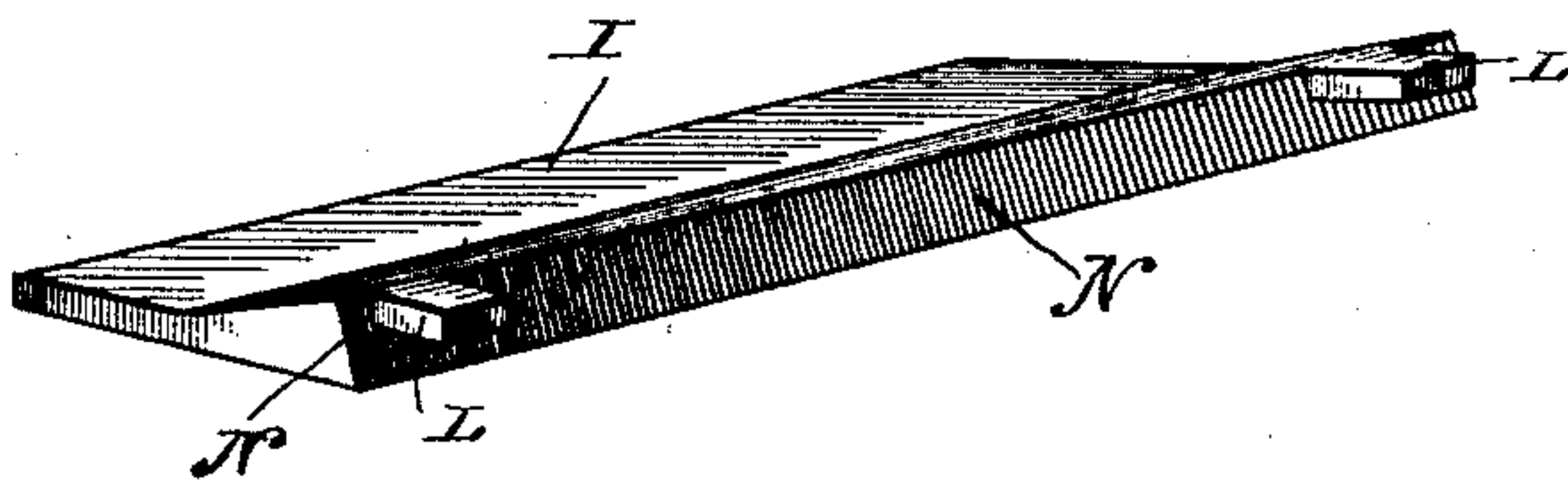
*Fig. 5.*



*Fig. 6.*



*Fig. 7.*



*Fig. 8.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF CHICAGO, ILLINOIS.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 432,552, dated July 22, 1890.

Application filed January 14, 1890. Serial No. 336,960½. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON C. NILES, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

This invention relates to improvements in that class of rail-joints in which the chair and binding-plate of the joint are tightened by means of wedges, and in which heretofore the wedge has been driven in between two parts previously tightened or set in position, and in which it frequently occurs that the chair or base-plate of the joint in the final tightening operation is forced away from instead of against the bottom of the rail, thereby necessarily weakening the joint and placing the strain upon the weaker parts thereof.

The prime object of this invention is to absolutely insure the tightening of the chair or base-plate of the joint against the rail, and to have the tightening mechanism of such a character that any desired degree of rigidity may be imparted to the joint.

Another object is to have the strain of the tightening mechanism so equalized upon the parts of the joint that practically all of the strain produced by the tightening operation is distributed between the rail-flange and base-plate, serving to bind the latter tightly against the bottom of the rail.

Other objects are to provide novel means for preventing the creeping of the joint upon the rail, and to provide certain other details in the carrying out of my invention, all as illustrated in the accompanying drawings, in which—

Figure 1 represents a top plan view of the meeting ends of a pair of rails, showing a joint applied thereto, embodying my invention; Fig. 2, a side elevation thereof; Fig. 3, a transverse vertical section through the rail, showing the joint in elevation; Fig. 4, a detail perspective view of the brace-plate of the joint; Fig. 5, a transverse vertical section on the line 5 5 of Fig. 1, showing the position of the parts of the joint when loosened; Fig. 6, a similar view to Fig. 5, showing the joint tightened; Fig. 7, a detail view of the wedge-plate, and Fig. 8 a detail view of a tightening-bolt.

Similar letters indicate the same parts in the several figures of the drawings.

Referring by letter to the accompanying drawings, A indicates the rail, and B the base-plate thereof, located under and extending a suitable distance to each side of the meeting ends of the rail, and provided along one side edge with an overhanging or hook-like projection, underneath which the flange D of the rail is inserted, while at the opposite side the base-plate is provided with an upturned or angular portion E, leaving just sufficient room between this portion and the hook for the seating of the rail upon the chair or base-plate. Through this angular portion of the base-plate at intervals loosely works any desired number of screw-bolts F, which are plain or unthreaded on that portion which bears in the base-plate, the free ends of which bolts project into suitable unthreaded sockets G in a brace-plate H, standing upright and substantially parallel with the web of the rail. This brace-plate bears at its upper end against the under side of the top or head of the rail, and at its lower end upon a wedge-plate I, resting upon the top of the rail-flange between the web of the rail and the upturned or angular portion of the base-plate, the inclined or wedging portion of this plate being so disposed thereon as to rise or incline upwardly from about the center or near the inner edge thereof to the outer edge, at which point the wedge is thickest. Bearing upon this wedge-plate, is a binding-plate J, the lower surface of which, bearing upon the wedge-plate, is beveled to correspond with the incline of the wedge-plate, so that it may maintain, in an unchanging vertical position throughout, its movement upon the wedge-plate, which movement is imparted thereto by means of screw-threaded openings therein corresponding in number with the bolts F, and through which the screw-threaded portion of the bolts work, so that whenever the bolts are rotated while bearing in the base-plate and against the brace-plate the binding-plate will be caused to move inwardly or outwardly toward or away from the rail, riding up and down the incline on the wedge-plate, according to the direction in which the bolts are turned. This action results in a di-



rect vertical pull upon the base-plate through the medium of its upturned or angular portion, in which the bolts freely work, for it will be understood that the brace-plate, against which the ends of the bolts bear when tightened in position, prevents any further forward endwise movement of the bolts, and that therefore the binding-plates, which enforce this movement by reason of their screw-thread connection with the bolt, are forced outward away from the ends of the bolt, and in such action ride up the incline upon the wedge-plate, thereby lifting the outer end of the bolts and through them the base-plate, which swings upon the overhanging projection or hook C as a fulcrum, until the base-plate binds tightly against the under side of the rails, when all the parts of the joint will be tightly bound together. This action will be readily understood from an inspection of Figs. 5 and 6.

The peculiar arrangement and disposition of the parts of the joint are such that the strain when the joint is tightened is centered upon the base-plate, tending to bind the latter tightly against the under side of the rail, being equalized upon the other members of the joint in such manner as to practically relieve them of all objectionable strain, whatever strain they are subjected to being in a direction in which they are best able to support it.

To prevent the creeping of the joint upon the rail, I prefer to chamfer or bevel off the lower edges of the opposing or meeting ends of the rails, as illustrated in Fig. 2, and provide the base-plate with a transverse rib K, of substantially the same forms and dimensions as the chamfer in the rails, and which thus effectually prevents any longitudinal movement of the base-plate. The wedge-plate is in turn provided at each end with ears L, projecting on each side of the angular portion E of the base-plate, which prevents its movement longitudinally independent of the base-plate, while the base-plate is in turn provided with depending lugs M at each end thereof, opposing the ends of the wedge-plate, so as to prevent its movement longitudinally independent of the wedge-plate, these various projections serving to effectually prevent any lateral movement of the joint as a whole or any part thereof upon the rails.

An important feature of my invention is that while the base-plate during the tightening operation is subjected to a lateral strain or pressure, tending to draw the hook C thereof firmly against the rail-flange D, upon which it swings as a fulcrum, this pressure is so applied as to be practically in the same plane with the fulcrum and to exert so little leverage upon the upturned or angular portion of the base-plate that the latter may be far lighter than would be possible if the pressure was applied thereto in the usual manner. This is accomplished by beveling or inclining the outer side edge N of the wedge-plate,

opposing the angular portion of the base-plate inwardly from the bottom, so that only the lower edge thereof in a plane with the top of the rail-flange will bear against this angular portion, practically in the same plane with the fulcrum-point of the base-plate. As a result of this construction, the lateral pressure upon the wedge-plate produced by the binding-plate will cause the former to always bear against the base-plate and hold the hook C of said plate in close relation with the flange of the rail, so as to prevent any lateral twisting of the base-plate, but at such a point as to exert substantially no leverage at all upon the angular portion of the base-plate, which would tend to bend the same, and consequently this portion at its point of conjunction with the main body of the base-plate requires no abnormal thickening or strengthening, as would otherwise be the case.

In conclusion I may state that while the employment of the base-plate is preferable, because the joint can be more readily applied to rails differing materially in dimensions and contour, at the same time it may be dispensed with and the bolts permitted to bear directly against the rails in sockets provided for their reception, as will be obvious without illustration.

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

1. In a rail-joint, the combination, with the base-plate, of a wedge-plate, a binding-plate bearing thereon, and a bolt working through the base-plate and having a connection with the binding-plate between the rail and base-plate, substantially as described.

2. In a rail-joint, the combination, with the base-plate, of a wedge-plate, a binding-plate bearing thereon, and a screw-bolt working freely through the base-plate and having a screw-thread connection with the binding-plate between the rail and base-plate, substantially as described.

3. In a rail-joint, the combination, with the base-plate, of a wedge-plate, a brace-plate confined between said wedge-plate and the under side of the rail-top, a binding-plate bearing upon the wedge-plate, and screw-bolts working freely through the base-plate, bearing at their ends against the brace-plate, and having a screw-thread connection with the binding-plate between the base and brace plates, substantially as described.

4. In a rail-joint, the combination, with the base-plate provided with an overhanging hook along one edge, against which the rail-flange rests, and an upturned angular portion at the opposite edge thereof, of a wedge-plate resting upon the rail-flange between the web of the rail and the angular portion of the base-plate, a brace-plate confined between said wedge-plate and the rail-top, a binding-plate bearing upon said wedge-plate, and screw-bolts working loosely through the angular portion of the base-plate, bearing at



their ends against the brace-plate, and having a screw-thread connection with the binding-plate between the brace-plate and the angular portion of the base-plate, substantially as described.

5 5. In a rail-joint, the combination, with the rails having the lower edges of their meeting ends beveled, of a base-plate provided with a transverse rib fitting said bevels, a wedge-plate provided with lugs or projections at each end opposing the ends of the base-plate, a brace-plate provided with lugs or projections at each end opposing the ends of the wedge-plate, a binding-plate bearing upon said  
10 wedge-plate, and screw-bolts working loosely through the base-plate, bearing at their ends against the brace-plate, and having a screw-thread connection with the binding-plate between said brace and base plates, substan-  
15 tially as described.

20 6. In a rail-joint, the combination, with the base-plate provided with an overhanging hook, against which the rail-flange rests, of a wedge-plate resting upon the rail-flange and  
25 bearing at one edge against the base-plate in

a plane with the hook, but at the opposite side of the rail, a binding-plate bearing thereon, and a screw-bolt working freely through the base-plate and having a screw-thread connection with the binding-plate between the rail and base-plate, substantially as described. 30

7. In a rail-joint, the combination, with the base-plate provided with an overhanging hook, against which the rail-flange rests, of a wedge-plate resting upon the rail-flange and  
35 bearing at one edge against the base-plate in a plane with the hook, but at the opposite side of the rail, a brace-plate confined between said wedge-plate and the under side of the rail-top, a binding-plate bearing upon the  
40 wedge-plate, and screw-bolts working freely through the base-plate and bearing at their ends against the brace-plate, and having a screw-thread connection with the binding-plate between the base and brace plates, sub-  
45 stantially as described.

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Witnesses:

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