

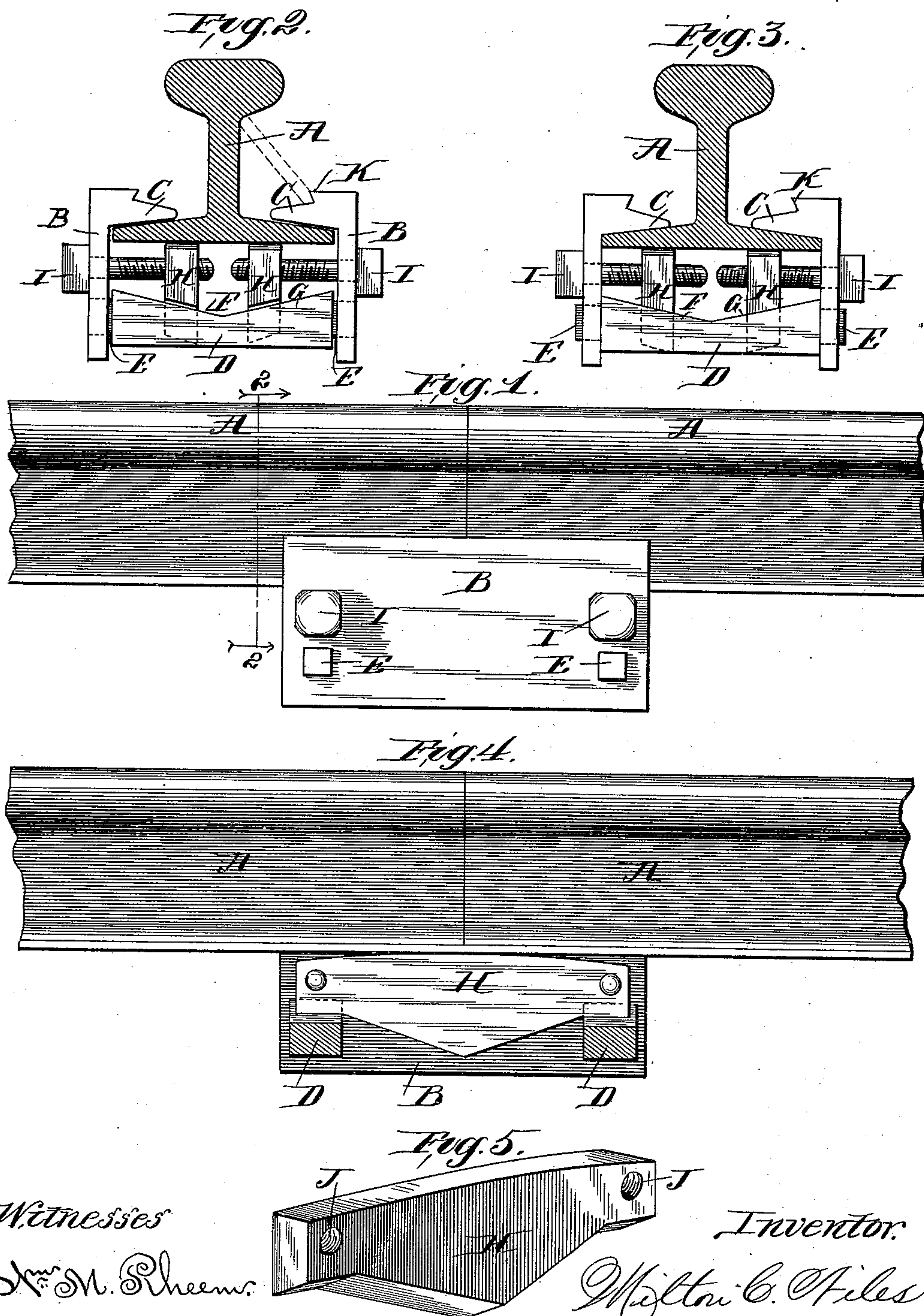
(No Model.)

3 Sheets—Sheet 1.

M. C. NILES.
RAIL JOINT.

No. 484,226.

Patented Oct. 11, 1892.



Witnesses

Wm. M. Rheems

[Signature]

Inventor.

Milton C. Niles

By Elliott & Quinlan
Attys.

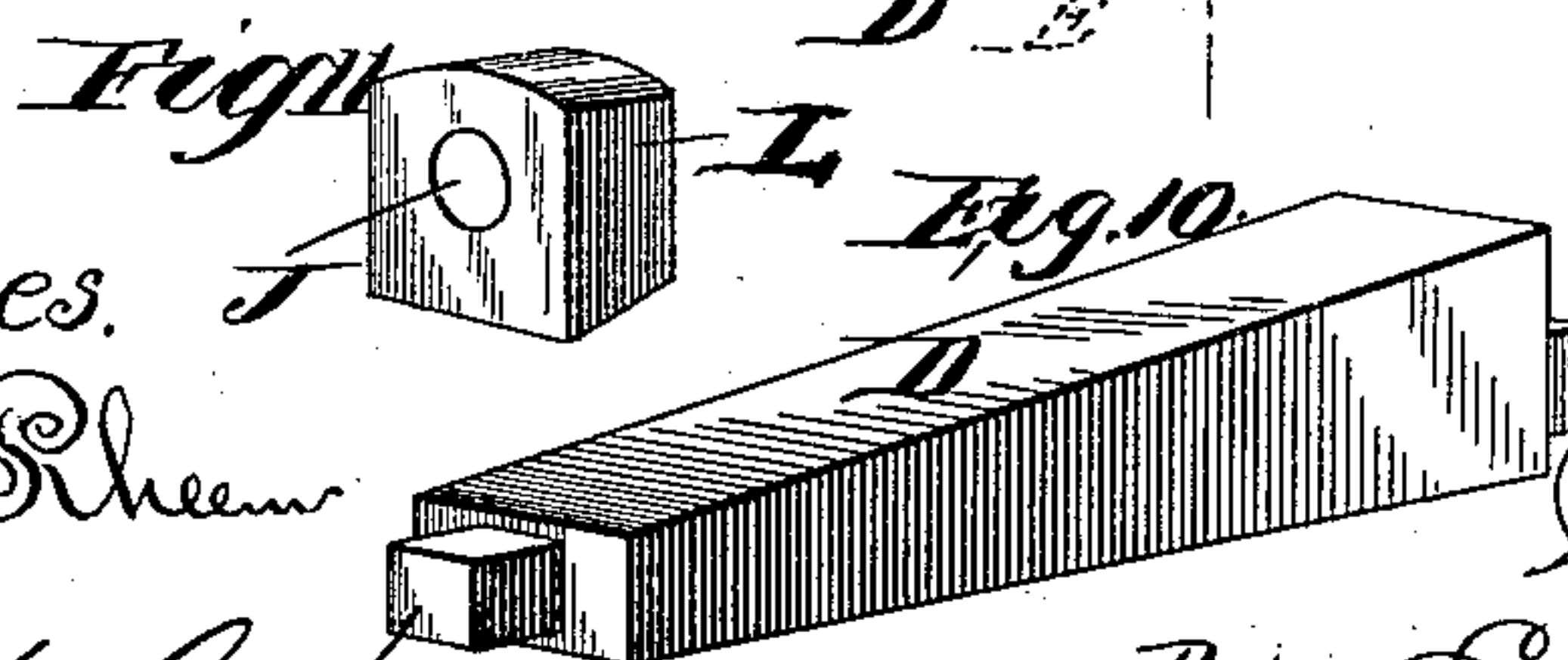
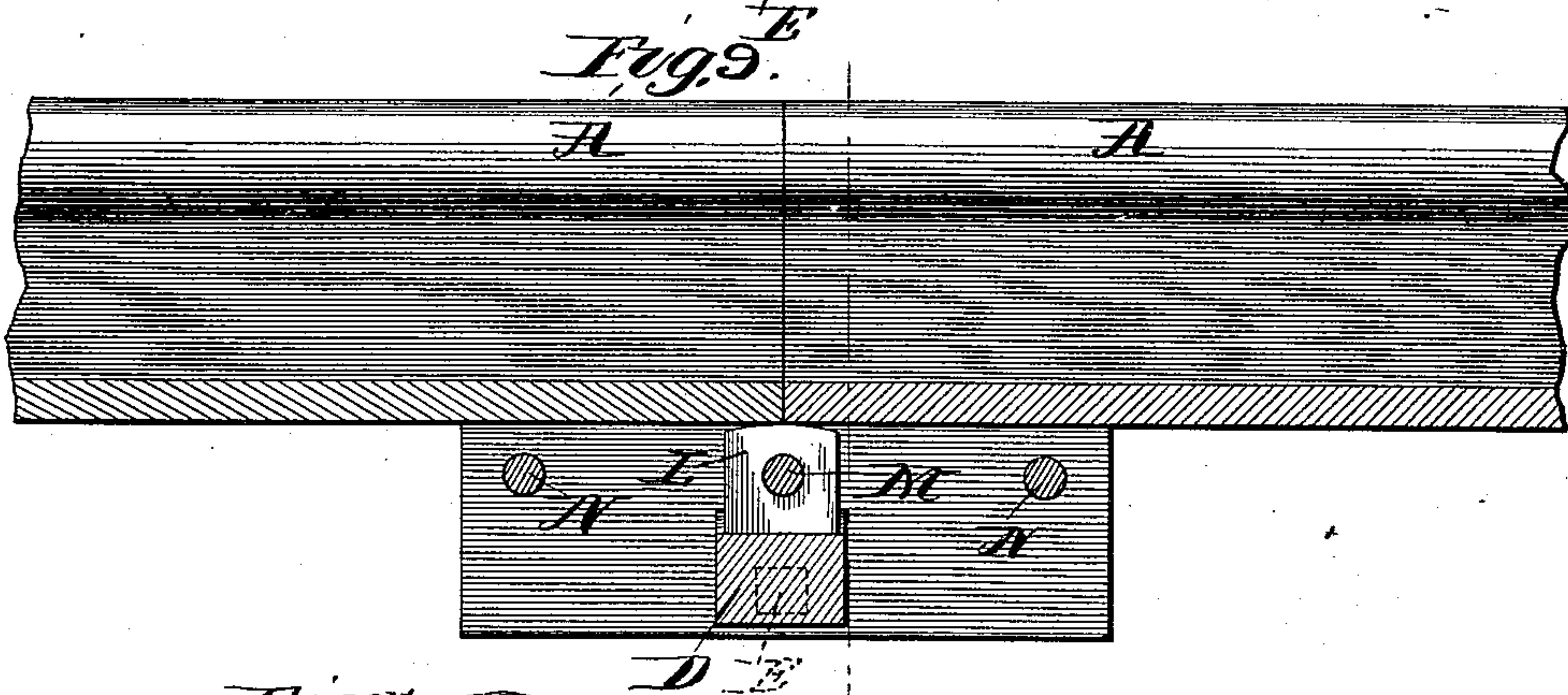
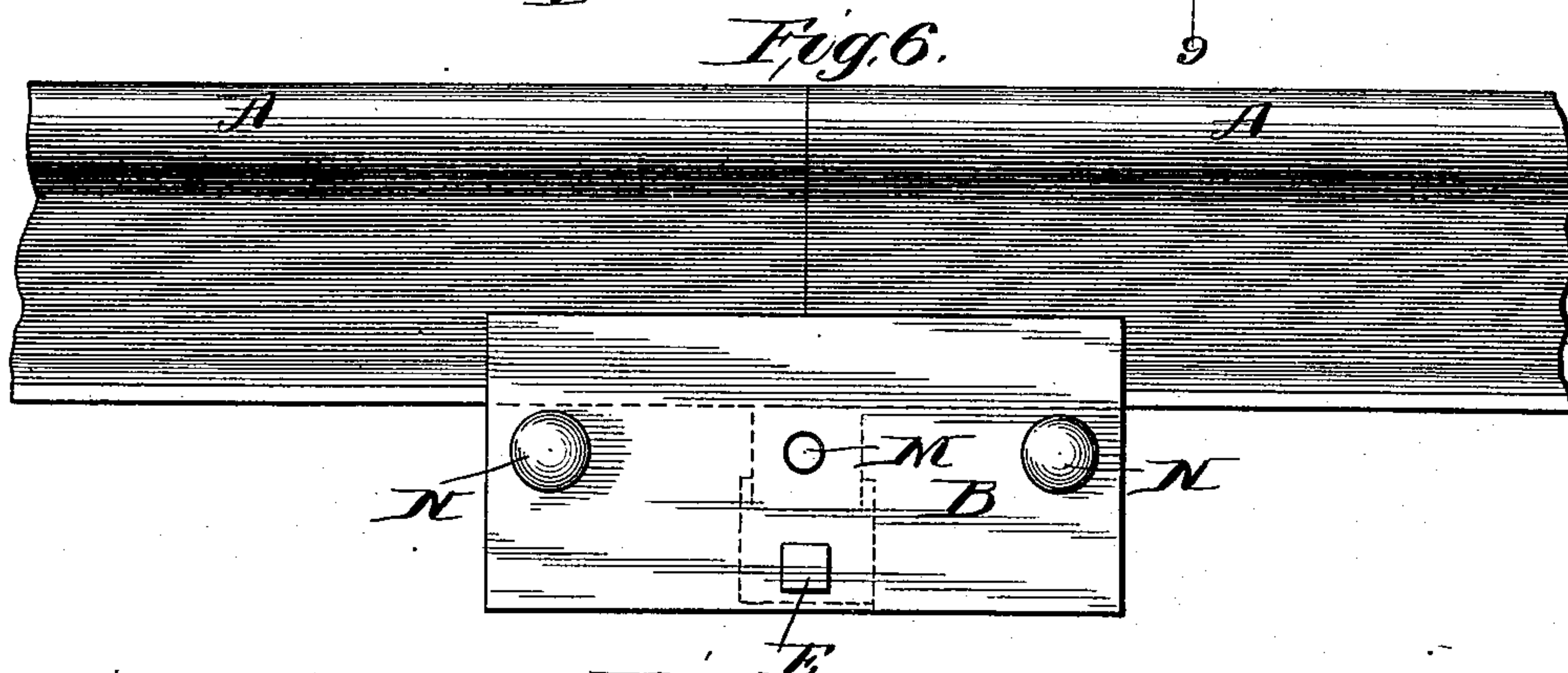
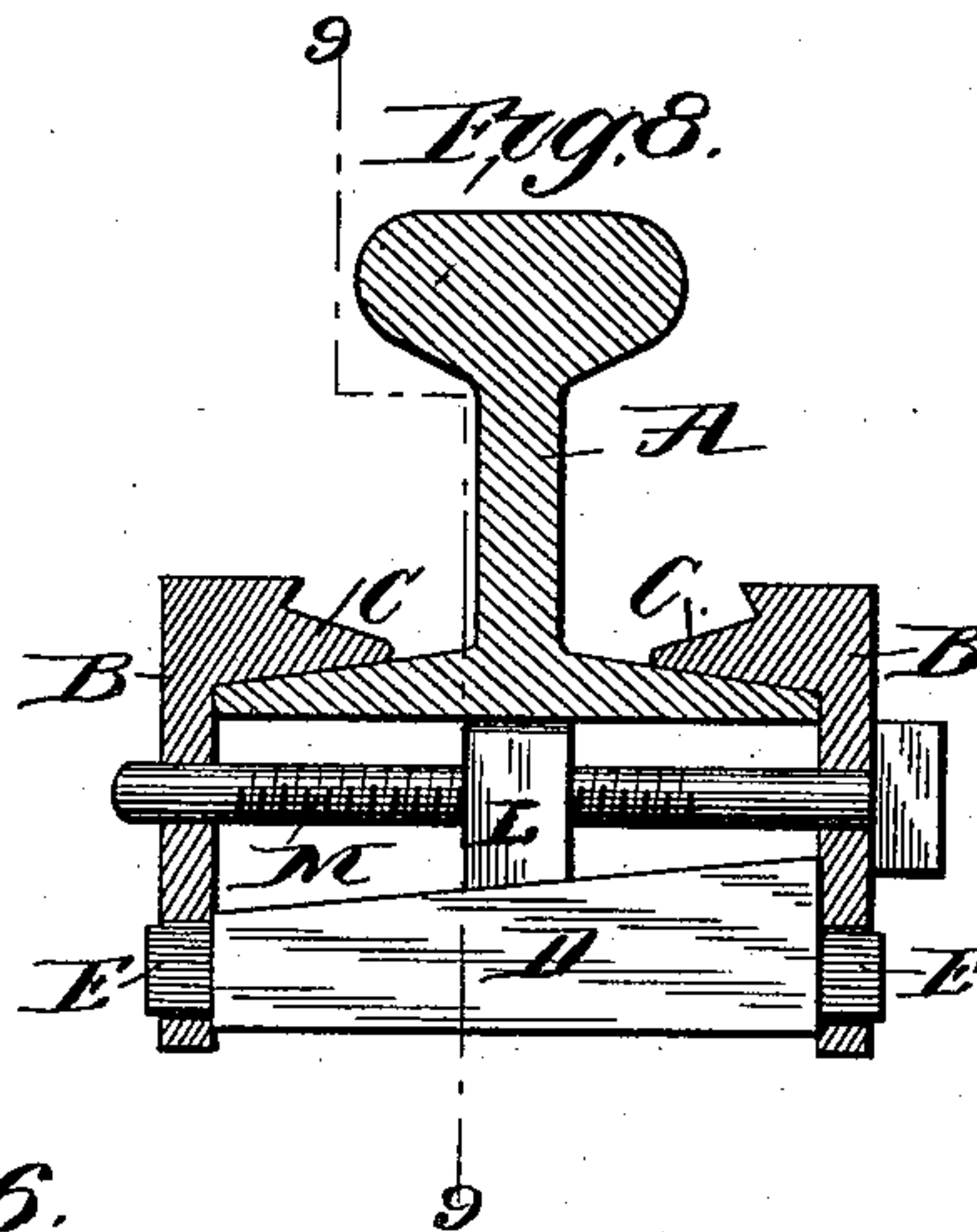
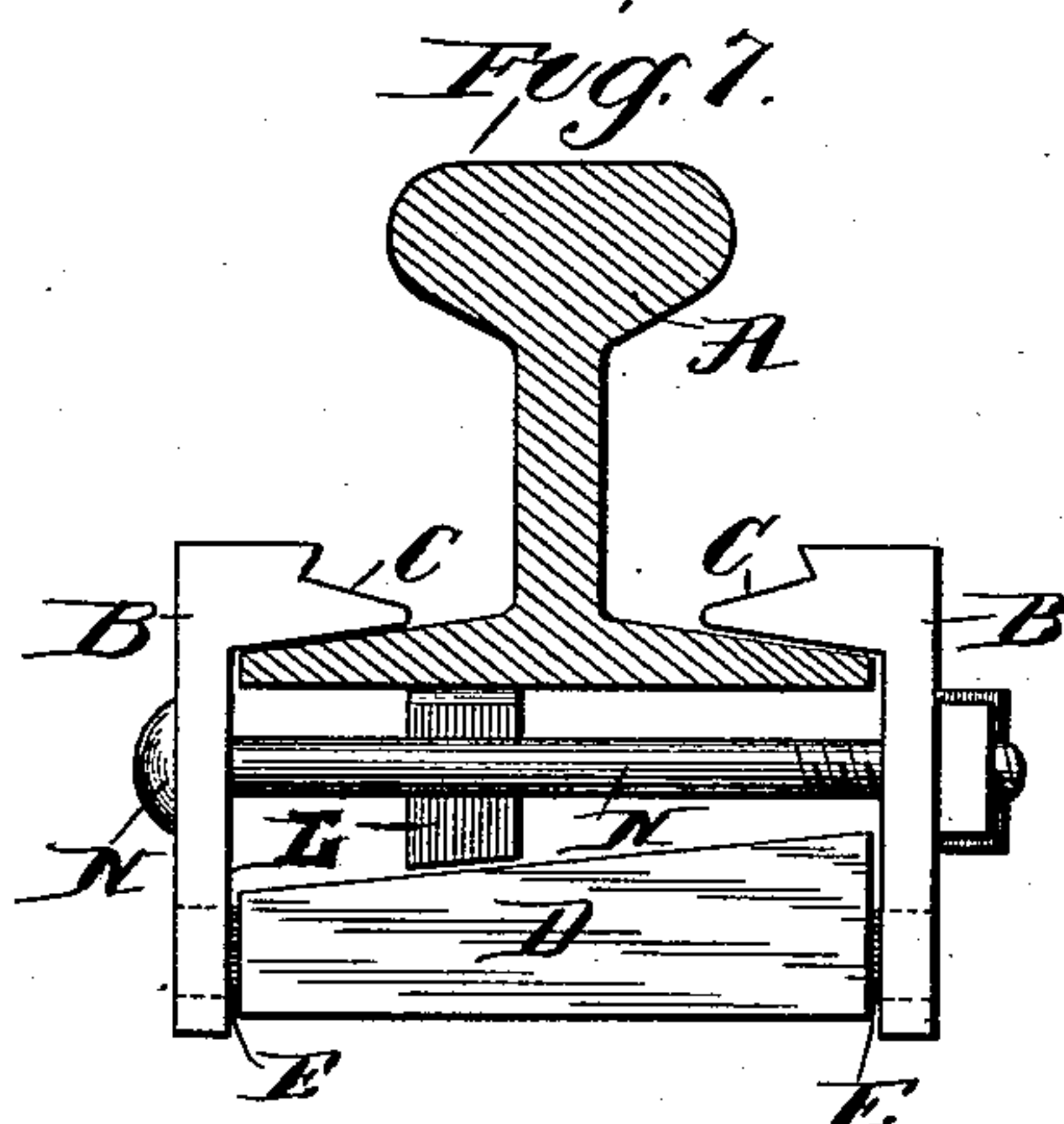
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No. 484,226.

Patented Oct. 11, 1892.



Witnesses.
S. M. Rheem

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Inventor:

Walter C. Niles

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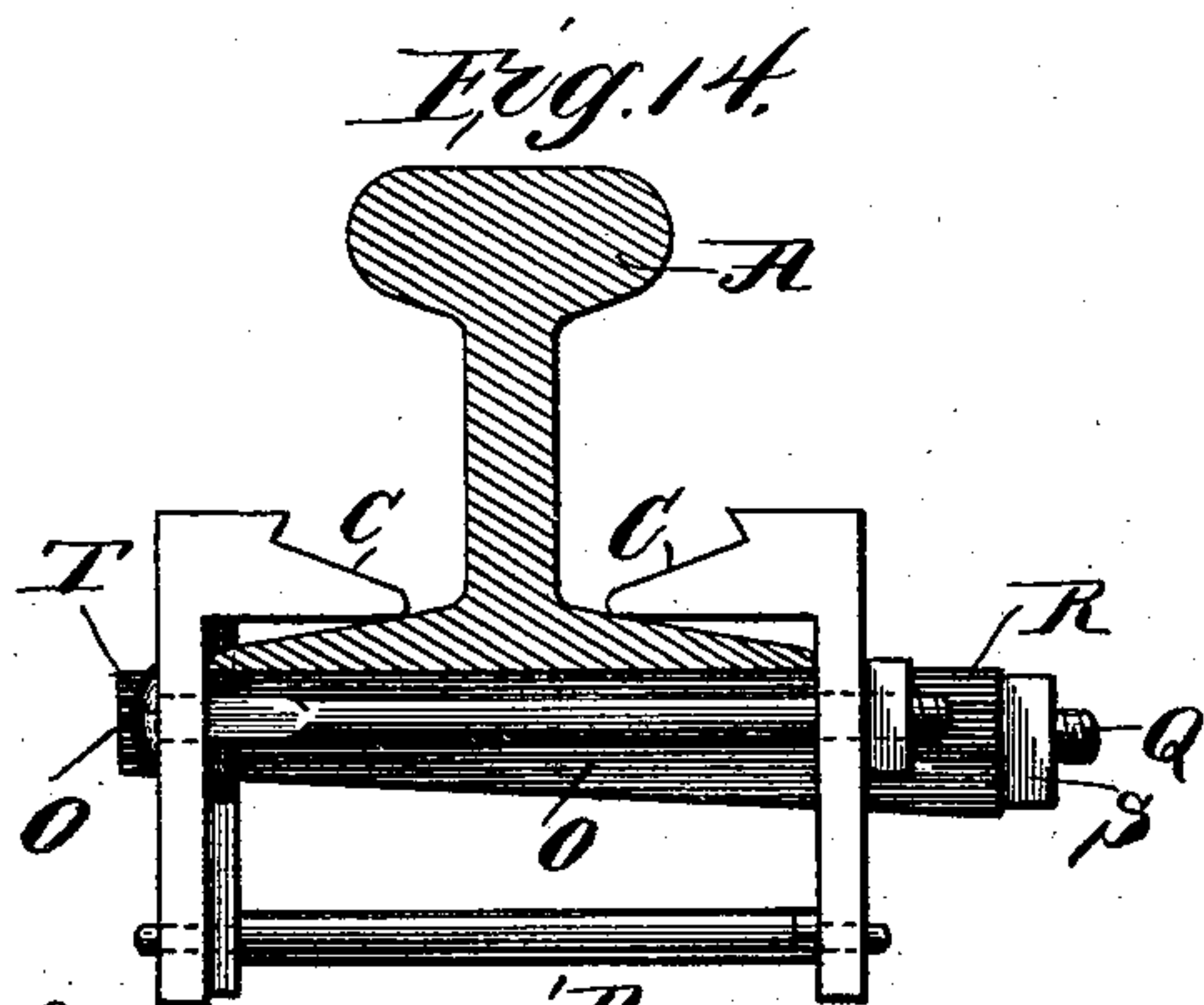
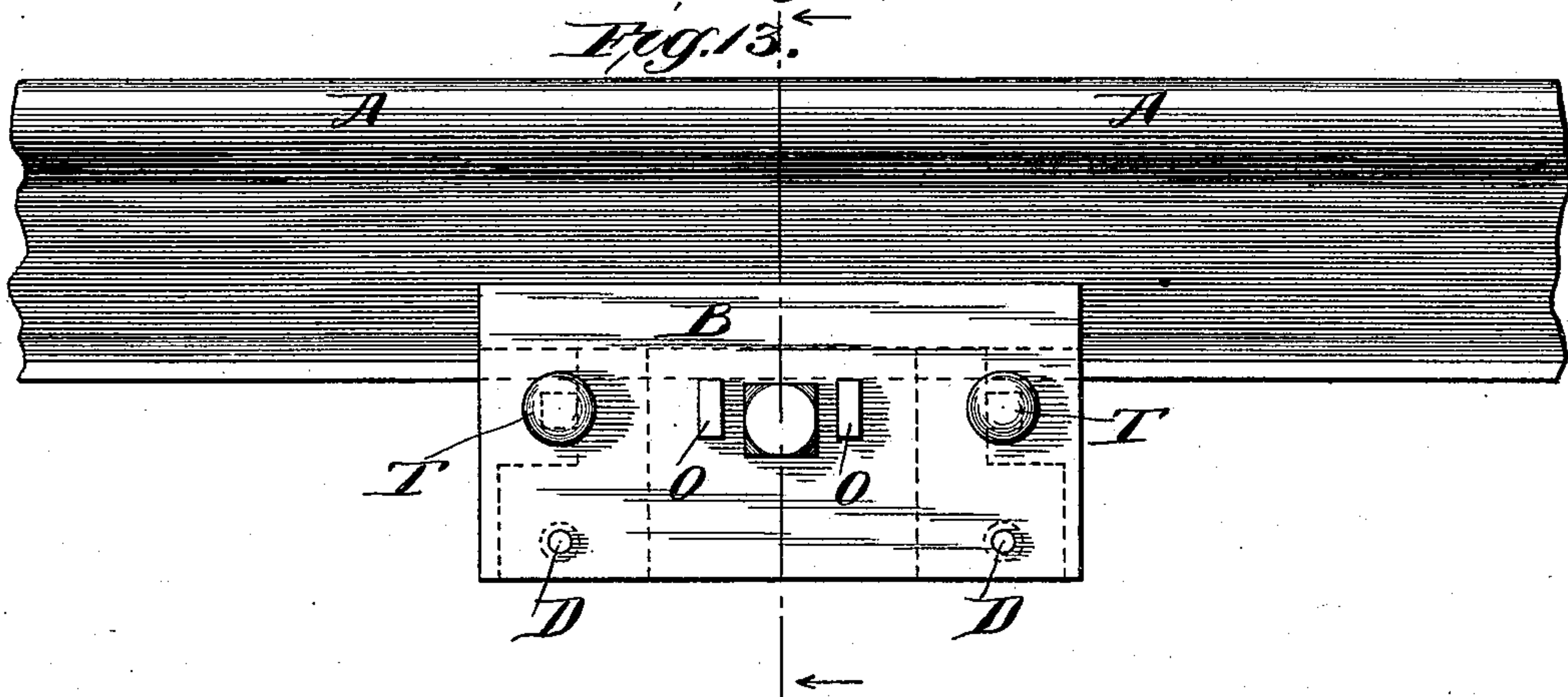
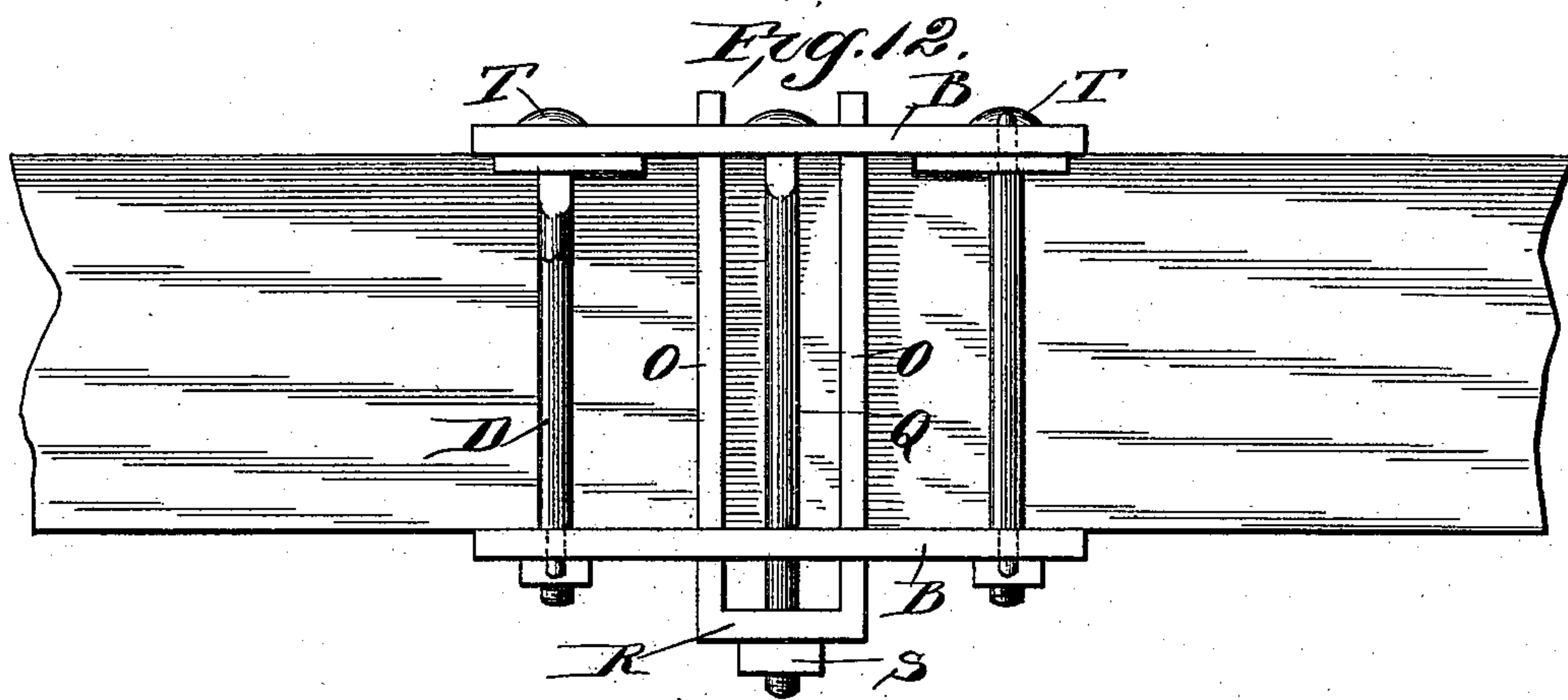
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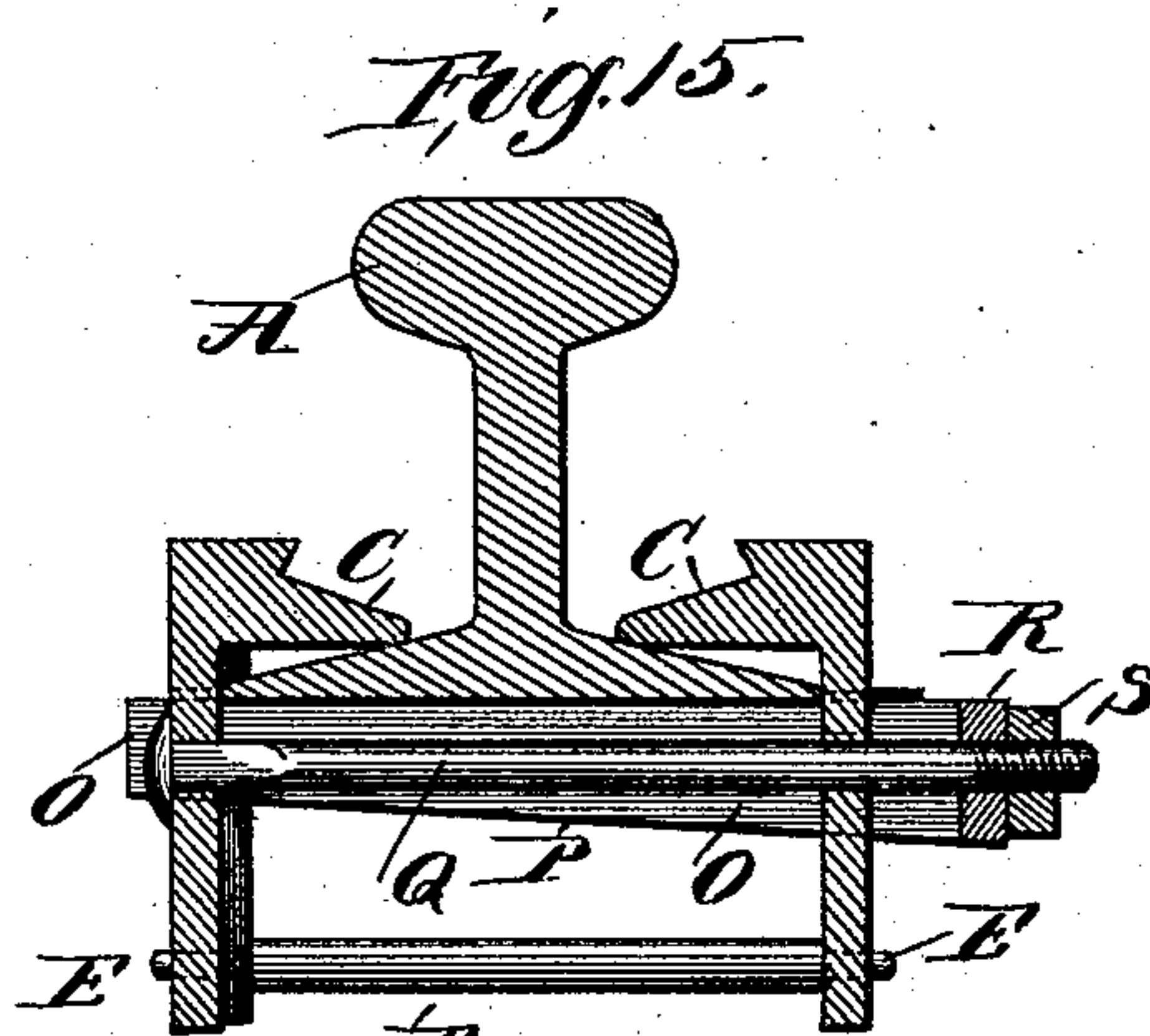
M. C. NILES.
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Witnesses:
Wm. M. Rheems.
J. H. Ford.



Inventor:
Milton C. Niles
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Attys.

UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF OAK PARK, ILLINOIS.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 484,226, dated October 11, 1892.

Application filed July 28, 1891. Serial No. 400,955. (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 Oak Park, 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 known as "truss-joints," in which the strain upon the parts of the joints is transmitted to the rails connected and supported thereby, and has for its prime object to produce a truss of which a wedge constitutes a part and by the operation of which the joint is tightened upon the rail as distinguished from the truss-joints heretofore in use, in which the tightening operation is solely dependent upon screw-bolts. This object is attained by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of a rail-joint embodying my invention; Fig. 2, a transverse vertical section through the rail on one side of the joint, taken on the line 2 2 of Fig. 1 and showing the relative position of the parts before the joint is tightened; Fig. 3, a view similar to Fig. 2, but showing the position of the parts when the joint is tightened; Fig. 4, a central longitudinal section of the same; Fig. 5, a detail perspective view of one of the truss-plates; Figs. 6, 7, 8, 9, 10, and 11, views of a modification of my invention in which only a single truss-plate is used instead of two, as in the preferred construction; and Figs. 12, 13, 14, and 15, views of another modification of my invention in which the truss-plate and wedge are directly supported upon the clamping-plates.

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

Referring by letter to the accompanying drawings, A indicates the rail, and B a pair of rectangular clamping-plates vertically disposed at the sides of the rails and provided with horizontal lips or projections C along the upper edges thereof, overhanging and bearing upon the flanges of the rail. The body of these plates extends down a suitable distance below but parallel with the rail, and are held apart by means of struts D, provided with reduced squared ends E, fitting into correspond-

ing perforations in the plates near the ends thereof, as more clearly illustrated in Fig. 1. The upper faces of these struts, which are preferably square or rectangular in cross-section, are formed on double reverse inclines F and G, each of which inclines downwardly toward the center from the ends of the struts and constitute rests for a pair of truss-plates H, extending longitudinally beneath the rails, with their ends resting upon the struts, respectively. The bottoms of the rails rest directly upon these truss-plates, the tops of which are slightly curved, so that only the central portions thereof are in contact with the rails, as illustrated in Fig. 4, while the lower faces of the ends of the truss-plates are beveled to correspond with the respective inclines of the upper faces of the struts, which latter are thereby caused to subserve the double purpose of struts for holding the lower ends of the clamping-plates apart and of supports for wedges operating to raise the truss-plates whenever the latter are moved outwardly along the struts. This latter operation is accomplished by means of screw-bolts I, working freely through perforations in the clamping-plates near each end thereof and against the outer surface of which plates the heads of the bolts impinge, while the inner screw-threaded ends thereof work through corresponding screw-threaded perforations J in the truss-plates, so that when these bolts are located the truss-plates will be caused to move laterally, riding up or down the incline on the struts, and thus in effect operating as wedges between the strut and the bottoms of the rails, to not only tighten the joint upon the rails but also to furnish a support for the rails against the weight of a passing train. The operation of this the preferred form of my invention will be readily understood by an inspection of Figs. 1 to 5, inclusive.

The clamping-plates, after being placed in position, are connected by the struts, and then the wedging-plates, with their actuating-screw bolts, are inserted in position. The first result of operating the screw-bolts in the tightening operation is to draw the clamping-plates inwardly until the inner vertical faces thereof bear against the shouldered ends of the struts and the edges of the rail-flanges. A further operation of the tightening-bolt

then causes the truss-plates to wedge tightly between the struts and the bottoms of the rails until the movement of all the parts is brought to a stop by the bearing of the hooks or projections C of the clamping-plates upon the tops of the rail-flanges. Consequently whenever the joint is subjected to strain from the weight of a passing train on the rails the strain will be transmitted through the truss-plates to the struts and from them to the clamping-plates and from them back to the tops of the rail-flanges. If found desirable, a brace-plate—such as that illustrated by the dotted line in Fig. 2—may be inserted between the under side of the rail-top and a shoulder K on the clamping-plates, so as to brace the rail against lateral pressure, and, in fact, such brace-plates may be employed at each side of the rail, if found desirable.

In Figs. 6 to 11, inclusive, I have shown a modification of my invention in which only a single truss-plate L is employed immediately under the abutting ends of the rails and operated by a single screw-bolt M in substantially the same manner as the truss-plate of the preferred construction, there being only one strut employed in this case having a single inclined face and one screw-bolt for operating the single truss-plate, while additional strengthening or tightening bolts N extend between and connect the clamping-plates near the ends thereof. In other respects the operation of the device is identical with that of the preferred construction. In Fig. 7 the position of the parts before the joint is tightened is illustrated, while in Figs. 6, 8, and 9 the position of the parts when the joint is finally tightened and in its operative position is illustrated.

In Figs. 12, 13, 14, and 15 I have illustrated still another modification of my invention in which the wedging truss-plate extends transversely instead of longitudinally of the rail and is supported directly upon the clamping-plates instead of upon the struts, as in the construction before described. In this case the wedging truss-plate is U-shaped, the parallel sides O of which have the upper horizontal or level faces, upon which the abutting ends of the adjacent rails rest, and lower longitudinally-inclined faces P, which work through corresponding perforations in the clamping-plates, between which they extend and by which they are supported, the lower or inclined faces of the arms O causing the latter to operate as a wedge when moved through the perforations in the clamping-plates. This wedge truss-plate is operated by a screw-bolt Q, lying between the sides of said plate, the head of which bears against the outer side of the clamping-plate next to the open or disconnected ends of the truss-plate, while the opposite screw-threaded end thereof works freely through a perforation in the other clamping-plate and the bridge or arch R, connecting the arms O of the truss-

plate, and has working thereon a nut S, which when screwed onto the bolt operates to force the wedging truss-plate laterally through the clamping-plates, and thus wedge it firmly between the clamping-plates and the bottoms of the rails. The struts in this case subserve only the single function of holding the lower edges of the clamping-plates a fixed distance apart, and additional tightening-bolts T, similar to those N of the last-described construction, are provided at each end of the clamping-plates for the purpose of giving additional strength and stiffness to the joint and relieving the tightening-bolt Q of the truss-plate from the strain, so as to prevent the possibility of the spreading of the clamping-plates. In operation this joint is substantially the same as that of the preferred construction, the only difference being that the strain upon the truss-plate is transmitted directly therefrom to the clamping-plates instead of through the intermediary of the struts. It will be observed that all of these structures possess the common characteristics of a wedging truss-plate, the wedge forming a part of the joint and operating to tighten the same upon the rail, while at the same time subserving the purpose of supporting and transmitting the strain to the other parts of the joint.

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

1. In a rail-joint, the combination, with the rails, the independent clamping-plates provided with overhanging projections engaging the rail-flanges, and struts extending between said clamping-plates below the rail, of wedging truss-plates separate from said clamping-plates and upon which the rails are supported and means for operating said truss-plates, substantially as described.

2. In a rail-joint, the combination, with the rails, the independent clamping-plates provided with overhanging projections engaging the rail-flanges, and struts extending between said clamping-plates below the rail and being independent of said clamping-plates, of a wedging truss-plate upon which the rails are supported and screw-bolts for operating said truss-plates, passing through both of said clamping-plates, substantially as described.

3. In a rail-joint, the combination, with the rails, of the clamping-plates having overhanging projections resting upon the foot-flanges of the rails, a wedge supported by said clamping-plates and being independent thereof, and the bolt passing through said wedge and through both of said clamping-plates under the rails, substantially as set forth.

4. In a rail-joint, the combination, with the rails, of clamping-plates having overhanging projections resting upon the foot-flanges of the rails, a wedge supported by said clamping-plates and being independent thereof, a bolt passing through said wedge and through both of said clamping-plates under the rails, and the strut arranged between said clamp-

ing-plates below said bolt, substantially as set forth.

5 5. In a rail-joint, the combination, with the rails, of clamping-plates having overhanging projections supported by the foot-flanges of said rails, a U-shaped wedge having arms O, supported by said clamping-plates, a bolt passing through said wedge between the arms thereof and through both of said clamping-plates under the rails, and a strut arranged
10 between said clamping-plates below said bolt, substantially as set forth.

15 6. In a rail-joint, the combination, with the rails, the clamping-plate provided with overhanging projections bearing upon the rail-

flanges, and struts extending between said clamping-plates below the rails and each provided with double-inclined upper faces, of wedging truss-plates extending between and resting upon said struts, the lower faces of the ends of which are inclined to correspond with the faces of the struts, and screw-bolts working through the clamping-plates and engaging and actuating the truss-plates so as to wedge them between the struts and the bottom of the rails, substantially as described.

MILTON C. NILES.

Witnesses:

R. C. OMOHUNDRO,
MANTON MAVERICK.