

(No Model.)

3 Sheets—Sheet 1.

M. C. NILES.
RAIL JOINT.

No. 438,707.

Patented Oct. 21, 1890.

Fig. 1.

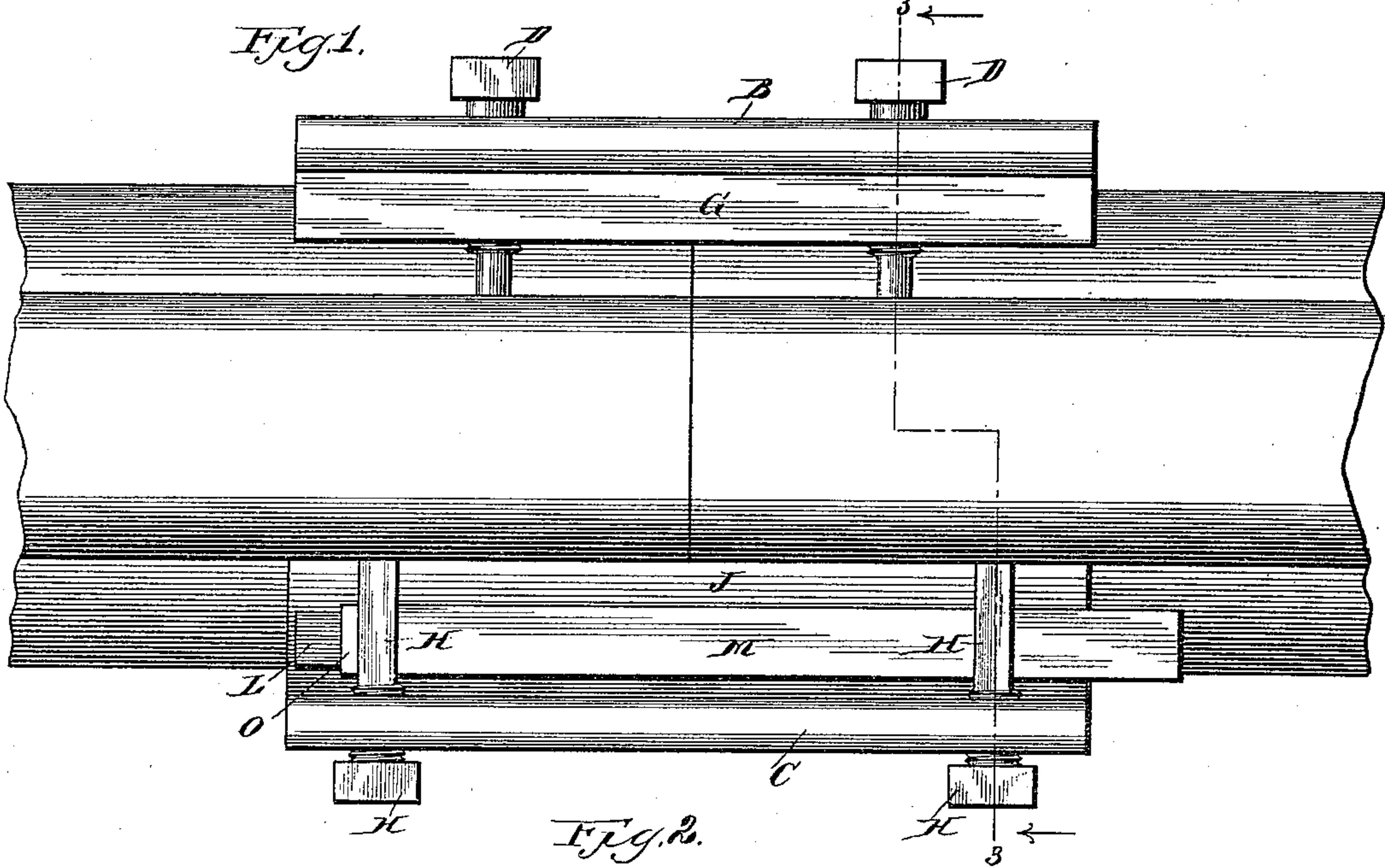


Fig. 2.

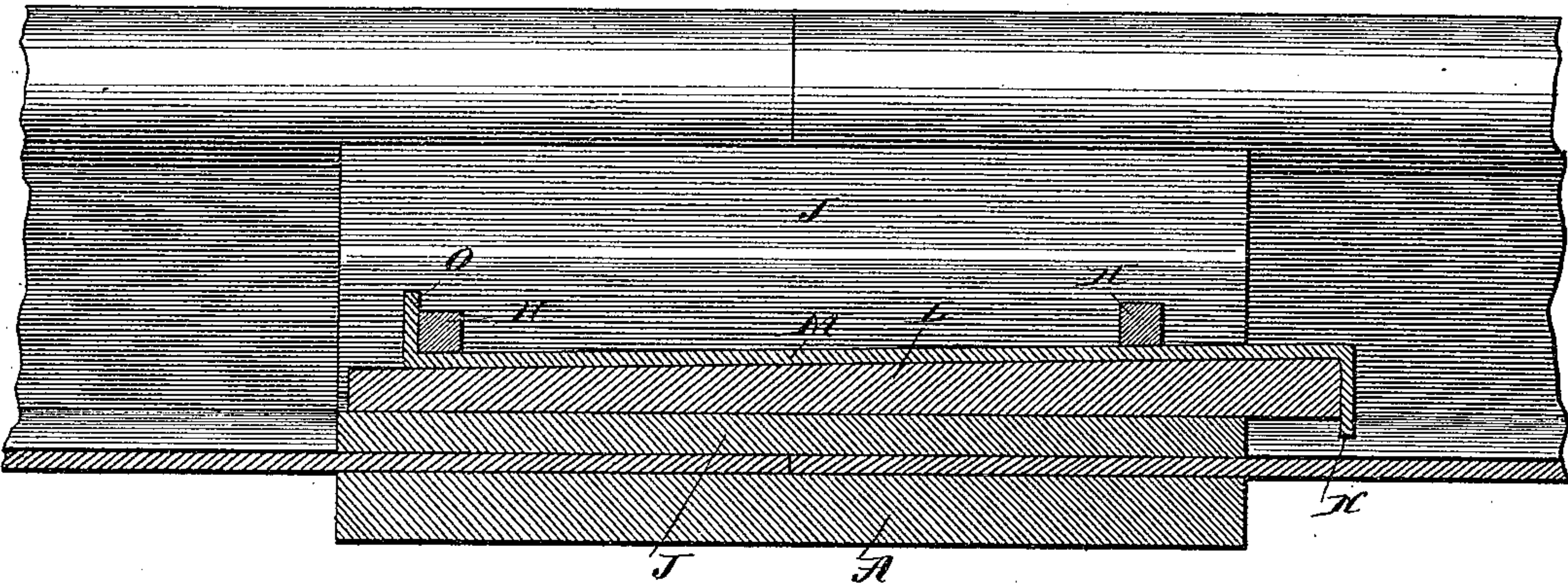
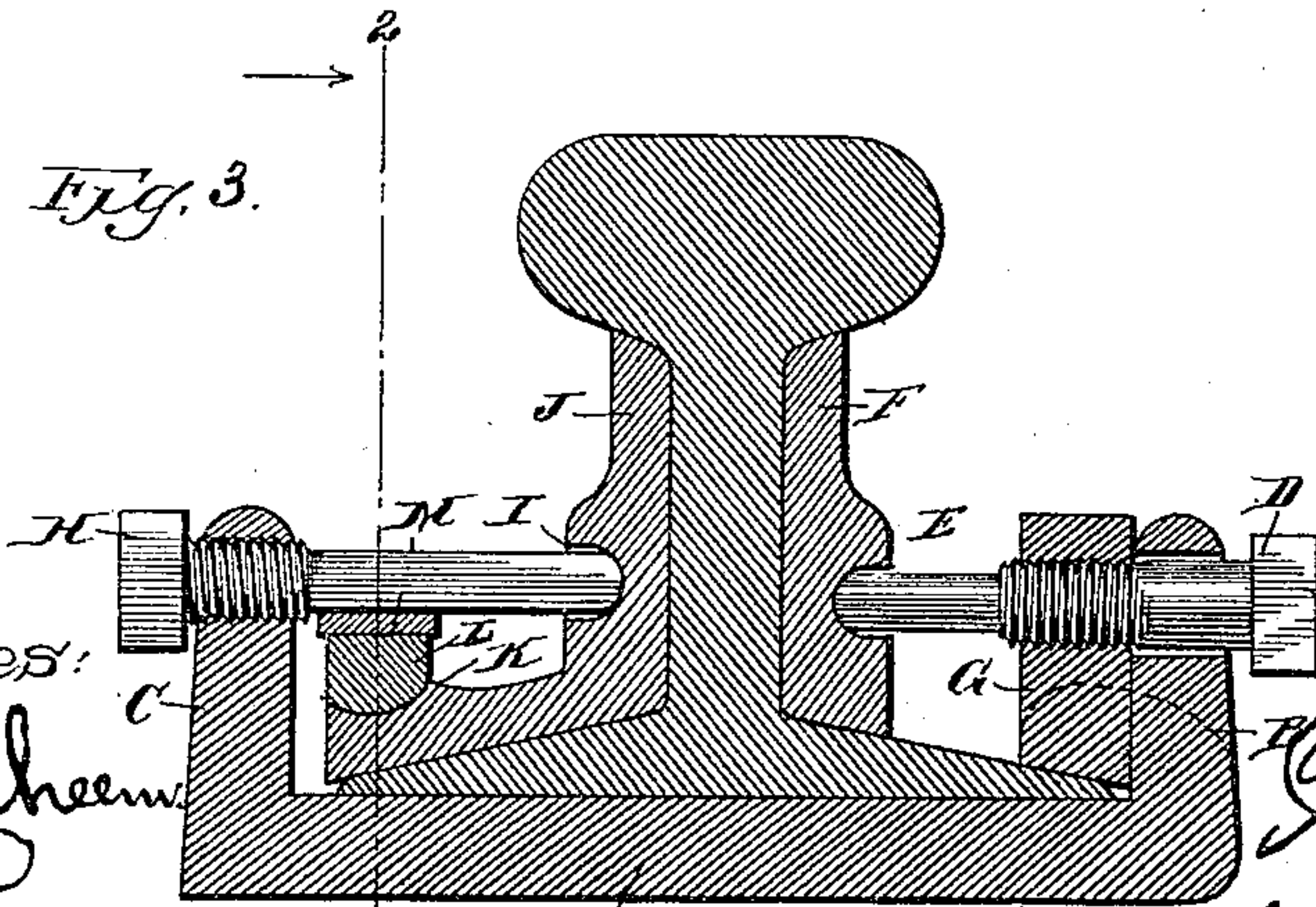


Fig. 3.



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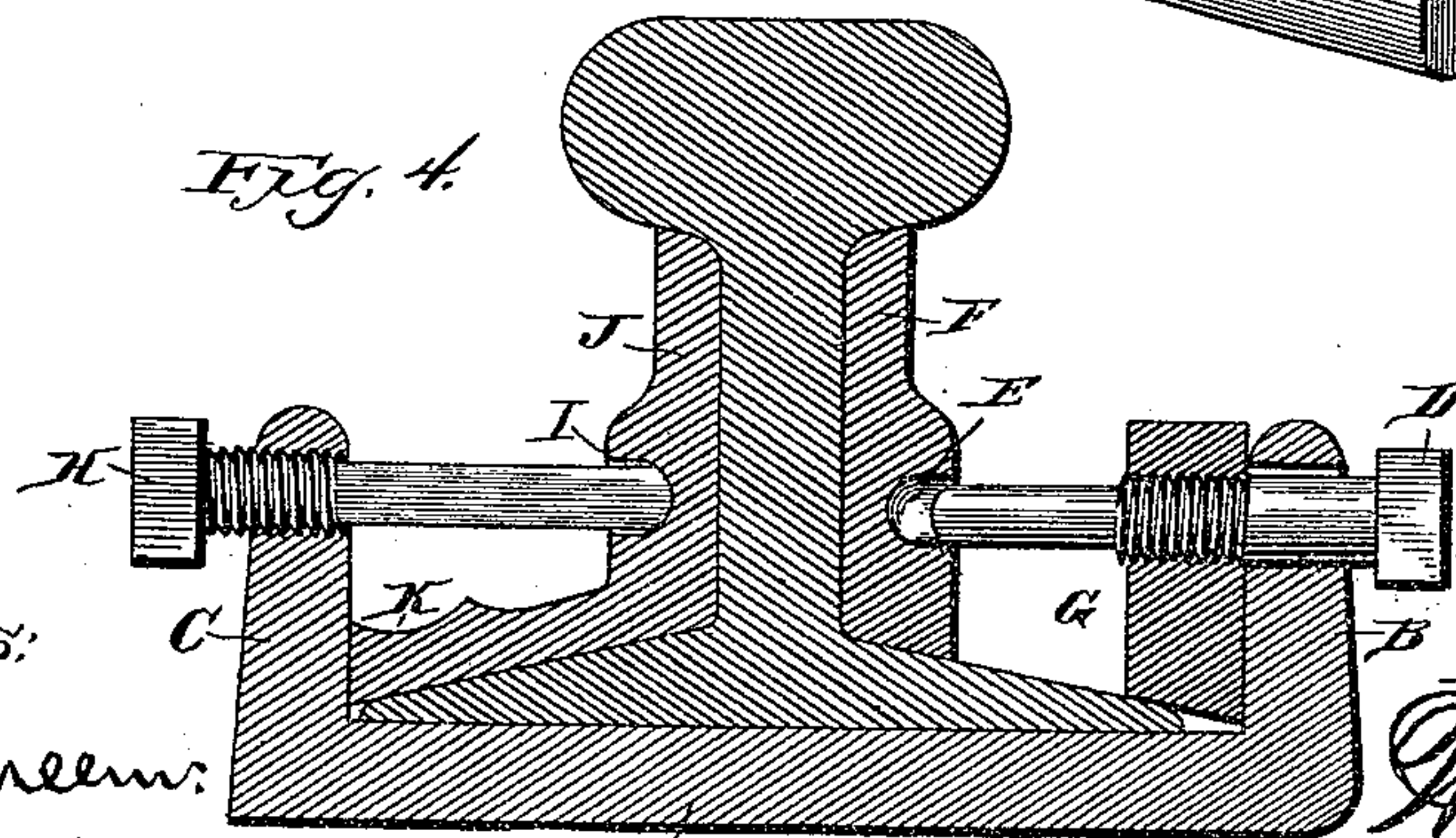
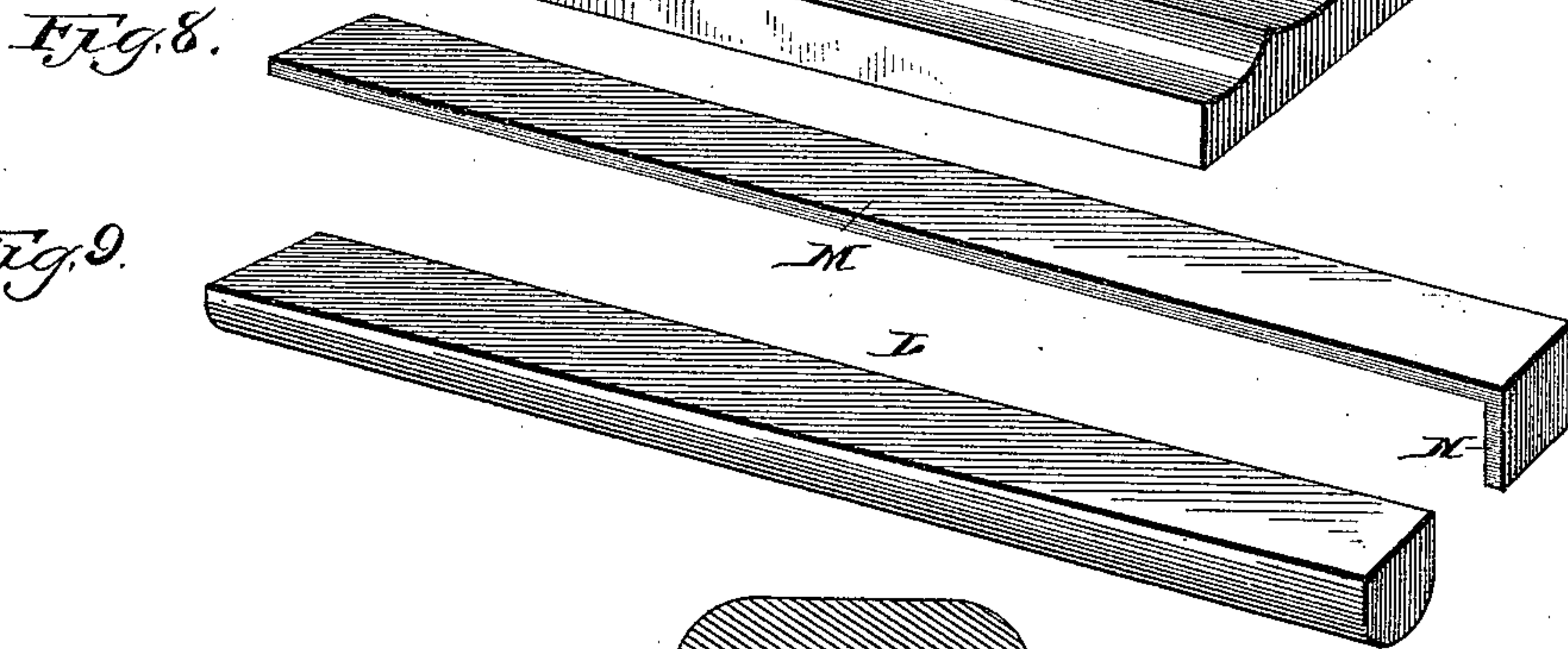
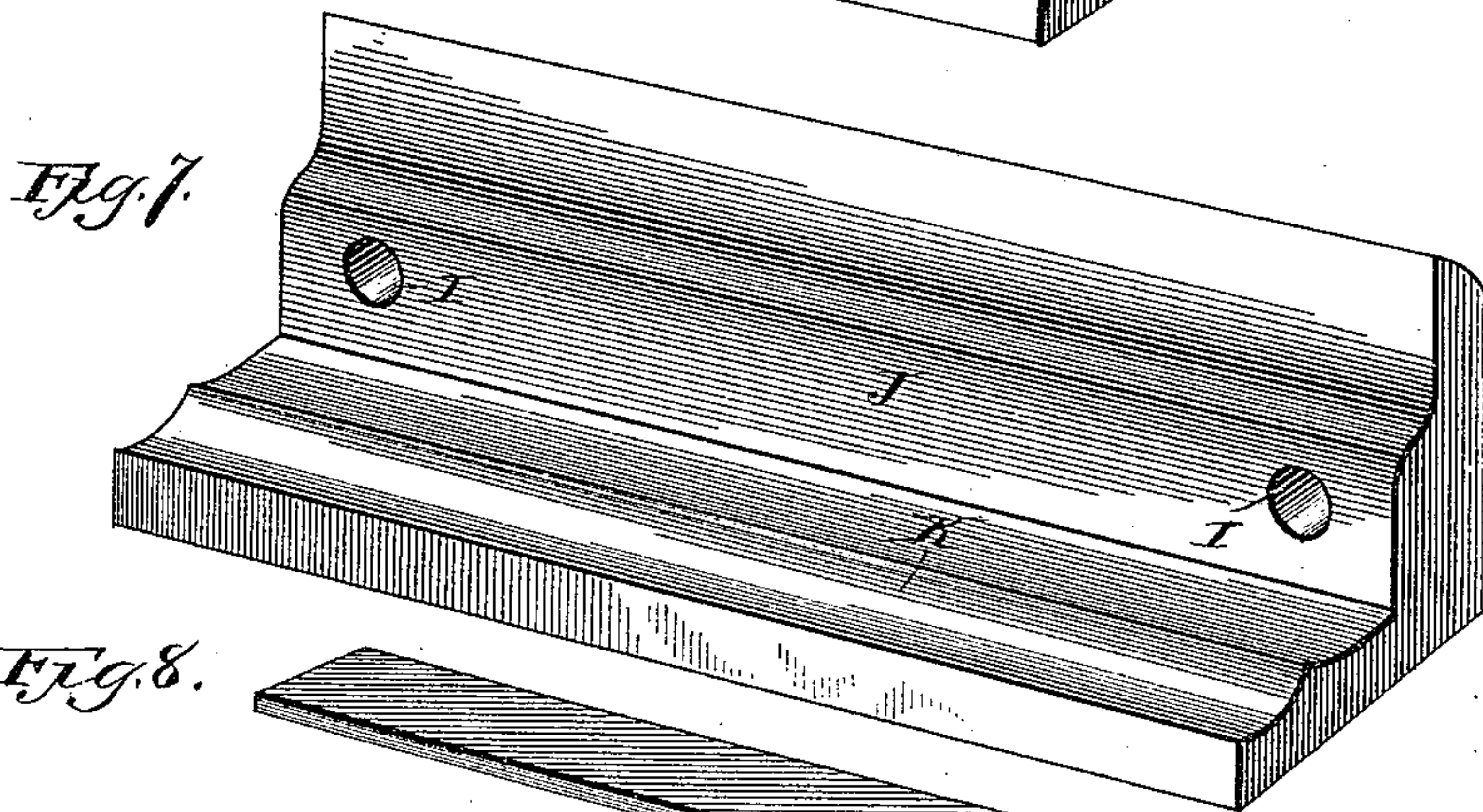
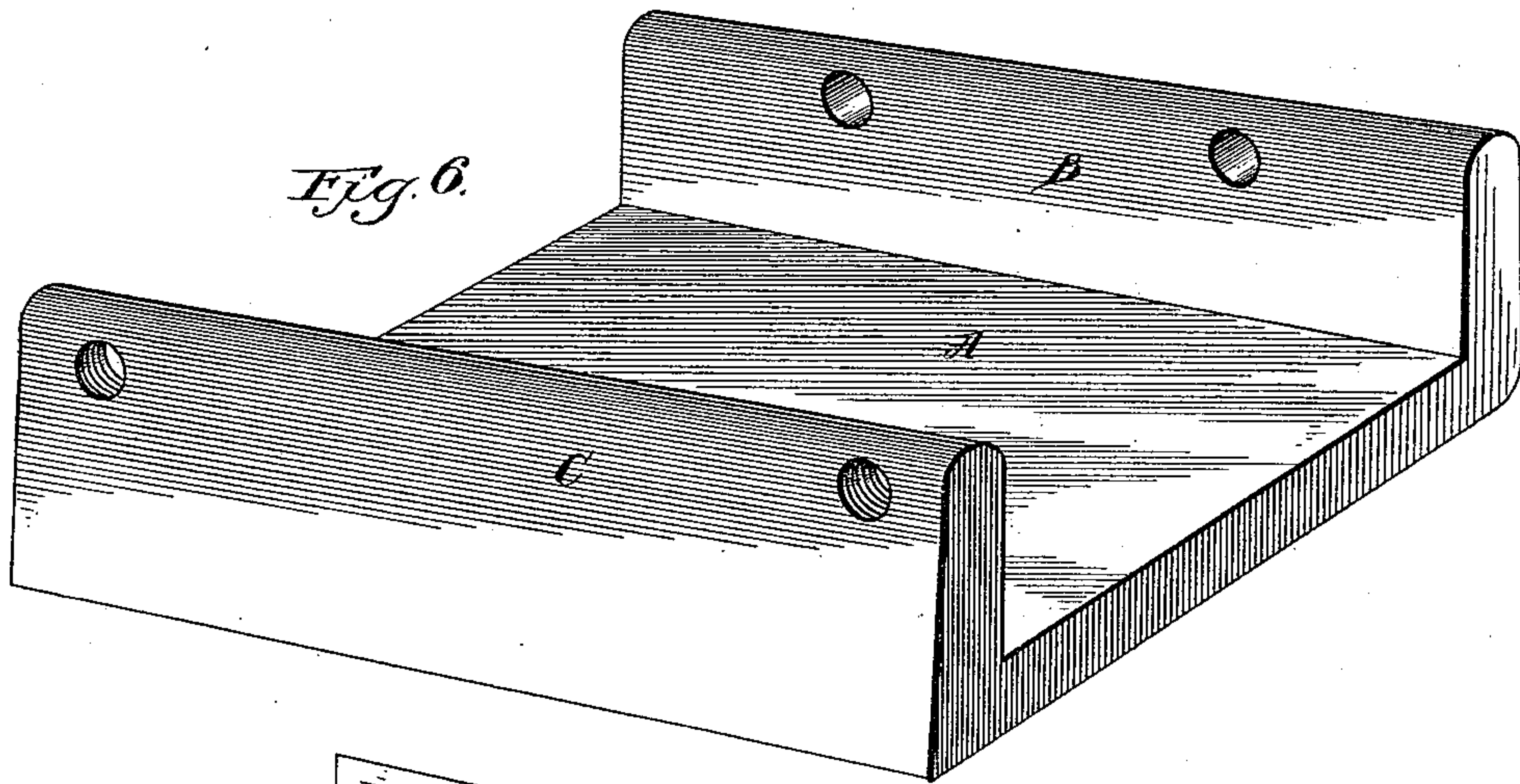
(No Model.)

3 Sheets—Sheet 2.

M. C. NILES.
RAIL JOINT.

No. 438,707.

Patented Oct. 21, 1890.



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M. C. NILES.
RAIL JOINT.

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Patented Oct. 21, 1890.

Fig. 10.

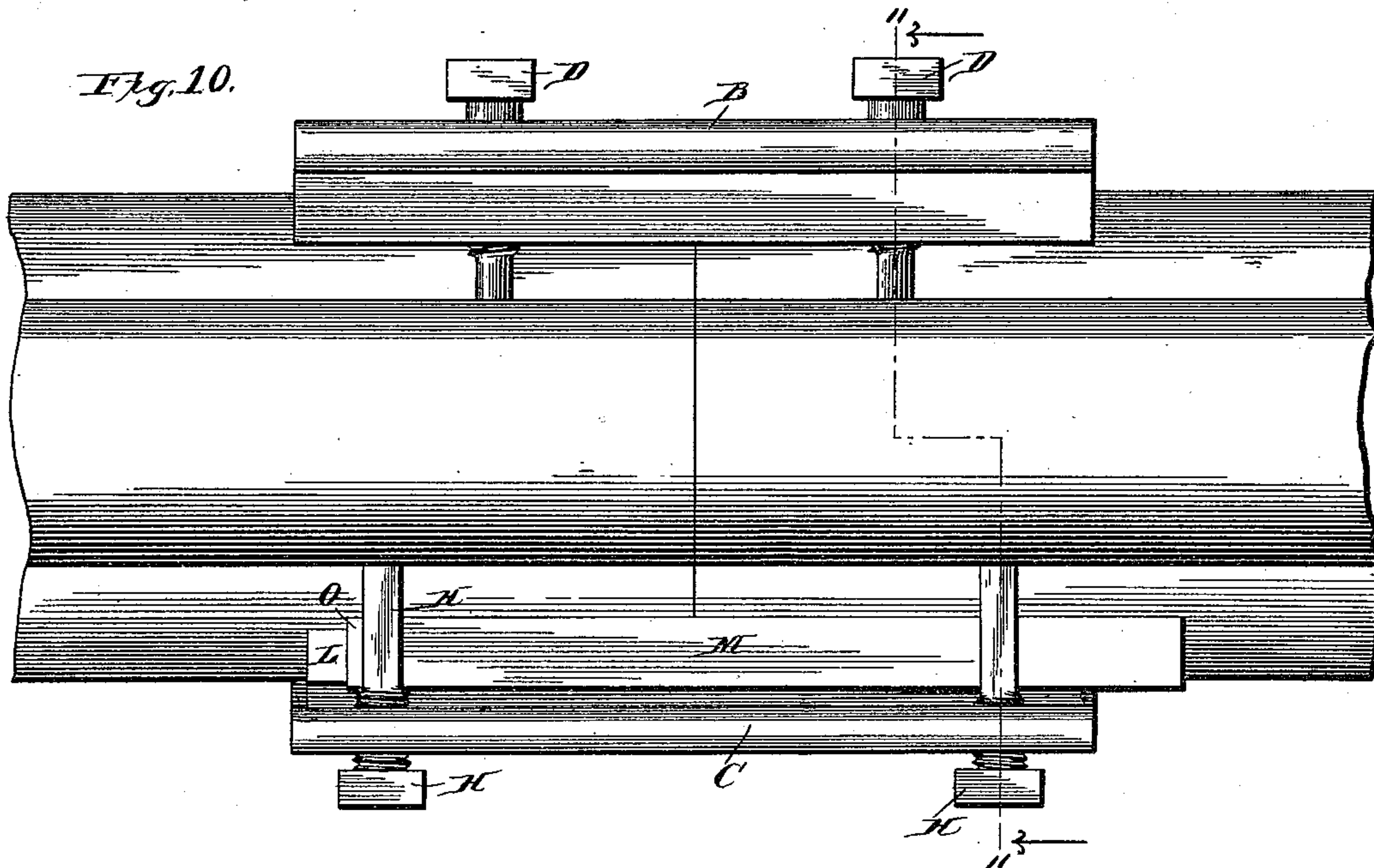


Fig. 11.

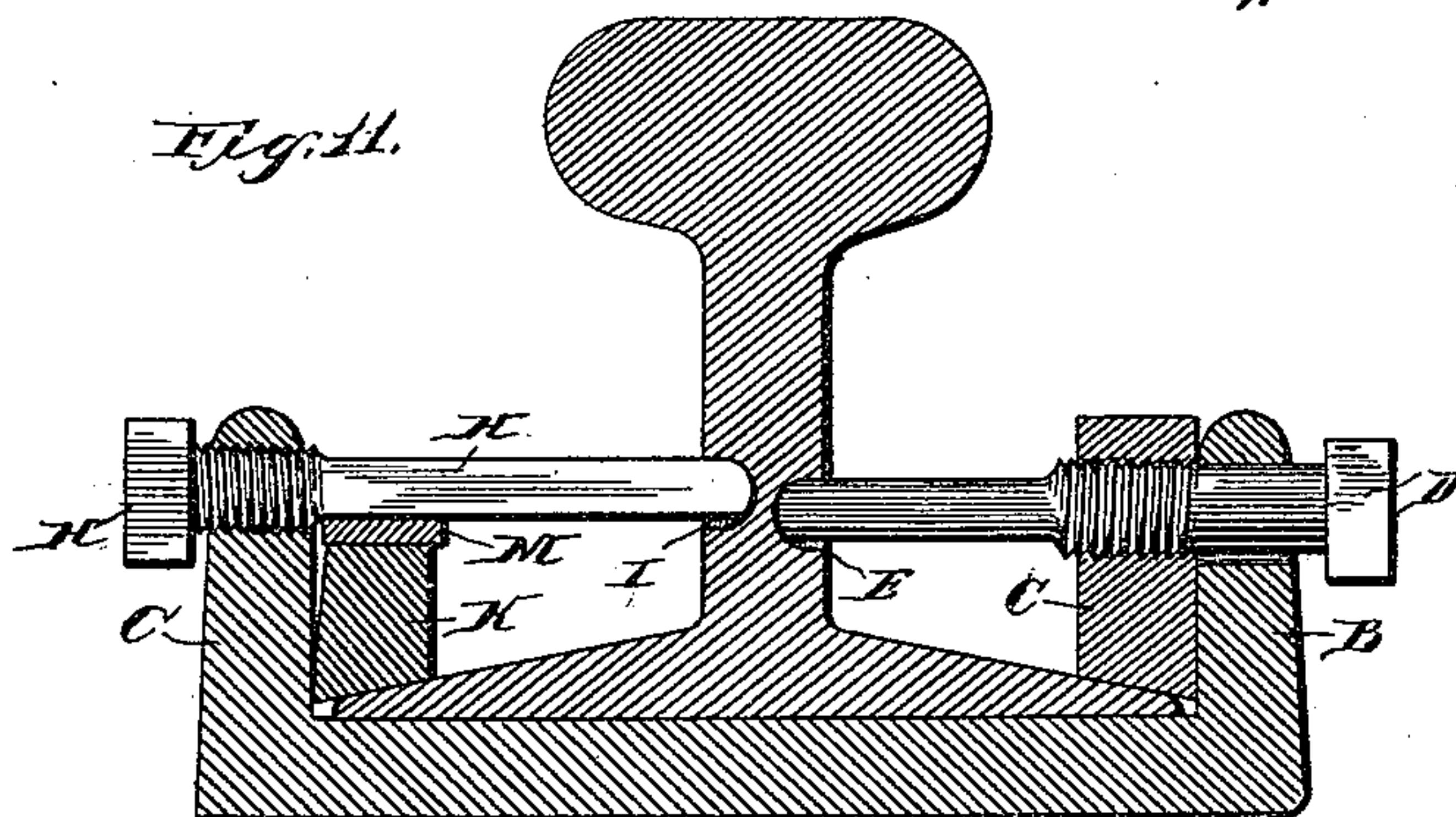
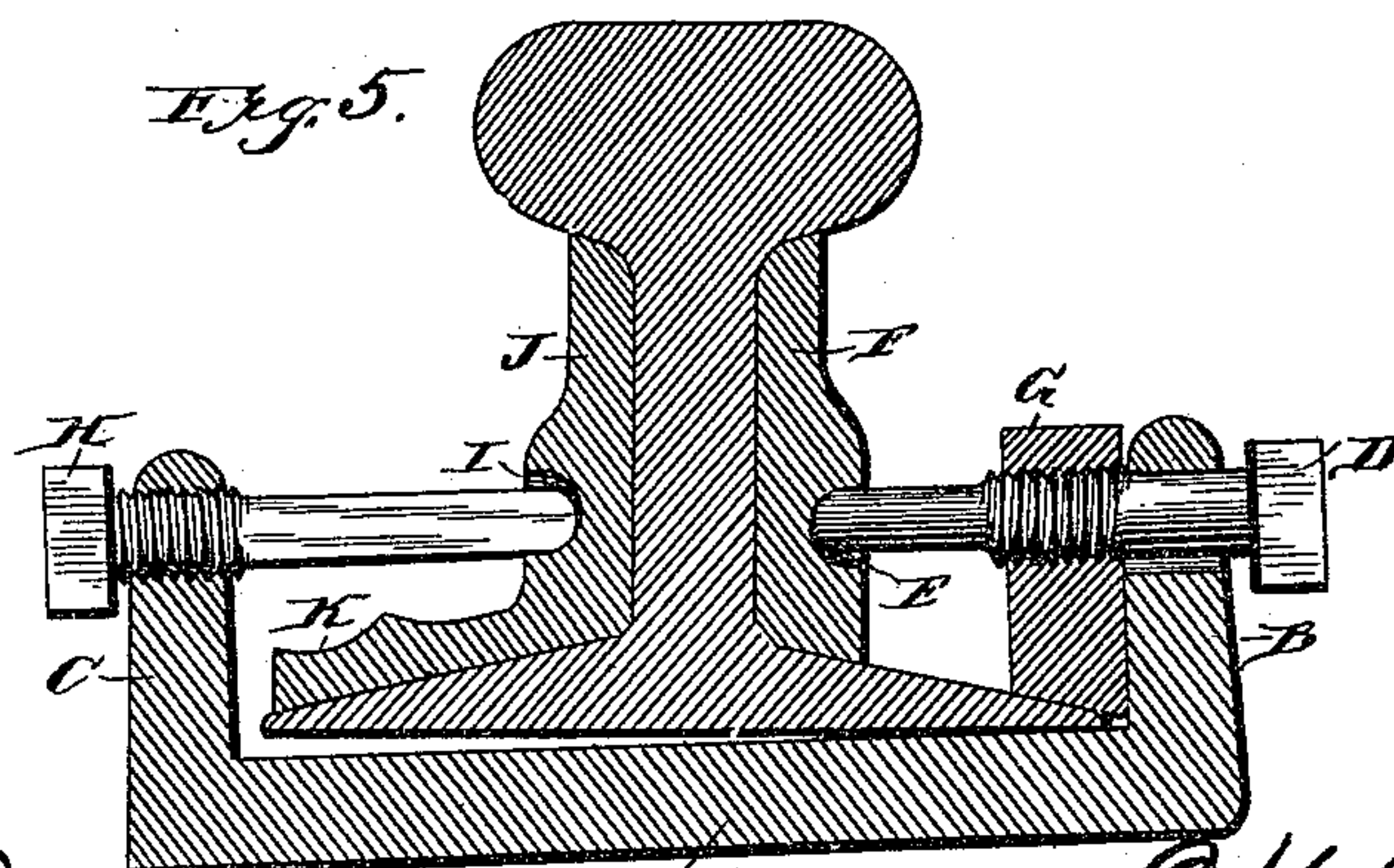


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF OAK PARK, ILLINOIS.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 438,707, dated October 21, 1890.

Application filed May 3, 1890. Serial No. 350,481. (No model.)

To all whom it may concern:

Be it known that I, MILTON C. NILES, of Oak Park, 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 or base-plate of the joint is secured so as to support the rails by means of lateral pressure obtained through the medium of screw-bolts working through the medium of the base-plate and bearing directly or indirectly against the rails.

The prime object of this invention is to have a joint of such a character that when tightened the strain upon the parts thereof will be evenly distributed and the parts maintained in proper relation to each other.

Other objects are to relieve the chair or base-plate of a portion of the weight upon the rail, and to provide certain novel details of construction in the carrying out of my invention, and for obtaining these desirable ends, all as illustrated in the accompanying drawings, in which—

Figure 1 represents a plan view of the meeting ends of a pair of rails, showing a joint applied thereto embodying my invention; Fig. 2, a longitudinal section thereof on the line 2 2 of Fig. 3, looking in the direction indicated by the arrows; Fig. 3, a transverse vertical section on the line 3 3 of Fig. 1, looking in the direction indicated by the arrows, showing the joint finally tightened in its operative position; Fig. 4, a similar view to Fig. 3, showing the joint applied to the rail before being tightened; Fig. 5, a similar view showing the initial tightening of the joint; Fig. 6, a detailed perspective view of the chair or base-plate; Fig. 7, a similar view of the wedge-plate; Figs. 8 and 9, similar views of the lock-bar and the wedge, respectively; Fig. 10, a plan view of a modified form of my improved new joint; and Fig. 11, a transverse vertical section thereof upon the line 11 11, looking in the direction indicated by the arrows.

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 chair or base-plate provided along each side edge thereof with upturned angular portions or flanges B C, extending parallel with the rails, which chair is of sufficiently greater width between the upturned portions thereof than the width of the rail-flanges to permit of a lateral movement of the chair relative to the rail. Through one of the upturned portions or chair-flanges—say the flange B—loosely work two or more bolts D, bearing at their inner ends in sockets E, provided in a brace-plate F, fitting between the flange and top of the rails against the web thereof. Each of these bolts is screw-threaded between the chair-flange and its inner end, and works through a screw-threaded hole in a binding-plate G, the lower edge of which, as illustrated in Fig. 3, bears upon the top of the rail-flange and is beveled or inclined to correspond with the bevel or incline of the upper surface of said flange. It will thus be seen that by manipulating the screw-bolt D the position of the binding-plate with relation to the rail may be readily adjusted, this plate in effect serving the purpose of an overhanging hook or shoulder along the edge of the chair, as illustrated by the dotted lines in Fig. 3 of the drawings; and I may here state that so far as relates to the broad idea of my invention the bolt D, binding-plate G, and brace-plate F may be dispensed with and a rigid hook or overhanging flange, as illustrated, substituted therefor; but the use of these members is preferred, because by merely using a larger or smaller binding-plate the same chair may be employed for rails of different dimensions, besides which the brace-plate is held firmly in position, so as to serve as a vertical support for the rails in the same manner as the ordinary fish-plate.

While the screw-bolt D is shown as screw-threaded only on that portion passing through the binding-plate G, obviously substantially the same result would be accomplished if it were screw-threaded on that portion bearing on the flange B, for in practice the binding-plate always impinges against the flange; but it is preferred to screw-thread it, as shown in the drawings, because it serves to better distribute the strain between the brace-plate and the flange. At the opposite side of the

rail through the chair-flange C work two or
 more bolts H, screw-threaded upon that por-
 tion working or bearing in the chair-flange,
 but preferably square throughout the remain-
 5 der of its length, and having an end bearing
 in a socket I, provided in an angular wedged
 plate J, formed to fit against the flange and
 web of the rail. This plate upon the hori-
 10 zontal portion thereof—that is to say, the por-
 tion resting upon the flange of the rail—is
 provided upon the upper face thereof and
 preferably near the outer edge with a wedge-
 seat K, upon which fits a wedge L, having a
 15 lower face corresponding in contour with the
 wedge-seat and an upper face flat, so as to
 bear against the square or flattened portion
 of the bolts H or to form a seat for a lock-
 bar M, consisting of a thin metallic bar of
 20 malleable metal, having an angular end or
 shoulder N adapted to fit against the end of
 the wedge and of sufficient length to have its
 opposite end project beyond the bolt H far-
 thest from the entering end, so as to be bent
 25 up, as illustrated at O in Fig. 2, and thus ef-
 fectually lock the wedge upon its seat.

In practice the bolts H are preferably lo-
 cated in different planes, so as to permit of
 the insertion of the wedge; but obviously the
 bolts might be located in the same plane and
 30 the wedge-plate be inclined so as to accom-
 plish the same end.

In the practical application of my joint,
 when applied to the rails before being tight-
 ened, the parts will assume substantially the
 35 position illustrated in Fig. 4, in which all of the
 parts, except the wedge and lock-bar, are
 shown in position for tightening, the bolts H
 bearing against the bottom of the sockets in
 the wedge-plate, while the bolts D just engage
 40 the sockets in the brace-plate. In the initial
 tightening operation the bolts H alone are
 manipulated, and by reason of their end bear-
 ing and the screw-thread connection between
 them and the chair cause the latter to move
 45 laterally or sidewise with relation to the rails,
 forcing the ends of the bolts D home in their
 sockets and wedging the flange of the rail
 tightly between the binding-plate and the
 chair until no further movement of the parts
 50 takes place, when they assume the position
 illustrated in Fig. 5.

It will be observed that the chair has fallen
 away from the rail-flange along the side upon
 which the wedge-plate is located, which result
 55 actually occurs in practice and is due to the
 action of the binding-plate, which operates
 somewhat in the nature of a fulcrum upon
 which the chair is caused to swing in its lat-
 eral movement. To remedy this defect and
 60 effect the final tightening operation, the
 wedge-plate and lock-bar are driven home
 between the wedge-plate and the bolts H,
 which serves to draw the chair up firmly
 against the bottom of the rails, as illustrated
 65 in Fig. 3. The wedge also subserves the
 further purpose of a lock for the bolts H, for
 when once driven to position these bolts can-

not rotate, but are effectually locked in the
 position in which they are set; and I may here
 state that while a lock to maintain this wedge 70
 upon its seat is not absolutely essential the
 use of the lock-bar is preferred because of the
 greater security obtained without adding to
 the expense of the joint. Nor is the employ-
 ment of the brace-plate F and the wedge-plate 75
 J a necessity to the successful operation of my
 joint so far as the broad idea of my invention is
 concerned, for, as illustrated in Figs. 10 and
 11, these plates may be dispensed with and the
 bolts D and H, as well as the wedge, bear di- 80
 rectly against the rails, in which suitable
 sockets may be provided for the bolts, as in
 the plates; but the employment of these plates
 is preferred not only for convenience and be- 85
 cause with them the rails need not be sock-
 eted, but also because these plates subserve
 all of the purposes of the ordinary fish-plates
 and relieve the chair or base-plate of a large
 part of the strain due to the weights of a pass- 90
 ing train upon the rail-joint, which would
 otherwise fall entirely to the chair. Obvi-
 ously an end bearing for the screw-bolts is
 necessary, in order that they may gain the de-
 sired purchase for resisting both the lateral 95
 strain and the vertical pressure of the wedge
 and binding plate, and this end bearing must
 be against the rails either indirectly by the in-
 terposition of the brace and wedge plates or
 directly by dispensing with these members;
 but in either case the end bearing is against 100
 the rails, and is broadly so expressed in the
 claims; and so, also, with the binding-plates,
 through the medium of which the chair indi-
 rectly engages the flange of the rail, although
 broadly considered this plate may be dis- 105
 pensed with and the chair directly engage
 the flange of the rails, as illustrated by the
 dotted lines in Fig. 3.

Having described my invention, what I
 claim, and desire to secure by Letters Patent, 110
 is—

1. In a rail-joint, the combination, with the
 rails and the chair engaging the rail-flange
 at one side thereof, of screw-bolts working
 through said chair at the opposite side of the 115
 rail, having an end bearing against the rail,
 and a wedge fitting between said bolt and the
 rail-flange, substantially as described.

2. In a rail-joint, the combination, with the
 rails and the chair engaging the rail-flange 120
 at one side thereof, of bolts working through
 said chair, having an end bearing, a wedge
 fitting between said bolts and the rail-flange,
 and a lock-bar interposed between said wedge
 and the bolts, substantially as described. 125

3. In a rail-joint, the combination, with the
 rails, the chair engaging the rail-flange at one
 side thereof, and the wedge-plate upon the op-
 130 posite side of the rail, of the screw-bolt work-
 ing through said chair, having an end bear-
 ing against said wedge-plate, and the wedge
 fitting between said plate and the bolts, sub-
 stantially as described.

4. In a rail-joint, the combination, with the

rails, the chair engaging the flange of the rails at one side thereof, and the wedge-plate at the opposite side of the rail, of the bolts working through the chair and having an end bearing against said wedge-plate, the wedge confined between said plate and the bolts, and the lock-bar interposed between said wedge and the bolts, substantially as described.

10 5. In a rail-joint, the combination, with the chair provided with the upturned side flanges, of opposing screw-bolts working through said flanges and having an end bearing against the rail of the binding-plate, and the wedge, 15 substantially as and for the purpose described.

20 6. In a rail-joint, the combination, with the chair provided with upturned side flanges and opposing screw-bolts working through said flanges and having an end bearing, of the binding-plate, the wedge, and the lock-bar, substantially as described.

25 7. In a rail-joint, the combination, with the rails, the brace-plate, the wedge-plate, the chair provided with upturned side flanges, and bolts working through said flanges and having an end bearing against said brace and wedge plates, of the binding-plate and the wedge, substantially as described.

8. In a rail-joint, the combination, with the rails, the brace-plate, the wedge-plate, the chair provided with upturned side flanges, and bolts working through said flanges, having an end bearing against said brace and wedge plates, of the binding-plate, the wedge, 35 and the lock-bar, substantially as described.

9. In a rail-joint, the combination, with the rails, the chair provided with upturned side flanges, opposing screw-bolts, one set of which work loosely through one of said flanges and both sets of which have an end bearing, of a binding-plate having a screw-thread connection with said loose-working bolts and bearing upon the rail-flange upon one side thereof, and a wedge fitting between the rail-flange 45 and the bolts at the opposite side thereof, substantially as described.

10. In a rail-joint, the combination, with the rails and the chair provided with upturned side flanges, of opposing bolts working 50 through said flanges and having end bearings, and the binding-plate provided with screw-threaded holes through which one set of said bolts work, substantially as described.

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Witnesses:

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A MILO BENNETT.