

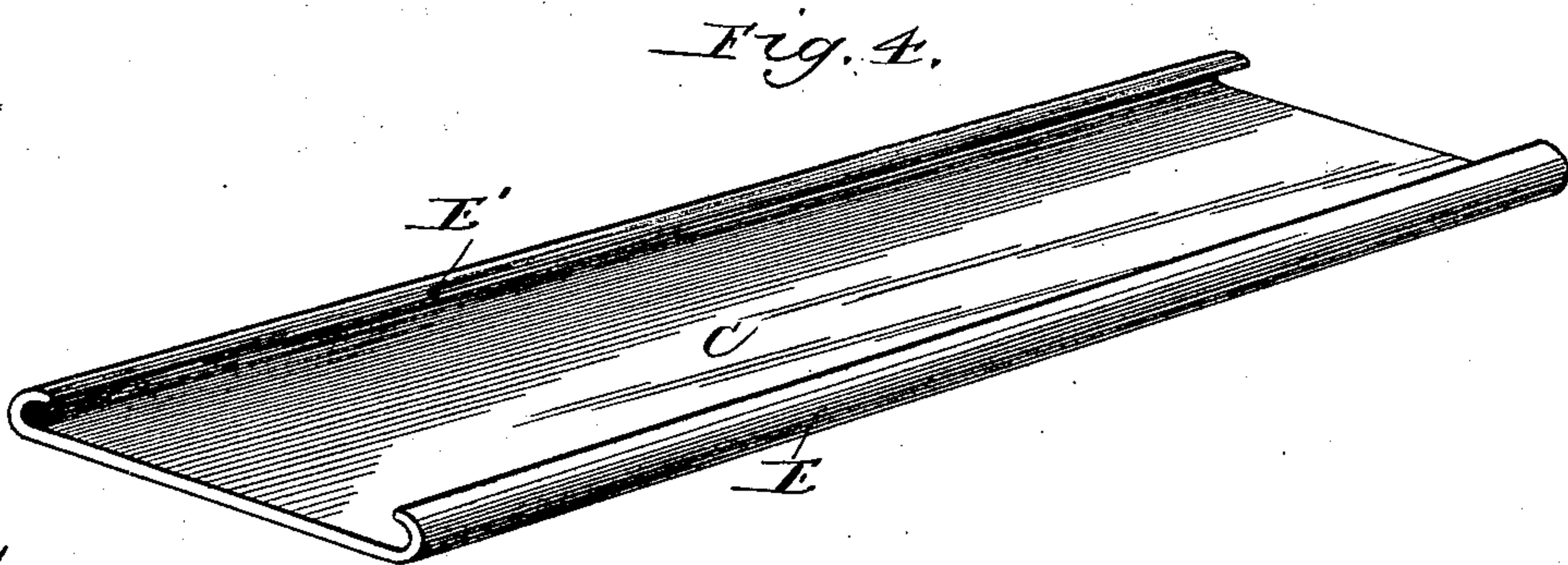
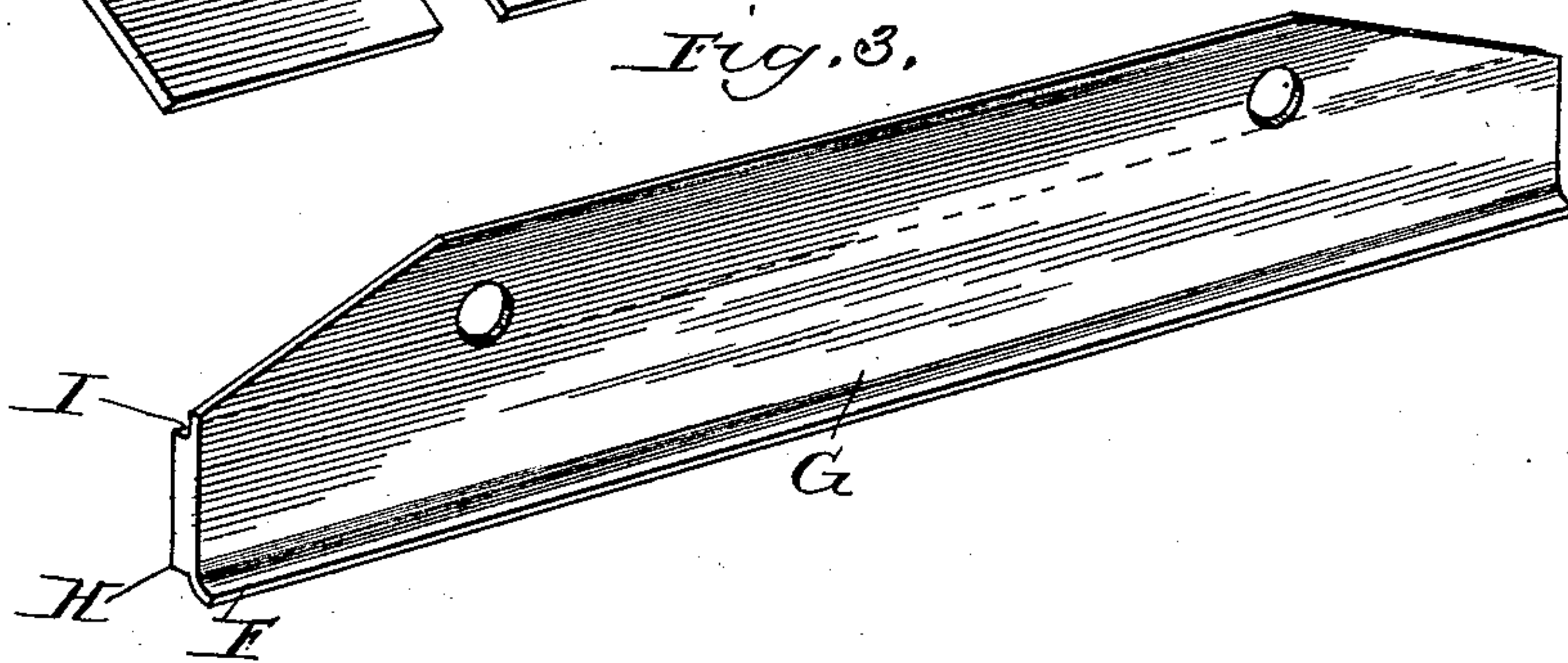
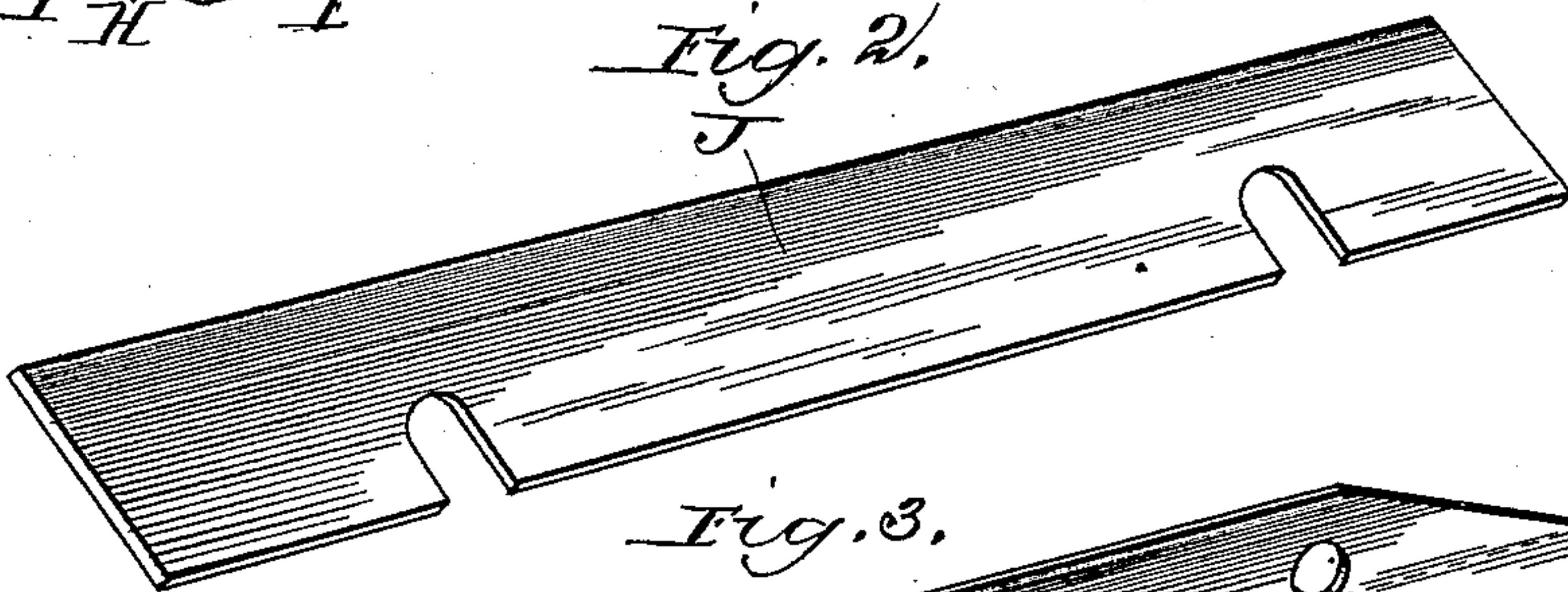
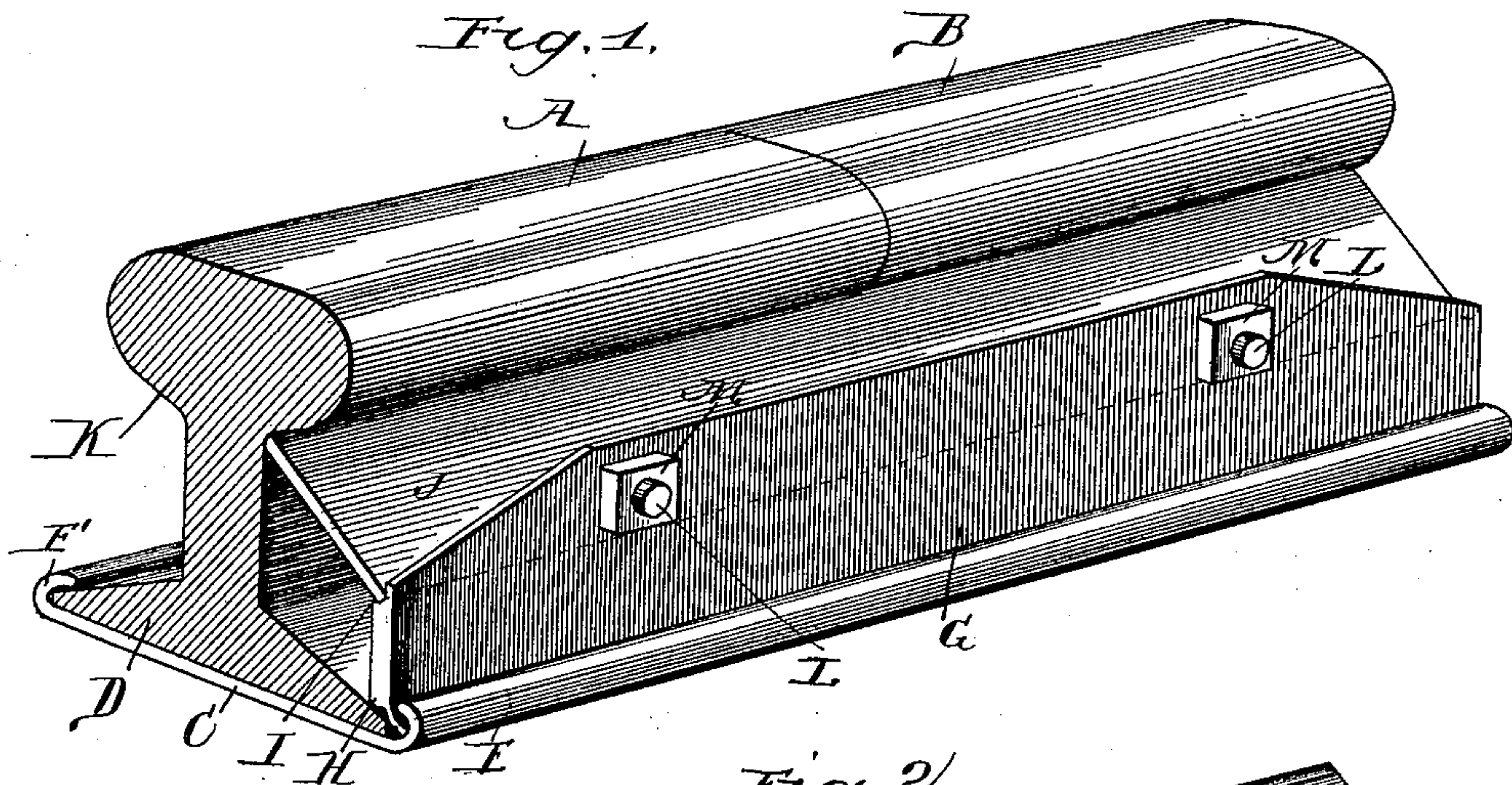
(No Model.)

2 Sheets—Sheet 1.

M. C. NILES.
RAIL JOINT.

No. 407,302.

Patented July 16, 1889.



Witnesses.
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(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

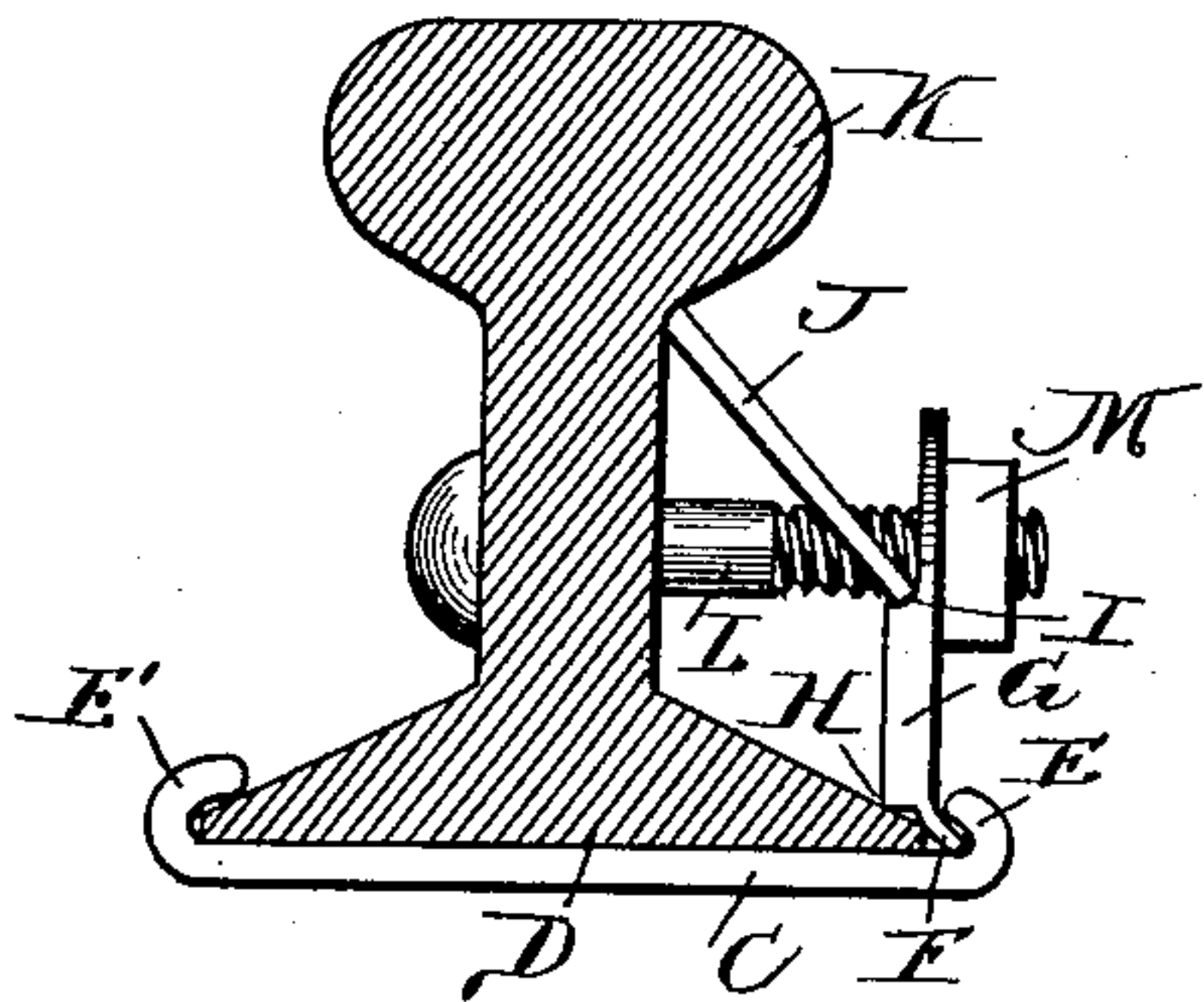


Fig. 6.

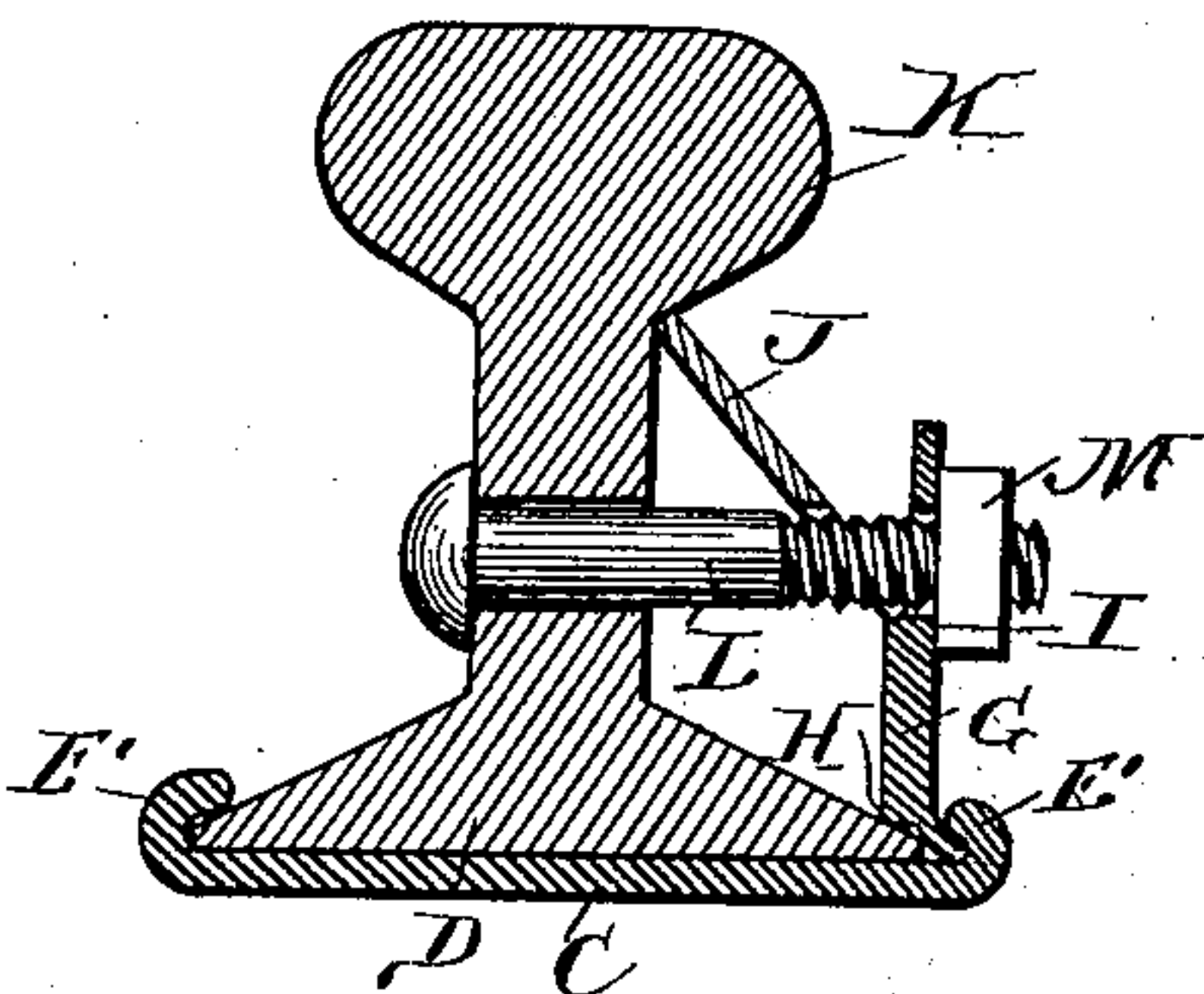


Fig. 8.

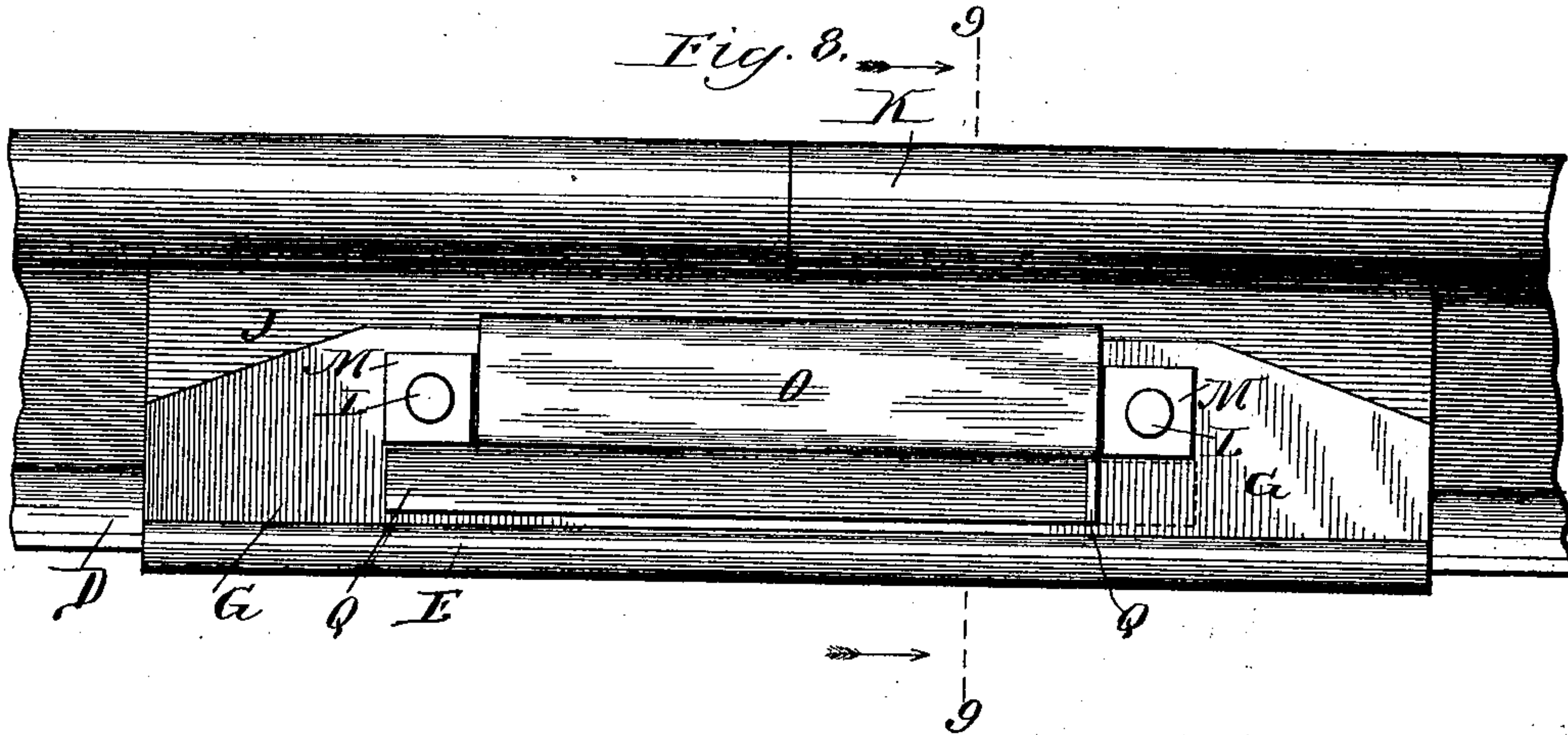


Fig. 9.

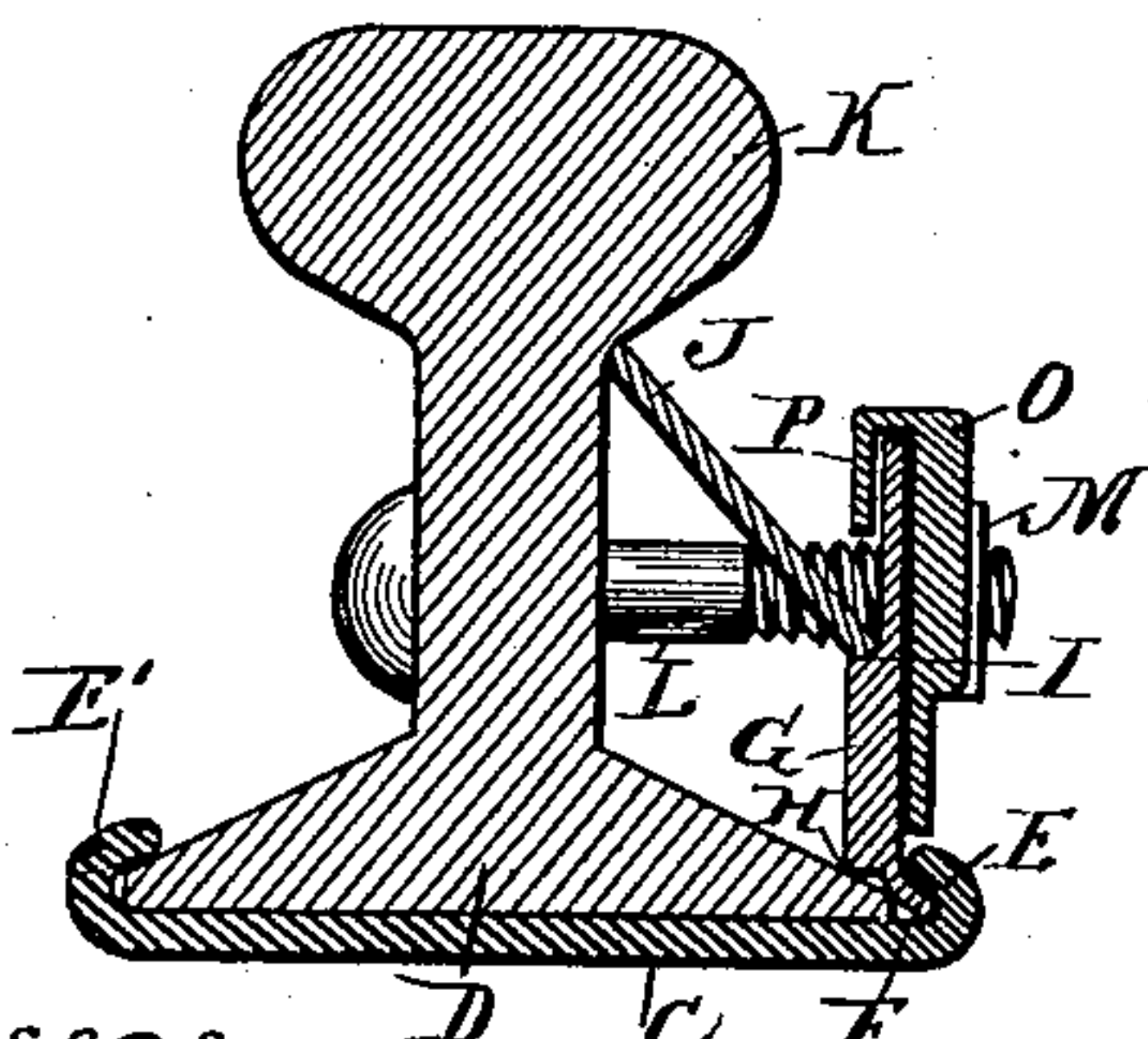


Fig. 10.

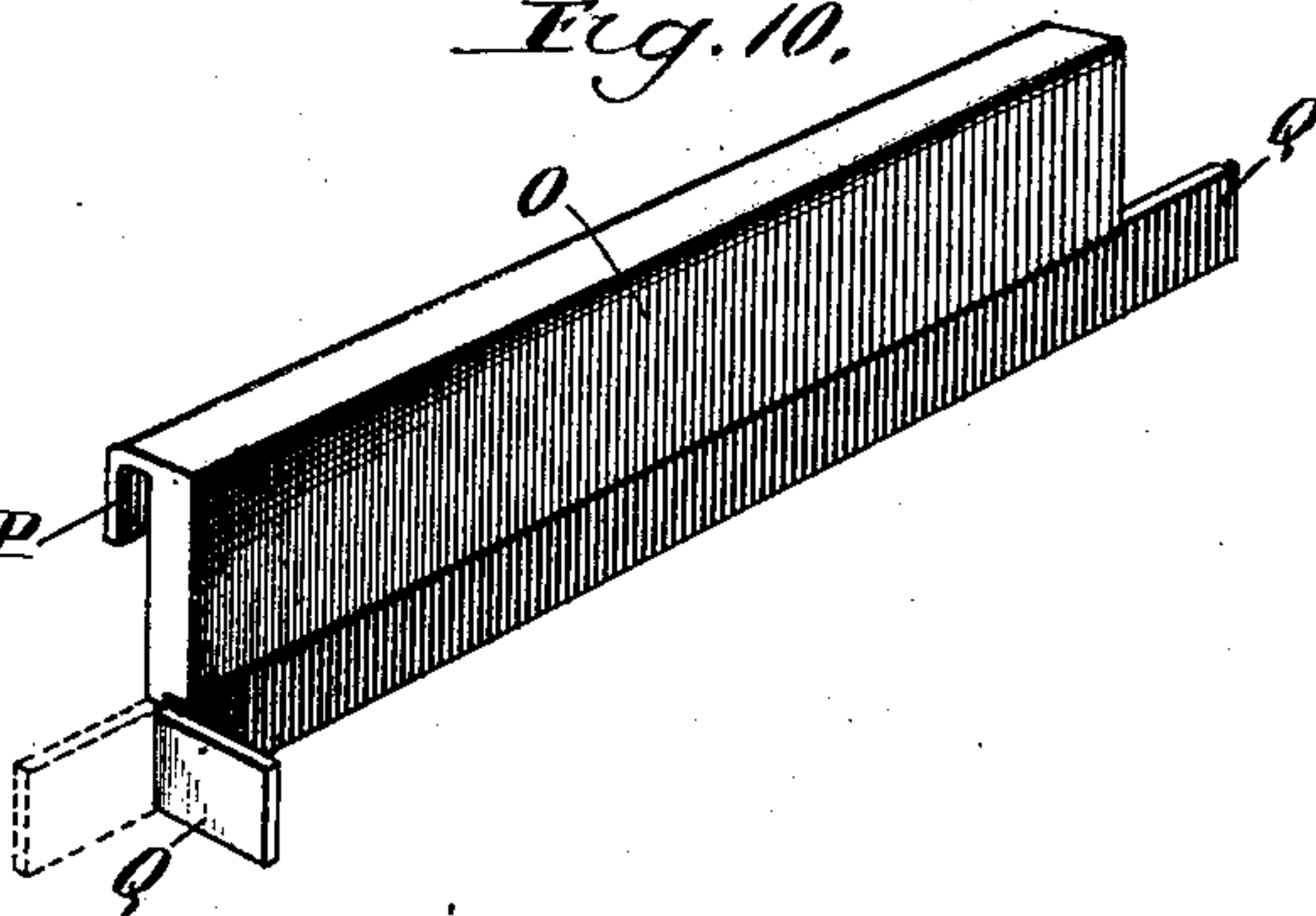
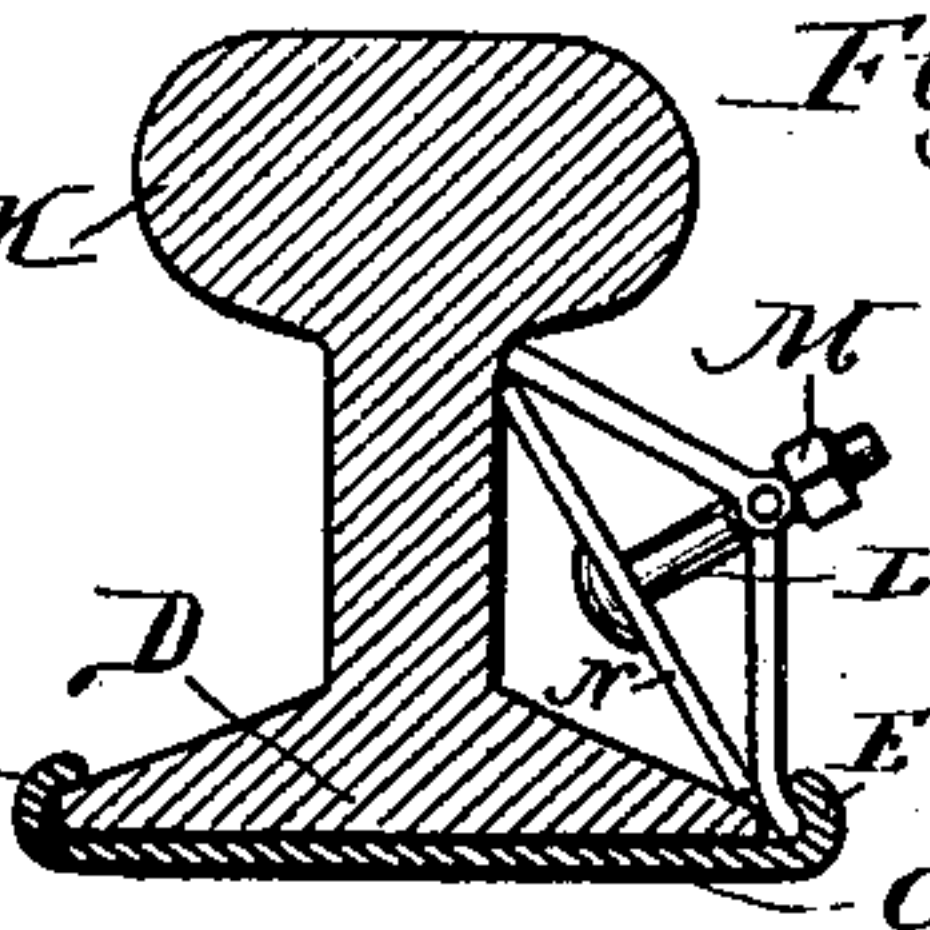


Fig. 7.



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UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF CHICAGO, ILLINOIS.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 407,302, dated July 16, 1889.

Application filed March 11, 1889. Serial No. 302,887. (No model.)

To all whom it may concern:

Be it known that I, MILTON C. NILES, a citizen of the United States, residing in the city 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 gripping-force thereof upon the rail is directly dependent upon and limited by the elasticity or spring of the metallic plates thereof, but is more especially designed as an improvement upon the invention set forth in the application for Letters Patent of the United States, filed by me on or about October 29, A. D. 1888, Serial No. 289,441, and allowed the 27th day of December, A. D. 1888. In that application was shown a clamping-plate pivoted on the rail-flange so as to engage the base-plate at the outer edge thereof, and firmly clamp it against the under side of the rail, when the inner edge thereof was depressed by means of screw-bolts working through a brace-plate confined between the top of the rail and the outer edge of the clamping-plate, the power of the grip of all these parts upon the rail being dependent solely upon and limited by the elasticity of the pivoted or lever-clamping plate.

The prime object of this invention is to dispense with dependence upon the elasticity of any of these parts of the joint, and to provide a perfect rail-joint by the employment of rigid unyielding parts.

Another object is to have this rigid joint of such a character that the power of the grip thereof may be readily adjusted, so that the parts may be further tightened at any time, and thus compensate for any looseness due to expansion, contraction, wear of the parts, or any other cause.

A further object is to have the rigid joint of such a character as to brace the top of the rail against the lateral pressure of the flanges of the car-wheel.

Other objects are to tighten the base-plate on each side of the rail by means of appliances on one side thereof only, and to combine with my rail-joint a nut-lock of peculiar and novel form especially adapted for use in connection with this joint.

I attain these objects by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a perspective view of a section of rail, showing a joint applied thereto, embodying my invention; Fig. 2, a detail perspective view of the brace-plate; Fig. 3, a similar view of the lever-clamping plate; Fig. 4, a similar view of the base-plate; Fig. 5, a transverse section through the rail, showing the joint in end elevation; Fig. 6, a transverse section through the rail and joint, showing the tightening-bolt in elevation; Fig. 7, a similar view to Fig. 6, showing a modification of my invention, in which the tightening-bolt through the rail is dispensed with; Fig. 8, a side elevation of a section of the rail with my joint applied thereto, illustrating the detachment of the nut-lock; Fig. 9, a vertical section on the line 9 9 of Fig. 8; and Fig. 10 a perspective view of the nut-lock plate.

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

Referring by letter to the accompanying drawings, A B indicate the meeting ends of the rails, and C a base-plate underlying the ends of the rails and extending practically an equal distance on each side of the meeting ends of the rails, consisting, preferably, of a flat plate of slightly greater width than the flange D of the rail, and having the side edges thereof upturned, so as to form overhanging or hook shoulders E and E', against one of which the rail-flange in operation is designed to abut.

With the overhanging shoulder E at the opposite side of the base-plate is designed to engage the outwardly-turned lower edge F of a lever-clamping plate G, pivoted at H upon the rail-flange, and provided about the center of height thereof with a notch or ledge I, upon which rests the lower edge of the brace-plate J, the upper edge of which bears against the under side of the top K of the rail, between which two parts the said brace-plate is confined.

The brace and clamping plates, taken together, constitute a toggle for clamping or binding all of the plates upon the rail, and the pressure upon the knee thereof is pref-

erably obtained through the medium of a headed bolt L, working through the web of the rail and loosely through both of said plates, upon the projecting end of which is
 5 secured a nut M, preferably bearing against an extension of the clamping-plate above the knee of the toggle to constitute a better bearing for the nut, and thus enabling the employment of a tightening-bolt working through
 10 the rail at an angle, instead of parallel with the line of movement of the knee of the toggle, for in practice it is intended that the clamping-plate when in its operative position, and the parts clamped sufficiently tight for
 15 practical purposes, shall stand in substantially a vertical position, and therefore at right angles to the tightening-bolt, but not necessarily.

It will thus be readily understood that when
 20 the several plates are put together, as just described, and the tightening-bolt is operated, the first effect will be to draw the base-plate laterally toward the clamping-plate until the shoulder E' thereof abuts against the edge of
 25 the rail-flange, after which the gripping force will be equalized between the flange and top of the rail, the former being tightly gripped by the lever-clamping plate at the pivoting-point thereof, while the latter will be directly
 30 braced against and so as to effectually resist the lateral pressure of the flange of the car-wheel by the brace-plate, and it is equally obvious that the power of the grip of this joint is practically unlimited, does not de-
 35 pend upon the elasticity of the plates composing it, and is also readily adjustable, and may be varied at will simply by tightening or loosening the nut applying the power to the knee of the toggle.

40 While I have described and shown several plates of the joint as detachably connected together and simply engaging one another at their meeting edges, it would be no departure from the spirit of my invention to unite these
 45 plates with each other by a hinge, knuckle, or knee-joint, such as is well known in the arts; nor do I desire to limit myself to the particular manner herein described for applying power to the knee-joint of the toggle through
 50 the medium of the bolt passing through the web of the rail, for, as illustrated in Fig. 7 of the drawings, the same results would be accomplished by the employment of the draft-plate N, confined between the rail and the
 55 brace and clamping-plates, with the edges bearing thereon at the point of conjunction of said joints with the rail, through which plate the headed tightening-bolt could work and furnish sufficient resistance and bearing
 60 for the operation of the toggle. In fact, the broad idea of my invention is a toggle comprising a brace and clamping plate, by means of which the joint is attached to and secured upon the rail, and, so far as relates to this
 65 feature of my invention, it is immaterial how the power is applied for operating the toggle, and whether the toggle works toward or away

from the rail, so long as it accomplishes the desired object, that of tightening, binding, and securing the joint to the rail.

70 It is also within my invention to combine with this particular form of rail-joint a nut-lock especially adapted for use in connection therewith, and which cannot well be employed in connection with any other rail-joint or fish-
 75 plate heretofore invented, so far as I am aware, at least not in its present form, for this nut-lock depends upon the peculiar form of this rail-joint for its effectiveness in operation, and is readily attached thereto and detached there-
 80 from without in any wise affecting the joint. To this end I employ a lock-plate O, (more clearly illustrated in Figs. 8, 9, and 10 of the drawings,) of a length substantially equal to
 85 the distance between the nuts on the tightening-plates, provided with a rearwardly downwardly turning lip or flange P along the upper edge thereof, designed to hook over and
 90 rest upon the extension of the clamping-plate above the tightening-bolts, while from the lower edge thereof at the ends projects a pair of ears Q, at a right angle from the face of the plate when the latter is inserted in posi-
 95 tion between the nuts, but are designed to be bent down, so as to lie parallel therewith and under the nuts, and thus prevent the acci-
 100 dental lifting and unseating of the lock-plate, and at the same time prevent the rotation of the nuts upon the bolts. The lip P serves to prevent the removal of the plate horizontally
 105 and the ears Q vertically, thus effectually securing the lock-plate to the joint, and at the same time preventing the rotation of the nut upon the bolts due to the jarring of the passing trains; but this lock-plate may be readily
 110 detached at any time by bending up the ears thereof, when the nuts of the joint may be tightened or the joint removed from the rail.

As before stated, a nut-lock of this peculiar character is especially adapted for use in con-
 115 nection with my rail-joint, for in the form shown in the drawings it could not well be employed in connection with any other form of rail-joint heretofore invented, so far as I
 120 am aware, and for that reason I desire to claim the same herein in combination with my rail-joint.

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

1. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder against which one of the flanges of the rail impinges, of a toggle confined between said
 125 plate and the rail, so as to clamp the same together, substantially as described.

2. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder against which the flange of the rail impinges, of a clamping and a brace plate constituting
 130 a toggle, the opposite edges of which respectively engage the base-plate and the rail, and means for operating said toggle, substantially as described.

3. In a rail-joint, the combination, with the rail of a base-plate provided with a shoulder against which one of the flanges of the rail impinges, of a clamping and brace plate constituting a toggle engaging the base-plate and rail, respectively, and a tightening-bolt working through said rail for operating the toggle, substantially as described.

4. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder against which the rail-flange abuts at one side, of a clamping-plate pivoted upon the rail-flange and engaging the base-plate at the opposite side of the rail, a brace-plate confined between the top of the rail and said clamping-plate, and a tightening-bolt working through the rail-flange and engaging the clamping-plate near the point of engagement therewith of the brace-plate, substantially as described.

5. In a rail-joint, the combination, with the rail and a base-plate provided with a shoulder at one side, against which the flange of the rail abuts, of a clamping-plate pivoted upon the rail-flange and engaging the base-plate at the opposite side of the rail, a brace-plate confined between said clamping-plate and the top of the rail, a tightening-bolt working through the rail-flange and said plates, the nut of which bears against the upper edge of the clamping-plate, a locking-plate provided with a depending lip from the upper edge thereof, engaging the upper edge of the clamping-plate, and ears thereon projecting beneath said nuts, substantially as described.

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Witnesses:

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