

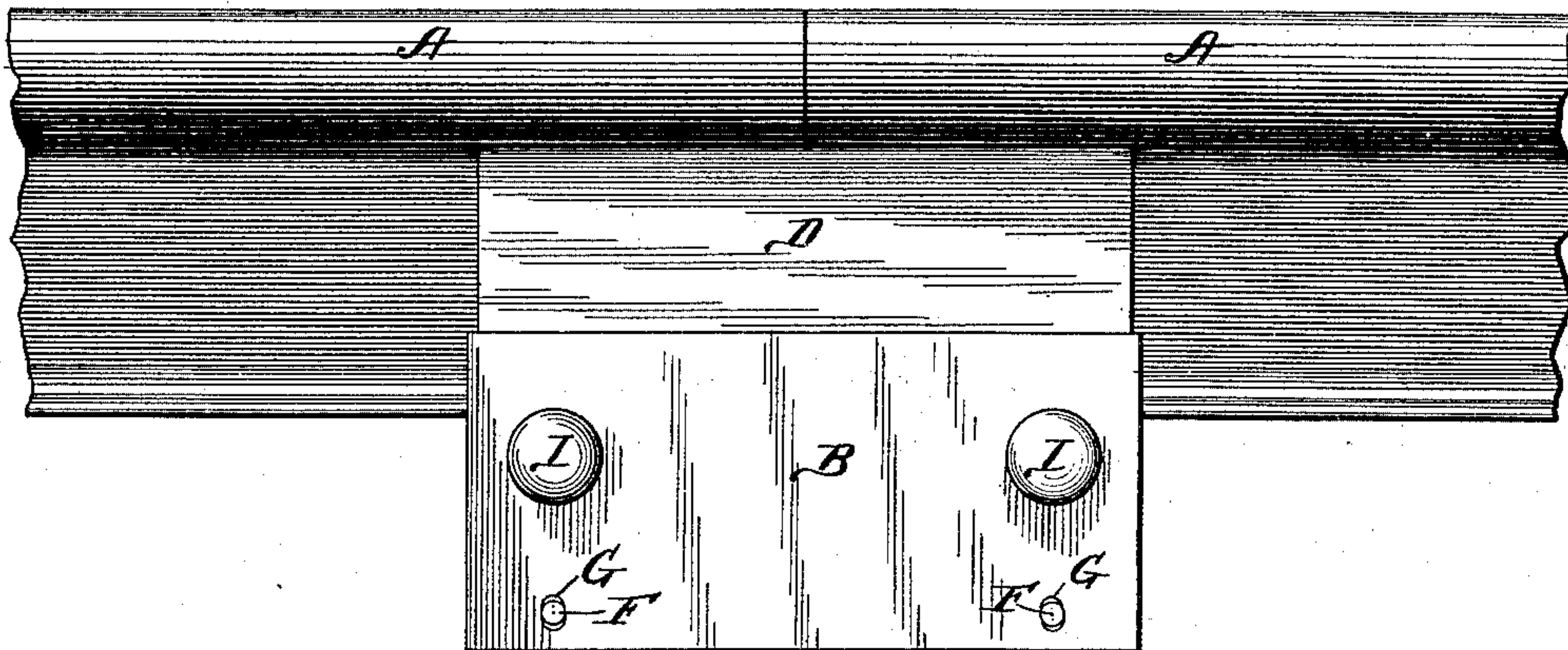
(No Model.)

M. C. NILES.  
RAIL JOINT.

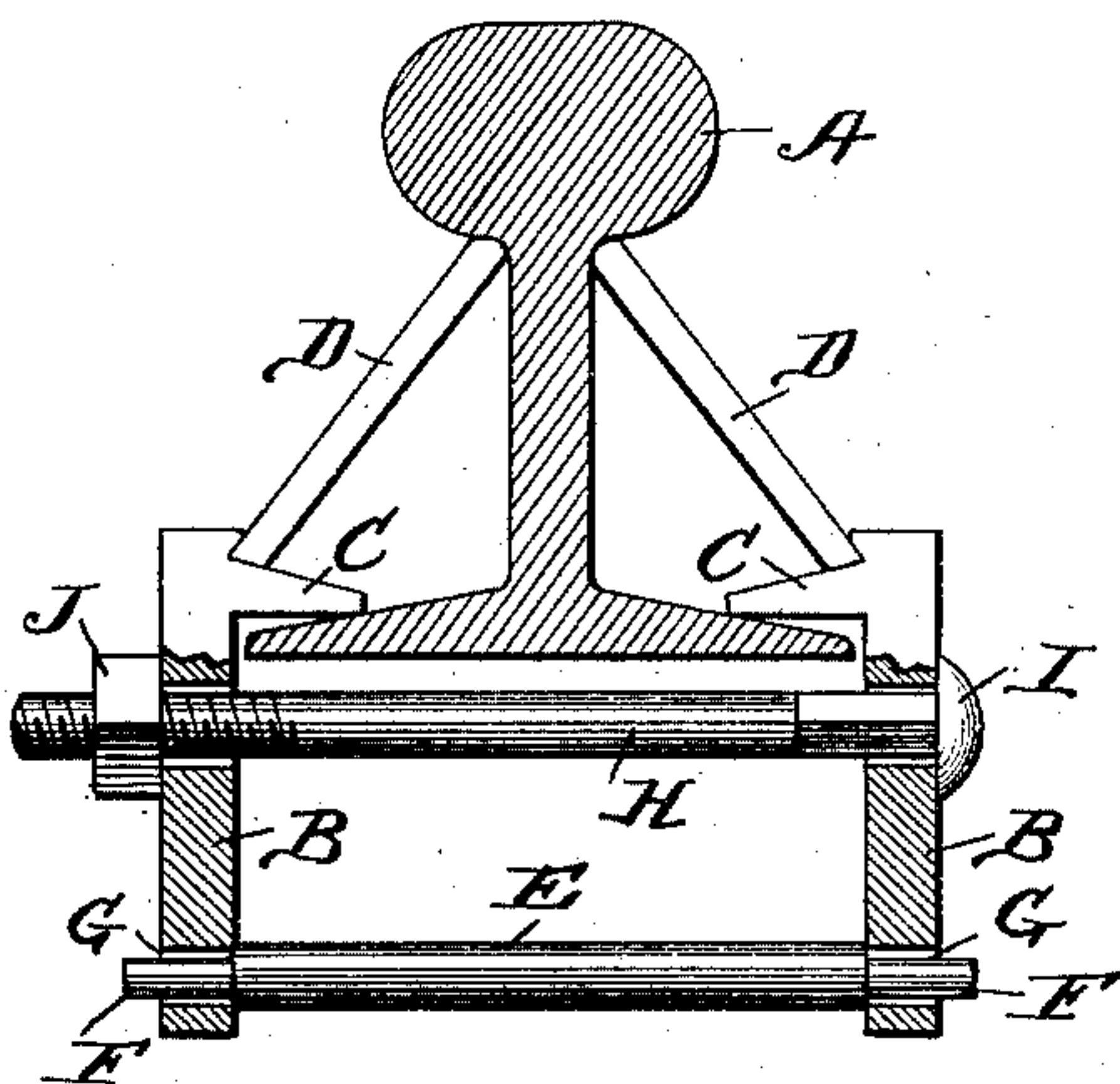
No. 473,638.

Patented Apr. 26, 1892.

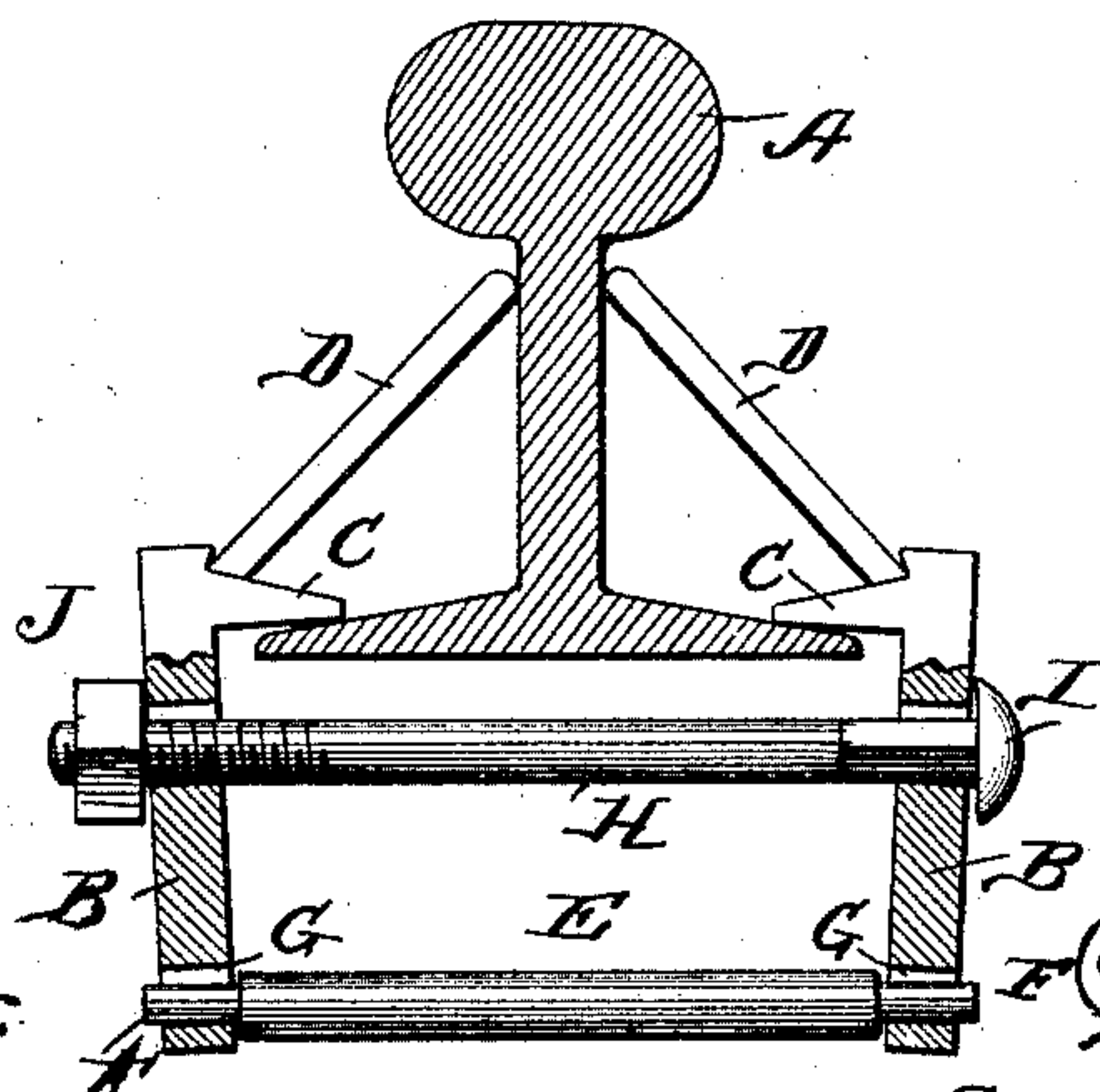
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:

Wm. M. Rhew.

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# UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF OAK PARK, ILLINOIS.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 473,638, dated April 26, 1892.

Application filed July 28, 1891. Serial No. 400,957. (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, 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 rail-joints, and has for its prime object to dispense with the employment of a base-plate by supporting the rail entirely by the top thereof, whereby the rails are not only supported against vertical strain, but also against lateral strain, from the flanges of the car-wheels.

Another object is to have toggles constitute a part of the joint, but to operate the same without the employment of a base-plate therewith, as has heretofore been necessary.

These objects are 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 sectional end elevation thereof, showing the position of the parts when the joint is tightened upon the rails; and Fig. 3, a similar view showing the position of the parts when the joint is loosened.

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

This invention is of the same class as that disclosed in Letters Patent of the United States No. 407,302, granted to me on July 16, 1889, in which the joint was tightened by the action of a toggle, but differs therefrom in that the base-plate employed in that patent is dispensed with herein and the rail wholly supported from the top, this being an improvement upon the invention set forth in the aforesaid patent.

Referring by letter to the accompanying drawings, A indicates the rails, and B a pair of lever-plates of suitable dimensions extending parallel with the rail and arranged vertically along the side thereof, the main body of the plates extending below the flanges of the rail, above which the plates are provided with angular inwardly-extending lips C, the ends of which rest upon the tops of the rail-flanges. Between the upper ends of the lever-plates,

preferably between the crotch formed by the conjunction of the horizontal angular lips with the vertical portion of the plates and the under side of the rail-top, extends a pair of brace-plates D, which are designed to constitute the direct support of the rail which is suspended by its head between these plates, these brace-plates each constituting one member of a toggle, while the angular lips C each constitute another member of a toggle, in effect pivotally connected together and to which the power is applied through the medium of the lever-plates in a manner now to be described. These plates, near their lower edges, are connected, but held a fixed distance apart, by means of shouldered struts E, the reduced ends F of which work in enlarged perforations G in the lever-plate, so as to permit such plates to assume a position oblique thereto in either tightening or loosening the joint. Between these struts and the rail the plates are connected by screw-bolts H, having heads I, bearing against the outer surface of one of the lever-plates, and having nuts J on the opposite screw-threaded ends thereof working against the outer surface of the other lever-plate, so that when the nuts are screwed up on the bolt they draw the lever-plates toward each other, the openings in the said plates through which the bolts pass being of sufficient diameter to permit the plates to assume a position oblique thereto either in tightening or loosening the joints.

The operation of tightening the joints is as follows: Assuming the joint to be loosened, but the parts in position for the tightening operation, as illustrated in Fig. 3, the first result of screwing up the nuts J is to cause the lever-plates B to move inwardly toward each other, swinging upon the ends of the strut as fulcrums, and thereby lifting the brace-plates G until they bear against the under side of the rail-top, the overhanging lips C during such operation riding up the inclined tops of the rail-flanges, which cause the lifting of both the lever-plates and the struts and tightening-bolts carried thereby as the plates assume a vertical position, which of course causes a more rapid lifting of the brace-plates to their position under the rail-top, for it will be understood that as the struts prevent the inward movement of the lower edges of the



lever-plates only the upper edges thereof can move inwardly under the action of the tightening-bolts.

In practice it is proposed that the complete  
5 tightening operation shall be effected at the instant the lever-plates reach a vertical position; but should this not occur by reason of a difference in the size of the rail to which the joints are applied or by reason of disproportion  
10 between the parts, necessitating the forcing of the upper edges of the lever-plates inwardly beyond the vertical, then the ends of the lips C, bearing upon the tops of the rail-flanges, will serve as the fulcrums of the said  
15 plates and continue the rapid lifting of the brace-plates until they bear against the under side of the rail-top.

It will thus be seen that in my device is comprised a double toggle, of which the brace-  
20 plates D and the lever-plates B constitute the members of one toggle and the brace-plates D and the angular lips C constitute the other toggle, both of which operate jointly and simultaneously, and to both of which the power  
25 is applied through the medium of the lever-plates.

It will be observed that the rails do not rest upon the tightening-bolt, but are supported solely upon the brace-plates by their  
30 tops, and that the overhanging lips C subserve the double purpose of members of the toggles and of sustaining the joint in position upon the rails, preventing the falling of the brace-plates away from the under sides of the  
35 rails, which would occur as a result of the jarring to which the joint is subjected in operation were not these lips or some equivalent devices employed for maintaining the joint in its operative position on the rails.

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

1. In a rail-joint, the combination, with the rails, the lever-plates, and the overhanging  
lips thereon resting upon the flanges of the  
45 rail, of the struts extending between the lower edges of said plates, brace-plates extending between the upper edges thereof and the rail-tops, and means for operating said lever-  
50 plates, substantially as described.

2. In a rail-joint, the combination, with the rails, the lever-plates, and the overhanging  
lips upon said plates bearing upon the rail-  
flanges, of the struts connecting said plates  
55 below the rails, brace-plates extending between the upper edges of said plates and the under side of the rail-tops, and screw-bolts connecting the lever-plates between the struts  
and the rails, substantially as described.

3. In a rail-joint, the combination, with the  
60 rails, the vertical plates lying parallel therewith and extending below the rail, and inwardly-extending horizontal lips along the upper edges of said plates resting upon the  
65 rail-flanges, of shouldered struts connecting the lower edges of said plates below the rail, obliquely-disposed brace-plates extending between the upper edge of said plates and the under side of the rail-tops, and screw-bolts  
70 working through said lever-plates between the struts and the rails for drawing said plates toward each other, substantially as described.

MILTON C. NILES.

Witnesses:

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