(No Model.)

M. C. NILES.

RAIL JOINT.

No. 464,702. Patented Dec. 8, 1891.

Fig. 1.

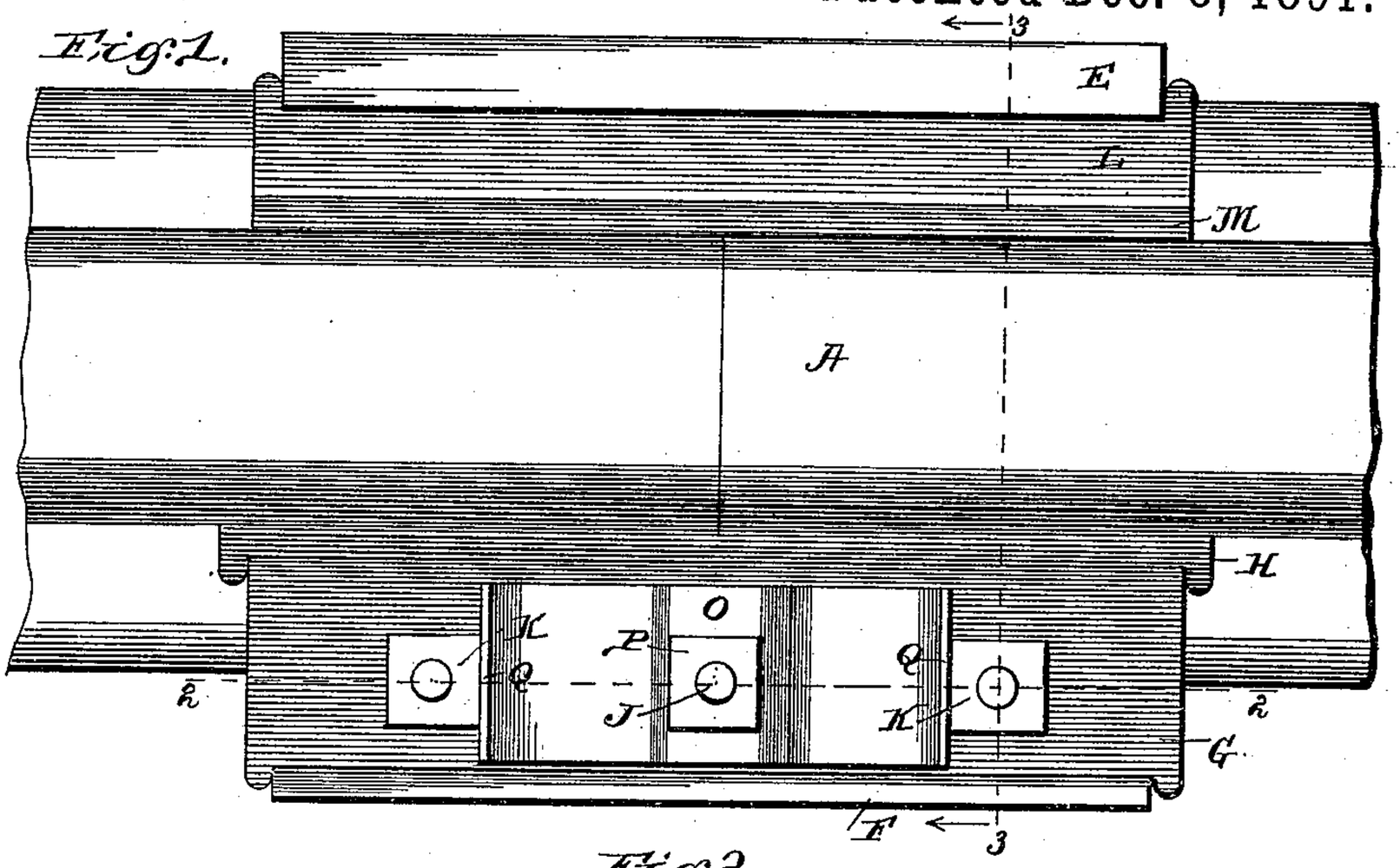


Fig. 2.

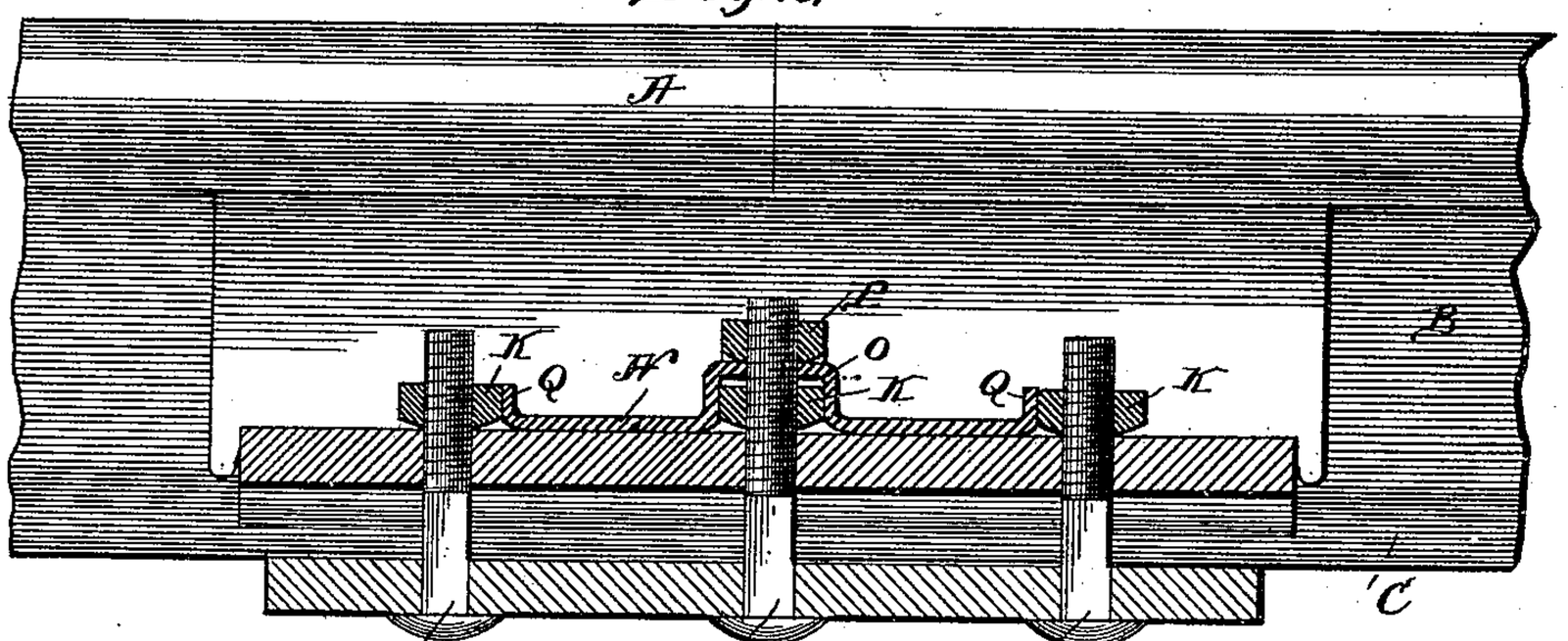


Fig. 3.

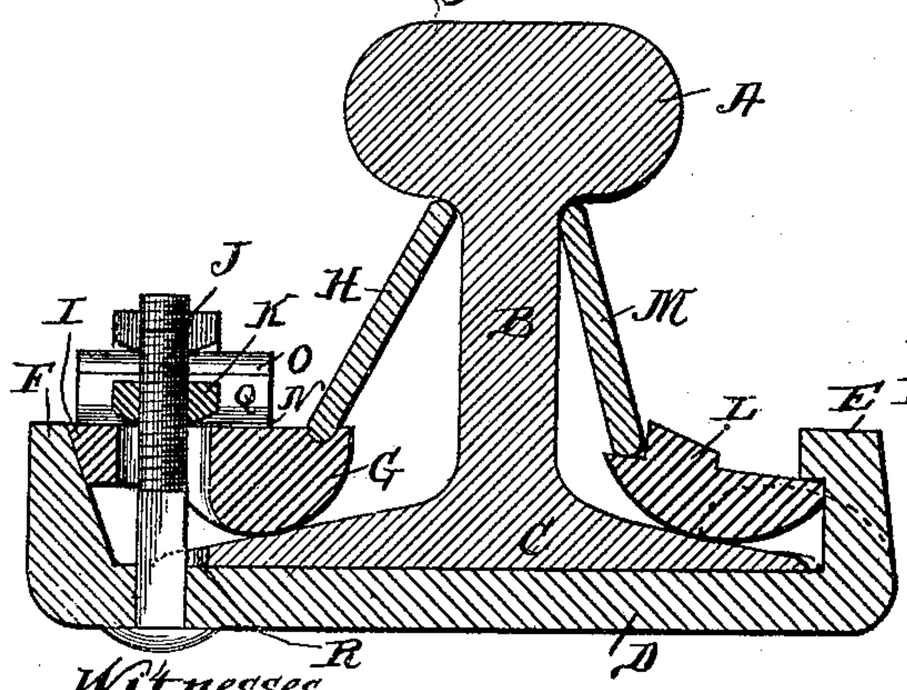
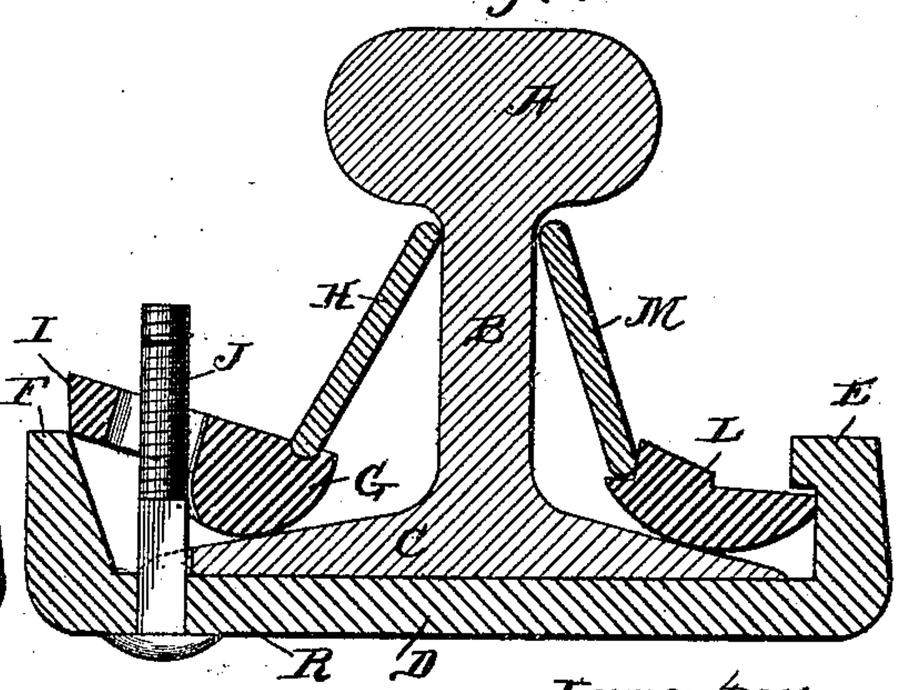


Fig. 4.



Witnesses.

Wm. M. Rheem.

Edward Yardley.

Inventor.

Milton C. Niles

By, Elliott & Quackenbush

Attys.

UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF CHICAGO, ILLINOIS.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 464,702, dated December 8, 1891.

Application filed March 17, 1891. Serial No. 385,344. (No model.)

To all whom it may concern:

Be it known that I, MILTON C. NILES, a citizen of the United States, residing in 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 rail-joints, but is more particularly designed as an improvement upon the invention set forth in Letters Patent of the United States, No. 407,302, granted me July 16, 1889, being in the nature of a reversal of the parts therein set forth.

The prime object of this invention is to effect the tightening of the parts of the joint upon the rails by a combined lever and wedging action, which serves to not only bind the joint firmly to the rail, but operates to brace the rail against the lateral pressure from the wheel-flanges and also to equalize the distribution of the weight in such manner that the binding force of the joint will be increased while the weight of the passing train is upon the joint.

Another object is to have the tightening devices of such character that while the power for tightening the joint upon the rails is applied from one side only it is distributed to both sides of the rails, so as to prevent any lateral movement or spreading of the same.

These objects are attained by the devices illustrated in the accompanying drawings, in which—

Figure 1 represents a top plan view of a rail-joint embodying my invention, showing the same in position upon the rails; Fig. 2, a sectional elevation thereof, taken upon the line 2 2 of Fig. 1; Fig. 3, a transverse vertical section of the same on the line 3 3 of Fig. 1, looking in the direction indicated by the arrows; and Fig. 4, a similar view showing the relative positions of the parts before the joint is tightened.

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 top, B the web, and C the flanges, of the rails, of usual construction, which rest upon and are supported by a base-plate D, of slightly greater width than the rail-flanges, which plate is upturned along its side edges, so as to permit at one side of the rail an overhanging shoulder or hook E and at the opposite side an inclined shoulder F, standing at an outward angle from the rail-flange. At the side next the inclined shoulder is the wedging-lever plate G, which fulcrums upon the rail, and between the inner end of which and the under side of the rail-top extends and is confined, a brace-plate H, the lower edge of which seats in a suitable socket provided in the end of the lever-plate; or, if desired, a hinged connection of suitable form may be provided between these plates. The outer edge of the lever-plate is inclined, as shown at I, corresponding with the incline of the shoulder F, so that when the said plate is swung upon its fulcrum it will operate as a wedge against the inclined shoulder. The wedge-plate is perforated at suitable intervals so as to permit the free passage of screw-bolts J, which extend up through the base-plate D and are provided with nuts K, bearing upon the broad face of the lever-plate between the fulcrum thereof and the beveled out-edge thereof, so that when the nuts are screwed down on the bolts the lever-plate will be caused to swing upon its pivot, forcing the brace-plate up against the under side of the top of the rail and the beveled outer edge of the lever-plate against the inclined shoulder F of the base-plate, thereby producing a wedging action upon the latter for the purpose now to be described. The base-plate D at the opposite side of the rail may, if desired, be simply upturned to form the overhanging or hook-like shoulder, (illustrated by dotted lines in Fig. 3,) directly engaging the rail-flange, which construction, so far as the tightening operation is concerned, would subserve the intended purpose; but it is preferably formed in the shape illustrated by the full lines in the drawings, terminating a short distance above the top of the rail-flange, so that one end of a lever-plate L may be inserted thereunder, which plate is fulcrumed on the rail-flange and has confined between its opposite end and the under side of the rail-top a second brace-plate M, corresponding with the brace-plate H on the opposite side of the rail. It will thus be seen that when the parts are first put together they will occupy some-

what the relative positions shown in Fig. 4, and the result of screwing down the tightening-bolts will be to cause a slight lateral movement of the base-plate simultaneously with a vertical movement of the brace-plates under the influence of the two lever-plates, the lateral movement being due to the impinging of the beveled edge of the lever-plate G against the inclined shoulder F on the base-plate, which produces a wedging action of the lever-plate as the latter is tightened down in position. This lateral movement will continue until the lever-plate L has moved a sufficient distance to force the brace-plate M up against the rail-top, after which the further tightening of the bolts will cause a slight lateral movement of the wedging lever-plate G simultaneously with its movement upon its fulcrum until the brace-plate H binds with sufficient tightness against the rail-top, the tightening of the joint being then equally distributed between the two sides of the rail. Obviously tremendous force can be exerted by a joint operated in this manner, limited only by the strength of the parts to withstand the pressure which may be applied, as there is practically no limit to such pressure. Substantially the same results would be accomplished with the lever-plate L dispensed with, as well as the brace-plate M, and by employing the shoulder (shown by dotted lines in Fig. 3) directly engaging the rail-flange—that is, so far as the tightening of the joint upon the rails is concerned; but the use of these plates is preferred because of the more equal distribution of the power and of the equalized bracing afforded the top of the rail by the opposing brace-plate.

For preventing the loosening of the nuts of the tightening-bolts by the jarring of the train any form of nut-lock may be employed; but I have shown in the drawings a form of nut-lock especially adapted for use in connection with this joint, consisting of the angular bent plates N, the center portion O of which is arched upwardly so as to cover the nut of the middle tightening-bolt and is perforated to permit the passage therethrough of said bolt, on the end of which is secured a nut-lock P for holding the plate in position. The ends Q of the lock-plate are upturned and bear against the sides of the nuts upon the end tightening-bolts, thus serving to securely lock all of the nuts of the tightening-bolts against turning.

This device is both simple, durable, and effectual, and while any other form of lock devices may be employed in connection with my invention I desire to claim this peculiar form of lock device in combination with my rail-joint because of its especial adaptability to this form of joint.

Creeping of the joint upon the rails is prevented by having the tightening-bolts work in suitable notches R, formed in the edges of the rail-flange, which notches, while being of sufficient dimensions to permit the necessary contraction and expansion, will at the same time prevent the creeping or moving of the joint on the rails beyond a desirable limit.

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 and the base-plate provided with an inclined shoulder along one side edge thereof, of a wedging lever-plate fulcrumed upon the rail-flange and bearing at its outer edge against the inclined shoulder on the base-plate, a brace-plate confined between the inner end of said lever-plate and the rail-top, and tightening-bolts working through the base-plate and actuating the lever-plate, substantially as described.

2. In a rail-joint, the combination, with the rails and the base-plate provided with an inclined shoulder along one side edge thereof, of a lever-plate fulcrumed upon the rail-flange and beveled along its side edge corresponding with the inclined shoulder of the base-plate against which it bears, a brace-plate confined between the inner edge of the lever-plate and the rail-top, and tightening-bolts working through the base-plate and actuating the lever-plate at the point between its fulcrum and the beveled outer edge thereof, substantially as described.

3. In a rail-joint, the combination, with the rails, the base-plate provided with an overhanging shoulder along one side edge, a lever-plate fulcrumed upon the rail-flange, one end of which engages the overhanging shoulder, and a brace-plate confined between the other end of said lever-plate and the rail-top, of a wedging lever-plate fulcrumed upon the rail-flange at the opposite side of the rail, the outer edge of which engages the inclined shoulder, a brace-plate confined between the inner edge of said lever-plate and the rail-top, and tightening-bolts working through the base-plate and actuating said lever-plate, substantially as described.

4. In a rail-joint, the combination, with the rails, the base-plate provided with an overhanging shoulder along one side edge and an inclined shoulder along the other side edge, a lever-plate fulcrumed upon the rail-flange, one end of which engages the overhanging shoulder, and a brace-plate confined between the other end of said lever-plate and the rail-top, of a wedging lever-plate fulcrumed upon the rail-flange at the opposite side, the outer edge of which is beveled to correspond with the inclined shoulder against which it bears, a brace-plate confined between the inner edge of said lever-plate and the rail-top, and tightening-bolts working through the base-plate and operating said wedging lever-plate at the point between the fulcrum and the outer beveled edge thereof, substantially as described.

5. In a rail-joint, the combination, with the rails, the base-plate provided with an inclined shoulder along one side edge thereof, a wedging lever-plate fulcrumed upon the rail-flange

and bearing at its outer edge against the inclined shoulder, a brace-plate confined between the inner edge of said lever-plate and the rail-top, tightening-bolts projecting upward through the base and lever-plates, nuts thereon, and a locking-plate arching over the middle bolt and having upturned ends bearing against the end bolt-nuts, and a lock-nut for securing the same in position, substantially as described.

MILTON C. NILES.

Witnesses:
R. C. OMOHUNDRO,
JAMES R. SCOTT.