(No Model.) 2 Sheets—Sheet 1.

# M. C. NILES.

## RAIL JOINT.

No. 484,229. Patented Oct. 11, 1892.

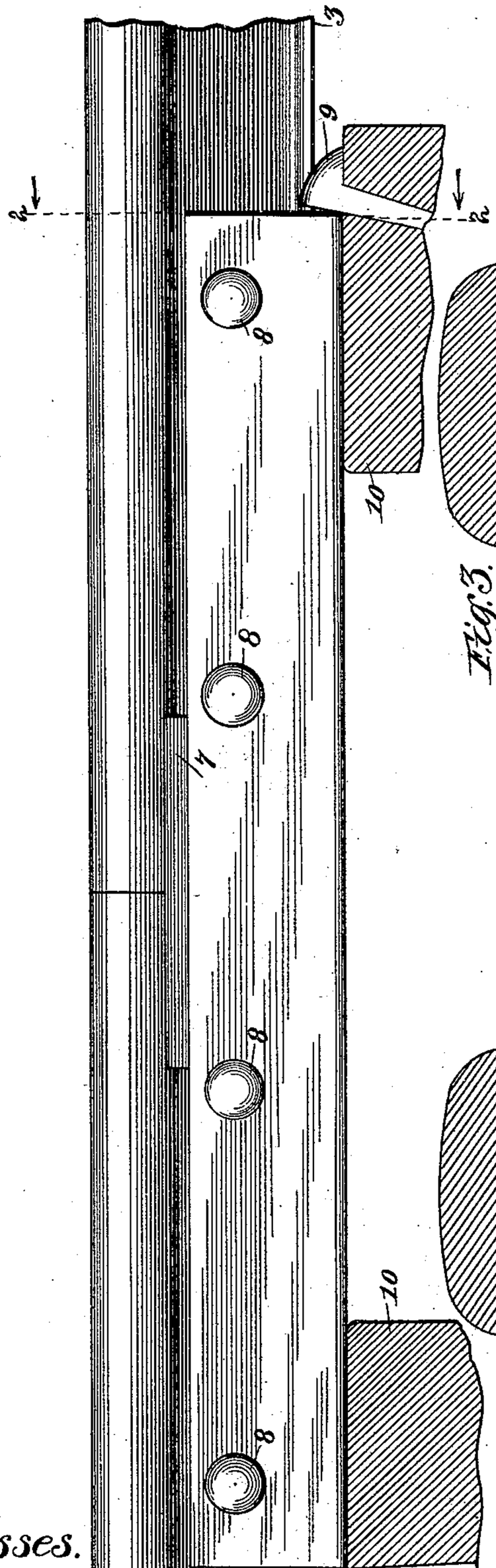


Fig. 1.

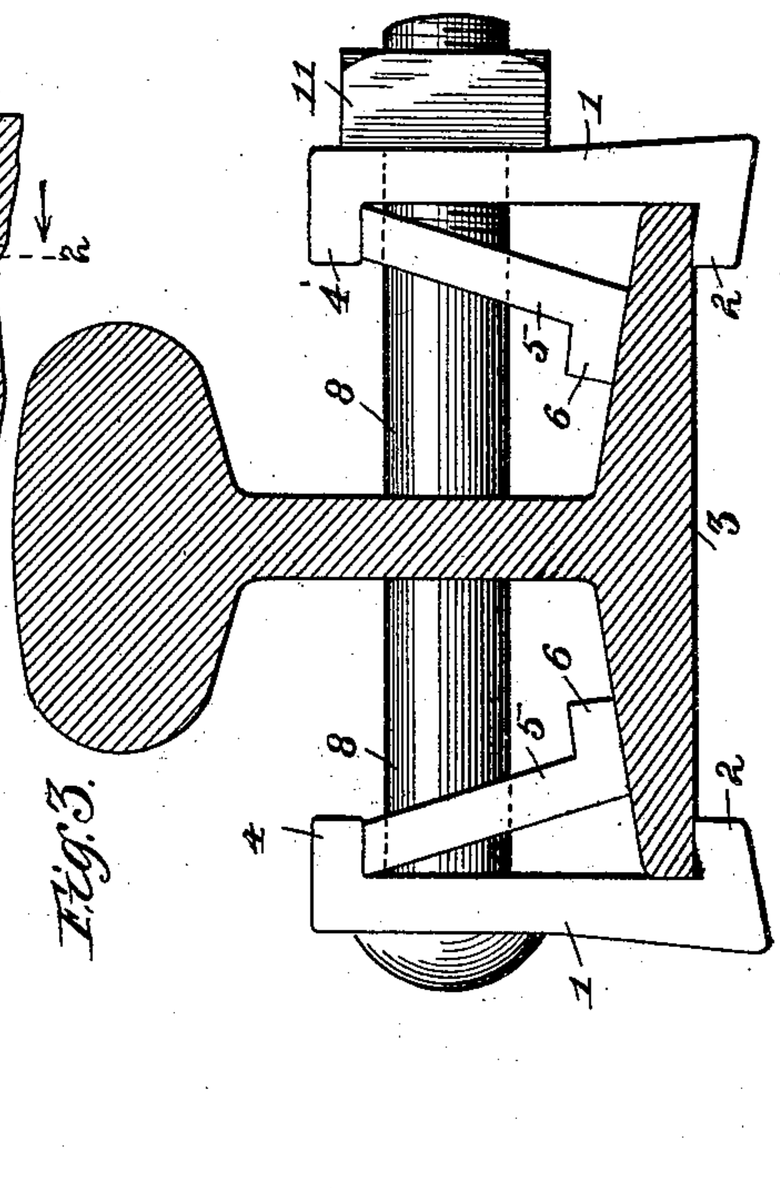


Fig. 3.




Fig. 2.

Witnesses.

Wm. N. Rheem.

Wm. F. Fleming.

Inventor.

M. C. Niles

By Elliott & Brookhouse

Atty's.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 4.

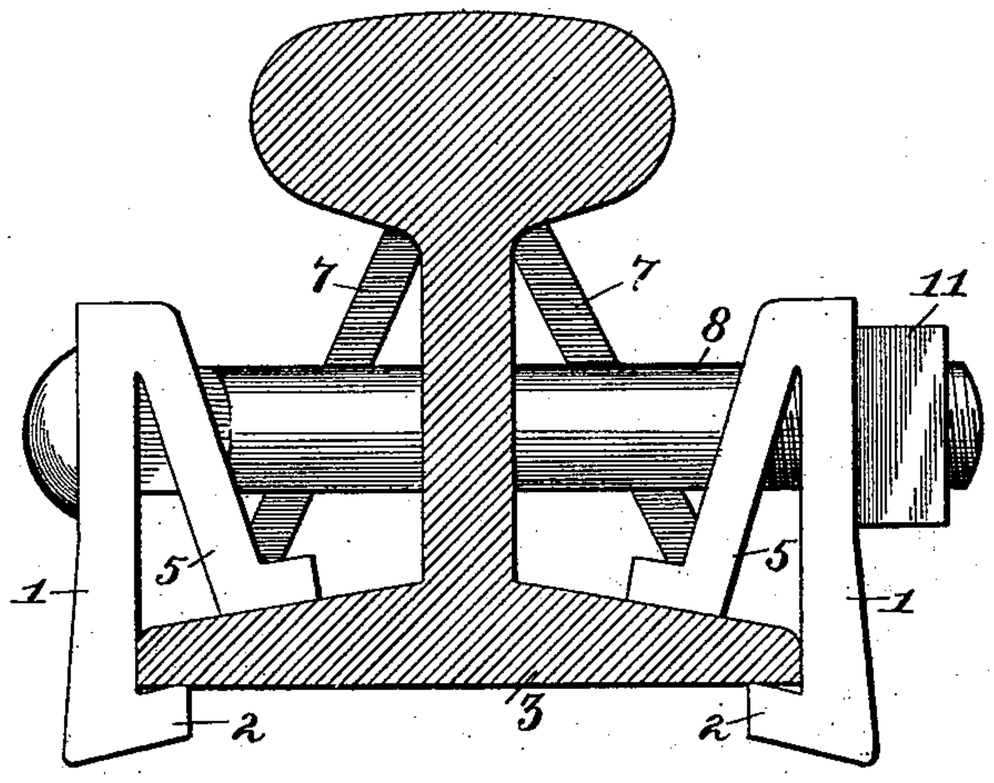
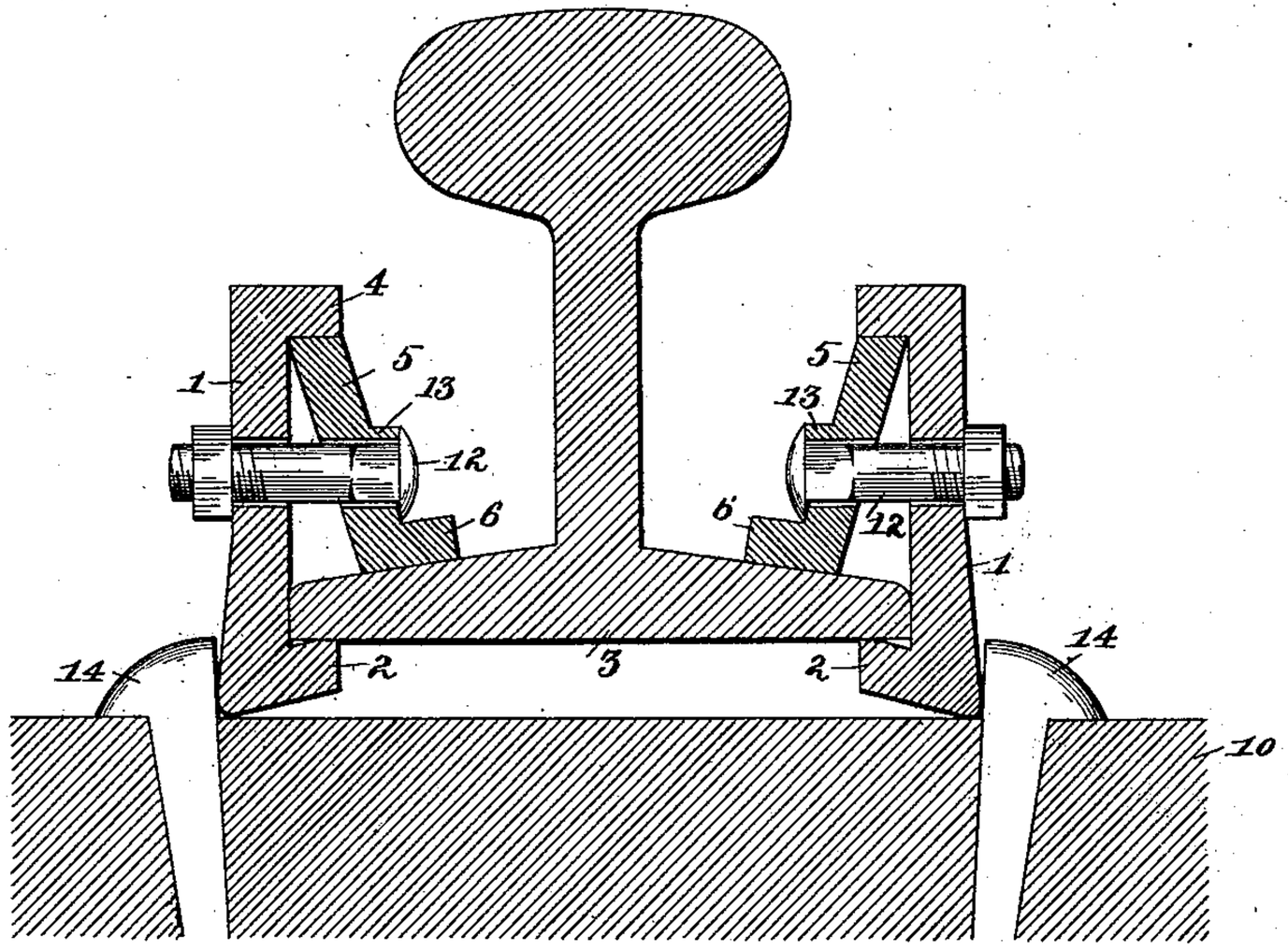



Fig. 5.




Witnesses:
Wm. M. Rheem.
Wm. F. Fleming.

Inventor;
M. C. Niles
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# UNITED STATES PATENT OFFICE.

MILTON C. NILES, OF OAK PARK, ILLINOIS.

## RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 484,229, dated October 11, 1892.

Application filed May 18, 1892. Serial No. 433,412. (No model.)

*To all whom it may concern:*

Be it known that I, MILTON C. NILES, a citizen of the United States, residing at 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 full, clear, and exact specification.

This invention relates to that class of rail-joints in which the chair is bound to the rails by pressure obtained through leverage or the like acting between a fixed portion of the chair and rail-flange, and it is designed more particularly as an improvement over the device of this character disclosed in United States Patent No. 464,696, issued to me December 8, 1891. In my said prior invention is employed a chair whose lower portion passes under the rails in the form of a base or bed plate, while its side portions are turned upward and provided with inturned overhanging lips or flanges, under which the clamping or wedging plates abut, the whole chair being formed integrally and the pressure for rendering the clamping or wedging plates effective being produced by outward pressure or by screws finding their abutment against the rail-webs. Such a construction of course necessitates a base-plate or chair of great strength, especially at the bend of the upright side pieces, in order to withstand the great outward pressure. Hence the primary object of my present invention is to avoid the necessity of forcing outward on the side plates or side members of the chair.

A further object is to do away with the necessity of forming the side plates integrally with a base-plate or connecting them together under the rail at all—in short, to do away with the necessity of a continuous base-plate under the rails in this class of joints and to provide a joint of this class that may be applied to the rails from the sides thereof and without taking the rails up.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter described are accomplished, as fully explained with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a side elevation of two rails at the meeting ends thereof, showing my improved joint applied thereto, the ties being shown in section. Fig. 2 is an enlarged vertical transverse section thereof, taken on the line 2 2, Fig. 1. Fig. 3 is a similar view, the brace-plates hereinafter described being omitted. Fig. 4 is a similar section showing the side lever-plates and clamping-plates formed integrally; and Fig. 5 is a vertical transverse section through the rail and tie, showing a modification of my joint adapting it for use without bolts passing through the rail-web.

Like signs of reference indicate like parts throughout the several views.

In carrying out my present invention, instead of the base-plate D of the chair and the two upright side plates formed integrally therewith, employed in the device covered by my aforesaid patent, I employ two independent side lever-plates 1, which are provided along their lower edges with flanges or hooks 2, adapted to engage the under side of the foot-flanges 3 of the rails, but which have no connection with each other under the rails. At or near the upper edge of each of these side plates 1, as in my aforesaid patent, is formed an overhanging flange or lip 4, under which abuts an inclined clamping-plate 5, whose lower edge is supported by the foot-flanges 3 of the rails, and are provided with angle toes or projections 6, upon which rest inclined brace-plates 7, whose upper edges engage under the heads of the rails; but such brace-plates are not essential to the successful operation of my joint and may be omitted, as shown in Fig. 3. It will thus be seen that any pressure tending to force the upper edges of the side plates 1 inward will cause the inclined clamping-plates 5 to ride toward the perpendicular, and thus create great pressure between the rail-flanges and the overhanging lips or flanges 4, and as such movement of the clamping-plates 5 will cause them to ride upward slightly on their toe-flanges 6 it follows that they will act as levers against the inclined brace-plates 7, imparting an upward movement thereto and producing great pressure directly under the heads of the rails. As a convenient means of producing this inward movement of the upper sides of the lever-plates 1, I employ a suitable number of bolts 8, which pass through the

side lever-plates 1 near their upper edges, as well as through the clamping-plates 5 and the ordinary bolt-holes in the webs of the rails, thus affording means of imparting great pressure to the side plates and at the same time holding the joint as a whole from being accidentally displaced. Any desired number of these bolts 8 may be employed; but when four are employed, as usual, I prefer to locate the brace-plate 7 between the intermediate two, (shown more clearly in Fig. 1,) such brace-plate being of sufficient length only to extend from one to the other, thereby affording a sufficient support immediately at the meeting end of the rails—the point where a support is most needed—while the said intermediate bolts hold such brace-plates 7 against longitudinal movement. The longitudinal movement of the joint and the rails as a whole may be prevented in any of the well-known ways—such, for instance, as by means of spikes 9, driven into the cross-ties 10 at both ends of the side plates 1, such side plates being, preferably, of sufficient length to extend from one tie to the other.

With a device thus constructed it will be seen that all of the parts may be applied to the rails without taking them up, as there is no bed-plate to be placed thereunder, as in my aforesaid invention; but the side plates and clamping-plates 5 on one side may be strung upon the bolts 8 and then placed in position on the side or edge of the foot-flanges, the plates on the other side being strung upon the bolts after the latter have been passed through the rail-webs. When the parts are first placed in position, the side plates 1 will of course be inclined outward slightly at their upper sides; but when the nuts 11 are tightened up they will assume a vertical or substantially-vertical position, as shown in the drawings, thus bringing the strain induced by supporting the rails in line with the vertical diameters of the side plates.

While it is very desirable that the clamping-plates 5 should be separate from the side lever-plates 1, in order that the plates may move independently of each other at the point of abutment between them, I wish it to be understood, nevertheless, that it would not involve a departure from the spirit of my invention to form these plates integrally with each other, as shown in Fig. 4, inasmuch as it is feasible to construct them of metal which will be sufficiently flexible at the point of conjunction to permit of this independent movement, which of course is very slight.

As a means of adapting my invention for use without the bolts 8 passing through the rails, I provide the clamping-plates and side lever-plates 1 on both sides of the rail with independent bolts 12. In this instance the plates 1 and 5 may be the same as those in the forms before described, excepting that it is desirable to provide the plates 5 at a point near their lower edges with a boss 13, through which the bolts 12 pass and which serve as flat seats for the heads of the latter. In order to guard against the accidental displacement of the two parts of the joint thus constructed, the ordinary spikes 14 may be driven into the cross-ties against the lower edges of the side plates, as shown in Fig. 5, thus avoiding the possibility of such plates being pushed outward sufficiently far to permit their hooks or flanges 2 to disengage the rails. I have shown the side plates 1 and clamping-plates 2 on both sides of the rails; but it will, nevertheless, be understood that if desired the same may be used on one side only and the other side provided with the ordinary fish-plate or any other form of brace, and it will also be understood that my improved joint may be employed with the ordinary angular fish-plate and the clamping-plates 5, supported thereon, instead of directly on the foot-flanges of the rail, as shown in the drawings, without departing from the spirit of my invention.

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

1. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks along their lower edges, engaging under the rails, clamping-plates abutting against said side lever-plates and being supported by the rails, and means for drawing said side plates toward the rails, substantially as set forth.

2. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks or flanges along their lower sides, engaging under the rails, inclined clamping-plates abutting against the said side plates at or near the upper edges of the latter and being supported upon the rails, and means for drawing said side plates toward the rails, substantially as set forth.

3. In a rail-joint, the combination, with the rails, of independent side lever-plates having overhanging lips and hooks or flanges engaging under the rails, inclined clamping-plates supported by the rails and abutting under said overhanging lips, and means for forcing said side plates and clamping-plates together, substantially as set forth.

4. In a rail-joint, the combination, with the rails, of independent side lever-plates having overhanging lips and hooks or flanges engaging under the rails, clamping-plates supported by the rails and abutting under said overhanging lips, brace-plates supported upon said clamping-plates and engaging under the heads of the rails, and means for forcing said side plates toward the rails, substantially as set forth.

5. In a rail-joint, the combination, with the rails, of independent side lever-plates having overhanging lips and hooks or flanges engaging under the rails, inclined clamping-plates supported upon the rails and abutting under said overhanging lips and having angle-toes, brace-plates supported upon said angle-toes

and engaging under the heads of the rails, and means for forcing said side plates inward, substantially as set forth.

6. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks or flanges at their lower edges, engaging under the rails and being free to move inward at their upper edges, clamping-plates abutting against the said side plates and being supported by the foot-flanges of the rails, and means for drawing said side plates inward, substantially as set forth.

7. In a rail-joint, the combination, with the rails, of independent side lever-plates having hooks or flanges at their lower edges, engaging under the rails and being free to move inward at their upper edges, clamping-plates abutting against said side plates and being supported by the foot-flanges of the rails, and bolts passing through said side plates for creating pressure upon said clamping-plates, substantially as set forth.

8. In a rail-joint, the combination, with the rails, of side lever-plates having hooks or flanges engaging under the rails and being free to move inward at their upper edges, clamping-plates abutting against the said side plates and being supported by the foot-flanges of the rails, and bolts passing through the rails and through said clamping-plates and side plates for drawing the side plates inward, substantially as set forth.

9. As a new and useful article of manufacture, the plate 1, having a narrow hook or flange 2 along its lower edge and an overhanging lip 4 along its other edge, in combination with a clamping-plate 5, of less width than the said plate 1, said plates being provided with registering bolt-holes, substantially as set forth.

10. As a new and useful article of manufacture, the side lever-plate 1, having a narrow hook or flange 2 along its lower edge and an overhanging lip 4 along its upper edge, in combination with a clamping-plate 5, being of less width than said plate 1 and having the angle-toe 6 for supporting a brace-plate, said plates 1 and 5 having registering bolt-holes, substantially as set forth.

MILTON C. NILES.

Witnesses:
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R. C. OMOHUNDRO.