

I. N. PRENOVICH.  
RAILWAY RAIL SPLICE.  
APPLICATION FILED APR. 15, 1907.

943,619.

Patented Dec. 14, 1909.

Fig. 2.

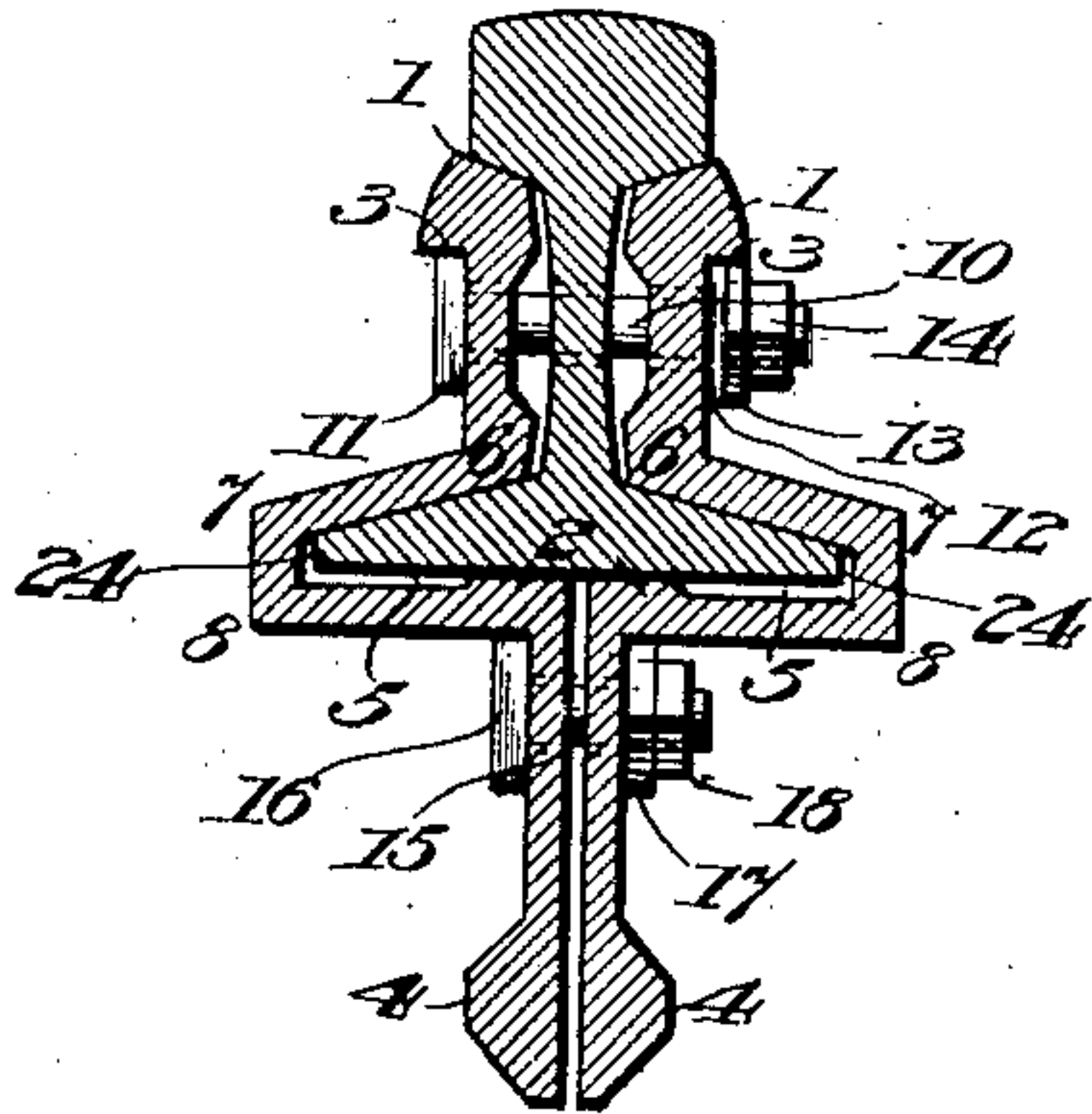


Fig. 1.

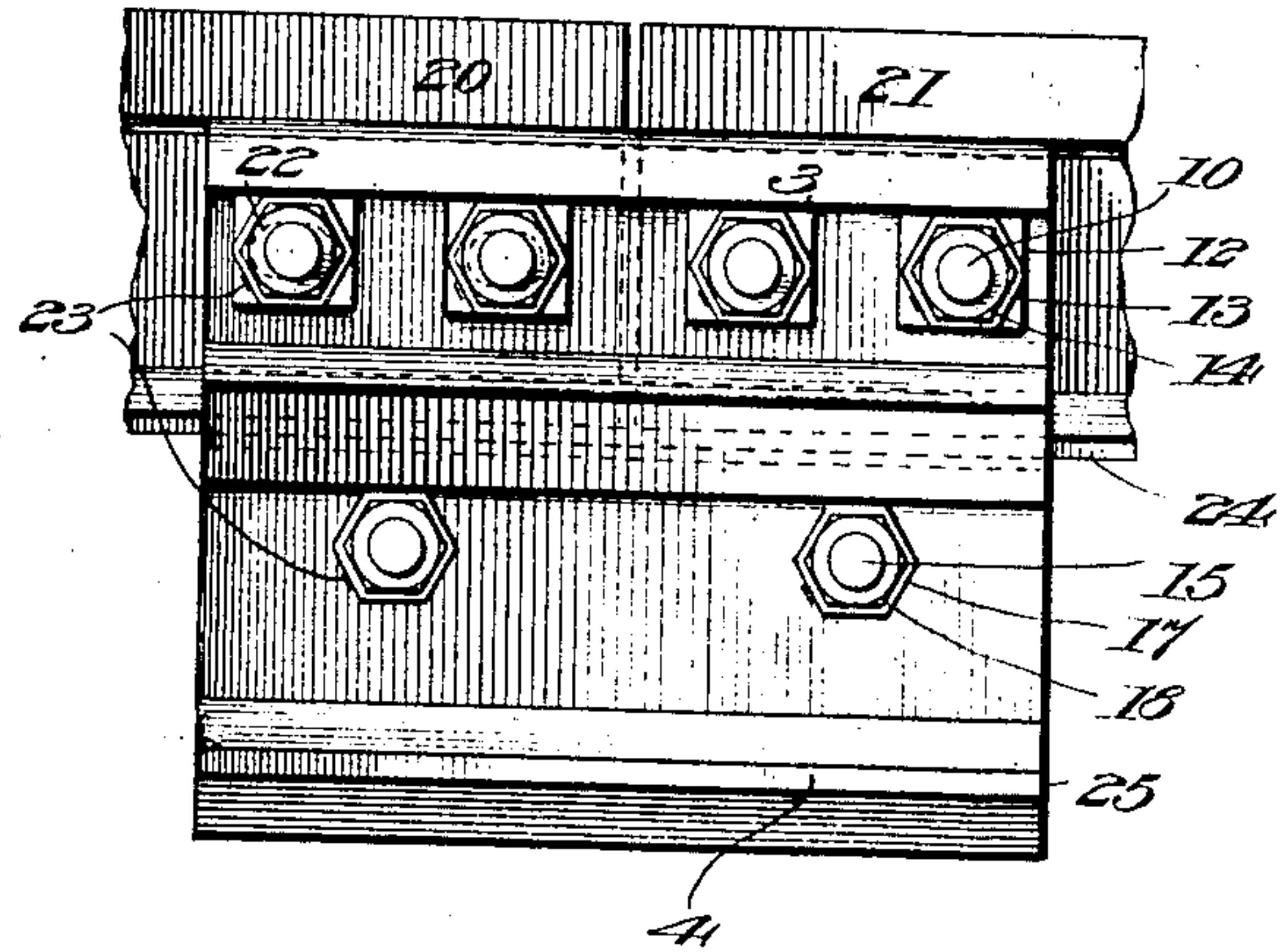


Fig. 3.

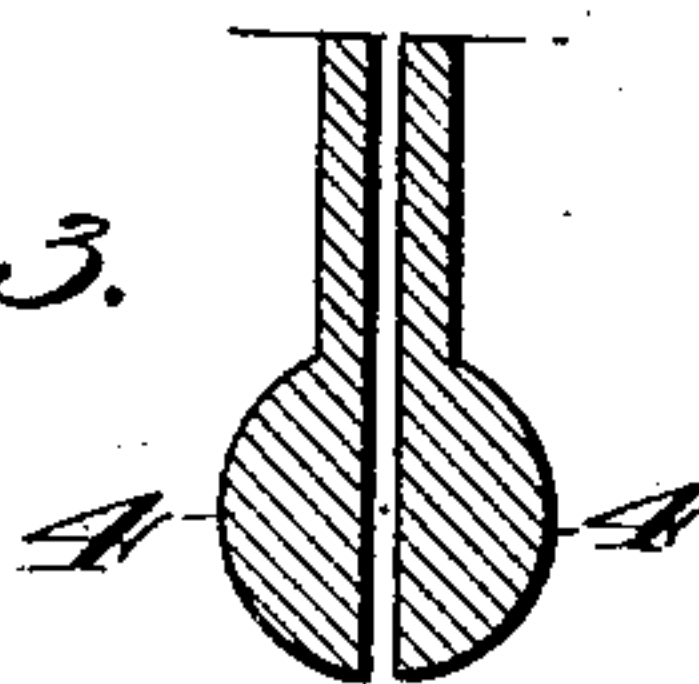


Fig. 4.

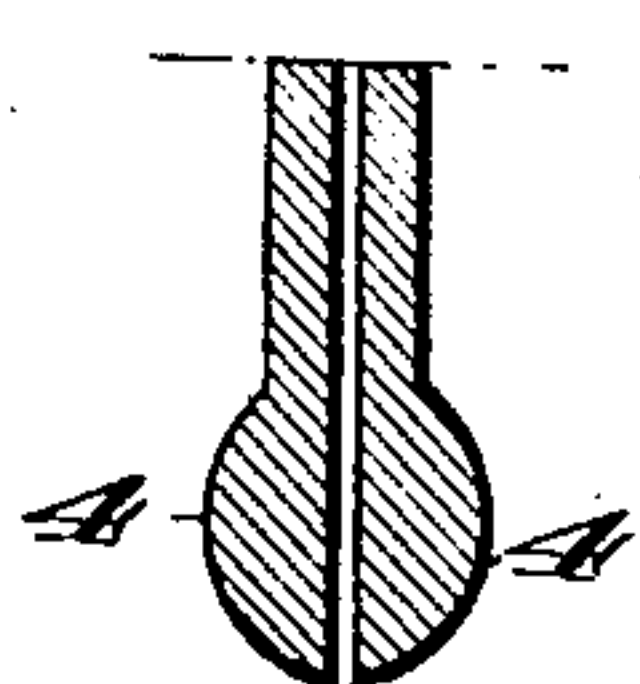
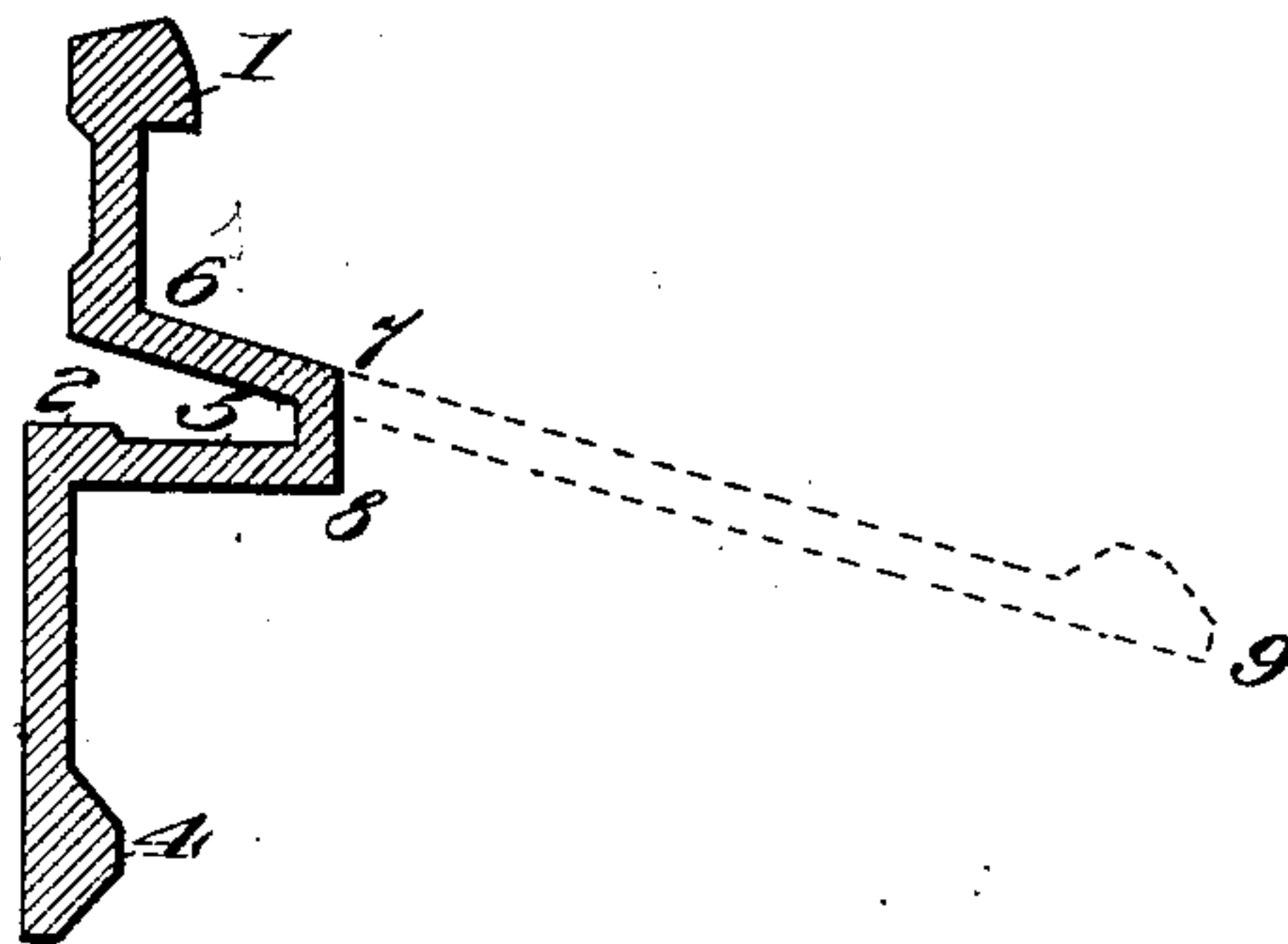


Fig. 5.



Witnesses:  
Mark Oppenheim  
Max Epstein

Inventor:  
Israel Noah Prenovich



# UNITED STATES PATENT OFFICE.

ISRAEL NOAH PRENOVICH, OF NEW YORK, N. Y.

## RAILWAY-RAIL SPLICE.

943,619.

Specification of Letters Patent.

Patented Dec. 14, 1909.

Application filed April 15, 1907. Serial No. 368,322.

To all whom it may concern:

Be it known that I, ISRAEL NOAH PRENOVICH, a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway-Rail Splices, of which the following is a specification.

My invention relates to improvements in railway-rail splices, and the main objects of my invention are, first, to make the splice stronger to resist bending, than the splices commonly used; second, to make the splice uncommonly stiff, so as to reduce the deflection of the rail-ends at the joint to a minimum; third, to provide a simple and cheap construction for locking the bolts, washers and nuts, used in the splice; and fourth, to prevent by means of the splice-plates a lateral displacement and a bodily longitudinal creeping of the rails.

I attain my objects by the construction illustrated in the accompanying drawing forming part of this specification, in which—

Figure 1, is an elevation, and Fig. 2, a cross-section of the splice; Figs. 3 and 4, show the bottom flanges 4—4, of the splice-plates in a somewhat modified form, Fig. 3, showing the same, cylindrical on their external sides and Fig. 4, showing the said flanges, elliptical on their external sides. Fig. 5, shows in 1—6—7—8—5—2—4, a cross-section of one of the splice-plates, shown in Figs. 1 and 2, all shaped, and in 1—6—7—9 (the part 7—9, dotted), the form of the splice-plate, as received from the rolls.

Like numerals designate corresponding parts in all the figures.

The splice consists of two plates, exactly alike and interchangeable with each other, the plates making when bolted up in place, as shown in the drawings, a girder like splice with three flanges to each splice-plate. The top-flange 1—1, and the bottom flanges 4—4, of the splice-plates, are conveniently located both in relation to the neutral axis of the latter, and to the central line of the rails, to efficiently resist bending, and the great depth of the splice-plates, between the said flanges makes the splice also very stiff vertically. The middle flanges 6—2, 6—2, of the splice-plates, envelop the lower flanges of the rail-ends, and are adapted to insure a great stiffness of the joint laterally. The

top flange 1, and the continuous with the same upright member 1—6, of each splice-plate, are of the ordinary fish-plate angle-plate shape. The flange 1, may have the continuous rib 3, on its external side, as shown in the drawings. The said rib is not new as such, but it is well placed to properly engage the bolt-heads 11, or the washers 12, and the nuts 14, the latter by means of the frames 13, and to efficiently resist bending, as a part of the top flanges 1—1, of the two splice-plates, located symmetrically to the central line of the rails. The middle flange 6—2, of each splice-plate, is in general also of a commonly known form, except the continuous rib 2, and the adjacent to the latter continuous notch 5, which are new. The principal object of the ribs 2—2, and the notches 5—5, of the middle flanges is to avoid a tightening up of the longitudinal edges 24—24, of the bottom flanges of the rails between the oblique and horizontal members of the said middle flanges, at the bends 7—8, where such a tightening up could seriously interfere with the longitudinal sliding of the rail-ends, due to the expansion and contraction of the rails by changes in the temperature.

The bottom flanges 4—4, of the splice-plates, are embedded into the ballast, when on a ballasted roadbed; they are in a free space, on certain street-car tracks and on some bridges, where no ballast is used. I prefer to give to these flanges a prismatical or curved form on their external sides, for in case they are embedded into the ballast, in order to facilitate small downward and upward movements of the splice, while deflecting under the influence of the passing trains. When embedded into the ballast the bottom flanges 4—4, transfer a considerable part of the wheel-loads, passing over the joint, directly to the ballast, thus greatly relieving the two ties, adjacent to the joint. The bottom flanges 4—4, may have any convenient form, adapted to economically resist bending, when not embedded in ballast.

I have shown in Fig. 2, some free space between the lower upright members 2—4, 2—4, of the splice-plates, and between the longitudinal extreme edges 24—24, of the lower rail-flanges, and the adjacent surfaces of the bends 7—8, as a provision for small inward movements of the splice-plates. The free space between the lower rail-flanges and the said bends, is made especially large, in



order to make impossible a tightening up of the former by the latter.

There are two rows of bolts, in the example embodying my invention; one row 5 connecting the upper upright members 1—6, 1—6, of the splice-plates with each other, and with the web of the rail-ends, and the second row, connecting the lower upright members 2—4, 2—4, of the splice-plates with 10 each other. The heads 11, of the bolts 10 (upper bolts), and the corresponding washers 12, and the nuts 14, the latter in connection with the frames 13, may be engaged and positively locked by the ribs 3—3, 15 of the top flanges, and the heads 16, of the bolts 15 (lower bolts), and the corresponding nuts 18, the latter in connection with the frames 17, may be engaged and positively locked by the bottom surfaces of the middle 20 flanges 2—8, 2—8, of the splice-plates (I have used no washers with the bolts 15).

The frames 13 and 17, if used, are made to fit on the respective nuts, and are put on the nuts, after the latter have been all 25 tightened up and one of their faces made parallel to the corresponding locking face. The frames fill the space between the locking face and the adjacent faces of the nuts, which latter are thus prevented from turning. 30 When in position, each frame is fastened to a side of the nut, it is on, with a tap bolt, either the hole in the frame, or that in the nut, being tapped. There must be, one extra hole provided in each nut, as a 35 provision for the case, that the face of the nut with a hole in it, may happen to be, the one, which is nearest to the locking face of the corresponding splice-plate, and thus not be available for use. The three flanged 40 splice is fixed in position either by having the bottom flanges 4—4, of its plates, embedded into the ballast, in case of a ballasted roadbed, or by having the ends 25—25, of the plates engaged by the two ties, adjacent 45 to the joint, in case, where the bottom flanges are in a free space. The oval holes 22, in the web of the rail-end 20, as dotted in Fig. 1, indicate the commonly known provision, for the required longitudinal sliding of the 50 said rail-end, due to the expansion and contraction of the corresponding rail, by changes in the temperature.

The frames 13 and 17, are made of wrought iron—or steel bars; they are of a 55 very simple make, and are adapted to be easily fastened to and taken off the nuts.

While I have shown and described only one example of the physical embodiment of my invention, I do not intend to limit the 60 scope of my invention to this one example. I want it to be understood, that many changes may be made, in the detail of the

construction, without departing from the general principle of my invention.

I am aware that railway-rail splices with 65 depending trusses have been used heretofore, and that edges or ribs of plates in railway-rail splices, have been used as locking faces for both heads, washers and nuts, and do not claim any of these ideas broadly. 70 But—

What I do claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the abutting ends of railway-rails, the two splice-plates, herein 75 described, each plate comprising integrally a top-flange, fitting against the tread of the top flanges of the rails, an upright-member, continuous with the top-flange, a middle flange, consisting of an oblique member, continuous with the upright member, and 80 adapted to rest on the inclined surfaces of the bottom flanges of the rails, and a horizontal member, continuous with and turned under the oblique member, having the continuous rib 2, and adjacent to the latter, the continuous notch 5, an upright member, continuous with and turned downwardly at 85 right angles to, the horizontal member of the middle flange, and a bottom flange, continuous with the last described upright-member, substantially as specified. 90

2. In combination with the abutting ends of railway-rails, the two splice-plates, herein 95 described, each plate comprising integrally a top-flange, fitting against the tread of the top flanges of the rails, and having the continuous rib 3, an upright member, continuous with the top flange, a middle flange, consisting of an oblique member, continuous 100 with the upright member, and adapted to rest on the inclined surfaces of the bottom flanges of the rails, and a horizontal member, continuous with and turned under, the oblique member, having the continuous rib 105 2, and adjacent to the latter, the continuous notch 5, an upright member, continuous with and turned downwardly at right angles to, the horizontal member of the middle-flange, and a bottom flange, continuous with the last 110 described upright member; the bolts 10, having the heads 11; the nuts 14, the frames 13, and the washers 12; the bolts 15, having the heads 16; the nuts 18 and the frames 17; and the tap-bolts 23, substantially as specified. 115

Signed at the city of New York in the county of New York and State of New York this twelfth day of April A. D. 1907.

ISRAEL NOAH PRENOVICH.

Witnesses:

MARK OPPENHEIM,  
MAX EPSTEIN.