

No. 765,797.

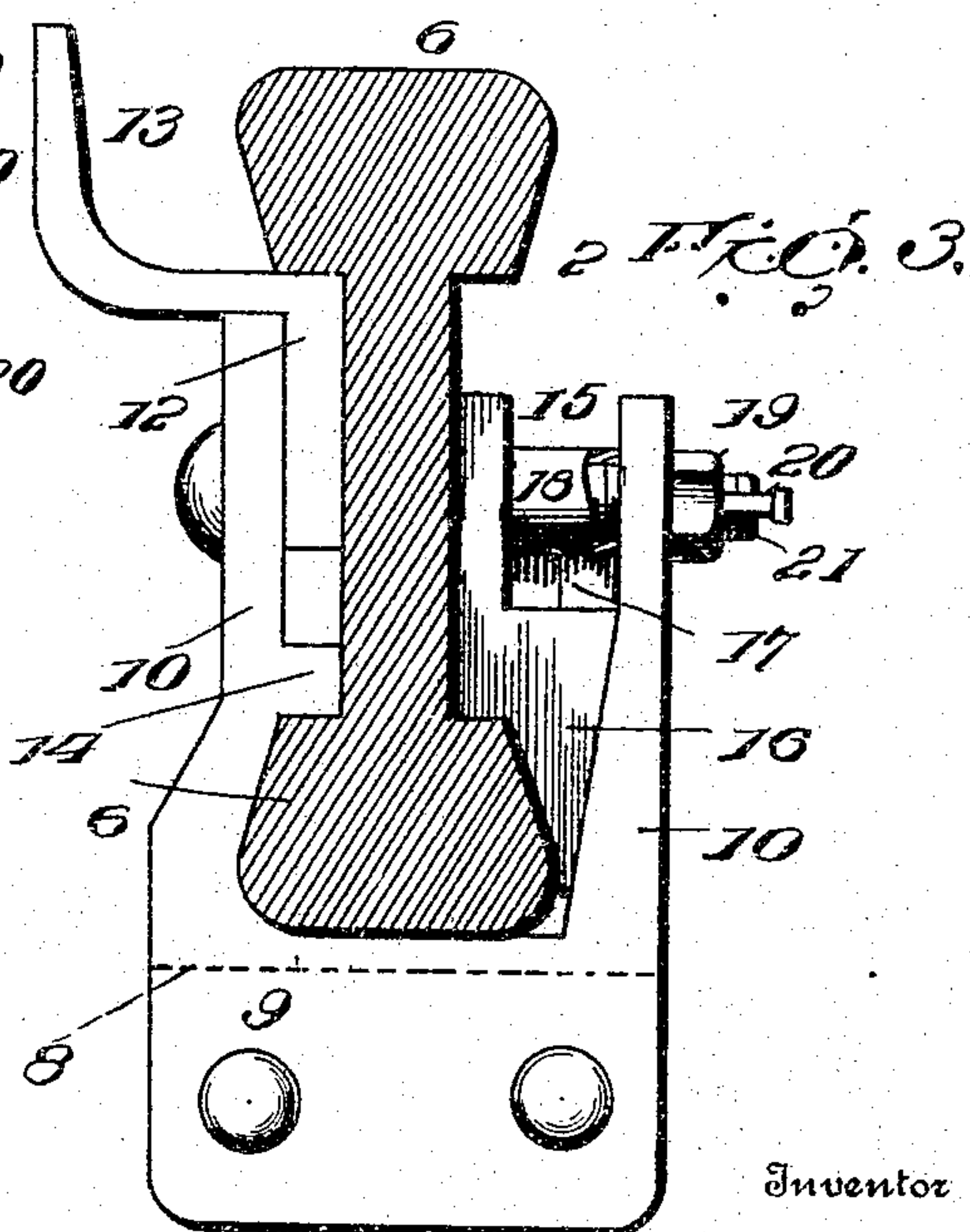
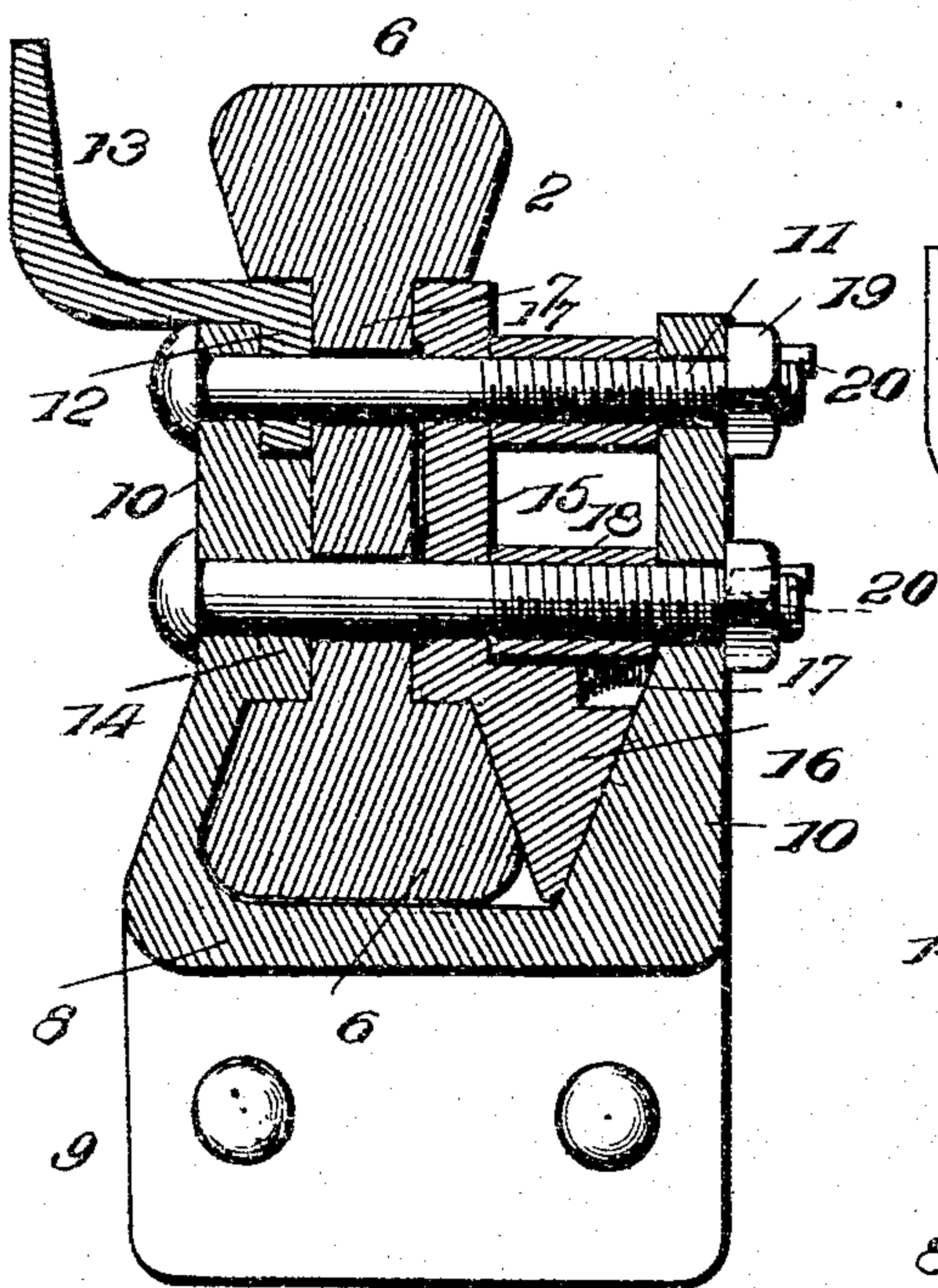
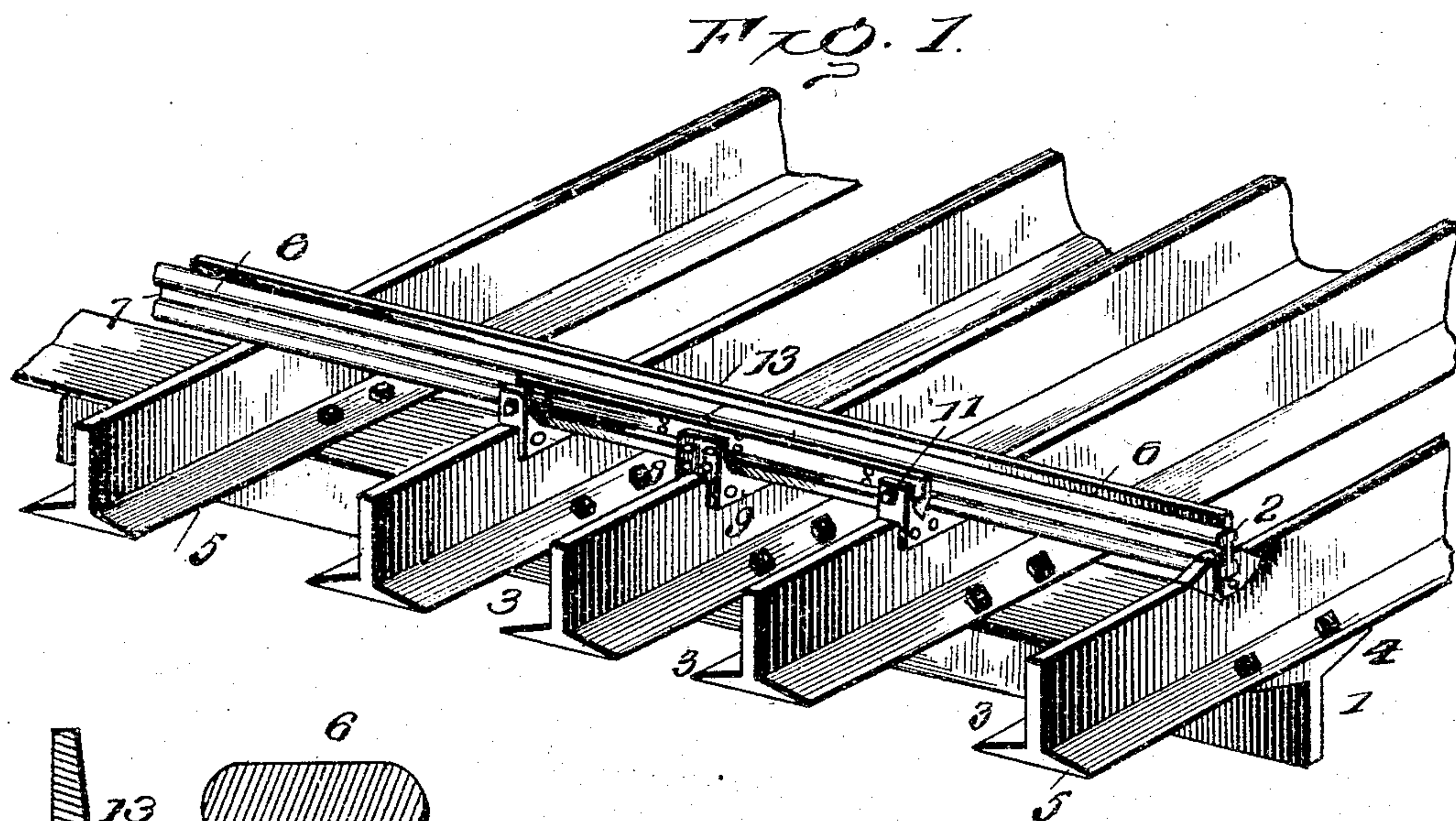
PATENTED JULY 26, 1904.

A. J. SMITHSON.
RAILROAD.

APPLICATION FILED OCT. 21, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses

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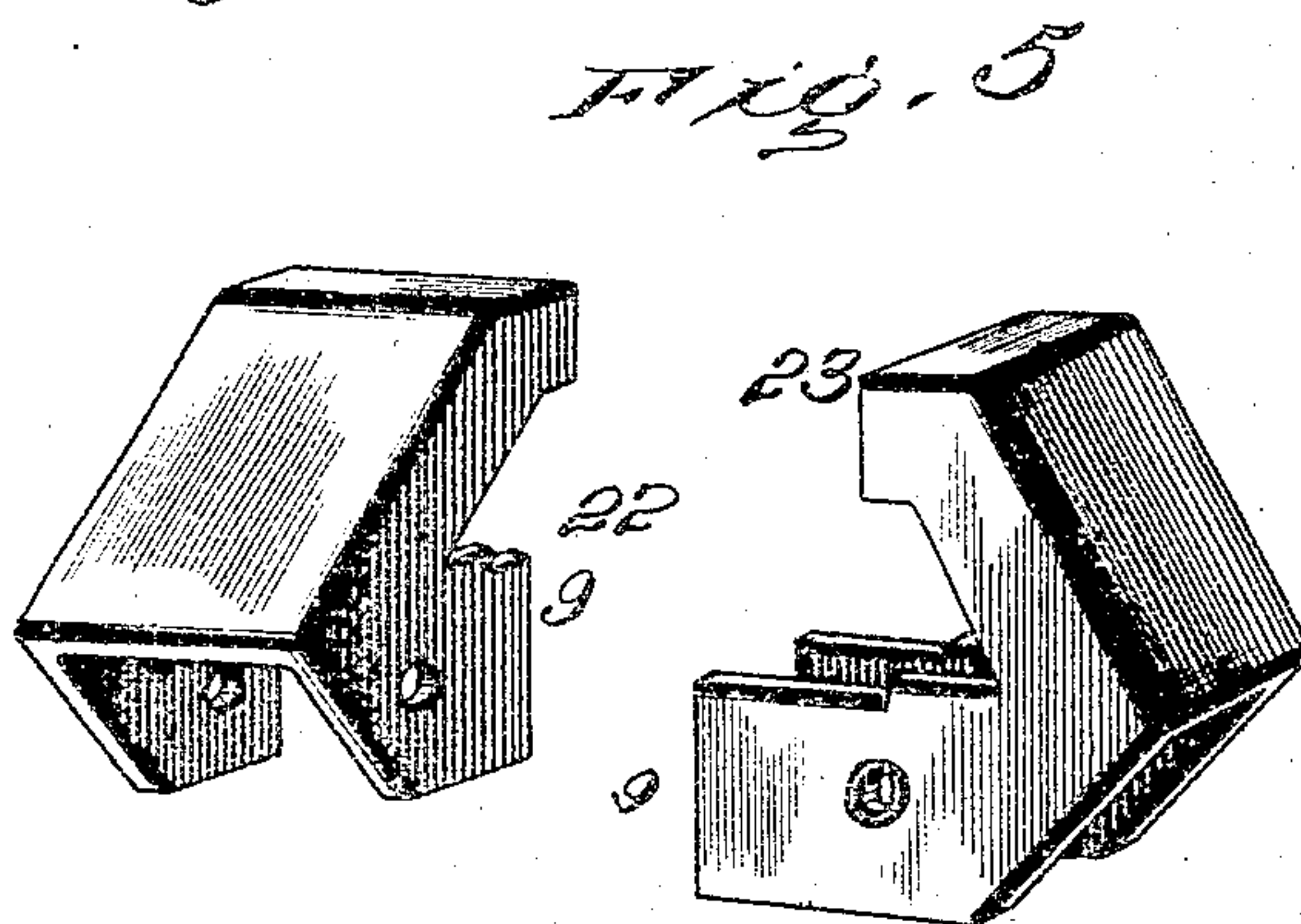
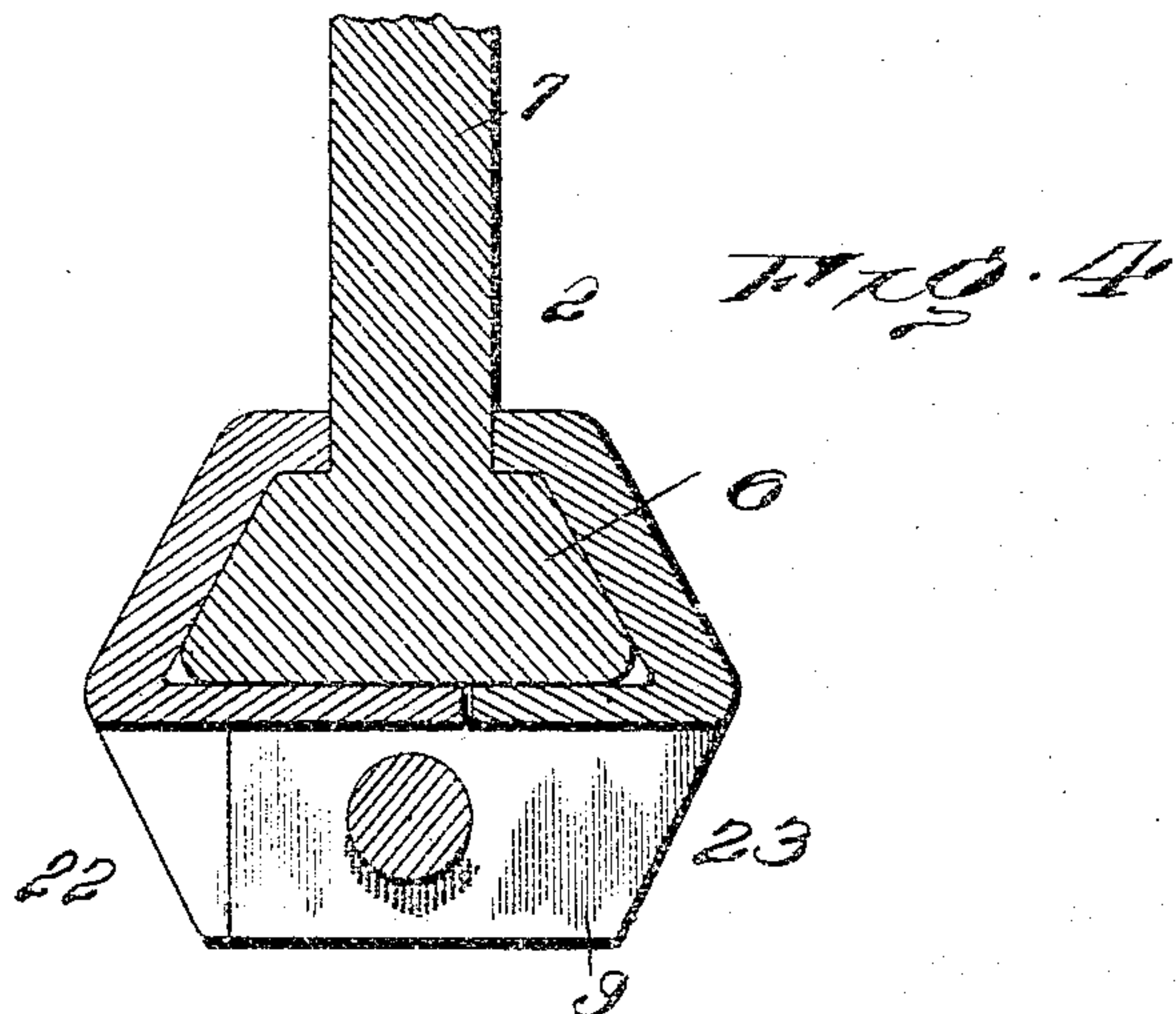
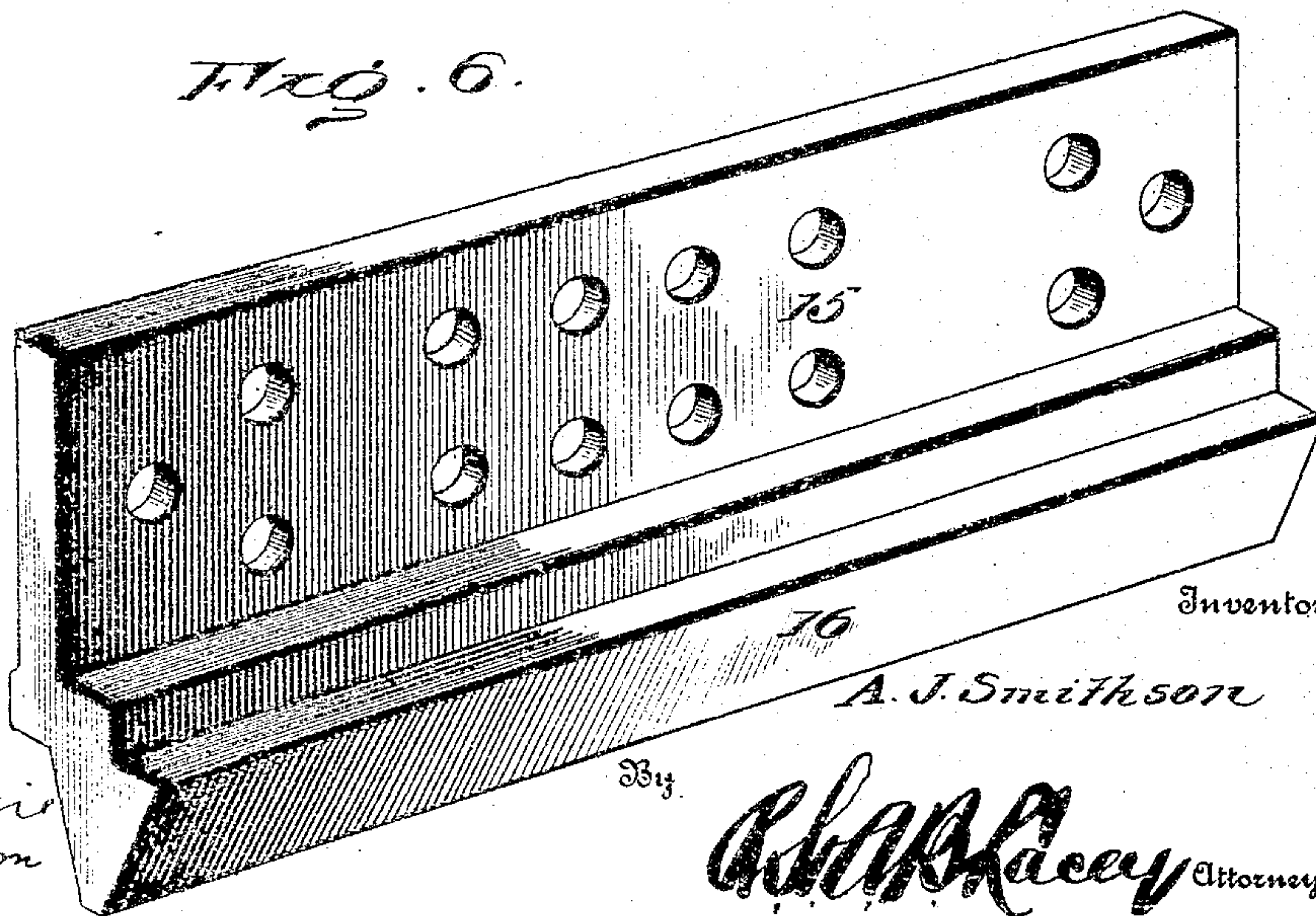


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE.

ALEXANDER J. SMITHSON, OF PORTLAND, OREGON.

RAILROAD.

SPECIFICATION forming part of Letters Patent No. 765,797, dated July 26, 1904.

Application filed October 21, 1903. Serial No. 177,957. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER J. SMITHSON, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Railroads, of which the following is a specification.

This invention provides an improved construction of railroad, the essential object in view being to attain a maximum degree of durability and substantiality of the road-bed, as well as the traction means and adjacent parts coöperating therewith. It is designed that all parts comprising the construction embodied in the invention be made of metal.

Further, a particular feature of the invention consists in the provision of a rail adapted to be reversed in its position upon the cross-ties of the structure, so that should one head of the rail be worn after continuous service the opposite head may be so disposed as to receive the traction thereon.

A further object of the invention is to provide continuous guard-rails disposed adjacent the tracks, which are secured in position by the rail-chairs and which are designed to prevent jumping or derailing of the rolling-stock due to any of the usual causes.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view showing a portion of the road construction in operative position. Fig. 2 is a sectional view through one of the rail-chairs to show the relative positions of the several parts when assembled, one form of the wedge fish-plate being illustrated. Fig. 3 is a sectional view similar to Fig. 2, illustrating a different form of the wedge fish-plate. Fig. 4 is a partial sectional view of a rail, showing one of the smaller clamp-chairs in engaging relation therewith.

Fig. 5 is a detail perspective view of the members of the clamp-chair shown in Fig. 4 separated. Fig. 6 is a detail perspective view of one of the wedge fish-plates which is specially constructed for use at the jointure of the rail.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

All parts of the road construction which carries the rolling-stock are of metal to make a more permanent and lasting structure.

Longitudinal bed-ties 1 are provided, which are spaced approximately the same distance as are the rails 2, the weight passing from the rails being sustained by the bed-ties indirectly. The rails 2 are disposed so as to rest upon the cross-ties 3, which are disposed transversely of the bed-ties, being supported by heads 4 of integral formation with the bed-ties 1. Each of the cross-ties is provided with a base 5, integrally formed therewith and consisting of lateral flanges projected from the body of the ties. Each of the flanges, comprising the base 5 of the cross-ties, is secured by bolts or like fastenings to the head 4 of the bed-tie, upon which the cross-tie rests. The rails 2 are of a particular structure specially adapted for use with the other parts of the railroad construction, being provided with the heads 6, which are connected by the web 7 and which are substantially identical in outline in order that the rails may be reversed after both sides of one head have been worn to such an extent as to render the head unserviceable. The rails 2 are supported by chairs of different types though of very similar form, generally speaking. The chair used at the adjacent meeting ends of the rail and forming a part of the joint therefor is of heavier and more substantial structure than are the chairs used for securing the rails to the cross-ties 3 at points intermediate the ends of the said rails. The joint chairs consist of a base 8, which rests directly in contact with the cross-ties and from which are extended pendent webs 9, which are disposed in spaced relation, so as to embrace the upper portion of the cross-ties 3 upon opposite sides, to thereby prevent any longitudinal

movement of the chairs with reference to the said ties. Fastening-bolts pass through openings in the pendent webs 9, connecting the said webs, at the same time passing through registering openings in the upper portions of the cross-ties. The fastening means for securing the pendent webs 9 of the chairs secures the chairs to the cross-ties in such a manner that lateral movement of the chairs is prevented and spreading of the rails avoided. Spaced wings 10 extend upwardly from the base 8 of the chairs, embracing the rails upon opposite sides, as will be apparent. The wings 10 are secured together by transverse bolts 11, which pass through the web 7 of the rails, fixing the position of the rails relative to the chairs. Between one of the wings 10 and the web of the rail adjacent thereto are disposed supporting-webs 12 of the guard-rails 13. The fastening-bolts 11 of the chair pass through openings provided upon the web portions 12 of the guard-rails, thereby fixing the position of the said rails, securing them in position. The flange 14 upon the inner face of one of the wings 10 abuts against the under side of the head which is received by the chair, forming a bearing-surface against this part of the rail. The wing 10, which carries the flange 14, is the inner wing, and the guard-rail 13 is disposed adjacent this wing. The outer of the wings 10 coöperates with a fish-plate 15 to firmly support the rail in position. The fish-plate 15 is provided only at the point of jointure of the rail ends and extends approximately the entire distance between three of the cross-ties 3, so as to firmly reinforce the heads of the rails at the point of meeting thereof. The fish-plate 15 is provided with a wedge-shaped foot 16, which is disposed between the lowermost head 3 of the rail and the outer wing 10 of the chair which receives the head. Side portions of the heads of the rail are inclined, and the inner face of the outer wing 10 is provided with a correspondingly-inclined portion, so as to permit of a wedge action of the foot 16 of the fish-plate. The fastening-bolts 11, passing through guard and main rails and connecting the wings 10, pass through elongated openings in the fish-plate, which elongated openings are provided so that a certain amount of vertical movement of the fish-plate is permitted when properly actuated to facilitate the wedge action of the foot 16, formed upon this element. A wedge-key 17 is adapted for actuation of the fish-plate 15, the said key bearing against the upper side of the foot 16, being disposed between the said foot and a collar 18, located between the fish-plate and the outer wing. The collar 18 is one of a plurality of threaded collars which are mounted upon the bolts 11 and which serve as spacing elements to brace the outer wing. The lowermost collars receiving the pressure of the key 17 serve to

prevent mutilation of the threaded portion of the lowermost bolts 11, as well as providing a smooth bearing-surface. Nuts 19 are screwed to the ends of the respective bolts, and these nuts are locked to the bolts by means of keys 20, which are adapted to be forced into grooves 21, provided longitudinally of the threaded portion of the several bolts, adjacent the ends thereof. The upper side of the foot 16 of the fish-plate 15, which is located adjacent the meeting ends of the rails, is stepped, so that the key 17 in its wedging action actuates the fish-plate both laterally and vertically, thereby causing the same to bind firmly against the web 7 of the rail and also against the under side of the head 6, supporting the rail. The above structure of fish-plate is shown most clearly in Fig. 2.

In Fig. 3 the fish-plate is of a lighter structure, the foot 16 having a straight bearing-surface for coöperation with the wedge 17. This last-described form of fish-plate is sufficiently substantial to afford a firm support for the rails at points intermediate the meeting ends. The chairs located at the joining point of the rails are secured, preferably, by four of the bolt-fastenings 11 and the chairs at other points in the length of the rail being of lighter structure and held in place by means of a single transversely-disposed bolt. The chairs of lighter structure, as shown in Fig. 3, may be located at intervals of three or four ties in the length of the road-bed, as found most desirable. A special form of clamp-chair is devised for use at points between the heavier structure of chairs, as shown in Figs. 2 and 3, the said clamp-chair being illustrated in Fig. 5 and consisting of complementary clamp members 22 and 23. Each of the clamp members 22 and 23 is provided with the pendent webs 9, which are of a form similar to those of the heavier rail-chairs and which coöperate with the cross-ties 3 in the same manner, preventing longitudinal play of the rail relative to the tie. The webs 9 of the member 23 are spaced so as to receive therebetween the webs 9 of the complementary member 22, the webs of the latter being disposed closer than those of the former. A bolt is adapted to pass through openings in the pendent webs of the members 22 and 23 and an opening in the cross-tie to secure the said members to the tie in clamping engagement with the lowermost head of the rail, which, as will be understood, is adapted for use as a base when placed between the chair-wings 10.

It is of course obvious that the longitudinal ties 1 and the cross-ties 3 will be embedded when the road structure is in finished condition. The preferred assemblance of the parts comprising the road construction is shown. However, it will be understood that I am not limited to the exact form of the parts as illustrated, but may modify the same in accord-

ance with the spirit and broad scope of the invention.

Having thus described the invention, what is claimed as new is—

5 1. In railroad construction, the combination with supporting-ties, chairs, spaced webs projected from the under side of said chairs and disposed upon opposite sides of the ties, wings
10 apart, rails received between the wings of the chairs, and fastenings passed through the wings and the rails securing same in position.

2. In railroad construction, the combination with supporting-ties, chairs disposed upon said
15 ties, integral spaced webs projected from the under side of the chairs and secured to the ties, spaced wings extended upwardly from the chairs, rails disposed intermediate said wings, fish-plates adjacent the rails, fastening
20 means passed through the wings of the chairs, rails and the fish-plates securing same together, and wedge means cooperating with the fish-plates and the fastening means aforesaid to secure the rails in position.

25 3. In railroad construction, the combination with supporting-ties, chairs comprising a base having wings projected upwardly therefrom in spaced relation, pendent webs projected from the chairs and disposed upon opposite
30 sides of the ties, rails mounted between the wings of the chairs, fish-plates disposed adjacent said rails, fastening-bolts passed through the wings, rails and fish-plates, and wedge means disposed between the fastening-bolts
35 and the fish-plates aforesaid.

4. In railroad construction, the combination with supporting-ties, chairs comprising a base and spaced wings extended upwardly from the base, pendent webs projected from the chairs
40 and secured to the ties, rails disposed between the spaced wings of the chairs, wedge fish-plates disposed between the rails and corre-

sponding wings of the chairs and provided with angular foot portions, fastening-bolts passed through the wings, rails and fish-plates, 45 and a wedge disposed between the fastening-bolts and the angular foot portions of the fish-plate.

5. In railroad construction, the combination with supporting-ties, chairs secured to the said 50 ties and having spaced wings, rails mounted between the wings of the chairs, guard-rails disposed adjacent the main rails first mentioned, fastening means passed through the spaced wings of the chairs and the main and 55 guard rails aforesaid securing the same together.

6. In railroad construction, the combination with supporting-ties, chairs comprising a base having upwardly-extending wings, pendent 60 webs extended from the base to embrace the cross-ties, securing means for securing the pendent webs of the chairs to the ties, rails mounted between the wings extended from the chairs, guard-rails disposed adjacent the 65 main rails and having web portions projected therefrom, the web portions of the guard-rails being disposed between corresponding wings of the chairs, fish-plates disposed between the main rails and the correspondingly- 70 opposite wings of the chairs, foot portions extended from the fish-plates aforesaid, spacing members disposed between the fish-plates and the adjacent wings of the chairs, and wedge means cooperating with the foot portions of 75 the fish-plates and adjacent spacing members for causing a wedge action of the fish-plates against the rail.

In testimony whereof I affix my signature in presence of two witnesses.

ALEXANDER J. SMITHSON. [L. s.]

Witnesses:

W. L. BROWN,
LEWIS STARR.