

(No Model.)

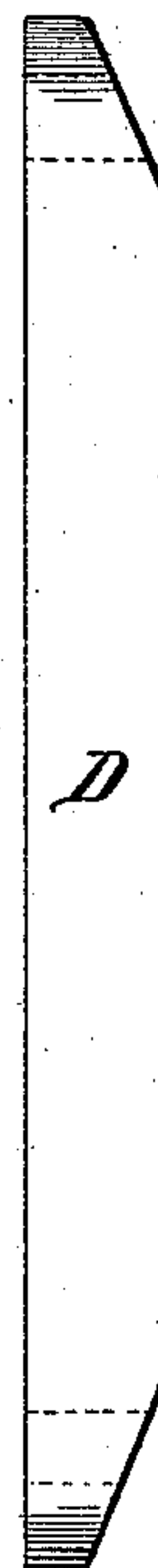
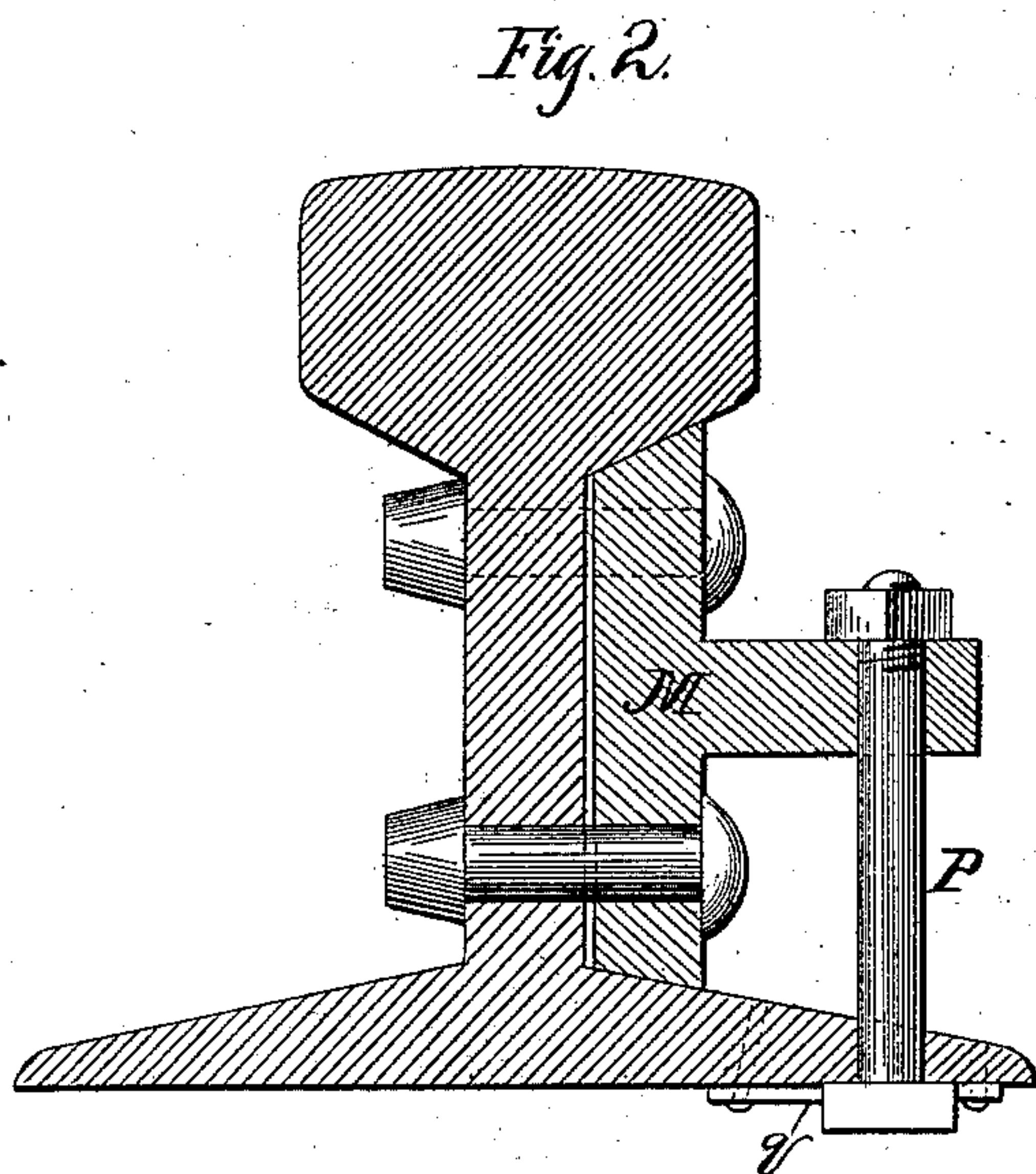
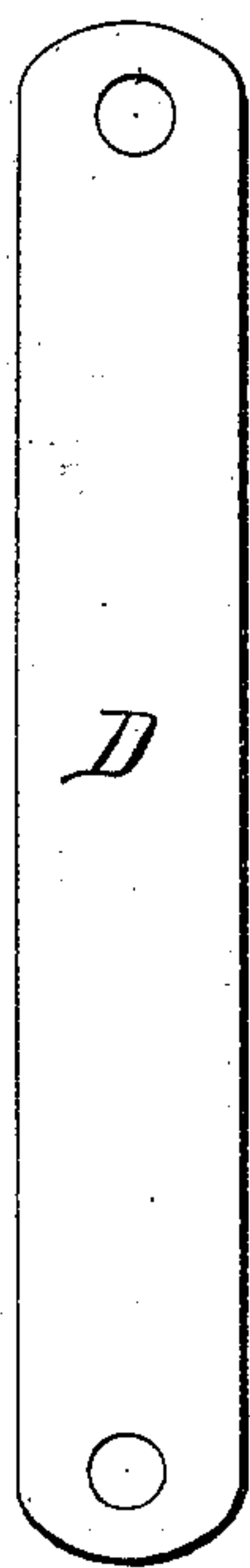
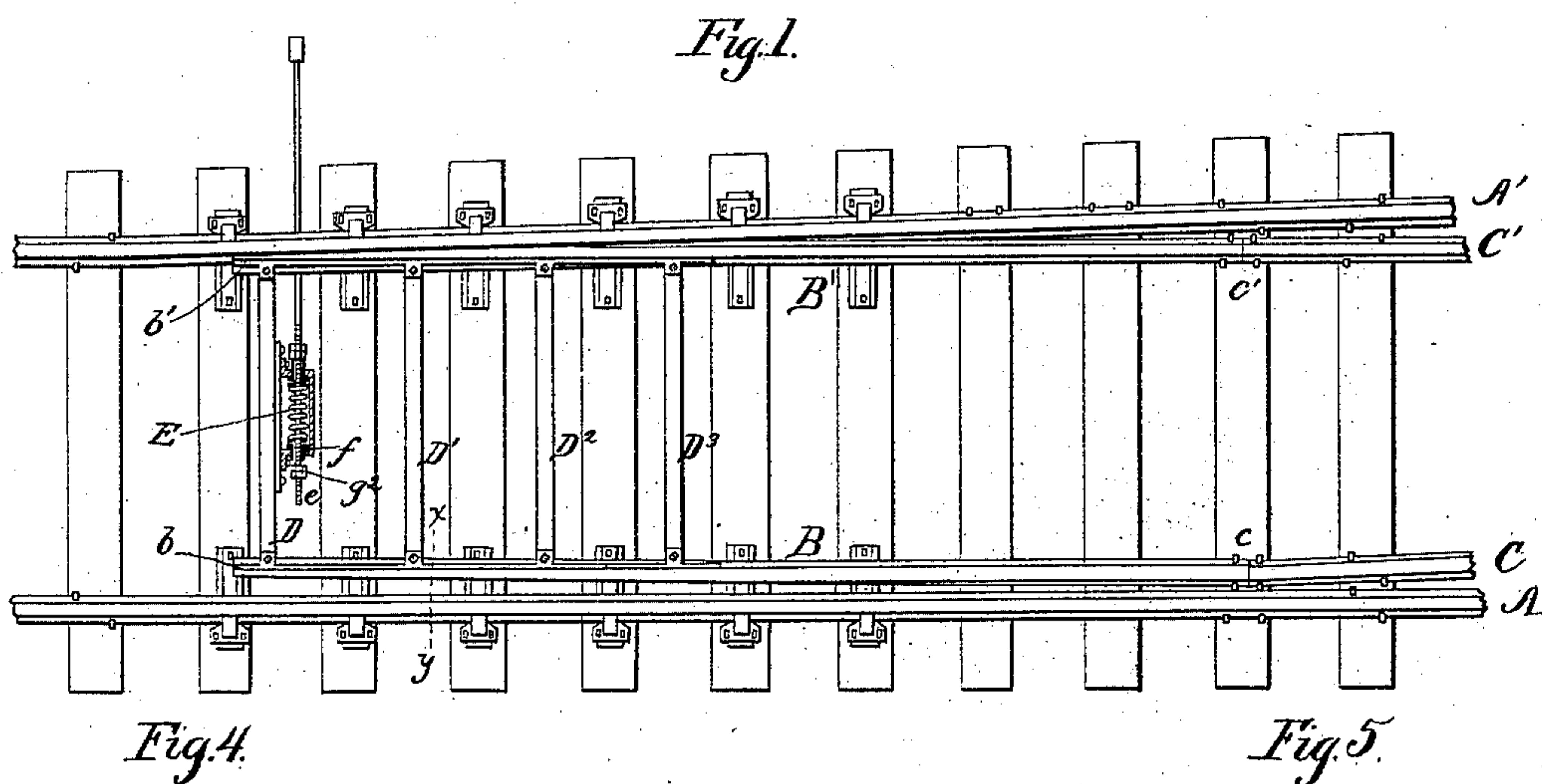
2 Sheets—Sheet 1.

J. T. RICHARDSON.

TIE OR CONNECTING BAR FOR RAILROAD SWITCHES.

No. 311,148.

Patented Jan. 20, 1885.



Witnesses:  
John G. Hinkel  
J. Campbell

Inventor:  
John T. Richardson  
by Foster & Freeman  
attys.

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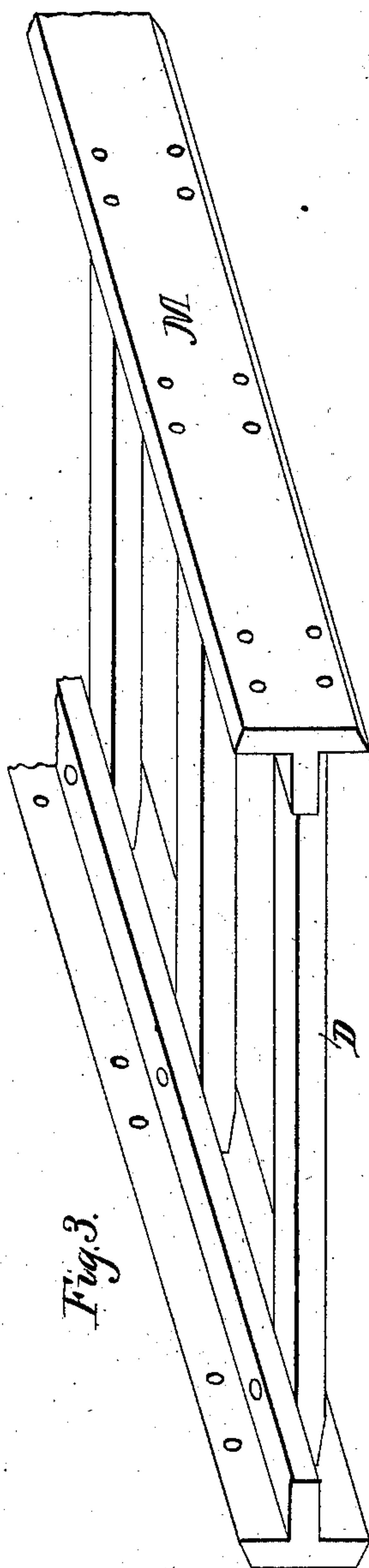
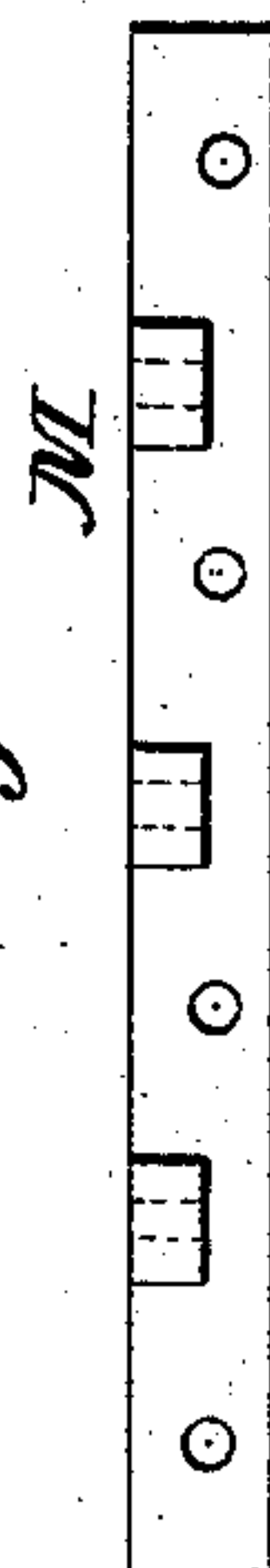


Fig. 6.



Fig. 7.



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# UNITED STATES PATENT OFFICE.

JOHN T. RICHARDSON, OF HARRISBURG, ASSIGNOR TO HIMSELF, AND ALEXANDER H. EGE, OF MECHANICSBURG, PENNSYLVANIA.

## TIE OR CONNECTING BAR FOR RAILROAD-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 311,148, dated January 20, 1885.

Application filed January 15, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. RICHARDSON, of Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Connecting-Bars of Railroad-Switches; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it ap-  
10 pertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to railroad-switches, and has for its object to provide the movable pointed rails of switches with such bearings for the swivel tie or connecting bars as shall secure increased strength, flexibility of lateral movement, simplicity and cheapness of structure, as well as a minimum liability of fault in  
20 operation.

In the drawings, Figure 1 is a plan view of a portion of the main track and siding, showing my improvement, and in normal position to allow a free and unobstructed passage of a  
25 train over the main line in either direction. Fig. 2 is a transverse vertical section through line *xy* of Fig. 1. Fig. 3 shows a pair of my improved tie-bars and their swivel-connections detached and complete. Fig. 4 is a plan view,  
30 and Fig. 5 is a side view, of the tie-bar. Fig. 6 is a modification. Fig. 7 is another modification.

Similar reference-letters indicate like parts in all the drawings.

Referring to the drawings, *A A'* are the fixed rails of the main track and siding, respectively.

*B B'* are the pointed and laterally-movable rails of the switch.

*D D' D<sup>2</sup> D<sup>3</sup>* are the connecting or tie bars, used to unite the switch-rails and keep them in their respective relative positions.

*E* is a spring of spiral or other form, placed  
45 over the switch-rod, to which the operating-lever is attached, and is limited in its expansion by flanged collars *f*, which in turn are limited by a yoke permanently fixed to the connecting-bar *D*. The said connecting-bar

being fixed or attached to the switch-rails *B B'*, the latter are carried with it to the one side or the other by opposite movements of the switch-lever. Nuts *g<sup>2</sup>* are adjusted on the rod *e*, to admit of play to the yoke on the said rod when, by force from the wheels of an approaching train, a lateral movement is given  
55 to the switch-rails *B B'* in case the switch should be set wrong to said train either moving out of the siding or coming down the main line in the direction of the switch-rails. The  
60 function of the spring *E* is to restore the pointed-rail *B* or *B'* to its locked position after yielding to the lateral force of the wheels of a passing train. The switch-rails *B B'*, sections of the main track and siding, respectively, being pointed at the ends *b b'*, as shown, are adapted to fit snugly against the fixed rail *A* of the main line when the switch is set for the siding, or against the fixed rail *A'* of the siding when set for the main line. The switch-  
70 rails *B B'* are fished at the ends *c c'* to the permanent rails *C C'*, their prolongations of the siding and main line, respectively.

*D' D<sup>2</sup> D<sup>3</sup>* are the connecting-bars, by which, in co-operation with the spring-bar *D*, the pointed switch-rails *B B'* are actuated laterally when the switch is operated for shunting. In order, however, that said pointed rails may move freely in cases of short leads that attend short radii of curvature, it has been found  
80 necessary in practice to provide the connecting-bars with some means of flexible adjustment that will readily admit of said lateral movement without distortion in the same horizontal plane, and yet at the same time afford  
85 absolute rigidity under vertical pressure. To attain this end, said bars have heretofore been jointed at points more or less removed from the longitudinal centers of the same, thus dividing the bars into arms or sections of greater or less  
90 lengths, to whose free ends are welded transverse pieces, which in turn are fastened into the shanks of the pointed rails by means of bolts passing through the webs of the latter. By this means of adjustment, in addition to the in-  
95 creased cost entailed, the disadvantage of a welding is encountered that is most liable to fault and disruption even under the most fa-



vorable circumstances of construction. In my device, however, I am able to secure the required flexibility by the use of a continuous bar of the required dimensions, and at the same time attain the greatest mechanical advantage possible by bringing the point of articulation in close proximity to the point of resistance, and thus utilizing the maximum percentage of power. To this end, therefore, I fasten the transverse beam M of a continuous T-bar into the inner longitudinal depression of the pointed switch-rails B B' by means of bolts or rivets passing through said transverse beam and the webs of said pointed rails. In this case, the other limb of the T-bar occupying a horizontal plane and extending inwardly more or less beyond the lateral limits of the flanges of the pointed rails, an ample breadth of bearing for the reception of a vertical perforation is made without an appreciable diminution of the strength of the same, through which a swivel-pin, P, is passed, said pin being made of sufficient length to pass through similar perforations at or near the extremities of the connecting-bars and the underlying flanges of the pointed rails, as shown in Fig. 2. While thus securing by means of my improvement increased strength, economy in the use of material, and simplicity of structure, the T-bar performs in addition the very important function of re-enforcing the strength of the pointed rails, and in effect restoring to the latter the equivalent of the material removed therefrom in consequence of planing the same to the angle required to attain a required lead.

Although my improved swivel-bearings could be utilized without making the T-bar continuous, yet, if made in sections, there would still exist the same weakness in the pointed rail as obtains in the different modes now used in attaching the connecting-bars to their respective seats. If it be required, I can also re-enforce the strength of the flange of the pointed rail by riveting to the upper or under side of the same a clip or plate, q, also perforated continuously with said flange, as aforementioned, for the reception of the swivel-pin.

In the further description of the details of my tie-bar, in addition to the advantage of making the same of a single piece and without bifurcated extremities, as are sometimes used in the crude forms of construction heretofore used, I propose to bevel the opposite ends of the bars upon their under side to the angle required to engage freely with the upper inclined surface of the underlying flange of the contiguous rail, as shown in Fig. 5.

Although I prefer to use my improved tie-bar for the operation of a point-rail switch, still I do not limit myself by any means to this combination, but wish to be distinctly understood as aware that it would be a most valuable appliance in the case of any of the forms of the commonly-designated "stub-switch," or other patterns involving a movable rail or rails, and therefore I claim its use in these connections also.

Since the operation of my improved pattern of switch is similar to that of the common split safety-switch in relation to the engagement of the wheel-flanges of a passing train, it is unnecessary to enlarge upon the same in this connection.

What I claim, and desire to secure by Letters Patent, is—

1. The combination, with a rail having perforations in the lower inside flange, of a bearing-plate secured to the web of the rail, having a perforated projection or lug, and bolts or pins passing through the perforations and adapted to secure the connecting-rods, as set forth.

2. The combination, with the moving rails of a switch, of continuous T-shaped strengthening-bearings adapted to be secured to the webs of the rails, the said bearings being connected by a series of continuous plain tie-bars joined to the laterally-projecting limb of the T-rail upon one side thereof only, substantially as described.

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

JOHN T. RICHARDSON.

Witnesses:

JNO. P. MELICK,

F. D. VANDEWALKER.