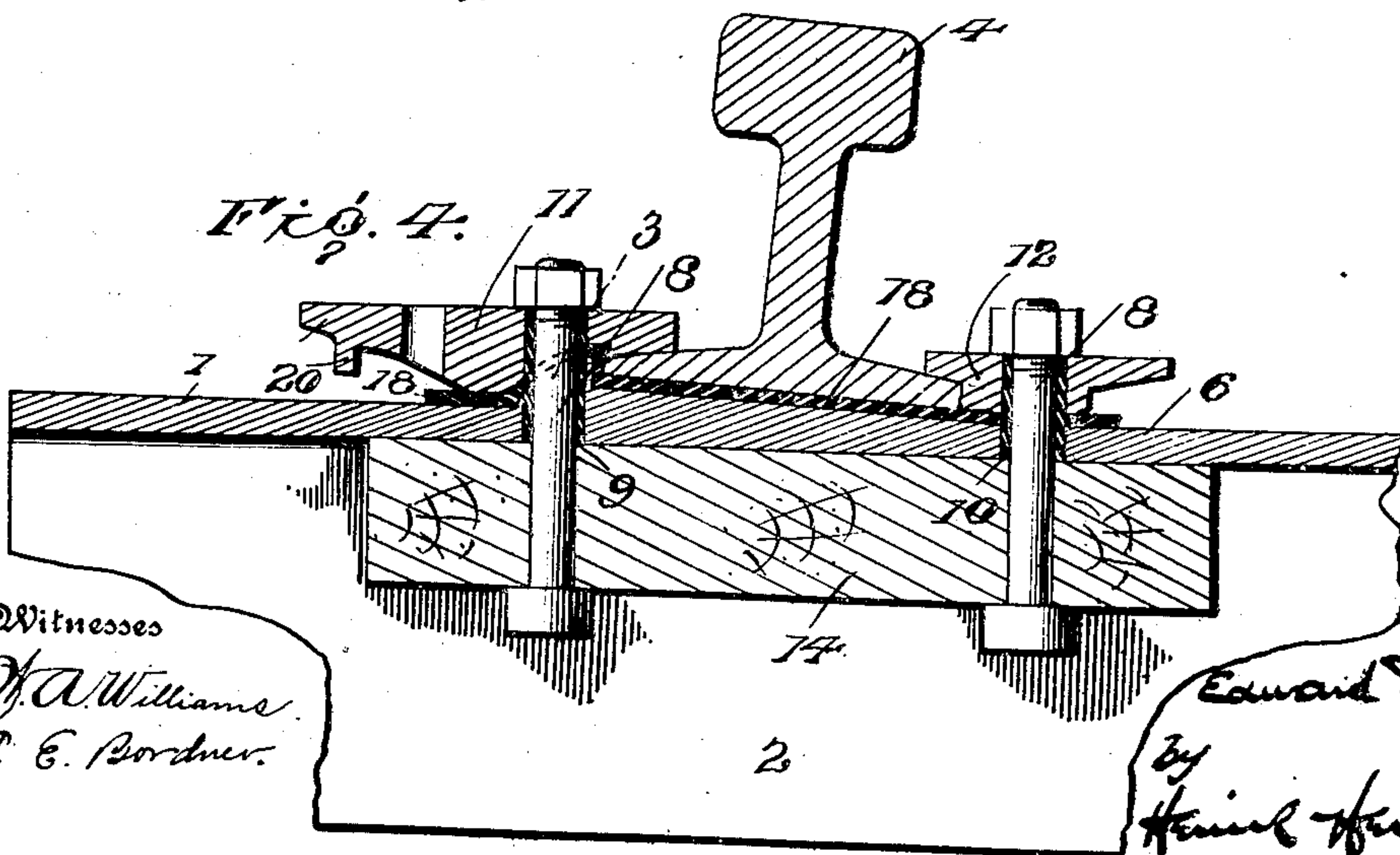
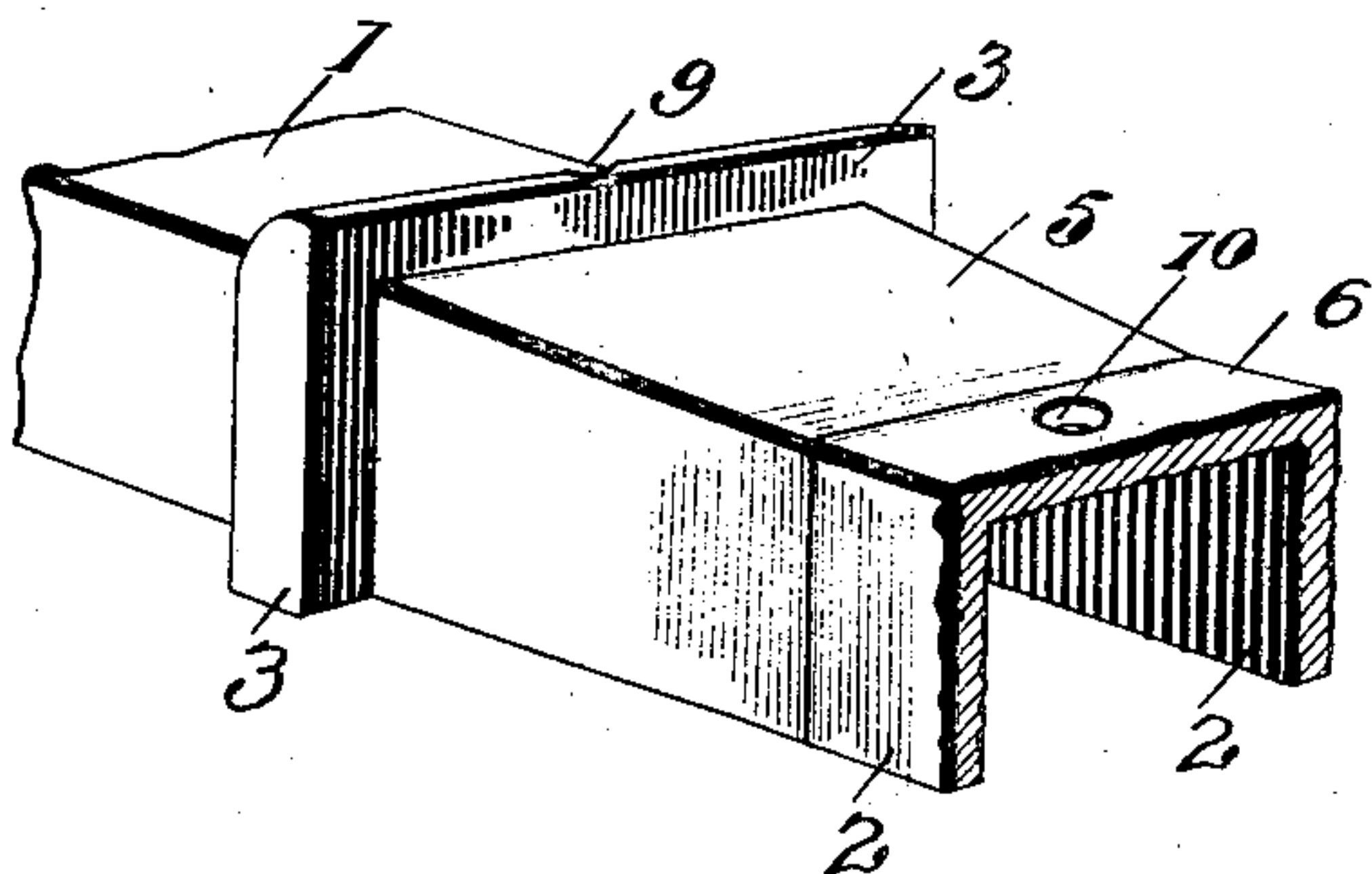
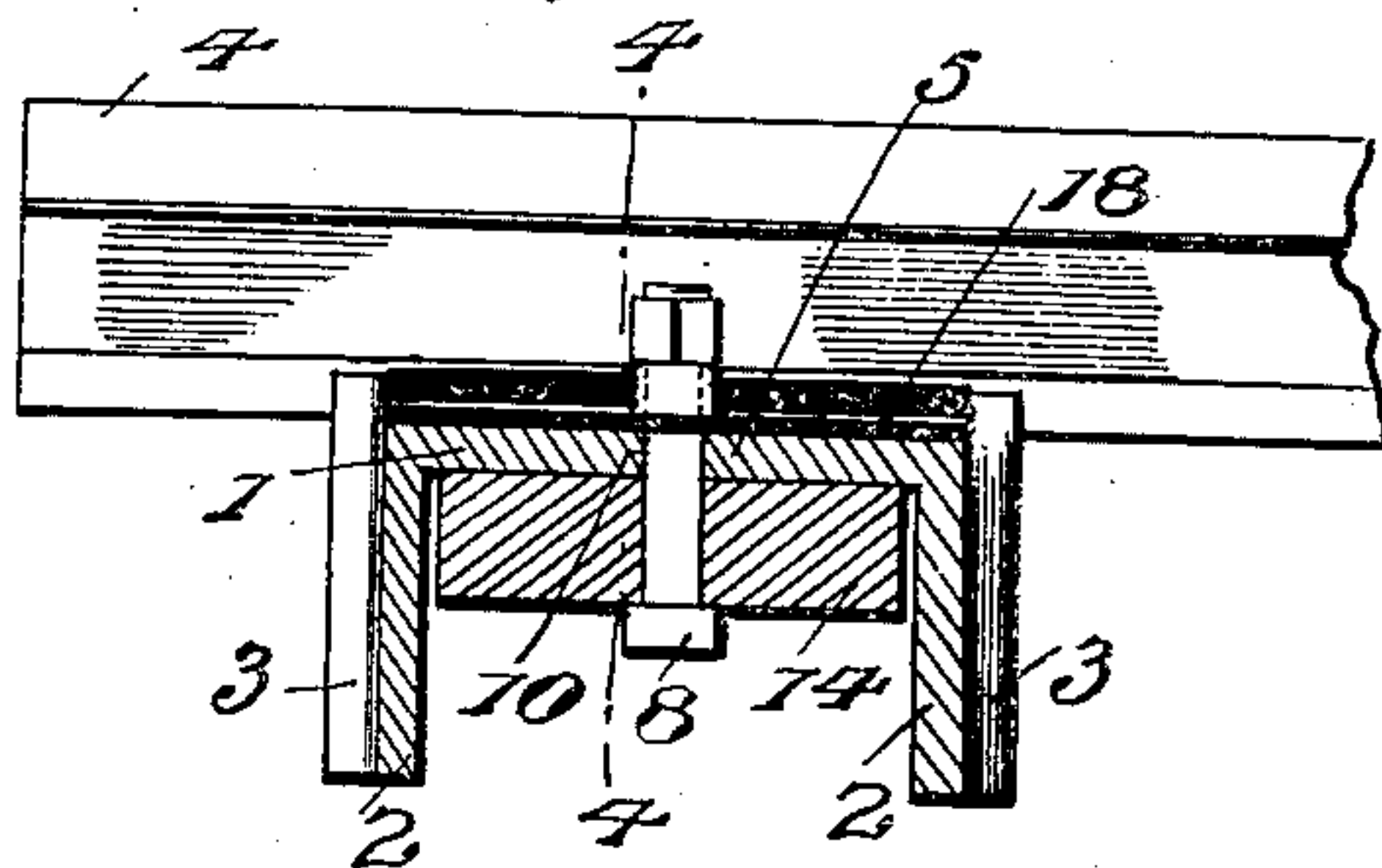
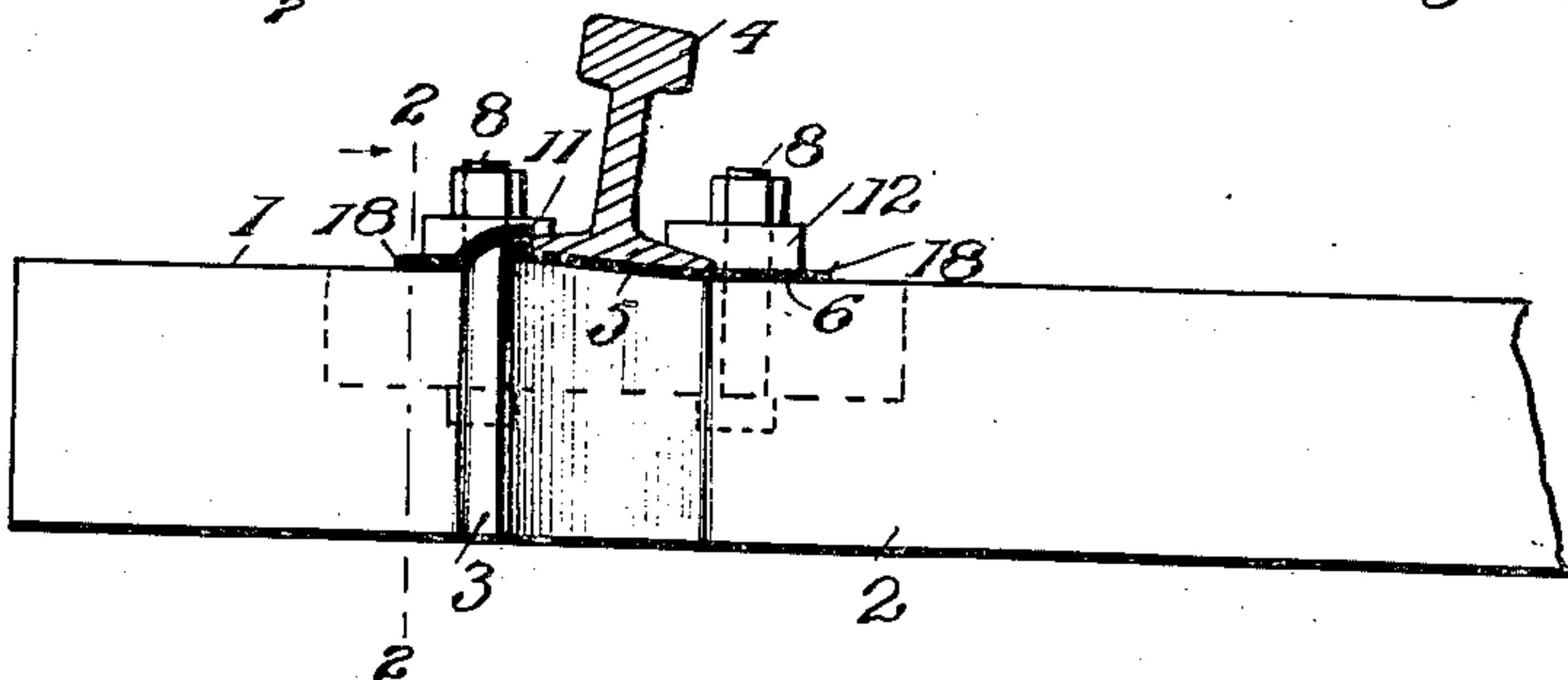


METALLIC TIE.

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Witnesses

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METALLIC TIE.

943,782.

Specification of Letters Patent.

Patented Dec. 21, 1909.

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To all whom it may concern:

Be it known that I, EDWARD F. KENNEY, citizen of the United States, residing at Moores, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Metallic Ties, of which the following is a specification.

My invention relates to railway track construction, and particularly to railway ties and the means for securing rails thereto in such manner that the objects hereinafter appearing may be attained.

The prime object of the invention is to produce a metal tie which, being an integrality, is of such conformation that various desirable functions of a tie construction may be subserved, and withal it may be manufactured so easily, quickly and cheaply that metal ties may be made a commercial and practical success, instead of a more or less costly experiment, as at present.

To these and other ends which will be developed hereinafter, I have devised a tie unusually well adapted by its construction to be firmly held on the trackway; which affords support for the rails, with provision for taking the lateral thrust thereof; which, with its adjuncts, makes provision against the dangers of too rigid connection between rail and tie; and especially, a construction of tie which, yielding all the advantages before referred to, possesses the crowning distinction and advantage that it may be rolled, a distinction which spells the difference between practical success and failure, since the tonnage output of steel mills need not be decreased by a change from rolling ordinary plates, rails, or the like, to rolling ties made in accordance with my invention.

What constitutes my invention will be fully described in the ensuing detailed description, and succinctly defined in the appended claims.

In the accompanying drawings, which are to be taken as a part of this specification, and in which I have shown a preferred form of embodiment of my invention, Figure 1 is a side elevation of part of a tie made in accordance with my invention, showing in section a rail supported thereon, and indicating in dotted lines the lower portions of the fastening bolts and the interposed elastic block; Fig. 2 is a section on the line 2—2 of Fig. 1; Fig. 3 is a perspective view of a portion

of the tie, after it is bent into the preferred U-shape; Fig. 4 is a central vertical longitudinal section on an enlarged scale, upon the line 4—4 of Fig. 2. Fig. 5 is a plan view of an end portion of the tie proper as it comes from the rolls.

Referring to the numerals on the drawings, 1 indicates the body portion of the tie used in connection with my invention preferably of steel or other metal, of proper length to afford necessary support to the track rails at each end, and preferably provided with depending wings or side pieces 2 integral therewith, the whole forming a tie substantially U-shaped in transverse section.

With the tie placed in the road-bed with ballast between and on each side of the legs thereof, it will be apparent that the tie will be much more securely emplaced than is possible with a flat solid rectangular tie. The U-shape has also a contributory function, to be referred to later.

Transversely of the body portion of the tie, and integral therewith is a rib 3, properly inclined or otherwise faced on its inner side to make contact with and receive the lateral thrust of a rail 4, said rib defining the outer side of a seat 5 for the rail. At a distance from the inner side of rib 3 corresponding with the width of base of the rail to be employed, the body member may be shouldered, as at 6, to define the inner side of seat 5. As shown in the drawings, the seat 5 may be inclined to the horizontal of the tie, so that the rail will be supported thereon in such a position that its axis will be normal to the standard tread of wheel. Similar ribs, shoulders, and rail seats are formed at each end of the tie, but in reversed relations, and the tie, with its two ribs 3, and also with the shoulder 6 and inclined seat if desired is rolled as an integrality from steel, its appearance as it comes from the rolls being somewhat as indicated in Fig. 5, *i. e.*, a substantially flat structure, with its upper surface shaped to form the ribs 3, etc. The blank is then by suitable means bent into the U-shape best shown in Fig. 3, the ribs 3 extending down on either side on the wing 2. The ribs 3 besides subserving the functions heretofore noted, provide reinforcing metal in the tie at the bearing points of the rails, increase

the stiffness of the tie at these points when bent into the U-shape, and in their downward extensions serve to hold the tie against longitudinal movement in the road-bed when surrounded by ballast, as will be apparent.

The rail 4 being seated upon the tie as shown in Fig. 4, it is secured in place as by means of bolts 8 passing through apertures 9 and 10 in the tie adjacent the ribs 3 and shoulders 6. It is preferred that the aperture 9 shall be drilled or punched directly in the rib, and the heads of the bolts 8 are below the tie, with the threaded ends extending up through the apertures 9 and 10. Suitably shaped clips 11, and 12, are provided, apertured to fit over said bolts, the clip 11 being adapted to take over the top of base flange of the rail adjacent rib 3, and clip 12 being shaped to take over the top of the flange adjacent to it and also to take the lateral thrust, thereof. Nuts upon the ends of the bolts force the clips into operative contact with the rail flanges as aforesaid, and complete the connections.

While it is desirable that a railway track should be rigid in the road-bed, it is likewise desirable that the connection between the ties of the track and the rails should not be absolutely unyielding, for the reason that the imposition of loads on wheels moving along rails causes deflections involving vertical movement of the rail, and if the ties be held rigid in the road-bed by any cause, and possibility of some slight movement between tie and rail be not permitted, disastrous consequence may follow. Accordingly I have provided, in connection with the tie hereinbefore discussed, means for securing a rail thereto so as to permit slight relative movement when necessary. Typical of such means is a block 14 of wood or other compressible or elastic material interposed between the heads of the bolts 8 and the under side of the body portion 1 of the tie, the bolts passing through said block as shown in Figs. 2 and 4. The block is preferably shaped to fit snugly between the legs of the tie, which guard it against accidental displacement.

When, as before suggested, there is a tendency on the part of the rail 4 to move vertically relatively to the tie on which it rests, such movement may take place, by reason of the compressible or elastic quality of the block.

The purpose of having the block positioned below the tie is in order that the rail may have a normally rigid unyielding seat on the tie, the block having no desirable function save when there is a tendency for the rail and tie to separate.

Where an electric block system is used in connection with a railroad employing ties made in accordance with this invention, the necessary insulation of the rails may be very read-

ily accomplished, as shown in the drawings, wherein 18 indicates the interposed insulating material.

When desired, the clips may, as shown in the drawings, be double-ended, or otherwise provided with means whereby, if, on account of the wearing away of the inner face of a rail on a curve or the like, it should become necessary to move the rails a little closer together to compensate for such wear, the relative position of one of the rails may be changed. To this end the clip 11 may be provided at one end with a depending lug 20, which is adapted to be interposed between the rail flange and rib 3. When this end of the clip is used, the rail as a whole must of course be moved, and to provide for this necessity the wall of clip 12 which surrounds the bolt is made thicker on one side than on the other, so that when the lug 20 is taking the lateral thrust of the rail on one side the thinner wall of the clip may take the thrust on the other.

It is thought that the application and operation of the invention is rendered sufficiently clear to one skilled in the art by the foregoing specification of parts to render further detailed description thereof unnecessary.

What I claim is:—

1. A railway tie formed by bending up a metal plate in box form and having circumferential ribs adjacent to the ends thereof.
2. A railway tie formed of a metal plate having reinforced portions at the end thereof, said plate being bent into U shaped form, said reinforced portions extending entirely around the exterior of said end.
3. A railway tie formed by bending a rolled metal plate into a box form, having reinforcing circumferential ribs adjacent the ends thereof, said ribs on the upper side of said box form being adapted to form a rail base.
4. A railway tie formed of a rolled metal plate, bent into U shaped form and having reinforced portions at the ends thereof, said reinforced portions extending entirely around the exterior of said ends.
5. A railway tie formed of a metal plate, rolled with reinforced ribs, said plate being bent to form an open box with the said reinforced ribs on the exterior thereof at the ends of said box, said reinforced ribs extending entirely around the exterior portions of said ends.
6. A metallic railway tie rolled with reinforcing transverse ribs adjacent the ends thereof, said reinforcing transverse ribs extending entirely around the exterior portion of said ends.
7. In combination a railway tie formed by bending up a metal plate in box form and having circumferential ribs adjacent to the ends thereof, means for attaching a rail

to said tie and a resilient washer upon which said attaching means is adapted to be sustained.

5 8. In combination with a railway tie formed by bending up a metal plate in box form and having circumferential ribs adjacent to the ends thereof, means to attach a rail to said tie and wooden blocks adapted to lie in the interior of the box form and to
10 form washers for said attaching means.

9. In combination with a railway tie formed by bending up a metal plate in box form and having circumferential ribs adjacent to the ends thereof, said ribs being
15 adapted to act as a side support for said rails to prevent them from spreading apart, means to attach the rails to said tie and re-

silient means intermediate said attaching means and said tie, substantially as described.

20 10. A railway tie formed by bending a rolled metal plate into box form having reinforcing circumferential ribs adjacent the ends thereof, said ribs on the upper side of said box form being adapted to form side
25 supports for rails to keep the rails from spreading apart.

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

EDWARD FULBISTER KENNEY.

Witnesses:

S. A. SLOAN,
M. S. SMOKER.