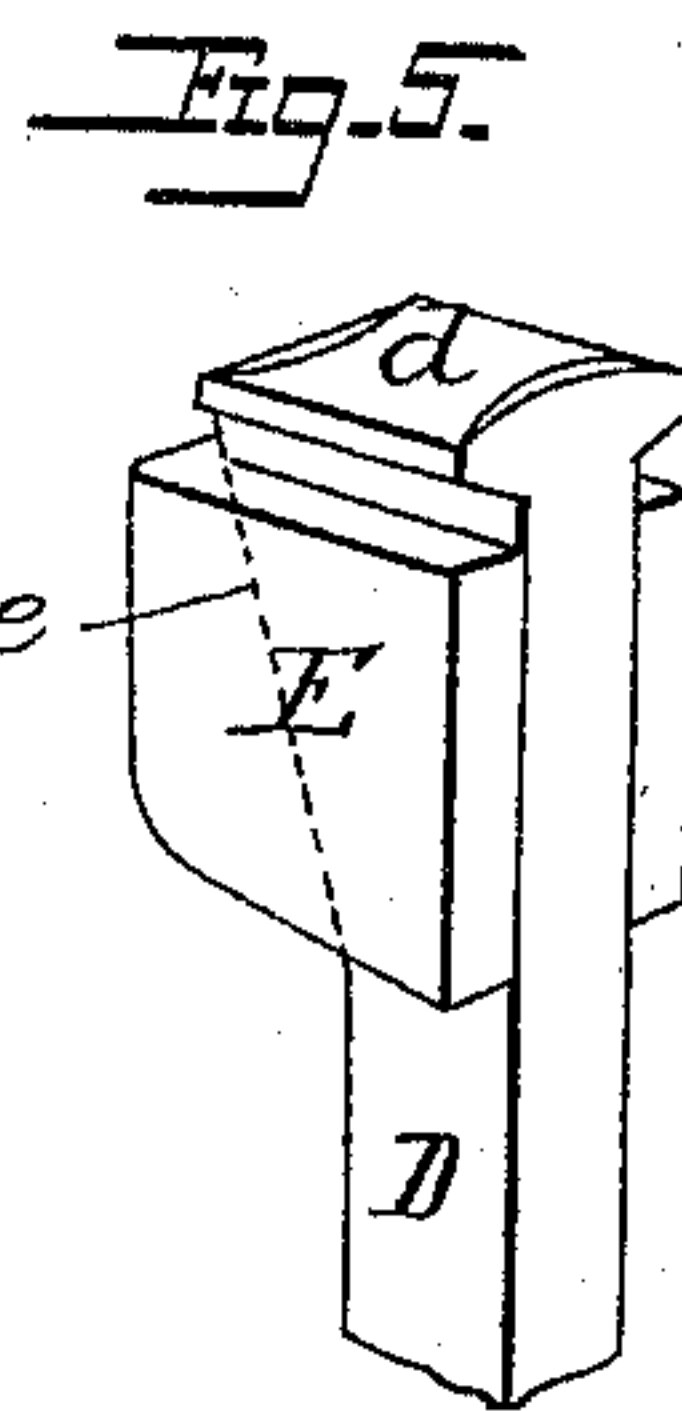
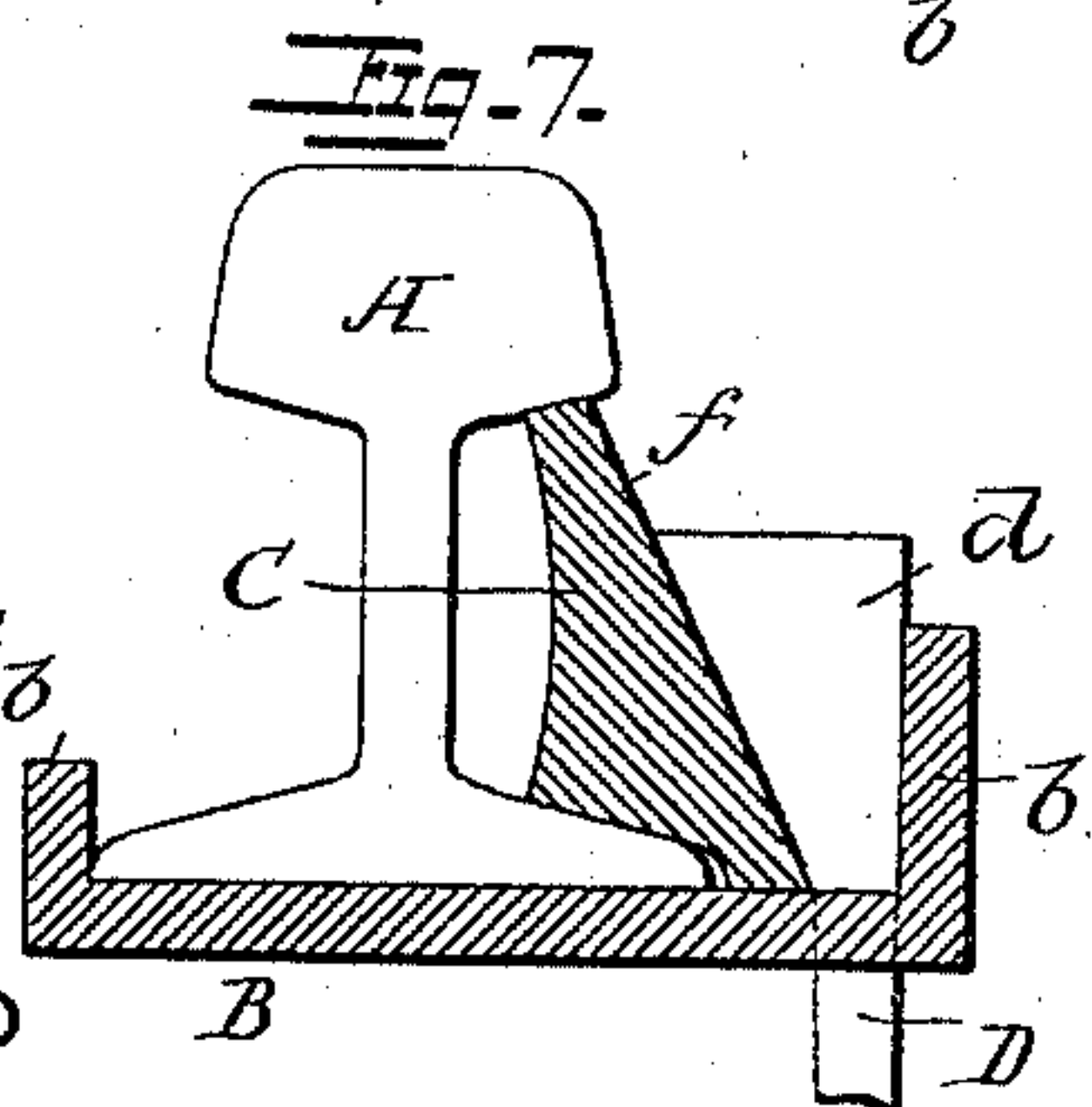
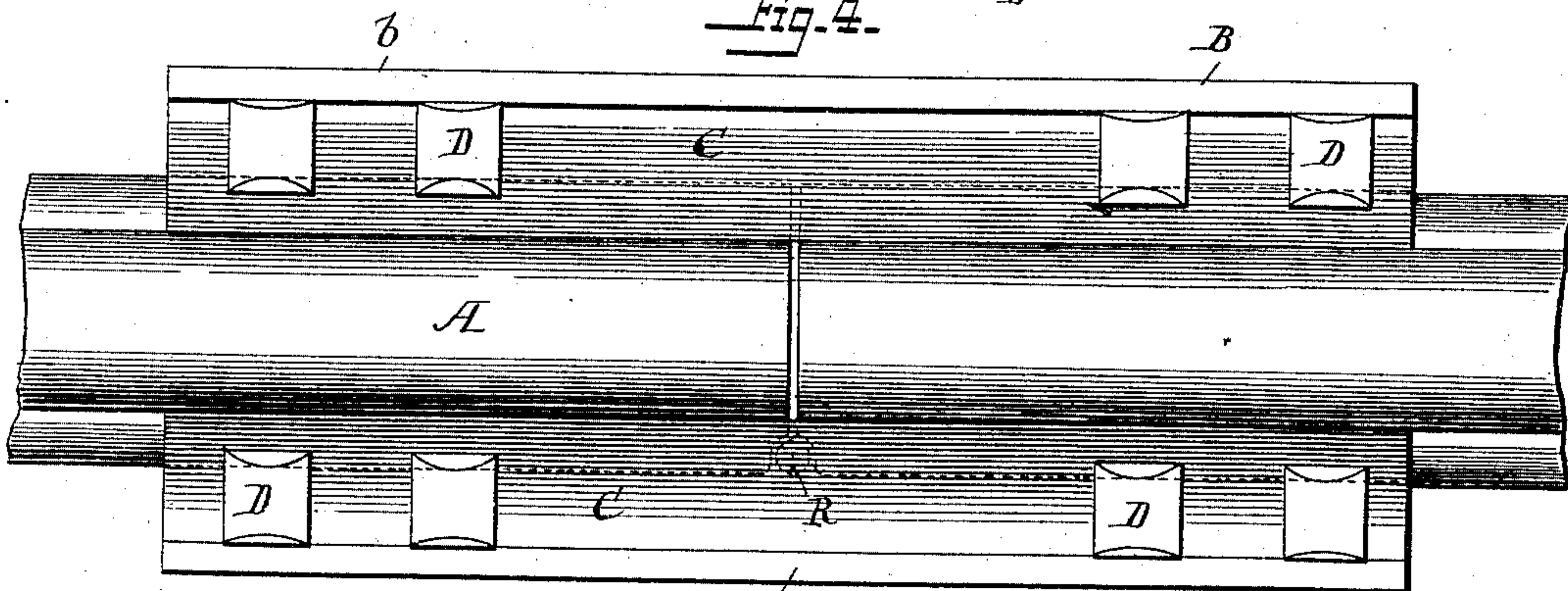
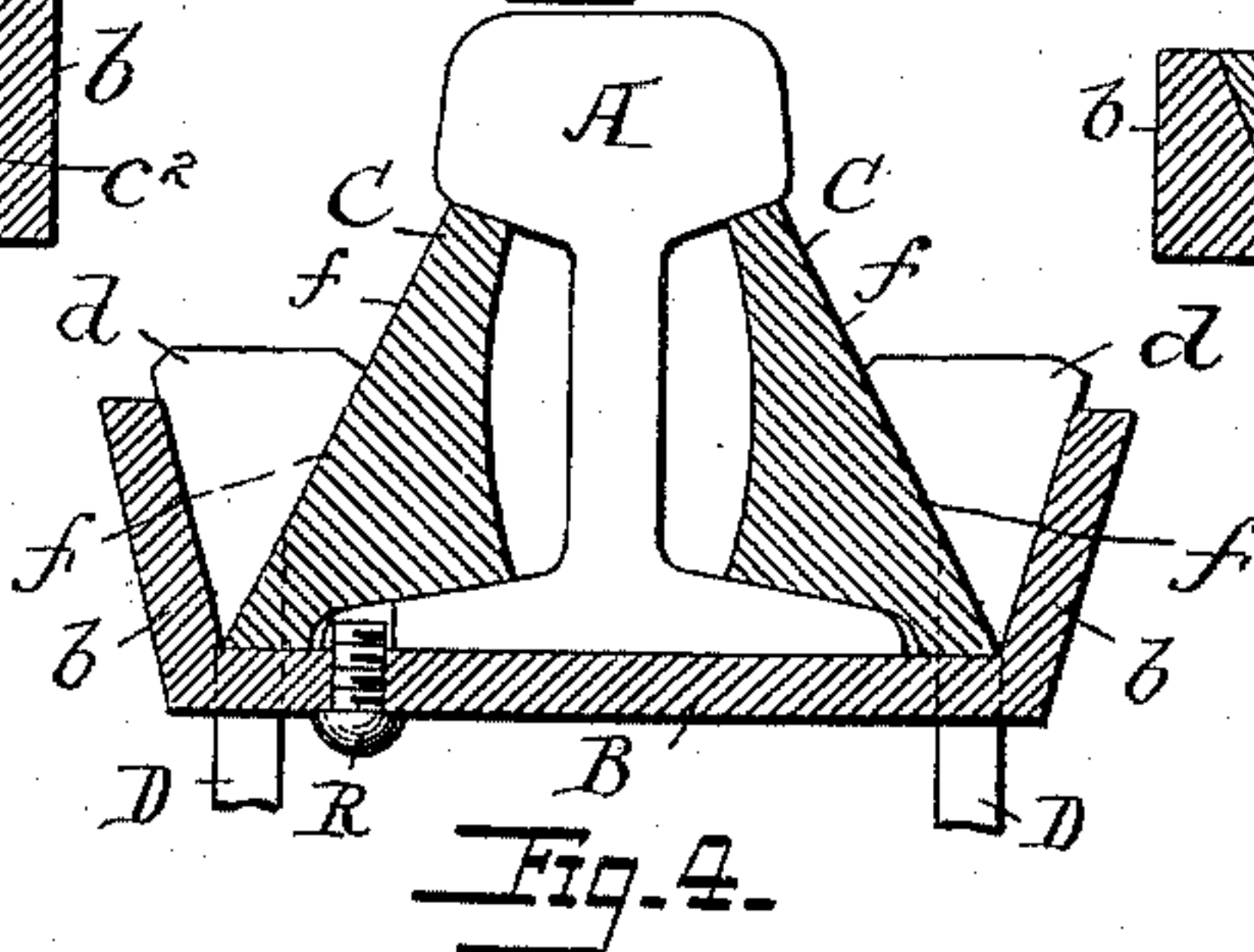
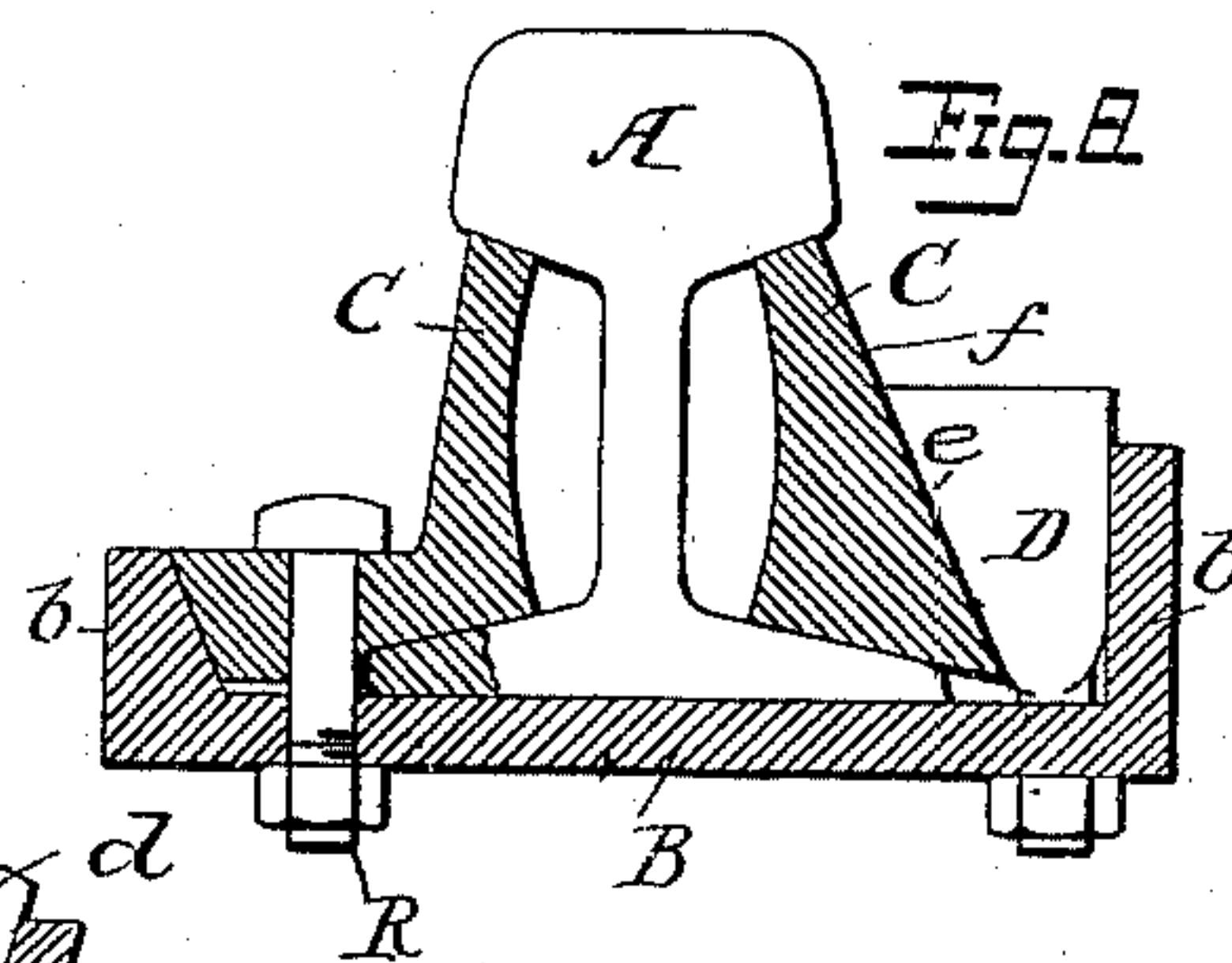
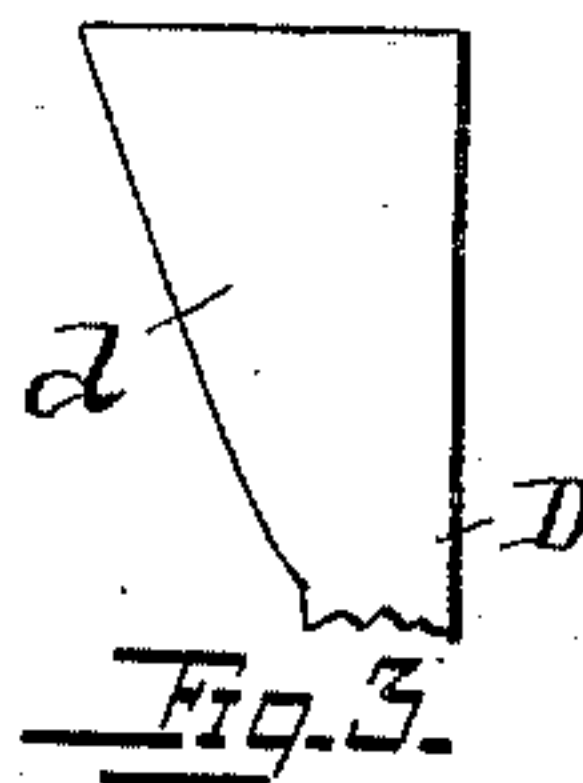
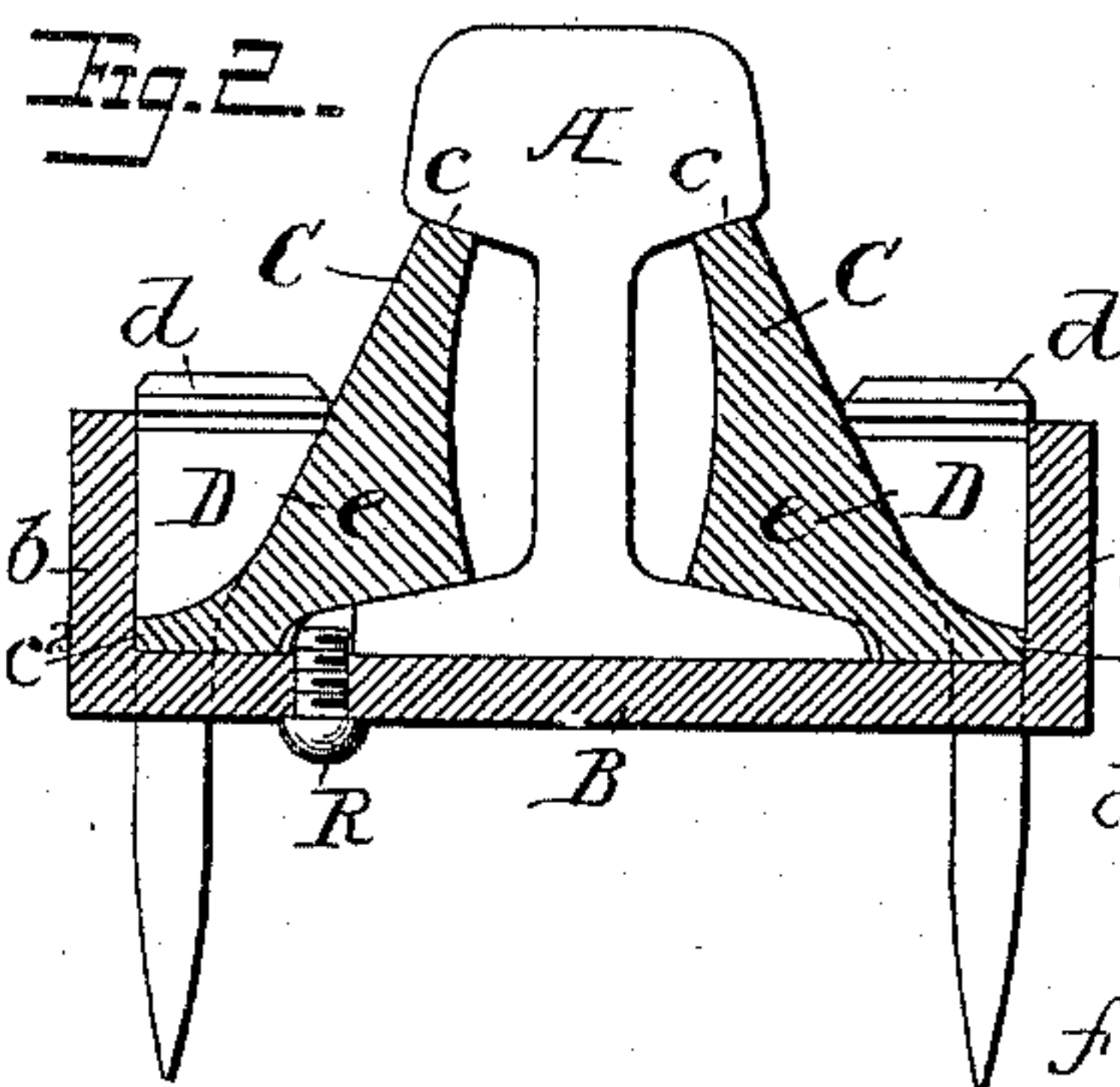
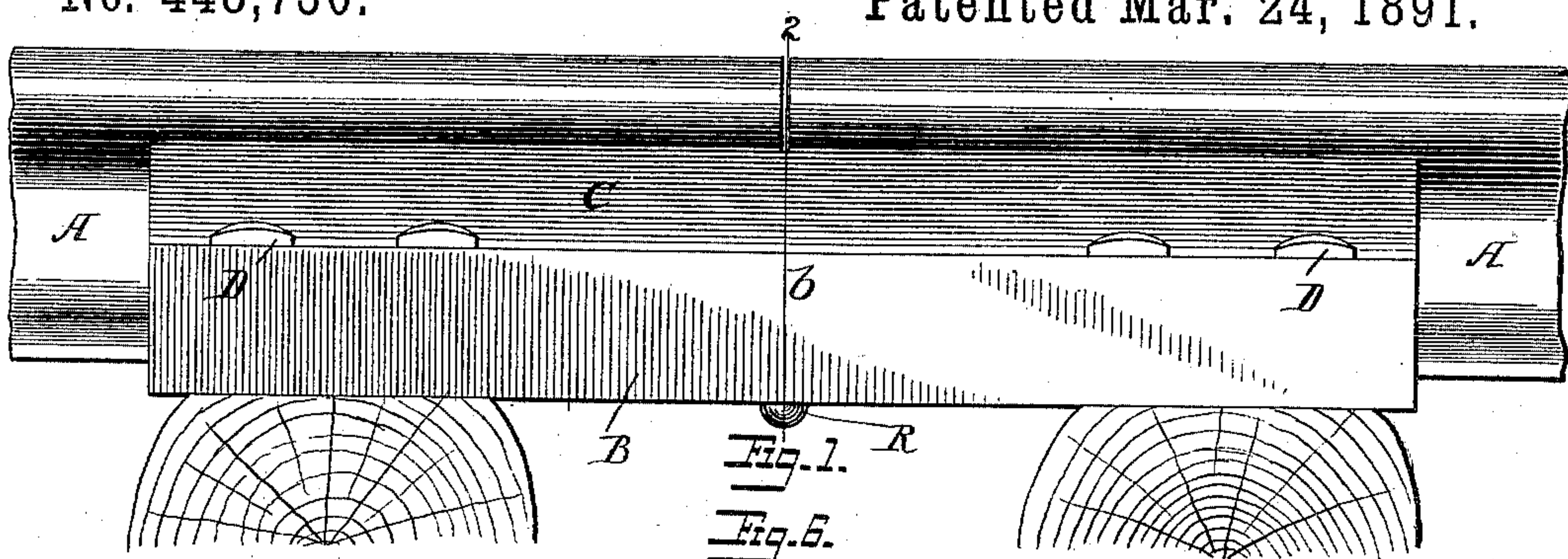


(No Model.)

J. T. RICHARDSON.
RAIL JOINT SUPPORT.

No. 448,730.

Patented Mar. 24, 1891.



WITNESSES
J. H. Hinkel.
H. S. McArthur.

INVENTOR
John F. Richardson.
By Peter Freeman
Attorneys.

UNITED STATES PATENT OFFICE.

JOHN T. RICHARDSON, OF HARRISBURG, ASSIGNOR OF ONE-HALF TO
ALEXANDER H. EGE, OF MECHANICSBURG, PENNSYLVANIA.

RAIL-JOINT SUPPORT.

SPECIFICATION forming part of Letters Patent No. 448,730, dated March 24, 1891.

Application filed October 9, 1890. Serial No. 367,532. (No model.)

To all whom it may concern:

Be it known that I, JOHN T. RICHARDSON, a citizen of the United States, residing in Harrisburg, Dauphin county, State of Pennsylvania, have invented certain new and useful Improvements in Rail-Joint Supports, of which the following is a specification.

My invention relates to rail-joint supports, particularly to what are known in the art as "suspension-joints"—that is, joints between the two contiguous ties—although my invention is not limited thereto; and it consists of certain features of construction which will be hereinafter described.

In the drawings, Figure 1 is a side view of a rail-joint and support embodying my invention. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1. Fig. 3 is a cross-sectional view of another form of my invention, the flanges of the girder-plate flaring outward. Fig. 4 is a plan view of the form shown in Figs. 1 and 2. Fig. 5 shows a wedge-block and spike applicable to ordinary splice-bars. Fig. 6 is a side view of the upper portion of one of the spikes. Fig. 7 is a modification showing the use of the device as a guard-brace. Fig. 8 shows a plain splice on the wheel-flange side of the rail, the outer splice being the same as in Fig. 2.

A represents the rails having their contiguous ends resting upon and supported by a bottom girder-plate B, preferably of a length greater than the distance between two contiguous ties, or, in other words, of such a length as may be required to admit of the ends thereof resting upon the upper surface of said ties. In practice I prefer the pattern of plate shown in Figs. 1, 2, and 3, having the central portion at least of said girder-plate in form of a channel-plate with side flanges *b*, in which the plain face is downward and rests terminally upon the ties. The girder-plate B is pierced vertically through its bottom bearing part in close proximity to the flanges *b* for the reception of bolts or spikes D, as hereinafter set forth. The flanges *b* of the girder-plate B are made of such a height as to afford sufficient lateral bearing-surface to adequately resist the side-pressure transmitted thereto by the laterally and vertically engaging wedges under the impact of passing trains.

C C represent angle-plates or splice-bars upon opposite sides of the rails, lapping them a short distance on each side of the joint, and held laterally and firmly against the webs of the rails and upon the upper supporting-face of the girder-plate B by wedge-blocks, which are made integral with the spikes or bolts. The inner portions of the splice-bars—that is, those portions which rest upon and engage with the rails—are of substantially the usual shape; but these bars C otherwise differ from the ordinary bars in having their outer faces inclined or beveled downward and outward toward the edges of the feet of the rails A at a greater or less angle to engage the similarly but reversely inclined heads *d* of the spikes D, as clearly shown in Fig. 2. The side or angle plates C may be grooved or channeled longitudinally and centrally to any desired depth upon the side next to the web of the rail to reduce the weight thereof, if desired. The upper edge *c* of said inner lateral face fits under the head of the rail, and the lower edge *c*² is made to terminate either in line with the lateral edge of the rail-flange or to project beyond the same, either having its lower surface in contact with the upper horizontal surface of the girder-plate, or otherwise, as may be desired in practice. In case the edge *c*² projects beyond the rail-flange it should be notched or cut away to a depth sufficient to receive my improved spike when the same is driven home to bind the parts of my joint-support together. The points of the spikes D are of the usual chisel shape; but the head is made of a peculiar shape in my invention. The side of the spike D that is contiguous to the rails A I call the "back" face *e*, and the opposite side next to the flanges *b* of the girder-plate B, I name the "front" face. As shown in Figs. 2, 5, and 6, the back face of the head end of said spikes is inclined inward at an angle more or less acute, so that when driven home said inclined face will engage and firmly bear upon the correspondingly-inclined face *f* of the splice-bar C. The front faces of the spikes D, when in position, may be vertical, as in Fig. 2, or inclined, as in Fig. 3, and when driven home they rest firmly against the corresponding inner faces of the flanges *b*. By the aforesaid combination of parts I secure a joint-

support that dispenses with the drilling of the webs of the rails A and the use of all bolts and nuts and obviates the objections thereto both as to their tendency to work loose and the enhanced expense of the manufacture of the same.

To prevent the creeping of the rails from any cause whatever, I thrust a rivet, bolt, or dowel-pin R through the bottom of my girder-plate B, upwardly extending the same to a distance above the horizontal upper surface of the girder-plate to engage the ends of the rails, the corners thereof being cut away or notched at their line of contact to an extent sufficient to admit of the insertion therein of the end of said rivet or dowel, as shown in Fig. 4.

In Fig. 5 is shown a modification of my invention for use when it is desired to adapt my improvements to joints of rails already laid and using the ordinary angle-bar splice or the plain strap or fish-plate. In this case I use in connection with my improved spike a block or head-support E slotted longitudinally in part on its face side, the lower end of said slot being beveled outward to correspond in angle with the beveled back face of the spike-head, and furnish a suitable inclined bearing for the same, the lower end of said block E being beveled in an opposite direction to rest upon the correspondingly-beveled upper surface of the rail-flange upon which said block in use is made to rest. The back face of said block E is more or less vertical to engage superficially with the outer face of said plain fish or splice bar.

When I use this modification, I insert a dowel through the bolt-hole of the splice and that of the rail registering therewith before placing said block E, an arrangement that operates to prevent the creeping of the rails under use.

I may, in lieu of the block E shown in Fig. 5, use a continuous plate nearly or quite as long as the splice and corresponding in cross-section to said block, the external face of the plate being provided with slots of suitable shape to receive the heads of the spikes D.

Fig. 7 shows a modification of my invention as used in lateral support of the rails at points intermediate to the rail ends, and hence performing the function of a guard-brace. This form of guard-brace is valuable when used upon curves of a greater or less curvature in case of rapid transit and heavy tonnage, where the tendency to overturning of the rails under lateral pressure is greatly enhanced.

In Fig. 8 is shown a modification of the support in which the angle-splice C on the side next the wheel-flanges is lighter in weight and section and is held in place by the head of the spikes overlapping the same. This form of joint I use upon roads using light rails and tonnage, and hence not requiring so strong a support as in case of roads using heavy rails under heavy tonnage and rapid transit.

Without limiting myself to the precise construction and arrangement of parts shown, I claim—

1. The combination, with the rails, splice-bars, and girder-plates having side flanges, of the spikes having wedge-shaped heads, said spikes being interposed between the side flanges of the girder-plates and the splice-bars, substantially as described.

2. The combination, with the rails, splice-bars, and girder-plates having side flanges, of spikes having wedge-shaped heads and suitable inclined bearings upon the splice-bars for said wedge-shaped heads, substantially as described.

3. The combination, with the rails, splice-bars having inclined outer faces and girder-plates having side flanges, of the spikes having wedge-shaped heads, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN T. RICHARDSON.

Witnesses:

JOHN E. MALONE,

JAMES A. NAYLOR.