

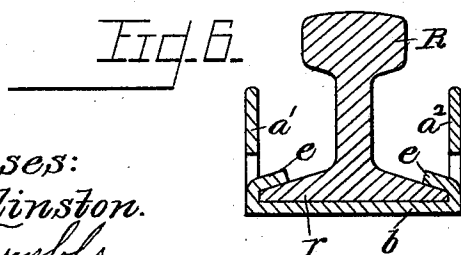
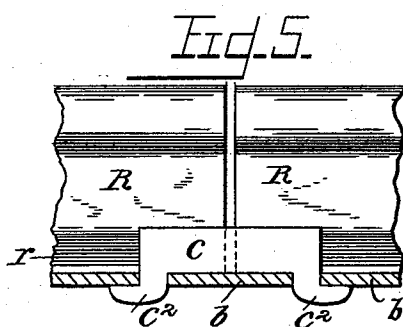
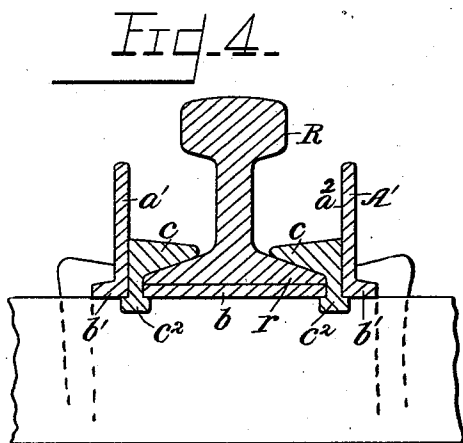
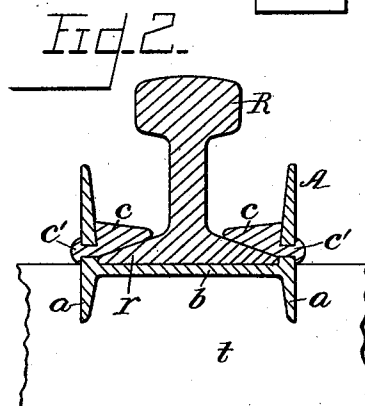
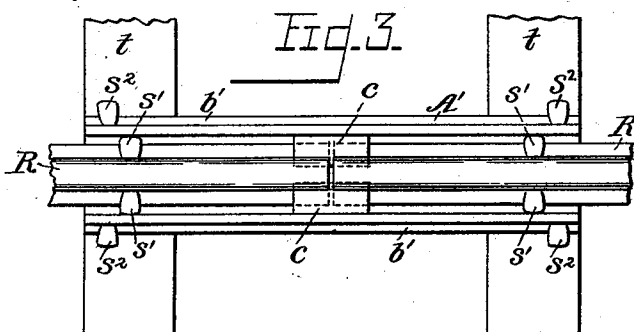
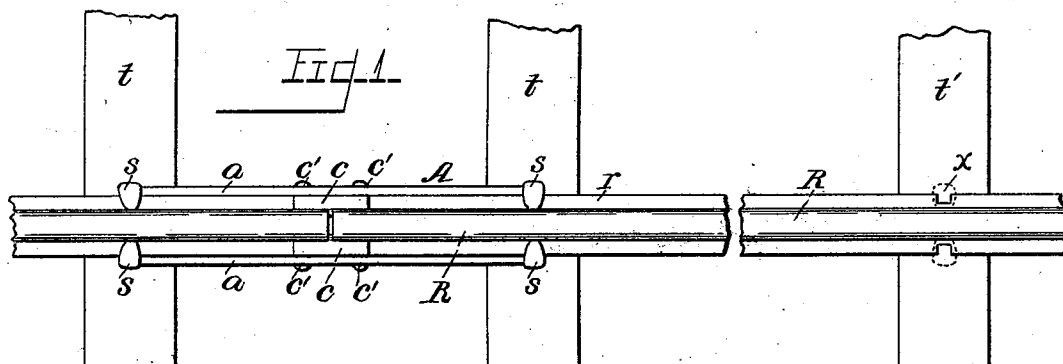
(No Model.)

L. ANDERSON & L. M. HOSEA.

RAILWAY RAIL JOINT.

No. 517,829.

Patented Apr. 10, 1894.



Witnesses:
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UNITED STATES PATENT OFFICE.

LATHAM ANDERSON AND LEWIS M. HOSEA, OF CINCINNATI, OHIO.

RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 517,829, dated April 10, 1894.

Application filed June 28, 1892. Serial No. 438,250. (No model.)

To all whom it may concern:

Be it known that we, LATHAM ANDERSON and LEWIS M. HOSEA, citizens of the United States, residing at Cincinnati, Ohio, have invented new and useful Improvements in Railway-Rail Joints, of which the following is a specification.

Our invention relates to railway tracks; its object being to provide a cheap and efficient supporting connection for the meeting ends of railway rails, which shall constitute a base support for the rails and efficiently resist both vertical and lateral stresses.

To this end and to secure advantages hereinafter adverted to, our invention consists, primarily, in a supporting connection for the meeting ends of railway rails, having the form, substantially, of a rolled I-beam, or channel-bar, adapted to rest upon and between contiguous cross-ties and carry the rails in the trough between the vertical side flanges upon the connecting web, with a central chair-plate or shield at one or both sides covering the meeting ends of the rails; also in the constructive arrangement whereby the supports are secured to the ties and the rails to the supports by ordinary rail spikes—all bolts or special adjuncts being dispensed with; and the entire structure is finished at the shop and requires no assembling of parts on the ground.

Mechanism embodying our invention is illustrated in the accompanying drawings showing the principle thereof in two typical forms of construction.

In the illustrations:—Figure 1, is a plan view of the rails and supporting connection complete in the first of the typical forms referred to, showing the supporting connection as an I-beam resting upon and secured to the cross ties by spikes driven to secure the rails in the ordinary manner beyond the supporting connection. Fig. 2, is a vertical cross section of the same through the chair plates. Fig. 3, is a plan, and Fig. 4, a cross section of the second of the typical forms of construction, namely; a channel-bar with chair-plates secured to the bottom-web and with bolt-holes through the bottom web at both sides of the rails. Fig. 5, is a partial longitudinal section of the supporting connection showing the mode of securing the chair plate

last mentioned; and Fig. 6, a detail cross-section showing a modification wherein the chair-plate is formed by cutting through the side flange of the channel or I-beam and bending inward the flap thus formed.

Referring now to the drawings, and particularly to Figs. 1 and 2, the form of joint shown consists of a rolled I-beam, A, of iron or steel, substantially of standard form, cut to length to span between and extend about half-way over contiguous ties, *t*, which are suitably mortised to receive the lower extensions of the side flanges, *a*, and preferably cut away to receive the connecting web, *b*, so that its upper surface will lie flush with the surface of the tie. The width of the "trough" at the upper surface of the web is just sufficient to receive the base, *r*, of the rails, R, in a close fit. By recessing the ties and seating the flanges, *a*, in the grooves thus formed, the I-beam is secured against lateral displacement. It is held to the ties and end-play prevented by the four rail spikes, S, driven respectively at opposite sides of each rail in the usual manner just beyond and against the ends of the beam, A. The rails, R, thus secured enter the trough of the I-beam, meeting about midway, where their bases, *r*, are held beneath covering shields or chair plates, *c*. These chair plates are preferably drop-forged in the form shown, with corresponding side-shanks, *c'*, *c'*, which are inserted through suitable apertures in the side flanges, *a*, as shown in Fig. 2, expanded in said apertures and held by upsetting the outer ends. They are intended to fit the contour of the rail bases, *r*, closely and span across the interval between the rail ends. Inasmuch as the vertical load upon the structure produces a compressive stress in the upper half of the flanges, *a*, the shank apertures which are solidly filled by the expanded shanks of the chair-plate do not weaken the structure. It will be observed as a feature of this and the constructions hereinafter described, that the longitudinal "creep" of the rail or its end-movement under expansion and contraction is unimpeded. The tendency to end-displacement is greatly increased by joining the ends of the rails by splice bars bolted thereto as in the construction at present generally used; and is seriously detrimental to

the alignment of the track and the integrity of the joints. We avoid this difficulty by the construction of the joint described, and by notching the rail-base at opposite sides at or about the longitudinal center as indicated at, x , (Fig. 1;) so that the holding spikes driven into the central tie, t , in said notches, perform the double function of holding the rail to its tie and at the same time anchor it centrally as against any tendency to longitudinal displacement. All elongation or contraction by varying temperature or otherwise being thus referred to a fixed central point in each rail of the entire track, and the end-joint being constructed to permit a limited end movement of the rails, it becomes practicable to abut the rails quite closely in the joints, allowing only sufficient space to accommodate the effect of the extremes of atmospheric temperature. Thus all "buckling" of the track is prevented and consequent injuries to the connecting joint prevented.

Instead of relying upon an anchorage at one central tie only, we may duplicate the notches to form a similar engagement upon an adjacent cross tie.

Instead of sinking the I-beam in the tie to bring the bottom of the trough flush with the tie surface, grooves for the side flanges only may be provided, and the web, b , may be extended longitudinally outward at each end beneath the rail as a support across the tie or the rails may rest upon suitable plates provided for the purpose.

Referring now to the second typical form of the device, illustrated in Figs. 3 and 4, A' , designates a rolled channel-bar cut to length to rest entirely across and between the two contiguous ties, t . The channel-bar consists of two parallel sides, a' , a^2 , rising above the connecting web, b , as far as may be, within the clearance limits of the car wheel. The channel-bar may be provided at each side with an outer ledge, b' , extending its bottom web, b . Between the vertical sides, a' , a^2 , the rails, R , rest upon the web, b ,—the width of the channel between the sides being greater than that of the rail-base by about the thickness of the ordinary rail-spike, at each side. Through the web, b , adjacent to the vertical sides, are punched four holes at longitudinal intervals, those nearest the ends of the channel being used as spike-holes for holding spikes S' , and the central ones for the insertion of the shanks, c^2 , of chair plates, c . The latter are substantially similar to those shown in Figs. 1 and 2, but have their shanks extended downward through the bottom web, b , instead of outward through the sides, and secured by expansion and upsetting outward as shown.

In manufacturing, the punching of holes through the web, b , may be effected during the final step of rolling a continuous channel-bar which is then cut in lengths. The insertion of the plates, c , may be subsequently made while the latter are heated and thus upset and

secured over a proper templet representing the rail base, r , to produce a close driving fit upon the ultimate rail when applied in use. These parts being properly constructed as indicated, the supporting-connection, A' , is placed across and between the ties, t , and the rail ends inserted into position and held by the chair-plates, c , and the inner spikes, s' . Outer spikes, s^2 , are then driven at opposite ends of the bar, A , engaging upon the outer ledge, b' . The chair-plates, c , and the spikes, s^2 , are intended to wedge the rail tight between the opposite sides, a' , a^2 , of the channel and prevent lateral or vertical movement of the rail. The outer ledge, b' , and spikes, s' , secure the support to the ties independently of the rail and add to the security of the joint. This latter construction is especially adapted to roads where the heaviest traffic is carried, as the mode of support is that of a girder with firmly fixed ends. The rail holdings are symmetrically disposed into a fixed system.

A modification may be made in the chair plate, that is to say; it may be formed as an integral part of the channel or I-beam, by cutting through the side flanges, a' , a^2 , at three adjacent sides of a rectangle and bending the flap, e , thus formed inward as illustrated in Fig. 6.

We have thus shown and described the preferred forms in which our invention may be carried out, adapted to different conditions of service or the varying preferences of engineers. Other mechanical modifications may be made; as, for example, the outer ledge, b' , extending the base or connecting web, b , may be omitted at one or both sides; or, additional spike holes may be provided through the web b to duplicate the spikes, s' . A practicable and useful structure can be made, also, by combining certain features of the device shown in Fig. 1, with those shown in Fig. 3; but we have not thought it necessary to exhibit these possible variations since they are clearly within the spirit of our invention.

We claim as our invention and desire to secure by Letters Patent of the United States—

1. A support for the meeting ends of railway rails consisting of a section of rolled channel or I-beam provided centrally with chair plates or shields secured thereto as a permanent part of the structure rigidly secured thereto at opposite sides within the trough formed by the sides and connecting web—said chair plates being formed to overlap and span across the meeting ends of the rail bases, substantially as set forth.

2. A railway rail-joint embodying a channel or I-beam girder spanning between and resting upon its connecting web upon contiguous cross-ties and having side flanges extended vertically a sufficient width to sustain the load-stress; and provided centrally with shoe-blocks or chair-plates as part of its structure to receive and overlap the meeting ends of the rails: in combination with rails having their meeting ends resting in the

trough of the girder, and spikes driven into the ties and directly engaging the bases of the rails and holding the rails to the girder and thereby securing the girder to the ties substantially as set forth.

3. A railway rail supporting joint consisting of a section of rolled channel or I-beam upon and spanning between contiguous ties, in combination with the rails fitted to the trough between and in contact with the vertical side flanges, chair plates permanently secured to the beam as a part of its structure and spanning across contiguous ends of the rail bases at each side; and rail spikes driven at each end of the beam and at side and engaging over the bases of the rails, holding both beam and rails to the ties and preventing end play of the beam, substantially as set forth.

4. A support for the meeting ends of rail-

way-rails consisting in a section of rolled channel or I-beam girder adapted to span between and rest upon contiguous ties and carry the rails upon the web connecting the sides, and provided with outer ledges b' , for the engagement of spikes, substantially as set forth.

5. The combination of a channel or I-beam, with a chair-plate provided with one or more shanks, inserted through suitable apertures of the beam and upset, securing the chair plate to the beam, substantially as set forth.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

LATHAM ANDERSON.
LEWIS M. HOSEA.

Witnesses:

ALBERT W. STORSMEISTER,
LONDON FREYBLER.