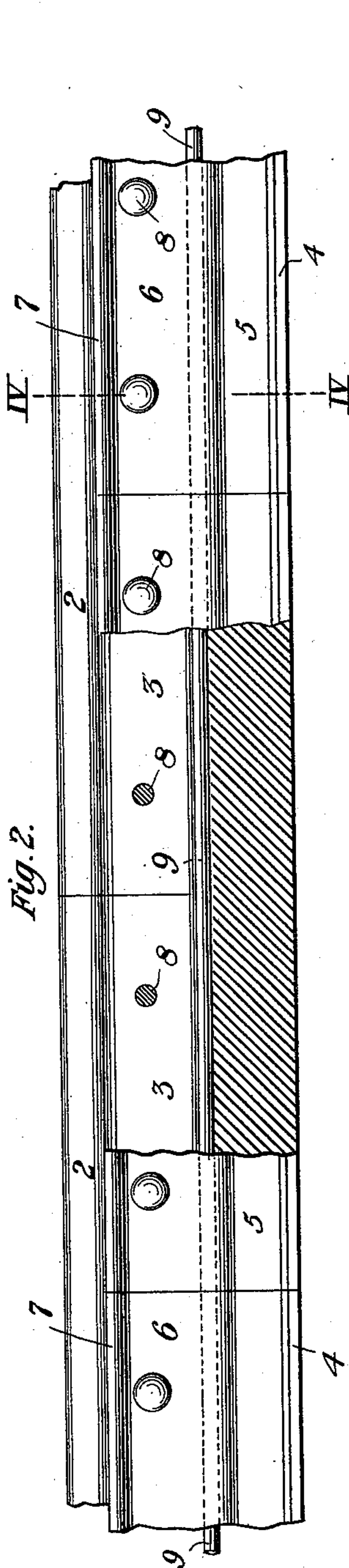


(No Model)

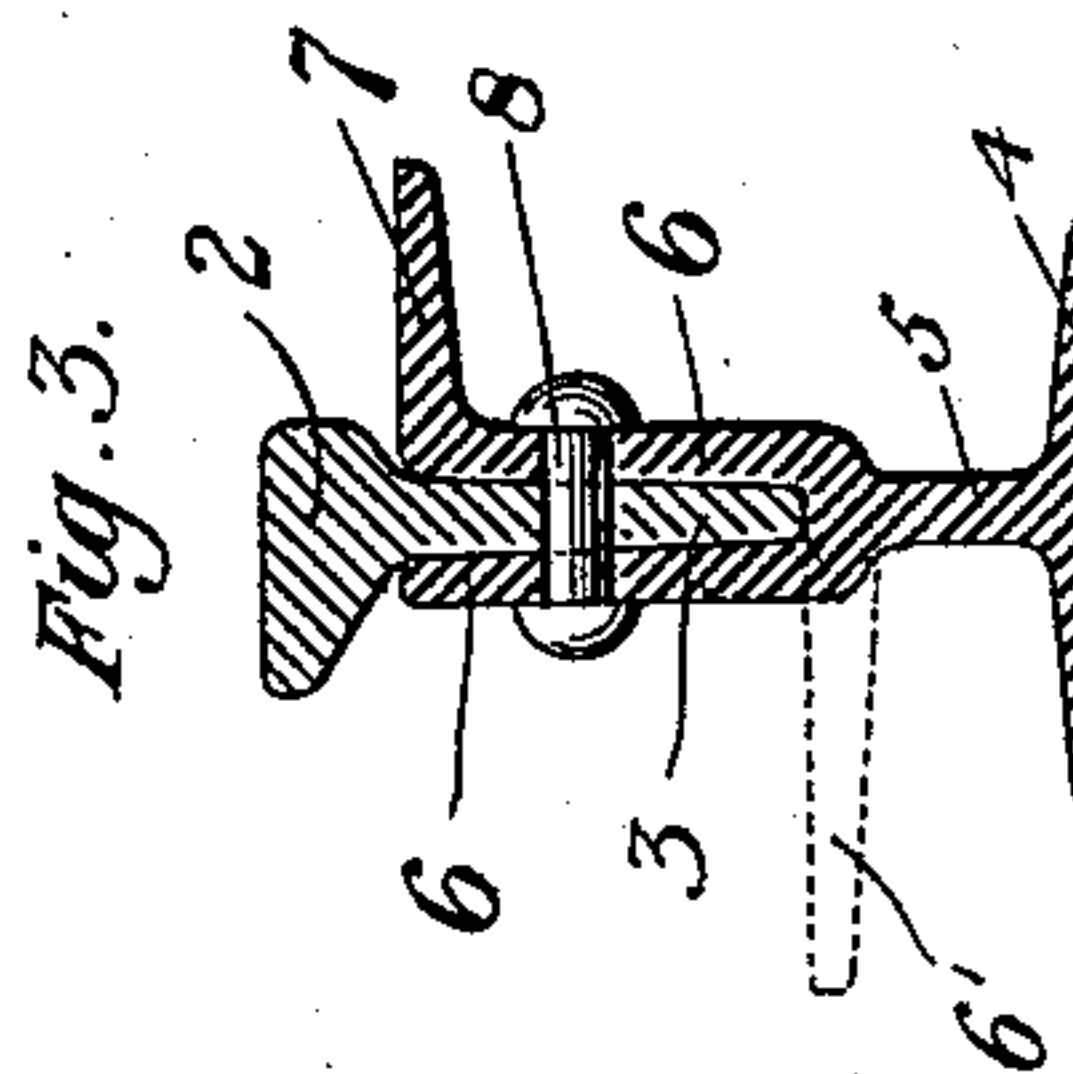
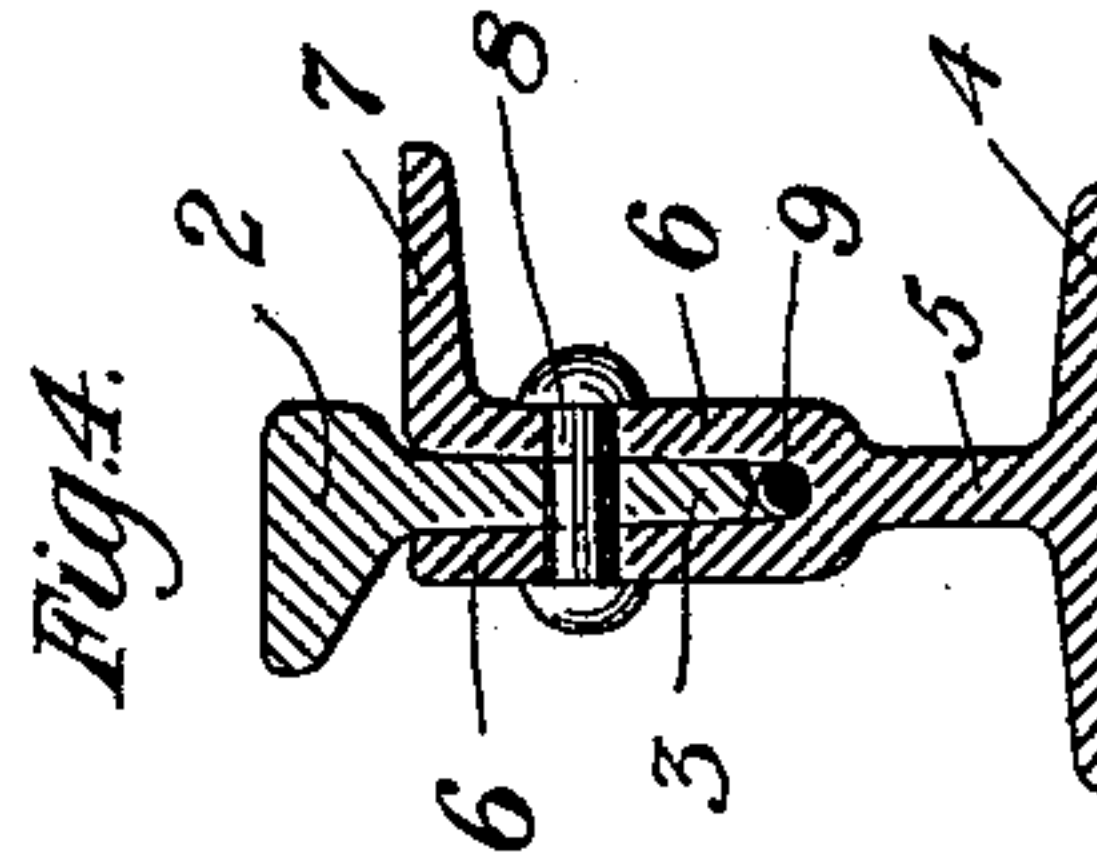
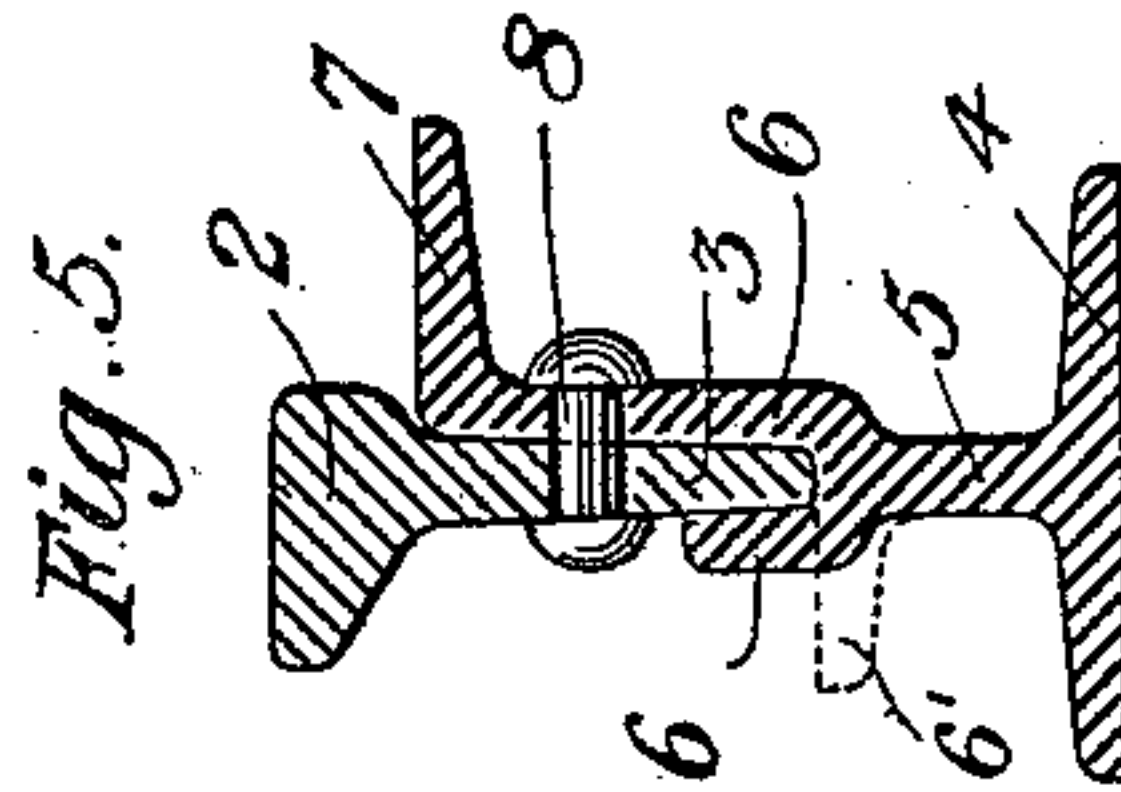
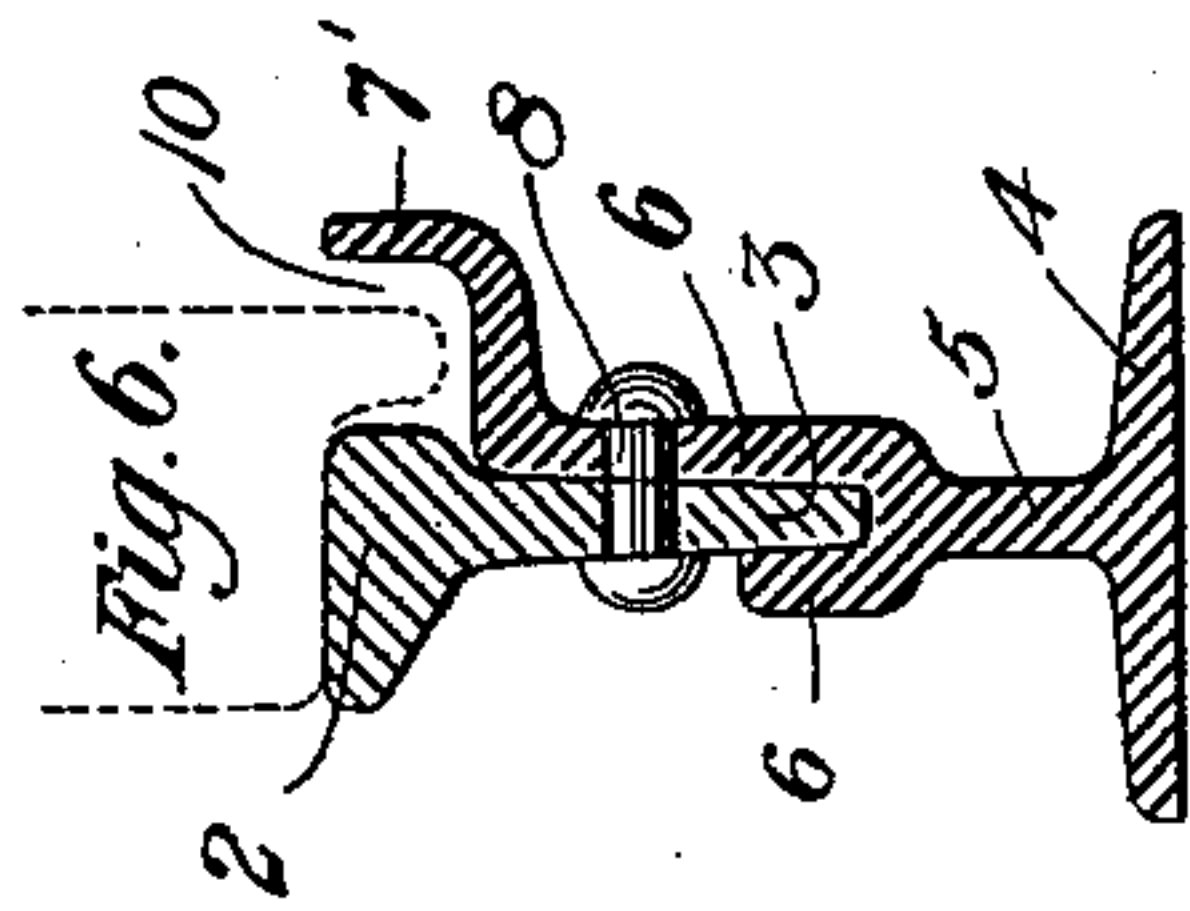
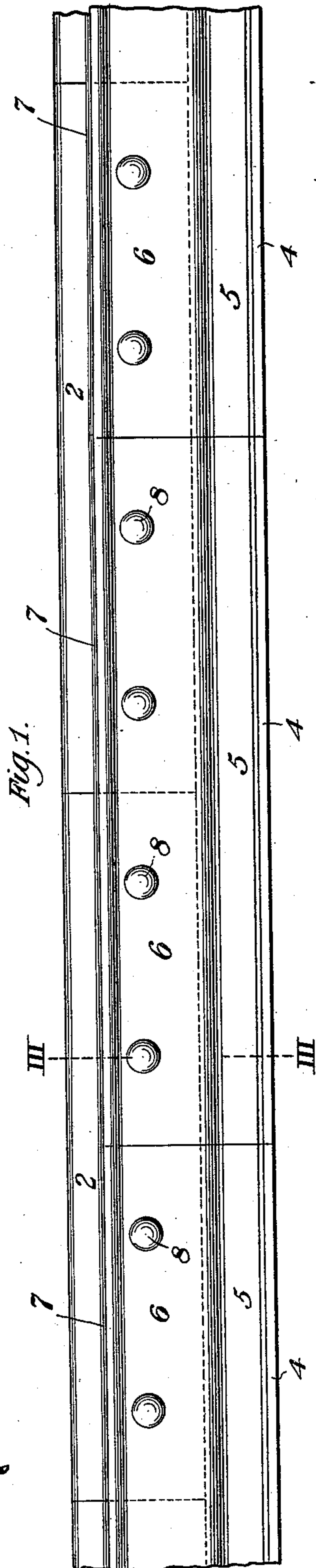
W. S. ELLIOTT.  
GIRDER RAIL.

No. 583,110.

Patented May 25, 1897.



WITNESSES:  
*Peter Edwards*  
*Geo. M. Harton*



INVENTOR,  
*William S. Elliott.*  
*by C. M. Clarke* Att'y



# UNITED STATES PATENT OFFICE.

WILLIAM S. ELLIOTT, OF PITTSBURG, PENNSYLVANIA.

## GIRDER-RAIL.

SPECIFICATION forming part of Letters Patent No. 583,110, dated May 25, 1897.

Application filed August 1, 1896. Serial No. 601,324. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM S. ELLIOTT, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented or discovered a new and useful Improvement in Girder-Rails, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this application, in which—

Figure 1 is a side elevation of a portion of track built in accordance with my invention. Fig. 2 is a similar view of a modified construction, partly broken away, exposing the circuit-wire. Fig. 3 is a cross-sectional view taken on the line III III of Fig. 1. Fig. 4 is a similar view taken on the line IV IV of Fig. 2. Fig. 5 is a similar view illustrating a modified construction of chair. Fig. 6 is a similar view illustrating a still further modification.

Similar numerals of reference refer to like parts wherever used throughout this specification.

My invention relates to the construction of street-railway tracks, and has for its object the formation of a compound rail consisting of a continuous separate chair and a continuous separate tread built up and joined in such a manner that the resulting structure shall be practically one continuous rail of equal undeviating strength at all points and free from weak joints or connections. A frequent cause of trouble in railway-tracks arises from unevenness of the surface at the joints due to the "pound" of the wheels, it being almost impossible to properly support and rigidly connect the meeting ends of the tram-rails by the usual means of fish-plates and chairs, especially when such joint occurs between the ties. I have obviated this difficulty by the use of a continuous flanged chair so constructed as to receive the web of the tram between its side members, the sections being lapped so as to break joint and the parts being riveted or bolted together at intervals throughout the entire length of the track.

A further object of my invention consists in the use of a ground-wire inclosed between the two members, making continuous contact and securing the required results and func-

tions of such a wire in the highest degree in a most simple, economical, and efficient manner in electric-railway tracks.

Referring to the drawings, 2 is the head or tread of the rail, having the downwardly-projecting web 3 preferably slightly tapered. The chair consists of a bottom flange portion 4, a central web structure 5, and two side members 6 6, one of which is turned at right angles and formed into a flange 7, which constitutes the tram of the rail. Between the side members 6 6 is left an open space corresponding in size and taper of the sides to the web of the tread-member web 3.

Rivets or bolts 8, passing through holes in the side members 6 and web 3, respectively, which holes may, if preferred, be somewhat oval in shape and are equally spaced, serve to connect the members together.

In the forms illustrated in Figs. 1, 3, 5, and 6 the bottom of the web 3 bears directly against the solid metal of the chair at the base of the opening between the sides 6, thus transmitting the strain of the load directly to the body portion of the chair instead of a bearing of the side members against the under side of the head, as is the practice in some forms of built-up rails known to me, which construction results in a shearing action against the head. These forms of rails are illustrated in patents to R. V. Jones, No. 56,760; G. R. Dunbar, No. 171,782; P. Bargoin, No. 236,530, and E. Robinson, No. 429,868, with which I am familiar and which I do not desire to claim as any part of my present invention.

When it is desired to embed a circuit-wire 9 within the rail between the two members, the web 3 is made sufficiently shorter to leave space for the wire, which is laid continuously throughout the rail, the pressure thereon insuring a good contact with the metal, while at the same time it is quite protected from contact with foreign bodies.

In Fig. 6 the tram 7 is bent upwardly, as at 7', leaving a gutter 10 between the tread 2 and such upturned part of the tram for the reception of the flange of the wheel, as indicated in dotted lines, whereby the wheel is prevented from leaving the track in rounding



curves. Such a grooved rail may also be used to advantage on a straight track, if desired.

In the operation of rolling the various sections of chair illustrated one of the side members 6 is first reduced to its finished section, as indicated in dotted lines at 6', at right angles to the main body portion, and then bent up to the desired position. This operation of rolling can be easily accomplished by the use of rolls of proper section, the successive passes resulting in the finished section, as shown.

In Figs. 5 and 6 the upwardly-extending side 6 opposite to the outwardly-extending tread 7 is made comparatively short and just sufficient to embrace the lower side of the web 3, the rivet 8 connecting but one side with the web, such construction being desirable in light sections of rail.

If desired, this portion 6 may be entirely dispensed with, as shown in Fig. 7, the tram and its web resting on the web structure 5 and against the side 6, a part of which is formed into the tread.

Having described my invention, what I claim is—

1. In combination with a tread member provided with a head 2 and web 3; a flanged base member having a central web structure and divided extensions thereof embracing the tread member, one of such extensions projecting laterally and constituting a tram member, substantially as set forth.

2. In combination with a tread member pro-

vided with a head 2 and web 3; a flanged base member having a central web structure and divided extensions thereof embracing the tread member, one of such extensions projecting laterally and constituting a tram member, with a wire-space intervening between the bottom of the space between the divided extensions and the base of the tread-member web, substantially as set forth.

3. In combination with a tread member provided with a head 2 and web 3; a flanged base member having a central web structure and divided extensions thereof, one of such extensions embracing the base of the tread-member web, and the other projecting up to the head of the tread member and then laterally, and constituting a tram member, substantially as set forth.

4. In combination with a tread member provided with a head 2 and web 3; a flanged base member having a central web structure and divided extensions thereof, one of such extensions embracing the base of the tread-member web, and the other projecting up to the head of the tread member and then laterally and upwardly, forming a safety-groove, and constituting a tram member, substantially as set forth.

In testimony whereof I have hereunto set my hand this 24th day June, 1896.

WILLIAM S. ELLIOTT.

Witnesses:

PETER J. EDWARDS,  
C. M. CLARKE.