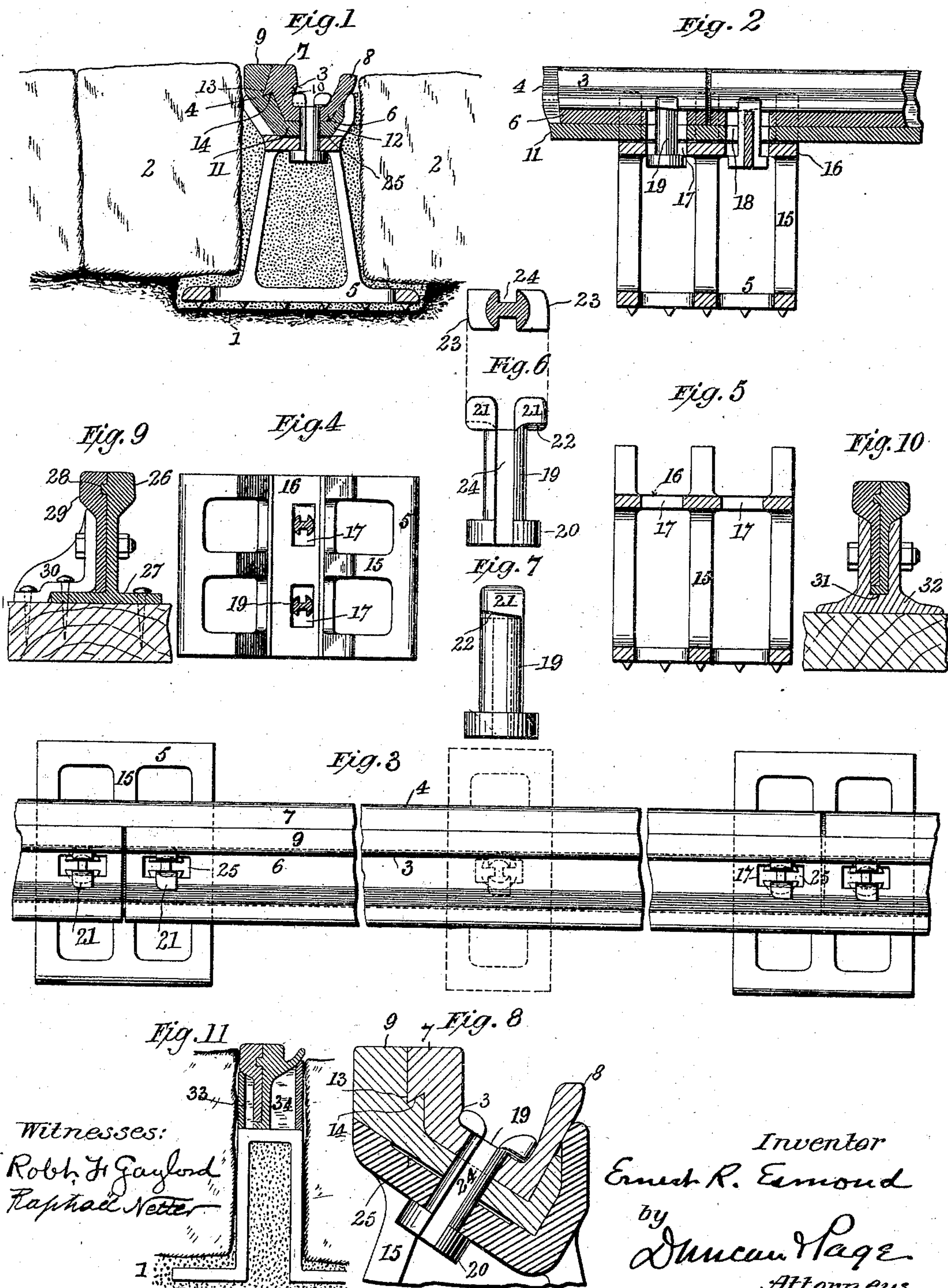


(No Model.)

E. R. ESMOND.  
RAILROAD RAIL.

No. 500,688.

Patented July 4, 1893.





# UNITED STATES PATENT OFFICE.

ERNEST R. ESMOND, OF NEW YORK, N. Y.

## RAILROAD-RAIL.

SPECIFICATION forming part of Letters Patent No. 500,688, dated July 4, 1893.

Application filed December 12, 1891. Serial No. 414,844. (No model.)

*To all whom it may concern:*

Be it known that I, ERNEST R. ESMOND, of the city, county, and State of New York, have invented certain new and useful Improvements in Railroad-Rails, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

The present improvements relate to continuous, compound or built-up rails, that is, to rails the treads of which are composed of two parallel members or parts joined together in overlapping or break-joint arrangement so that the tread of the completed or built-up rail will be continuous or free of any cross joints cutting the tread entirely through laterally.

The invention has for its purpose to provide improved means for holding such a divided or compound tread rail in place on the road bed, the essential object being to secure the two members of the rail directly together, and also on or in a base, chair or like device which may be continuous of the rail or interrupted, which base is common to both members of the tread and is arranged to receive the downward thrust of either or both of the said members and prevent their moving relatively in a vertical direction.

Another purpose of the invention is to provide one member of the rail with a foot or lateral side extension that projects under the other member and constitutes a part upon which it rests.

Other details of improvement will be pointed out in the claims to follow the description.

Referring to the drawings, Figure 1 is a cross-sectional view of a surface rail adapted to horse-cars or similar roads. Fig. 2 is a side view of a portion of the same, the flanges of the rail being sectioned away longitudinally, and the tread portion being exposed; the chair or base supports are also centrally sectioned. Fig. 3 is a plan view of the parts of Fig. 1. Fig. 4 is a plan view of one of the chairs in detail. Fig. 5 is a lengthwise vertical section of one of the chairs. Fig. 6 is a side elevation of one of the locking bolts by which the rail is secured to the chair, and also a cross-section of the same. Fig. 7 is a like elevation view of one of these bolts, taken

at right-angles to the position in Fig. 6. Fig. 8 is a detail cross-section of the rail and top of a chair, in modified form. Figs. 9, 10 and 11 are modifications of the rail and chair.

Referring to Figs. 1 to 11, 1 represents the ground, 2 paving stones, 3 and 4 the two members making up the rail, and 5 a chair for supporting the rail. The rail of these figures is a so-called groove rail, or one adapted to horse-car roads, or to other like roads where it is desired to have the tread and groove flange practically flush with the surface of the road bed. The upper member 3, or outer tread portion, of this rail is constructed to have a flat base 6, which is practically the bottom of the groove between the tread portion 7 and the flange portion 8; which base may be horizontal as in Fig. 1, or inclined to a horizontal plane as in Fig. 8. This groove and flange may be of other shapes and forms, adapting the rail to surface use or to any of the various other uses where it is desired to employ a groove rail. The other member or outer tread portion 4 of the rail, is in general form the same as that of the member 3, having a tread 9, a slanting web portion 10, a flat base 11, and flange 12, though this flange is not an essential; these parts being of proper form and size to adapt the two members to be placed, closely fitting together, one upon and one within the other, as seen in Figs. 1 and 8. The tread portions of the two members of the rail rise to the same horizontal level, and their inner faces interlock by the bevel slot 13 and bevel rib 14. The chairs employed to support this rail are constructed with a base or foot portion 5, uprights 15 and the seat 16. The inner parts of the base are cut away except along the sides of the same and between the uprights; also the uprights at their tops are separated except along the seat 16, thus producing a series of ground and rail bearings in one structure, which is of an open framework construction, and therefore light and yet rigid and durable. The seat 16 is shaped to the form of the under-face of the rail 4 and is pierced by the slots 17, as also are the base parts 6 and 11 of the rail pierced by slots 18. The rail lies in the seat, and the holes 18 through the same correspond in position to the holes 17 in the chair seat.

19 is a lock bolt for securing the rail to the



chair. It has a round head 20 and flanged locking shoulders 21, which shoulders have oppositely beveled cam faces 22; likewise the outer ends of these cam shoulders have vertical cam faces 23 oppositely turned. The opposite sides of the shank of this bolt are lengthwise grooved between the cam shoulders by slots 24. The upper end of such a bolt is inserted through the chair seat from below and through the rail; it can then be turned from above to lock the rail in position on the chair, the cam faces 22 acting to draw the parts together vertically, while the cam faces 23 will bear against the sides of the groove in the top members of the rail and jam so as to secure the bolt against turning back and loosening. At the same time these shoulders press laterally to hold the vertical parts of the rail closely pressed together. To further insure these bolts remaining in place, a key or keys 25 is inserted in the slots 24, such key filling the space between the bolts and the ends of slots 17. The particular purpose of this construction of bolt will be now understood. After a rail is laid and the ground, paving stones, concrete or other groundwork is closed in, it is desirable to not disturb the same. Therefore, in repairing or relaying rails, the locking bolts have but to be turned, after the keys 25 are removed, to free the rails. The bolts will be held from dropping through the chair seats by the concrete or earth packed in and around the chair—see Fig. 1.

It is to be understood that the parts 3 and 4 of the rail are laid one upon the other in break-joint arrangement, as particularly seen in Figs. 2 and 3, where the rails 3 abut between the ends of the rail 4. Thus there is produced a continuous tread without cross-joints cutting the tread through laterally.

If desired, packing, elastic or non resonant material may be placed between the rail and chair, or between the members of the rail, and to this end I show a shallow trough-like groove 25 in the top of the chair seat.

In Fig. 8 the seat of the chair is shown as approaching a V-shape, and the base of each member of the rail inclines downwardly in a correspondingly slanting direction. This form and arrangement insures the holding closely together of the members of the rail and their secure position on the chair. Under pressure the rail is driven downward, and the resulting tendency is to press the treads together and hold the flange of the upper member against outward lateral movement. Furthermore, this wedging of these parts effects the desired cushioning action of the rail.

In Fig. 9 the part 26 of the rail has a lateral flange 27 which rests upon a tie or stringer, also a rib 28 that interlocks with a groove in the other member 29 of the rail. The web of this member 29 rests upon the flange 27 of the part 26. The two parts of the rail are properly bolted together at proper intervals, and any suitable form of bracket or brace 30

is employed to sustain and secure the rail in position.

In Fig. 10, one member is provided with a foot flange 31, corresponding to the flanges 27 of Fig. 9, upon which rests the web of the other member of the rail, a chair 32 being employed to support the rail, hold the parts thereof together and receive the downward thrust of the rail when under pressure. This foot 31 stiffens the member of which it is a part against lateral strains and pressure, also it serves as a vertical support for the other member particularly between separated chairs and when the rail is suspended.

In Fig. 11, a grooved two-part tread-rail is shown inclosed by the chair support 33 and having a cross-sectional width the same as the tread of the rail, the webs of the rail resting laterally against the vertical and spaced webs 34 projecting inwardly from the sides of the chair. This chair, as well as the others shown, may be continuous, in the form of a girder support and constitute a part of the permanent road-bed, or placed at proper intervals in lengths suiting the conditions of road bed and character of support necessary to the rail.

The improvements described may be embodied in light rails, like horse-car rails, or in heavy rails such as are adapted to locomotive traction. The parts of the rail may be bolted together, further than herein shown and described, as may be desired and as is requisite according to the demands of construction. Also suitable provision for expansion and contraction can be had. Other modifications and changes are possible which do not limit my improvements, but do not call for mention here, being well known to those skilled in this art.

It will be noticed that in each of the forms of rail shown the base flange of the rail is wholly on one member, the other member at its base rests on and is supported by the first named member; and the interlock between the two is located in the head of the rail. By thus forming the two members, and thus locating these parts of the joint between them, I insure the solidity of the compound rail, render it most capable of withstanding the strains to which it is subjected when in use, and prevent any and all vertical movement of the one member independently of the other.

What is claimed as new is—

1. A rail road rail vertically divided lengthwise through its head and web, forming two members, one formed with the base flange of the rail, the other at its base resting on and supported by the first named member and the two interlocking in the head as and for the purposes hereinbefore set forth.

2. A grooved railroad rail, composed of two longitudinal parts or members which are secured directly together and jointly compose the tread of the rail, one of which parts is provided with a wheel-flange groove and en-



gages with the other part by laterally projecting parts.

3. In combination with a rail having a two-part tread, a chair for supporting the rail, and  
5 a cam bolt passing through the said chair and lateral projections of the parts of the tread to secure the rail to the chair.

4. In combination with a rail having a two-part tread and being vertically slotted, a chair  
10 also vertically slotted, and a lock bolt 19 hav-

ing the cam faces 22 and key slot 24, the bolt being adapted to pass through the slotted portion of the chair and rails and turned to a position to bolt and bind the parts firmly together.

ERNEST R. ESMOND.

Witnesses:

ROBT. F. GAYLORD,  
ERNEST HOPKINSON.