

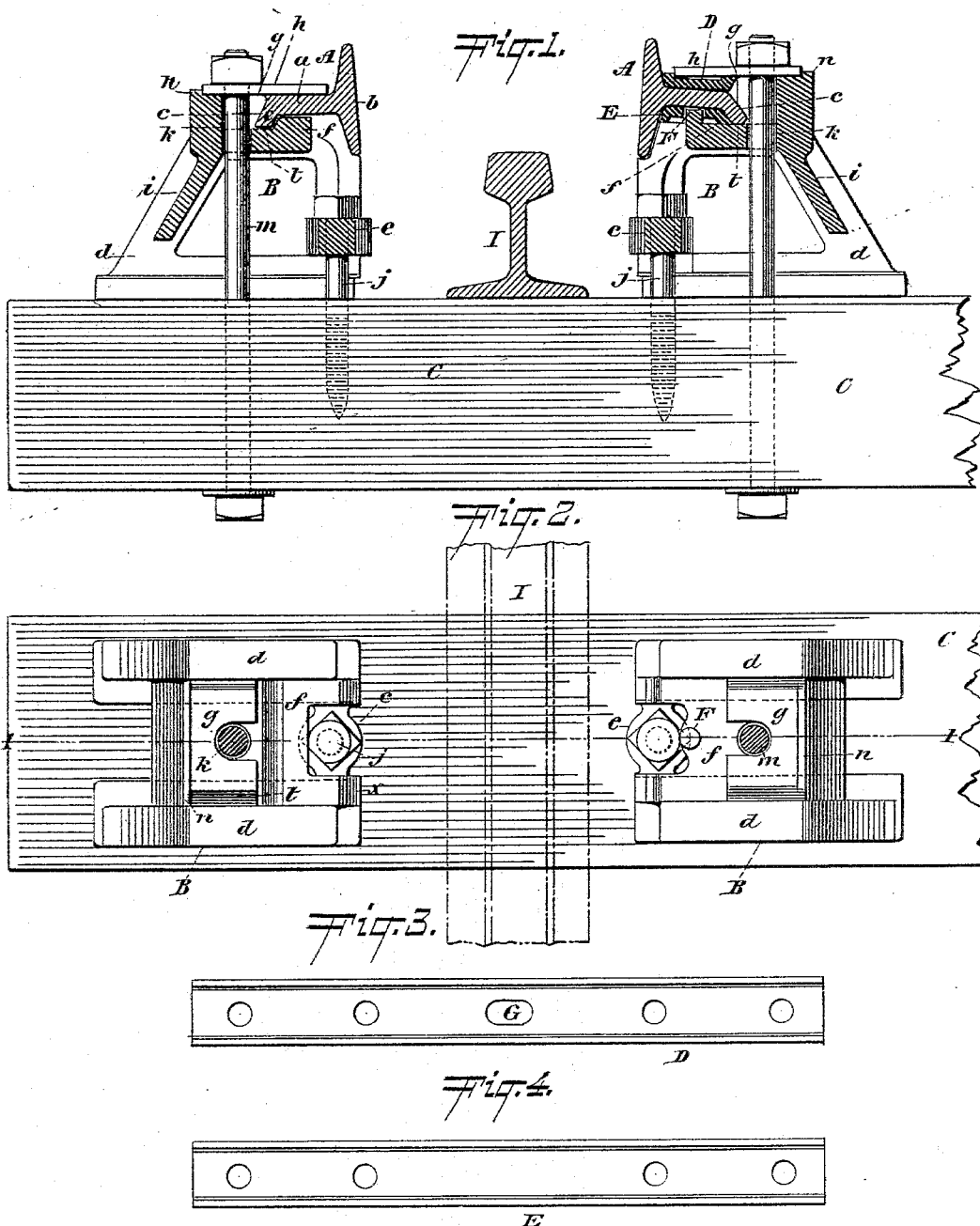
(No Model.)

2 Sheets—Sheet 1.

E. A. TRAPP.  
GUARD RAIL FOR RAILWAYS.

No. 490,325.

Patented Jan. 24, 1893.



WITNESSES:  
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Fig. 5.

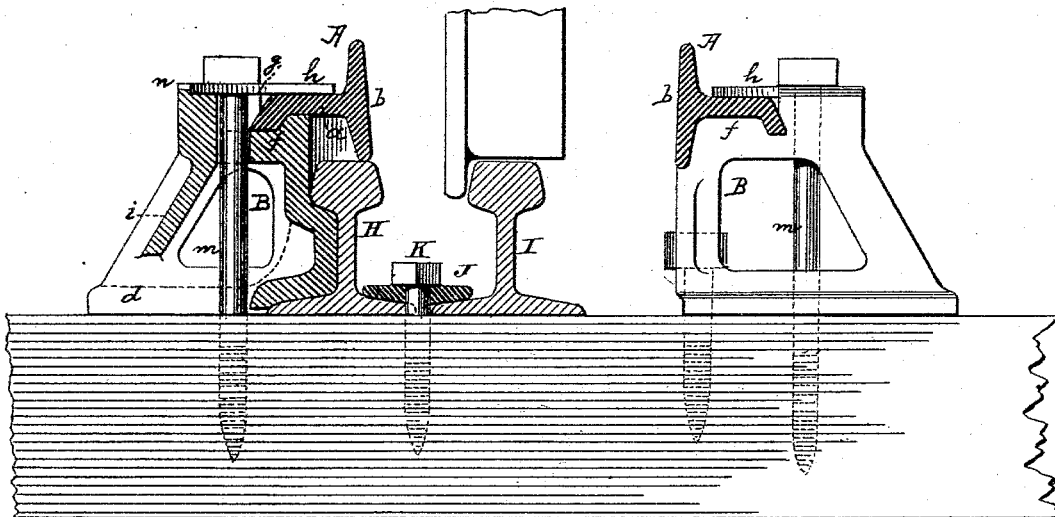
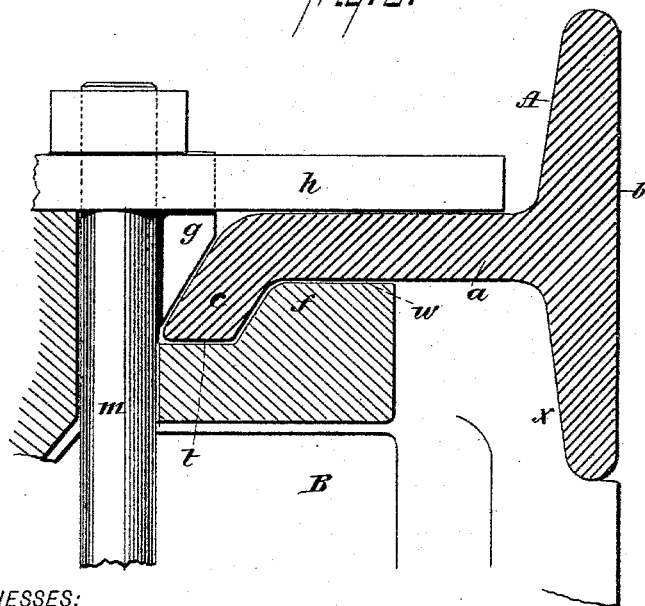


Fig. 6.



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# UNITED STATES PATENT OFFICE.

EDWARD A. TRAPP, OF PATERSON, NEW JERSEY.

## GUARD-RAIL FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 490,325, dated January 24, 1893.

Application filed September 27, 1892. Serial No. 447,013. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD A. TRAPP, a citizen of the United States, and a resident of Paterson, in the county of Passaic and State of New Jersey, have invented certain new and useful Improvements in Guard-Rails for Railways, of which the following is a specification.

The invention relates to improvements in guard rails for railways, and pertains more particularly to the form of the rail and the construction of the chairs which support the same, as hereinafter more fully described and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this application, Figure 1 is a central vertical transverse section through a part of a railway track and showing one of the usual T-rails with guard rails and chairs on each side thereof constructed in accordance with and embodying the invention; the chair at the right hand side of the figure illustrating the application of fish plates, and the chair at the left hand side of the figure representing the relative relation of the chair and guard rail where no fish plates are required; Fig. 2 is a top view partly in section of same, the T-rail being indicated by dotted lines, the guard rails and fish plates being entirely removed, and the dotted line 1—1 denoting the section on which Fig. 1 is made; Fig. 3 is a detached bottom view of the lower fish plate; Fig. 4 is a detached top view of the upper fish plate; Fig. 5 is a central vertical transverse section through a part of a railway track at a point where there is a curve and showing the application of the chairs and guard rails at each side of the main track rail; and Fig. 6 is an enlarged vertical transverse section through the guard rail and a portion of its supporting chair.

In the drawings A indicates the guard rails, and B the chairs secured to the ties C and supporting said rails.

The guard rail A is of novel form and is composed of the web *a* having at one edge the double flange or tread *b* and at its other edge the short arm *c*, which is of about the same thickness as the web *a* and extends therefrom on an obtuse angle, as shown more clearly in Fig. 6. The rail A is of a form which affords the maximum degree of strength and permits

the same to be secured in the most rigid manner, and while I specially claim said rail for use as a guard rail for railways I do not confine the invention in every instance to such use, since it may with advantage be employed as a beam or girder or otherwise, where great strength and rigidity are required with the minimum weight. The guard rail A is constructed with a view of rendering it throughout capable of resisting great strain, without the consumption of an undue quantity of metal and without creating in the rail a bulky appearance.

The chairs B are each preferably a single casting and composed, as shown at the left hand side of Fig. 1, of the opposite sides *d, d*, with the connecting bar *e* at the lower front edge, and the solid portion forming the top of the chair and comprising the bed *f* for the guard rail A, the bed *g* for the clip plate *h*, and the downwardly extending web *i*, which connects the sides *d, d*, and adds strength to the structure. The connecting bar *e* of the chairs B is provided with a vertical aperture to receive the bolt or lag screw *j* by which the front portion of the chair may be firmly secured to the usual ties. The rear or outer portion of the chairs B is provided with the vertical opening *k* to receive the bolt *m* which as illustrated in Fig. 1 extends from the upper portion of the chairs downward entirely through the ties and serves not only to rigidly secure the chairs in place but also to fasten the clip plate *h* downward upon the bed *g* and web of the guard rail A. The bed *g* is on a higher elevation than the bed *f* and is about on a level with the upper surface of the web of the guard rail when the latter is in position, and at the outer edge of the bed *g* is provided the elevated shoulder *n* against which the outer end of the clip plate abuts when in position. The upper end of the bolt *m* is provided with a suitable nut by which the clip plate *h* may be tightened upon the bed *g* or loosened therefrom at will. The middle portion of the bed *g* toward its inner or front edge is entirely removed, as illustrated more clearly in Fig. 2, and the front edge of the bed *g* is under-cut or recessed inward and outward, as indicated in Fig. 6, down to the lower level of the bed *f*, which, as illustrated more clearly in Fig. 6, receives

the web *a* and the short arm *c* of the guard rail A. The upper surface of the bed *f* conforms in outline with that of the lower surface of the guard rail A and, as may be seen more clearly in Fig. 6, said bed comprises the under-cut recess *t* to receive the short arm *c*, the elevated surface *w* to receive and support the web *a* and the front vertical recess *x* receiving and supporting the lower flange of the tread *b*.

The guard rail A will be used upon one or both sides of the usual T-rails, and said guard rail will first be placed upon the bed *f* of the chairs B and thereafter the clip plates *h* will be secured thereon by means of bolts *m*.

The guard rail A is supported by the chairs B from the outer edge of its tread to the extreme outer edge of the short arm *c* and is prevented from losing its position not only by the clip plate *h*, but also by the form of the under-cut recess *t* which receives the short arm *c*. It will be observed upon reference to Fig. 6 that any strain upon the tread of the guard rail would be resisted not only by the clip plate *h* but also by the walls of the recess *x* and the under-cut surface formed by the outer inclined wall of the recess *t*. In the absence of the clip plate *h* the guard rail would resist considerable force since it would not tilt downward toward the track-rail, being effectually held in its upward position by the recess *t* and recess *x*, but more particularly by the said recess *t*. The clip plate *h* however, adds greater security to the guard rail A and will be found desirable particularly where the rail is used as a guard rail for railways. The clip plates are prevented from turning or twisting by the shoulders *n* which engage the adjacent edges of said plates.

At points where the meeting ends of the sections of the guard rail shall appear on the chairs B it will be desirable to employ fish plates D, E, which will overlap the joints in the usual manner of fish plates and be secured by bolts passing through apertures provided in the plates and guard rails; and in such instances the upper surface of the bed *f* will be provided with a stud F pointing upward and adapted to enter an elongated aperture G provided in the lower fish plate D as illustrated in Figs. 1 and 3. The upper surface of the fish plate D will conform to the lower surface of the web and short arm of the guard rail A, as illustrated in Fig. 1, and the upper surface of the upper fish plate E will be about on a horizontal plane with the lower surface of the clip plate *h* which will be utilized to secure the fish plates and guard rail down upon the chairs B.

The chair B illustrated at the right hand side of Fig. 1 indicates the relative position of the guard rail, fish plates, clip plate and chair, and this chair like the chair at the left hand side of Fig. 1 is provided with the recess *t* to receive the short arm of the guard

rail and with the recess *x* supporting the lower flange of the tread of said rail.

The chairs B adapted to receive the fish plates D, E, are substantially the same in construction as the chairs which receive the guard rail without the fish plates, but in the former there is a greater depth between the levels of the beds *f*, *g*, to compensate for the extra thickness caused by the presence of the fish plates D, E. The elongated slot or opening G in the lower fish plate D receives the stud F and by reason of its elongated form it will engage said stud whether the joint between the sections of the guard rail are directly in the center of the chairs B or to one side or the other thereof.

The form of the chairs B for use at points where there is a curve in the road and an extra T-rail H employed, as shown in Fig. 5, will vary somewhat from the outline of the chairs illustrated in Figs. 1 and 2, in that the inner front portion of the chairs will be made to conform to the outline of the outer side of said rail H and hence when in position the chairs will snugly fit the outer side of said rail H and aid in securing the same in position.

The chair B illustrated at the left hand side of Fig. 5 snugly fits the outer side and upper surface of the rail H and not only aids in holding the rail H down upon the ties but is itself in part held downward by said rail, thus affording a very durable and effectual means for securing the parts, and in addition the lower edge of the tread of the guard rail A rests upon the upper surface of the rail H thereby obtaining a firm support.

Between the T-rail H and the usual track rail I is placed the plates or washers J which overlap the flanges of said rails and are secured by lag screws or bolts K, the said plates or washers J being thus utilized to aid in securing both the rail H and the usual track rail I in position and being also preferably rectangular in outline.

The guard rail A supported with its double flange on edge on the usual guard rail H will be used only at curves and crossings, and, as will be observed, it increases the height of the guard rail H.

What I claim as my invention and desire to secure by Letters Patent, is:—

1. The rail consisting of the web having at one edge the double flange and at the other edge the arm extending at an obtuse angle therefrom; substantially as shown and described.

2. The rail consisting of the web having at one edge the double flange and at the other edge the arm extending at an obtuse angle therefrom, combined with the bed for said rail having an under-cut recess to receive the said arm; substantially as set forth.

3. The rail consisting of the web having at one edge the double flange and at the other edge the arm extending at an obtuse angle therefrom, combined with the bed for said rail

having the conforming recess to receive said arm, and the clip plate; substantially as set forth.

4. The guard rail, and the chair supporting same and having the bed *g* and shoulder *n*, combined with the clip plate secured on said bed and overlapping said guard rail; substantially as set forth.

5. The guard rail, and the chair supporting same and having the stud *F*, combined with the fish plates *D*, *E*, the lower of said plates having the elongated aperture *G*; substantially as set forth.

6. For use on curves and crossings the usual guard rail *H* combined with a guard rail supported with the edge of its double flange on said rail and increasing the height of said rail *H*; substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 23d day of September, A. D. 1892.

EDWARD A. TRAPP.

Witnesses:

CHAS. C. GILL,  
ED. D. MILLER.