

(No Model.)

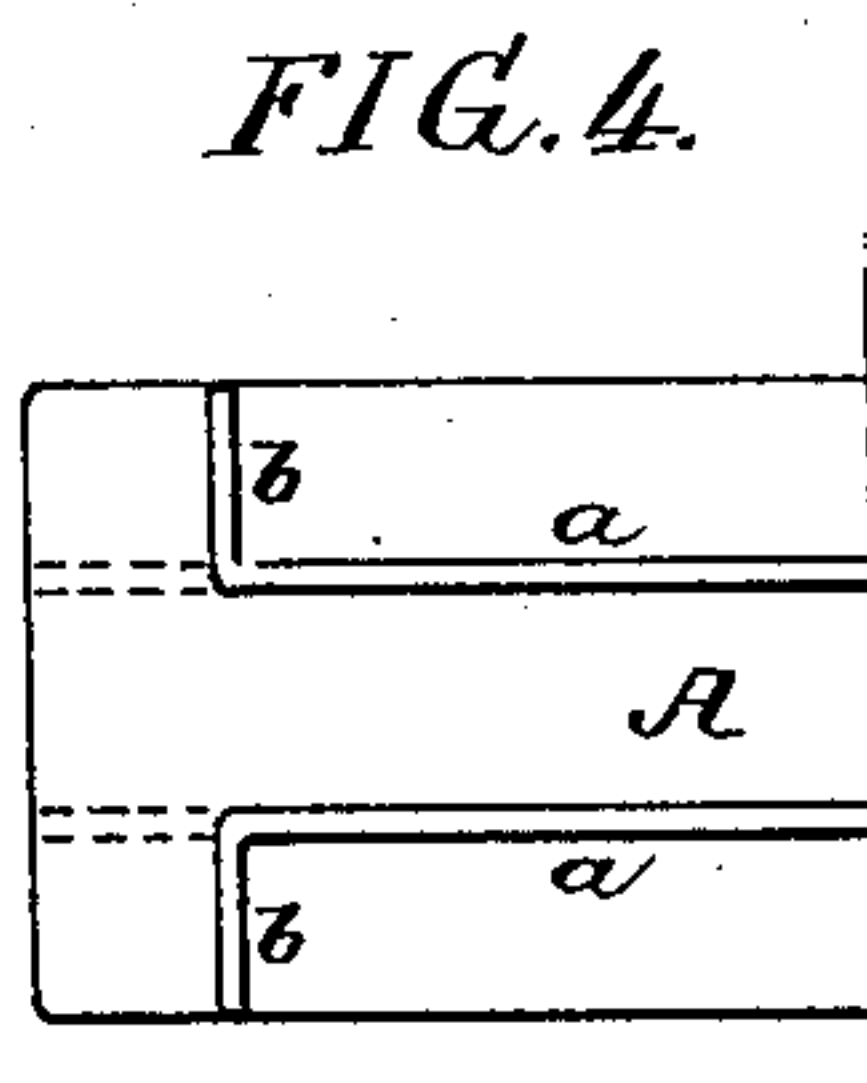
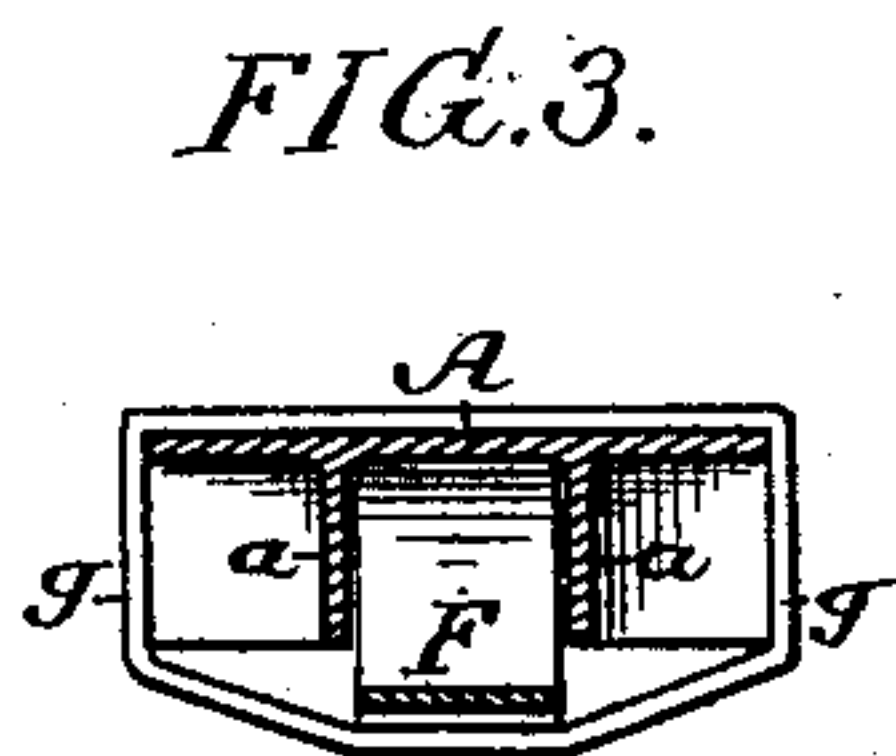
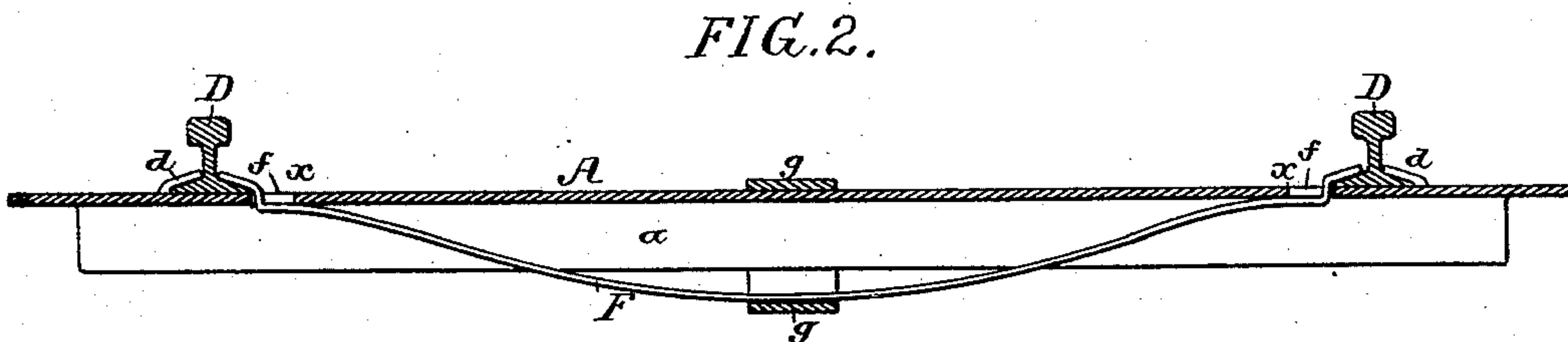
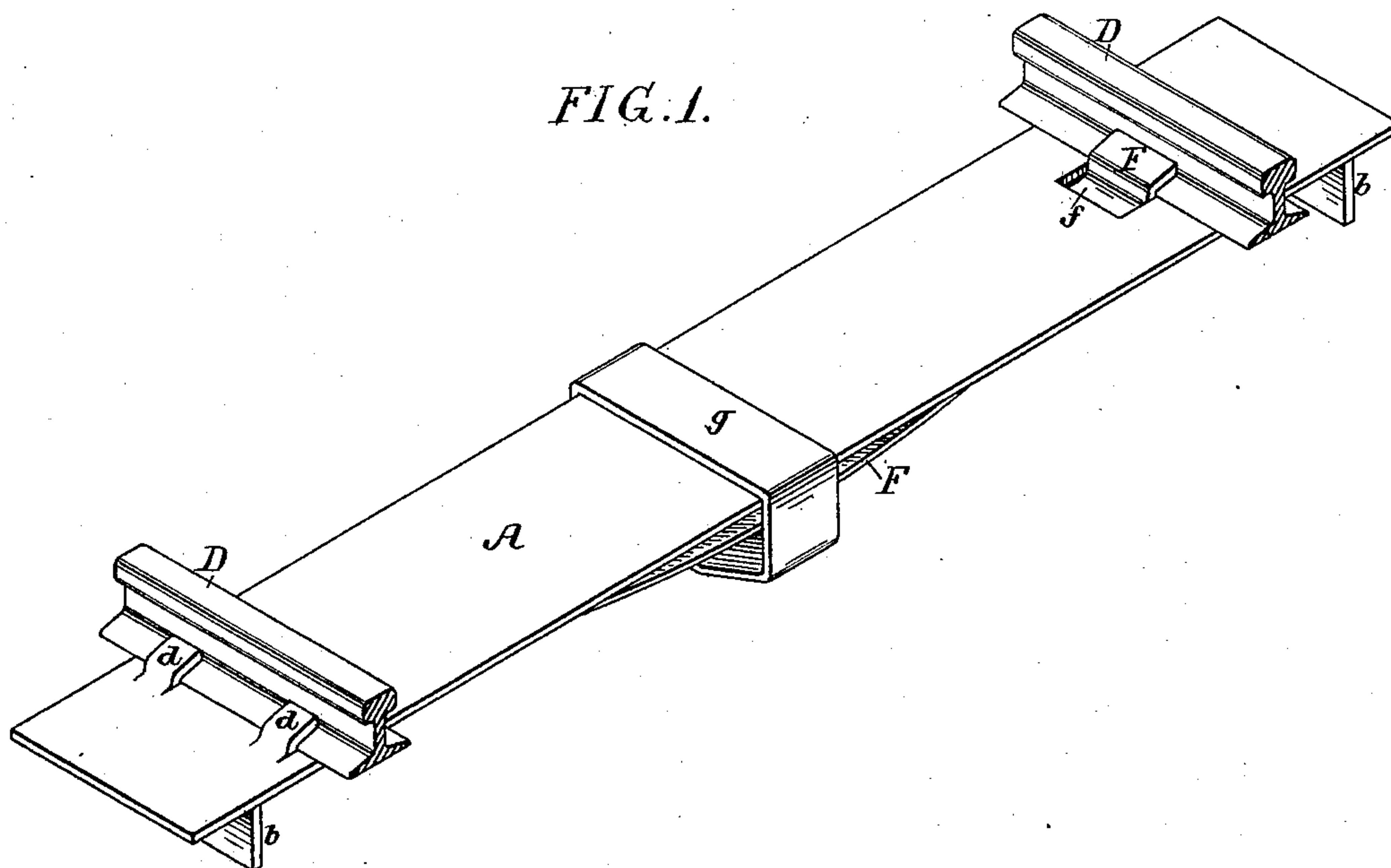
2 Sheets—Sheet 1.

A. ROELOFS.

RAILROAD RAIL TIE AND FASTENING.

No. 365,350.

Patented June 21, 1887.



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Inventor:
Anthony Roelofs
by his Attorneys

Howson & Son

(No Model.)

2 Sheets—Sheet 2.

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FIG. 5.

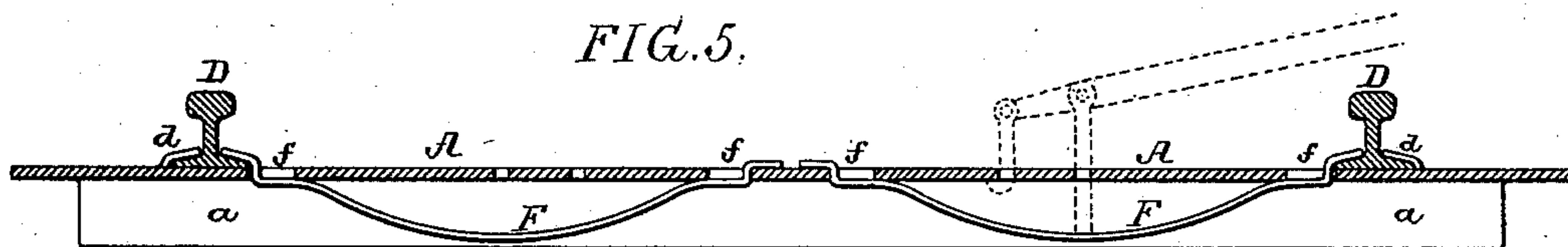


FIG. 9.

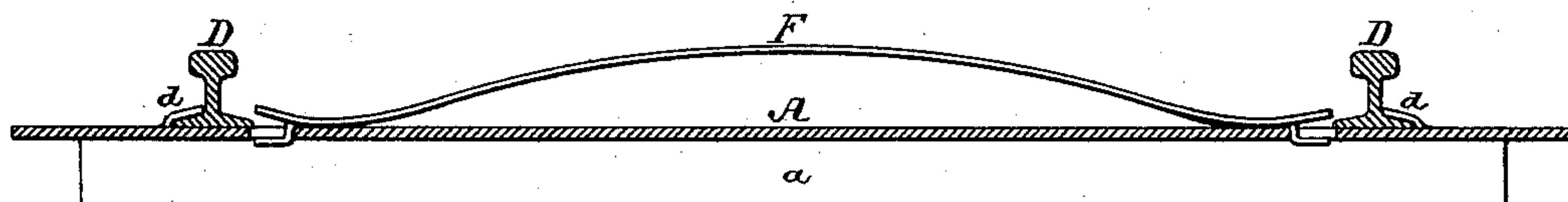


FIG. 10.

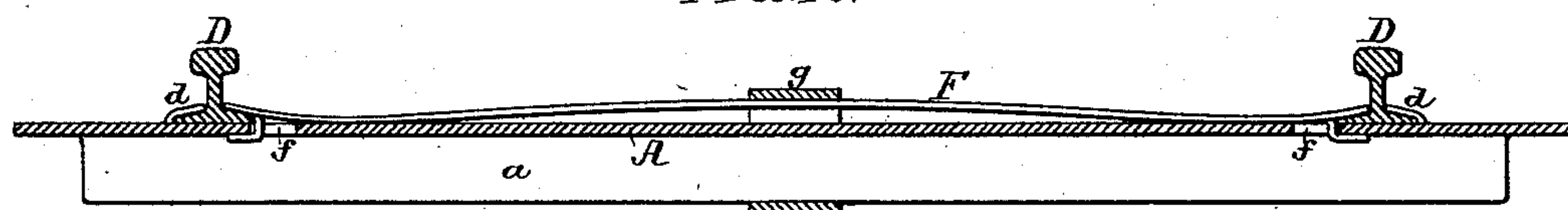


FIG. 8.

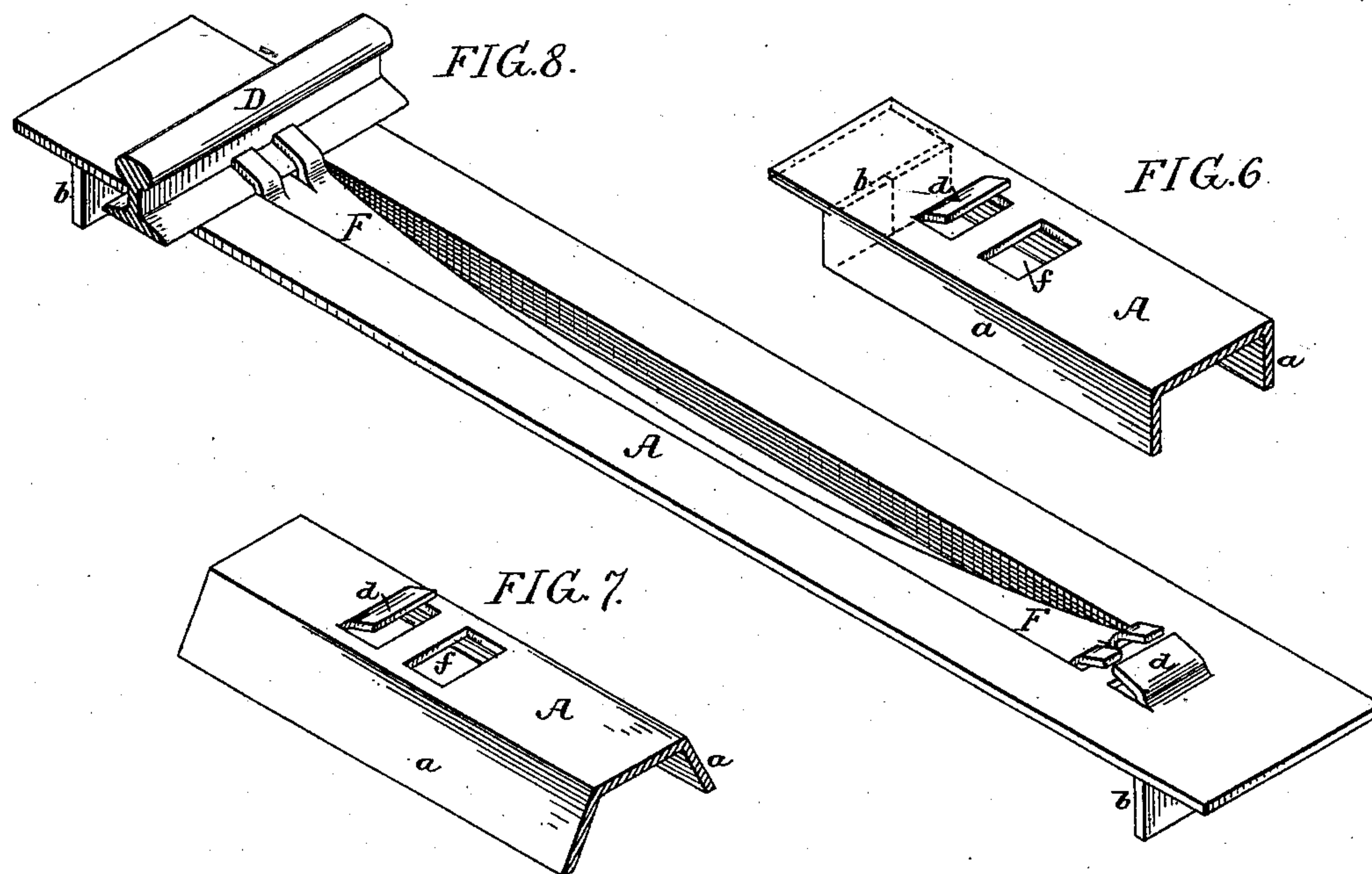


FIG. 6.

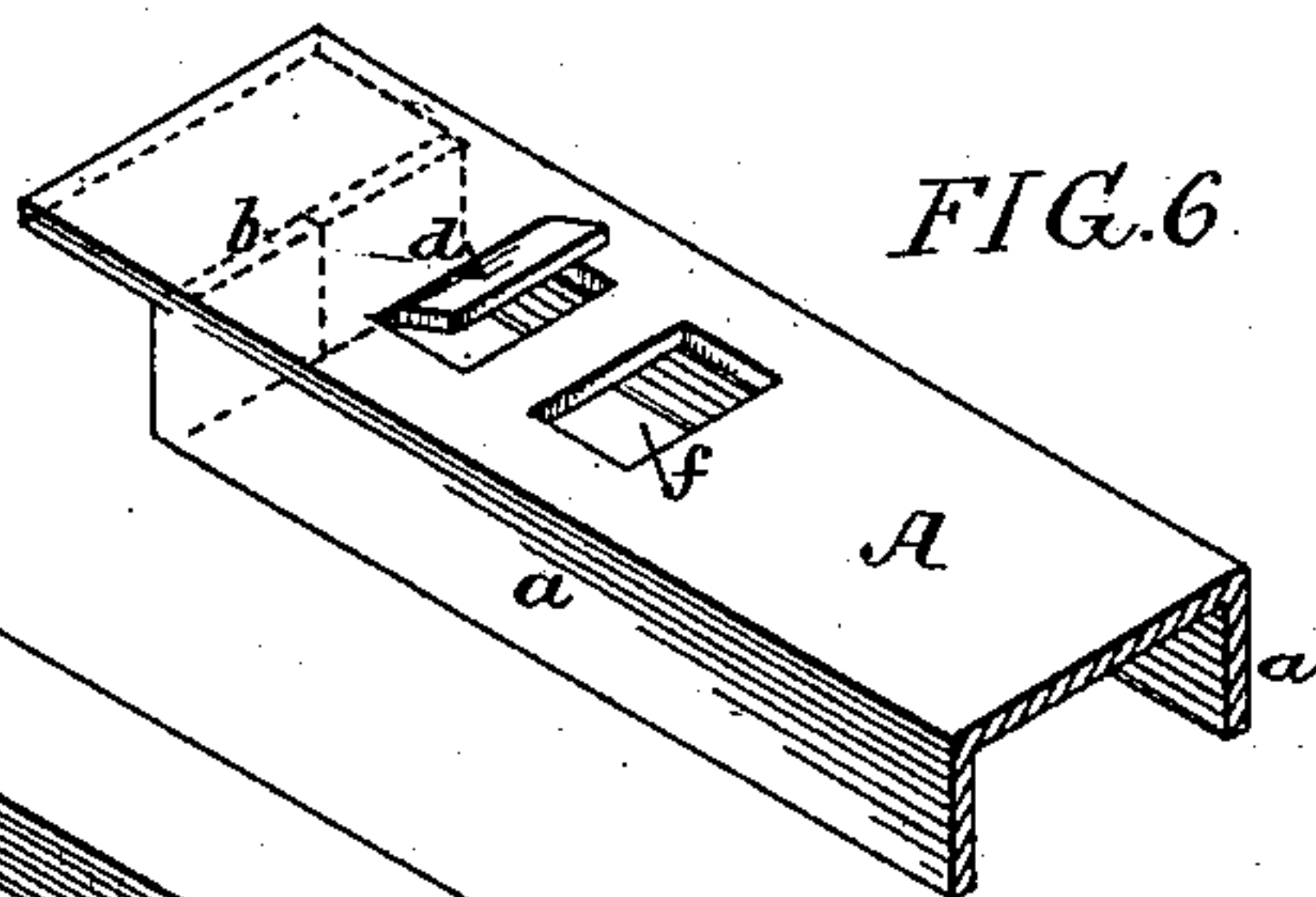
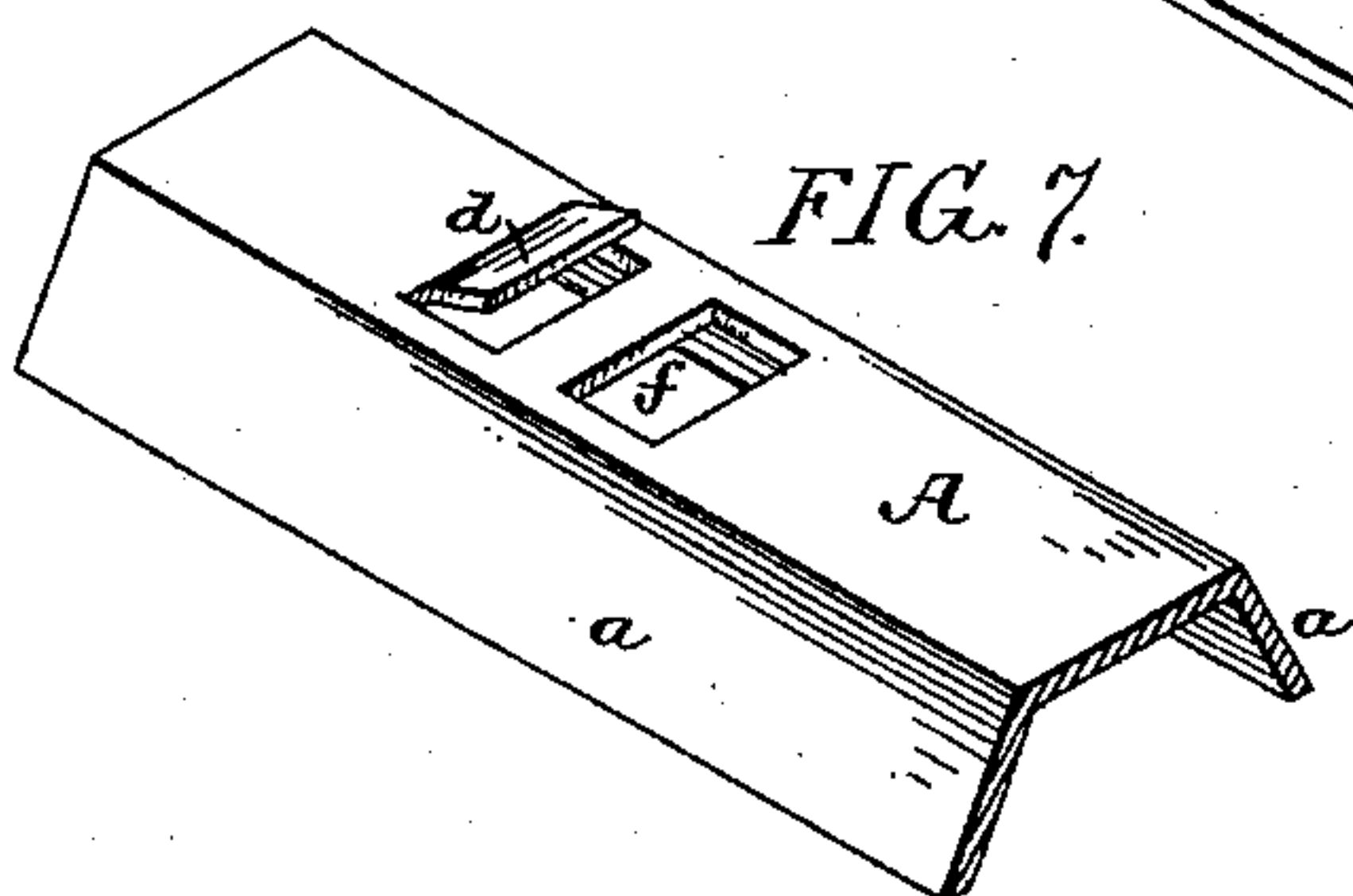


FIG. 7.



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UNITED STATES PATENT OFFICE.

ANTHONY ROELOFS, OF PHILADELPHIA, PENNSYLVANIA.

RAILROAD-RAIL TIE AND FASTENING.

SPECIFICATION forming part of Letters Patent No. 365,350, dated June 21, 1887.

Application filed March 26, 1887. Serial No. 232,535. (No model.)

To all whom it may concern:

Be it known that I, ANTHONY ROELOFS, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Railroad-Rail Ties and Fastenings, of which the following is a specification.

My invention relates to a rail-fastening device for use in connection with a metallic tie, the object of my invention being to so construct the fastening device that the number of parts composing the same will be reduced to a minimum, and bolts, nuts, or equivalent retaining devices will be rendered unnecessary.

In the accompanying drawings, Figure 1 is a perspective view showing a metallic cross-tie, with portions of two rails and a fastening device therefor, constructed in accordance with my invention. Fig. 2 a is longitudinal section of the same; Fig. 3, a transverse section; Fig. 4, an inverted plan of one end of the tie, and Figs. 5 to 10 views of modified forms of the tie and fastening device.

The tie consists of a flat web or plate, A, having on the under side depending flanges *a*, which are slit for some distance from each end of the tie, the free ends of the flanges being then bent laterally, so as to form wings *b*, which engage with the ballast of the track and effectually prevent any lateral slipping of the tie thereon.

From the flat web A of the tie are struck up lugs *d*, which overlap and retain the outer flanges of the rails D, these retaining-lugs being so located on the tie that when the rails are properly applied thereto the track will be of the desired gage.

In the web A are formed openings *f* for the reception of the opposite hooked ends of a transverse retaining-bar, F, which is preferably made of material possessing elasticity, whereby the rails will be retained in place on the tie by reason of the resiliency of the bar, the opposite hooked ends of which overlap the inner flanges of the rail, as shown in Figs. 1 and 2.

In order to release the rails from the control of the retainer, pressure may be applied to the latter at or about the center, so as to bend the bar and thus longitudinally contract the same until one of the rails is free from the control of the hooked end of the bar, the retainer

being then readily detached from the opposite rail by moving it longitudinally.

In applying the retainer to the rails the latter are first adjusted to their positions against the lugs *d*, one of the hooked ends of the bar is adapted to the flange of one rail, and the bar is then sprung until the opposite hooked end of the same can be passed through the opening *f* inside the flange of the opposite rail, after which the bar is allowed to expand, so as to bring its hooked end into engagement with said flange. When the ballast is properly packed under the tie, the springing of the bar is prevented, as said bar bears directly upon the ballast; but if it is not desired to rely solely upon the ballast for this purpose, a yoke, *g*, may be used, as shown in Figs. 1 and 2, this yoke embracing the tie, and being movable longitudinally thereon, so that it can, if occasion requires, be employed to govern the degree of elasticity of the bar by being moved along on the bowed portion of said bar. A bolt and nut may take the place of the yoke, if desired, although the latter is preferred as the simplest device.

It will be seen that in the structure shown in Figs. 1 and 2 both rails are retained by a single bar, so that the number of parts in my improved fastening is reduced to the lowest possible limit, no reliance being placed upon bolts, nuts, rivets, or equivalent means to complete the fastening, for the yoke *g*, or its equivalent, is not to be regarded as an absolutely necessary part of the fastening, but rather as a precautionary device in the matter of a check to supplement any defect in the ballast as a bearing for the bar.

So far as it dispenses with bolts, nuts, &c., my invention may be carried out even if more than one retaining-bar is used. For instance, in Fig. 5 I have shown two such bars—one for each rail—the inner ends of the bars being hooked and engaging with suitable bearings on the tie.

A convenient means of springing the bar is a rod passing through an opening in the web of the tie and hung to a lever, which is pivoted to a link having a hooked end adapted to another opening in the tie, as shown by dotted lines in Fig. 5.

The construction of the tie itself may be

varied without departing from the essential feature of my invention, the tie shown in Fig. 6 being a simple inverted U-bar with depending flanges at the opposite edges, while the tie shown in Fig. 7 has these flanges inclined, the latter form of tie being preferable for roads having dirt ballast.

In the tie shown in Fig. 8 the bar F is contained in a recess in the top of the tie, and has at each end two sets of fingers, one overlying and the other underlying the rail-flange, so as to prevent vertical displacement of the bar.

Although when the ballast is removed and pressure is properly applied to the elastic retainer the latter can be readily sprung so as to release the rail, said retainer possesses such longitudinal rigidity that the rails are firmly pressed outward against the fixed lugs on the tie.

When the retainer shown in Figs. 1 and 2 is used, any lifting of the inner flange of the rail, due to the outward thrust of the wheel against the tread, is resisted by the retainer, owing to the fact that the latter has a rigid bearing against the tie at the point *x*, which is but a short distance from the flange of the rail, as shown in Fig. 2, that portion of the retainer which projects beyond the bearing being so short as to have little or no elasticity or tendency to yield to vertical pressure.

While I prefer to use, in carrying out my invention, an elastic retaining-bar, on account of its tendency to exert, by reason of its expansion, a constant outward thrust upon the rails, and thus keep them at all times pressed snugly against their outer bearings, an inelastic bar may be employed in place of the elastic bar, if desired. For instance, a bar of wrought-iron or other metal possessing no elasticity may be constructed with suitable retaining-fingers at its outer ends, and this bar may then be bowed or bent, as shown in Fig. 9, so as to contract it longitudinally to such an extent that the fingers can be adapted to the inner flanges of the opposite rails when the latter have been adjusted so as to bear against the outer fixed stops on the tie. By applying pressure to the bent bar the latter may then be so expanded as to force its opposite ends firmly against the inner portions of the rails, the bar, owing to its lack of elasticity, remaining in the flattened condition to which it is reduced, so as to firmly retain the rails. If the length of the bar has been accurately gaged to accord with the required distance between the rails, the bar will be completely flattened in expanding the same; but the bar is preferably of a length slightly in excess of the exact gage of the track, so that when expanded to the fullest extent it will still remain slightly bowed, as shown in Fig. 10.

I have shown the bar on the top of the tie, as it is there most accessible for the application of pressure; but it may, as will be evident, be used beneath the tie in the same manner as the elastic bar, if desired. When the bar is on the top of the tie, the yoke *g* serves as a means of

preventing evil-disposed persons from readily bending the bar, so as to withdraw its fingers from engagement with the rail.

I am aware that prior to my invention a rail-retaining bar has been applied to a metallic cross-tie, this bar consisting of a strip of wrought-iron secured to the tie by a central bolt and acted upon near the ends by set-screws which depressed the ends of the bar upon the flanges of the rails; but in this fastening there was no longitudinal expansion of the bar and no outward thrust of the latter upon the rails, as in my fastening.

I am also aware that a rail-retaining bar made in two parts acted upon by a central wedge has been combined with a tie; but this also differs, essentially, from my fastening device, in which the expansion of the bar itself is relied upon to impart the pressure to the rails without the necessity of combining with the bar any wedge or like actuating device.

I therefore claim as my invention--

1. The combination of the rails, and the tie having outer bearings for the same, with a transverse retaining-bar constructed at its opposite ends for holding the rails upon the tie, said bar being continuous from rail to rail and capable of longitudinal expansion, so as to impart lateral thrust to the rails and force them against their outer bearings, all substantially as specified.

2. The combination of the rails, the tie having outer bearings for the same, a continuous retaining-bar capable of longitudinal expansion, and constructed at its opposite ends for holding the rails upon the tie, and a check-yoke or equivalent device adapted to and retaining said bar in its expanded condition, all substantially as specified.

3. The combination of a rail, a tie having a rigid bearing for one flange of the same, and an elastic retaining-bar engaging the opposite flange of the rail, and serving by its resiliency to press said rail against the rigid bearing, all substantially as specified.

4. The combination of the rails, a tie having rigid bearings for the outer flanges thereof, and an elastic bearing-bar engaging with the inner flanges of the rails, and serving by its resiliency to press said rails laterally against their rigid bearings, all substantially as specified.

5. The combination of the rail, the tie having a bearing for a flange of the same, and an elastic retaining-bar located beneath the tie, and projecting through an opening therein to engage with the other flange of the rail, the resiliency of the bar serving to impart a lateral thrust to the rail, all substantially as specified.

6. The combination of the rails, and the tie having outer bearings for the same, with the continuous transverse retaining-bar, the opposite ends of which project through openings in the tie and are constructed to engage with the inner flanges of the rails, said bar be-

ing capable of longitudinal expansion, so as to impart lateral thrust to the rails, all substantially as specified.

5 7. The combination of the rail and its elastic retaining-bar with the tie having an opening above the bar, at or about the center of the same, for the passage of the presser-rod, all substantially as specified.

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

ANTHONY ROELOFS.

Witnesses:

WILLIAM D. CONNER,
HARRY SMITH.