May 16, 1939. H. H. FEBREY 2,158,057

RAIL FASTENING

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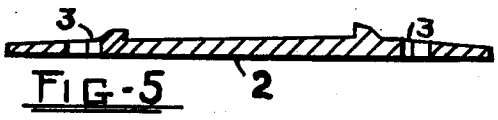


FIG-5

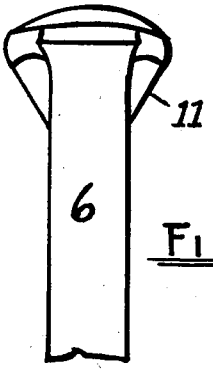


FIG-7

FIG-1

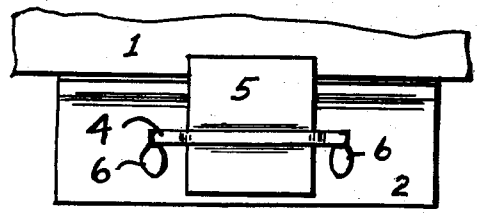


FIG-3

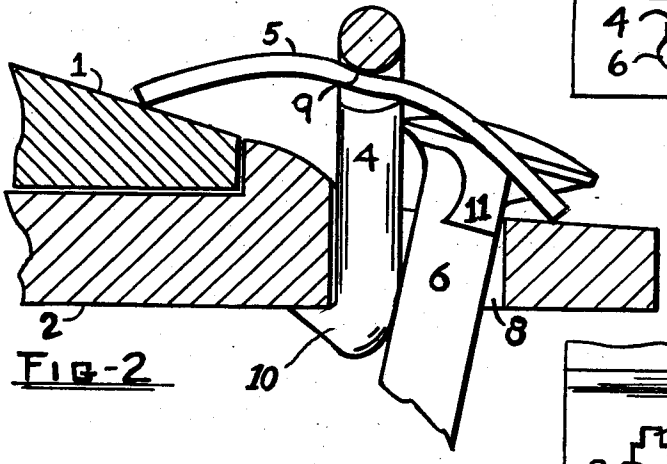


FIG-2

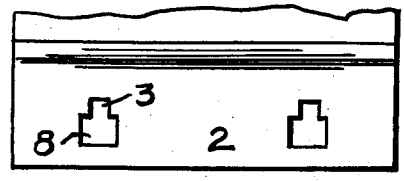


FIG-4

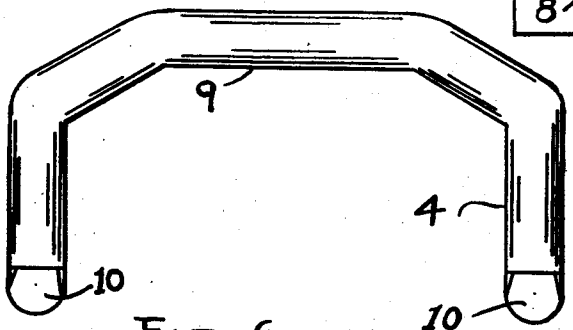


FIG-6

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RAIL FASTENING

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7 Claims. (Cl. 238—349)

My invention relates to rail fastenings, particularly those of the non-adjustable stirrup type for resiliently clamping a rail to a support.

An object of my invention is to provide a rail fastener of fixed parts suitable for use with varying sizes of rails and tieplates, readily applied without special tools and easily removed when desired.

A further object of the present invention is to provide a relatively strong and inexpensive rail fastener in which the tieplate securing spike is efficiently used to prevent release of the fastener without the reaction tending to loosen the tieplate fastening.

Another object is to provide resilient means to clamp a rail to a tieplate combined with cooperating means which independently anchors a tieplate to a tie.

Still another object of the present invention is to provide a non-adjustable resilient clamp adapted by spacing toward or away from the rail to accommodate itself to any variations in the combined thickness of rail base and tieplate and give substantially the same clamping pressure on each side of a rail.

With the foregoing and other objects in view, as will be apparent to those skilled in the art as the description proceeds, my invention resides in the combination and arrangement of parts and in the details of construction described in this specification and particularly pointed out in the appended claims, it being understood that changes may be made in the particular embodiment of the invention within the scope of what is claimed, without departing from the spirit of the invention. I intend no limitation other than those of the claims when fairly interpreted in the light of the full disclosure and the present state of the art.

In the drawing:

Fig. 1 is a fragmentary and part sectional elevation showing the initial position of parts of a preferred form of fastener;

Fig. 2 is a view similar to Fig. 1 showing the same parts in operative position;

Fig. 3 is a fragmentary plan view of a rail fastener, involving my invention, in operative position;

Fig. 4 is a plan view similar to Fig. 3 with the fastener parts removed, illustrating the tieplate punching;

Fig. 5 is a sectional elevation through a tieplate punched at both sides at differing distances from the rail;

Fig. 6 is a view of a preferred form of retaining stirrup;

Fig. 7 is a fragmentary view of a preferred form of drive spike used in the assemblies of Figs. 1, 2, and 3.

Similar reference characters refer to similar parts throughout the views.

In the present embodiment of my invention, I prefer to punch special openings (Fig. 4) through the tieplate, spaced longitudinally of the rail and aligned therewith and to provide a stirrup or double legged staple (Fig. 6) so designed that the legs, provided with detent lips, enter the tieplate openings when the stirrup straddles a clamping spring slightly bowed to avoid the tieplate shoulder and resting with one end on the rail base and the other end of the upper surface of the tieplate.

In the preferred form of this invention (Fig. 1), the stirrup hangs on the spring pivotally, the legs being just too short for the detent lips to more than start under the tieplate. To position the stirrup, I prefer to provide a drive spike, the tieplate opening being so dimensioned that when the spike is driven angularly behind the stirrup leg, the detent lip is wedged under the tieplate (Fig. 2) and the spring is tensed by the downward pull of the stirrup as it pivots about its bearing on the spring.

Preferably the spike used is headed to permit withdrawal and is of the full throated type (Fig. 7) so that it may be driven definitely to a stop, the throat engaging the sides of the tieplate opening and thus independently anchoring the tieplate. While the spike acts as the driving member of the rail fastener and remains in position to prevent release of the detent lip, thus cooperating with the rail fastening, the spike nevertheless independently secures the tieplate to the tie and the rail fastening neither intervenes nor has a part in that function nor does any force the rail fastening exerts have any tendency to loosen the tieplate fastening.

With this general explanation of my invention, attention is now directed to the details of the construction preferred. A flat imperforate plate or strip **5** is preferred as a spring member, being slightly bowed or arcuate, or otherwise shaped, to rest on its ends and bridge the tieplate shoulder. Preferably the spring is deformed to provide a pivotal or rocking bearing for the reception of the spring bearing portion **9** of the stirrup **4**.

The preferred stirrup **4** is generally of an inverted U shape having legs provided with detent

lip portions 10, 10, preferably at the ends and projecting towards the rail 1 at right angles to the spring bearing portion 9 so that, in position, when the detent lips 10, 10, are driven under the tieplate 2, the stirrup 4 rocks or pivots on the spring 5. Preferably the spring bearing portion 9 is so constructed as to restrain the spring 5 from sidewise movement, the legs of the stirrup being spaced from the bearing portion 9 to provide clearance at the openings for the head of the spike 6 (Fig. 3).

It is apparent (Fig. 1) that the radius from the bearing of the portion 9 to the tip 7 of the detent lip 10 is considerably greater than a similar radius to the inner end of the detent lip where it joins the leg and, hence, that the action of the spike 6 in wedging the detent lip 10 under the tieplate 2 is to bend down or tense the spring 5, thus clamping a rail 1 to a tieplate 2. The amount of this wedging action and consequent spring deflection clearly depends to some extent on the projecting length of the detent lip. For a given group of parts, however, it would appear desirable to so position the tieplate openings that the initial position is substantially as shown in Fig. 1 and with tieplates of varying thickness on the two sides of the rail (Fig. 5) and with various combinations of rails and tieplates, I have found that the holes may be punched at distances back from the shoulder to give uniform initial positions and consequent uniform or substantially uniform spring deflection as, for instance, on both sides of the rail when a canted tieplate is used.

Various forms of tieplate punchings may be employed but I prefer a two part hole (Fig. 4), the portion 3 nearer the rail being preferably narrower to provide a socket for the reception of the legs of the stirrup 4 and the rear portion 8 preferably of spike hole width to permit the throat portion 11 of the spike 6 to engage the sides thereof and prevent longitudinal shifting of the tieplate 2. The shoulders between portions 3 and 8 of the opening also limits the spike 6 and avoids undue crowding of the stirrup 4 and permits the spike 6 to perform its tieplate anchoring function.

What I claim is:

1. In combination, a tieplate provided on one side with a pair of aligned openings therethrough, a rail positioned on said tieplate, a spring member in engagement with the base of said rail and with said tieplate and positioned between said aligned openings and adapted when tensed to resiliently clamp said rail to said tieplate, a stirrup in engagement with and adapted to tense said spring member and having legs projecting into said tieplate openings provided with detent lip projections in engagement with said tieplate when said spring member is tensed, and removable members positioned in said openings behind said legs and constructed and arranged to retain said lip portions in detent position.

2. A rail fastening device for clamping a rail to a tieplate comprising a bowed spring member engaging both the rail and the tieplate, a stirrup member straddling said spring member and compressing the same, a leg integral with said stirrup member engaging the tieplate, and a spike positioned behind said leg and preventing the release thereof.

3. A rail fastening device comprising a spring member supported by the rail and the tieplate, a retaining member pivotally engaging said spring member and provided with legs having detent portions engaging below the tieplate, and a driven member adapted and arranged to force said detent portions under the tieplate and thereby compress the spring member whereby to clamp the rail to the tieplate.

4. In combination, a tieplate, a rail thereon, and a rail fastening device comprising a spring member bearing upon the base of said rail and said tieplate, means adapted when positioned to tense said spring member and catch below said tieplate and thereby clamp said rail, and removable means to drive said first mentioned means into position, said removable means being independent of and in addition to said first mentioned means.

5. A rail fastening device comprising a spring member engaging the rail and said tieplate, a retaining member straddling said spring member, and removable means to force said retaining member into engagement with the tieplate on either side of said spring member and thereby compress said spring member whereby clamping down said rail, said removable means comprising a spike constructed and arranged to secure the tieplate to a support.

6. In combination, a tieplate, a rail seated thereon, headed anchoring means for said tieplate, and a rail fastener comprising a spring member engaging said rail and said tieplate and spring anchoring means straddling said member and engaging said tieplate, said tieplate being provided with openings for the reception of both said spring anchoring means and said headed anchoring means, said openings being aligned with said rail and spaced apart a greater distance than the width of said spring member, whereby to provide clearance for said headed anchoring means.

7. As an article of manufacture, a shaped rod or bar of substantially uniform cross-section forming a spring retaining stirrup for a rail fastener adapted to clamp a rail to a tieplate, comprising a spring bearing portion, dependent legs integral therewith and spaced therefrom, detent lip portions integral with said legs and substantially at right angles to said spring bearing portion whereby said detent lip portions may be driven in the same direction beneath the tieplate.

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