April 4, 1939. E. R. PACKER 2,152,853

SPRING RAIL GRIP

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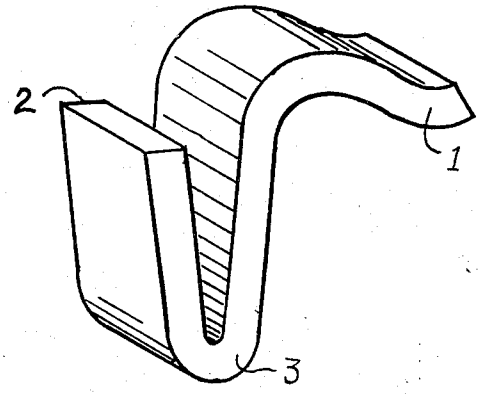


FIG. 1

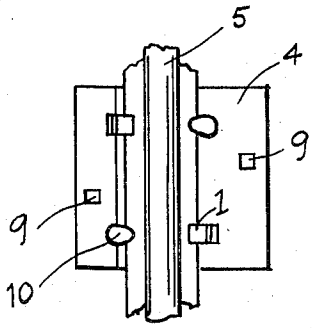


FIG. 3

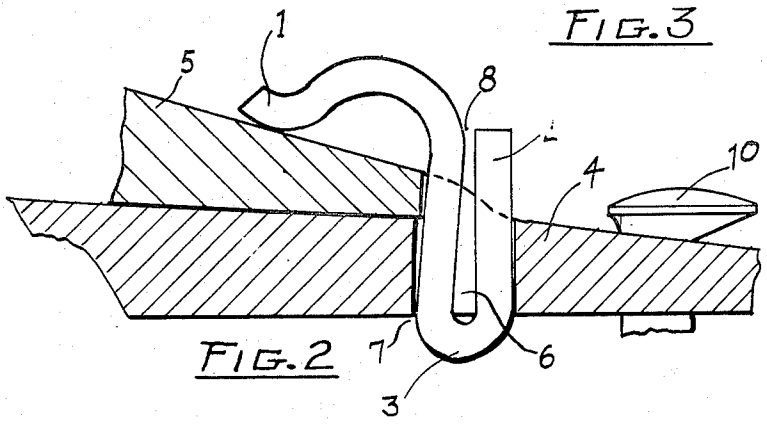


FIG. 2

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SPRING RAIL GRIP

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4 Claims. (Cl. 238—349)

My invention relates to an improved spring rail grip which may be driven into the spike opening of a tieplate and firmly anchor therein by the inherent spring action of the short stiff legs and the bulging of the bend at the bottom, clamping the rail to the tieplate by the action of a resilient rail arm overhanging the rail base, the tieplate being held to the tie by the usual spikes.

This invention has for an object the provision of suitable means for resiliently clamping a rail to a tieplate independently of the tieplate fastening. A further object is to provide a relatively cheap, easily installed rail grip suitable to serve as an anti-creeper and holding the rail equally well in both directions. Another object is to provide a rail fastening readily applied to old or new rail construction without pre-boring the tie and which is rugged and capable of exerting great holding force against undesired rail movement.

With the foregoing and other objects in view, as will be apparent 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 sketch of a preferred form of spring rail grip according to this invention; Fig. 2 illustrates in fragmentary vertical section a preferred application of the device of Fig. 1 to a rail structure, in this case using an anchor spike hole of the tieplate; Fig. 3 represents in plan view, a rail fastened to a tieplate by spring rail grips similar to Fig. 1, rail spikes also being used to maintain gauge and anchor the tieplate. Similar reference characters relate to similar parts in all the views.

For the most part present tieplates are provided with spike openings adjacent the rail and anchor spike openings 9 (Fig. 3) laterally removed from the rail seat, all such openings in present tieplates being commonly about ¾ inch square. My present preferred form of rail grip for general use with such tieplates according to this invention is preferably formed of heavy spring steel strip or band, approximately 11/16 inch wide and approximately ¼ inch thick, and the completed fastening is of such length as to barely project through the tieplate, so that in new ties there is no destructive cutting into the wood to destroy the impregnation of the tie, but a mere compressing of surface fibres. Where used in spike openings from which present spikes have been withdrawn, the projecting bend of the rail grip is positioned in the hole in the tie left by the spike and, of course, does not enter the wood of the tie. Contrary to many folded rail fasteners which penetrate the tie, this rail grip fastens the rail to the tieplate and requires no expensive preboring of the tie. Fastening of the tieplate to the tie is separately accomplished either by cut spikes or screw spikes in the usual manner.

To hold a rail 5 to a tieplate 4, according to this invention, a band or strip of the required dimensions is preferably give a hairpin bend resulting in a V-shape, one leg being much longer than the other and shaped in a reverse curve to form a rail bearing arm 1. The other leg 2 provides means for driving the rail grip. The two legs diverge widely from the rounded nose or entering end 3, but when driven into position in a spike opening 6 the two legs approach each other at the top and in practise almost touch, making the entering end 3 of greater thickness transversely of the rail than any other part of the shank (Fig. 2), the shank thus "bulging" at the bottom into a bulbous end 3 immediately below the bottom of the tieplate 4.

By reason of the cantilever action of the rail arm 1, final driving of the rail grip and thereafter, any raising of the rail 5 in wave motion, tips the leg 1, tends to tip the shank so as to catch the bulbous end 3 under the lower inner edge 7 of the spike opening 6 and with any excessive movement the legs touch at the top 8, leg 2 thus reinforcing the rail bearing leg. I have found that where such a rail grip is positioned in a spike opening 6 adjacent the rail 5 and the rail bearing end 1 contacts the rail base at a substantial distance from the shank, preferably 1¼ inches or more, and the rail grip is driven to such point that the center of curvature of the rounded nose is at or below the bottom of the tieplate 4, it is virtually impossible to withdraw the rail grip by any vertical movement of the rail 5, thus giving a firm anchorage of the rail grip in the tieplate 4 and a pressure on the rail base of the order developed by any form change in the resilient rail arm 1. A frictional holding force on the rail of 1000 pounds or more is readily created. Where a shouldered tieplate is provided (Fig. 2), the tieplate holding spike 10 may be removed from the rail and occupy the anchor spike open-

ing. Where no shoulder is provided, the tieplate holding spike 10 may be and preferably is used adjacent the rail (Fig. 3), although it is apparent that the stiffness of the rail grip may be such as to maintain gauge.

It is preferred that the tieplate opening be slightly set back under the rail edge so that the rail grip is in fact partly below the rail.

What I claim is:

1. In combination, a tie, a tieplate provided with openings therethrough, a rail seated on said tieplate, tieplate securing means comprising spikes positioned in some of said tieplate openings adapted and arranged to secure said tieplate to said tie, and a plurality of spring rail grips wedged into other of said tieplate openings to clamp said rail to said tieplate independently of said tieplate securing means, each of said spring rail grips comprising a folded strip of heavy spring metal provided with a rounded nose and forming a short V-shaped shank portion which is deformed when driven into said tieplate opening to the extent that the upper open portion thereof is almost closed and of less thickness than the lower or entering portion, one leg of said folded strip being of much greater length than the other and formed with a reverse curve and contacting the base of said rail at a point substantially removed from the tieplate opening, the said rounded nose of said spring rail grip projecting downward beyond the lower surface of said tieplate at least a distance equal to the radius of curvature of said rounded nose but not sufficient to destroy the fibre of said tie.

2. In combination, a tie, a tieplate provided with spike openings therethrough, a rail seated on said tieplate, tieplate securing spikes positioned in some of said tieplate openings, and a plurality of drive-type spring rail grips independent of said spikes, resiliently wedged into others of said openings to clamp said rail to said tieplate, each of said spring rail grips comprising a folded V-shaped strip of heavy spring material provided with a rounded nose projecting downward beyond the lower surface of said tieplate at least a distance equal to the radius of curvature of said rounded nose, each said rail grip being deformed in driving to the extent that the upper open portion thereof is almost closed, thereby providing reinforcement against excessive movement of the rail.

3. As an article of manufacture a drive-type rail grip to clamp a rail to a tieplate independently of tieplate holding means, said rail grip consisting of a single piece of heavy strip spring material folded to provide a short V-shaped shank with a rounded nose and legs diverging widely from said nose, one leg being materially longer than the other and formed with a reverse curve to overlie the rail base, the other leg terminating abruptly in an upstanding driving head, the whole so proportioned as to be so deformed in driving into a spike hole as to provide a bulbous portion below the tieplate and to thereby almost close the upper open portion so that the legs reinforce each other at the top on excessive rail movement.

4. In combination, a tie, a tieplate provided with a rail seat, and provided with a plurality of spike openings therethrough adjacent said rail seat, a rail seated on said tieplate, tieplate securing means anchored in said tie, and a plurality of V-shaped spring rail grips with short stiff legs driven into some of said spike openings and wedged therein by the inherent spring action of the legs and provided with an arm engaging said rail base, each of said V-shaped spring rail grips comprising a folded strip of heavy spring material provided with a bulbous end created by the deformation of said rail grip in being driven into place and positioned directly below the lower surface of said tieplate, the said legs being brought almost together at the top by said deformation and one of said legs terminating in an upstanding position to form a driving head.

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