

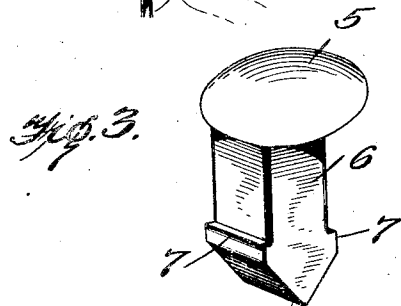
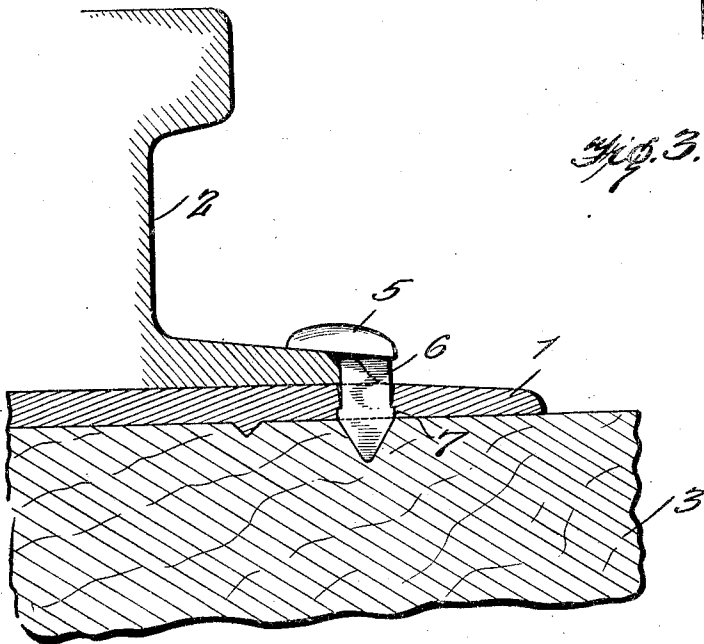
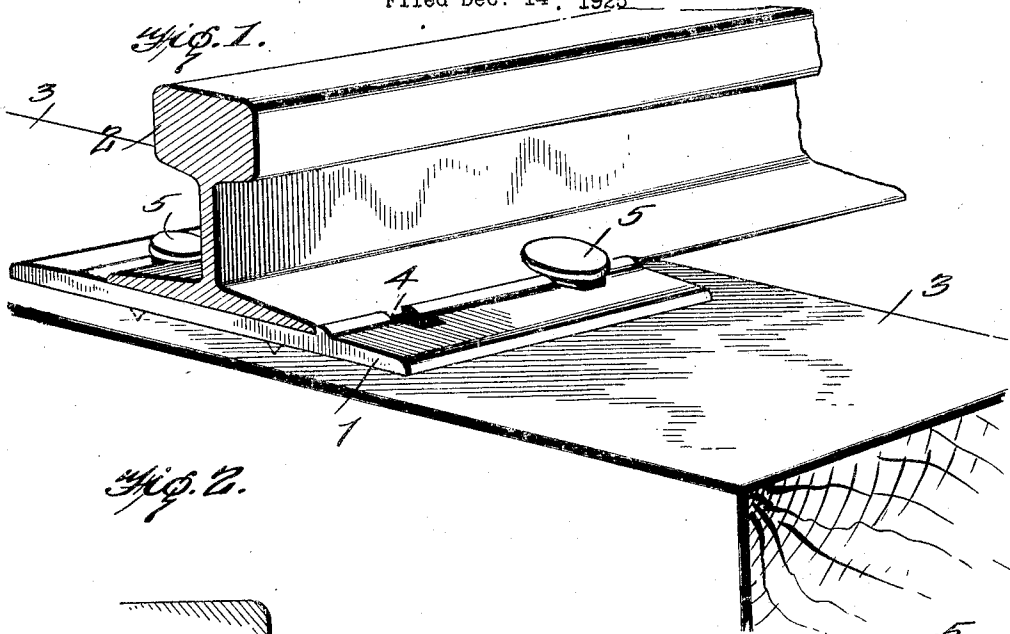
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L. R. PARSONS

RAIL ANCHOR

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Inventor

L. R. PARSONS,

By

R. M. Davis

Attorney

UNITED STATES PATENT OFFICE.

LOUIS R. PARSONS, OF RARITAN, ILLINOIS.

RAIL ANCHOR.

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This invention relates to a railroad rail anchor, through the use of which the rail is anchored to the tie plate in a manner to interlock the parts to prevent possibility of separation or the independent longitudinal creep of the rail under any stresses to which it may be subjected in use.

As is well understood, tie plates, formed for carrying the rail, are formed with a plurality of spike openings, usually four in number, through certain of which, ordinarily the diagonally opposite pair, the usual spikes are driven to take into the tie underlying the tie plate with the head of the spike bearing on the rail. In ordinary usage, the travel on the rail tends to a loosening of these spikes, so that the rail is free to creep with the consequent danger. Various means have been employed to anchor the rail and tie plate together, with a view to so interlocking these parts as to prevent creeping of the rail under any of the usual stresses. Many of such anchoring devices are so complicated, both in cost of manufacture and in application, that their use is prohibited, while others, seeking the ideal manner of anchoring the rail, have constructed the anchoring devices in the form of spikes, which through various formations, are alleged to grip the tie plate in a manner to avoid relative loosening of the rail. These spikes however, in practically every instance, are of the usual length of railroad spikes and are designed and intended to be driven the appropriate distance into the tie. Here is the serious drawback to anchoring devices of this character, for there is necessarily vertical play in the tie plate and rail relative to the tie in the travel of the train, and each time the spike is slightly withdrawn and then forced back into the tie by the weight of the train, the resistance of the tie against the spike is exerted directly upon the interlocking means or friction between the spike and tie plate, and thus the very object sought is prevented, for the weight of the train itself acts to break the anchor.

The present invention seeks to provide a rail anchor in the form of a spike, but distinguished from the usual spike in that when in place, it has little or no penetration of the tie. The anchoring spike so called of this invention is formed at an appropriate point in its length, and on two diametrically opposite sides with abrupt right-angled

shoulders. These shoulders are designed to cooperate with the walls of the tie plate opening to cause an interlocking cooperation between the anchoring spike and tie plate.

The invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view, partly in section, showing the rail, tie plate, tie, and anchoring keys in applied positions.

Fig. 2 is a transverse section through the same illustrating the position of the anchoring key, with the latter shown in elevation.

Fig. 3 is a perspective view of the improved anchoring key.

The anchoring spike of this invention is designed to be used with any usual or conventional form of tie plate as 1, constructed to receive and support the rail 2 and rest on the tie 3, the usual tie spikes being employed in certain holes as 4 of the tie plate, all of which is the usual construction.

It is proposed to anchor the rail to the tie plate through the use of anchoring spikes or keys employed in the remaining holes of the tie plate. As illustrated, this anchoring key is generally of spike formation, in that it has the usual head 5 and rectangular body 6, adapted to more or less snugly fit the opening in the tie plate. A characteristic and important feature of this key is that its length is materially less than the length of the usual spike, being in fact such that when in place, the lower pointed end of such key will penetrate the tie to a comparatively slight extent only, and this penetration will not extend above the pointed end to any appreciable extent.

A pair of opposing walls of the key, preferably that pair of such walls parallel to the rail as the key is applied, are formed with abrupt shoulders 7, arranged at such a distance from the head of the key that when the latter is bearing upon the rail, the shoulders will not have passed entirely through the tie plate, the preferred distance being such that in applied position, the shoulders will be substantially coincident with or immediately above the lower surface of the tie plate. As the sectional dimension of the key in line with the shoulders exceeds that of the opening in the tie plate, it will be apparent that under a driving force on the head of the key, the shoulders will be forced along the walls of the tie plate opening. In this operation, there will

be a mutual compression of the metal of the key, including the shoulders, and of the walls of the tie plate, insuring thereby a frictional grip, which is effective to some extent, in maintaining the key in place. However, as the shoulders of the key are not, as experience proves, entirely sheared away in this driving action of the key, there will be appreciable permanent projections from the walls of the key, which, in the final seating of the key, will bear tightly against the walls of the spike opening immediately adjacent the lower edge of said opening. Any tendency to displace the key, that is, move the same upwardly to free the rail, will result in a shearing effect of these shoulder projections of the key on the walls of the tie plate opening. This tendency to displace the metal of the walls of the opening will cause such metal to override the shoulders as the key is forced upwardly, and this constitutes a resistance to an upward movement of the key which actual tests have proven is many times in excess of that to which the interlocking key would ever be subjected in actual use.

Another and important feature of the invention is that the interlocking key has a length which is slightly greater than that required to pass through the tie plate. In fact, the pointed end only of the key will take into the tie. Therefore, as the rail and tie plate rise and fall as a unit under the travel of the train, the downward movement of the key is not resisted by the tie and there is consequently no upward pressure on the key incident to the weight of the train and the resistance of the tie. Hence, the grip of the interlocking key as described is allowed to remain effective and there are no external influences tending to break this grip and force the key upwardly.

In other anchoring spikes, where special formation tends to insure a grip between the spike and tie plate, the spikes penetrate to substantially the normal spike depth in the tie. As the rail and tie plate move up and down, as they are certain to do in use, each downward movement of the spike is resisted by the tie, and this resistance acts directly against the frictional hold between the spike and tie plate, so that the very holding effect is continually being opposed by the natural movement of the parts. This renders these anchoring spikes of little real value after an extremely short use. This objectionable feature is, it will be apparent, entirely overcome by the present anchoring key, as the tie resistance is in effect non-resistant.

The present anchoring key is, therefore, formed to so interlock with the walls of the

tie plate opening as to compel a shearing of the tie plate in the upward movement of the key; and is further of such relative length as to avoid substantial penetration of the tie, to prevent tie resistance from inducing upward pressure on the key as the parts move in actual usage.

Claims:

1. An anchoring key for securing railroad rails to tie plates, comprising a headed member having a body of sectional dimension substantially equal to that of the tie plate opening, two of the opposing sides of such body being formed with abrupt shoulders extending beyond the normal plane of the body, the distance between the shoulders and the head of the member being such as to confine the shoulders to a point immediately above the lower surface of the tie plate when the anchoring key is in fully driven position.

2. An anchoring key for securing railroad rails to tie plates, comprising a headed member having a body of sectional dimension substantially equal to that of the tie plate opening, the opposing sides of such body parallel with the rail in the application of the key being formed with abrupt shoulders extending beyond the normal plane of the body, the distance between the shoulders and the head of the member being such as to confine the shoulders to a point immediately above the lower surface of the tie plate when the anchoring key is in fully driven position.

3. An anchoring key for securing railroad rails to tie plates, comprising a headed member having a rectangular body and a wedge-shaped terminal, two of the opposing sides of said body being formed with abrupt shoulders to increase the sectional dimension of the body slightly in excess of that of the tie plate opening, the length of the key being such that when driven the wedge-shaped terminal only will penetrate the tie underlying the tie plate.

4. An anchoring key for securing railroad rails to tie plates, comprising a headed member having a rectangular body and a wedge-shaped terminal, two of the opposing sides of said body being formed with abrupt shoulders to increase the sectional dimension of the body slightly in excess of that of the tie plate opening, the length of the body and the relation of the shoulders to the head being such that when the key is in anchoring position the shoulders will be disposed slightly above the lower surface of the tie plate and the wedge-shaped terminal only of the key will penetrate the tie.

In testimony whereof I affix my signature.
LOUIS R. PARSONS.