

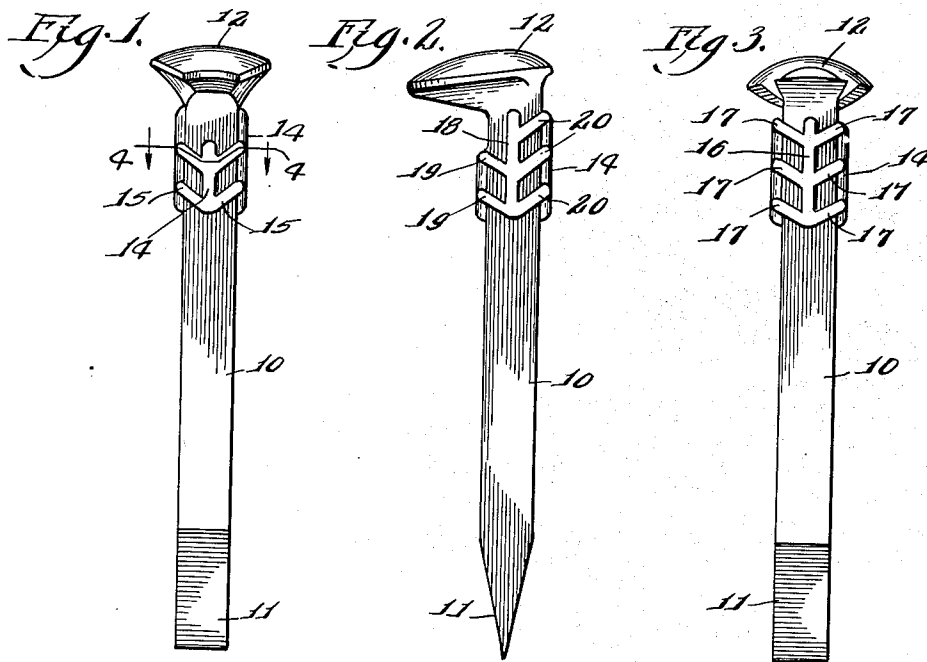
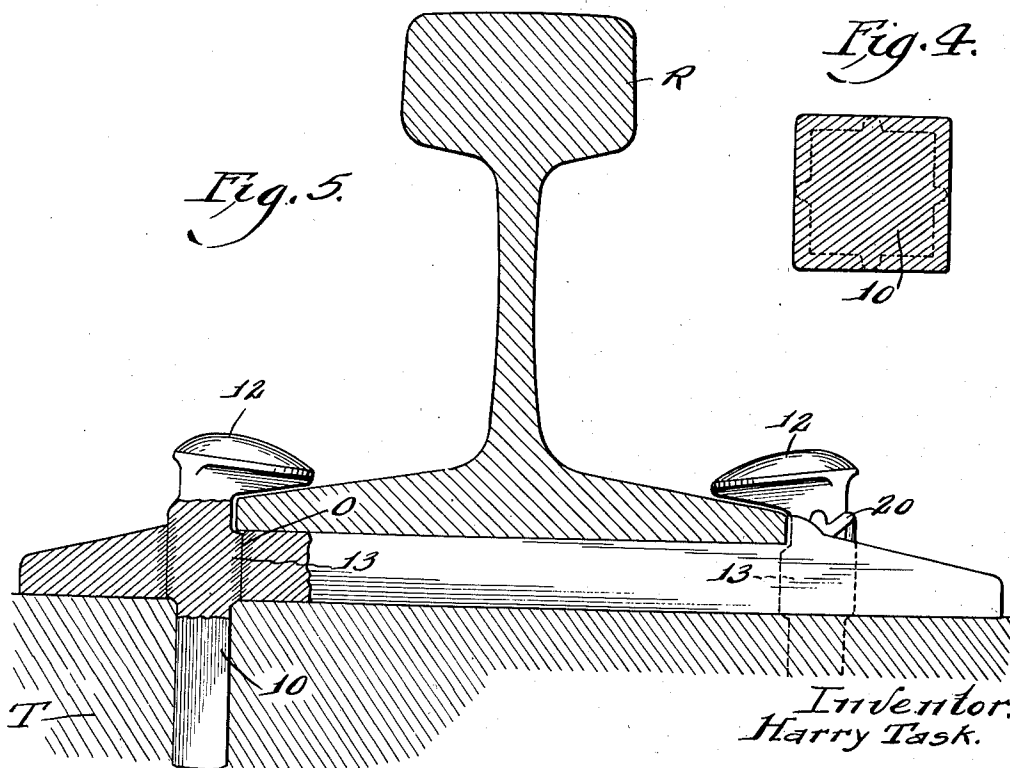
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RAIL SPIKE

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RAIL SPIKE

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This invention relates to rail spikes.

Wear on the tie incident to relative motion, between same and the tie plate caused by movement of spikes which are loose in the holes in said plate have given rise to perplexing problems that have not been satisfactorily solved by devices of the prior art. Heavy maintenance costs have resulted by reason of failure of these prior devices to withstand the effect of the great burdens imposed upon them. It is my opinion that none of these prior devices has approached the various problems in consideration of the actual source of trouble; that nothing of practical value is gained by devices which merely teach how a rail spike may be more firmly held in a supporting tie, to an alleged end, that there shall neither be too frequent loosening of the spike in the tie or separation of the tie plate from the tie. Instead, and according to the herein disclosure, I have taken into consideration the fact that relative motion between the tie plate and the base flange of the rail must be avoided if the aforementioned problems are to be satisfactorily solved and the cost of upkeep materially reduced. If, therefore, instead of depending upon a form of spike which merely increases anchorage thereof to the tie, the tie plate and the spike are made to become one homogeneous whole, there can be no relative motion between the tie and the tie plate and, therefore, no wear on these elements or transmission of forces thereto which these elements cannot resist. Incidentally, loosening of the spike in the tie is reduced to a satisfactory minimum.

Certain important objects of my invention are summed up, as follows:

(1) The provision of means functioning to produce a union of the spike and the tie plate, such that the former becomes substantially an integral part of the latter.

(2) The provision of a rail spike having means responsive to the action of friction and a driving force to produce, a sort of band, between the spike and the tie plate such that these elements become practically an integral metallic mass capable of withstanding the effect of shocks, stresses, jars and vibrations transmitted thereto and effective in its functioning to avoid separation of the spike from the plate or movement of the spike in and from the tie.

(3) The provision of a spike of such construction that when used in the customary number in a tie plate and supporting tie, resistance to all forces will be divided between all spikes.

(4) The provision of a spike which adapts itself to all tolerances in the holes of conventional tie plates.

(5) The provision of a spike which may be produced by a simple stamping operation.

(6) A spike, the cost of production of which is not greater than an ordinary spike.

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With the above and other objects in view, my invention consists in certain novel constructions, combinations, and arrangements or features as will hereinafter be fully described and claimed.

In the accompanying drawing, forming a part of this specification, and in which like numerals are employed to designate like parts throughout the several views:

Figure 1 is a view in front elevation of the spike;

Figure 2 is a view in side elevation of the spike;

Figure 3 is a view in rear elevation of the spike;

Figure 4 is a transverse section taken on the line 4—4 of Figure 1, and

Figure 5 is a vertical section taken through a rail and tie plate showing an application of my invention thereto.

In carrying my invention into practice, use is made of a cross sectionally rectangular shank 10, pointed at 11 at its driven end and formed at its opposite end with the customary head 12.

At 14 and formed as an integral part of the shank is what I have elected to call a lattice structure. This structure is bounded by imaginary straight lines drawn about same and describing a rectangle, the distance from one side to an opposite side of which is slightly greater than the face width of any single side of the shank. Thus, there is formed a rectangular structure of such proportions as is calculated to be received in the customary hole in a conventional tie plate with a drive fit between the sides of said structure and the confronting walls of said hole. Said structure extends axially of the shank a distance approximately equal to the depth of the aforementioned hole in said tie plate, the upper end of the structure terminating a slight distance below the under side of the head of the spike, as clearly shown herein.

Referring now more particularly to Figures 1 to 3, inclusive, of the drawings, it is noted that the side of the structure which faces the rail is characterized by a flat faced rib 14 disposed medially and longitudinally of the side of the spike which also faces said rail. Extending from either side of rib 14 are axially spaced apart flutes 15, 15, the same disposed at an obtuse angle to the longitudinal center line of the spike and flared upwardly and outwardly towards the head 12.

The structure 13 is similarly formed at the side facing away from the rail and consists of a longitudinal rib 16 and three flared flutes, 17, 17, 17, at either side thereof.

The remaining two sides of said structure 13 are identical, each consisting of a longitudinal rib 18, two flutes 19, 19, flared towards the rail and three flutes 20, 20, 20, flared away from the rail.

By reason of the forms and the difference in

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number of flutes at the respective sides of said structure 13, flutes 15, 16, and 19, 19, lie below the plane of uppermost flutes 17 and 20, thereby providing a clearance for accommodating the base flange of rail R, as shown at Figure 4.

The spike is of softer metal than the tie plate. When driving the spike into the tie T, the lattice structure 13, is received in the opening O in said plate, as shown at Figure 4. As the form, shape and proportions of the structure are such as to compensate for usual tolerances, it follows that said structure, at all sides thereof will have frictional contact with the walls of the hole in said tie plate, so that, and in response to friction resulting from driving force applied to the head of the spike, the normal positions of the flat faced flutes will change and become deformed in a manner completely filling the hole and providing, so to speak, a weld-like bond or union of the spike and the tie plate. Thus, these elements virtually become one homogeneous mass or complete whole.

With the spike held securely in the tie plate there is no opportunity for the spike to pull out of the tie, or to enlarge the hole in the tie, thereby resulting in great saving in ties and maintenance.

While I have shown and described a single embodiment of my invention, I point particularly to that which constitutes the gist of my contribution, namely, malleable means on a spike, the form of which insures completely filling the spike hole in the tie plate in such an effective manner that the spike becomes an integral part of said plate. I therefore do not intend to limit myself to the precise showing of the various elements. It suffices to say that as the main feature of my invention is found in my use of a flat faced structure which is deformable as a resultant of induced friction when driving the spike into the tie, variations in form, size, shape and proportions of the elements can be resorted to without departing from the spirit and intention of my invention.

What I claim as my invention is:

1. A rail spike comprising a headed shank of

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rectangular cross section presenting parallel sides, and a lattice-like structure closely related to said head and forming an integral part of said shank, said lattice structure comprising a plurality of deformable flutes on each side of said shank, said flutes extending upwardly and outwardly at an obtuse angle to the long dimensions of said shank, said lattice structure being of a form, size and shape for reception in the hole of a tie plate, providing a drive fit between the walls of said hole and the outer surfaces of said flutes, whereby said flutes have frictional engagement with said walls when driving the spike into a supporting tie and are deformed in a manner completely to fill said hole and provide a metallic bond between the spike and said tie plate for preventing relative motion between said plate and the tie when the spike is fully driven into said tie and the head of spike is firmly engaged with the base flange of the rail.

2. A rail spike comprising a headed shank of rectangular cross section presenting parallel sides, and a lattice-like structure situated close to the head of the spike and forming an integral part of the shank, said lattice-like structure being of a form, size and shape for reception in the hole in a tie plate providing a drive fit between the walls of the hole and confronting sides of said lattice structure, said lattice structure having malleable portions which are deformable in response to driving force applied to the head of the spike so that and by virtue of deformation of said malleable portions said hole will be completely filled and a bond effected between the plate and the spike which renders the spike substantially an integral part of said tie plate.

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The following references are of record in the file of this patent:

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