

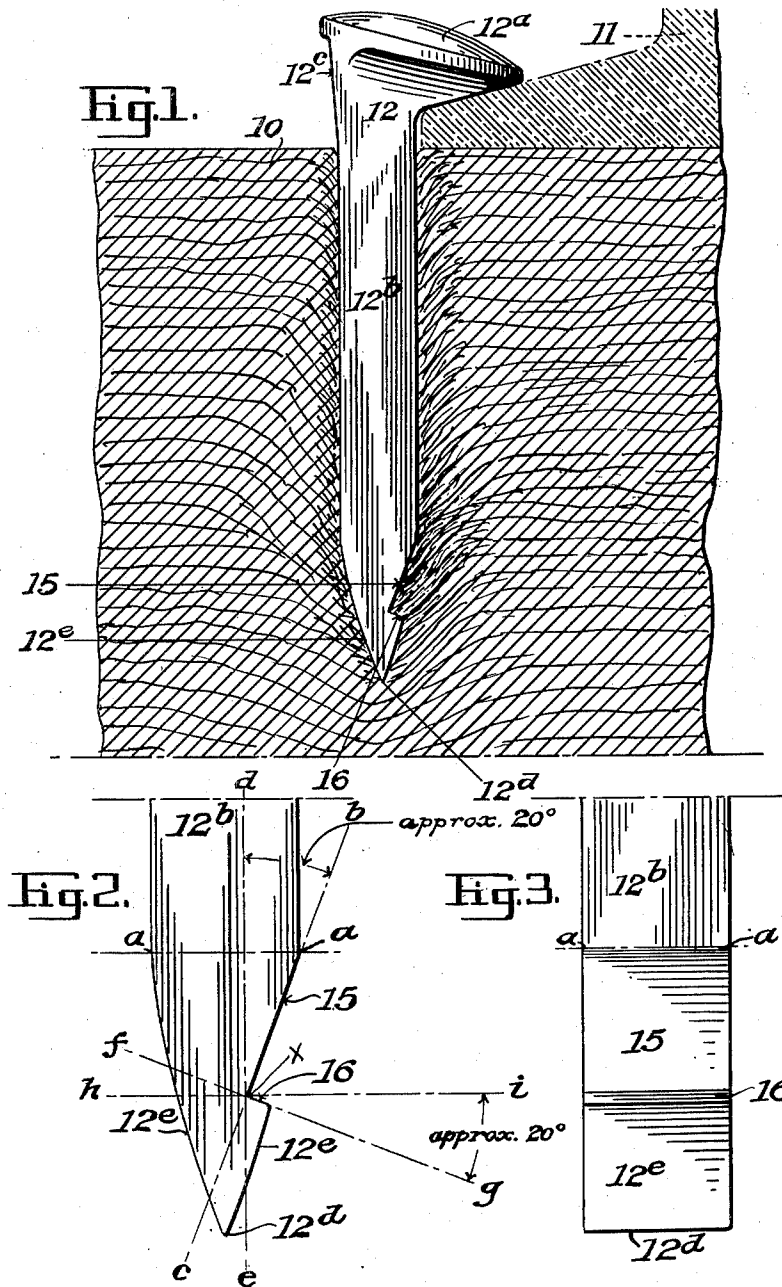
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RAILROAD SPIKE

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RAILROAD SPIKE

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1 Claim. (Cl. 85—21)

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My invention relates to railroad spikes employed for holding the rails to wooden cross-ties or sleepers.

The object of my invention is to provide a standard railroad-spike with means that will effectively retain the spike in the wooden cross-tie or sleeper and greatly increase its holding power against any tendency to lift after it has been driven home.

A further object of my invention is to provide a standard railroad-spike with a single notch so proportioned and arranged that when the spike is driven home, a portion of the fibres of the wood of the cross-tie or sleeper which have been displaced during the operation of driving the spike may enter the notch and by such engagement prevent any tendency of the spike to "lift" due to train vibration or the weather.

A further object of my invention is to locate the notch wholly within the boundaries of one tapered wall portion of the substantially wedge-shaped end of the spike.

And a still further object of my invention is to provide a notch of such type that, while performing the desired function, will not affect the strength of the spike nor prevent proper driving of the same.

These and other features of my invention are more fully set forth hereinafter; reference being had to the accompanying drawings, more or less diagrammatic in character, in which:

Figure 1 is a view in elevation of a standard railroad-spike notched in accordance with my invention and in rail-engaging position in a wooden cross-tie or sleeper (the latter being shown in section); such spike being shown in the final position of use with the overhanging portion of its head in engagement with the flange of a rail.

Fig. 2 is an enlarged view of the substantially wedge-shaped end of the spike showing the notch forming the subject of my invention as located within the boundaries of one tapered wall portion of the substantially wedge-shaped end of the spike.

Fig. 3 is a view of the notched wedge-shaped end of the spike at right angles to Fig. 2.

This invention, relating to an improved standard railroad-spike, enables it to greatly increase its holding power against any tendency of "lifting" due to train vibration and/or weather conditions, by the provision of a single "hook notch" on the inside of the tapered or wedge-shaped end of the spike shank; such notch being so shaped and positioned that a portion of the split

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wood fibres of the cross-tie or sleeper displaced as the spike is driven home is caused to "wedge-anchor" the spike in place.

In Figure 1 of the drawings, the wooden cross-tie or sleeper is indicated at 10; a portion of a rail flange at 11 and the spike, of my improved construction, is indicated at 12.

In developing the feature of construction constituting my invention, the same has been applied to an ordinary or standard railroad-spike in general use in track construction. Such spike includes a head 12^a having an overhanging portion for engagement with the head of a rail, and a shank 12^b substantially rectangular in cross section—or square—and constituting the part driven into the cross-tie or sleeper; such spike shank having a thickened upper portion 12^c and terminating in a tapered and/or substantially wedge-shaped end provided with a relatively sharp chisel-edge, indicated at 12^d.

The faces of the tapered or wedge-shaped end are slightly curved—convexly—as indicated at 12^e and extend substantially from the points *a* on opposite sides of the shank to the relatively sharp chisel-edge 12^d which is first presented to the wood of the cross-tie or sleeper in the operation of driving the spike.

In one of these relatively tapered and curved faces at the wedge-shaped end of the spike, preferably that side beneath the overhanging portion of the head of the same, I form a single notch—wholly within the boundaries of such tapered face and below the points *a* at the sides of the shank—such notch having an inclined wall surface 15, preferably in a single plane, and a relatively shorter inclined wall surface 16, also in a single plane, which latter surface is preferably at right angles to the plane of the wall surface 15.

The wall surfaces of the shallow notch, indicated at 15 and 16, are diagonally disposed with respect to the longitudinal axis of the spike shank and are preferably at right angles to each other. By preference these wall surfaces are arranged at definite angles with respect to each other and to the longitudinal axis of the spike shank, as diagrammatically illustrated in Fig. 2. For instance, the inclined wall surface 15 along the plane of the line *b—c* is at an angle of approximately 20 degrees to the plane of the vertical line *d—e* cutting through the root of the notch, indicated at *x*, while the shorter inclined wall surface 16 of the notch along the plane of the line *f—g* is at an angle of approximately 20 degrees with respect to the plane of the horizontal

line $h-i$ cutting through the root x of said notch.

The depth of the notch at its root x with respect to the width of the wedge-shaped end of the spike in the plane of the line $h-i$ is much less than one-half of the width of such end in said plane and by preference such depth is approximately one-third of such width.

The depth of the notch at the re-entrant angle should be much less in extent than the balance of the body of the wedge-shaped end of the spike in the plane $h-i$ intersecting the root of such re-entrant angle in order to preserve the necessary strength of the spike and to insure that, when driven into the wooden cross-tie or sleeper there will be no tendency of the wedge-shaped end to bend out of the longitudinal axis of the spike shank. It is essential that the notch be formed wholly within one of the substantially tapered surfaces of the spike at the wedge-shaped end of the same, and that the sides of the spike shank above such tapered surface be left wholly free of the notch.

In the final position of the spike in the wood of the cross-tie or sleeper, the layers of split wood fibre enter the notch and engage the wall surfaces of the same; a portion of such layers abutting the lower wall surface 16 of the same in the manner indicated in Fig. 1. This displacement and successive engagement of the layers of wood fibre with the wall surfaces of the notch is progressive during the driving operation and when the spike is finally seated with the overhanging portion of its head in engagement with the flange of the rail, such engagement of the layers of wood fibre with the wall surfaces of the notch firmly holds the spike in place.

By producing the notch wholly within the boundaries of one of the tapered faces of the wedge-shaped end of the same, there is no resistance to proper driving of the spike. The fibres of the wood of the cross-tie or sleeper are displaced by the sides of the spike shank and these displaced layers curving downward adjacent to the sides of the shank grip such sides; successively entering and leaving the notch, after the spike has been driven home, the lowermost layers of wood fibre opposite the notch enter the same and abut the wall surface 16 ; firmly locking the spike in place.

The holding face of the notch, indicated at 16 , is entirely out of the plane of the side of the spike shank and hence the resistance to removal is greatly enhanced by the fact that the ends

of the layers of wood fibre engaging the same are inwardly of the side of the spike shank. This resistance to removal is along the face of the wall 15 of the notch which is arranged at such an angle as to afford maximum holding effect for retaining the spike in place and resisting all tendency to "lift" by reason of the effect of train vibration distributed through the rail and/or other conditions such as the effect of the weather upon the wood immediately surrounding the driven spike.

While I have shown in the accompanying drawing and have hereinabove described a more or less specific form of notched railroad-spike, it will be understood that the same is for illustrative purposes only and not as a limitation, since modifications may be made in the construction illustrated without departing from the spirit of my invention; all of which is deemed to be within the scope of the appended claim.

I claim:

A railroad spike of usual type and shape having the usual head for engagement with the flange of a rail and a rectangular shank portion of uniform dimensions depending therefrom in a single plane substantially square in cross section and terminating in a definitely defined and substantially wedge-shaped end with a chisel edge point; one of the tapering wall surfaces of said wedge-shaped end being provided with a single notch of elongated character and having wall surfaces of different areal extent disposed substantially at right angles to each other and the lower wall surface of said notch sloping outwardly from the body portion of the tapered end; said single notch being formed wholly within the boundaries of one face of said tapered end.

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