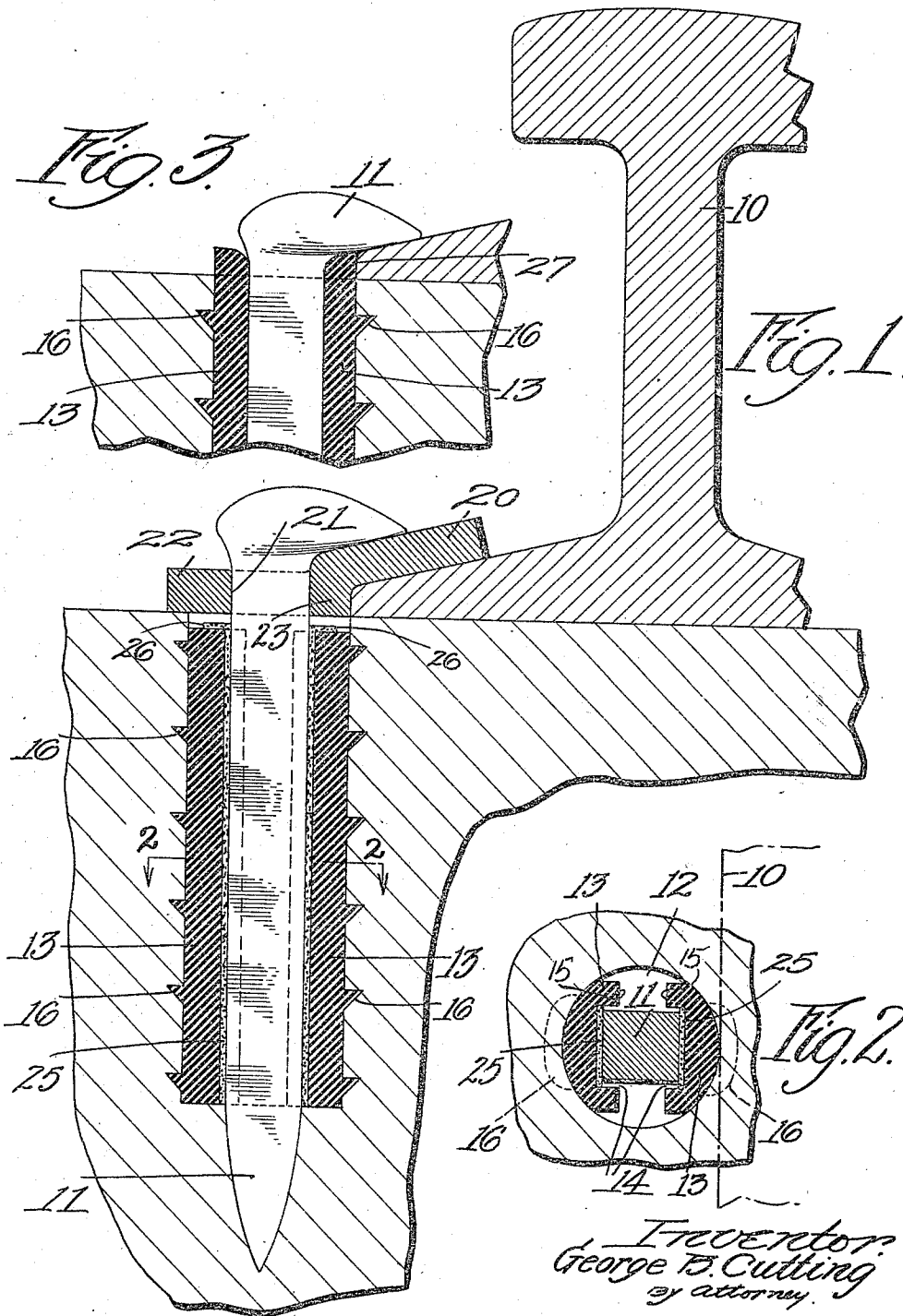


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 RETAINER FOR RAIL SPIKES.
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1,294,778.

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RETAINER FOR RAIL-SPIKES.

1,294,778.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GEORGE B. CUTTING, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Retainer for Rail-Spikes, of which the following is a specification.

This invention relates to a device for holding rail spikes, and the principal objects thereof are to provide a construction of such a nature that it will effectively and rigidly hold an ordinary rail spike in any desired position with reference to the rail and will cause the same to be wedged in position even more tightly when the lateral crowding strain of the rail is applied to it, thus reducing the difficulty now encountered due to the lifting of the spikes from any wave action of the rails as a result of heaving due to frost or imperfect ballast; also to provide a construction for this purpose which can be used in connection with the ordinary spikes now in use so as to avoid any modification of these spikes and thus permit of using this device on a part of a system without necessitating the changing of the spikes or ties; to provide a construction which will be very cheap to manufacture and install, which can be used at the edge of the rail base and which will have a rough metal holding surface to engage the surface of the forged or cut steel spike, thus providing a very high degree of friction to prevent the withdrawal of the spike; to provide a construction in which the holding surfaces will be of metal so that the holding power of the spike will not be affected by wave action of the rails or by temperature changes and adapted to provide for any degree of elasticity or rigidity desired in the construction; to provide a plate to cover the top of the hole bored in the tie to properly space the spike from the rail so as to bring it exactly at the center of the holding device; and to provide a construction which can be placed in a hole bored preferably by machine without necessitating any nicety of adjustment in any way. The device is simply dropped in place ready for the spike to be driven in.

The invention in one form also involves the provision of a soft metal strip between the cast iron and steel surfaces adapted to be embedded in the irregularities of both when the spike is driven in to still further

increase the grip which the surfaces have on each other.

Further objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which—

Figure 1 is a sectional view of a rail with a preferred embodiment of this invention applied thereto;

Fig. 2 is a sectional view of the same on the line 2—2 of Fig. 1, and

Fig. 3 is a view similar to Fig. 1 showing a modification.

The expense of keeping rails spiked down to the ties or sleepers is an enormous one because of the lifting of the spikes due to the movement of the rails and to expansion and contraction. The rail also exerts a lateral crowding strain on the head of the spike and tends to tilt it in its seat in the sleeper and this distorts the seat and at once loosens the spike so that it will never afterward have the same gripping effect. Ordinarily the spikes are driven back down in after this happens, but they never have their original holding force. Furthermore the lifting action of the rail is a direct one tending to pull the spike directly out and with an ordinary spike driven into a wooden tie there would be no object in changing this arrangement, but with this invention the relation of the spike to the rail is such that the lifting action of the rail does not have a direct lifting action on the spike, but tends to move it backwardly having an action substantially the same as the lateral crowding. According to this invention, both of these actions simply wedge the parts more firmly together without directly lifting the spike.

Referring first to Figs. 1 and 2, it will be seen that I have shown an ordinary rail as held by an ordinary spike not modified in the slightest degree. This in itself is of material advantage because the same spikes will be used no matter whether this invention is applied or not, and consequently this invention can be applied if desired only in the places where the greatest strain occurs, as for example, on the inner edges of the rails, but I prefer to apply it everywhere.

In the application of my invention a hole is bored in the tie at the edge of the base of the rail, that is, the auger is inserted in the tie at such position as substantially to

touch the edge of the rail as it goes in or to clear it by a very small distance. This hole is cylindrical preferably, although not necessarily, and can be bored very readily by a machine on a hand car so that the time required to bore the holes is comparatively short. After it is bored, a pair of entirely separate retaining plates 13 are introduced into it, preferably one adjacent to the edge of the base of the rail and the other just opposite the same. These retaining plates are of metal, preferably cast iron, having a channel 14 on the inner surface, and they have an arc-shaped outer surface which fits the circumference of the hole 12. The channel 14 is bounded by two flanges 15 on the edges. On the convex surface these retaining plates are provided with spaced holding ribs 16 preferably horizontal on the top and slanting below so as to form horizontal wedge-shaped projections.

The two retaining plates are simply dropped in position in the hole and they may be left to have the edges of their flanges 15 come into contact or they may stand at a slight angle in the hole. No attention need be paid to these matters because the parts are secured in position by driving in the spike 11. As it is wedge-shaped at the point it forces the two plates 13 apart when driven in until the ribs 16 project into the wood so as to hold the plates 13 against being drawn out through the top.

The spike 11 can be driven down so that its head directly engages the top of the base of the rail as shown in Fig. 3, but I prefer to place a plate 20 over the opening 12 before the spike is driven in. This plate has a perforation 21 for the spike and a flange 22 extending over the base of the rail for receiving the lower surface of the head of the spike. It also has a vertical portion 23 constituting means for spacing the spike from the rail equal to the thickness of one of the retaining plates 13. This plate protects the opening 12 from the entrance of water to a large degree and makes a more substantial and neater job.

I have shown in addition to what has been described a pair of thin lead plates 25 in Figs. 1 and 2 adapted to come between the surfaces of the retaining plates and the spike in order that the lead may embed itself in the regularities of both and thus help to hold the parts firmly in position after the spike is once driven to its final place. For convenience these plates 25 are shown as having flanges 26 at the top by which they are readily supported by the retaining plates so that no special care has to be exercised in placing them in position. They are also made just wide enough to fit snugly in the channels 14 and be held therein by friction. They can be omitted, however, as indicated in Fig. 3.

In Fig. 3 also another modification is shown in that the plates 13 extend up above the top of the tie up to the level of the upper edge of the base of the rail, and one of said plates comes into contact with the vertical edge of the base of the rail at the point 27 to space the spike from the rail and prevent independent side motion.

In addition to the advantages that have been explained above and as will be obvious from an inspection of the drawings, it is to be noted that the lifting action of the rail is applied to the spike head at a distance from its body. Therefore, it has a tendency to swing the spike from its normal position and a large part of the lifting force is exerted in this way instead of being exerted to lift the spike directly. This is of advantage in the present instance because it simply wedges the two plates 13 more firmly in position and adds to the force with which they grip the spike 11 because one binds it much more firmly at the top and the other at the bottom. This adds materially to the holding force of the spike.

Another advantage of the invention lies in the fact that the spike is not likely to be bent when held between these retaining plates and consequently if it does become loosened the old spike can be driven back in. It is now customary to drive the old spikes in, but they are often bent and in any event the opening in which they have been located has been enlarged by their motion so that they seldom hold when driven in the second time.

Although I have illustrated and described only two forms of the invention, I am aware of the fact that many other modifications can be made therein by any person skilled in the art without departing from the scope of the invention as expressed in the claims.

Therefore I do not wish to be limited to all the details of construction shown and described, but what I do claim is—

1. A retaining device for a plain surfaced driven rail spike comprising a pair of entirely separate retaining plates located in a hole in the tie or sleeper and provided with means for permanently holding them in position when the spike is driven in between them.

2. A device for holding a rail spike comprising a pair of retaining plates provided with means for permanently holding them in fixed position in a tie when the spike is driven in between them, the said plates being of unfinished cast metal and the spike of rough forged steel.

3. In a device for holding a rail spike, the combination of a retaining plate located in a hole in the tie or sleeper and provided with means for permanently holding it in position when the spike is driven beside it, and a thin strip of soft metal located be-

tween the surface of the spike and the surface of the retaining plate.

4. In a device for holding a rail spike, the combination with a rail, a tie having a hole
5 extending downwardly therein, and a spike, of a retaining plate located in said hole and provided with means for permanently holding it in position when the spike is driven in beside it, means for spacing said spike at
10 the top of its shank from the edge of the rail, whereby the lifting effect from the rail on the spike will be exerted only partially to lift it, some of said force being exerted to wedge it more firmly in position against
15 the retaining plate.

5. In a device for holding a railway spike, the combination with a wood tie having a hole, of a retaining plate located in said hole and provided with means for permanently holding it in position when a spike
20 is driven in beside it, and a horizontal plate

over said retaining plate and hole resting directly on the tie and having a flange resting on the top of the base of the rail and provided with an opening therethrough
25 spaced from the rail for the spike.

6. The combination with a rail and the tie on which it rests, said tie having a cylindrical hole bored vertically into it at the edge of the rail, and a pair of retaining plates
30 having convex opposite surfaces located in said hole and having ribs on the convex surfaces, and a spike having a wedge-shaped point driven in between said retaining plates, whereby the plates are forced out-
35 wardly in opposite directions, and their ribs or flanges forced into the wood of the tie so as to be held permanently in the hole.

In testimony whereof I have hereunto affixed my signature.

GEORGE B. CUTTING.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."