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Patented Sept. 26, 1899.

J. HARRISON.
KEY FOR RAILROAD SPIKES.

(Application filed Apr. 20, 1899.)

(No Model.)

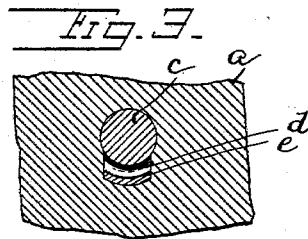
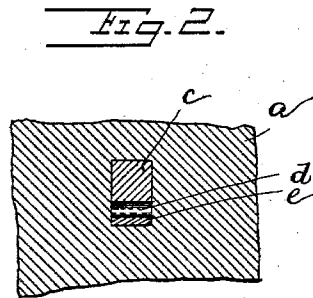
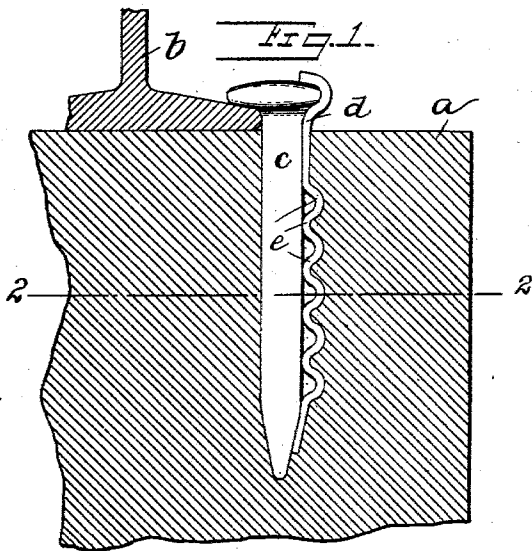
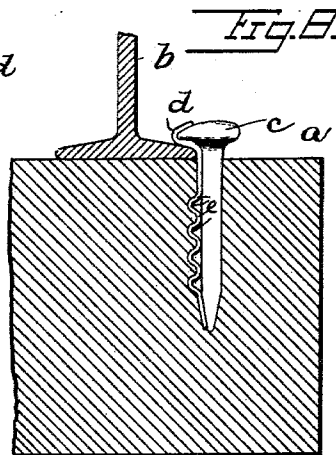
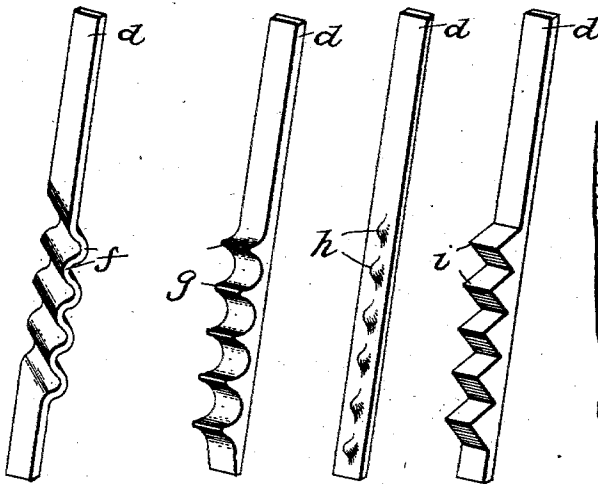


Fig. 4. Fig. 5. Fig. 6. Fig. 7.



WITNESSES:

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KEY FOR RAILROAD-SPIKES.

SPECIFICATION forming part of Letters Patent No. 633,838, dated September 26, 1899.

Application filed April 20, 1899. Serial No. 713,711. (No model.)

To all whom it may concern:

Be it known that I, JOHN HARRISON, a citizen of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Keys for Railroad-Spikes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to produce a new and improved key for spikes, by means of which old spikes and old cross-ties whose efficiency have been impaired or destroyed by the spikes wearing or working loose may be again rendered available and efficient as a means for firmly fastening the rail or rail-chair upon the ties.

It frequently happens that after a tie has been in use for some time the slight but continuous working of the spike in the wood, added to the tendency of the wood to appreciably disintegrate at its point of contact with the spike, will wear away the spike-hole radially to such an extent that the spike will no longer have any binding engagement with the cross-tie, under which conditions the rail or rail-chair is no longer effectively secured to such tie, and the tie is ordinarily discarded and a new one put in its place. This frequent discarding of old ties for the reason stated involves an expense which in the aggregate is a considerable and serious item in the maintenance and repair of the general track construction. The key which forms the subject of my invention has been found to obviate the necessity of discarding old ties by reason of the wearing away of the spike-hole and the loosening of the spike, as it may be used and is intended to be used in connection with the old tie and the old spike, and when so used secures as firm and binding an engagement of the rail or rail-chair and tie as is effected by a new spike driven in a new tie.

The key which forms the subject of my invention consists of a strip of metal of a thickness small in comparison with that of the spike, and which is provided on one or both sides, but necessarily on the side which is intended for engagement with the wall of the old spike-hole, with projecting portions or surfaces, which may be either corrugations,

teeth, projections, serrations, ridges, or their equivalent. The spike used is withdrawn from the tie and the key dropped loosely in the spike-hole. The spike is then driven home, which causes the key to be forced laterally against the wall of the spike-hole and the corrugations or teeth thereof to bite or press into the wood, which not only causes the spike to fit tightly in the tie, but by the gripping action of the key provision is made for subsequent wear without resultant vertical looseness of the spike.

In the drawings I show several embodiments of my invention, some of which possess substantial advantages over others, but all of which exhibit the same generic principle of construction and operation.

Figure 1 is a vertical transverse section through the tie and rail, the spike and key being shown in side elevation. Fig. 2 is a partial horizontal section through line 2 2 of Fig. 1. Fig. 3 is a view similar to Fig. 2, but differing therefrom in that the spike is round and the key concentrically curved. Figs. 4, 5, 6, and 7 are perspective views of modified forms of keys embodying my invention. Fig. 8 is a view similar to Fig. 1, showing a modified arrangement of spike and tie.

a is the tie.

b is the rail, which may also represent the base of a chair or other rail-support in a construction wherein the rail is not directly spiked to the tie.

c is the spike.

d is the key.

In Figs. 1 and 8 the key is formed of an originally flat strip of metal bent or pressed so as to exhibit transverse corrugations, forming projecting portions or surfaces adapted to engage the wall of the spike-hole. This I consider the preferred embodiment of my invention, as it possesses great strength and has the capacity of being forced into the wood a sufficient extent to prevent a vertical slippage of the key and when in place exerts also a decided lateral pressure against the spike. In Fig. 1 the key is placed on the side of the spike opposite the rail, and the head of the key is made long enough to enable it to be turned around and over the head of the spike, whereby supplemental means are afforded for holding the key and spike in proper

relation to each other. In Fig. 8 the key is placed on the opposite side of the spike and is bent inwardly over the edge of the base of the rail and then upwardly, and after the spike is driven home the upwardly-extending terminus of the key may be bent down over the head of the spike. If the spike is round in cross-section, it is preferable to make the key correspondingly curved in cross-section, so as to have a continuous bearing between the spike and key, as shown in Fig. 3.

In Fig. 4 I have shown the key formed with obliquely and transversely extending corrugations *f*, whose function and action are similar to the corrugations formed in the key shown in Fig. 1.

In Fig. 5 I have shown a key flat on one side and provided with teeth, serrations, or projections *g* on the side which is intended to engage the wood, the teeth being formed so that the metal between the ridges or apexes of the teeth is curved, so as to lessen the chances of breakage by reason of the powerful wedge-pressure to which the key is subjected.

In Fig. 6 the key is stamped so as to form projections *h*, which will be forced into the wood when the spike is driven home; but the engagement between the wood and key being only at a succession of points the binding action will be somewhat less efficient than in the other forms shown.

In Fig. 7 the key is formed with angular teeth, serrations, or projections *i*. This form of key is adapted to exert a powerful pressure against the wood and will be forced into the wood a considerable distance. The key, however, must be used with care to prevent breakage of the key at the intersection of adjacent teeth.

The keys which I have described are particularly adapted to be used for the purpose of renewing or prolonging the efficiency of old cross-ties. It is not adapted to be driven bodily into the solid wood, as this would break the teeth of the toothed or serrated keys or distort the corrugated keys. For the same reason it is not adapted to be driven between the tie and the spike after the spike is in place, and it could not be practically used in this way for the additional reason that the orifice formed thereby would be equal in diameter to the maximum thickness of the keys, so that the spike would be held in place with even less security and permanence than ordinarily. The only efficient way of utilizing the key is to drop it loosely in a spike-hole previously prepared, and more specifically a spike-hole from which an old spike has been withdrawn, and then to drive the spike in the somewhat smaller orifice remaining between the key and the opposite wall of the spike-hole. It is also important, if not practically essential, that the thickness of the key should be relatively small as compared

with the thickness of the spike, so that the wedge action of the spike will be only sufficiently powerful to cause a firm engagement of the wood and key and for the further more important reason that the hole should not be very considerably larger than the spike itself, as otherwise the spike would be deflected in the line of least resistance laterally away from the key, which would prevent an effective bearing between the spike and key throughout the whole length of the key and prevent the lower part of the key from having any effective engagement with the contiguous wall of the hole.

It is apparent that my improved key is available for other purposes than the specific purpose of securing a spike to a rail, and I do not confine myself to the particular use or application of the invention hereinbefore described, except in those claims where such particular application is specifically set out.

Having now fully described my invention, what I claim, and desire to protect by Letters Patent, is—

1. As a means for utilizing old spikes in old spike-holes, the combination with a railroad-tie having a spike-hole therein, of an ordinary spike, having plane-surfaced sides and of substantially uniform thickness throughout the greater portion of the length and tapering to a point at its driving end, and being of a thickness less than the average diameter of the spike-hole, of a key having laterally-projecting surfaces, the key of a width substantially that of the spike, and of a length approximately that of the spike, and adapted to be inserted loosely into the spike-hole after the withdrawal and before the reinsertion of the spike, the width of the spike plus the width of the key being substantially greater than the diameter of the spike-hole, the laterally-projecting surfaces of the key being forced into engagement with the tie by the lateral pressure exerted by the spike during its insertion.

2. As a means for utilizing old spikes in old spike-holes, the combination with the spike, of a key of substantially uniform thickness but of a thickness substantially less than its width, and of a length approximately that of the spike, the key being bent laterally to form corrugations substantially as described, the key being adapted to be inserted loosely into the spike-hole after the withdrawal of the spike and to be forced into engagement with the tie by the lateral pressure exerted by the spike during its insertion.

In testimony of which invention I have hereunto set my hand, at Philadelphia, on this 13th day of April, 1899.

JOHN HARRISON.

Witnesses:

FRANK S. BUSSER,
Z. K. LOUCKS.