

1,040,568.

III. 1.

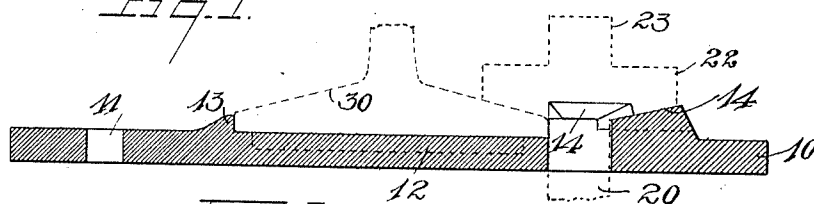


Fig. 2

Fig. 3.

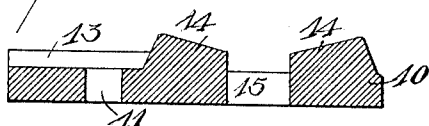
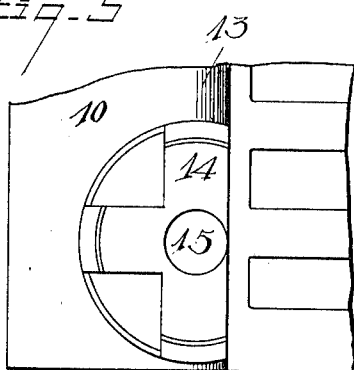
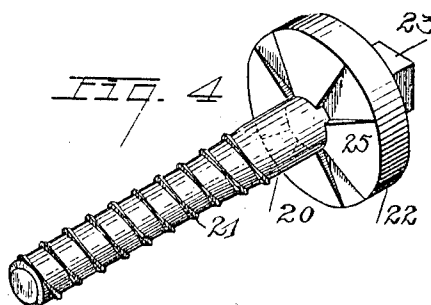


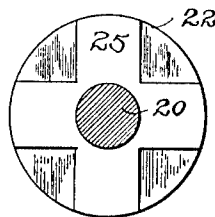
Fig. 5



III. 4



117.6



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UNITED STATES PATENT OFFICE.

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RAIL-FASTENING DEVICE.

1,040,568.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed November 22, 1909. Serial No. 529,209.

To all whom it may concern:

Be it known that I, WALTER S. NEWHALL, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Rail-Fastening Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide an extremely efficient device for holding railroad rails to their ties.

The invention includes a particularly constructed tie plate on which the rail rests and a particularly constructed spike arranged to cooperate with the rail and the tie plate.

The invention is hereinafter more fully described and the essential characteristics set out in the claims.

In the drawings—Figure 1 is a plan of my fastening device, the right hand portion of the figure showing the tie plate alone and the left hand portion showing the spike in place over the flange of the rail; Fig. 2 is a vertical section through the tie plate as indicated by the line 2—2 of Fig. 1, the base of the rail and the head of the spike being shown in dotted lines; Fig. 3 is a transverse vertical section of the tie plate as indicated by the line 3—3 of Fig. 1; Fig. 4 is a perspective of the spike cooperating with the tie plate and rail shown; Fig. 5 is a fragmentary plan of the tie plate having the spike-bearing surfaces arranged with parallel edges instead of radial; and Fig. 6 is a section through the spike, looking toward the head, of a form arranged specifically to cooperate with the plate illustrated in Fig. 5.

Referring by reference numerals to the parts shown, 10 indicates the tie plate which is adapted to rest on the tie and stand beneath the rail and extend to each side thereof. Suitable holes 11 through the plate furnish means by which it may be spiked or otherwise secured to the tie. The rail rests intermediately on this plate, the flange or base of the rail being illustrated at 30 in Figs. 1 and 2. The surface over which the rail stands may conveniently have a series of recesses 12 for the purpose of lightness. On opposite sides of the rail the tie plate is provided with upwardly extending ribs 13 formed to substantially engage the edge of the rail base and prevent lateral movement.

The rail is held down on the plate by means of the heads of spikes which are screwed into the tie. In order to enable the spikes to obtain a firm seating on the flange of the rail and on the tie plate, the spike and the tie plate are formed in a peculiar manner, which I will now explain.

Figs. 4 and 6 illustrate the spike. It consists of a shank 20 having a screw-thread 21, an integral flange or head 22, and a suitable angular stud 23 at the top of the head adapted to receive a wrench, whereby the spike may be screwed into place. The under-surface of the head is inclined, corresponding to the inclination of the top surface of the rail base, and the tie plate is provided with correspondingly inclined upwardly extending bosses 14. This construction enables the spike to be screwed into the tie vertically and engage with its head both the rail base and the bosses 14, as shown in dotted lines, Fig. 2.

To enable the engagement of the spike with both the rail and the tie plate to extend over considerable surface, instead of being a line or point engagement, I form the inclined portion of the under surface of the head 22 as a series of wedge-shaped projections 25. These projections have flat or plane surfaces extending from the shank 20 outwardly at an oblique angle which corresponds to the angle which the upper surface of the rail base makes with the shank of the spike. The surfaces of the bosses 14 make a similar angle with the shank of the spike, or, what is the same thing, with the axis of the hole 15 which the spike occupies. The result is that, when the spike is in place, it has an extended surface engagement with the base of the rail and with the tie plate bosses, thus effectively locking the rail in place. This surface bearing is found in use to provide much greater resistance against the creeping of the rail than either a line bearing or a point bearing.

As shown, the tie plate is provided with three of the bosses 14 located at right angles to each other, and the spike is provided with four similarly placed inclined under-surfaces 25. Accordingly, when the spike is in place, one of the surfaces 25 engages the rail base and three of such surfaces engage the bosses 14 of the tie plate. This makes a very effective construction. Each quarter-

turn of the spike brings flat surfaces into juxtaposition, so that whenever the spike is screwed home, there will always be the desired engagement, a quarter-turn of the spike causing a slight enough approach of its head to the rail and plate so that there will be no position intermediate of registering positions where the spike need stop in being turned home. After one set of three projections on the spike engage the three bosses with the desired firmness, the spike is left with two of the sides of its stud 23 parallel and two at right angles to the rails, which insures the desired position of the surfaces 25 of the spike. To facilitate this result, the sides of the stud are at right angles to radial lines extending to the centers of the arcs bounding the outer edges of the surfaces 25. Between the downwardly projecting surfaces 25, the spike flange or head 22 is provided with recesses 26, the upper surfaces of said recesses being substantially perpendicular to the axis of the spike.

When three bosses 14 are employed as shown on the tie plate, the two which are diametrically opposite constitute a continuation of the ribs 13, wherefore the inner edges of these two bosses form further shoulders for engaging and holding the edge of the rail base.

The bosses 14 and the surfaces 25, in the form shown in Figs. 1 and 4, have radial edges, and, in the form shown in Figs. 5 and 6, these bosses and projections have parallel edges. Either form may be used, as desired and as the methods of manufacture render most expedient. The tie plate may be cast and the spike forged, or these parts made in any other manner, as desired.

Having thus described my invention, what I claim is:—

1. In a fastening device, the combination of a tie plate having an opening through it and separated raised plane surfaces adjacent to the opening, said surfaces being inclined complementarily to the inclination of the rail base with which said plate coöperates, and a screw spike adapted to screw into the tie through said opening and having a head, the under surface of which is provided with a plurality of plane inclined surfaces adapted to have a surface engagement with the rail and tie plate respectively.

2. In a fastening device, the combination of a tie plate on which a rail may rest, said plate having an opening therethrough, a plurality of bosses arranged about the opening and each having an upper surface presenting substantially the same angle to the axis of the opening that the top of the rail base presents, and a screw spike adapted to screw into the tie through said opening and having a head on the under surface of which are inclined portions arranged at an angle to the shank of the spike corresponding to

the angle of the faces of the bosses, the number of such portions on the spike head being at least one more than the number of bosses.

3. In a fastening device, the combination of a tie plate on which a rail may rest, said plate having an opening therethrough, three bosses arranged at right angles about the opening, the two bosses which are diametrically opposite having their inner edges adapted to abut against the edge of the rail base, and a spike adapted to be passed into the tie through said opening and having on its under side four projections adapted to engage the three bosses and the rail base respectively.

4. A tie plate for railway rails, comprising a base portion having a seat for the rail and an adjacent spike opening, and a plurality of discontinuous raised surfaces arranged about such opening, said surfaces being plane and presenting substantially the same angle to the axis of the opening.

5. A tie plate having three upwardly extending bosses arranged about an opening through the plate, two of the bosses being diametrically opposite and having inner edges parallel with the edge of the rail base adapted to rest on the plate.

6. A tie plate having three upwardly extending bosses arranged about an opening through the plate, two of the bosses being diametrically opposite and having inner edges parallel with the edge of the rail base, said plate having shoulders continuing the shoulders of the bosses, whereby the rail may be engaged approximately continuously across the plate.

7. A tie plate having an intermediate seat on which the rail may rest, said plate having two spike openings therethrough adjacent to the edge of the rail seat, three bosses around each spike opening, said bosses being at right angles to each other and two of them, which are diametrically opposite, having their inner edges substantially alining with ribs formed on the upper surface of the plate, said edges and ribs constituting side walls for the rail seat, the upper surface of each set of three bosses being plane but downwardly inclined toward the axis of the corresponding opening.

8. A screw spike having a threaded shank, a head, an angular projection on top of the head, and a plurality of spaced wedge-shaped projections on the under face of the head.

9. A screw spike made of a single integral piece of metal and comprising a shank having an external thread, a round head, an angular projection on top of the head and a plurality of spaced, plane surfaces on the under side of the head, which surfaces all make the same oblique angle with the axis of the shank.

10. A spike having a shank and a head,

the under surface of the head having at least four spaced, plane surfaces which make an oblique angle with the axis of the shank.

5 11. The combination of a tie plate having a plurality of upwardly inclined discontinuous surfaces arranged about one side of an opening through the plate, a rail seat at the other side of said opening and a screw
10 spike adapted to occupy such opening and having a threaded shank and a head with spaced under surfaces which are plane and make an oblique angle with the axis of the spike.

15 12. A spike having a shank and a head,

the under surface of the head having more than two inclined plane surfaces arranged equidistantly and having recesses therebetween.

13. A screw spike having a threaded 20 shank, a head, and a plurality of spaced, inclined plane projections on the under face of the head.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses. 25

WALTER S. NEWHALL.

Witnesses:

ALBERT H. BATES,
BRENNAN B. WEST.

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