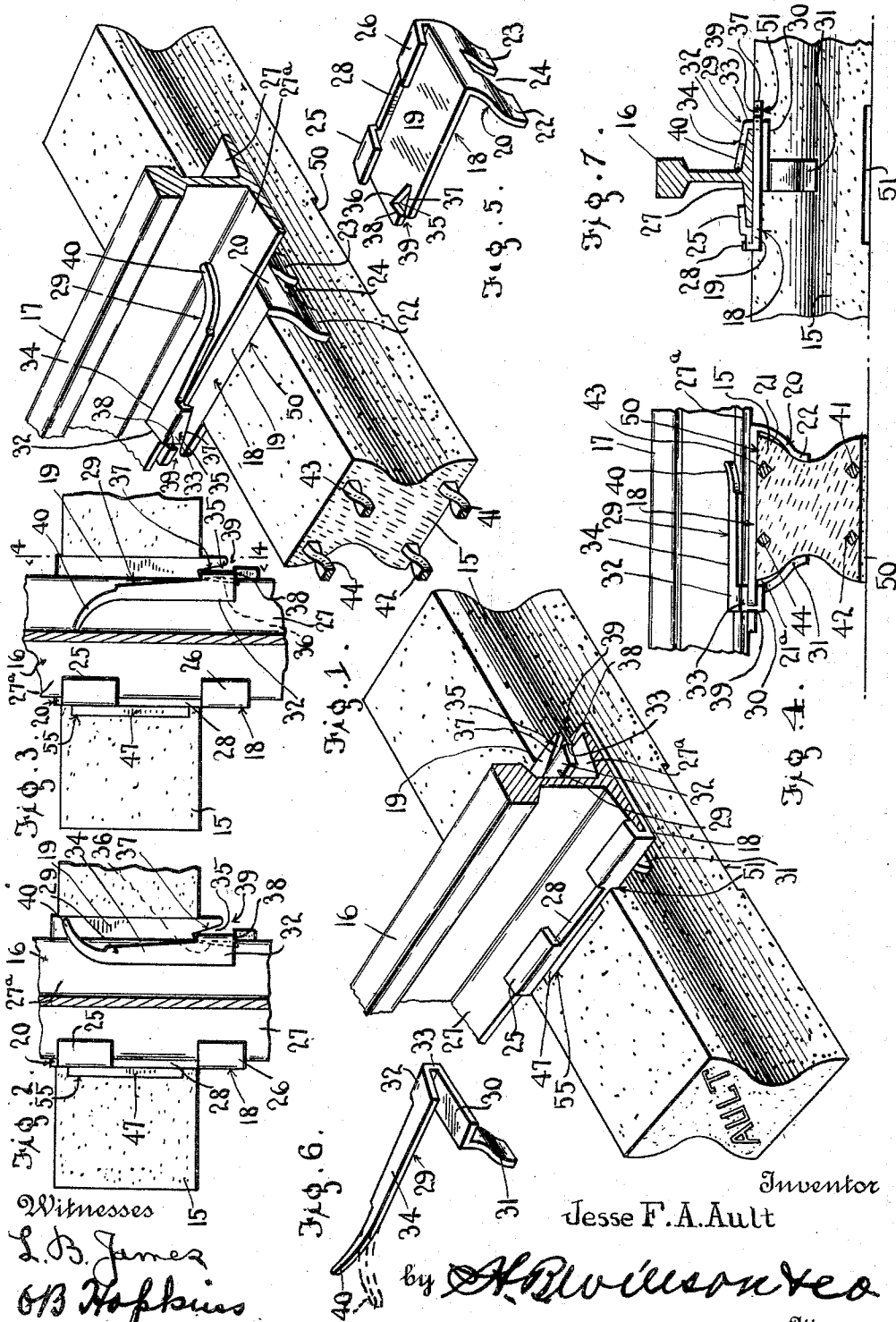


J. F. A. AULT.
RAILWAY RAIL FASTENING.
APPLICATION FILED APR. 27, 1911.

1,005,922.

Patented Oct. 17, 1911.



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UNITED STATES PATENT OFFICE.

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RAILWAY-RAIL FASTENING.

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Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed April 27, 1911. Serial No. 623,669.

To all whom it may concern:

Be it known that I, JESSE F. A. AULT, a citizen of the United States, residing at Cambridge, in the county of Guernsey and State of Ohio, have invented certain new and useful Improvements in Railway-Rail Fastenings; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to railway rail fastenings, and has for its general object the improvement of such devices with a view to increased wear, safety, strength, utility, and economy in manufacture.

A special object of the invention is to provide improved means for fastening railway rails of any usual form upon railway ties of any improved construction.

With this object in view the invention consists in the improved construction, arrangement and combination of parts hereinafter fully described and afterward specifically claimed.

In the accompanying drawings in which I have illustrated an embodiment of my invention: Figure 1 represents a perspective view of a railway tie with its middle portion broken away, exposing the re-inforcing bars, and two rails in position on the tie and secured thereon by my improved fastening; Fig. 2 represents a horizontal sectional view on a plane cutting through the web of the rail, looking downwardly, showing the rail flange, fastening, and tie in plan view, the fastening being in unlocked position; Fig. 3 represents a view similar to Fig. 2, with the fastening in locked position; Fig. 4 represents a sectional view on the plane indicated by the broken line 4-4 of Fig. 3 with the rails shown in full lines; Fig. 5 represents a perspective view of the rail plate detached; Fig. 6 represents a similar view of the clamp-lock; Fig. 7 represents a transverse sectional view of a smaller rail secured to a tie by means of a slightly modified form of my improved fastening.

Like reference characters mark the same parts in all the figures of the drawings.

Referring specifically to the drawing, 15 indicates a railway tie and 16 and 17 railway rails, held in position thereon (see Fig. 1) by means of my improved rail fastening. For the purpose of application of my improved rail fastening, the tie may be made

of any suitable material, such as wood, metal, concrete, etc., and may be of any usual form, a preferred form, however, being one in which the sides are hollowed out on the lines of a double ogee curve, whereby the upper curves afford additional support against the material embedded between the ties on lines inclined from the perpendicular, thereby reinforcing the support afforded against vertical strain in the usual manner.

18 indicates my improved rail plate, which is preferably cut, punched and pressed into shape, from any approved material, forming a flat plate 19 from which is projected downwardly at one end a flange 20 of a width about half of the vertical thickness of the tie, said flange being shaped on the lines of an ogee curve and bearing slightly upon the curve of the upper half of the side of the tie, so that when in position upon the tie there will be a space 21 between said flange and the upper portion of the side of the tie, while the lower edge of the flange will be in yielding contact with the middle portion of the tie, said lower edge of the flange being divided into two parts 22 and 23 by cutting away the central portion thereof at 24, the parts 22 and 23 acting as separate flanges.

Along one edge of the plate 19 are formed clips 25 and 26 by bending the edge of the plate upward and inward to fit over the edge of the flange 27 of the rail, the central portion of the edge of the rail plate between said clips, being preferably about one-third of the length of the plate, and turned up vertically as at 28 to a height about equal the thickness of a rail flange, whereby additional resistance against lateral thrust of the rail flange is afforded.

The plate 19, when in position, rests squarely on the top of the tie 15 with the parts 22 and 23 of the flanges 20 in contact with the central portion of the side of the tie with the clips 25 and 26 lying transversely of the tie in position to receive the flange 27 of the rail. It is now necessary to effectually secure the rail plate to the tie and the rail to the rail plate, and this I accomplish by means of my improved clamping lock, which I have illustrated detached at 29 in Fig. 6. This clamp-lock is composed of a single piece of metal, preferably plate steel, and comprises a flat plate 30, and a down-turned flange 31 on one edge of the plate 30 and of the same curve, but

in opposite directions to the curve of the down-turned flange 20 of the rail plate. This flange 31 projects downward from the side of the plate 30 at its inner edge and in near its inner end, its outer end being
 5 turned upward and inward to form a clip 32 connected to the plate by an upright neck 33, the clip being extended laterally in the form of a finger 34. In one corner of the
 10 plate 19 is formed a notch of triangular shape, as at 35, having its inner side 36 slightly inclined toward the longitudinal edge of the plate in one direction and its side 37 more abruptly inclined toward the
 15 same side of the plate in the opposite direction, the side 36 representing the altitude of the triangle and the side 37 the hypotenuse thereof, while the side 38, representing the base of the triangle, is parallel with the end
 20 of the rail plate and is terminated by the cutting away of the corner of the plate, leaving an opening 39.

The rail plate being in position as before set forth with the flange 20 embracing the
 25 upper ogee curve of the side of the tie, and the clips 25 and 26 embracing the flange 27 of the rail 17 in position upon the top of the tie, my improved clamping-lock is now applied by passing the upright neck 33 into
 30 the triangular notch 35 through the opening 39 with the clip 32 embracing the flange 27^a of the rail and the finger 34 resting upon the top of said flange, the flat face 30 of the clamp-lock passing under the rail plate and
 35 base of the rail and bringing the flange 31 into position opposite to the flange 20 on the other end of the plate until said flange 31 contacts with the upper ogee curved side
 40 of the tie, leaving the space 21^a, similar to the space 21, so as to afford a yielding contact with the middle portion of the tie as before described with reference to the part
 45 22 of the flange 20. As the upright neck 33 passes into the slot 35, it bears with a wedge-like action against the outer wall 37 of the triangular notch, gradually forcing the clip 32 over the edge of the flange of the rail until the parts are rigidly seated.
 50 In order to permit of this inclined movement into the notch 35, the outer end of the finger 34, as indicated at 40, is curved outward so that it will not contact with the web of the rail during such movement, such
 55 a curve being necessary, as best illustrated in dotted lines in Fig. 6, in order to permit of the movement of the neck 33 into the apex of the triangular slot. This dotted line having been reached, it is necessary, in order to cause the flange 31 to tightly clamp the
 60 side of the tie, to move the finger 34 outward away from the flange of the rail into the position shown in full lines in Fig. 6, during which movement the inner end of the wall 37 at the apex of the flange or slot has
 65 acted as a fulcrum for the clamp-lock and

has forced the edge of the neck 33 to engage the base wall 38 of the triangular slot and the inner face of the neck 33 itself to lie in contact with the altitude wall 36 of the triangular slot. This is the position indicated
 70 in full lines in Fig. 3, but there is nothing to hold the parts in this position, and in order to so hold the parts the finger must be prevented from tilting inward on the fulcrum before mentioned toward the web
 75 of the rail. To prevent this, I then bend the end 40 of the finger 34, curving it in the opposite direction, as indicated in Fig. 3, until its end contacts with the web of the rail, which, owing to the leverage afforded
 80 by the length of the finger, will securely maintain the operative parts of the lock, including the flange 31, neck 33 and clip 32, in their operative or holding position and rigidly secure the rail in position on the tie.
 85

From the foregoing description of my improved rail fastening, it will be obvious that I have provided, without perforations, bolts, spikes, or the like, means whereby a rail
 90 of any improved form may be rigidly secured upon a tie of any preferred material and form, it only being necessary that the rail be provided with ordinary base flanges and that the tie be constructed in the form
 95 to receive the clips of the rail plate, and while I have particularly described, as the preferred form, the tie as having double ogee sides, it will be obvious that the form
 100 of the sides may be varied, and the shape of the flanges of the rail plate which embrace the sides be correspondingly changed, without departing from the spirit and scope of this part of my invention.

In Fig. 7, I have shown a modified form of my improved rail clamp to accommodate
 105 rails having flanges of less width than ordinarily. In this construction I have shown the clips 25 as bent in substantially ogee form, so as to shorten the distance between their operative parts and the clip 32 of the
 110 clamp-lock on the opposite side of the rail.

Other modifications and variations might be made to accommodate varying circumstances within the spirit and scope of the
 115 invention.

Having thus fully described my invention what I claim as new and desire to secure by Letters Patent of the United States is:—

1. A railway rail fastening comprising a
 120 rail plate to rest on the top of the tie provided with a downwardly-turned flange at one end to engage one side of the tie, clips along one side of the plate to engage one edge of the base flange of the rail, an open
 125 notch in one corner of the opposite end of the rail plate, and a clamp-lock to engage in the notch, said clamp-lock comprising a depending flange to engage the opposite side of the tie, and a clip to engage the opposite edge of the base flange of the rail.
 130

2. A railway rail fastening comprising a rail plate to rest on the top of the tie provided with a downwardly-turned flange at one end to engage one side of the tie, clips
5 along one side of the plate to engage one edge of the base flange of the rail, an open notch in one corner of the opposite end of the rail plate, and a clamp-lock to engage in the notch, said clamp-lock comprising a flat
10 plate to pass below the rail plate, a depending flange at one side of the flat plate to engage the other side of the tie, and a clip at one end of the flat plate to engage the opposite edge of the base flange of the rail.

15 3. A railway rail fastening comprising a rail plate to rest on the top of the tie provided with a downwardly-turned flange at one end to engage one side of the tie, clips along one side of the plate to engage one
20 edge of the base flange of the rail, an open notch in one corner of the opposite end of the rail plate, and a clamp-lock to engage in the notch, said clamp-lock comprising a flat plate to pass below the rail plate, a depending
25 flange at one side of the flat plate to engage the other side of the tie, a clamp at one end of the flat plate to engage the opposite edge of the base flange of the rail, and a finger extending laterally from the clip substantially in the longitudinal direction of the
30 rail for manipulating the clamp-lock.

4. A railway rail fastening comprising a rail plate to rest on the top of the tie provided with a downwardly-turned flange at
35 one end to engage one side of the tie, clips along one side of the plate to engage one edge of the base flange of the rail, an open notch in one corner of the opposite end of the rail plate, and a clamp-lock to engage in
40 the notch, said clamp lock comprising a flat plate to pass below the rail plate, a depending flange at one side of the flat plate to engage the other side of the tie, a vertical neck at one end of the flat plate to pass through
45 the opening into the notch and a clip forming a continuation of the vertical neck adapted to engage the other edge of the base flange of the rail.

5. A railway rail fastening comprising a
50 rail plate to rest on the top of the tie provided with a downwardly-turned flange at one end to engage one side of the tie, clips along one side of the plate to engage one edge of the base flange of the rail, an open
55 notch in one corner of the opposite end of the rail plate, and a clamp-lock to engage in

the notch, said clamp-lock comprising a flat plate to pass below the rail plate, a depending flange at one side of the flat plate to engage the other side of the tie, a vertical
60 neck at one end of the flat plate to pass through the opening into the notch, a clip forming a continuation of the vertical neck adapted to engage the other edge of the base flange of the rail, and a finger extending laterally from the clip substantially in a longitudinal direction of the rail for manipulating the clamp-lock.

6. A railway fastening comprising a rail plate to rest on the top of the tie provided
70 with a downwardly-turned flange at one end to engage one side of the tie, clips along one side of the plate to engage one edge of the base flange of the rail, an open notch in one corner of the opposite end of the rail plate,
75 and a clamp-lock to engage in the notch, said clamp lock comprising a flat plate to pass below the rail plate, a depending flange at one side of the flat plate to engage the other side of the tie, a vertical neck at one end of
80 the flat plate to pass through the opening into the notch, a clip forming a continuation of the vertical neck adapted to engage the other edge of the base flange of the rail, and a finger extending laterally from the clip
85 having its outer end curved away from the rail and adapted to be bent into contact with the web of the rail to lock the parts in position.

7. A railway rail fastening comprising a
90 rail plate to rest on the top of the tie provided with a downwardly-turned flange at one end to engage one side of the tie, clips along one side to engage one edge of the base flange of the rail, an open triangular notch
95 in one corner of the opposite end of the rail plate having its outer wall inclined inward from the opening to its throat, and a clamp-lock to engage with a wedge action upon the said outer wall of the notch, said clamp-lock
100 comprising a depending flange to engage the opposite side of the tie, and a clip to engage the opposite edge of the base flange of the rail.

In testimony whereof I have hereunto set
105 my hand in presence of two subscribing witnesses.

JESSE F. A. AULT.

Witnesses:

HOLMES W. AULT,
C. H. GRIESBAUER.