(No Model.)

E. G. PATTERSON.

RAILROAD RAIL.

No. 423,078. Patented Mar. 11, 1890.

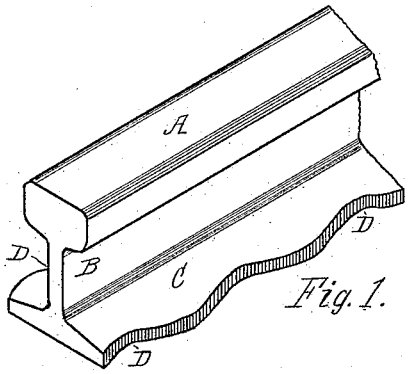

Fig. 1.

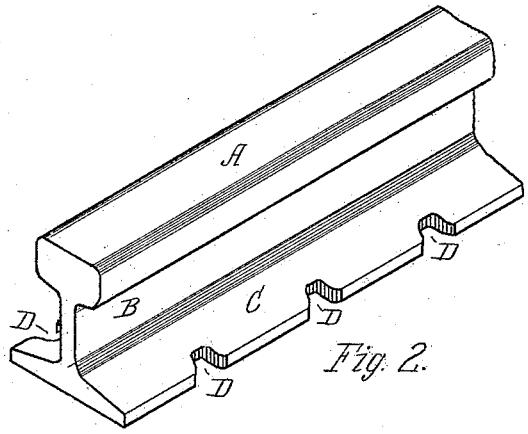

Fig. 2.

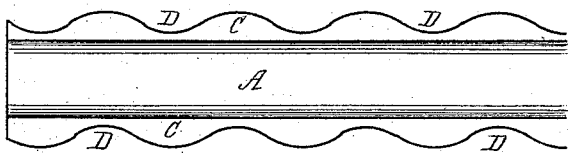

Fig. 3.

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UNITED STATES PATENT OFFICE.

ELISHA G. PATTERSON, OF TITUSVILLE, PENNSYLVANIA.

RAILROAD-RAIL.

SPECIFICATION forming part of Letters Patent No. 423,078, dated March 11, 1890.

Application filed August 3, 1889. Serial No. 319,682. (No model.)

To all whom it may concern:

Be it known that I, ELISHA G. PATTERSON, of Titusville, in the county of Crawford and State of Pennsylvania, a citizen of the United States, have invented a new and useful Improvement in Railroad-Rails, of which the following is a specification.

In railroad-rails as ordinarily constructed with a foot or flange it is the usual, if not the universal, practice to make the rail without any slots, holes, or notches for the reception of the spikes by which the rail is fastened to the cross-ties of the road, and subsequently to form such perforations or notches by means of a punch, drill, or other machine when the rail is about to be used, or at any rate as a separate process or step from that of manufacturing the rail. There are several objections to the use of rails so punched or drilled after manufacture, among which may be mentioned that the punching or drilling of the rail when cold tends materially to weaken it by disintegrating the metal and breaking the fibers, especially in the case of steel rails, which are now most generally used, and that the notch or hole for the spike has to be made, or should be made, at a point corresponding nearly with the mid-width of a cross-tie, to secure which either the cross-tie has to be adjusted in position to the rail, or the rail has to be specially punched or drilled to suit the position of the ties, and that, further, when it is desirable to insert spikes at points intermediate to the ends of the rail, special holes or notches have to be made in the flange of the rail, or the spike has to be driven against the plane side of the flange, which does not prevent longitudinal movement or creeping of the track, which is a very common and serious evil. To obviate all of these difficulties and furnish rails which may be laid without preliminary punching or drilling and without any special adjustment of the cross-ties, and can be spiked equally well at any point in their length and on either side, thus relieving the joint and joint-ties of the strain incident to the resistance of longitudinal movement, I form the flange of the rail on either side, but preferably on both sides, with a series of indentations extending inward from the outer edge of the flange, and forming recesses in which the spikes can be driven in any number and at any desired point in the length of the rail.

In the accompanying drawings, Figure 1 is a perspective view of a T-rail having indentations on the outer edge of the flange formed by curved or wave lines. Fig. 2 is a similar view of a rail having notches formed at short intervals in the otherwise straight edges of the flange. Fig. 3 is a top or plan view of Fig. 1.

Like symbols of reference indicate like parts in each.

In the several figures of the drawings, A is the tread, B the web, and C C the flanges, of the rail. In the sides of the flanges are indentations D D, which, as before stated, are in Figs. 1 and 3 formed by continuous waving lines, and in Fig. 2 by a series of notches formed at intervals.

It will be noticed that the flanges may be made of normal width, and this without necessarily increasing the weight, and that the indentations occur so frequently as not in any degree to interfere with the steadiness of the rail or prevent its having a firm seat on the cross-ties or road-bed.

I have invented a method of manufacturing the rail which I have just described, and which will form the subject-matter of a separate application. It is important, however, that the indentations should form a part of the rail as manufactured, inasmuch as it is one of the special features of my improved rail that these indentations are made while the rail is being formed, and while the iron or steel, as the case may be, is yet in a formative or somewhat plastic condition.

The method which I have invented for making the described indentations in the flanges of rails, and the difference between my method of rolling and that heretofore in use for analogous purposes, may be briefly stated as follows: The rail having been gradually formed from a heated bar of iron by passes through the grooves of a pair of rolls, will, when it reaches the final pass in which the indentations are to be formed, have assumed substantially, if not exactly, the shape of the finished T-rail having head, web, and flange. In the last pass the rail is rolled on its edge. The grooves for the head and web are substantially, if not exactly, of the shape and

size of those parts of the finished rail, the difference being in the grooves to finish the flange. Now, in the ordinary mode of rolling, this groove would be formed with projections corresponding in size and depth to the indentations to be made in the rail, the greatest depth of the groove (between the projections which form the indentations) being considerably less than one-half of the width of the flange before being inserted between the grooves. In the practice of this method there is obviously a large amount of surplus metal displaced, and although the metal may be somewhat compressed by the rolling the surplus is so large that it can only be disposed of by the elongation of the metal in the entire rail, (tread and web as well as flange,) and such elongation under the circumstances involves considerable pulling and displacement of the metal. In fact, this cannot be successfully accomplished, as the metal, especially where steel is used, cannot be disposed of sidewise, but must, if at all, be forced backward, which is entirely unobjectionable in case of a blank in process of formation, but is impracticable where the larger part of the bar has already received its final shape. My method of operation, by which I overcome this difficulty, is to employ rolls in which the grooves to form the indentations in the flanges are cut down at their deepest point (corresponding with the outer edge of the flange of the finished rail) to the depth of one-half of the width of the flange of the rail before the indentations are made, so that the width of the flange of the rail before indenting it is substantially the same as that of the widest part of the flange of the rail after being indented. In this case there will be very little surplus metal to be disposed of, and no part of the rail, as it is after leaving the pass in the rail previous to the last, requires to be at all increased in any of its dimensions. The metal removed from the indented portions is probably partly forced into the other portions of the rail by compression, which, together with a slight elongation of the whole rail, is insufficient materially to disturb or disintegrate the metal.

The projections in the grooves of the rolls are made either by turning down the grooves to the depth of the projections and chipping out the spaces between them, or by turning down the grooves to the full depth and inserting teeth in the grooves to make the indentations in the flanges of the rail.

What I claim as my invention, and desire to secure by Letters Patent, is—

As a new article of manufacture, a railroad-rail having tread, web, and flange or flanges, the flange or flanges of which have a series of indentations on the outer edge formed while the metal is yet in a formative condition, substantially as and for the purposes described.

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Witnesses:

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