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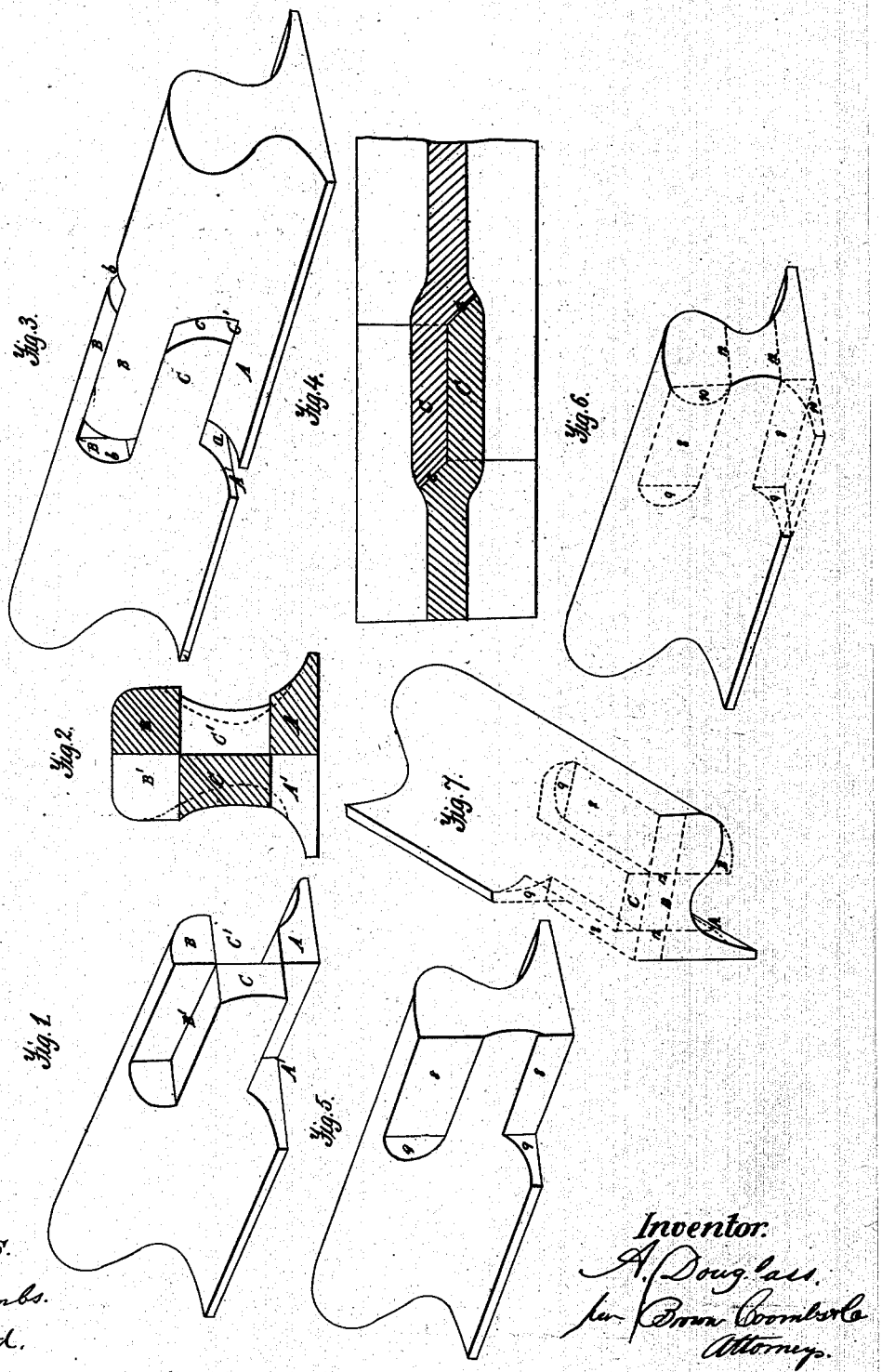
A. DOUGLASS.

LOCK JOINT FOR RAILROAD RAILS.



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IMPROVEMENT IN LOCK-JOINTS FOR RAILROAD-RAILS.

Specification forming part of Letters Patent No. **47,528**, dated May 2, 1865.

To all whom it may concern:

Be it known that I, AARON DOUGLASS, of the city of Paterson, county of Passaic, and State of New Jersey, have invented a new and Improved Lock-Joint for Railway-Bars; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

There have been many inventions of what are called "lock-joints" for railway-bars, consisting of modes of forming or constructing the ends of the bars, whereby, though end play is provided for, they are prevented from moving either vertically or laterally relatively to each other without the use of joint chairs, screws, clamps, or other fastenings than spikes driven into the cross-ties. Some of these inventions were well suited to the purpose intended, except that they have been difficult and too expensive to construct, and I believe that this has been the reason why not one has ever been adopted or used to any extent.

The object of this invention is to overcome this difficulty and to obtain a lock-joint which, without presenting any difficulty in its construction, will meet all the required conditions in its operation; and the said invention consists in a novel formation of the ends of the rails or bars, whereby the desired result is obtained without cutting away any portion of the necks of the rails or bars.

To enable others skilled in the art to construct lock-joints according to my invention and apply them to use, I will proceed to describe, with reference to the drawings, the manner in which my invention is applied to the ordinary inverted T-rail in common use.

Figure 1 in the drawings is a perspective view of a finished end of a rail or bar, showing one-half of the joint. Fig. 2 represents a transverse elevation of the same, and exhibits, by the aid of dotted lines, the comparison of the form of the rail proper with the form of the joint. Fig. 3 is a perspective view of the ends of two rails or bars forming the joint. Fig. 4 is a horizontal section of the joint, taken through the necks of the two rails or bars. Figs. 5, 6, and 7 are perspective views illustrative of the process of forming the ends of the rails or bars to produce the joint.

Similar letters of reference indicate corresponding parts in the several figures.

Each rail end is formed with three laps, A B C, Figs. 1, 2, and 3, and corresponding recesses. The lap A forms a portion of the base, B forms a portion of the head, and C forms a portion of the neck. A and B are on one side of a vertical plane, passing longitudinally through the center of the rail, and C on the opposite side of the said plane, and their inner longitudinal faces are flat and in the aforesaid plane. The upper face of A and the lower face of C are in the same horizontal plane, and the lower face of B and upper face of C are in the same horizontal plane. The formation of these laps produces three corresponding recesses, A′ B′ C′, in the end of the rail, for the reception of the three corresponding laps of the end of the next rail when the two rails are placed end to end and pushed together in a longitudinal direction. The form and arrangement of the laps and recesses are shown in Fig. 2. The laps of the two rails combine to form a continuous rail. One set of laps confines the others both in a vertical and a lateral direction, so that neither rail can move in either of those directions without the other, and yet the necessary degree of end-play is permitted to the joint. Fig. 4 exhibits the joint with the ends of the laps of each rail not quite pushed up to the shoulders *a b c* at the backs of the other one. The several shoulders and ends of the laps may be of square or oblique form; but I prefer to have the shoulder *c* and the end of the lap C oblique, as shown in Fig. 4.

I will now describe a method of forming the ends of the rails or bars. The end, having been heated to a proper degree, is placed on a sliding table arranged in proper relation to a saw, and by the latter cut vertically and longitudinally to remove portions of the head and base of the rail, as shown at 8 8 in Fig. 5, and in red outline in Fig. 6, leaving the neck of the rail entire. By another saw, running at right angles to that first mentioned, the head and base are cut transversely, as shown at 9 9 in the figures above mentioned, to intersect with the first cut, 8 8, and thereby detach the pieces 10 10. (Indicated in black dotted outline in Fig. 6.) The rail is then turned over on its side, and by means of two parallel saws

is cut longitudinally parallel with the base, as shown at 12 12 in red lines in Fig. 6, to the same distance as it was cut by the first cut, 8 8, dividing the end into three separate parts, A B C, as indicated in the latter figure. The rail is now removed to a die-block of suitable form, in which it is placed on its side, as shown in Fig. 7, and subjected to the pressure or blow of a suitable tool, so that as much of the metal in the upper and lower parts, A and B, as projects above the central plane of the rail (indicated by the line 13) is forced down into the recess of the die-block, and the upper faces of A and B brought to the plane 13. At the same time the piece C, resting upon a portion of the die-block, is displaced upward, so that its lower face is flattened and brought to the plane 13. The dotted red lines in Fig. 7 show the position to which the outer sides of A, B, and C are brought by this operation.

Two rails having been similarly treated will fit together to form the lock-joint, as shown in Fig. 3.

Rails united by this joint may be separated by being sprung aside, by means of a crow-bar or other means, so far out of line that the two arcs described by their ends in this movement will cause the laps A B C of each rail to be withdrawn from the recesses *a b c* in the other one.

I do not claim, broadly, the construction of a lock-joint between railway-bars by means of laps formed on one bar fitting into recesses formed in the other one; but

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

The combination of the three laps A B C, two formed of portions of the base and head of the rail, and one of a portion of the neck thereof, by dividing the rail in vertical and horizontal planes, and offsetting the neck in a lateral direction between the said horizontal planes, substantially in the form and manner herein specified.

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