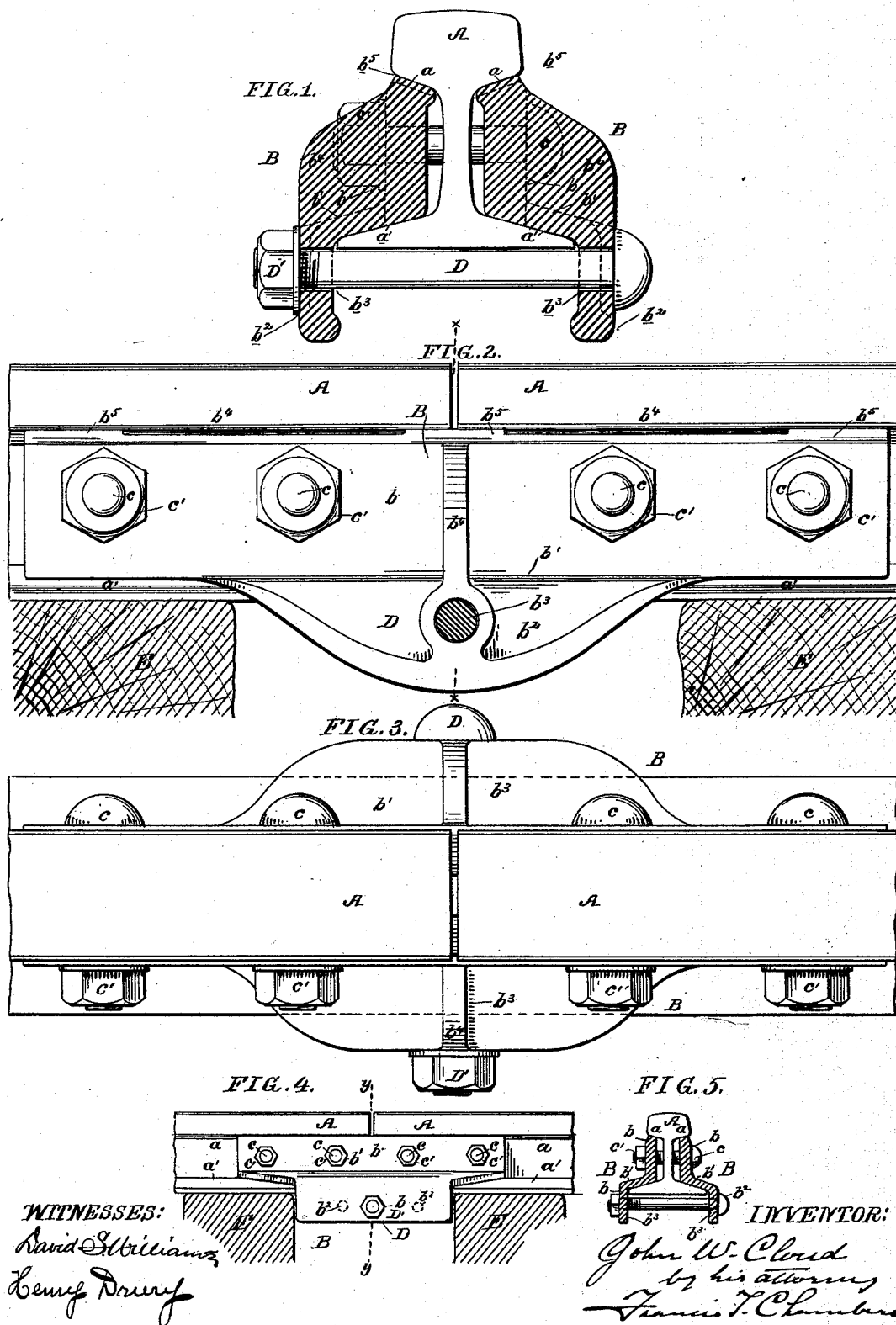


(No Model.)

J. W. CLOUD.
RAIL JOINT.

No. 410,151.

Patented Sept. 3, 1889.



UNITED STATES PATENT OFFICE.

JOHN W. CLOUD, OF BUFFALO, NEW YORK.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 410,151, dated September 3, 1889.

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To all whom it may concern:

Be it known that I, JOHN W. CLOUD, of Buffalo, county of Erie, State of New York, have invented a new and useful Improved Rail-Joint, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the rail-joint by which the abutting ends of railway-rails are united together; and it has for its object to provide a joint of great strength and rigidity, whereby the track may be as nearly as possible of the same strength at the joints as in the center of the rails.

The novel features of my invention are hereinafter clearly pointed out in the claims, and will be best understood after an explanation of the drawings, which illustrate the invention, and in which—

Figure 1 is a vertical section on the line x of Fig. 2. Fig. 2 is an elevation showing the abutting ends of two rails provided with my improved rail-joint in the form and construction preferred by me when the fish-plates are made of malleable iron or other cast metal. Fig. 3 is a plan view of the same joint; Fig. 4, an elevation similar to that of Fig. 2, showing my joint as made with the fish-plates formed of a rolled section; and Fig. 5, a cross-section on the line $y y$ of Fig. 4.

A is the rail; aa , the lower sides of the rail-head; $a' a'$, the upper sides of the rail-base.

B indicates my improved fish-plate, two of which are used to make the rail-joint. These fish-plates are formed with an upwardly-extending flange b , adapted to fit on the under side a of the rail, as shown. An outwardly-extending flange b' , adapted to fit upon and extend beyond the upper surface a' of the rail-base, and a downwardly-extending flange b^2 , extending beneath the base of the rail. The flange b is pierced with bolt-holes in the usual manner to enable the pair of fish-plates to be secured to the rail ends by bolts c , passing through them and the web of the rail, and nuts c' fitting on the end of said bolts. In the downwardly-extending flange of the fish-plates I form bolt-holes b^3 , the tops of which must be below the bottom of the rail-base, as shown. A single bolt-hole, or more

than one, may be formed in this lower flange of the fish-plate.

Where, as is shown in Figs. 1, 2, and 3, the fish-plates B are formed of cast metal, I prefer to strengthen and stiffen them by providing them with flanges b^4 , connecting the flanges b and b' , such flanges acting to brace and strengthen the casting; and I also prefer, when using cast metal, to form projections b^5 on the upper face of flange b and at its center and ends, such projections resting on the under faces a of the rail-head, while the spaces b^4 between the projections do not come in contact with it. This device I believe to give a better and tighter hold upon the rail than where the entire upper face of the flange b rests against it. The same form may be used when made of pressed metal. In all cases I prefer to make the lower flange b^2 shorter than the upper flange b of the fish-plates, and preferably make its length so that it can be inserted between two ties, so as to come in contact, or nearly so, with both of them, this construction acting to prevent creeping.

D is a bolt adapted to pass through the bolt-holes b^3 in the flange b^2 of the fish-plates, being of sufficient length to extend through the bolt-holes of both fish-plates. D' is a nut screwing on the end of bolt D .

My improved fish-plates are secured to the rail by the bolt c in the usual manner, as is best shown in Figs. 1 and 5. After they are in place the bolt D is inserted in the bolt-holes b^3 of the lower flange and the nut D' screwed down tight upon its end. It is necessary in all cases that the flange b' should extend out beyond the edge of the rail-base, so that the dependent or downwardly-extending flange b^2 should not in any case abut against or come in contact with the edge of the rail-base. The result of drawing the flanges b^2 together by means of the bolt D and its nut D' is therefore to press the flange or web b' and the upwardly-extending flange b against the base and head of the rail, respectively, thus coacting with the bolt c ; and, owing to the position of the bolt D when once in place, it acts with great power to prevent the spreading of the fish-plates under the load of a passing train, thus greatly increasing the stiffness and rigidity of the joint. By the construction de-

scribed, in which the flanges b^2 are so placed that they cannot come in contact with the edge of the rail-base and the bolt-holes b^3 placed so far below the rail-base that the bolt D cannot come in contact with the bottom of the rail, the structural unity of the joint is made perfect, which would not be the case were either of the flanges b^2 or the bolt D in contact with the rail.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A rail-joint consisting of two fish-plates B, having upwardly-extending flanges b , adapted to fit under the head of a rail and provided with bolt-holes, outwardly-extending flanges b' , adapted to extend along and over the rail-base, and downwardly-extending flanges b^2 , adapted to extend below the rail-base without coming in contact with it and provided with one or more bolt-holes b^3 at a point or points below the level of the rail-base, in combination with bolts for securing the flanges b to the rail and a bolt or bolts passing through the downwardly-extending flanges, said fish-plate flanges b^2 and the bolt or bolts uniting them beneath the rail-base being so constructed and combined as not to press directly or indirectly upon the under side of the rail.

2. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange b , adapted to fit beneath the head of the rail and provided with bolt-holes, an outwardly-extending flange b' , adapted to lie along and extend beyond the rail-base, and a downwardly-extending flange b^2 , adapted to extend below the rail-base without coming in contact with it or passing beneath its edges, and having one or more bolt-holes at a point below the level of said rail-base, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

3. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange b , adapted to fit beneath the head of the rail and provided with bolt-holes, an outwardly-extending flange b' , adapted to lie along and extend beyond the rail-base, and a downwardly-extending flange b^2 , shorter than the flange b , adapted to extend below the rail-base without coming in contact with it or passing beneath its edges, and having one or

more bolt-holes at a point below the level of said rail-base, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

4. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange b , adapted to fit beneath the head of the rail and provided with bolt-holes, an outwardly-extending flange b' , adapted to lie along and extend beyond the rail-base, a downwardly-extending flange b^2 , shorter than the flange b , adapted to extend below the rail-base without coming in contact with it, and having one or more bolt-holes at a point below the level of said rail-base, and a web b^4 , connecting the flanges b and b' , all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

5. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange b , having projections b^5 , adapted to fit beneath the head of the rail at the center and the ends of the flange, said upwardly-extending flange being provided with bolt-holes, an outwardly-extending flange b' , adapted to lie along and extend beyond the rail-base, and a downwardly-extending flange b^2 , shorter than the flange b , adapted to extend below the rail-base without coming in contact with it, and having one or more bolt-holes at a point below the level of said rail-base, all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

6. As a new article of manufacture, a railway fish-plate having an upwardly-extending flange b , having projections b^5 , adapted to fit beneath the head of the rail at the center and the ends of the flange, said upwardly-extending flange being provided with bolt-holes, an outwardly-extending flange b' , adapted to lie along and extend beyond the rail-base, a downwardly-extending flange b^2 , shorter than the flange b , adapted to extend below the rail-base without coming in contact with it, and having one or more bolt-holes at a point below the level of said rail-base, and a web b^4 , connecting the flanges b and b' , all substantially as described, and so as to form with a similar plate a rail-joint of the kind specified.

JOHN W. CLOUD.

Witnesses:

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