(No Model.)

H. F. COX.

RAIL JOINT.

No. 378,575. Patented Feb. 28, 1888.

Fig. 1.

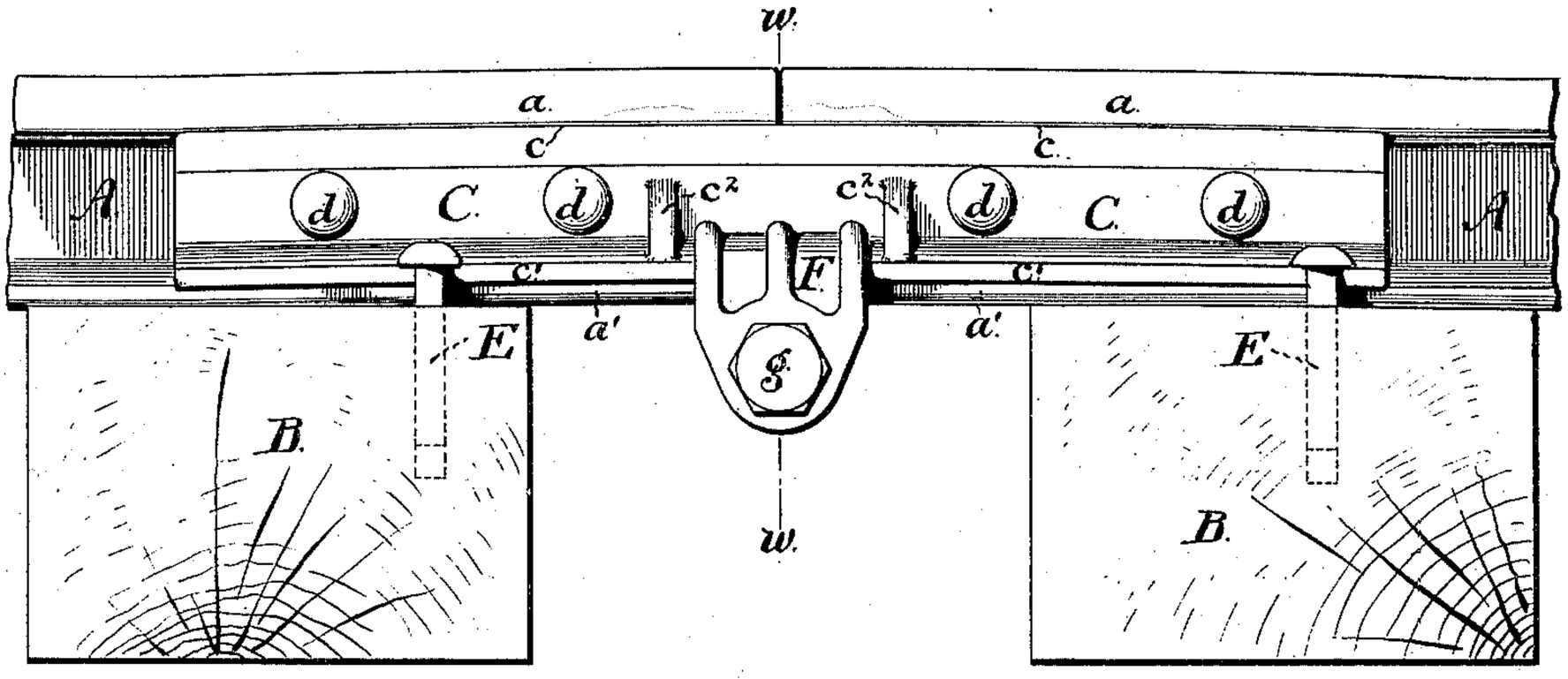
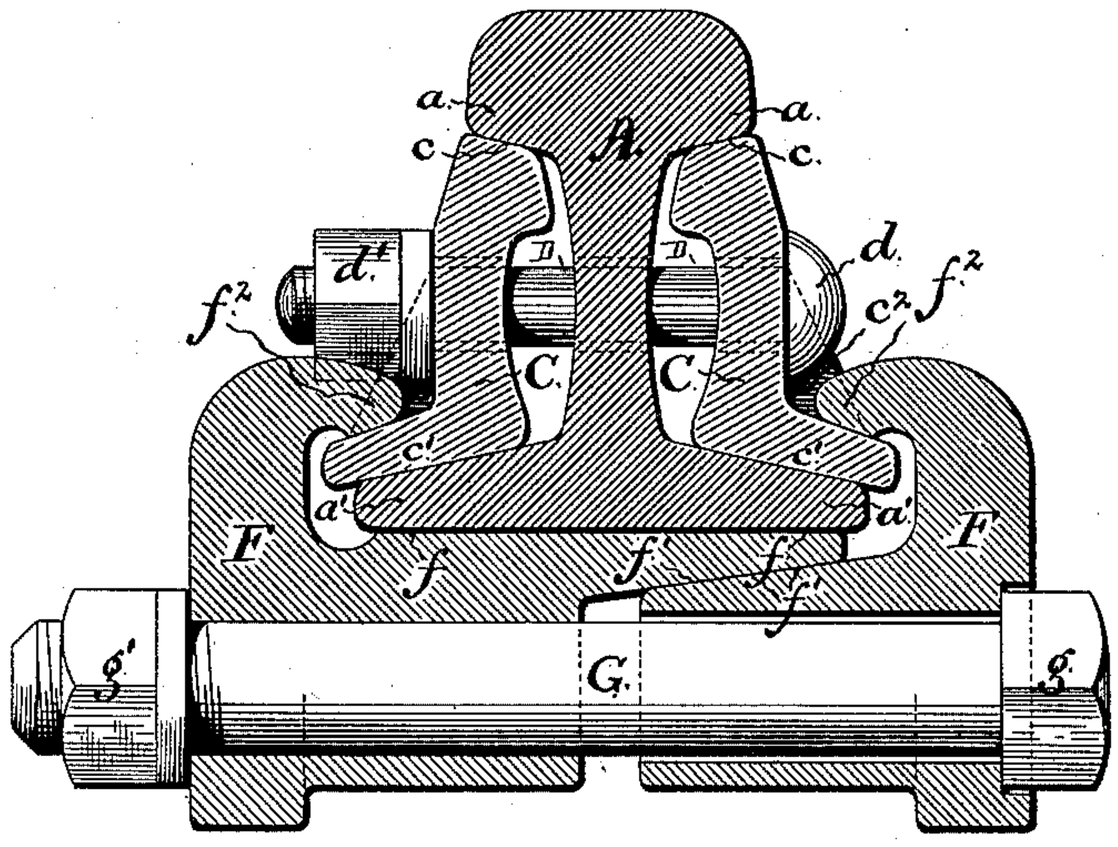


Fig. 2.



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UNITED STATES PATENT OFFICE.

HENRY F. COX, OF PHILADELPHIA, PENNSYLVANIA.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 378,575, dated February 28, 1888.

Application filed June 30, 1887. Serial No. 242,951. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. COX, of the city and county of Philadelphia, State of Pennsylvania, 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 construction of the joint between two abutting rails of a railway, and has for its object to make a firmer, smoother, and stronger joint than has heretofore been practicable; and my invention consists in the combination of a peculiar fish-plate, having an upward convex curve of about one-sixteenth ($\frac{1}{16}$) of an inch, with a clamp, by means of which the rail and fish-plates are held tightly together both vertically and horizontally.

Reference being now had to the drawings which illustrate my invention, Figure 1 is an elevation of my improved rail-joint, and Fig. 2 a cross-section thereof.

A A are the rails united by my improved joint, the lateral projections of the head being marked *a* and the lateral projections of the base being marked *a'*.

B B are the ties.

C C are the fish-plates, made to fit between the flanges of the head and base of the rail, and provided with a bottom flange, *c'*, projecting over and slightly beyond the top of the rail-base. The portion of the fish-plate which fits beneath the top of the rail is marked *c*. These fish-plates are curved upward throughout their length, the rise in the center being about one-sixteenth ($\frac{1}{16}$) of an inch.

c^2 c^2 are flanges or braces which I prefer to form upon the central portion of the fish-plates, where they serve to strengthen the plate and also, as will hereinafter be described, to center the clamp.

D D are the bolts which secure the fish-plates in place. The heads of these bolts are marked *d*, and the nut, as shown in Fig. 2, *d'*.

E E are spikes which project over the edges *e'* of the fish-plates and secure them and the rails in line.

F is a clamp, preferably made in two pieces, as shown, and provided with a bolt, G, by which it is drawn up and made to grasp the rail. The essential features of this clamp are that it shall have projecting jaws f^2, which will pass over the top of the flange *c'* of the fish-plates, and that it shall have a bottom-supporting surface or surfaces, *f f*, which rest against the bottom of the rail, and between which and the jaws f^2 the flanges *a'* of the rail-base and *c'* of the fish-plates will be clamped tightly together. I prefer to construct the two pieces constituting the clamp F with wedge-surfaces, as indicated at *f'*, as I have found it, if so constructed, to be more efficient than any others with which I am familiar; but this wedging of the one side of the clamp upon the other is not absolutely essential, and I do not wish to be understood as limiting my claims upon any particular clamp.

g is the head of the bolt G, and *g'* the nut.

The action of my improved rail-joint will be easily understood. The cambered fish-plates C C are placed opposite to each other on each side of the rail, the bolts D inserted, and the fish-plates then secured in place by means of the nuts *d'*. In forcing the cambered fish-plates into place the rails will be bowed slightly upward at their ends, following closely the curve of the fish-plate; but as this throws a very great strain upon the bolts D, and as, in case of the loosening of the nuts *d'*, the effect of the camber upon the rail will disappear, I have found it advisable to use a clamp, such as F, which, passing beneath the base of the rail, with jaws passing around and resting on top of the flanges *c'* of the fish-plate, will, when tightened into place, force the ends of the rails upward against the concavely-curved central portion of the base of the fish-plates, thus coacting with and re-enforcing the bolts D and insuring the upward curvature of the rail-joint under all conditions which are likely to occur in practice.

In the use of clamps similar to F it has heretofore been found necessary to provide them with one or more wedge-shaped projections which will enter a notch between the rails or in the edge of the fish-plate and prevent any lateral movement of the clamp. With my fish-plate, however, when provided with the re-enforcing ribs c^2 c^2, the clamp may be placed with its jaws f^2 between these ribs, which will effectually prevent the clamp from moving away from the center of the joint.

The cambered fish-plate shown and described

in this specification forms the subject-matter of another application for Letters Patent of the United States filed by me on the 28th day of March, 1887, and bearing the serial number 232,652, my present invention being an improvement upon the invention therein described.

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

1. In combination with the abutting ends of railway-rails, cambered fish-plates C C, having flanges c' extending over the top of the rail-base, a clamp, F, having jaws f^2 resting upon the top of the flanges c', and supporting-surfaces f resting against the bottom of the rail beneath the jaws f^2, and a bolt, G, whereby the clamp is drawn together and made to grasp and compress the base and the flanges c' of the fish-plate together, all substantially as and for the purpose specified.

2. In combination with the abutting ends of railway-rails, cambered fish-plates C C, having flanges c' extending over the top of the rail-base, and bracing-wings c^2 c^2, a clamp, F, having jaws f^2 resting upon the top of the flanges c' between the bracing-wings c^2 c^2, supporting-surfaces f resting against the bottom of the rail beneath the jaws f^2, and a bolt, G, whereby the clamp is drawn together and made to grasp and compress the base and the flanges c' of the fish-plate together, all substantially as and for the purpose specified.

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