

(No Model.)

C. ROBERTS.
RAIL JOINT.

No. 472,228.

Patented Apr. 5, 1892.

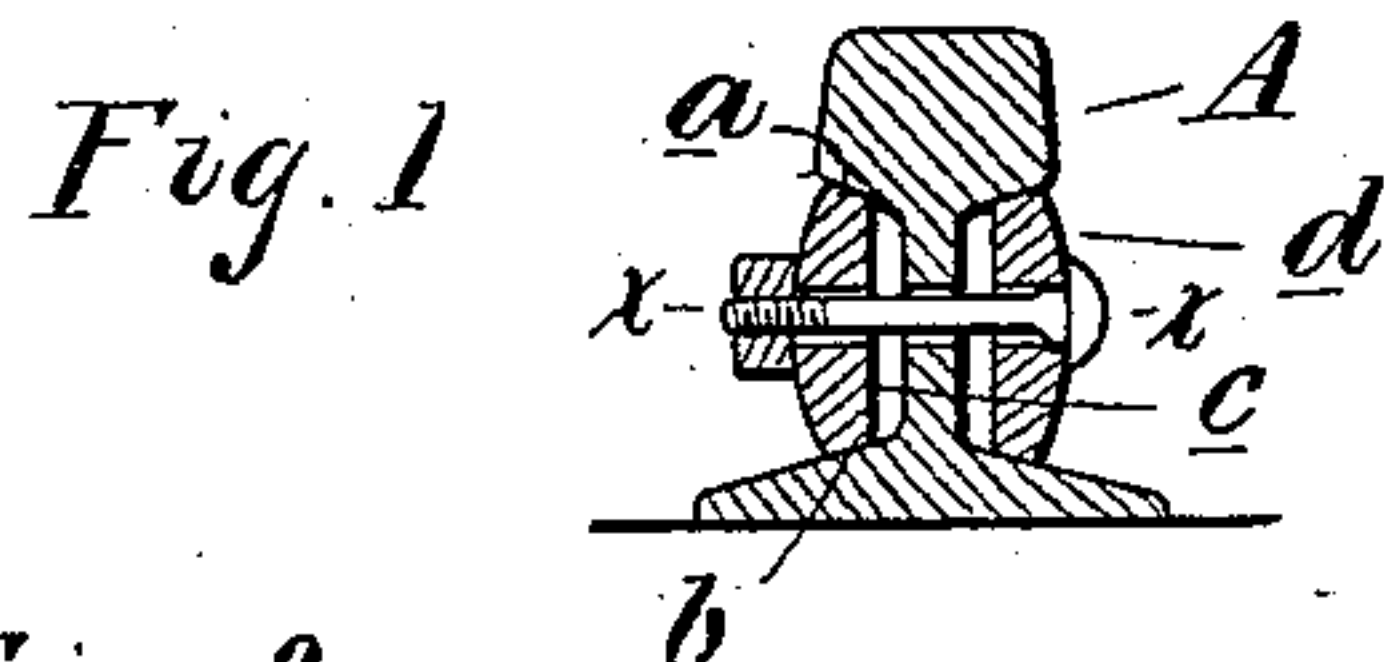


Fig. 2

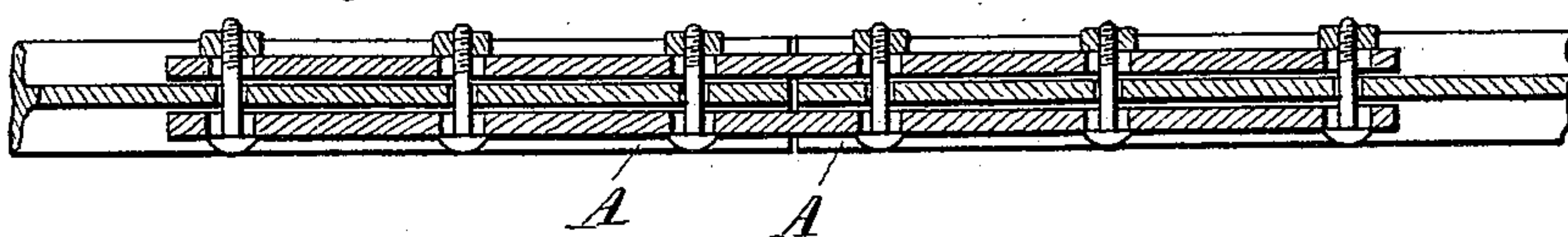


Fig. 3

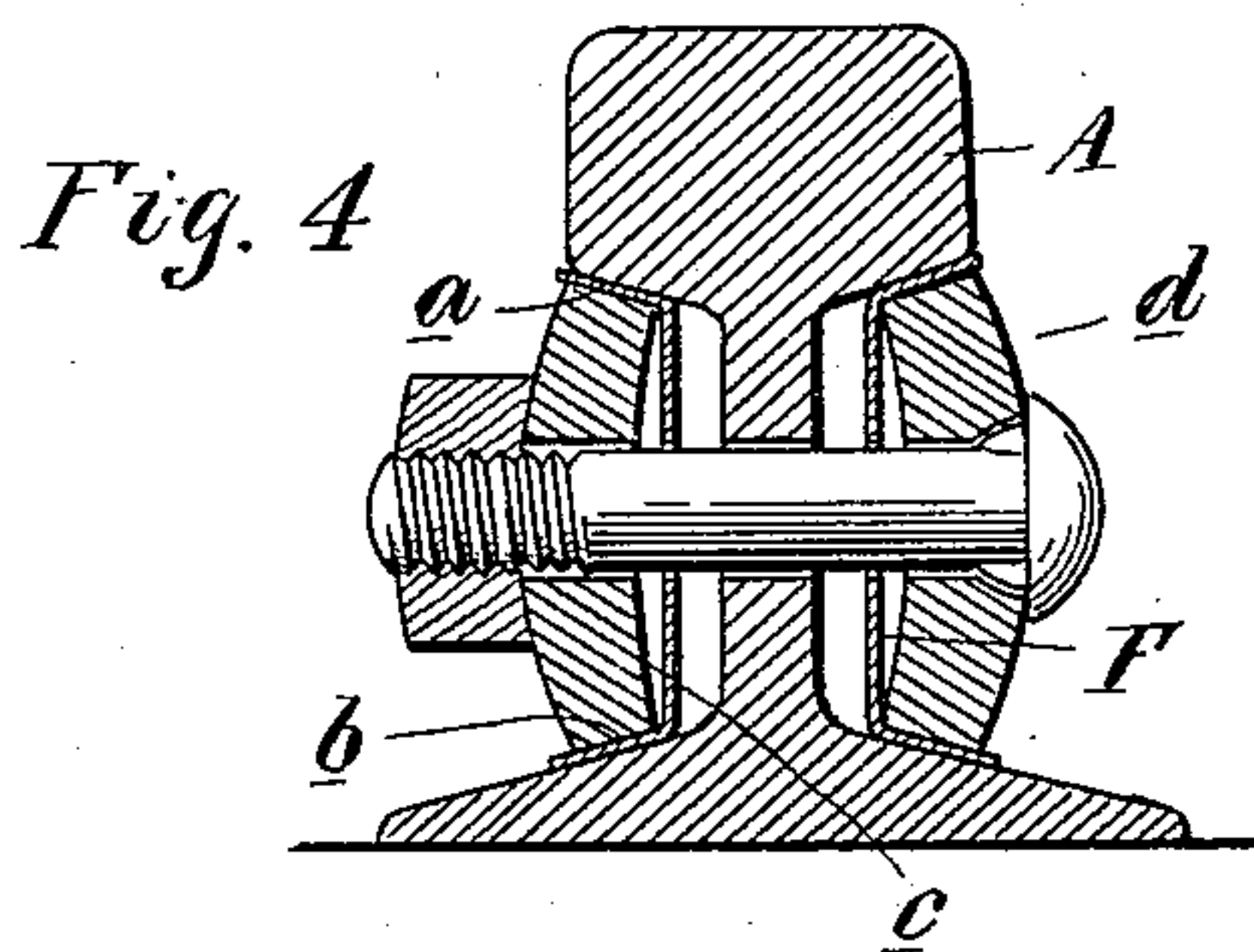
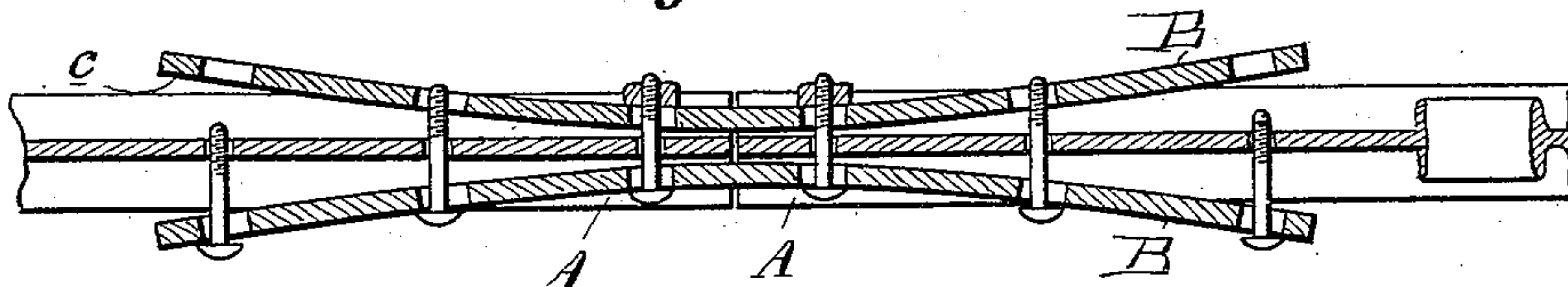
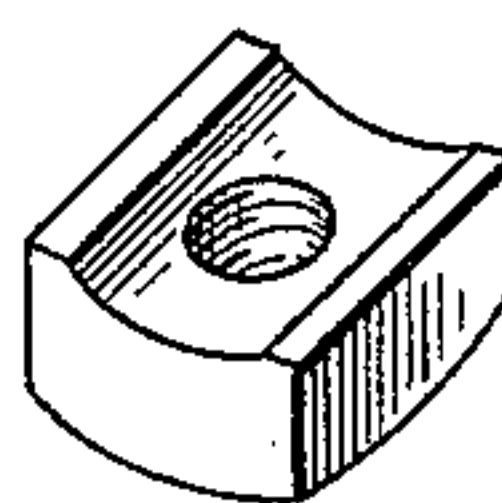


Fig. 5



Witnesses:
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UNITED STATES PATENT OFFICE.

CYRUS ROBERTS, OF THREE RIVERS, MICHIGAN.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 472,228, dated April 5, 1892.

Application filed July 1, 1891. Serial No. 398,196. (No model.)

To all whom it may concern:

Be it known that I, CYRUS ROBERTS, a citizen of the United States, residing at Three Rivers, in the county of St. Joseph and State of Michigan, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention relates to new and useful improvements in rail-joints; and the invention consists in the peculiar construction of the fish-plates, whereby a greater clamping effect is produced at the joint, and, further, in the peculiar construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

20 In the drawings, Figure 1 is a vertical central cross-section through a rail-joint made with my improved fish plate. Fig. 2 is a horizontal section thereof on line *xx*. Fig. 3 is a similar section showing the joint before the nuts are turned up. Fig. 4 is an enlarged cross-section through a joint of slightly-modified construction. Fig. 5 is a perspective view of the under side of one of the nuts.

A are the abutting ends of two rails of ordinary construction, and which are connected by a joint of my improved construction.

30 My joint consists of two like fish-plates B, made of spring-steel or other spring metal, substantially of the cross-section shown, so that the fish-plate is adapted to bear with the upper edge *a* against the under side of the head and 35 with the lower edge *b* against the foot of the rail, without, however, permitting the inner face *c* to come in contact with the web of the rail. The outer face *d* of the fish-plate is preferably curved in cross-section, as shown in 40 Figs. 1 and 4.

Instead of being made straight, as in the usual construction for uniting straight rails, my fish-plates are made curved, so that when laid against the sides of the abutting rail ends, 45 as shown in Fig. 3, the center portions only of the two fish-plates contact with the rails. In perfecting the joint I clamp these fish-plates firmly against the abutting rail ends until they finally contact their whole length. To 50 this end I preferably use bolts as in the ordinary way of securing fish-plates, suitable co-

incident bolt-holes being provided therefor in the fish-plates and rails, as in the usual manner. In tightening up the bolts I begin, preferably, with the bolts nearest the middle 55 and tighten the outer ones last, until finally both fish-plates are clamped into firm contact against the rails their whole length.

It will be readily observed that with my improved joint the rails will be clamped much 60 more firmly than in the ordinary joint, in which the fish-plates are made to fit the rails from the start. This increased clamping effect results from the gradual drawing into contact of the curved fish-plates, whereby the 65 edges *a b* produce a shearing or rubbing effect, which cuts off or smooths all the roughness or inequalities which may be on the surfaces of the rails or fish-plates at the contact- 70 ing-points. This shearing effect takes place at a time only on a small portion of the length of the fish-plate, with the power of a screw-bolt not only concentrated upon that portion but also increased by the leverage of the bolts on the fish-plate, which leverage is quite con- 75 siderable as regards the central portions of the fish-plates. When the fish-plates are thus clamped in contact their whole length, it is obvious that a perfect joint is made their whole length and the clamping force of the 80 bolts is increased in the center by the whole power it takes to compel the fish-plates to assume the straight line.

Where the rails are very rough or have inequalities, I preferably employ a packing of 85 suitable material—as, for instance, a sheet-metal strip F—bent over the edges *a b* of the fish-plates, as shown in the modification in Fig. 4. In turning up the nuts with this construction the fish-plate forces the packing 90 tightly against the head and foot of the rail, thus forming a tight joint, even if the rails and fish-plates are quite rough.

It will be conceded that in my construction there is much less danger of the nuts becom- 95 ing loose than there is in the ordinary construction, as the spring of the fish-plates holds the nuts from turning; but to lock the nuts still more firmly I form the nuts on the under side the reverse of the face *d* on the fish-plate, 100 as shown in Fig. 5, so that in certain positions the nuts will fit exactly the curved face

of the fish-plates, and in practice I screw the nuts up until I obtain that perfect fit which is not difficult to obtain. When once so secured the nuts can never become loose, and
5 this simple expedient at once forms a reliable nut-lock.

What I claim as my invention is—

1. In a rail-joint, the combination, with the rail, of a spring fish-plate curved outwardly
10 at its ends and formed with a convex outer face, the width of the plate being greater than the width of the web of the rail, securing bolts passing through the rails and plates, and nuts on the bolts, having grooved inner faces
15 corresponding to the contour of the outer face of the fish-plate, substantially as described.

2. In a rail-joint, the combination, with the rails, of two fish-plates having a curved outer face and bearing only against the head and

foot of the rails, a packing interposed between 20 the fish-plates and rails, and bolts for securing the fish-plates in place, having nuts formed with their inner faces curved inwardly to correspond with the curvature of the fish-plates and locked into contact with the face of the 25 same, substantially as described.

3. In a rail-joint, the combination, with the rails, of two curved fish-plates of spring metal secured into contact with the rails at their upper and lower edges and a packing inter- 30 posed between said edges and the rails, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CYRUS ROBERTS.

Witnesses:

M. B. O'DOGHERTY,
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