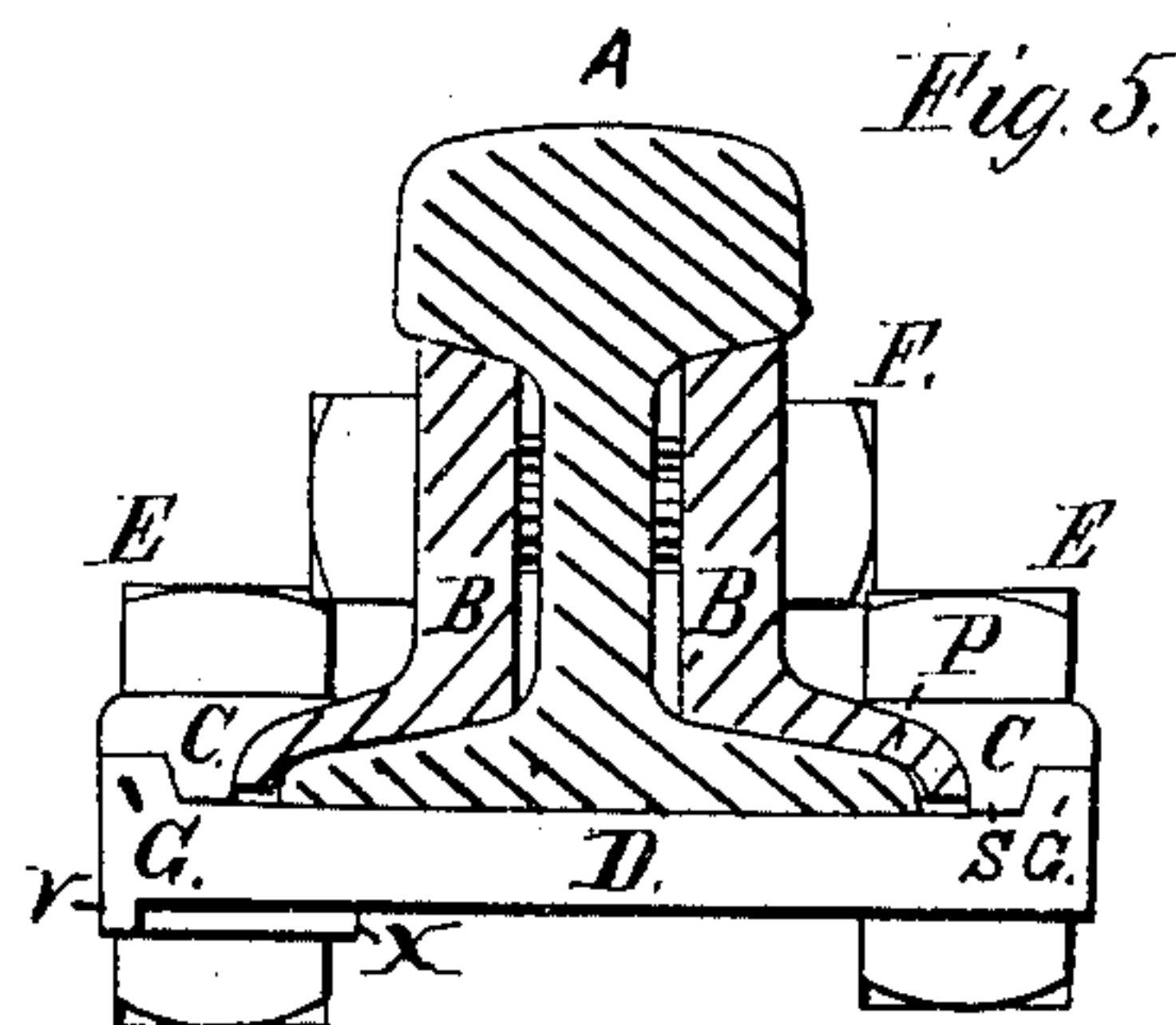
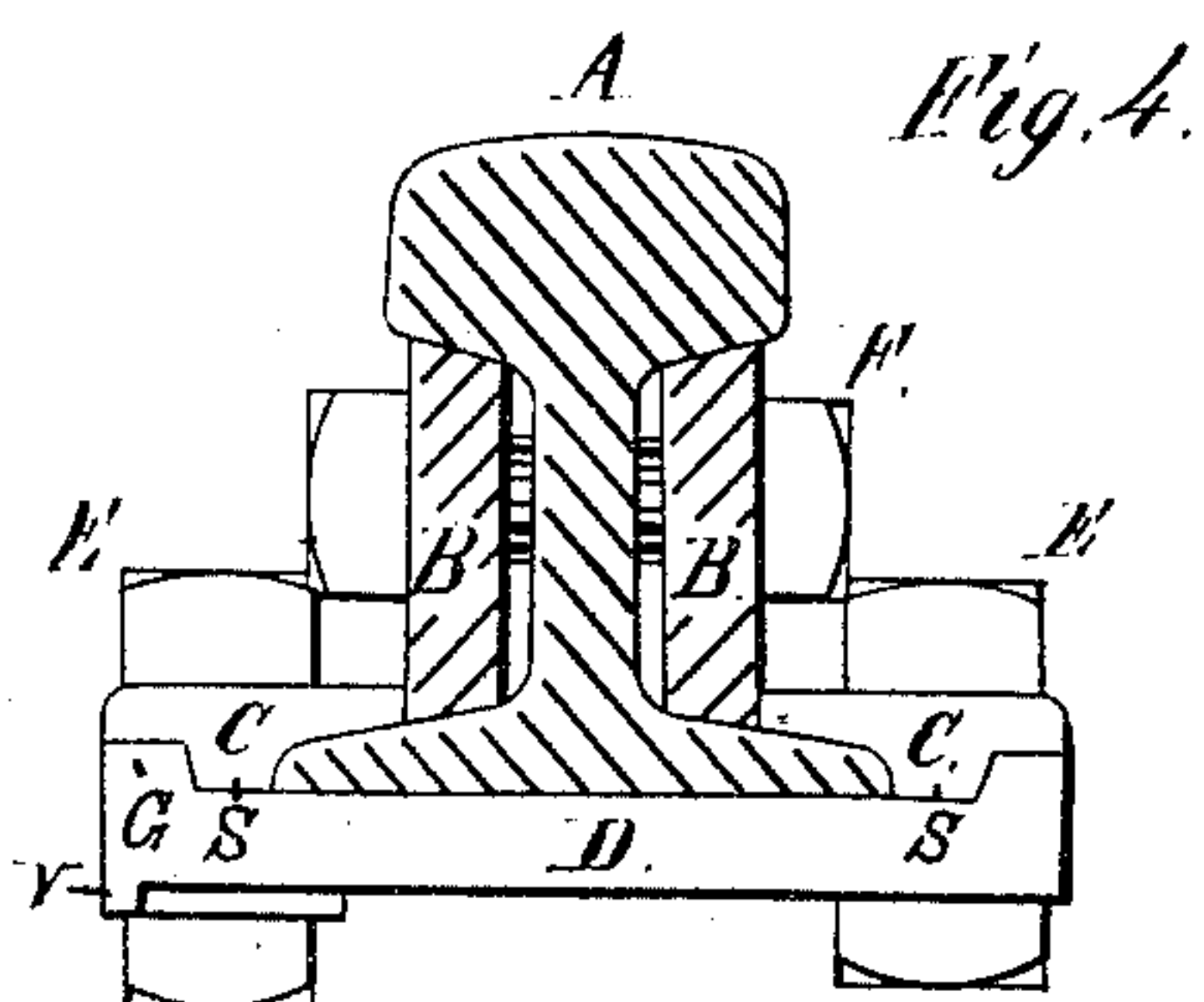
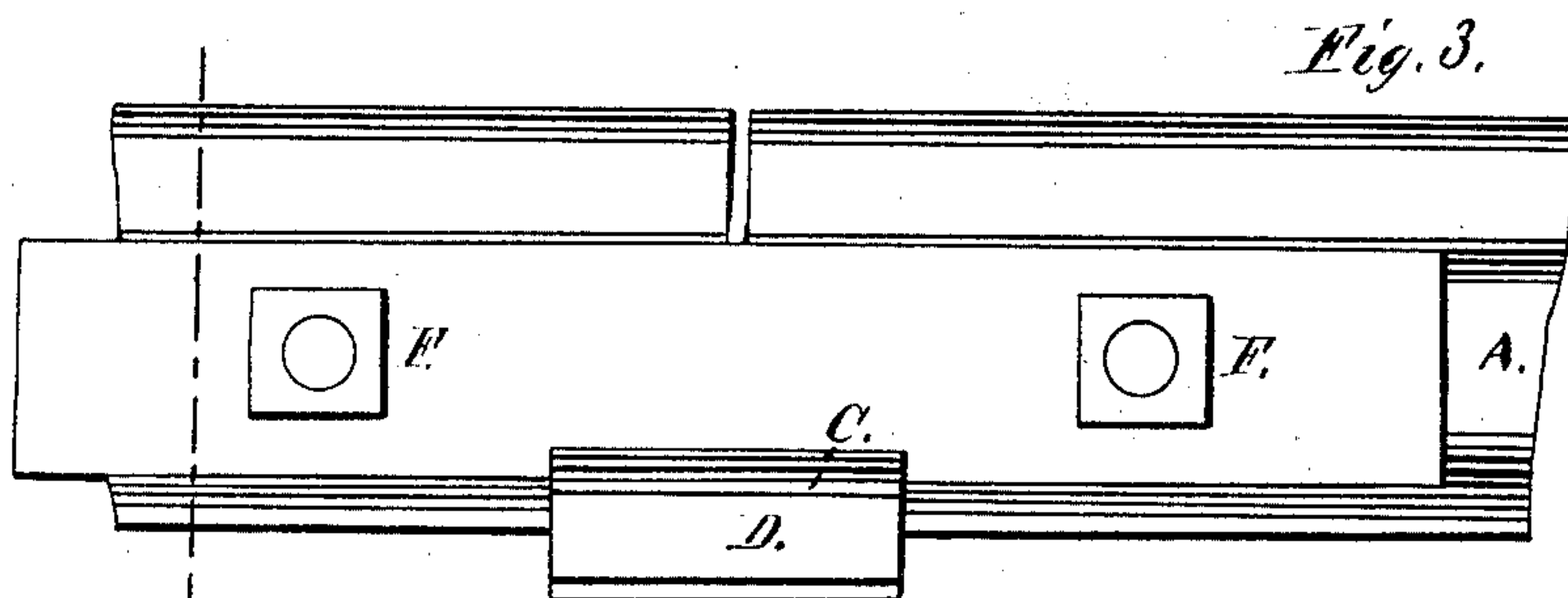
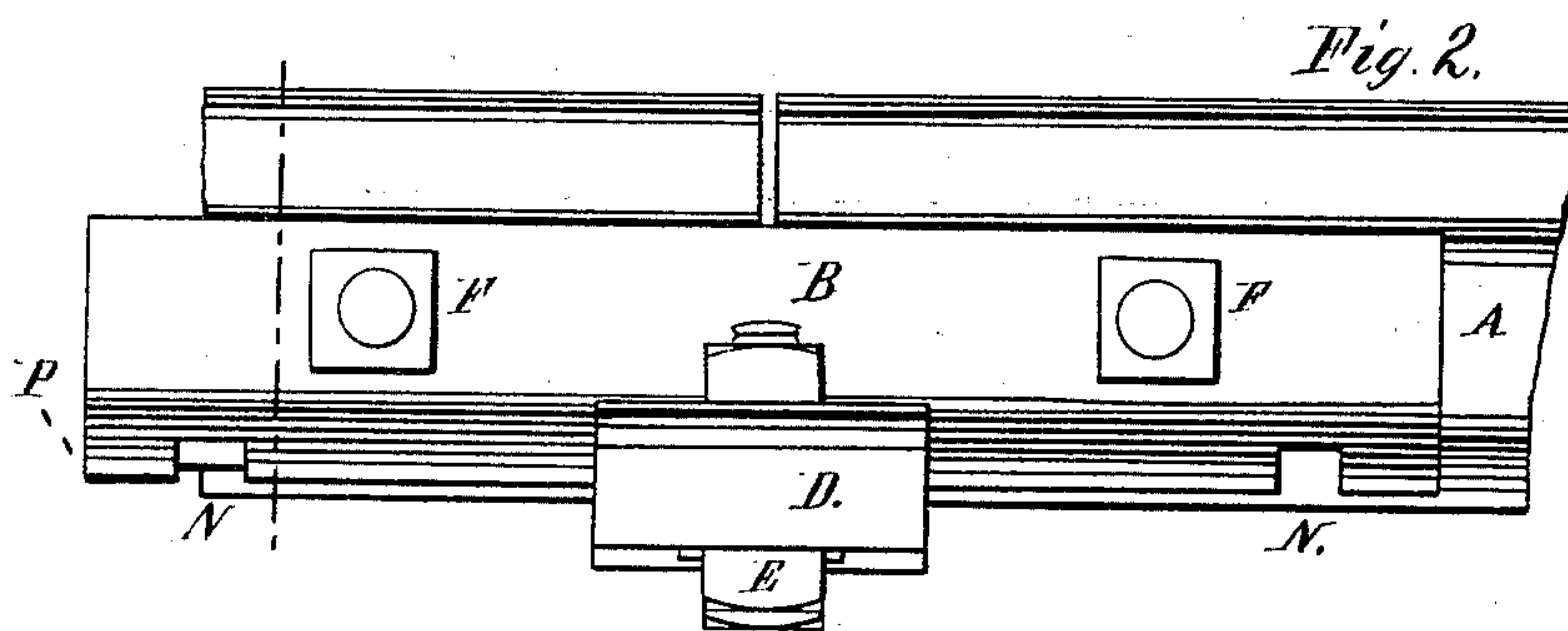
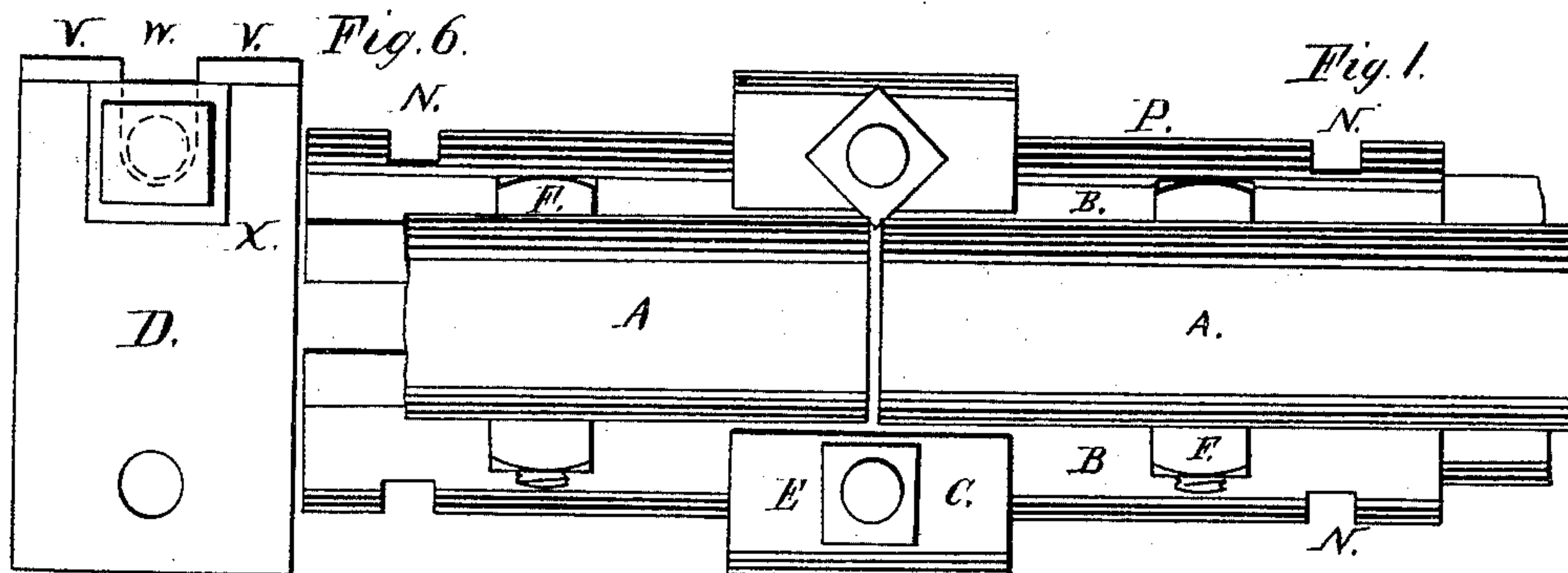


L. B. TYNG.  
Fish-Joint for Railroad-Rails.

No. 223,260.

Patented Jan. 6, 1880.



Witnesses.  
Nathaniel Hill,  
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Inventor.  
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His Attorney.



# UNITED STATES PATENT OFFICE.

LEVI B. TYNG, OF LOWELL, MASSACHUSETTS.

## FISH-JOINT FOR RAILROAD-RAILS.

SPECIFICATION forming part of Letters Patent No. 223,260, dated January 6, 1880.

Application filed May 1, 1879.

*To all whom it may concern:*

Be it known that I, LEVI BARTLETT TYNG, of Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Fish-Joints for Railroad-Rails, of which the following is a specification.

Most railroads in this country have their rails fish-jointed—that is, the attempt is made by the use of fish-plates to keep the rail ends of the same joint in the same horizontal and vertical planes; but in fish-joints as heretofore constructed there is great difficulty in keeping the fish-plates up to their bearings upon the head and foot of the rail, owing to the outward inclination of said bearings, the fish-plates being frustums of wedges, and the under side of the head of the rail and the upper side of the foot inclining upward and downward, respectively, from the web on each side of the rail—in other words, each rail consisting of two wedges having their thin edges connected by the web.

From this construction of the fish-plates and rails it is clear that if one rail end is depressed below the other rail end of the same joint the ends of the fish-plates are pressed apart by the head of the depressed rail and the foot of the other rail, and that said fish-plates are at the same time pressed apart in the middle by the head of the depressed rail and the foot of the other rail, the fish-plates turning slightly on the two bolts which secure them to the rails, and which are placed each at a distance from the ends of the fish-plates of about a quarter of the length of said plates. The enormous weight of trains passing over the rails does so depress one rail end of the joint below the other rail end, and thereby causes the nuts on said bolts to become loose, either by stripping the bolts or by gradually turning the nuts, and this allows the fish-plates to work out from the rails, and so to lose all power of holding the rails in line with each other.

The object of my invention is to keep the rails in line with each other by holding the fish-plates up to their bearings, and to relieve said fish-plates of a portion of the strain upon them, which object I secure by means of a cross-bar provided with a rib on its upper

surface at each end, in combination with ribbed caps bolted to said cross-bar, as hereinafter described.

A secondary object of my invention is to enable the cross-bar to be removed from under the rails without disturbing the rails or the road-ballast, and this object I accomplish by slotting the said bar longitudinally from one bolt-hole to the end of the bar nearest said bolt-hole, so that by loosening the nut of the bolt and raising the cap the bar may be drawn from under the rails.

In the accompanying drawings, Figure 1 is a plan of an American or H rail having flanged fish-plates at the joint, to which my invention is applied. Fig. 2 is an elevation of the same. Fig. 3 is the same as Fig. 2, except that the fish-plates are shown without flanges. Fig. 4 is a vertical cross-section on the dotted line in Fig. 3. Fig. 5 is a vertical cross-section on the dotted line in Fig. 2, and Fig. 6 is a plan of the bottom of the cross-bar, showing the rib and slotted end, a part of the slot being shown by a dotted line.

A A are ordinary H-rails, their adjacent ends being secured together by two ordinary flanged fish-plates, B B, each of about fourteen inches in length, the flanges P resting upon the foot of the rails, and projecting out beyond said foot on each side to receive spike-notches N N, clear of said foot, and held to the rails by two stout bolts, F F, passing through said plates and through the web of the rail, all in the usual manner, except that I prefer that the flanges P should be wedge-shaped, or about half as thick again where they join the fish-plates as at their outer edges, for reasons hereinafter stated.

The rectangular cross-bar D is about half an inch thick, four inches wide, and six inches long, and has a rib, G G, about half an inch high, on its upper surface across each end. The cross-bar is placed below the joint against the rails, with the ribs G G parallel to the line of rails. The wedge-shaped caps C C are as long as the cross-bar is wide, and have each a rib, S, on the under side, which rib S is placed between the rib on the cross-bar and the rails and bears against the last-named rib G. The inner or thinner edges of the caps rest on the flanges of the fish-plates, or if the fish-plates



have no flanges, then upon the top of the foot of the rail, and in the latter case the inner edges of the caps should reach to the fish-plates. The caps are bolted to their respective ends of the cross-bar D by vertical screws E E and nuts, and therefore, with the cross-bar, pinch the foot of the rails and the flanges of the fish-plates, so that it is impossible for the flanges to move outward from the web of the rail or for the fish-plates to leave their bearings on the foot of the rail.

If fish-plates having wedge-shaped flanges are used, as above described, the flanges, if they move at all, must necessarily move nearer the web of the rail.

The corners of the foot of the rails are clipped to let the bolts E E, for a part of the diameters of said bolts, in between the rail ends, so that the cross-bar cannot slide on the rails.

It is evident that depressing one end of rail must carry down the cross-bar, the caps, the flanges of the fish-plates, and consequently the other rail end of the same joint, making it impossible to depress one of said rail ends below the other—a result never yet obtained where the weight of a train is thrown wholly upon the thin, narrow, and wedge-shaped edges of the fish-plates alone—and that the caps keep the fish-plates, whether flanged or not, up to their bearings.

It may sometimes be found desirable to remove the cross-bar from under the rails without disturbing the ballast or the rails in places where the road is ballasted up to the rails, as in the vicinity of stations. I therefore make a longitudinal slot in one end of the cross-bar into the bolt-hole, so that the bolt, after loosening its nut and removing the cap at that end of the bar, can be drawn, at right angles to the rails, out of this slot W, allowing the cross-bar to be drawn in the direction of its length from under the rails, and in a similar way to be again placed under the joint.

To secure the bolt from working outward in the slot, a cross-rib, V, is formed on the lower side of the cross-bar at the slotted end of the same, and a washer, X, placed above the head of the bolt, under the cross-bar, with one edge of the washer against the cross-rib. If the head of the bolt be square, no washer will be required.

It will be seen that the cross-bar, having a bearing-surface of about eight square inches under each rail end, (supposing the foot of the rail to be four inches wide, which is about the average width,) relieves the fish-plates of a great portion of the strain brought on them, and by keeping the latter to their bearings retains both rails in the same horizontal plane, and, with the caps, keeps the rails both in the same vertical plane.

I claim as my invention—

1. The combination of the cross-bar D, provided with the ribs G G, the caps C C, provided with the ribs S S, the inner faces of said caps bearing against the fish-plates B B or their flanges, and the fish-plates B B, as and for the purpose described.

2. The combination of the cross-bar D, provided with the ribs G G, the caps C C, provided with the ribs S S, and the fish-plates B B, provided with the flanges P P, as and for the purpose described.

3. The combination of the cross-bar D, provided with the ribs G G, the caps C C, provided with the ribs S S, and the fish-plates B B, provided with the wedge-shaped flanges P P, as and for the purpose described.

4. The cross-bar D, provided with the slot W and the rib V, in combination with the bolt E, provided with the washer X, as and for the purpose described.

LEVI BARTLETT TYNG.

Witnesses:

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