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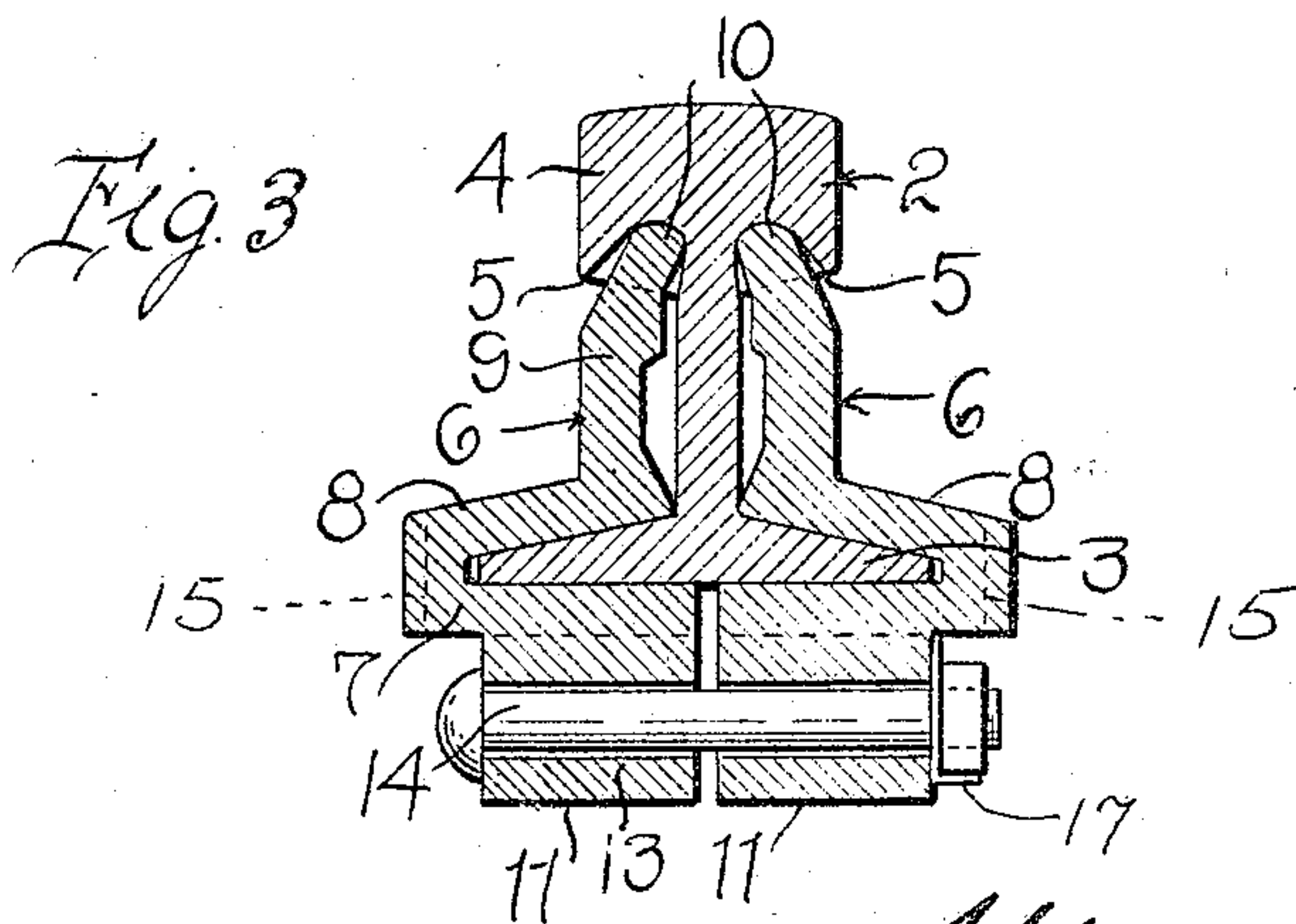
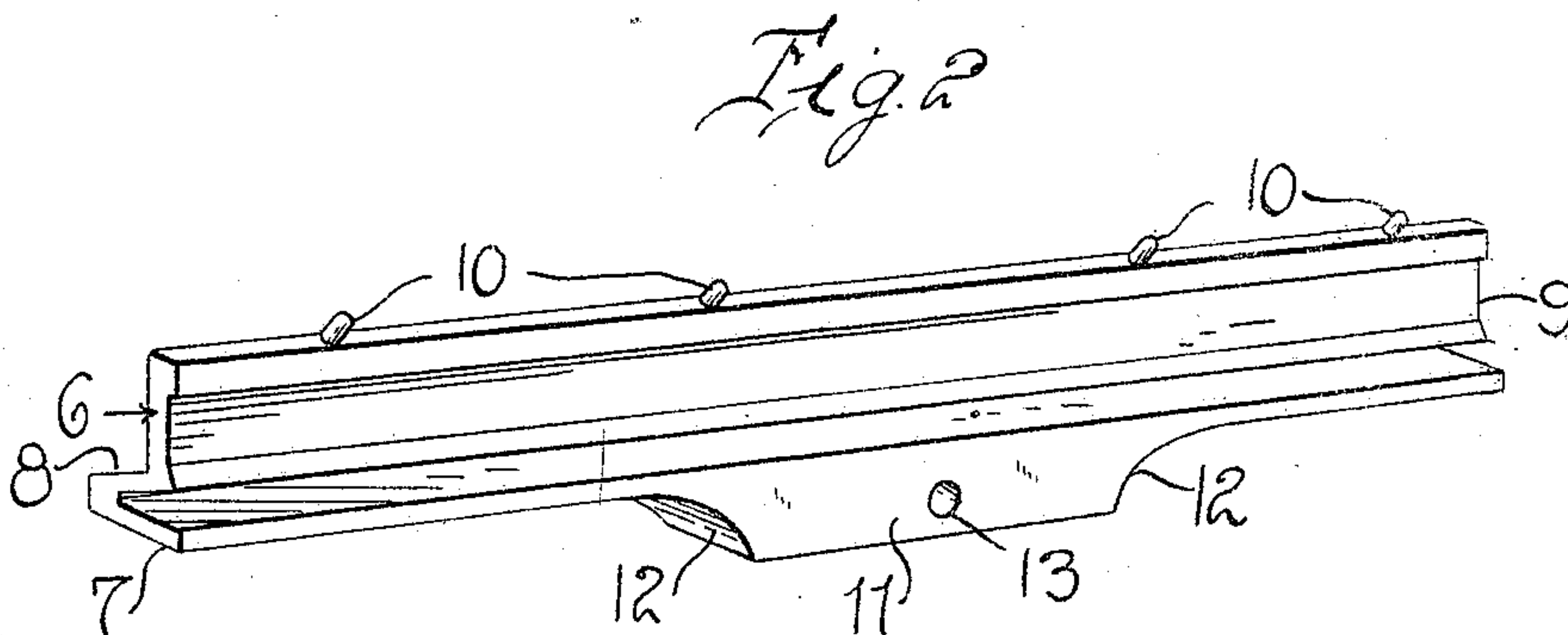
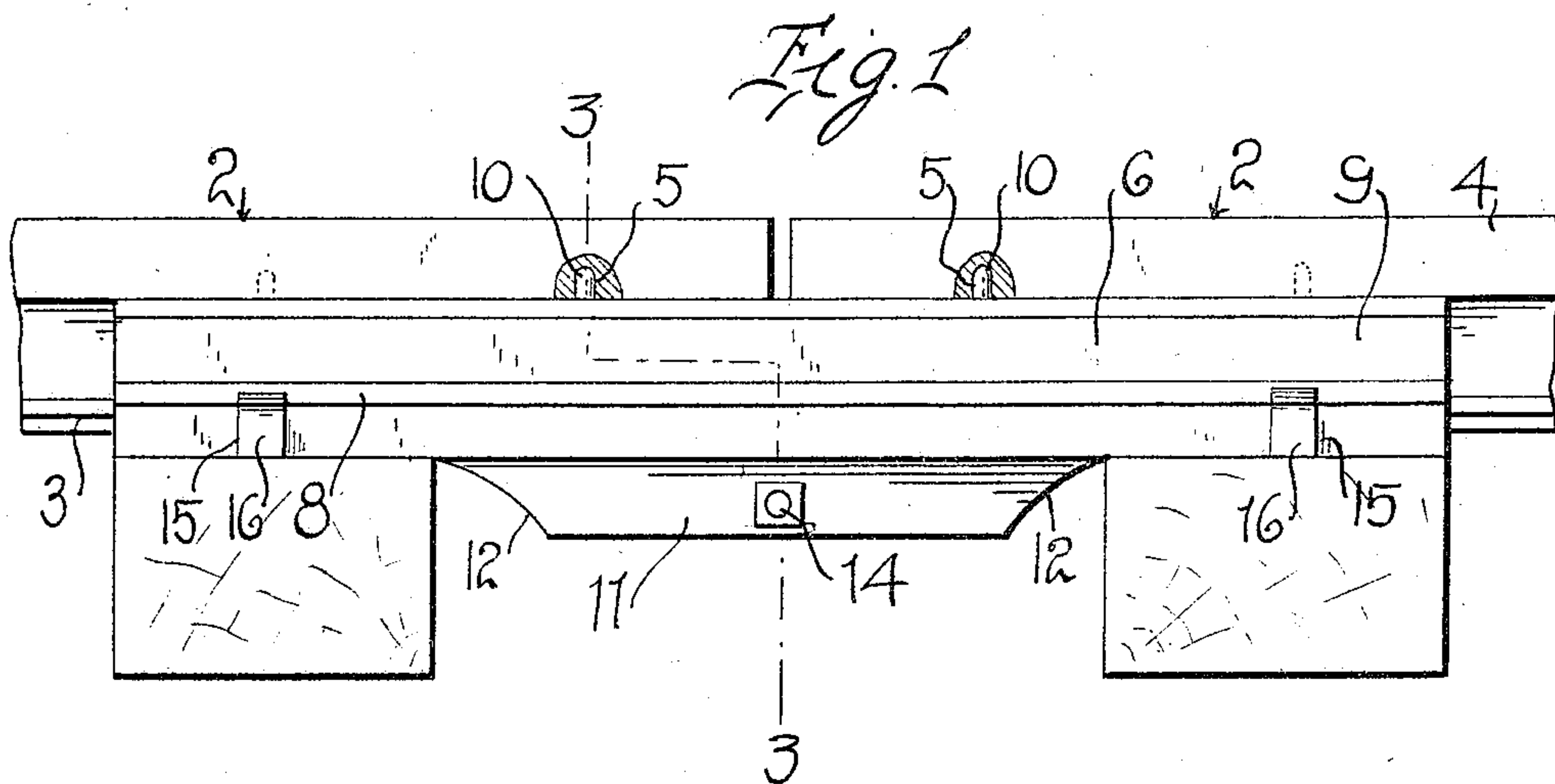
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RAIL JOINT.

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1,154,771.

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RAIL-JOINT.

1,154,771.

Specification of Letters Patent.

Patented Sept. 28, 1915.

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To all whom it may concern:

Be it known that we, JAMES M. HINKLE and JOHN S. COOPER, citizens of the United States, residing at Somerset, in the county of Pulaski and State of Kentucky, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to rail joints, and particularly to that class of rail joints wherein fish-plates are used, engaging on each side of the rail and extending over and around the base flanges thereof.

The primary object of this invention is to provide a rail joint which will not only hold the rails in absolute alinement with each other, but will also act to support the rails from downward deflection at their meeting ends.

A further object of the invention is the provision of a joint of this character so formed that only one bolt may be used to hold the fish-plates in engagement with the meeting rails, and this bolt not being passed through either of the rails but being disposed beneath the base of the rail in such a position that it will not be liable to accidental detachment.

A further object of the invention is to provide a joint having fish-plates which are so formed as to support the rail against lateral thrust and tipping strain, these fish-plates also extending beneath the rail and being so constructed as to provide strengthening webs or thickened portions beneath the joint meeting rails so as to additionally guard against any downward deflection of the rails at the joints.

A further object of the invention is to so form the fish-plates that they may be spiked to the tie in the same manner as the flange of the rail itself, and that these fish-plates shall have relatively thick and strong marginal edges in engagement with the spike so that the heaving of the track will not tend to break or crack the fish-plates as is often the case where spikes engage the relatively thin base flange of the rail.

Other objects will appear in the course of the following description.

This invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a side elevation of a rail joint with my improved rail applied thereto, the head of the rail being partly broken away;

Fig. 2 is a perspective detail view of one of the splice-bars or fish-plates; Fig. 3 is a transverse sectional view on the line 3—3 of Fig. 1.

Referring to these drawings, 2 designates a rail of the usual form having the base 3 and the head 4. The under side of the head of each rail adjacent its ends is formed with the upwardly extending recesses 5. It will of course be understood that there are two rails 2 which are abutted against each other at the joints between their ends.

For the purpose of supporting the two abutting rails and holding them in alinement, I provide the oppositely disposed fish-plates 6. Each fish-plate has a base portion 7, an upwardly and inwardly extending web 8 which extends over the upper face of the adjacent base flange of the rail, and the upwardly extending portion 9 which extends up against the web of the rail. This portion 9 at its upper edge is formed with the tenons or lugs 10 which are received within the recesses or mortises 5. The base of each fish-plate is formed on its under side and adjacent its middle with the longitudinally extending rib or thickened portion 11. This thickened portion may extend out to the outer edge of the corresponding fish-plate but preferably the outer edge of the thickened portion does not extend outward beyond the inner face of the bracing portion 8 of the fish-plate.

Preferably, each rib 11 or web has an upwardly and longitudinally curved or inclined face 12, and each rib is provided with one or more transversely extending bolt holes 13 for the reception of one or more bolts 14. The ribs or thickened portions 11 have a length approximately equal to the usual distance between two ties, so that the thickened portions 11 will extend downward between the ties and will bear at their ends against the ties, thus holding the fish-plate from longitudinal movement relative to the ties. These downwardly depending ribs 11 also engage with the ballast of the road bed, and this assists in holding the rails, fish-plates, and the ties securely in place from longitudinal movement. Furthermore, the fish-plates are each cut away at their edges, as at 15, to provide for the engagement of the fish-plates by spikes 16.

In practical use, the meeting ends of the rails are supported within the two opposed fish-plates 6, the joint between the meeting

rails being disposed above the middle of the thickened portion 11. It will be obvious that these thickened portions will so strengthen the bases of the fish-plates that downward strain upon the rails will be fully resisted, and therefore there will be no downward deflection of the rails at the joint, notwithstanding the fact that the joint does not come over the ties. It will be obvious that there can be no upward deflection of one rail with relation to the other because of the fact that the ends of the rails are clamped securely from either upward, downward, or lateral movement. Creeping of the rails with relation to the fish-plates is prevented by the interlocking lugs and recesses in the fish-plates and heads of the rails. And furthermore, by the use of these lugs interlocking with the rail heads, the upper portion of each fish-plate will be interlocked with the rail, while the lower portion is held clamped by the bolt or bolts 14. Because of this interlocking of the upper edges of the fish-plates with the rail, only one bolt is needed to hold the fish-plates securely in position.

It will be seen that the angular form given to the fish-plates is very much stronger than the flat form ordinarily given to fish-plates, and that there will be less tendency of the fish-plates to be deflected or strained. And again it will be noted that the rail is braced between the two fish-plates and supported against tipping strain or any tendency to break, and again even if the rail should break the two portions of the rail on each side of the break cannot get out of alinement with each other.

In modern railway practice, with the high speed trains now in use and with the increasing weight of the rolling stock, there is a very great strain upon the rails which is met to-day by increasing the weight of the rails. Our intention is to resist this strain very largely by the use of these fish-plates, which need not be used necessarily at a joint but might be used at intervals entirely along the rail. Furthermore, under the conditions of modern practice, flat wheels on freight trains are relatively common, and these flat wheels result in constant breakages of the rails. With our improved joint, even though the rails do break, there can be no danger of de-railment inasmuch as the two portions of the rail will be held firmly spliced, and the two sections will be firmly supported against downward or upward relative deflection. Again it is to be noted that in ordinary railroad practice, the spikes engage over the relatively thin edges of the base flange of the rail, and this often causes the breakage of the thin edges of the base flange, either due to the strain placed upon the rail by the heaving of the track, or to tipping thrust upon the rail. With our

construction the spikes are applied to the edges of the fish-plates or splice bar, and these edges are relatively thick. As a consequence, these edges are not so liable to break or crack under strain, and even if such a break or crack should appear it will not affect the rail itself.

Having described our invention, what we claim is:

1. The combination with a rail having a base flange formed with oppositely disposed upwardly and inwardly beveled faces, of oppositely disposed complementary fish plates formed to embrace the base flange of the rail and confront each other below the rail, each of said fish plates having a vertical web, an outwardly and downwardly extending web, the under face of which is inclined to contact with and have wedging engagement with the upper face of the corresponding base flange, and a horizontal web, the horizontal web engaging beneath the base of the rail and means disposed below the rail for urging said fish plates toward each other and against the rail, the upper edge of the vertical web of each fish plate engaging beneath the head of the rail and being formed with a plurality of studs, the rail being formed upon the under face of its head with a plurality of stud-receiving vertically extending recesses, the outer faces of which are inclined outward and downward, whereby upon the forcing of the fish plates toward each other the vertical flanges of the fish plates will be urged into wedging engagement between the base flange of the rail and the head to thereby clamp the fish plates into wedging engagement with the base and head of the rail.

2. The combination with a rail having a base flange formed with oppositely disposed upwardly and inwardly beveled faces, of oppositely disposed complementary fish-plates formed to embrace the base flange of the rail and confront each other below the rail, each of said fish-plates having a vertical web, an outwardly and downwardly extending web, the under face of which is inclined to contact with and have wedging engagement with the upper face of the corresponding base flange, and a horizontal web, the horizontal web being adapted to engage beneath the base of the rail, the upper edge of the vertical web of each fish-plate being provided with a plurality of studs, and the under face of the horizontal web being provided with a longitudinally extending thickened web less in width than the width of the horizontal web and terminating short of its outer edge face and perforated for the passage of a bolt the portions of the horizontal web overhanging the longitudinally extending web acting to protect the ends of the bolt from moisture, the rail being formed upon the under face

of its head with a plurality of stud-receiving vertically extending recesses whereby upon the forcing of the fish-plates toward each other and in contact with the rail, the
5 studs on the upper edge of the vertical flange of each fish-plate will be forced into engagement with the recesses in the head of the rail.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses. 10

JAMES M. HINKLE.
JOHN S. COOPER.

Witnesses:

J. V. SMITH,
R. H. WELCH, Jr.