

965,540.

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RAIL JOINT.
APPLICATION FILED MAR. 8, 1910.

Patented July 26, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

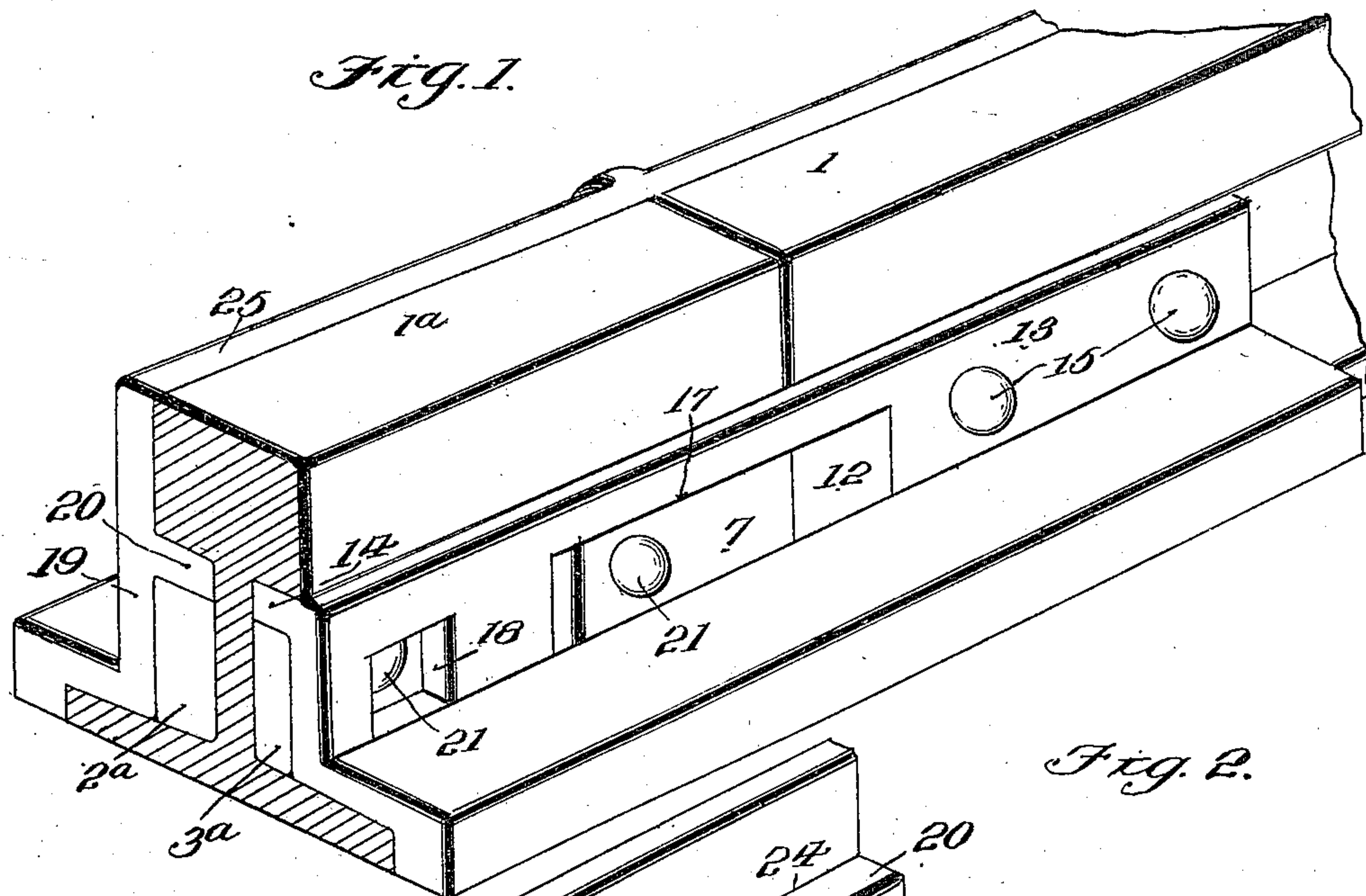
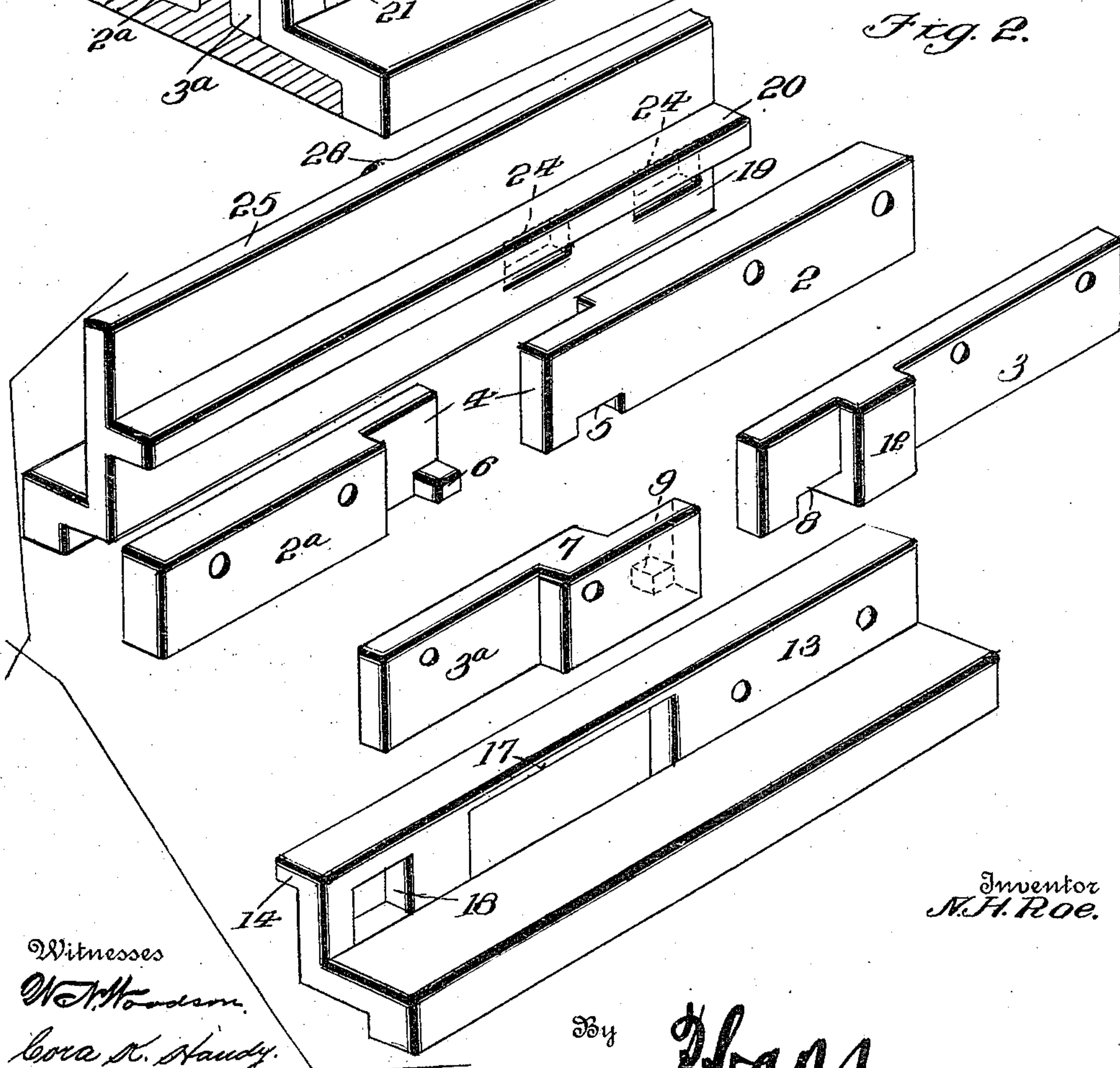


Fig. 2.



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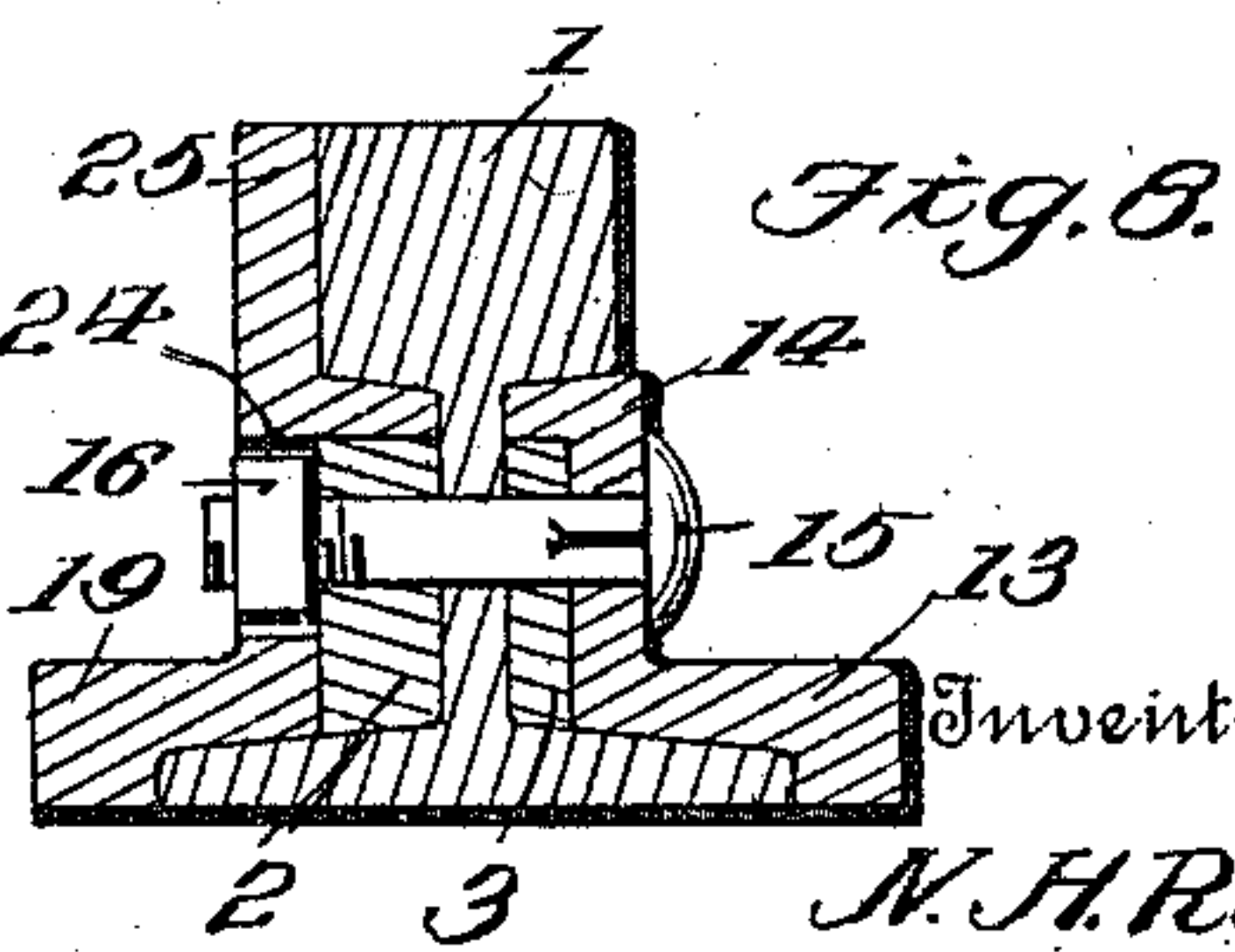
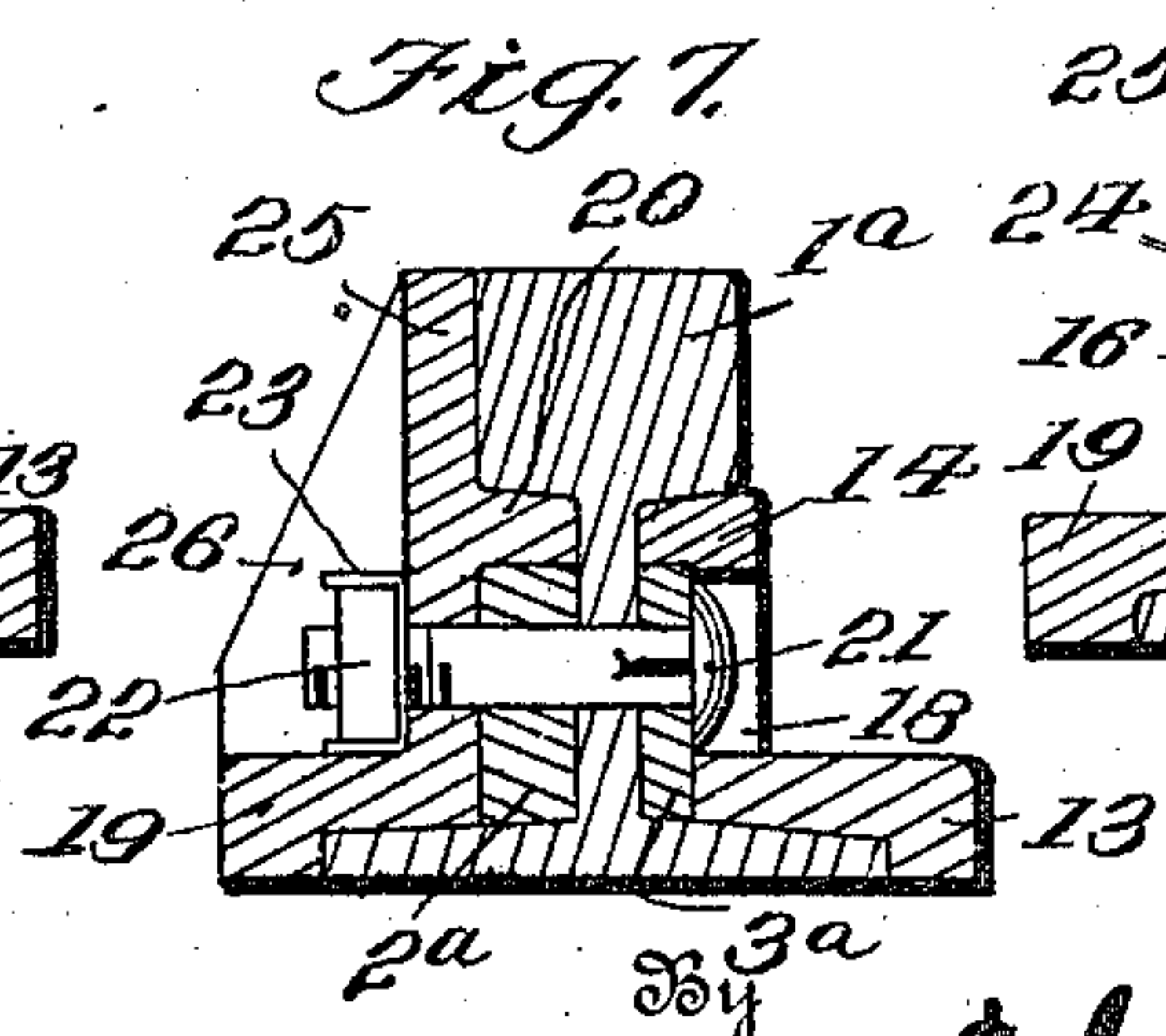
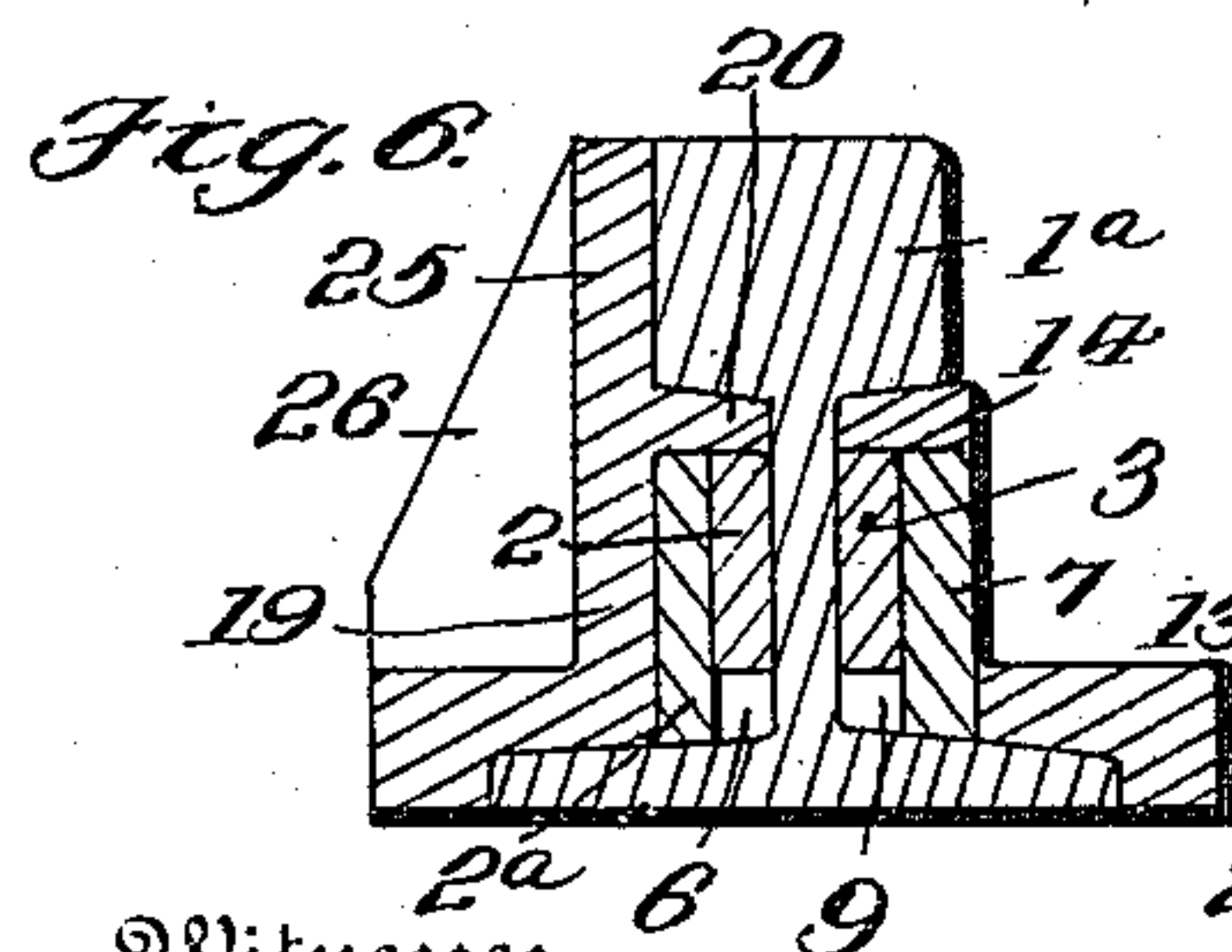
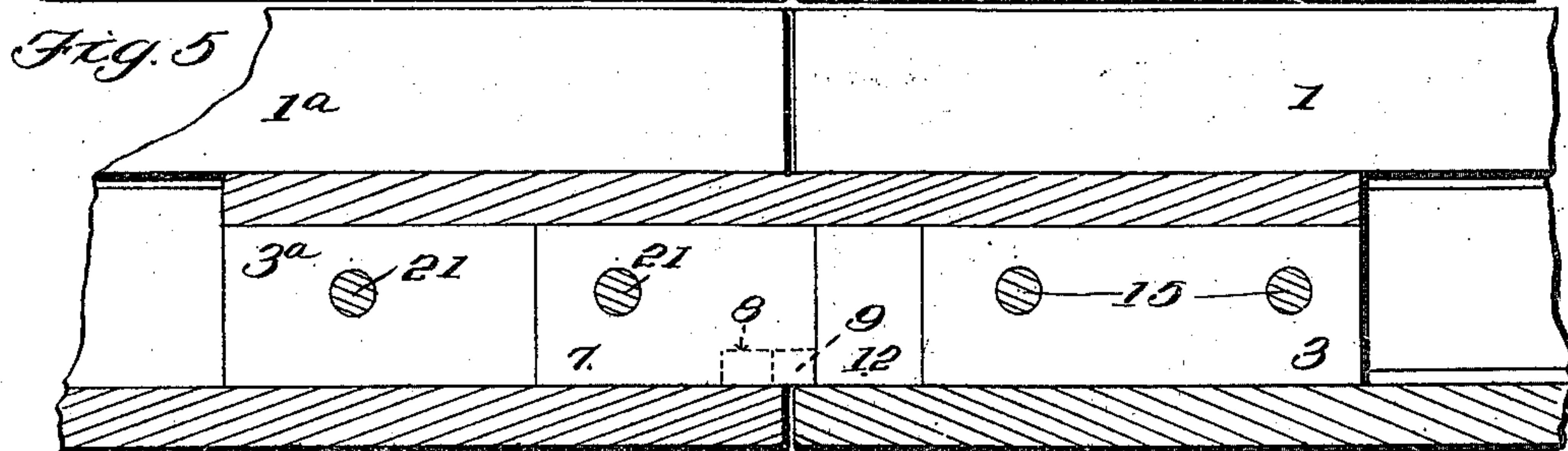
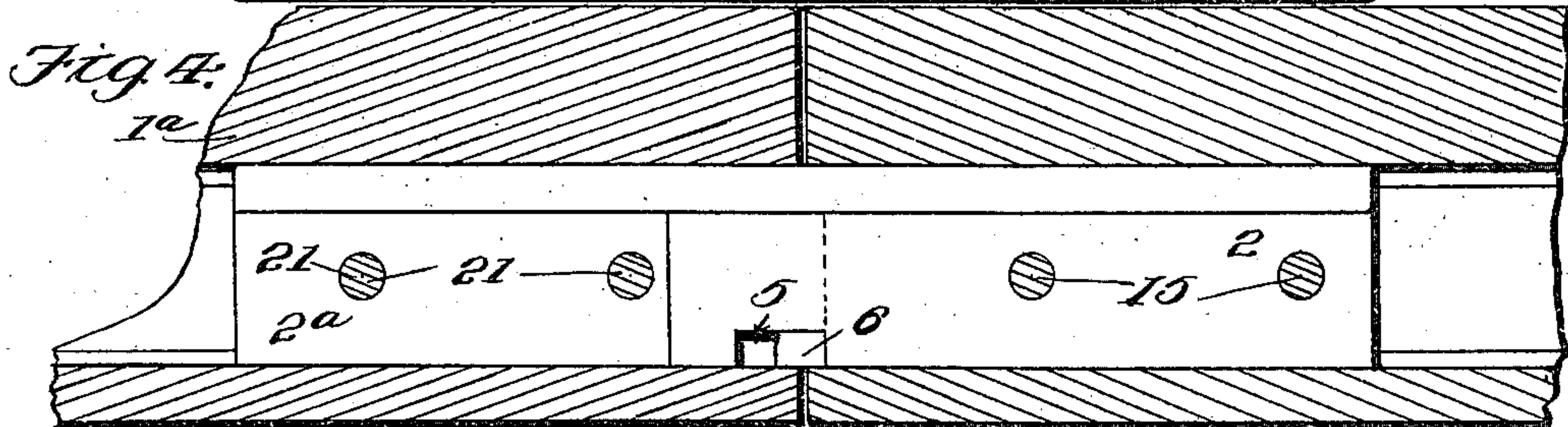
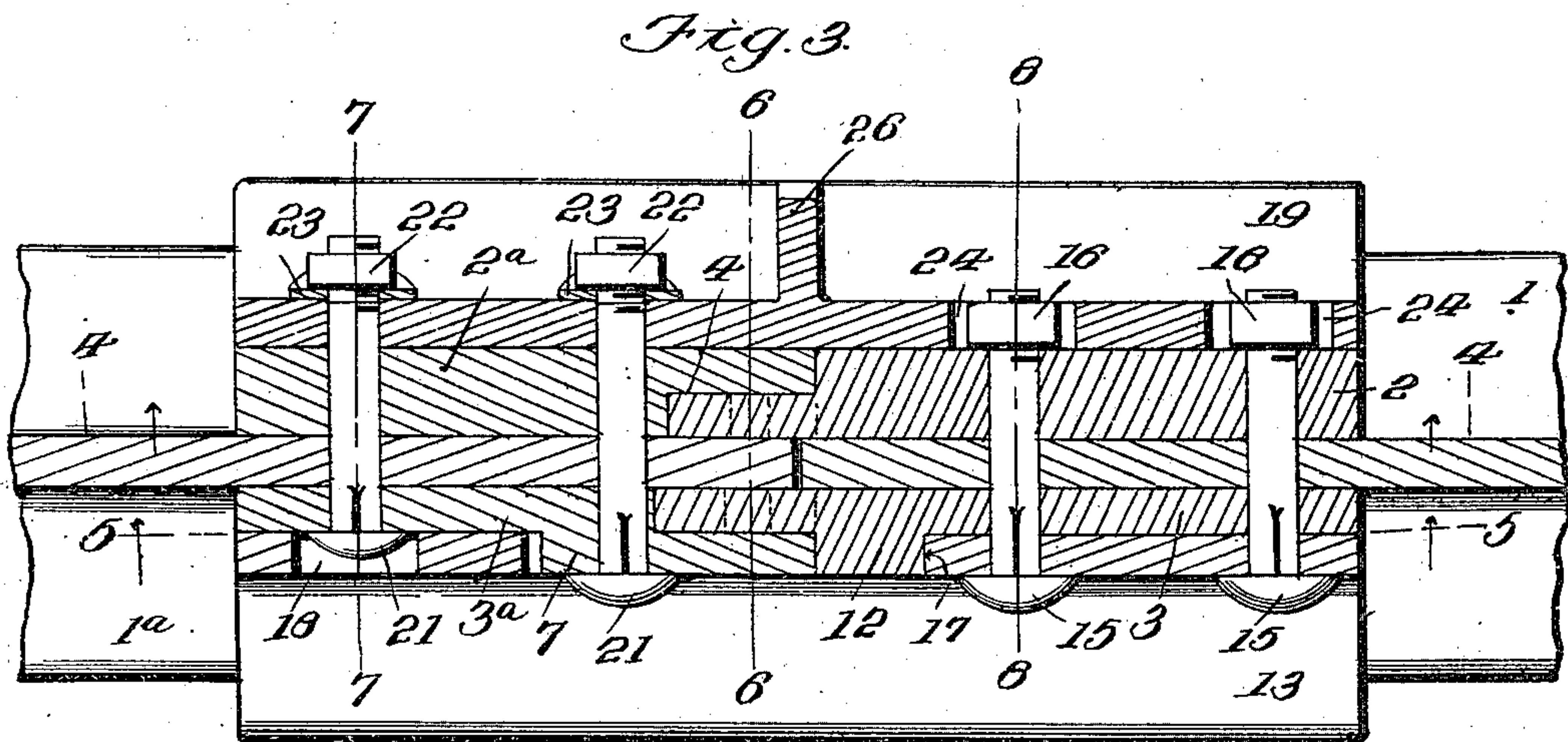
RAIL JOINT.

APPLICATION FILED MAR. 8, 1910.

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2 SHEETS—SHEET 2.



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RAIL-JOINT.

965,540.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, NOBLE H. ROE, a citizen of the United States, residing at Marcelline, in the county of Linn and State of Missouri, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

The present invention comprehends certain new and useful improvements in rail joints, and the invention has for its object an improved device of this character which serves to rigidly unite the meeting ends of rails and which provides novel means whereby the rail ends are afforded limited independent longitudinal movement in order to compensate for expansion and contraction through exposure to the weather.

A further object of the invention is a rail joint which prevents the rails of the track from spreading, which braces the rails between the heads and base flanges thereof and thus forms a solid joint, and which bridges the joint to afford a continuous tread surface as is manifestly desirable in order to eliminate the injurious and disagreeable vibration caused by the pounding of the wheels of the rolling stock at the joint.

With these and other objects in view as will more fully appear as the description proceeds, the invention consists in certain constructions, arrangements and combinations of the parts that I shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in which:

Figure 1 is a sectional perspective view of a rail joint constructed in accordance with my invention; Fig. 2 is a perspective view showing the fish plates and splice bars in juxtaposition; Fig. 3 is a horizontal section of the joint; Fig. 4 is a section on the line 4—4 of Fig. 3; Fig. 5 is a section on the line 5—5 of Fig. 3; Fig. 6 is a section on the line 6—6 of Fig. 3; Fig. 7 is a section on the line 7—7 of Fig. 3; and, Fig. 8 is a section on the line 8—8 of Fig. 3.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying drawings by the same reference characters.

The present invention is applied to the meeting ends of the rails 1 and 1^a which are of conventional form. Lying upon opposite sides of the rail ends and spanning the

joint are splice bars that abut against the web portions of the rails and rest upon the adjacent base flanges thereof with their upper edges spaced below the overhanging portions of the heads. Each splice bar consists of two separate longitudinally alining sections, the sections of one of the splice bars being designated 2 and 2^a and the sections of the other splice bar being designated 3 and 3^a. The sections 2 and 3 are rigidly secured to the opposite sides of the rail 1 while the sections 2^a and 3^a are rigidly secured to the opposite sides of the rail 1^a. The meeting ends of the corresponding sections, that is, the sections on the same side of the rails, are extensively connected together. In the present instance, the meeting ends of the sections 2 and 2^a are scarfed as indicated at 4, the scarfed end of the section 2^a terminating flush with the adjacent end of the rail 1^a and being spaced apart from the web portion thereof, as shown, so as to form, in effect, a socket for the reception of the scarfed end of the section 2 which projects longitudinally beyond the rail 1. The projecting end of the section 2 is somewhat of hooked formation and is provided in its lower edge with a cut-away portion or recess 5 in which a lug 6 is received and has limited longitudinal movement. This lug projects inwardly from the lower edge of the scarfed end of the section 2^a and lies upon the base flange of the rail and abuts against the web thereof (see Fig. 6.)

The meeting end of the section 3^a terminates flush with the rail 1^a and is offset outwardly from the web portion thereof as indicated at 7, to provide a socket for the reception of the adjacent end of the section 3. The meeting end of the section 3 projects longitudinally beyond the rail 1 and is hooked similar to the projecting end of the section 2, and for this purpose is formed on its lower edge with recess 8. Operating in the recess is a lug 9 which projects inwardly from the offset end of the section 3^a and is similar to the lug 6, above mentioned. The offset end of the section 3^a is substantially in the form of an outstanding block and terminates in oppositely longitudinally facing shoulders.

The section 3 is preferably formed in its outer face with a block 12 against which the offset end 7 bears when the rail ends abut against each other as shown.

By virtue of the elongated recesses and

lugs, the meeting ends of the splice bar sections are connected together for limited longitudinal movement, whereby to permit the independent longitudinal movement of the rails in order to compensate for expansion and contraction through exposure to weather. Inasmuch as the splice bars are spaced apart from the overhanging portions of the heads of the rails, the rail 1 and the splice bar sections secured thereto may be lifted sufficiently to disengage the recesses 5 and 8 from the lugs 6 and 7 whereby to effect the disconnection of the corresponding splice bar sections and permit the rails to be moved in an endwise direction.

A rigid fish plate 13 lies against the splice bar sections 3 and 3^a and spans the joint therebetween and also the joint between the meeting ends of the rails. This fish plate is of conventional form and is preferably provided with a laterally and outwardly projecting foot portion that lies over the adjacent base flanges of the rails and is turned downwardly to rest upon the tie. At its upper edge the fish plate has an inwardly directed longitudinal flange 14 that fits snugly between the upper edge of the splice bar and the heads of the rails and prevents any relative upward movement of the splice bar sections 3 and 3^a so as to insure against the disengagement of the recess 8 from the lug 9. The fish plate is rigidly secured to the rail end 1 through the medium of a pair of bolts 15 which are inserted therethrough and through the sections 2 and 3. The extremities of the bolts project beyond the section 2 and are engaged by nuts 16 which are tightened up against said section. Intermediate of its ends the fish plate is formed with an elongated slot 17 extending transversely therethrough to accommodate the block 12 and the offset end 7 of the section 3^a. The block 12 is stationary in the slot while the offset end has sufficient play therein so as not to interfere with the extension of the splice bar, the offset end being movable between the block and one of the end walls of the slot. At a point opposite the rail end 1^a and beyond the slot 17, a relatively large opening 18 extends through the fish plate, for a purpose to be presently explained.

Disposed on the other side of the rail ends is a rigid fish plate 19 which abuts against the sections 2 and 2^a, such fish plate having a laterally turned foot portion to overlies the adjacent edges of the flanges of the rails and being also formed with an inwardly directed flange 20 fitting between the upper edge of the adjacent splice bar and the overhanging portions of the heads of the rails. The fish plate is rigidly secured to the rail end 1^a by a pair of bolts 21 that pass through the sections 2^a and 3^a and the interposed web of the rail with their extremities outstanding from the fish plate 19 and engaged by nuts

22, the nuts being preferably locked against accidental turning movement through the instrumentality of the band washers 23. Attention is here directed to the fact that one of the bolts 21 is passed through and has its head movable longitudinally in the opening 18 in the fish plate 13, while the other bolt is passed through the offset end 7 at a point beyond the meeting end of the section 3 (see Fig. 3). The object of this arrangement is to permit the bolts 21 to move longitudinally relative to the fish plate 13. Besides the splice bar section 2, the fish plate 19 is formed with a pair of longitudinally elongated slots 24, in which the respective nuts 16 have longitudinal movement. The side walls of the slots are substantially parallel and are spaced apart sufficiently to engage opposite faces of the nuts, and hence maintain the same against turning movement, it being noted that the provision of a separate nut lock for this purpose is thus avoided.

The fish plate 19 is extended upwardly as indicated at 25 and lies against the side faces of the heads of the rails with its upper edge terminating flush with the tread surface thereof, thus affording a continuous tread. The extension, of course, tends to prevent the ends of the rails from becoming worn away by heavy traffic thereover, and therefore the injurious and disagreeable vibration caused by the wheels of the rolling stock pounding at the joint is obviously eliminated. Both the fish plate 19 and the rail joint are materially reinforced against lateral strain by virtue of a vertically disposed brace or web 26 upstanding from the outer face of said fish plate opposite the joint. The fish plate 19 is arranged on the outer side of the rail ends and thus serves in addition to its function above mentioned, to brace the rails against lateral displacement and thus preserve the desired gage of the track.

As each fish plate is rigidly secured to one of the rail ends, and merely lies against the other rail and without being positively connected thereto, it will be seen that the fish plates will in no wise interfere with the limited longitudinal movement of the rails to compensate for expansion and contraction.

Another important feature of the invention resides in the fact that the flanges of the fish plates fit between the upper edges of the splice bars and the heads of the rails so that the rails are reinforced between their heads and base flanges and the solidity and strength of the joint is considerably increased.

From the foregoing description in connection with the accompanying drawings, it will be apparent that I have provided an improved rail joint which is quite efficient

and durable in operation and is susceptible of general application, which may be easily and quickly applied to the rails, which is quite practical and possesses to a marked degree the characteristics of strength and durability, and which may be easily and cheaply manufactured so as to warrant its general adoption.

It will be noted that inasmuch as the nuts are positively locked against loosening movement, the necessity of employing track walkers will be obviated, and a material economy in the cost of maintenance of the track will be effected.

Having thus described the invention, what is claimed as new is:—

1. A rail joint, in combination with the meeting ends of the rails, of a splice bar spanning the joint and secured to the rail ends, the splice bar being freely extensible to permit the rail ends to have independent longitudinal movement to compensate for expansion and contraction.

2. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections rigidly attached to the respective rail ends, the sections being connected together for relative longitudinal movement, whereby to afford the rails independent longitudinal movement to compensate for expansion and contraction.

3. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections rigidly attached to the respective rails, the adjacent ends of the sections being connected together for relative longitudinal movement, and means for limiting said relative movement.

4. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections rigidly attached to the respective rail ends, the adjacent ends of the sections overlapping, and one of such ends being formed with an elongated recess, and means rigid with the other section and operating in said recess to connect the sections together for limited relative longitudinal movement.

5. In a rail joint, the combination with the meeting ends of rails, of a splice bar spanning the joint and consisting of separate sections attached to the respective rail ends, the meeting ends of the sections overlapping, one of such ends having a hooked formation, the end of the other section being formed with a lug adapted to engage said hook and having limited longitudinal movement therein.

6. In a rail joint, the combination with the meeting ends of rails, of a splice bar spanning the joint and including a section rigidly attached to the web of one of the

rails and spaced apart therefrom to provide a socket, said section having a lug disposed inwardly toward the web and a second section rigidly attached to the other rail and extended beyond the same and fitted in the socket and formed in its lower edge with an elongated recess in which the lug is received for limited longitudinal movement.

7. In a rail joint, the combination with the meeting ends of rails, of a splice bar spanning the joint and consisting of separate sections attached to the respective rail ends, one of said sections being formed with a lug and the other section having a hooked formation to take over the lug and having limited longitudinal movement relative thereto, the splice bar being spaced apart from the under side of the heads of the rails, whereby to permit the hooked section to be lifted out of engagement with the lug.

8. In a rail joint, the combination with the meeting ends of rails, of a splice bar spanning the joint and consisting of separate sections rigidly attached to the respective rail ends, the sections being connected together for relative longitudinal movement, and a fish plate abutting against the splice bar sections and spanning the joint therebetween, the fish plate being rigidly attached to one of the rail ends and being movable longitudinally with respect to the other rail end.

9. In a rail joint, the combination with the meeting ends of rails, of a splice bar spanning the joint and consisting of separate sections rigidly attached to the respective rail ends, the sections being joined together for relative longitudinal movement to permit the independent longitudinal movement of the rails, a fish plate abutting against the splice bar sections and spanning the joint therebetween and rigidly secured to one of the rail ends and the corresponding splice bar section, the fish plate being formed opposite the other splice bar section with an elongated slot, and means carried by the last named splice bar section and having limited longitudinal movement in said slot.

10. In a rail joint, the combination with the meeting ends of rails, of a splice bar spanning the joint and consisting of separate sections rigidly attached to the respective rail ends, one of said sections having a hooked formation and engaging with the other section and having limited longitudinal movement relative thereto, and both splice bar sections being spaced from the under side of the heads of the rails to permit the hooked section to be lifted out of engagement with the other section, and a fish plate extending over the splice bar sections and spanning the joint therebetween and rigidly attached to one of the rail ends and having limited longitudinal movement rela-

tive to the other rail end, the fish plate being extended inwardly and fitting between the splice bar sections and the heads of the rails, as and for the purpose specified.

5 11. In a rail joint, the combination with the meeting ends of rails, of a splice bar including a section rigidly attached to one of the rail ends and a second section connected to the first section for limited longitudinal
10 extension, a bolt securing the second section to the other rail end, a nut working on the bolt and bearing against the adjacent section, and a fish plate lying against both splice bar sections and rigidly attached to
15 the first named section and to the corresponding rail end, the fish plate being formed opposite the other splice bar section with an elongated slot in which the nut has limited longitudinal movement and is held
20 against turning movement.

12. In a rail joint, the combination with meeting ends of rails, of splice bars lying against the opposite sides of the rails and spanning the joint, each splice bar consisting of separate sections rigidly attached to the respective rail ends and joined together for relative longitudinal movement and fish plates lying against the respective splice bars and spanning the joint between the sections thereof and also the joint between the rail ends, each fish plate being rigidly attached to one of the rail ends and having independent longitudinal movement relative to the opposite rail end.

35 13. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections attached to the webs of the respective rail ends, one of said sections
40 having a downwardly facing hook engaging the other section to connect the sections together, the hooked section being movable upwardly relative to the other section to be lifted out of engagement therewith.

45 14. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections secured on the side of the respective rail ends, the meeting ends of said sections
50 engaging with each other to connect the sections together for relative longitudinal movement, one of said sections being movable vertically relative to the other section to be disengaged therefrom.

55 15. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections attached to the respective rail ends, the adjacent ends of said sections having an interlocking connection, and a fish plate
60 fitted against both splice bar sections and spanning the joint between the same and also the joint between the rail ends.

16. In a rail joint, the combination with the meeting ends of the rails, and a splice bar spanning the joint and consisting of separate sections attached to the respective rail ends, the sections being connected together at their meeting ends for relative longitudinal movement, a fish plate fitting against both of the sections and spanning the joint between the same and also the joint between the rail ends, and means for securing the fish plate in place.

17. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections attached to the webs of the respective rail ends, the adjacent ends of the sections having an interlocking connection, the sections spaced from the under side of the heads of the rails to permit one of the sections to be moved upwardly relative to and out of engagement with the other section, a fish plate fitting against both of the sections, and means carried by the fish plate and fitting between the sections and the heads of the rails to hold the sections in engagement.

18. In a rail joint, the combination with the meeting ends of the rails, and a splice bar spanning the joint and consisting of separate sections attached to the respective rail ends, the sections being formed with outstanding projections, and a fish plate fitting against both of the sections and engaging said outstanding projections.

19. In a rail joint, the combination with the meeting ends of the rails, of a splice bar spanning the joint and consisting of separate sections secured to the respective rail ends, the sections being connected together for relative longitudinal movement and being formed with outstanding projections, and a fish plate fitting against both of the sections and formed with an elongated slot receiving the projections to limit the relative movement of the sections.

20. In a rail joint, the combination with the meeting ends of the rails, and a splice bar consisting of separate sections attached to the respective rail ends, bolts passing through the respective rail ends and the adjacent sections to secure the latter to the former, nuts working on the bolts, and a fish plate fitting against the sections and spanning the joint therebetween, the fish plate being formed with slots in which certain of the nuts are received and held against turning movement.

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

NOBLE H. ROE. [L. S.]

Witnesses:

JAMES FULLER,

ETHNA L. SMEDLEY.