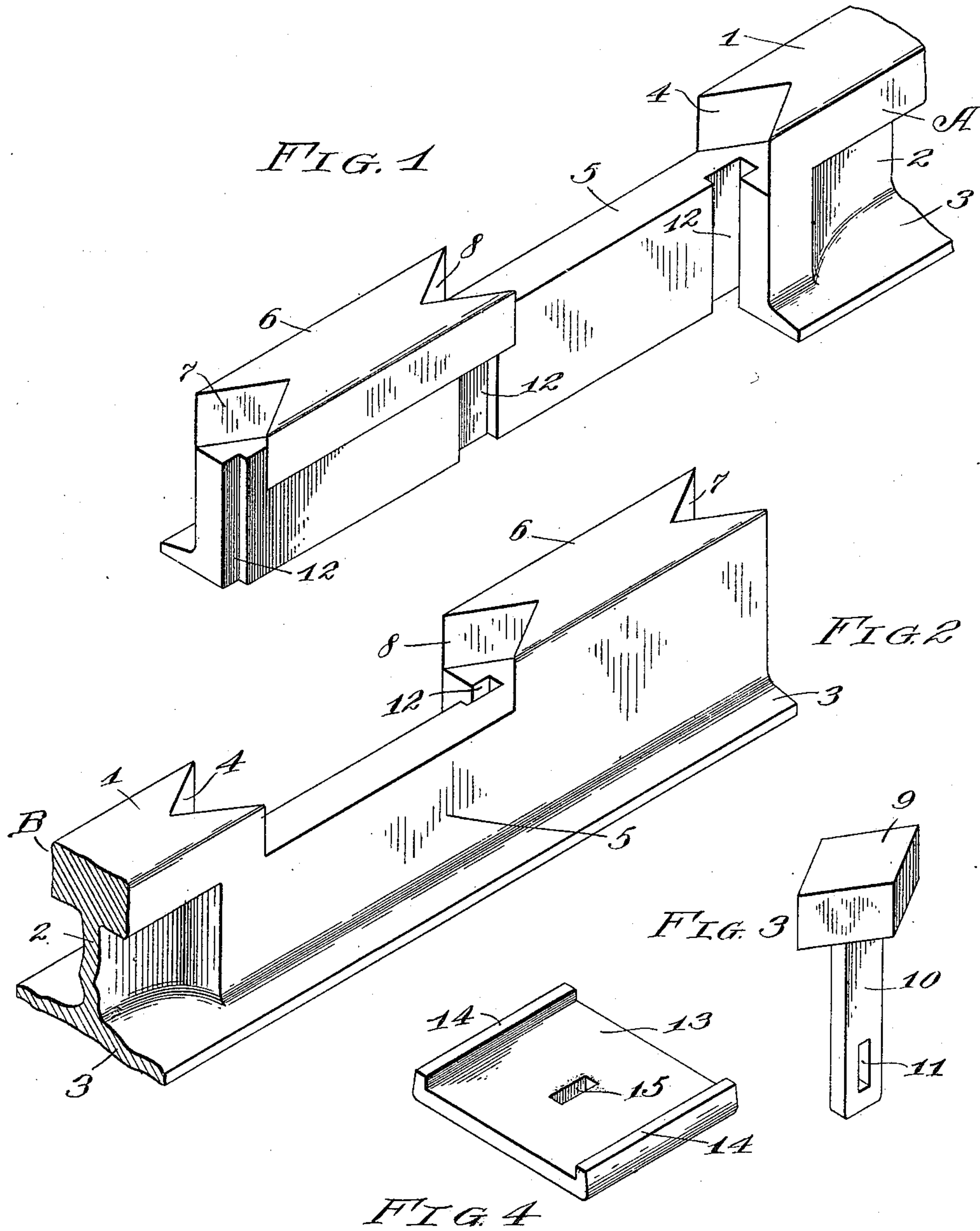


B. L. MALLORY.
JOINT FOR LONGITUDINAL MEMBERS.
APPLICATION FILED DEC. 31, 1910.

993,309.

Patented May 23, 1911.

2 SHEETS-SHEET 1.



Witnesses,
Walter K. Mann
M. E. Mann.

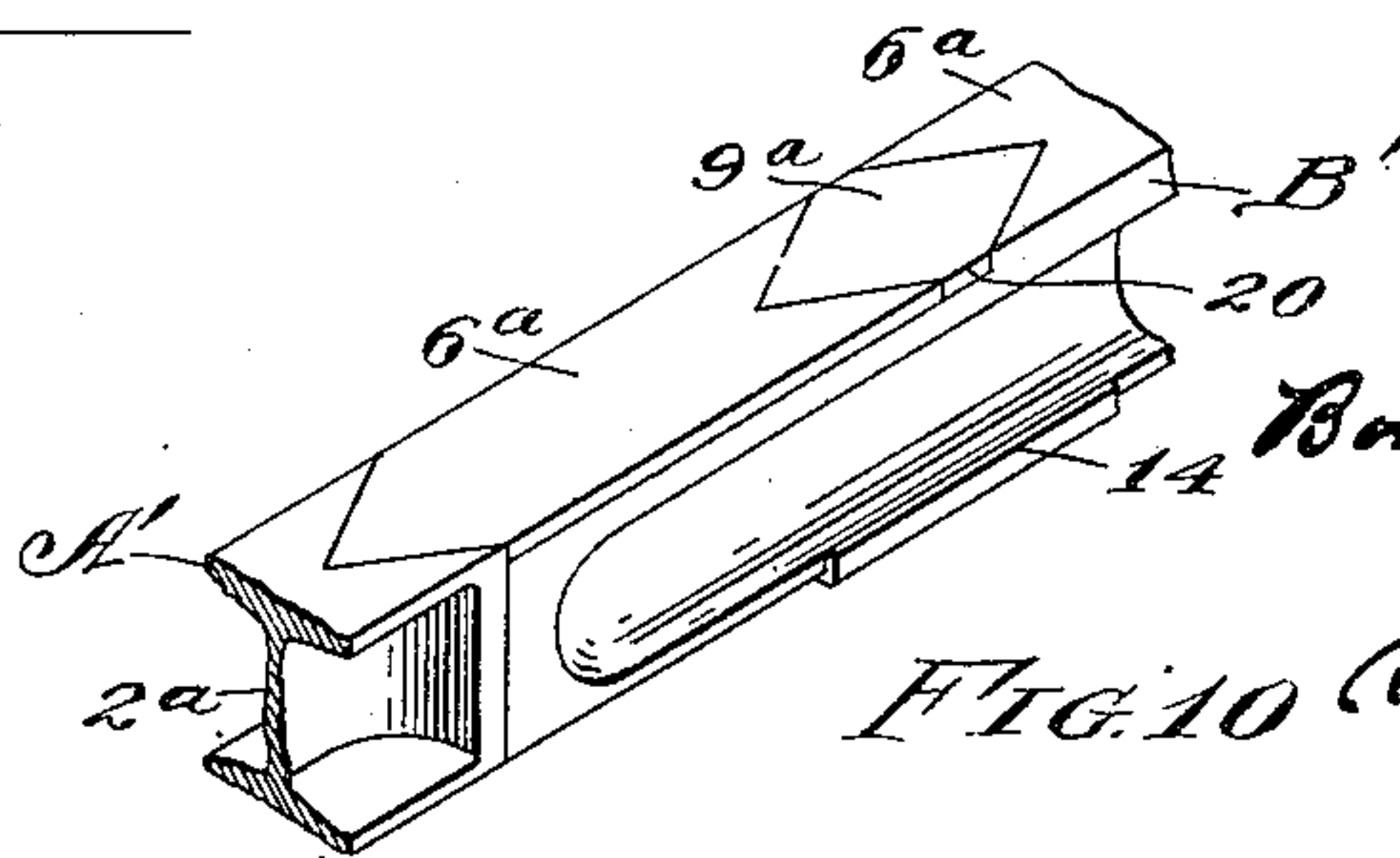
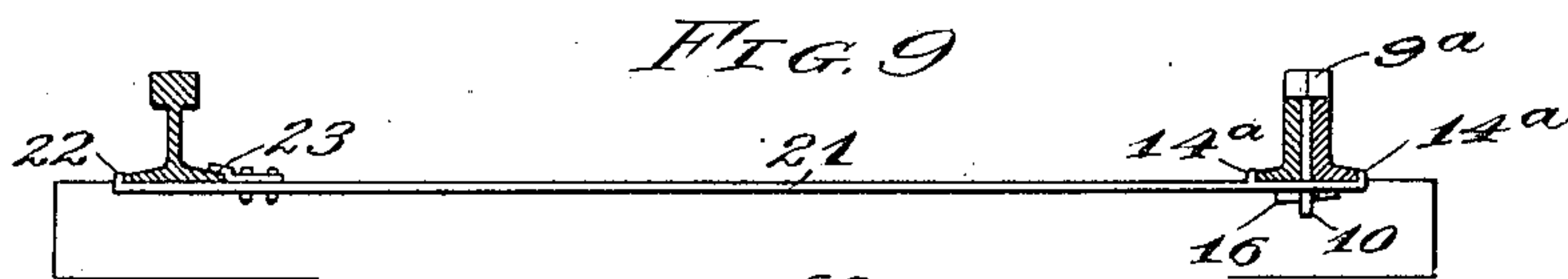
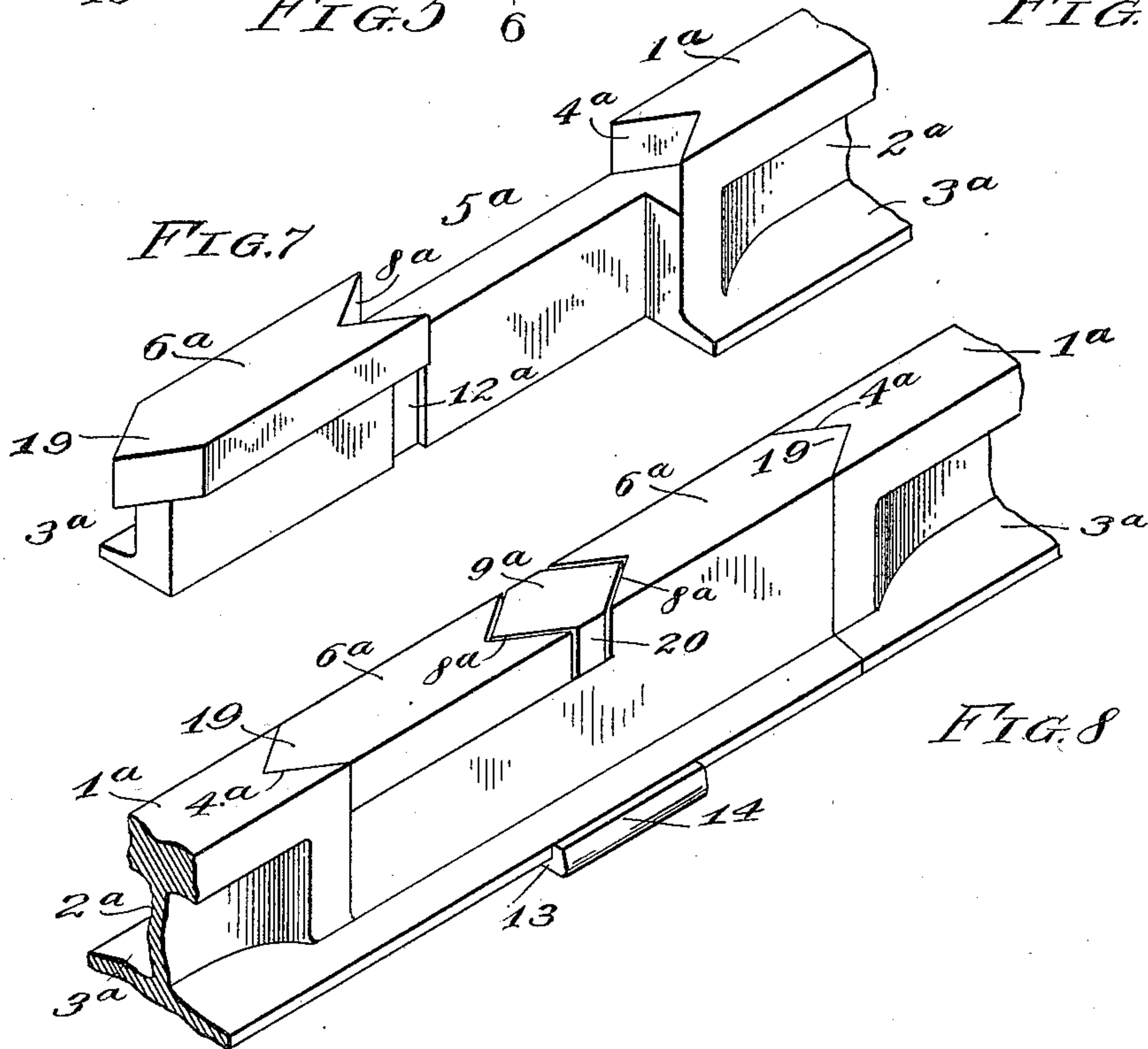
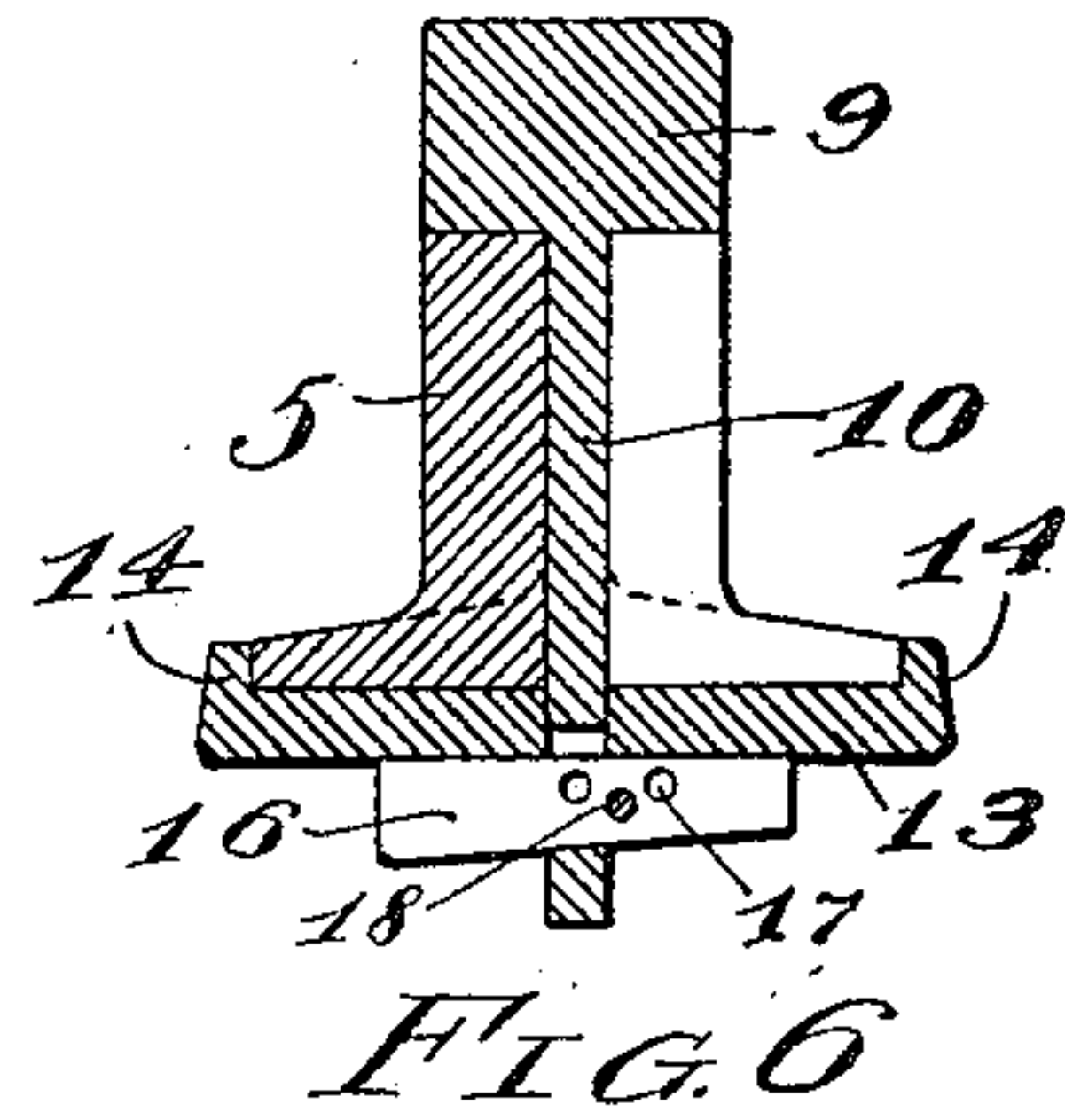
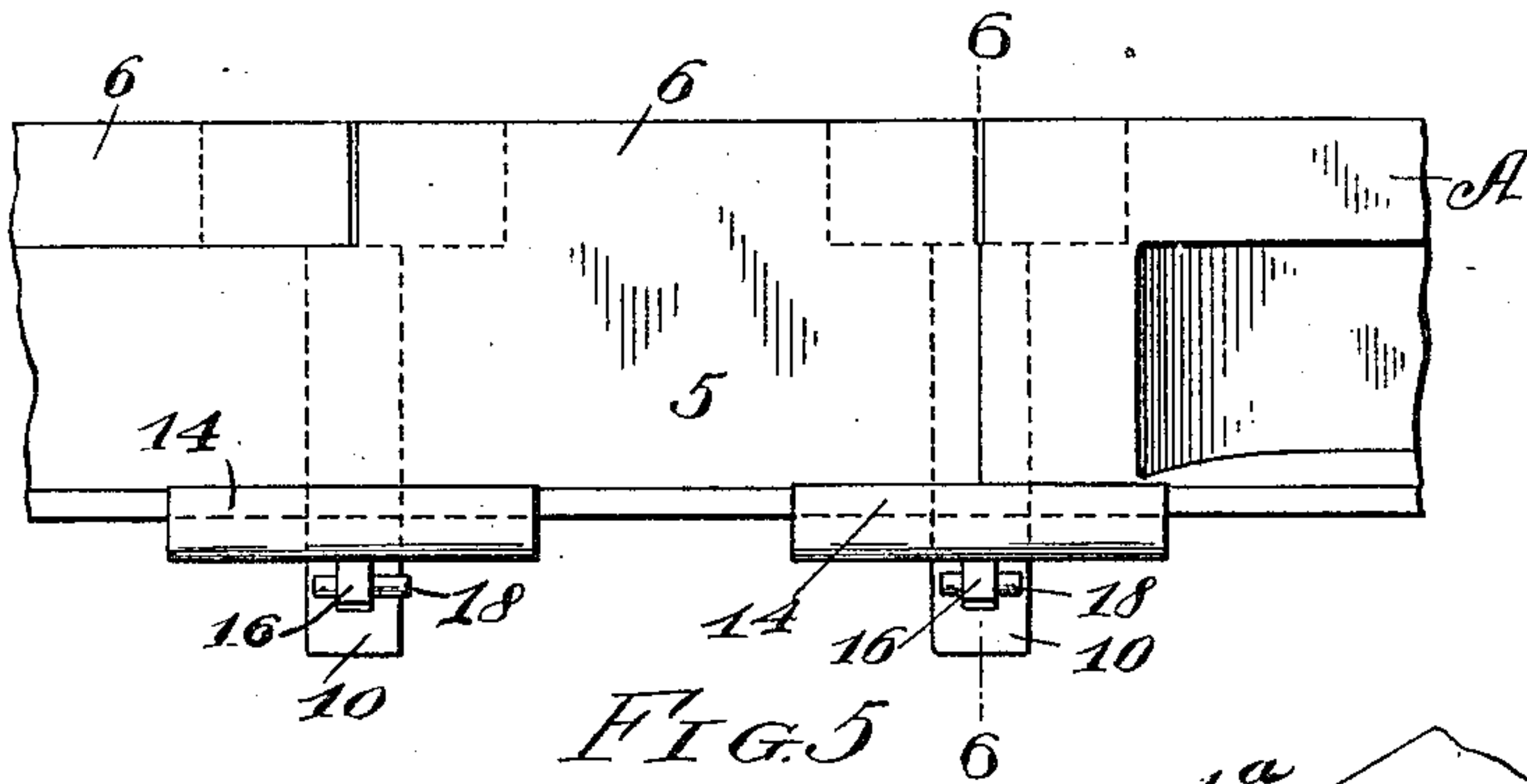
Bonnie L. Mallory
By INVENTOR
D. E. Foulis
His Attorney.

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2 SHEETS—SHEET 2.



Witnesses,
Walter R. Mann
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His Attorney.

UNITED STATES PATENT OFFICE.

BONNIE L. MALLORY, OF CLEVELAND, OHIO, ASSIGNOR OF ONE-THIRD TO FRED C. ELLASSER, OF CLEVELAND, OHIO.

JOINT FOR LONGITUDINAL MEMBERS.

993,309.

Specification of Letters Patent.

Patented May 23, 1911.

Application filed December 31, 1910. Serial No. 600,303.

To all whom it may concern:

Be it known that I, BONNIE L. MALLORY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Joints for Longitudinal Members, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to joints between the ends of longitudinal members such as railway rails, I-beams and the like, and it has for its object the production of a joint which shall be strong and durable and which, when applied to railway rails, shall provide a smooth and noiseless connection.

Other objects of the invention are the elimination of fish plates, of a large number of bolts, and of the nut locks employed with such bolts in railway construction.

The accompanying drawings show two forms of joints, and also show the joint applied both to railway rails and to I-beams, in which drawings Figures 1 and 2 are perspective views of the adjacent ends of two rails, the same being disconnected; Fig. 3 is a perspective view of one of the bolts or pins for holding the rails together; Fig. 4 is a perspective view of one of the clamping plates through which the bolts shown in Fig. 3 extend; Fig. 5 is a side elevation of one of the joints as used on railway rails; Fig. 6 is a transverse sectional view taken through Fig. 5 on the line 6—6; Fig. 7 is a perspective view of one end of a railway rail showing a somewhat modified construction; Fig. 8 is a view similar to Fig. 7 but showing the end of the adjacent rail also, the rails being joined together; Fig. 9 is a sectional view taken transversely through the rails of a railway and showing a bar between the rails for spacing the latter, and Fig. 10 is a view similar to Fig. 8 and showing the joint of the latter figure applied to I-beams.

Taking up a detailed description of the invention by the use of the reference characters on the drawings, A and B represent the adjacent ends of two railway rails which, of course, are adapted for use on any sort of railway or tramway. These rails have a head or tread portion 1, a vertical web portion 2, and a base flange 3, these parts, generally speaking, being similar to those in ordinary use. The head or tread portion, proper, terminates in a V-

shaped notch or recess 4 that is located some distance from the extreme end of the rail. Extending beyond the said recess, is a member 5, the same being, in effect, a continuation of the web 2, although it is offset slightly to one side of the plane of the web. On one side of the member 5, the base flange 3 is removed, as shown in Fig. 1, the said flange continuing throughout the length of said member on its opposite side, as shown in Fig. 2. At the end of the member 5, a tread or head member 6 is provided, the same being preferably integral with the member 5, and having its upper surface in the same plane with the upper surface of the tread 1. The forward end of the tread member 6 is provided with a V-shaped notch 7, corresponding to the notch 4 in the head 1, and the rear end of said member 6 is likewise provided with a V-shaped notch 8 like the notch 7 but extending in the opposite direction. The tread members 6 extend beyond the sides of the respective members 5 so as to rest upon the upper surface of the latter members of the adjacent rail when the parts are assembled.

In assembling the rails, the tread member 6 on one rail occupies the space between the notches 4 and 8 of the adjacent rail, so that the notch 4 of one rail and the notch 7 of the adjacent rail form a diamond shaped recess extending vertically downward from the top of the rail to the upper surface of the members 5. Likewise, the notches 8 of the two rails are brought into alinement, and they also form a diamond shaped recess like that just described.

For holding the rails together, I employ bolts or pins, one of the same being shown in Fig. 3, and having a diamond shaped head 9 that is adapted to fit in the diamond shaped recesses formed by the notches in the rails, as hereinbefore described. The heads of these bolts or pins act as keys and lock the ends of the rails against relative lateral movement. For holding these heads in their respective recesses, they are each provided with a downwardly extending stem 10, the lower end of which is provided with a hole 11. For receiving the said stems, the members 5 are provided with vertical grooves or apertures 12 which, when the rails are assembled, form continuous openings downwardly through the rails. The stems 10 of the bolts or pins extend downwardly

through these apertures, and project below the base flanges of the rails, as shown in Figs. 5 and 6. For holding the pins against vertical movement, and for more securely clamping the rails together, I employ for each pin a clamping plate, shown in Fig. 4, the same having the flat central portion 13 and the vertically extending lips 14 at each of the side edges thereof, said lips extending upwardly along the side edges of the base flanges, as shown in Fig. 6. At the center of the flat portion 13, I provide an aperture 15 through which the lower end of the pin extends, said pin being held in position by a wedge 16 that is adapted to be forced into the hole 11 of the pin below the clamping plate. By driving this wedge into position, the pin is drawn downwardly with its head in the diamond shaped recesses of the rails, and the parts are thus tightly clamped together. As shown in Fig. 6, the wedge 16 is provided with a series of transverse holes 17 for the reception of a pin 18, the latter being driven into the particular hole in the wedge that is just beyond the side of the stem 10 whereby the wedge is held against backward movement.

While I have shown the bolts or pins as having diamond shaped heads and rectangularly sectioned stems, such being my preferred construction, it will be understood that modified shapes of the pin head and stems may be employed if desired, in which case the cooperating parts of the rails would be correspondingly shaped.

The form of rails shown in Figs. 7 and 8 has the tread or head portion 1^a, the web portion 2^a and the base flanges 3^a, the same being of substantially the same construction as the corresponding parts in the other joint. This form likewise has members 5^a and 6^a, the same corresponding generally to the members 5 and 6 of the form first described. The tread 1^a terminates in a V-shaped notch 4^a, and the member 6^a has a V-shaped notch 8^a in its rear end. Instead, however, of having a V-shaped notch at its forward end, it has a V-shaped projection 19, the same being adapted to fit into the notch 4^a of the adjacent rail. The members 6^a are shorter than the distance between the notches 4^a and 8^a on the adjacent rail, so that, in assembling, the member 6^a can be slid laterally into position, the notches 8^a then forming a substantially diamond shaped recess. The ends 19, however, are out of engagement with the notches 4^a, and the rails, or one of them, must be moved longitudinally so as to bring the wedge shaped terminations 19 into their corresponding notches, as shown in Fig. 8, which movement, however, separates the ends of the members 6^a at the notches 8^a, as also shown in said figure. The resulting recess at the ends of the members 6^a therefore, becomes elongated, and re-

quires a pin with an extended head having flat side portions 20. This pin is provided with a downwardly extending stem, not shown, extending through grooves or apertures 12^a in the members 5^a, and through clamping plates like those hereinbefore described. From the above, it will be seen that one bolt or pin only is required for holding the rails together.

In both forms described, the bolt heads are confined within the recesses formed by the notches in the rails, and they project outwardly flush with the rails so that a smooth and noiseless joint is produced. The joint, moreover, has great strength, as the members 6 of the first form and 6^a of the second form rest upon the portions 5 and 5^a respectively. In the second form, the bolt head 9^a is made somewhat smaller than the aperture formed for it, whereby a slight space is left about the head to allow for expansion and contraction of the rails.

In Fig. 10 I have shown the adjacent ends of two I-beams held together by the same form of joint that has been last described and that is shown in Figs. 7 and 8, the I-beams being indicated at A' and B' respectively, the other parts of the joints bearing the same reference characters as have been employed in describing the same joint, as shown in Figs. 7 and 8.

As is well known, it is a common practice in railway construction to have the joints in one rail broken with respect to the joints in the other rail of the track. In Fig. 9 I have shown the two rails of the track in section, the view being taken through the joint of one rail. For gaging the rails or for holding the same in proper position, I employ a spacing bar 21, said bar also taking the place of the clamping plate shown in Fig. 4, as it is provided at and near one of its ends with lips 14^a for engaging the edges of the base flanges, and with an aperture between said lips through which the lower end of the bolt stem 10 may extend. This bar is held to the rails at the joint by a wedge 16, like that shown in Fig. 6, said wedge passing through the bolt stem. At its opposite end the bar is provided with an integral lip 22 for the outside flange of the rail, and with a removable lip 23 for engaging the inside flange of said rail. This spacing bar, therefore, not only serves the purpose of spacing the rails, but it also forms a part of the joint between sections of one of the rails. The bar is used with both forms of joint shown and described.

While I have shown and described what are, at present, my preferred embodiments of my invention, I realize that the details of construction may be more or less modified without departing from the spirit of my invention, and I desire it to be understood that the following claims are not in-

tended to be limited to such details any further than the specific terms therein employed may require.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a joint, the combination with a pair of longitudinally arranged members each having a notch and the notches in the respective members forming a recess between the members, of a bolt or pin connecting said members and having a head within the said recess said bolt or pin extending through and beyond said members, and means connected with the bolt or pin beyond the members for holding the parts from displacement.

2. In a joint, the combination with a pair of longitudinally arranged members each having a notch in its upper surface, said notches, when the members are joined, co-operating to form a recess in the upper surface of the members, of a bolt or pin having a head corresponding in outline to the shape of the said recess, said bolt or pin connecting the said members and having its head confined within the said recess, the bolt or pin extending through and beyond said members, and means connected with the bolt or pin beyond the members for holding the parts from displacement.

3. In a joint, the combination with two members having an upper and a lower flange and a web connecting said flanges, of a part projecting forwardly from each member, said parts lying side by side in the finished joint, a notch formed in upper flanges at the bases of the projecting parts thereon, a flanged member on each of the said projecting parts, said flanged members having notches therein corresponding to the notches in the upper flanges, said notches, when the members are assembled, forming recesses, a key within each of the said recesses, and means for holding the keys in position, whereby the members are held against displacement.

4. In a rail joint, the combination with a pair of longitudinally alined rails, each of said rails having an upper and a lower flange and a web connecting said flanges, of a projecting member extending beyond the web in each of said rails, a flanged member formed on each of said projecting members in alinement with the upper flange thereof, said flange members being spaced from their respective upper flanges and being so positioned that, in the assembled joint, the upper flanges and the flanged members are in alinement, notches formed in the adjacent parts of the upper flanges and the flanged members, said notches forming recesses extending downwardly from the upper surface of the rails, bolts or pins having heads corresponding in shape to the said recesses and being contained therein, whereby the rails

are held together, and means for holding the bolts in position.

5. In a joint, the combination with a pair of longitudinally alined members, said members being each provided with notches in their adjacent portions, said notches, in the assembled joint, forming recesses extending downwardly from the upper side of the members, a bolt head within said recesses and conforming in shape thereto for holding the members against lateral displacement, apertures extending vertically through said members, a stem on the bolt passing through said apertures, said stem having a hole therethrough, a plate below said members, said plate having an opening therein through which the bolt stem passes, a wedge passing through the hole in the bolt stem below the said plate, and means for holding the said wedge in position.

6. In a joint, the combination with a pair of longitudinally alined members, each of said members having a V-shaped notch therein, the said notches when the members are assembled forming a diamond shaped recess in the upper surface of the members, a bolt connecting said members together, said bolt having a diamond shaped head within and fitting the recess in the members, a plate below said members through which the bolt passes, and means for holding the bolt and the plate in position.

7. In a railway joint, the combination with a pair of longitudinally alined rails, each of the latter having upper and lower flanges and a web connecting said flanges, projecting members extending beyond the end of each of said rails, said members being offset from their respective webs so as to lie side by side when the rails are assembled, a flanged member on each of the projecting members, said flanged members being adapted to extend over and lie upon the projecting member on the opposite rail and to be disposed in alinement with the upper flanges of the rails, V-shaped notches in the upper flanges and in each end of each of the flanged members, said notches, in the assembled rails, forming a plurality of vertically extending recesses, apertures extending downwardly through the projecting members from the bottoms of said recesses, bolts or pins having stems extending through said apertures and having heads lying within and fitting the said recesses, and means for holding the said bolts in position.

8. In a rail joint, the combination with a pair of longitudinally alined rails, each rail having an upper and a lower flange and a web connecting said flanges, the web, the upper flange and one side of the lower flange terminating some distance from the end of the respective rail proper thereby producing a forward extension, said extension being out of alinement with the web of the rail

so that the extensions on the rails of the pair may lie side by side, registering apertures extending vertically in the adjacent sides of said extension, a flanged member on each of
 5 said extensions, said flanged members, when the rails are assembled, being in alinement with the upper flanges of the rails, notches formed in each of the upper flanges and in
 10 each end of the flanged members, said notches registering and forming recesses opposite the apertures in the said extensions, bolts passing downwardly through said apertures and having their heads confined within the recesses formed by the said notches,
 15 and means for holding the said bolts and heads in position, as and for the purpose specified.

9. In a rail joint, the combination with a pair of longitudinally alined rails, each of
 20 said rails having an upper and a lower flange and a web connecting said flanges, the upper flange, the web and one side of the lower flange terminating some distance from the extreme end of the rail, whereby projecting
 25 members are provided, said members being offset from the planes of their respective webs so as to lie side by side when the rails are assembled, flanged members integral with said projecting members and spaced
 30 from the top flange of their respective rails whereby the flanged extension on one rail may lie between the flanged extension and the upper flange of the other rail, the said upper flanges and the flanged extensions
 35 forming a continuous structure, V-shaped notches formed in the ends of the upper flanges and in each end of each of the flanged extensions, said notches, when the rails are assembled, forcing a plurality of downwardly extending recesses in the upper surfaces of the rails, a bolt for each of the said
 40 recesses, said bolts holding the rails together and having heads within and fitting the said recesses, a clamping plate for each bolt, each

of said plates having an opening through
 which the bolt extends and each plate also having a pair of lips that extend on the opposite sides of the lower flanges of the rails, and means for holding the bolts and the plates in position. 50

10. In a railway construction, the combination with a pair of alined rails, of a rail parallel thereto, the adjacent ends of the alined rails being provided with notches extending downwardly from the upper surface
 55 of the rails, a bolt securing the said alined rails together, said bolt extending vertically and having its head resting in the recess formed by the notches in the rails, a spacing bar extending from the alined rails to
 60 the parallel rail, means for securing the said bar to the parallel rail, said bar being provided with an aperture through which the said bolt extends, and means for securing the bolt and the bar in position, whereby the bar
 65 forms part of the joint between the alined rails and also spaces the parallel rail therefrom.

11. In a joint, the combination with a pair of longitudinally arranged members, of a
 70 part projecting forwardly from each member, each of said parts having a notch therein intermediate its ends and said notches cooperating in the assembled joint to form a recess, and a key having a head corresponding in outline to the shape of the said
 75 recess, said key connecting the said members and having its head confined within the said recess, whereby the members are held against longitudinal and lateral displacement. 80

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

BONNIE L. MALLORY.

Witnesses:

M. M. WEST,

BRENNAN B. WEST.