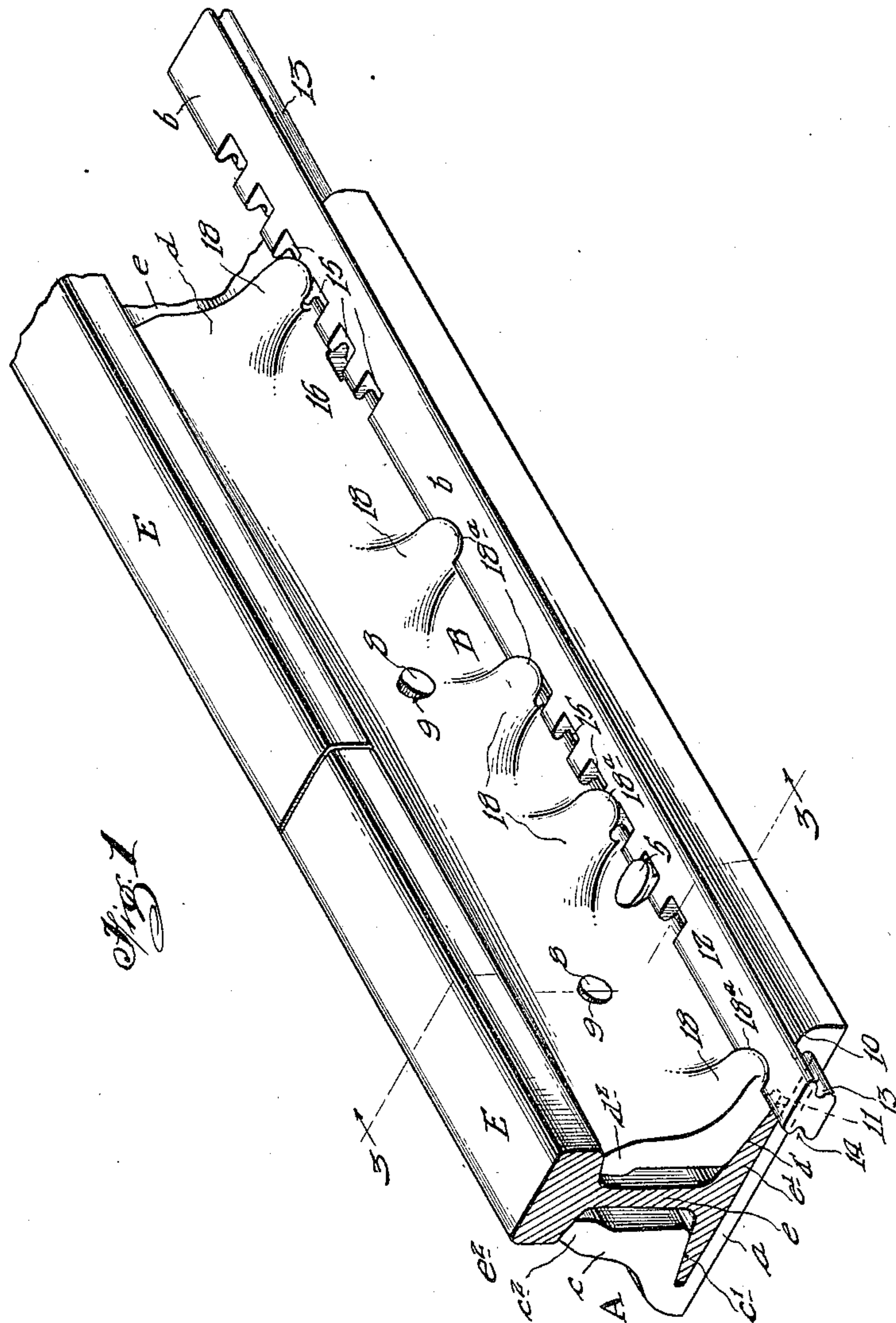


R. R. DITZEL.
 COMBINED RAIL CHAIR AND JOINT LOCK.
 APPLICATION FILED MAR. 9, 1910.

999,552.

Patented Aug. 1, 1911.

2 SHEETS—SHEET 1.



Witnesses:
M. W. Mansfield
B. J. Fletcher

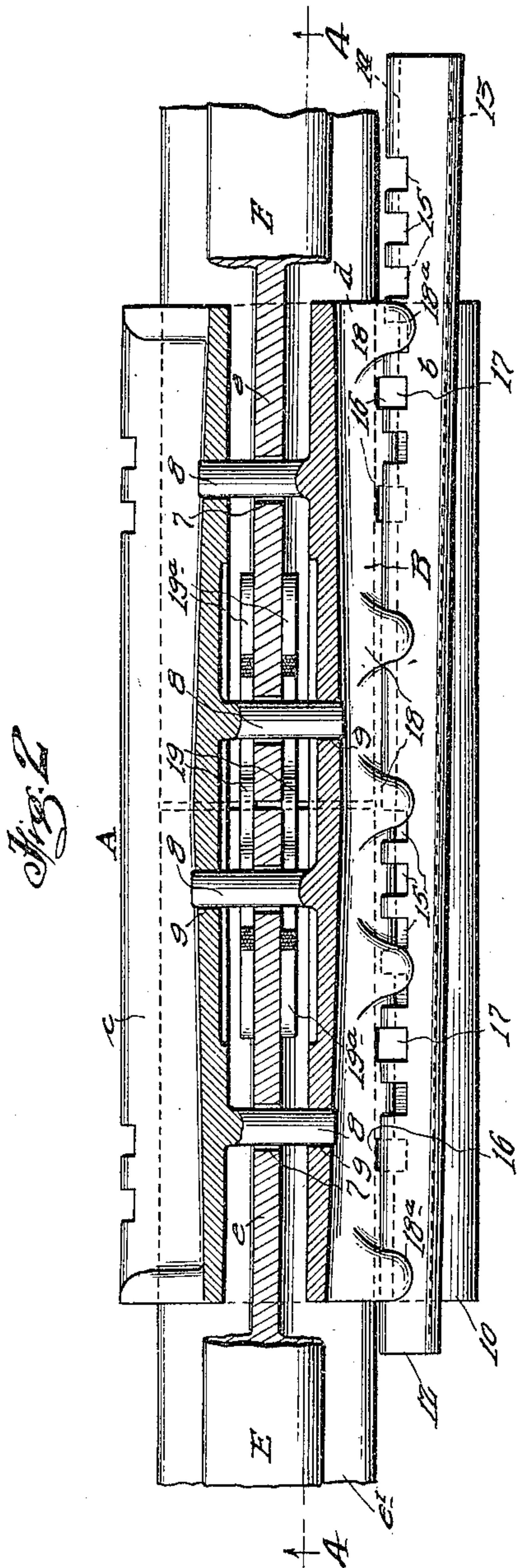
Inventor,
Richard R. Ditzel;
Respectfully,
his Attorneys.

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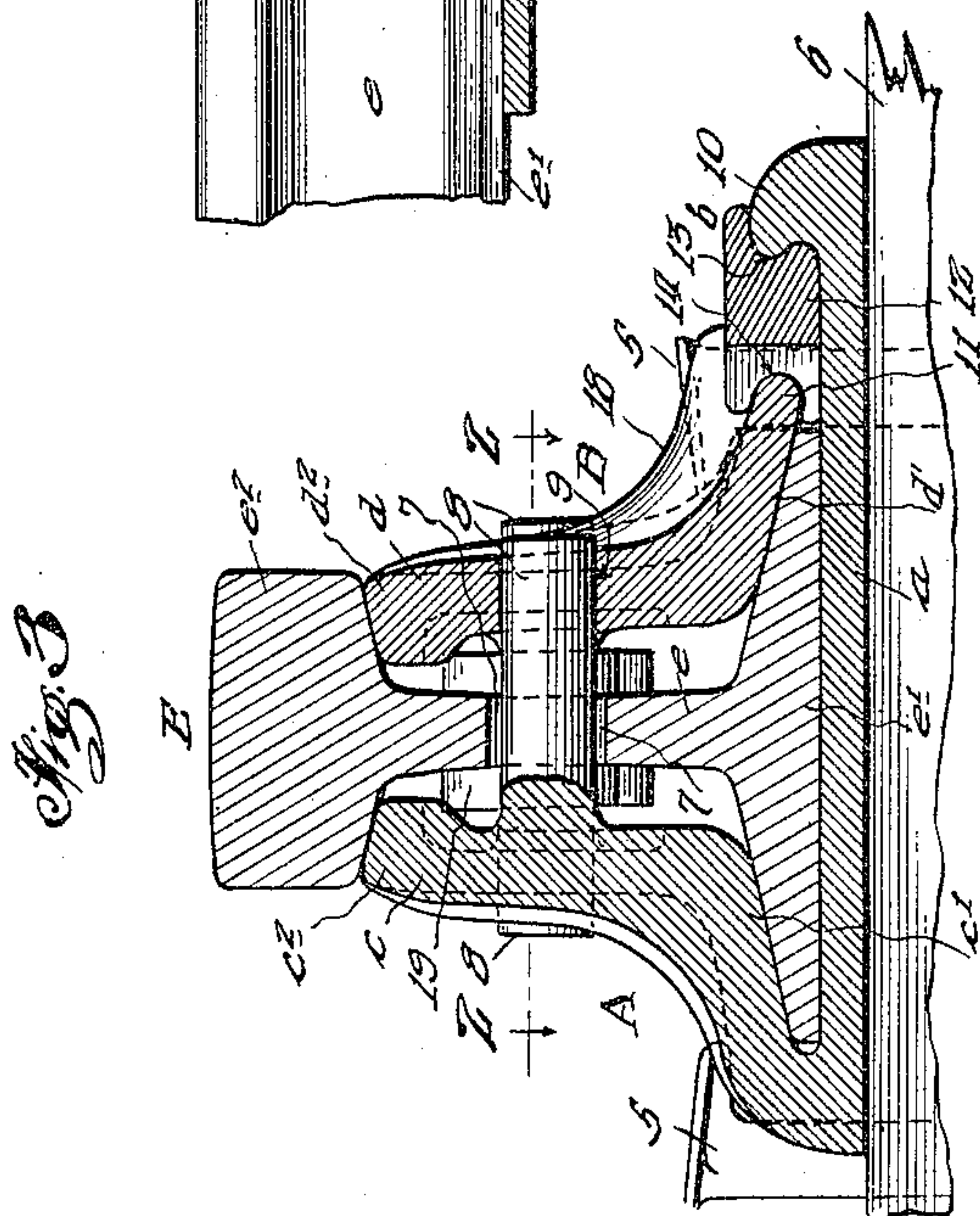
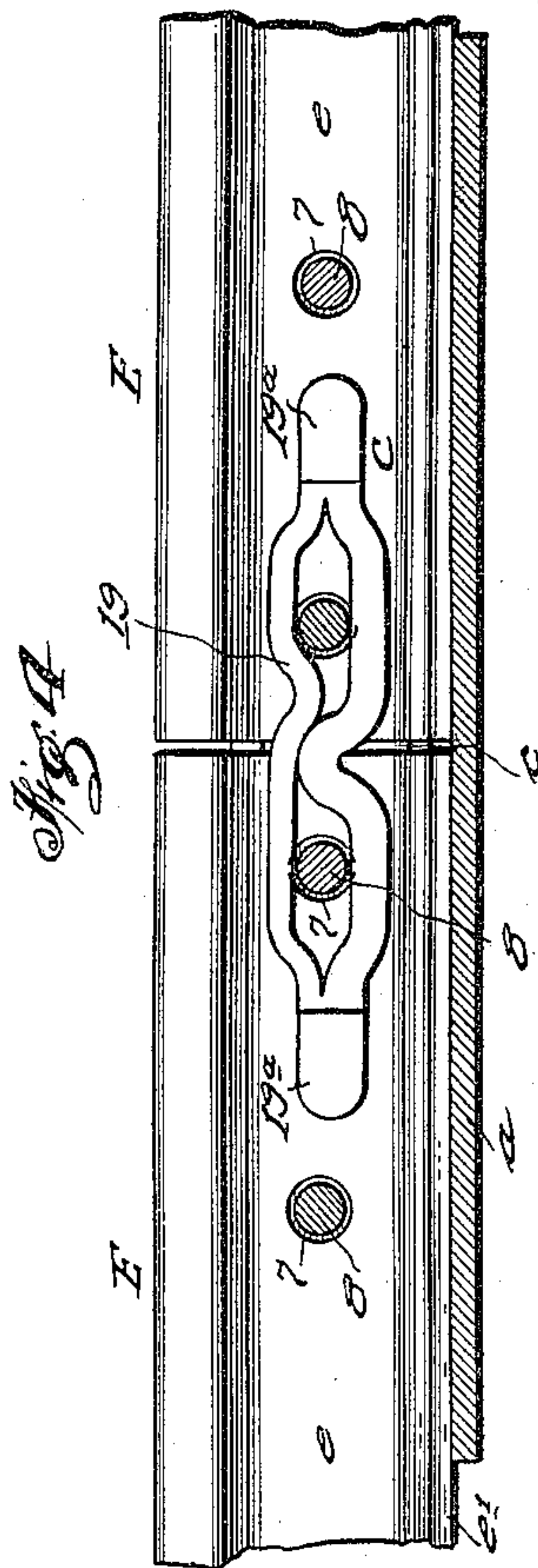
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2 SHEETS—SHEET 2.



Witnesses:
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 his Attorneys

UNITED STATES PATENT OFFICE.

RICHARD R. DITZEL, OF LOS ANGELES, CALIFORNIA.

COMBINED RAIL-CHAIR AND JOINT-LOCK.

999,552.

Specification of Letters Patent.

Patented Aug. 1, 1911.

Application filed March 9, 1910. Serial No. 548,312.

To all whom it may concern:

Be it known that I, RICHARD R. DITZEL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Combined Rail-Chairs and Joint-Locks, of which the following is a specification.

This invention relates to combined rail chairs and joint locks; and it has for its object to provide improvements of the general character set forth which will be relatively superior in point of positiveness of operation, simplicity and inexpensiveness of construction and organization, facility in installation and assemblage and in repair and substitution of parts, which will readily conform in working conditions to the varying attendant conditions of use and service, and which will be generally superior in efficiency and serviceability.

The invention relates more particularly to that class of combined rail chairs and joint locks which comprise fixed and movable jaws or fish-plates, the former of which is rigidly mounted upon or integral with the base of the rail chair, interlocking means positively uniting the fish-plates or jaws with the web of the rail at both sides of the joint, and a locking wedge co-acting with the rail chair and one of said jaws or fish-plates; the parts and features being held in positions of final assemblage and adjustment by one or more rail spikes.

While employing the above-stated general or leading features and parts of construction and organization, I provide particular elements and structural factors which result in the provision and production of a more efficient and serviceable entirety which is adapted for practical employment under conditions of service to be met with in standard railway practice.

With the above and other objects in view, and the above and equivalent means of carrying the same into operation and effect, the invention consists in the novel provision, construction, formation, combination and relative arrangement of parts, members and features, all as hereinafter described, shown in the drawings, and finally pointed out in claims.

In the drawings:—Figure 1 is an isometric view of an improved rail chair and joint lock embodying the invention, the same being shown as associated with the ends of

rails supported and joined thereby; Fig. 2 is a longitudinal transverse sectional view, partly in full lines and partly broken away for clearness of illustration, showing the construction disclosed in Fig. 1, the plane of section being upon the line 2—2, Fig. 3, and looking in the direction of the appended arrows; Fig. 3 is an enlarged detail transverse sectional view taken upon the plane of the line 3—3, Fig. 1, and looking in the direction of the appended arrows, parts being shown in full lines and broken away for clearness of illustration; and, Fig. 4 is a fragmentary side elevation, partly in section upon the line 4—4, Fig. 2, and looking in the direction of the appended arrows, the same showing a preferred form of bond spanning the joint of the rails.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring with particularity to the drawings, A and B designate respectively the rail chair and joint lock organized according to the invention and associated each with the other for the purpose of supporting the ends of the rails and effectively joining the same.

C designates a bond between the rails and spanning the joint of the ends of the same, *b* designating a locking wedge between the parts A and B.

5 designates in each instance a spike which co-acts with the locking wedge *b* and the other features of the joint lock and rail chair in maintaining all the parts and features in positions of adjustment and assemblage; the spike or spikes of a requisite number being driven into the tie 6 upon which the rail chair and joint lock rests.

c and *d* respectively designate fish-plates or jaws arranged in opposition to each other and at opposite sides of the web *e* of the rails E, the ends of which are united and supported by the rail chair and joint lock. The fish-plate or jaw *c* is formed upon, connected with, or formed integrally with the base *a* of the rail chair, which latter is flat and formed to rest upon the tie 6. The fish-plate or jaw *d* is separate from the chair A and its base *a*, and both of the jaws *c* and *d* are formed with a vertical transverse curvature or angularity, preferably the former, whereby the jaw *c* impinges directly upon the bases *e'* of the rails E, as at *c'*, and impinges directly upon and beneath the crowns *e''* of the rails E, as at *c''*; and whereby the

jaw d impinges directly upon the bases e' of the rails E, as at d' , and impinges directly upon and beneath the crowns e^2 of the rails E, as at d^2 ; the formation and relative portions of the parts last recited being such that both of the jaws c and d are entirely spaced from the webs e of the rails; said webs being provided with transverse openings 7 through which pass dowel pins 8 formed upon or connected with the jaws c and d and projecting angularly from the opposed faces thereof through the openings 7 and being received at their outer end portions in openings 9 in the jaws c and d and substantially midway of their upper and lower portions, the pins 8 being of straight formation and preferably of uniform diameter. The pins 8 project alternately oppositely from the jaws c and d , each pin 8 being opposed by an opening 9, and vice versa; and the openings 7 are enlarged relatively to the diameters of the pins 8 but said pins closely fit the openings 9. The enlarged openings 7 permit the rail ends to creep or move relatively in contraction or expansion. The base a of the rail chair A is provided at one side edge with an upwardly and laterally or inwardly directed flange or bead 10 which is in direct opposition to the lower side edge 11 of the jaw d and is slightly spaced therefrom; the flange or bead 10 being arranged slightly out of parallelism with the edge 11, as clearly shown in Figs. 1 and 2; and the locking wedge b of the joint lock B is disposed between the flange 10 and the edge 11, being free to move with relation to the fixed jaw c and the chair base a and comprises a slightly longitudinal tapering wedge body 12 having opposed lateral grooves 13 and 14 which respectively receive the flange or bead 10 and the jaw edge 11. The side edge of the wedge body 12 which is provided with the groove 14 is also provided with a plurality of spaced notches 15 extending vertically transversely therethrough; and the jaw edge 11 is provided with a plurality of spaced transverse vertical notches 16 adapted to register respectively with the notches 15 and to form therewith continuous-walled spike holes which register with spike holes 17 in the base a of the rail chair A; the spikes 5 being driven through the registering notches 15 and 16, or the proper number of pairs thereof, through the spike holes 17 and into the tie 6.

The jaw d is preferably provided with reinforcing lugs or bosses 18 ranging vertically transversely thereof, and formed upon the outer face thereof, the lower end portion or nose 18^a of each of such bosses 18 projecting in position to receive beneath the same in close fit the upper surface of the locking wedge b . Furthermore, each of the jaws c and d preferably increased slightly in

thickness from its ends toward its central portion, as clearly shown in Fig. 2.

The bond C comprises an electrically-conducting loop unit 19 at each side of the rail joint, each unit 19 being welded at its ends, as at 19^a , in direct connection with the rail ends, and such loop unit being normally distorted to permit contraction of the rails and simultaneous expansion or extension of the loop formation.

The operation, method of use and advantages of the improved rail chair and joint lock constituting the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings and the following statement:—In assembling the improved rail chair and joint lock, the rail ends are placed upon the base a of the rail chair, with the jaw c impinging upon and beneath the crowns e^2 and upon the rail bases e' . The jaw d is then brought to bear beneath the crowns e^2 and upon the bases e' of the rails, the pins 8 being passed through the openings 7 in the web e of the rail and caused to project and lie within the openings 9 in the jaws. The locking wedge b is then passed at its smaller end into the space between the flange or bead 10 and the edge 11 of the jaw d , and forced home into tight locking engagement with said jaw and said flange upon the base a of the rail chair. One or more of the notches 15 are brought into registration respectively with the notches 16, in the wedge body 12 and the jaw d respectively, the notches registering with spike openings 17 in the base a , and spikes 5 are driven through said registering notches and said spike holes and into the tie, holding the locking wedge firmly and positively in position of engagement with the rail chair and the jaw d , and locking the jaw d with the jaw c through the agency of the pins 8.

The ends of the rails are permitted to creep in compensation for contraction or expansion, the enlarged openings 7 permitting relative movement of the pins 8 and the jaws c and d , and the rails. The parts and features may be readily separated by withdrawing the spikes and removing the wedge or moving it longitudinally to loosen the joint lock; and to render more positive the action of the joint lock the wedge may be moved into a tighter engagement with the flange 10 and the jaw d , and the spikes again set, being driven through such notches 15 and 16 and spike holes 17 as are caused to register. The jaws c and d , by impingement solely upon the under surface of the crowns e^2 and the upper surface of the bases e' of the rails, both of which are in standard practice inclined in surface formation, obtain a close effective contact with the rails, which is not possible when such jaws also impinge upon the webs of the rails. The spacing of

the jaws from the webs is therefore an essential feature. The proper formation and arrangement of the flange or bead 10 of the base *a* and the edge portion 11 of the jaw *d*, and of the grooves 13 and 14 in the wedge body 12 which receive said flange and edge portion, is also productive to a high degree of locking efficiency; and the lugs or bosses 18 efficiently reinforce the jaw *d* and act to properly center the wedge body 12 by the impingement of the noses 18^a thereof upon the said wedge body. The bonds *C* also serve efficiently in electrical connection of the rails, and being disposed between the rails and the jaws *c* and *d* are thoroughly protected from injury.

Having thus described my invention, I claim and desire to secure by Letters Patent:—

1. In a rail joint, the combination of the abutting ends of a pair of rails, a base plate fitting under the rail ends and provided upon one side thereof with an integral jaw member extending upwardly and fitting against one side of the rails, the opposite side of the base plate extending beyond the rails and being provided with an upwardly projecting flange having a bead upon the inner face thereof, a removable jaw member fitting against the last mentioned side of the rails and formed with a lower edge which projects beyond the base of the rails, and a locking wedge slidable upon the base plate between the removable jaw and the before mentioned flange, the longitudinal edges of the locking wedge being grooved to receive

the lower edge of the removable jaw and the bead upon the inner side of the flange.

2. In a rail joint, the combination of the abutting ends of a pair of rails, a base plate fitting under the rail ends and formed upon one side thereof with an integral jaw member engaging one side of the rails and at the opposite side thereof with an upwardly projecting flange having a bead upon the inner face thereof, a removable jaw fitting against the last mentioned side of the rails and having the lower edge thereof projecting outwardly beyond the base of the rails where it is formed with a series of notches, and a locking wedge slidable upon the base plate between the lower edge of the removable jaw and the before mentioned flange, the said locking wedge having opposite sides thereof grooved for the reception of the lower edge of the removable jaw and the bead upon the flange, and the inner side of the locking wedge being formed with notches adapted to register with the notches of the removable jaw to form spike receiving openings, the said removable jaw being formed with reinforcing bosses projecting outwardly over the locking wedge and bearing loosely upon the top thereof.

In testimony whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

RICHARD R. DITZEL.

Witnesses:

J. W. ASHLEY,
B. F. FLETCHER.