

No. 714,056.

Patented Nov. 18, 1902.

L. T. STEPHENSON.
RAIL JOINT.

(Application filed Dec. 31, 1901.)

(No Model.)

Fig. 1.

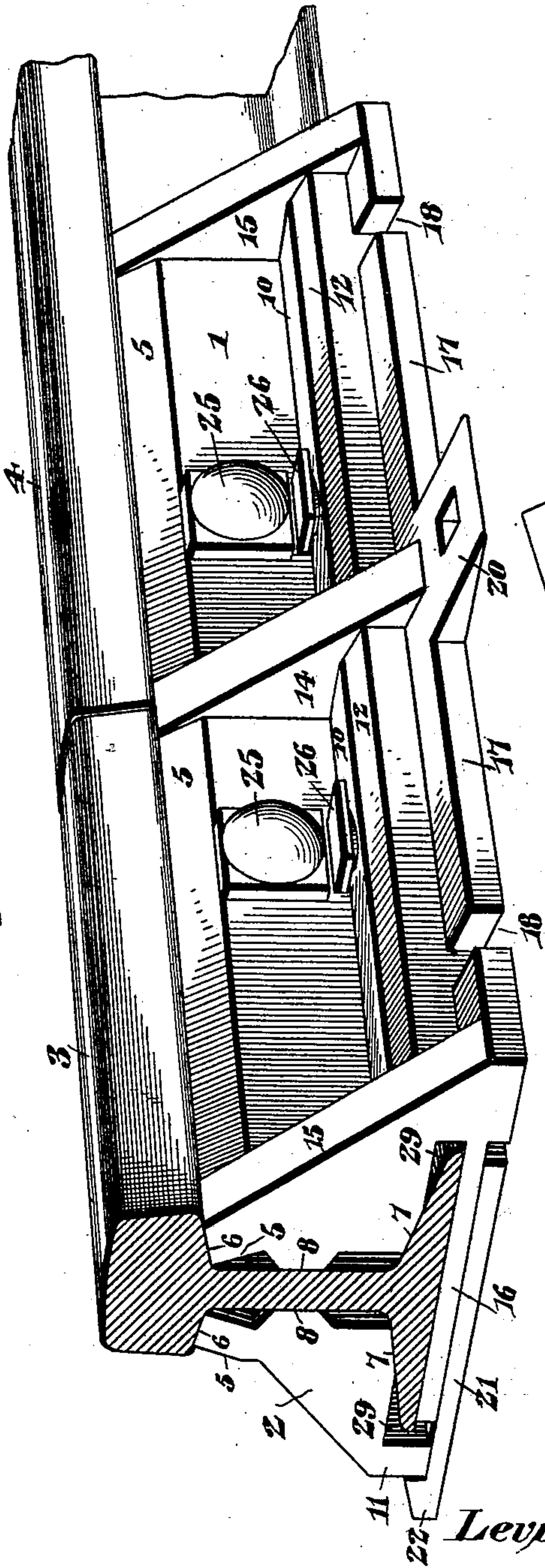


Fig. 2.

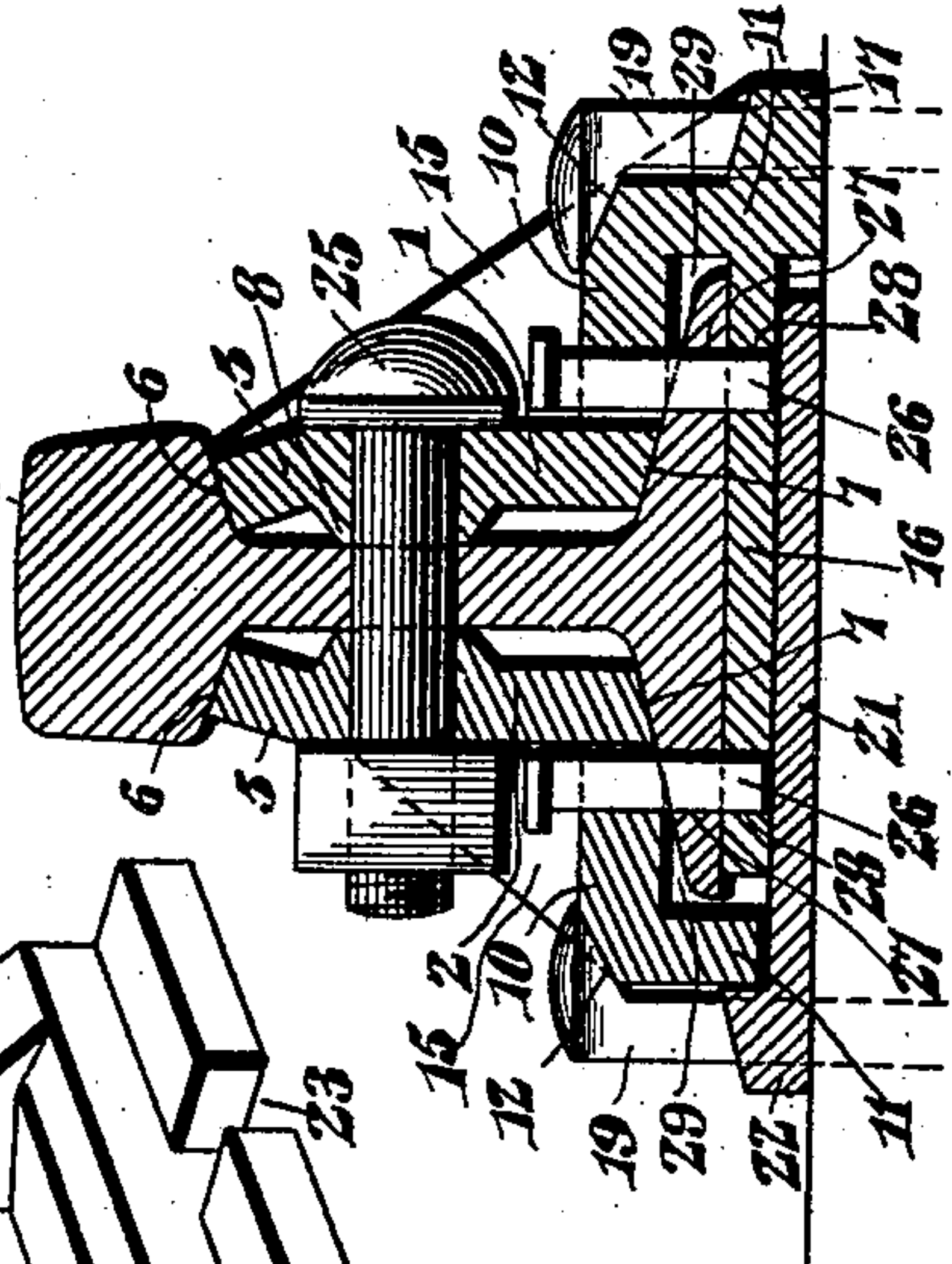
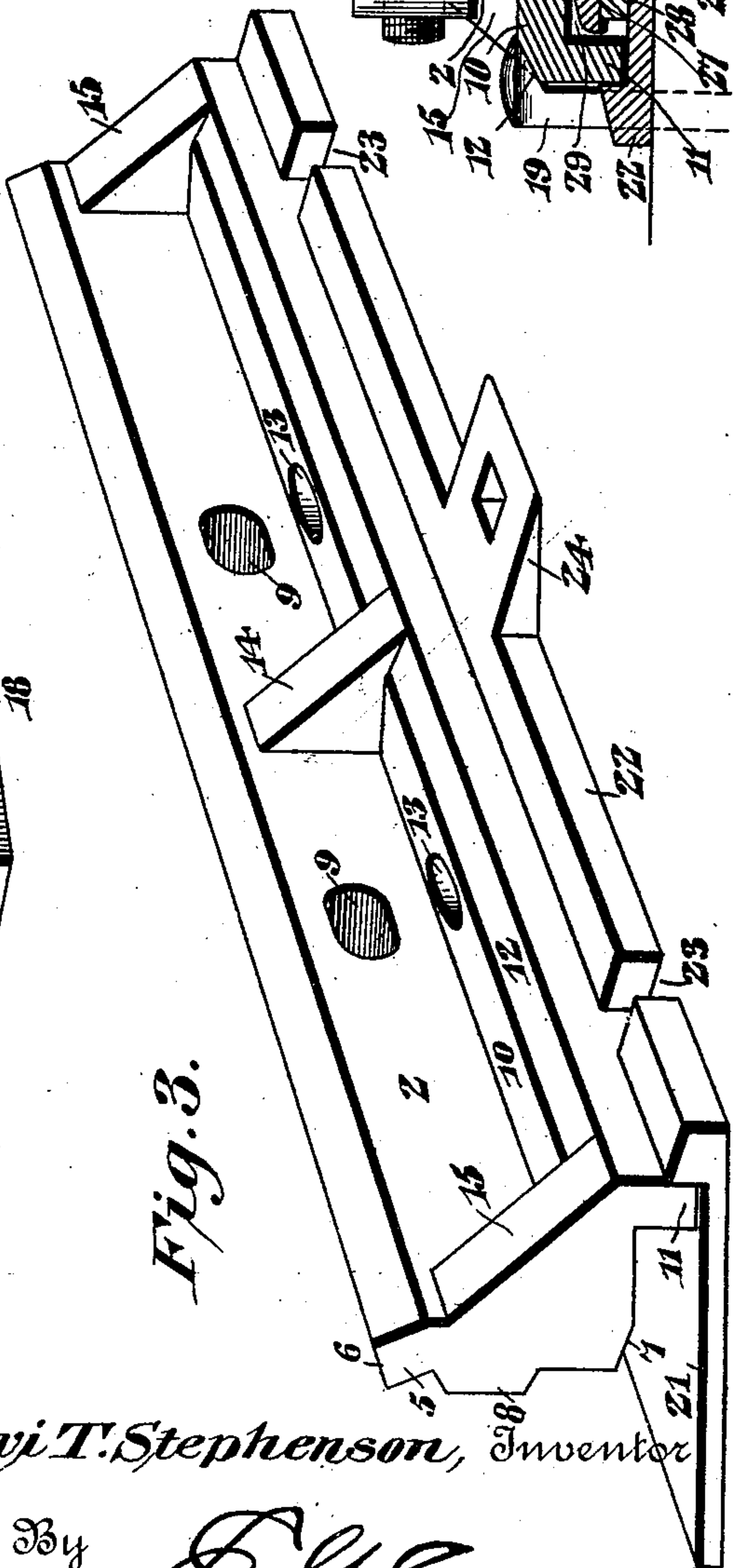


Fig. 3.



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RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 714,056, dated November 18, 1902.

Application filed December 31, 1901. Serial No. 87,951. (No model.)

To all whom it may concern:

Be it known that I, LEVI T. STEPHENSON, a citizen of the United States, residing at Trinidad, in the county of Las Animas and State of Colorado, have invented a new and useful Rail-Joint, of which the following is a specification.

This invention relates to rail-joints and is designed to reduce the length of the fish-plates and also the number of the fastenings which pierce the webs of the rails, thereby to materially simplify and increase the strength and durability of the joint.

Another object is to brace both sides of the joint at its weakest point, which is at the interval between the adjacent ends of the rail-sections.

A further object is to guard against separation of the fish-plates by means additional to the usual bolts that pierce the rails, thereby to materially relieve strain from the threaded portions of the bolts.

Another object is to have parts of the device cooperate so as to prevent turning of the bolts which pierce the rails and also to lock the nuts thereof against becoming accidentally loosened.

Another object is to have the parts of the joint cooperate so as to form a rail-chair, the parts of which are disposed so as to break joints and present a continuous unbroken seat for the flange of the rail.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a perspective view of a rail-joint embodying the present invention. Fig. 2 is a cross-sectional view thereof. Fig. 3 is a detail perspective view of the fish-plate for the inner side of the rail and the cooperating rail-chair member.

Like characters of reference designate cor-

responding parts in all the figures of the drawings.

In carrying out the present invention there are employed the opposite fish-plate members 1 and 2, respectively, which embrace rail-sections 3 and 4 and overlap the joint therebetween in the manner of ordinary fish-plates. Each fish-plate consists of a substantially straight intermediate body portion, the upper edge portion of which is inclined inwardly toward the rail, as indicated at 5, and has its top edge 6 beveled to fit snugly against the adjacent under side of the ball or tread of the rail, so as to brace the same. The lower edge of the fish-plate is beveled, as at 7, to correspond with and also to rest upon the inclined upper face of the flange of the rail, and the inner face of the body portion of the fish-plate is provided with a longitudinal rib 8 to bear against the web of the rail. The bolt-openings 9 are formed through this ribbed portion of the plate. At the lower edge of the plate there is an outwardly-directed ledge 10, the lower side of which is substantially horizontal, and at the outer edge of this ledge there is a pendent foot-flange 11, and the outer meeting edge of the ledge 10 and the flange 11 is beveled upwardly and inwardly, as indicated at 12. In the ledge 10 there is provided a pair of vertically-disposed openings 13, which are alined with the bolt-openings 9. At the center of each plate there is provided a brace-web 14, which extends between the ledge 10 and the upstanding portion of the body of the plate, and at opposite ends of the latter are provided similar terminal brace-webs 15. As thus far described, the two fish-plates are practically the same; but in other respects they differ, as will now be described.

The fish-plate 1, which is applied to the outer side of the track, is provided with a horizontal chair member 16, which projects inwardly from the upstanding foot-flange 11 and lies between the top and bottom and is also of a length to overlap the joint between the two fish-plates. At the bottom of the flange 11 there is provided an outwardly-directed flange 17, in which are provided suitable notches 18 for the reception of the usual

track-fastenings or spikes 19, as best illustrated in Fig. 2. These notches extend inwardly to the upstanding flange 11, so that the spikes may lie against the latter and have the inclined under face of the projected head portion thereof lie snugly against the beveled portion 12 of the fish-plate, and thereby hold the latter snugly to the tie. At the center of the flange 17 there is provided an outwardly-directed perforate ear or extension 20, which is designed for the reception of a spike, which would therefore lie in line with the central brace-web 14, and thus effectually brace the rail-joint at its weakest point, which is directly at the joint between the rail-sections.

The fish-plate member 2 has its flange 11 shorter than the flange 11 of the member 1, and to support the shorter flange and the rail-chair portion of the fish-plate member 1 there is provided a bottom rail-chair member 21, which is thrust beneath the fish-plate member 2 and the rail-chair section 16, so as to support the latter, and the outer edge of this plate 21 is provided with an upstanding flange 22, which snugly engages the outer side of the foot-flange 11 of the fish-plate 2 and is provided with notches 23 for the reception of the spikes 19 and is also provided at its center with a perforate extension 24, which corresponds to the similar extension 20 of the other fish-plate.

Before the usual bolts 25 are passed through the fish-plates and the webs of the rails the smooth-headed pins 26 are inserted downwardly through the openings 13 in the ledges 10 of the fish-plates and also through aligned perforations 27 and 28, formed in the flanges of the rails and the chair-sections 16, whereby all of these parts are connected, so as to prevent the same from working apart. It will of course be understood that the openings for the pins 26 are as much larger than the latter as the bolt-openings are larger than the bolts in order that the pins 26 may not interfere with the endwise movements of the rails, due to contraction and expansion thereof. The tops of the pins 26 lie in the paths of rotation of the opposite heads of the fastenings 25, so as to prevent accidental rotation.

In assembling the present rail-joint the rail-sections are pried or blocked up above the adjacent cross-tie, so that the rail-chair section 16 may be conveniently inserted beneath the flanges of the rails when the fish-plate 1 is fitted in place. After the fish-plates have been fitted in place the pins 26 are dropped down through the perforations in the ledges of the plates, the flanges of the rails, and the rail-chair section 16, and then the bolts 25 are fitted in place and the nuts thereof screwed up tightly against the adjacent fish-plate. In view of the fact that the rails are elevated above the tie the pins 26 will drop down until their heads strike the ledges 10, so that there is sufficient room above the same to permit of the turning of the nuts, and af-

ter the latter have been tightened the rail-chair member 21 is inserted from the inner side of the track, and then the rails are permitted to drop down to their normal position, whereby the lower ends of the pins 26 strike against the rail-chair section 21, and are thereby forced upwardly, so that their heads may lie in close proximity to the under side of the nuts and the heads of the bolts, thereby serving to prevent accidental loosening of the nuts and turning of the bolts. It will of course be understood that the distance between the heads of the pins and the nuts is sufficient to permit sagging of the rails under the weight of a train without danger of contact between the nuts and the pins, as such contact might result in the breaking of the bolts. After the insertion of the rail-chair section 21 the spikes or fastenings 19 are driven into the respective spike notches or sockets, so as to draw all parts of the joint downwardly into mutual engagement and also to hold the plate 21 and the foot-flange of the fish-plate 1 firmly upon the tie, and thereby form a solid chair for the support of the rail-sections. It will here be noted that the chair-sections 16 and 21 break joints and overlap for nearly the entire length thereof, thereby obviating the joint beneath the longitudinal center of the rail-sections and presenting a practically continuous unbroken rail-chair.

In view of the fact that wheel-flanges project downwardly at the inner side of the rails the brace-webs 14 and 15 of the inner fish-plate 2 terminate short of the upper edge thereof, preferably in line with the upper edges of the bolt-openings 9, thereby to avoid offering obstructions to wheel-flanges. The brace-webs of the other fish-plate extend clear to the upper edge thereof, as they do not lie in the path of wheel-flanges.

It will here be noted, particularly in Figs. 1 and 2 of the drawings, that the rear portions of the sockets for the reception of the rail-flanges formed in the bottom of the fish-plates are enlarged at their inner ends, as indicated at 29, so that said flanges may be readily received within the sockets, even though the edges of said flanges should be bent. This is an important feature of the present invention, as the edges of the flanges of the rails are frequently dented and bent in the course of handling and transportation, and should the sockets 29 be shaped snugly to fit all portions of said flanges such dents or bent portions would prevent the ready insertion of the flanges into the sockets, and therefore it would be necessary to hammer or otherwise treat the flanges, so as to reduce the lateral projections thereof, before they could be introduced into the socket.

What I claim is—

1. A rail-joint, comprising opposite fish-plates, having upstanding brace-webs located at the abutted ends of rail-sections, the top of the brace-web at the inner side of the joint being terminated short of the top edge of the

fish-plate and located out of the path of wheel-flanges.

2. A rail-joint, comprising opposite fish-plate members, one of which is provided with an integral rail-chair member terminated short of the opposite plate member, and another rail-chair member which is separate from the other parts of the joint, overlaps the first-mentioned rail-chair member, is terminated short of the first-mentioned fish-plate member and forms a support for the other fish-plate member.

3. A rail-joint, comprising opposite angular fish-plate members, which are provided at their lower outer edges with pendent foot-flanges, one of which is longer than the other, an integral rail-chair member carried by and projected inwardly from an intermediate portion of the longer foot-flange and overlapping the bottom of the other fish-plate, and a separate rail-chair member overlapping the first-mentioned rail-chair member and inserted beneath the shorter foot-flange to form a support therefor, the outer edge of the separate chair member being provided with an up-standing flange lying against the outer side of the shorter foot-flange.

4. In a rail-joint, the combination with abutted rail-sections, of angular fish-plates embracing the rail-sections, bolts piercing the webs of the rail-sections and the fish-plates, and pins passed through the lower members of the fish-plates and the flanges of the rails with their upper ends lying in the path of the rotary movement of the nuts on the bolts to prevent accidental loosening thereof.

5. In a rail-joint, the combination of opposite fish-plates which are angular in cross-section and have pendent foot-flanges at their outer edges, the body portions of the plates being provided with corresponding bolt-openings, and the lower members of the plates being provided with vertical openings alined with the bolt-openings, a rail-chair member carried by one of the foot-flanges and projected inwardly below and across the space between the two plates, a separate rail-chair

member inserted beneath the other fish-plate and overlapping the first-mentioned rail-chair member, and smooth pins inserted through the openings in the fish-plates and also through corresponding openings in the first-mentioned rail-chair member, the lower ends of the pins resting upon the lower rail-chair member with their upper ends projected above the horizontal parts of the fish-plates.

6. In a rail-joint, the combination with abutted rail-sections, of opposite fish-plates embracing the joint between the rail-sections, bolts piercing the fish-plates and the webs of the rail-sections, and locking-pins passed through openings in the flanges of the rails and having their upper ends lying in the paths of rotation of the bolt-nuts to prevent unscrewing thereof.

7. In a rail-joint, the combination with abutted rail-sections, of opposite fish-plates embracing the joint between the rail-sections, bolts piercing the fish-plates and the webs of the rail-sections, and locking-pins inserted through openings in the flanges of the rail-sections, the upper ends of some of the pins lying in the paths of rotation of the bolt-nuts and the other pins having the upper ends lying in the paths of rotation of the heads of the bolts, whereby the nuts and bolts are locked against accidental turning.

8. In a rail-joint, the combination with abutted rail-sections, of opposite fish-plates embracing the joint between the rail-sections, headed fastenings piercing the fish-plates and the webs of the rail-sections, and locking-pins passed through openings in the flanges of the rails and having their upper ends lying in the paths of rotation of the heads of the fasteners to prevent accidental turning thereof.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LEVI T. STEPHENSON.

Witnesses:

WM. P. DUNLAVY,
S. D. IRISH.