

(No Model.)

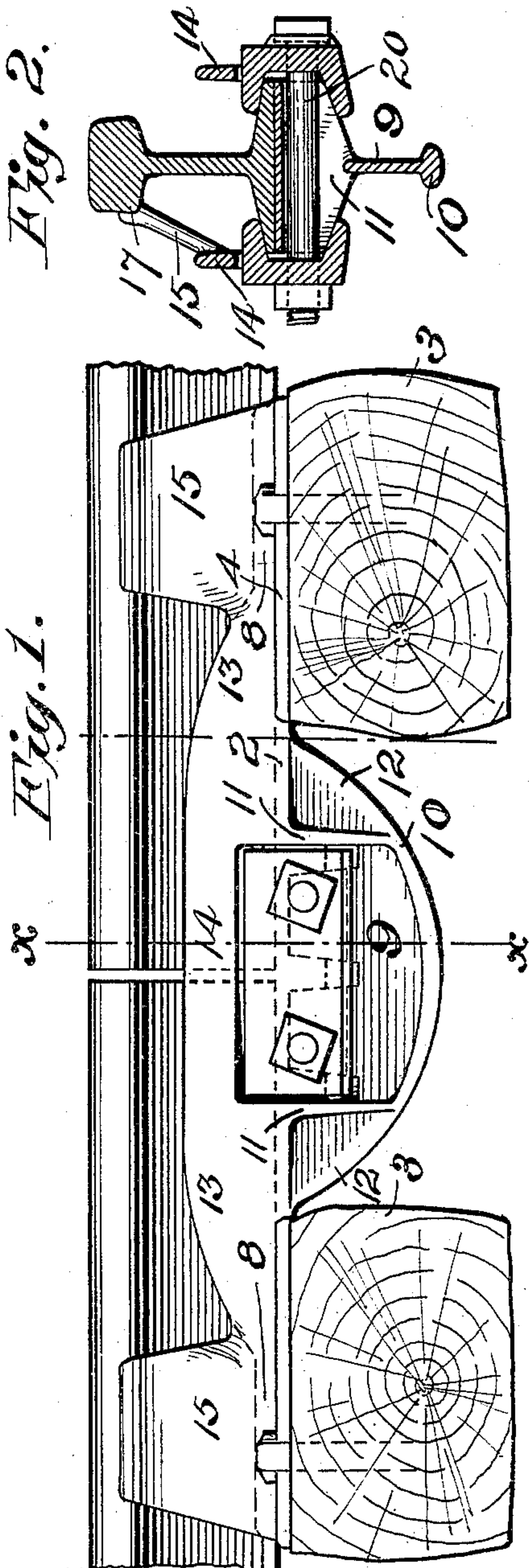
2 Sheets—Sheet 1.

F. H. HEATH.

COMBINED RAIL BRACE AND TRUSS FASTENING FOR RAIL JOINTS.

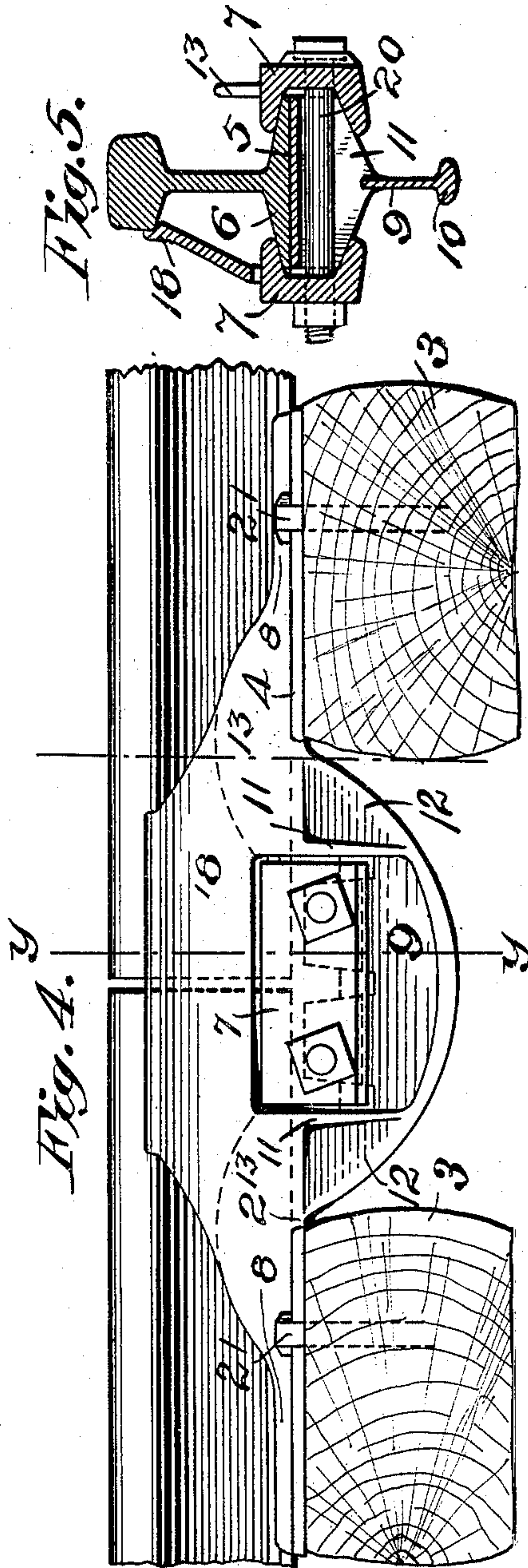
No. 474,128.

Patented May 3, 1892.



Witnesses,
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A. Hawley



Inventor,
Frederick H. Heath

By Paul & Merwin attys.

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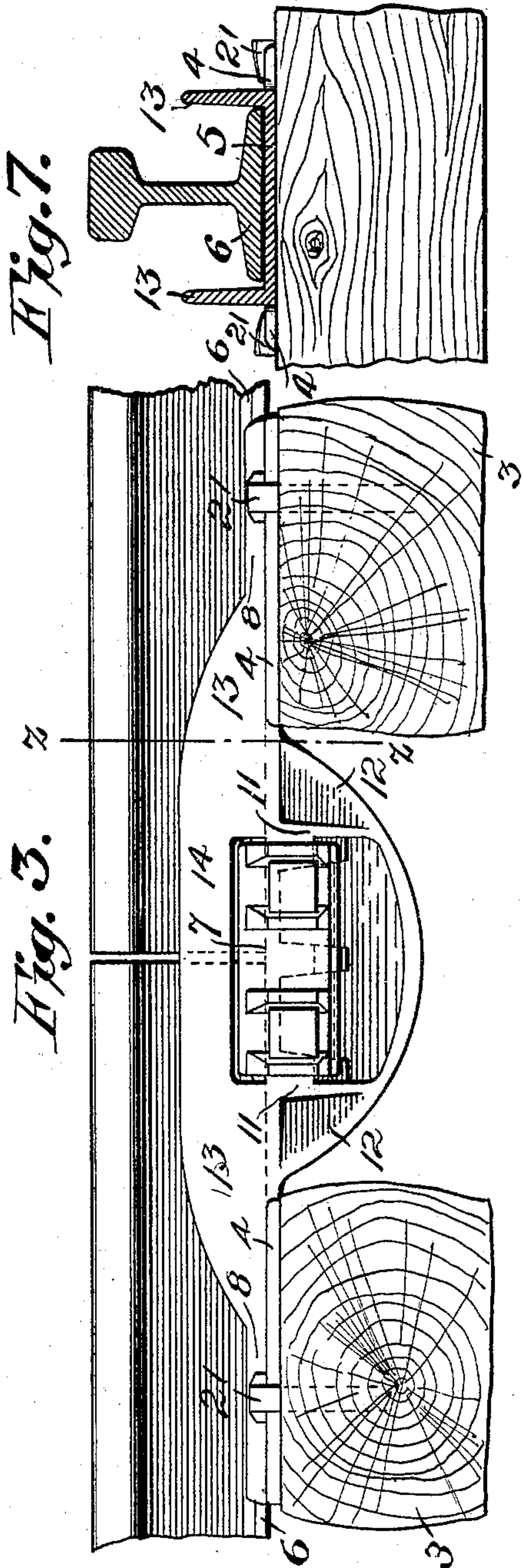
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F. H. HEATH.

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No. 474,128.

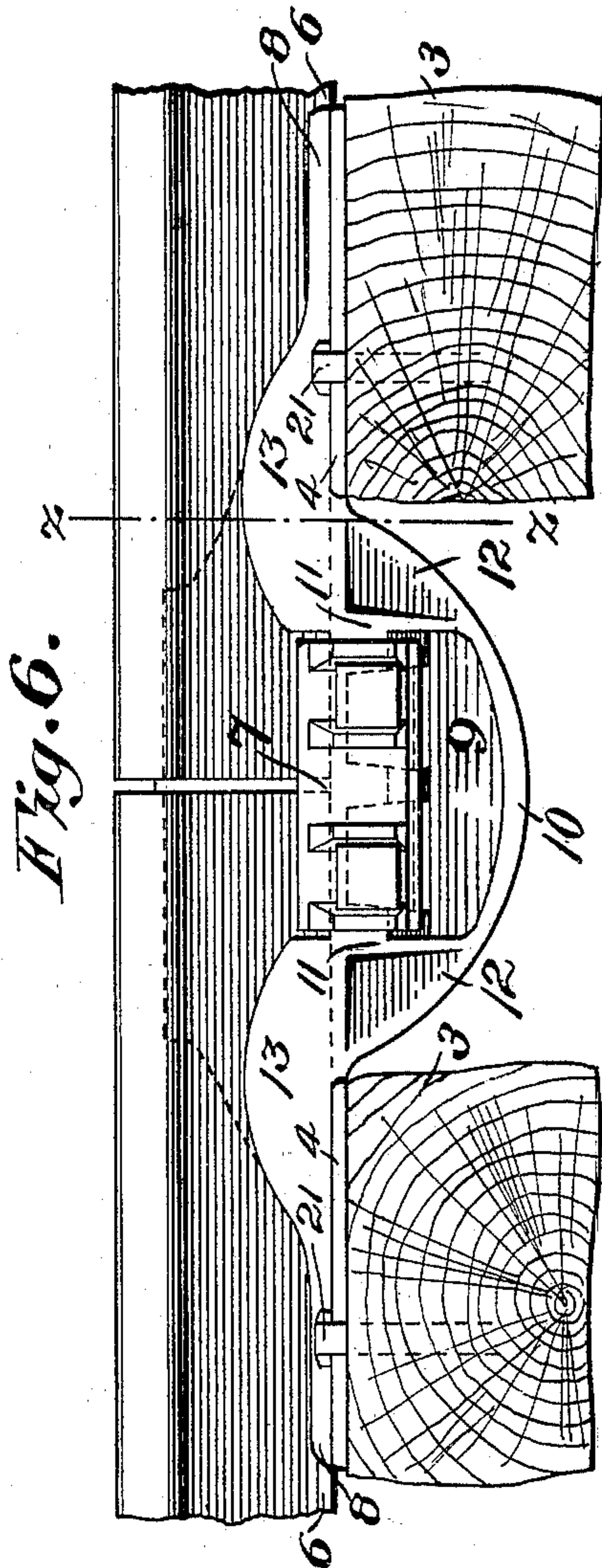
Patented May 3, 1892.



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UNITED STATES PATENT OFFICE.

FREDERICK H. HEATH, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE
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COMBINED RAIL-BRACE AND TRUSS-FASTENING FOR RAIL-JOINTS.

SPECIFICATION forming part of Letters Patent No. 474,128, dated May 3, 1892.

Application filed November 9, 1891. Serial No. 411,282. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK H. HEATH, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain Improvements in a Combined Rail-Brace and Truss-Fastening for Rail-Joints, of which the following is a specification.

My invention relates to means whereby rails are at once braced and their joints firmly and solidly fastened; and the object of the invention is to make the rail-joints as strong as any other part and to provide simple and economical means for so doing.

To this end my invention consists in the combination, with the rail or rails, of a plate whereon the same rest, said plate extending across the tops of the ties and provided with a central depending truss having its ends formed by laterally-extending parts and trusses arched over the top of the plate at the sides of the same, one of said trusses provided with an extension or extensions extending into engagement with the tread of the rail or rails to brace the same, said part or parts extending inwardly and upwardly from the truss parts; in a plate whereon the rails rest and itself resting upon the ties and provided with upwardly-extending trusses on its upper surface adapted to strengthen the middle part of the plate and with a brace extension or extensions engaging the rail-top; in means combined with the above for securing the rails thereto, and in various details of construction and in combinations, all as hereinafter described, and particularly pointed out in the claims.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation showing a combined joint and brace embodying my invention. Fig. 2 is a sectional view thereof on the line $x x$ of Fig. 1. Fig. 3 is a view of the other side of the joint shown in Fig. 1. Fig. 4 is a side elevation of a similar joint, the same differing from the other merely in the use of a single brace-extension in place of the two extensions shown in Fig. 1. Fig. 5 is a cross-section on the line $y y$ of Fig. 4. Fig. 6 is an elevation showing the other side of the joint shown in Fig. 4. Fig. 7 is a sectional

view on the line $z z$ of either one of the rail-joints and showing top trusses and the extended edges of the ends of the plate, whereby the plate is given a greater bearing-surface on the ties.

As shown in the drawings, the thin plate 2 extends across the two ties 3 and is provided on each end for a distance equal to the width of a tie with the extended edges 4, whereby a wide bearing is secured on the tops of the ties. The middle part 5 of the plate is of the same width as the rail-base 6, so that the clamp 7 may, if necessary, be forced clear against the edges of the base. This narrow part is long enough to accommodate the clamp 7, and then the rest of the plate is widened by the formation on the edges thereof of the vertical arched trusses 13 and the flanges 8, between which the rail-bases fit quite snugly, as shown plainly in Figs. 2, 5, and 7. The under side of the plate is strengthened by the depending truss, consisting of the web 9, the rib 10, and the transverse and the diagonal parts 11 and 12, respectively. All of these parts are cast integrally with the plate and are fully described and claimed in my prior applications on rail-joints. The outer ends of the arch trusses formed on the top surface of the rail-plate extend about half-way over onto the rail-chair ends of the plate—that is, the parts of the plate covering the ties. It will be seen that the upper ends of the depending truss merge into the bottom of the plate about at the junction of the same with the inner edges of the ties 3. The office of the top trusses is to strengthen the plate at just these points to prevent the springing or breaking of the plate over the edges of the ties. I therefore raise the highest points of the top or arch trusses above these points and carry the inner ends thereof back to the meeting points with the ends of the clamp 7. As shown in the different figures, so long as this strengthening is accomplished the specific form of the top trusses may be altered somewhat. For instance in Figs. 1, 2, and 3 the inner ends of the top or arched trusses 13 are integrally joined by the connection 14 springing over the clamping-blocks 7, thus tying the ends firmly together and greatly strengthening the whole joint. In connection with

these arched trusses for strengthening the plate over the junctions with the ties I provide other upwardly-extending parts for bracing the rail or rails. These braces are arranged on the outside of the rail, and, as shown in Figs. 1 and 2, consist of upwardly and inwardly extending lugs or plates 15, raised upon the ends of the trusses 13 and from the low ribs or flanges 8 and formed integrally therewith. Each brace 15 is provided with a longitudinal notch or groove to accommodate the corner 17 of the rail-tread, and being slanted inwardly they form very strong rail-braces. In place of these braces 15 I may provide one solid brace-plate 18, as shown in Figs. 4, 5, and 6, and formed directly with and above and between the inner parts of the arch trusses. With this construction I gain an exceedingly-strong supplemental truss or brace directly over the middle of the plate. Owing to the size of the brace-plate 18 it gives the rail a greater rigidity and strength than would result from the use of a part 14 on both sides of the plate. I therefore cut out a portion corresponding to a part 14 on the opposite side of the Fig.-4-and-6 plate and terminate the inner ends of the trusses 13 at the points where they meet the ends of the block 7, thereby in some respects rendering the plate easier to mold.

All parts of my combined truss joint and brace are cast integrally and of soft steel or malleable iron, and owing to the strengthening qualities of the several trusses all parts may be made thin and light. The bolts 20, which secure the clamping-blocks 7, pass through openings provided in the web of the depending truss. The rails are fastened upon the ties by usual spikes 21, which are accommodated by notches provided in the extended edges 4 of the plates. I thus provide a light, strong, cheap, and durable rail joint and brace in which no holes or bolts passing through the rail-web are used.

Any convenient means may be provided in connection with the plate for preventing the rails from sliding thereon.

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

1. The combination, with the rail or rails, of a plate for the same to rest upon, said plate extending across and between adjoining ties, a depending truss arranged centrally on said plate and having laterally-extended ends, arch trusses arranged on the upper surface of the plate and adapted to retain the rail base or bases, blocks for clamping the same on the plate and secured by bolts passing beneath the plate, said arch trusses having their ends extended to meet the ends of said blocks, the highest points of said arch trusses being above the junctions of the plate and ties, the outer ends of the trusses being thence slanted downwardly, and means for fastening the whole upon the ties, substantially as described.

2. The combination, with the rail or rails,

of a plate extending between and across adjoining ties and whereon said rail or rails rest, with vertical arch trusses arranged on the upper surface of said plate, means for securing the rail or rails on said plate, and a rail-brace extending upwardly and inwardly from and formed integrally with the trusses of one side of the plate, substantially as described.

3. A combined rail joint and brace comprising a plate to extend across two ties and whereon the rails are adapted to rest, arch trusses arranged vertically on said plate and between which the rail-bases are adapted to fit, and a rail brace or braces constituted by an inwardly-inclined plate or plates formed integrally therewith, substantially as described.

4. A combined rail joint and brace consisting of a plate whereon the rails are adapted to rest and extending across adjoining ties, vertical arch trusses formed on the upper surface of the plate, the inner portions of the same connected by an integral part 14, and a rail-brace formed in integral connection therewith, substantially as described.

5. The combination, with the rail or rails, of a plate arranged beneath the same and extending across adjoining ties, with a truss for the lower side of said plate and integral therewith, arch trusses formed upon the upper surface of the plate, and connecting portions 14, sprung over the middle of the plate and integrally connecting the pairs of arch trusses, substantially as and for the purpose specified.

6. The combination, with the rail or rails, of the plate whereon the same are adapted to rest, said plate adapted to extend across adjoining ties, arch trusses arranged vertically on the upper surface of the plate, said arch trusses being disposed to strengthen the plate at the points of the junction between the same and the ties, and an inwardly-slanting rail-brace extending from and connecting the arch trusses on one side of the plate, the upper edge of the rail-brace adapted to engage the tread of the rail, and said plate and truss and brace parts all formed integrally, substantially as described.

7. The combination, with the rail or rails, of the plate whereon the same are adapted to rest, said plate adapted to extend across adjoining ties and provided with a depending truss, arch trusses arranged vertically on the upper surface of the plate, said arch trusses being disposed to strengthen the plate at the points of junction between the same and the ties, flanges to engage the edge of the rail-base and forming continuations of said trusses on the upper surface of the plate, and an inwardly-slanting rail-brace extending from and connecting the arch trusses on one side of the plate, the upper edge of the rail-brace adapted to engage the tread of the rail, and said plate, trusses, flanges, and brace being all formed integrally, substantially as described.

8. The combination, with the rail or rails, of a plate for the same to rest upon, said plate

extending across and between adjoining ties, an integral depending truss arranged centrally beneath said plate and having laterally-extending ends, arch extension-trusses arranged on the upper surface of the plate and adapted to retain the rail base or bases, clamping-blocks secured by bolts passing beneath the plate, said arch trusses having their inner ends extended to meet the ends of said blocks, the highest points of said arch trusses being above the junction of the plate and ties, the outer ends of the trusses being thence slanted downwardly, and a rail-brace formed by an upwardly and inwardly slanting extension of the arch trusses of one side of the plate, substantially as described.

9. The combination, with the rail or rails, of the plate having its ends provided with the

extended edges, vertical arch trusses sprung above the junction-points of the plate and ties, the flanges, extending from said arch trusses along the edges of the rail-base, clamping-blocks for securing the rail or rails upon said plate, an inwardly and upwardly slanting rail-brace proceeding from the arch trusses upon the plate, the whole being formed integrally, and means whereby longitudinal movement of the rail or rails upon the plate is prevented, substantially as described.

In testimony whereof I have hereunto set my hand this 22d day of October, 1891.

FREDERICK H. HEATH.

In presence of—

C. G. HAWLEY,
F. S. LYON.