

No. 680,335.

Patented Aug. 13, 1901.

J. LANZ.
RAILWAY CROSS TIE.

(Application filed July 16, 1900.)

(No Model.)

2 Sheets—Sheet 1.

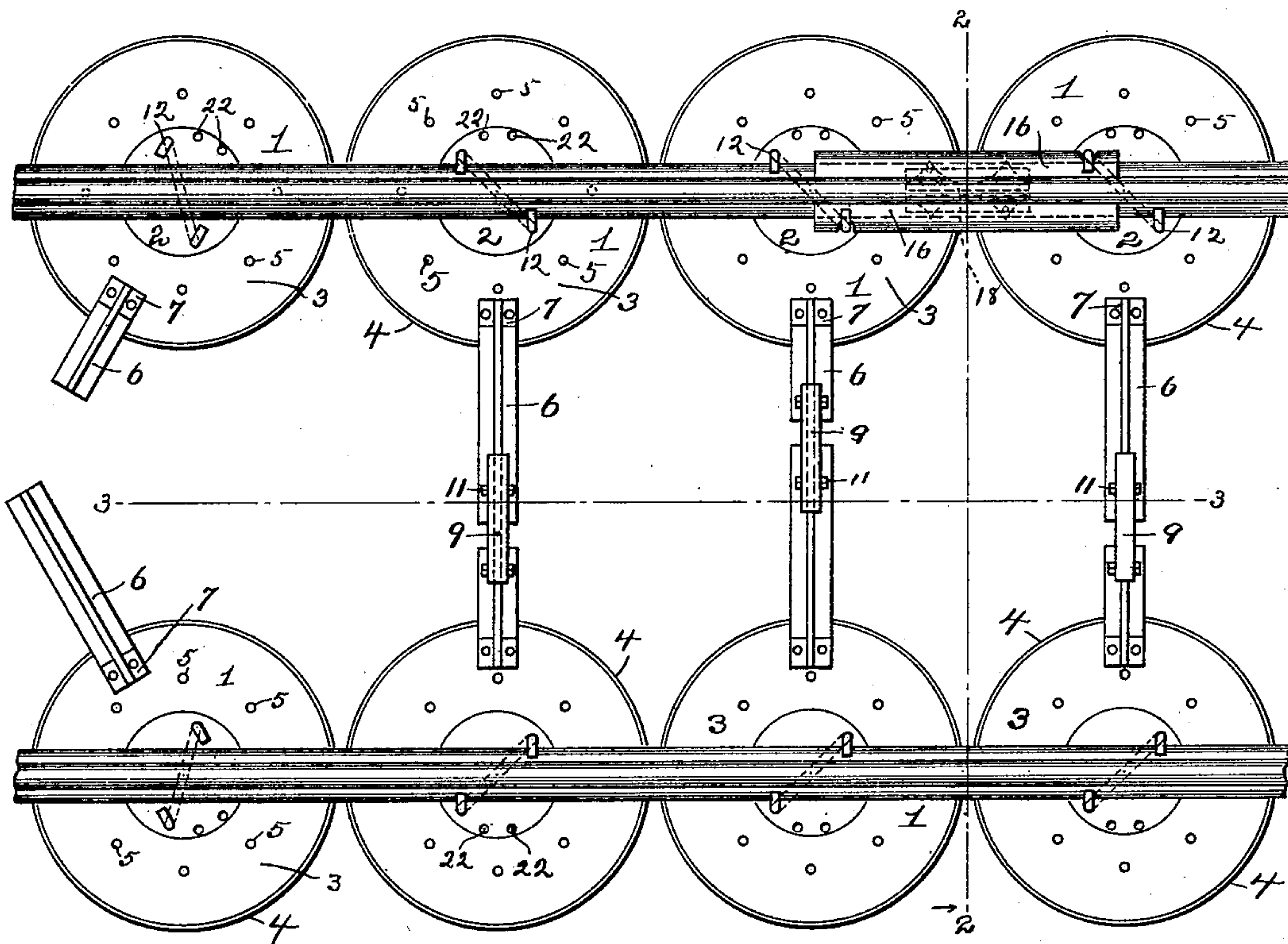


Fig. 1

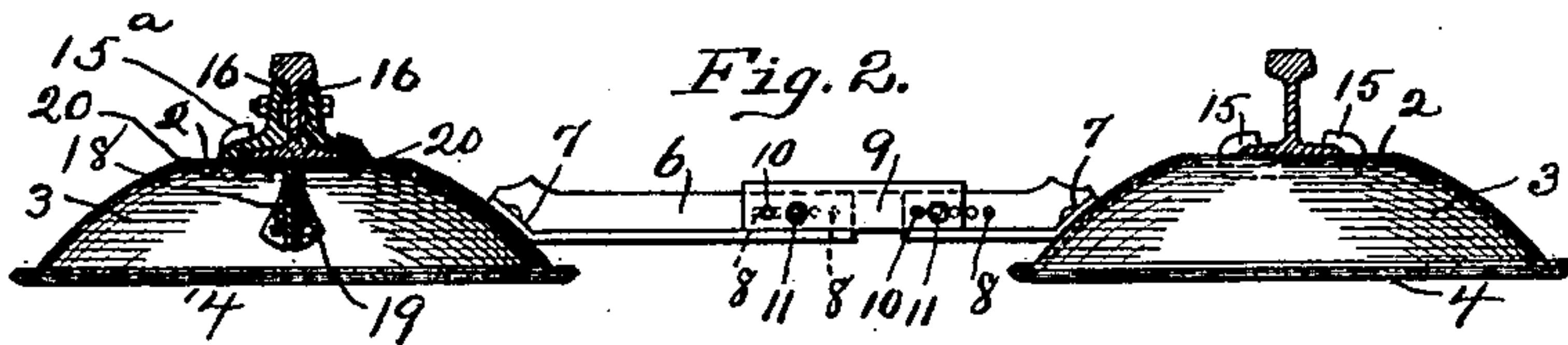


Fig. 2.

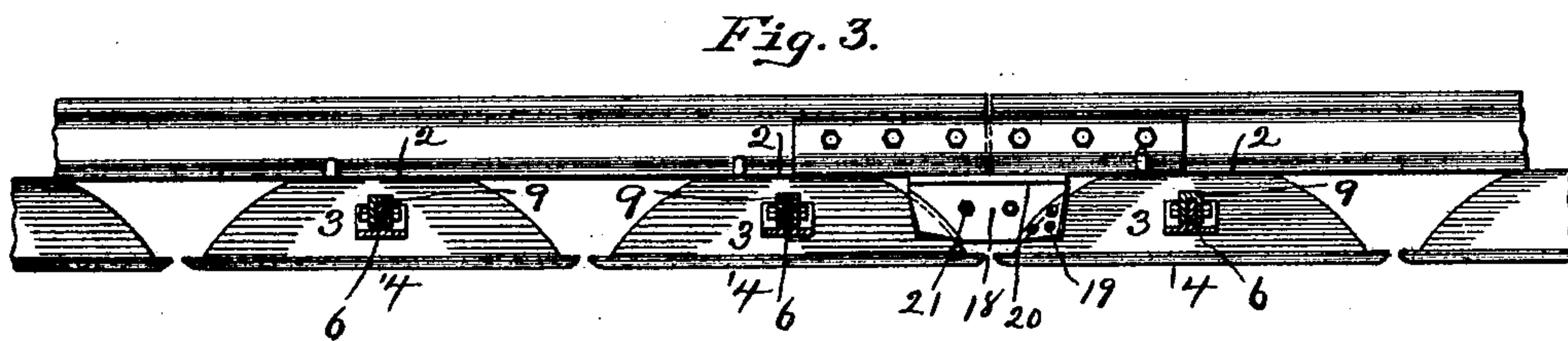


Fig. 3.

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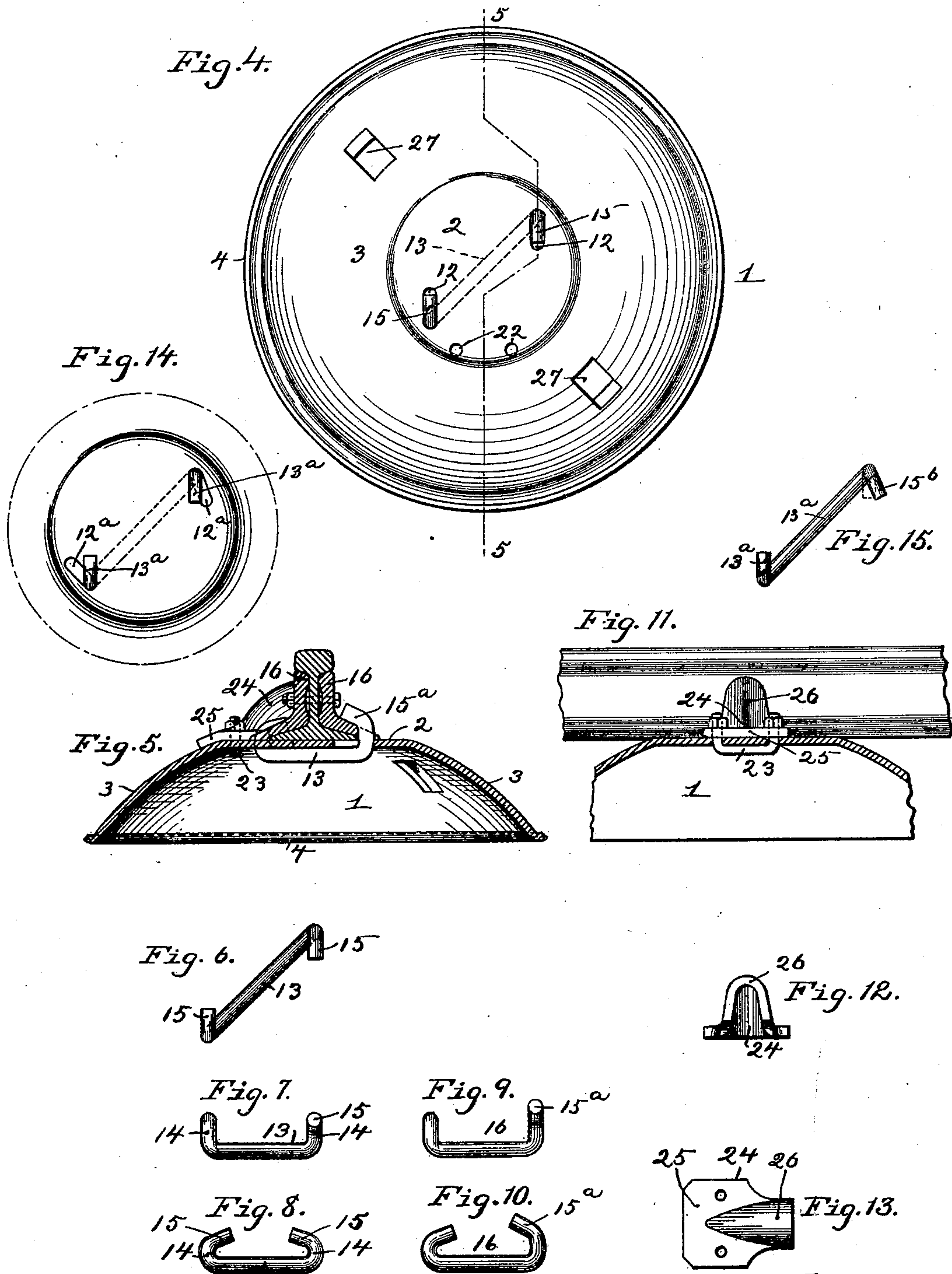
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UNITED STATES PATENT OFFICE.

JOHN LANZ, OF PITTSBURG, PENNSYLVANIA.

RAILWAY CROSS-TIE.

SPECIFICATION forming part of Letters Patent No. 680,335, dated August 13, 1901.

Application filed July 16, 1900. Serial No. 23,735. (No model.)

To all whom it may concern:

Be it known that I, JOHN LANZ, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Railway Cross-Ties; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to metallic cross-ties for railways, and has for its object a device of this character embodying the greatest amount of strength and solidity for the amount of metal, which is easily adjustable to suit the width of the tracks and which is provided with means for readily securing the rail thereto or taking a rail out and replacing it by another.

To enable others skilled in the art to make and use my invention, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a plan view of a section of track with my improved cross-tie applied thereto. Fig. 2 is a transverse section on the line 2 2, Fig. 1. Fig. 3 is a longitudinal section on the line 3 3, Fig. 1. Fig. 4 is a plan view of a modified form of one of the bowl-shaped members. Fig. 5 is a transverse section thereof on the line 5 5, Fig. 4. Fig. 6 is a top view of the clamping member. Fig. 7 is a side view of the same. Fig. 8 is an end view of the same. Fig. 9 is an end view of a modified form of clamp. Fig. 10 is a side view of the same. Fig. 11 is a longitudinal section showing a side brace for the rail. Fig. 12 is an end view of the brace. Fig. 13 is a plan view of the same. Fig. 14 is a plan view of a modified form of bowl and clamp, and Fig. 15 is a plan view of the clamp as it appears before being put in place.

Each cross-tie comprises two members 1 1, which are circular in plan view and are substantially in the form of an inverted bowl, as shown. These members are all made of one size or standard, so that they can be used in any place in the track, and are formed by suitably pressing up heated steel plates. They are provided with the flat top 2 and with the rim 3, forming a rounded and broadened base 4, and are also provided with suitably-spaced holes 5 5 for receiving a spanner for turning said members, as will hereinafter more fully appear. To each of said members

is suitably secured, as by means of bolts or rivets, a section of T-bar 6, the said bar forming an arm and having its ends suitably turned up, as at 7, to conform to the shape of the sides of the bowl 1 and having its free end provided with a series of perforations 8. These bars or arms 6 are of two lengths, and a bowl provided with a long bar or arm will be united to one provided with a short bar or arm, and the long and short bars will be arranged alternately on opposite sides of the track, as shown in Fig. 1. The legs of the T-bars 6 are straddled by a channel-piece 9, provided with suitable perforations 10 at its ends for receiving the fastening-bolts 11. By arranging the long and short bars 6 alternately on opposite sides of the track or two or more long arms alternately with two or more short arms the coupling members 9 are out of line with each other, so that the tendency of said coupling members to knuckle or bend is greatly reduced. The perforations 8 in the long bar 6 are spaced apart a certain distance—say one and one-eighth inches—from center to center, and the corresponding perforations of the short bars are spaced apart a different distance—say one inch—from center to center, while the four perforations 10 in the coupling members 9 are placed so that the three distances between them are all different. By this simple arrangement it is possible by shifting the bolts 11 in said perforations to secure a very wide adjustment of the members 1 1, there being thirty-five different combinations in which the distance between the ends of the T-bars varies from zero to seven inches.

The flattened top 2 of the bowl 1 is provided with slots 12 12, said slots being located on opposite sides of the base of the rail when in place and at right angles to the axis of said rail and diagonally with reference thereto. Projecting through these slots is the clamping member 13, said member being formed, preferably, of a round rod or bar having its body lying within the bowl, with the vertical portions 14 projecting upward through the slots 12 12 and its ends bent over to form the hooks 15 15 for taking over the base of the rail. The clamping members 13 are inserted through the holes 12 12 and the bowls are placed in the position shown at the left

of Fig. 1, and after the rail is laid across the top of said bowl the latter is turned by means of a spanner inserted in the openings 5 5 until the bowl is brought to the position at the right of Fig. 1. In the first-named position the openings 12 12 are substantially on diametrically opposite sides of the rail, so that the space between the ends of the hooks 15 is greater than the width of the rail-base, thereby permitting the latter to be put in place; but when the bowls 1 are turned to the positions shown at the right of Fig. 1 the openings 12 12 are brought so that they lie diagonally on opposite sides of the base of the rail, thereby bringing the hooks 15 over the base of the rail and firmly securing the latter in place. If at any time it is desired to remove a rail, it is merely necessary to loosen the coupling members 9 of all the cross-ties relating to said rail, when by the use of the spanner, as above described, the members 1 1 can be turned to the position indicated at the left of Fig. 1, thereby permitting the rail to be removed and another put in its place, after which the members 1 1 are turned back to their normal positions and the coupling members 9 put in place. The circular form of the members 1 1 permits of this rotation even when deeply embedded in the ballast and without materially disturbing the latter.

When the members 1 1 are located beneath or adjacent a rail-joint, the clamping members 13 must be modified so that one or both of the hooks thereof will pass over the splice-bars. This modification is shown in Figs 2, 5, 9, and 10, wherein 16 represents the splice-bar and 15^a the modified hook, the same being more open than in the usual form, so that it will receive, in addition to the rail-base, the lower flange of the splice-bar. In actual practice it will be found necessary to provide two standard forms of clamping members, one such as shown in Figs. 6, 7 and 8, wherein both hooks 15 are of the same size, and the other of the form shown in Figs. 9 and 10, wherein the hook 15^a on one end of said clamping member is wider than the hook 15 on the opposite end thereof.

At each rail-joint two adjacent members 1 1 are preferably united by the flange-pieces 18, said pieces having the corners of one leg bent, as shown at 19, to conform to the shape of the bowls 1 and are suitably secured thereto, as by means of bolts or rivets. The other legs of said flange-pieces lie in a horizontal position, as shown at 20, and the two pieces are suitably united, as by means of bolts 21. The horizontal legs 20 of said flange-pieces form a support for the ends of the rails, as shown in Figs. 1 and 3. These angle-pieces are also suitable for making a continuous rail-support, such as is desired in street-railways, in which case each member 1 would be united to the adjacent members by these angle-pieces. Whenever a switch is to be placed along the track, several members or bowls 1

may be secured together by these angle-pieces and placed across the track-bed and used to support the switch rails and stand.

On curves and at other portions of tracks it is desirable to provide an additional brace for the lateral strain to which the rail is subjected, and to this end I provide each of the bowls 1 1 with the perforations 22, which are adapted to receive U-bolts 23, by means of which the braces 24 are secured in place and prevented from turning, said braces having one end flat, as at 25, and suitably perforated for receiving the U-bolts 23 and having their opposite end bent up in inverted-U form, as shown at 26, and abutting against the web of the rail.

In Figs. 4 and 5 the bowl 1 is shown provided with openings 27 in the curved side thereof, through which openings a bar may be inserted to hold the clamping member 13 up in position to engage the rail and prevent its falling down into the bowl. A bar inserted through the openings 27 may be used to rotate the bowls in place of the spanner heretofore described.

In the modification shown in Figs. 14 and 15 the slots 12^a in the top of the bowl are not at right angles to the axis of the rail, but are inclined with reference to the same, and the clamping member 13^a is made in the form shown in Fig. 15, with the hook 15^b substantially at right angles to the body. This clamping member is introduced through the slots 12^a, and the hook 15^b is then bent to the position shown by dotted lines in Fig. 15, so that said clamping member cannot fall through the slots 12^a.

In the use of my cross-tie the bowls 1 are embedded in the ballast or earth, and the latter is tamped firmly into the interior thereof, so that said bowls practically rest upon a cone of ballast, so that they may be readily rotated when necessary to remove and replace a rail. By making these bowls of pressed steel and in circular form this rotation is provided for, and at the same time I secure the greatest strength for the amount of metal used. It also leaves open spaces about said bowls, so that the ballast can be firmly tamped into the same on all sides thereof. If desired, tie-plates or wearing-plates may be placed between the bowls and rails.

The cross-tie constructed according to my invention is exceedingly strong and easy of application to the rails and permits the latter to be removed and replaced when necessary.

What I claim, and desire to secure by Letters Patent, is—

1. A metallic railway cross-tie comprising two inverted-bowl-shaped members adapted to be embedded in the road-bed, means for securing the rail to the top thereof, an arm united to each of said members, and adjustable means uniting the ends of said arms.

2. A metallic railway cross-tie comprising two bowl-shaped members adapted to be embedded in the road-bed, means for securing

the rail to the top thereof, an arm united to each of said members, said arms being of different lengths, and means for uniting the ends of said arms, the members with the long and short arms being alternately on opposite sides of the track.

3. A metallic railway cross-tie comprising two circular members, separate hook-shaped clamps secured to said members, said clamps being arranged diagonally to the line of the rail-base and engaged by a portion of said members so as to be incapable of movement when engaging said base, and detachable cross connections between said members.

4. A metallic railway cross-tie comprising two circular members provided with openings arranged diagonally to the line of the rail-base, clamps comprising a bar having hook-shaped ends projecting through said openings and adapted to engage the rail-base, said hook-shaped ends being held against the rail-base by the walls of the openings through which they pass, and detachable cross connections between said circular members.

5. A metallic railway cross-tie comprising an inverted-bowl-shaped member adapted to be embedded in the road-bed and to be rotated in place, said member having a flat top with openings arranged diagonally to the line of the rail-base, and hook-shaped clamps extending through said openings and adapted to engage the rail-base, said clamps being held against the rail-base by the walls of the openings through which they pass.

6. A metallic railway cross-tie comprising two members adapted to be embedded in the ballast, T-bars united to each of said members and U-shaped clamping-pieces for uniting the ends of said bars.

7. A metallic railway cross-tie comprising two or more circular members, adapted to be embedded in the road-bed, angle-irons uniting adjacent members, said angle-irons having their upper faces flush with the top of said members whereby they serve to support the rail.

8. A metallic railway cross-tie comprising inverted-bowl-shaped members adapted to be embedded in the road-bed, and flange shapes secured to adjacent members, said flange shapes having their upper faces flush with the top of said members.

9. A metallic railway cross-tie comprising two members adapted to be embedded in the road-bed, an arm secured to each of said members, said arms having a series of holes in their outer ends, the holes in one arm being differently spaced from the holes in the other arm, a coupling member also suitably perforated, and bolts or pins for uniting said coupling member to said arms.

10. A metallic railway cross-tie comprising two members adapted to be embedded in the road-bed, an arm united to each of said members, said arms having a series of holes in their outer ends, the holes in one arm being differently spaced from the holes in the other arm, a coupling member having a plurality of holes at each end spaced differently from each other and from the holes in the arms, and bolts or rivets for uniting said coupling member and arms.

In testimony whereof I, the said JOHN LANZ, have hereunto set my hand.

JOHN LANZ.

Witnesses:

F. W. WINTER,
ROBERT C. TOTTEN.