

No. 656,986.

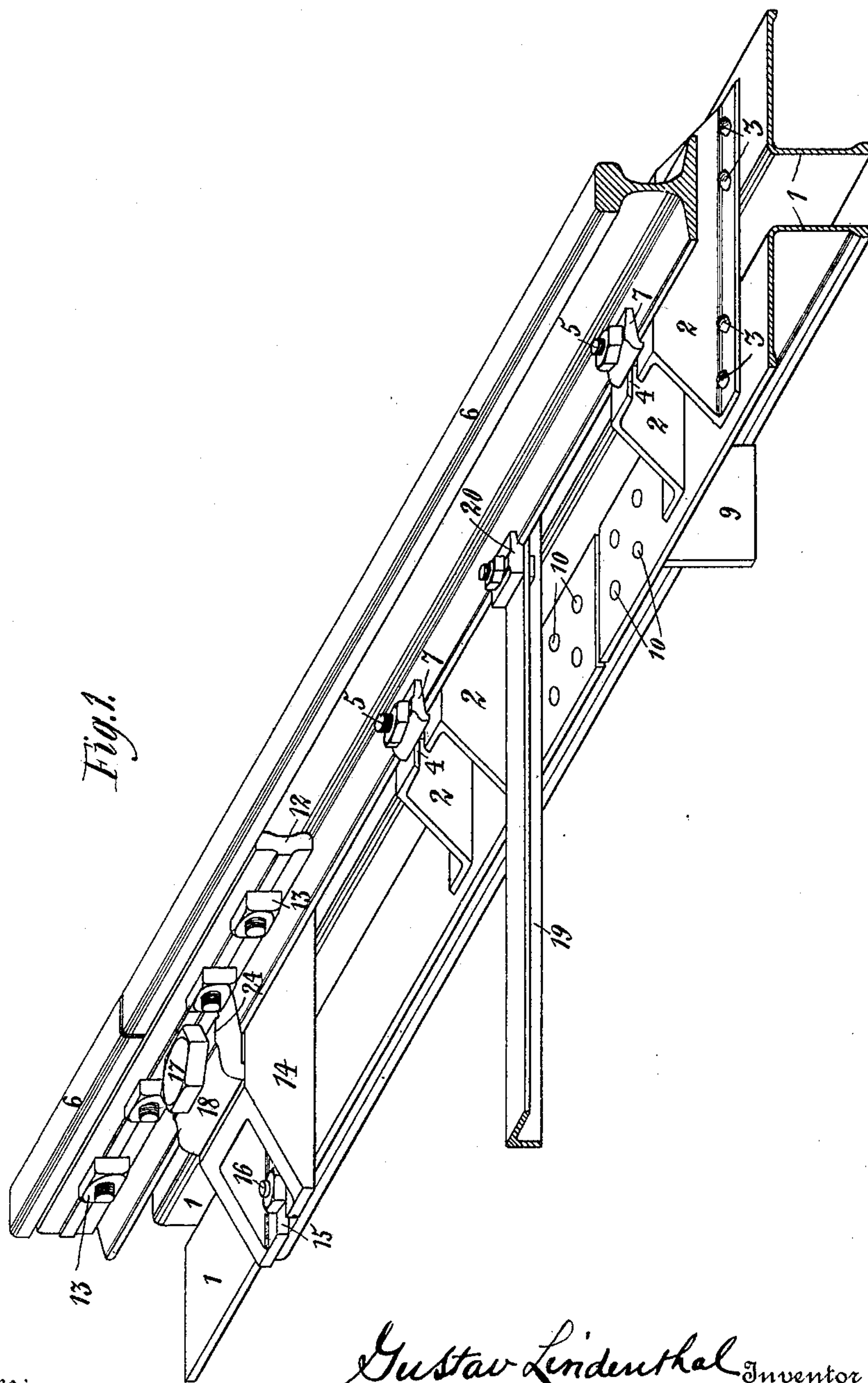
Patented Aug. 28, 1900.

G. LINDENTHAL.
CONSTRUCTION OF RAILROAD TRACKS.

(Application filed July 20, 1899.)

(No Model.)

5 Sheets—Sheet 1.



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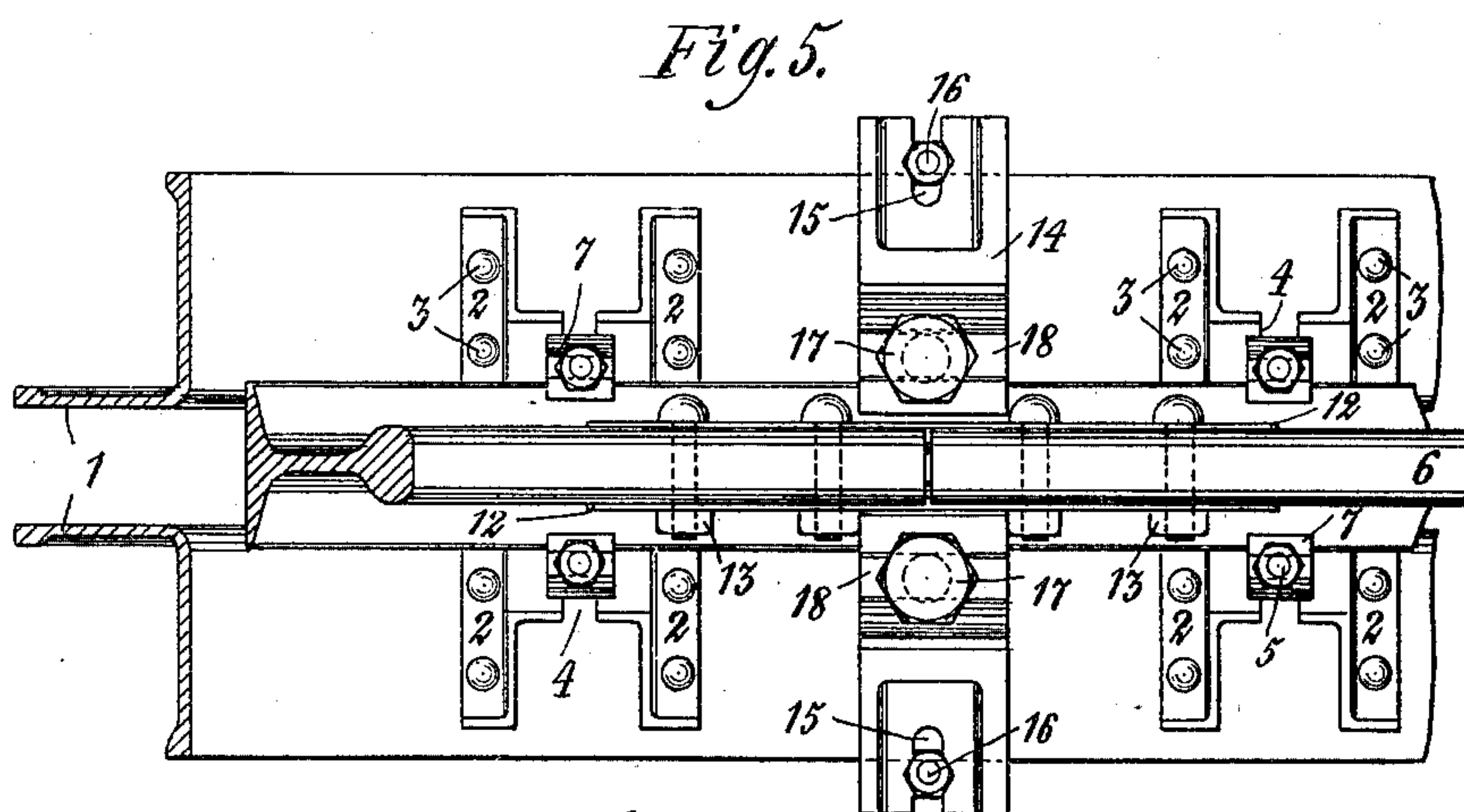
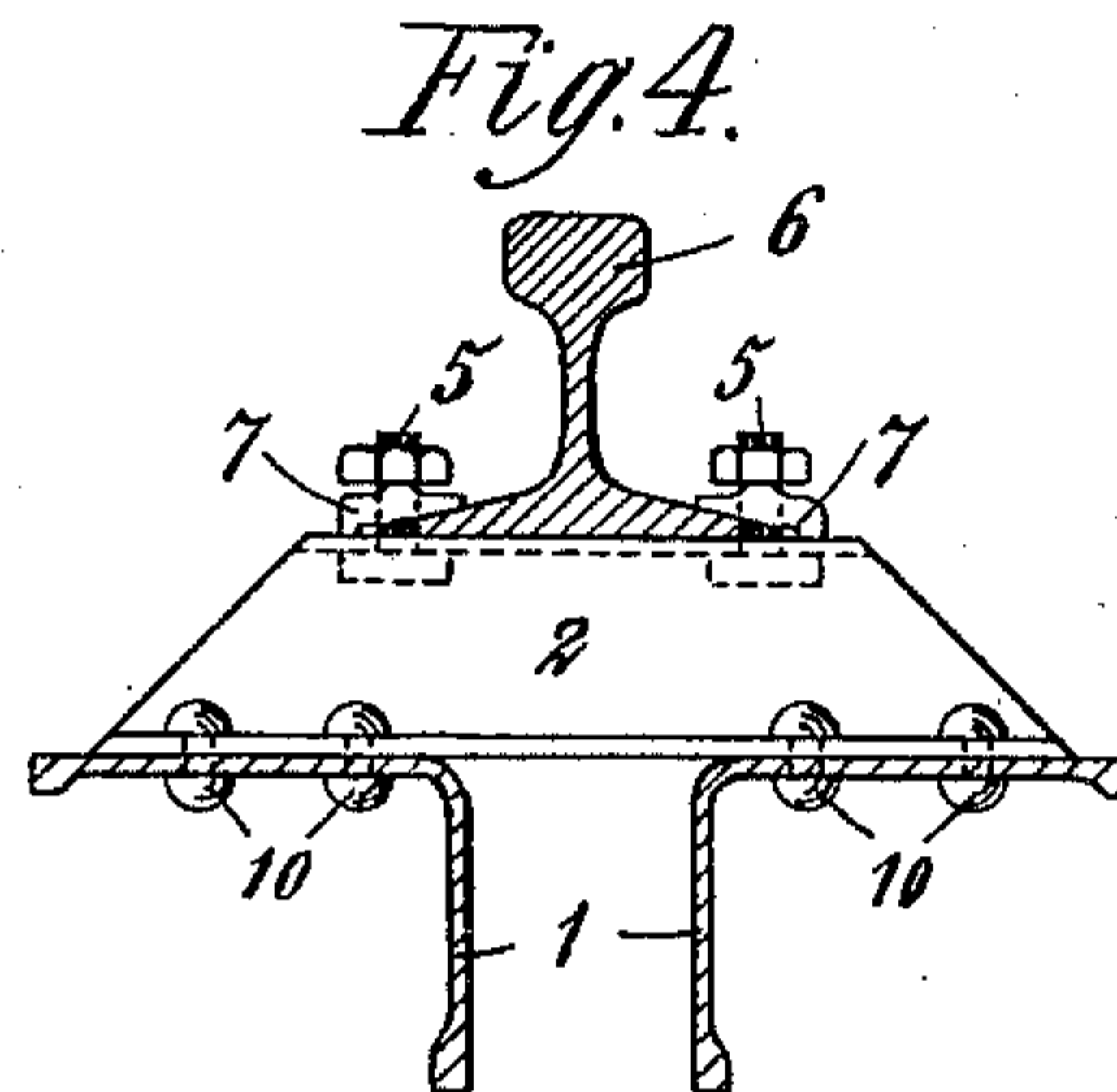
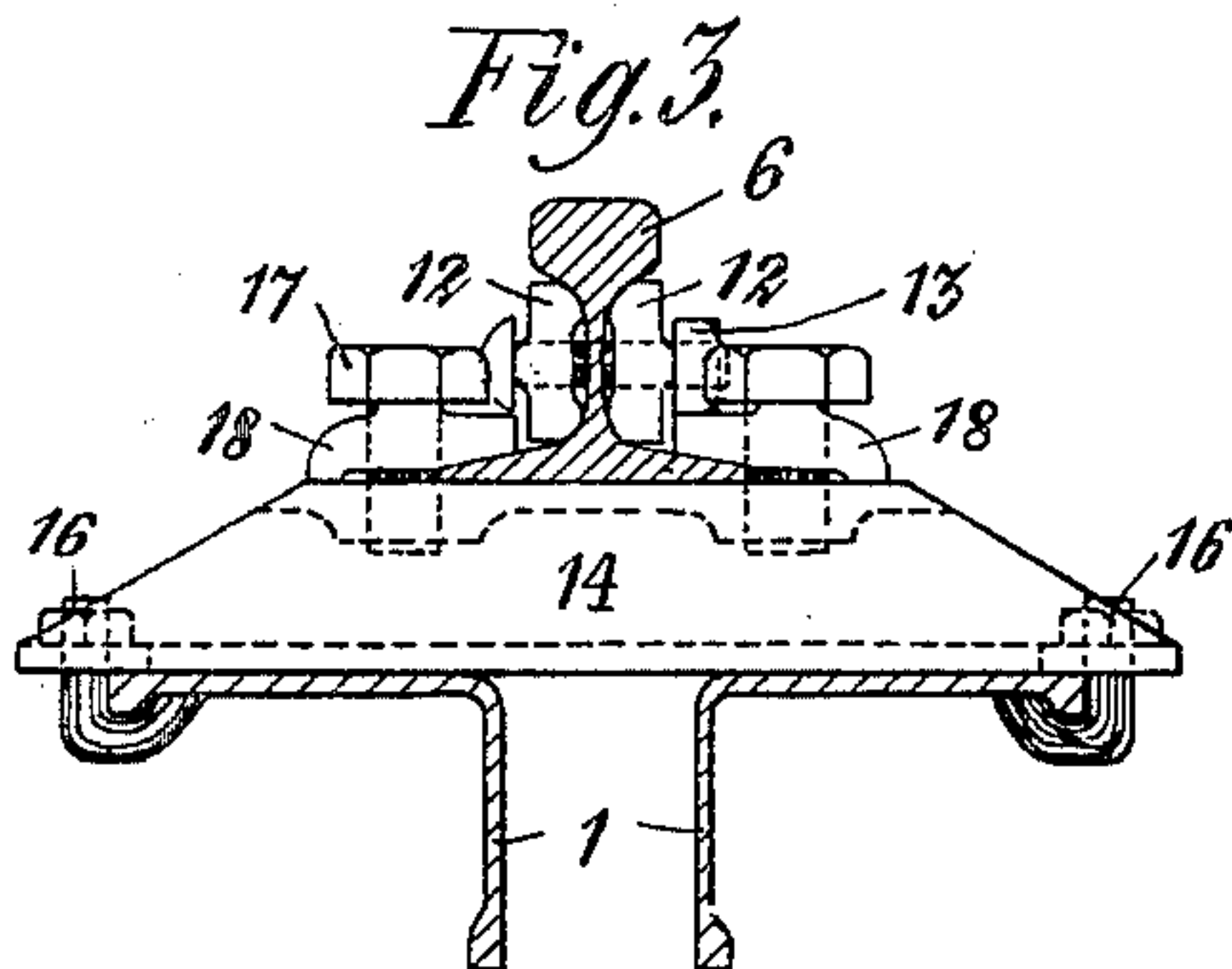
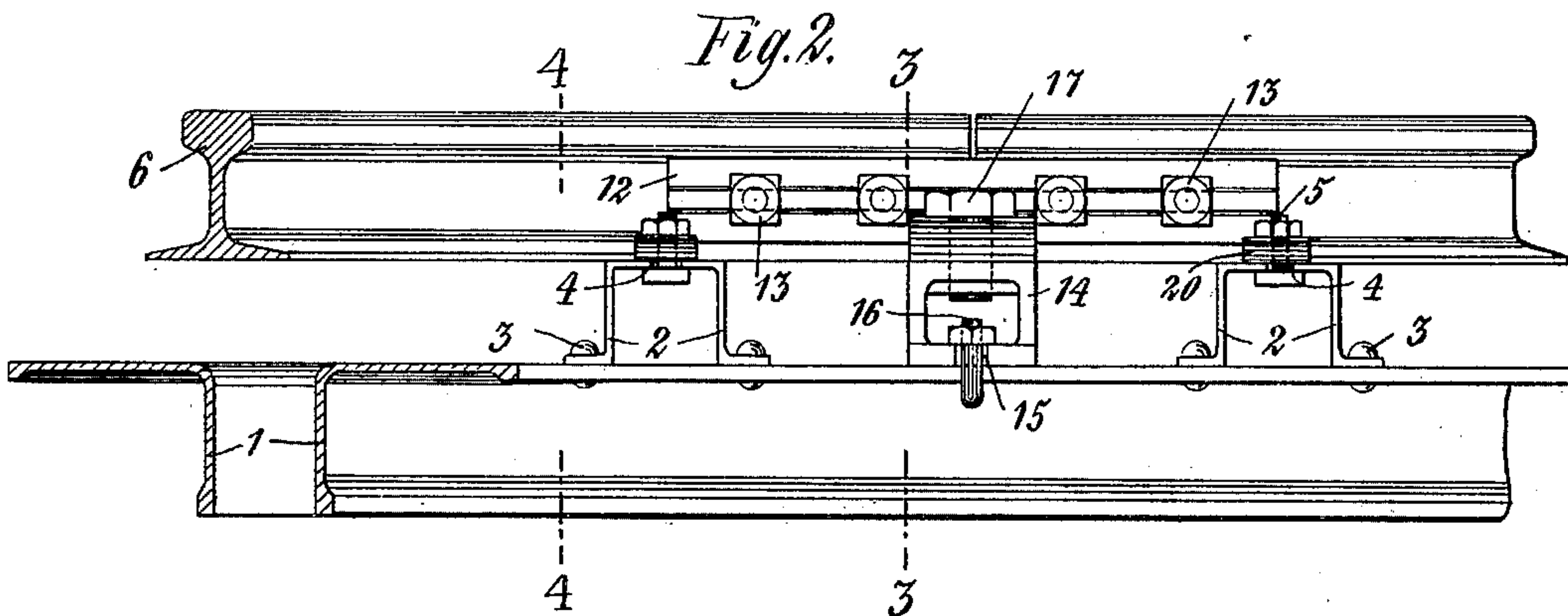
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5 Sheets—Sheet 2.



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5 Sheets—Sheet 3.

Fig. 6.

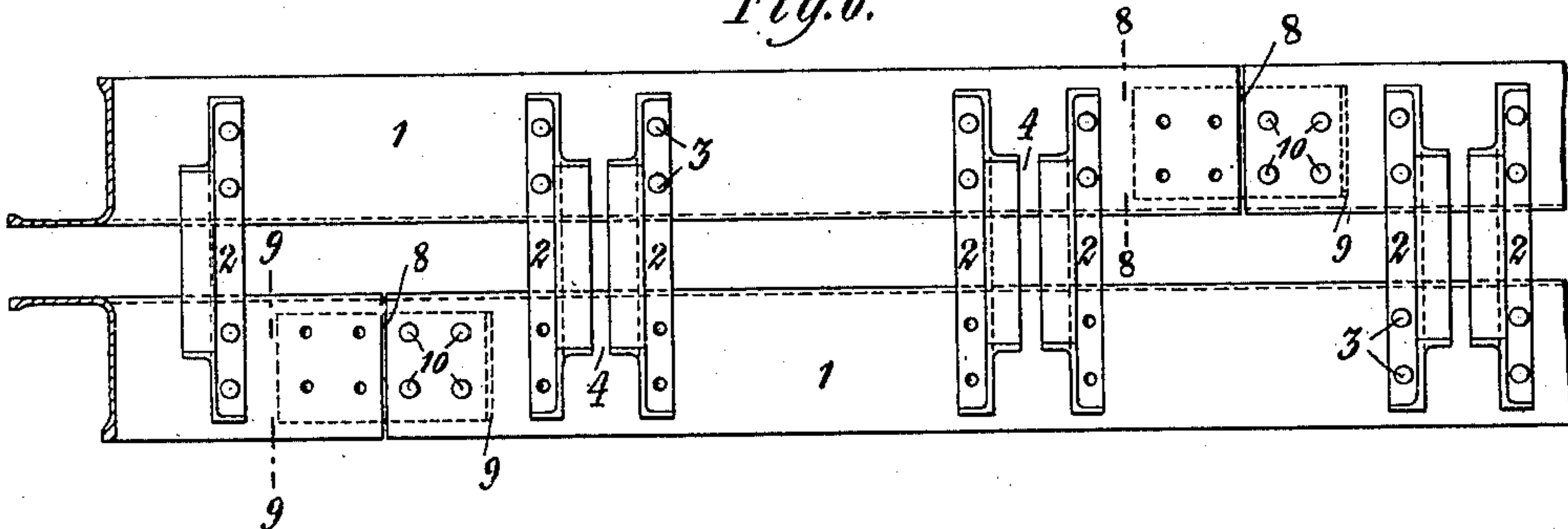


Fig. 7.

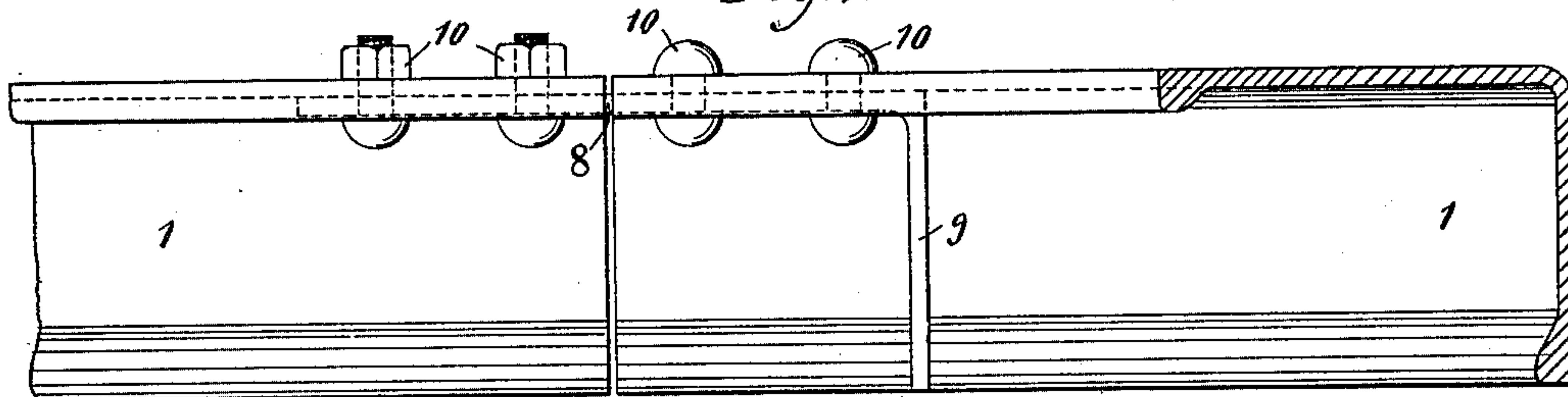


Fig. 8.

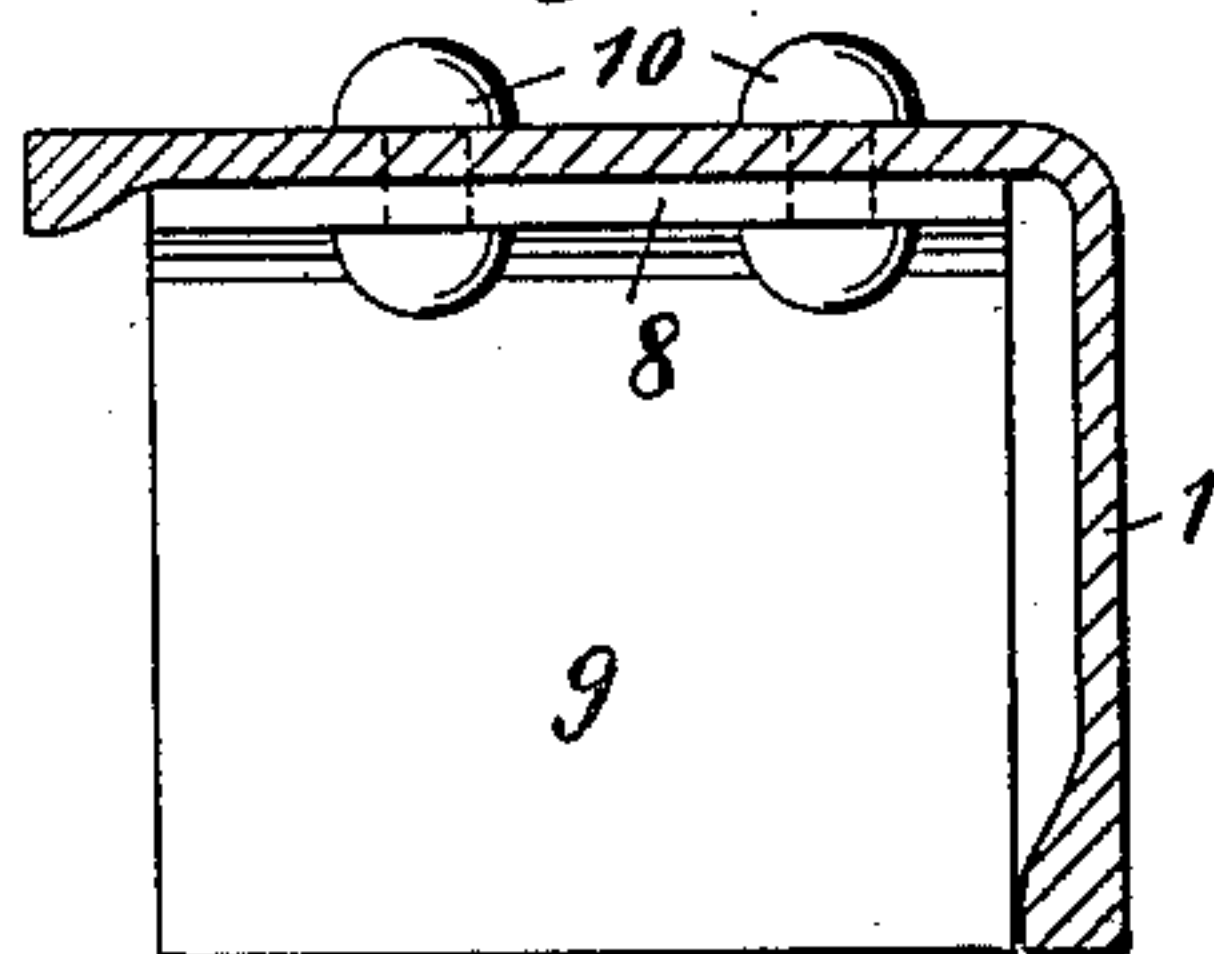
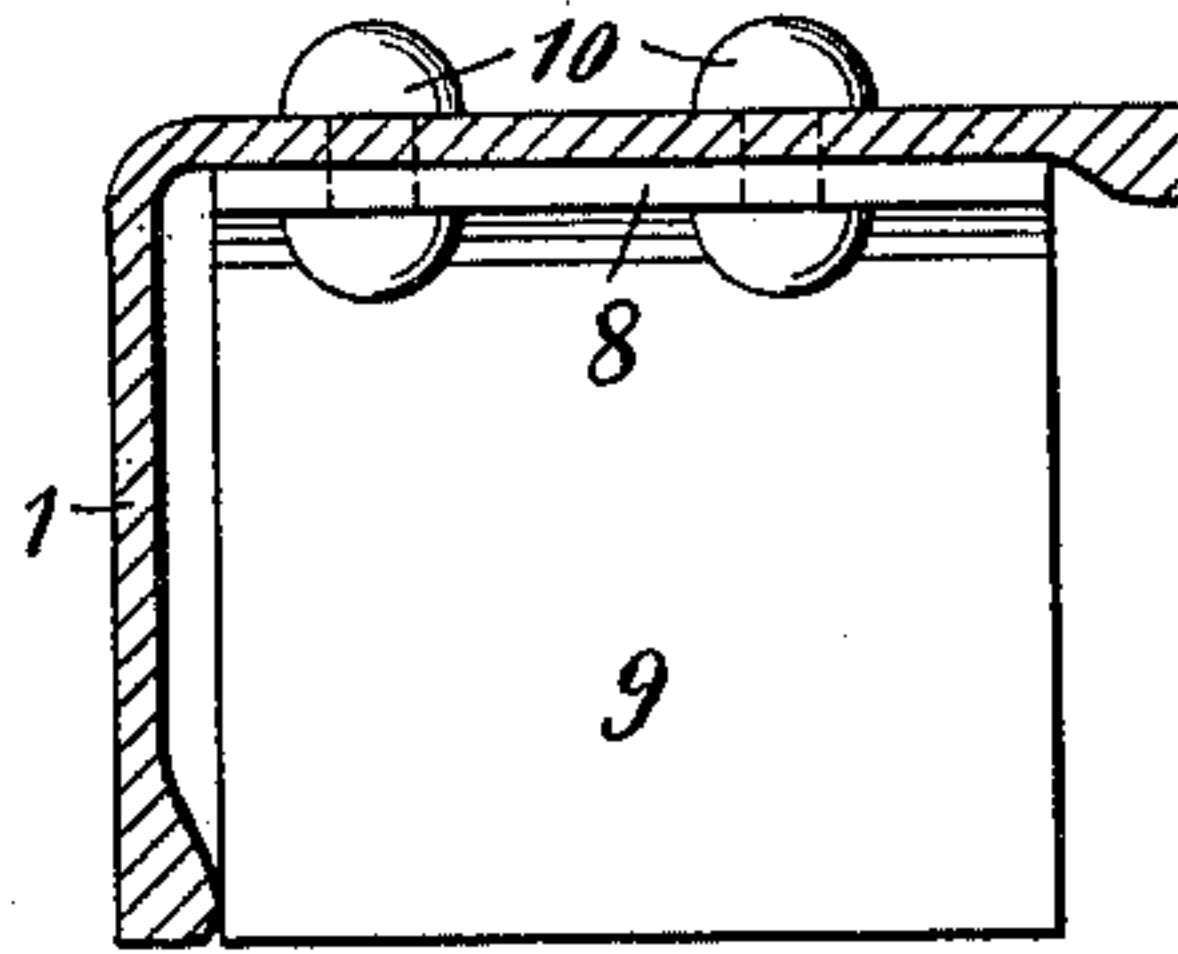


Fig. 9.



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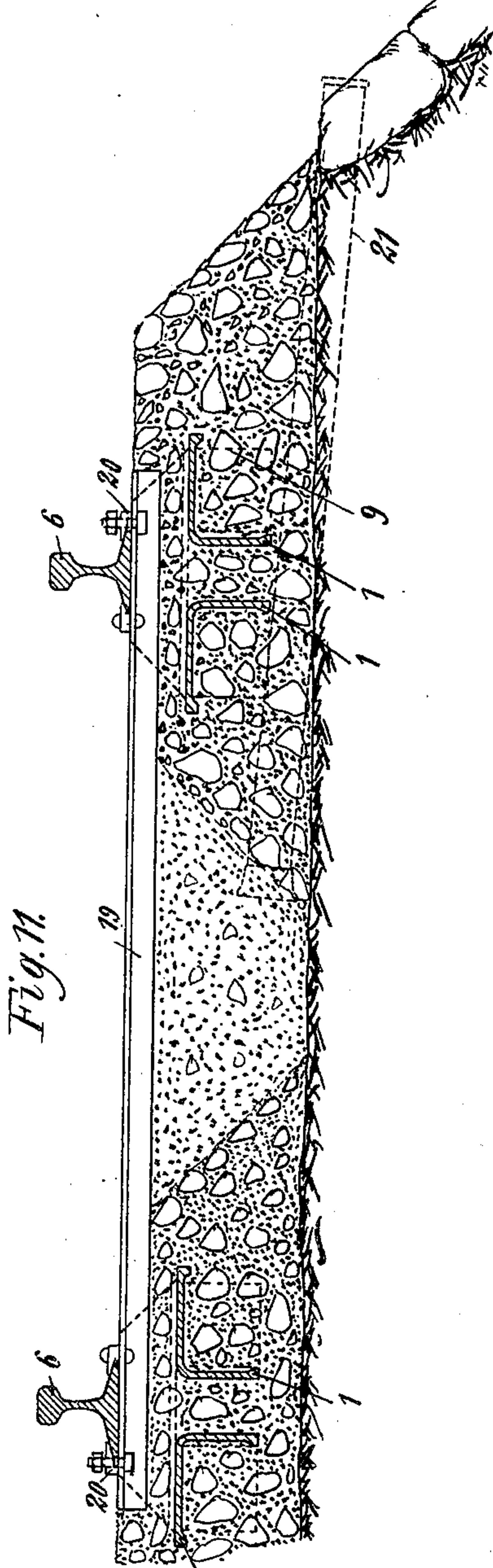
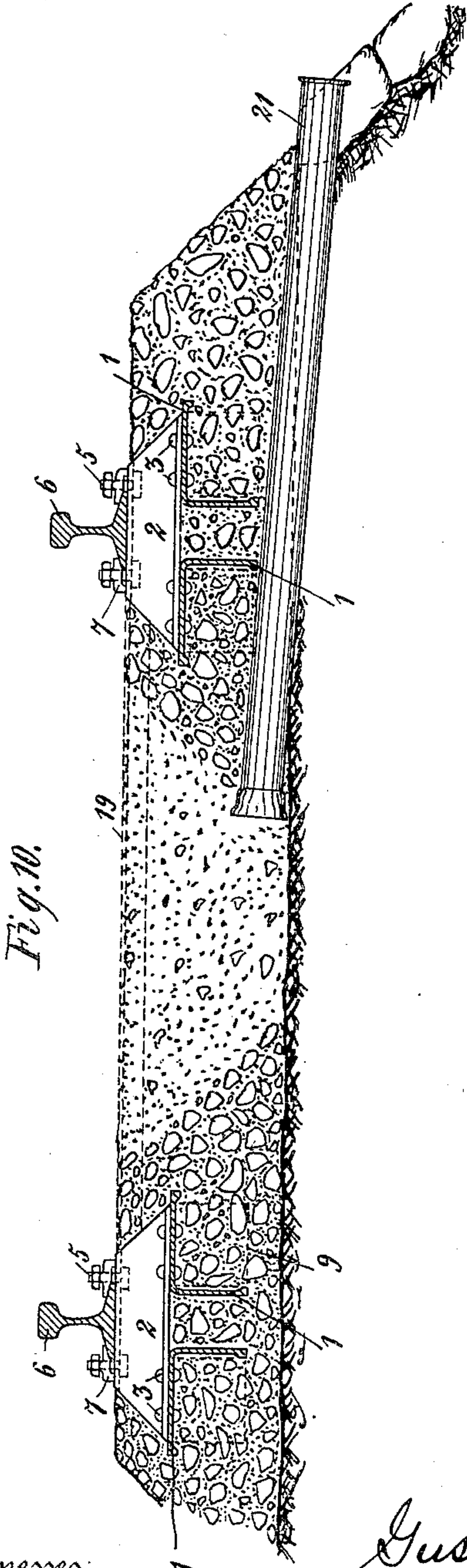
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5 Sheets—Sheet 4.



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CONSTRUCTION OF RAILROAD TRACKS.

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(No Model.)

5 Sheets—Sheet 5.

Fig. 12.

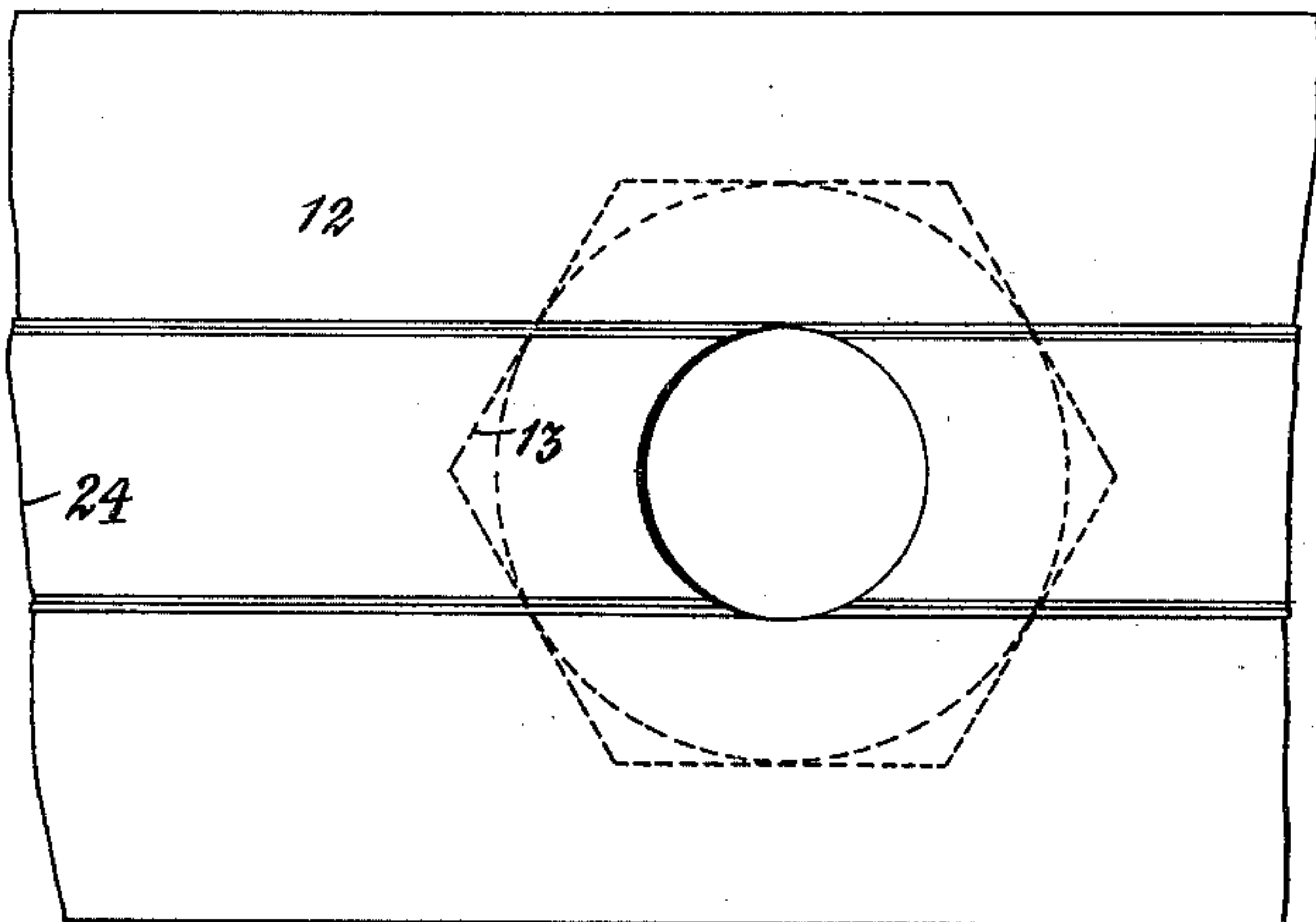


Fig. 13.

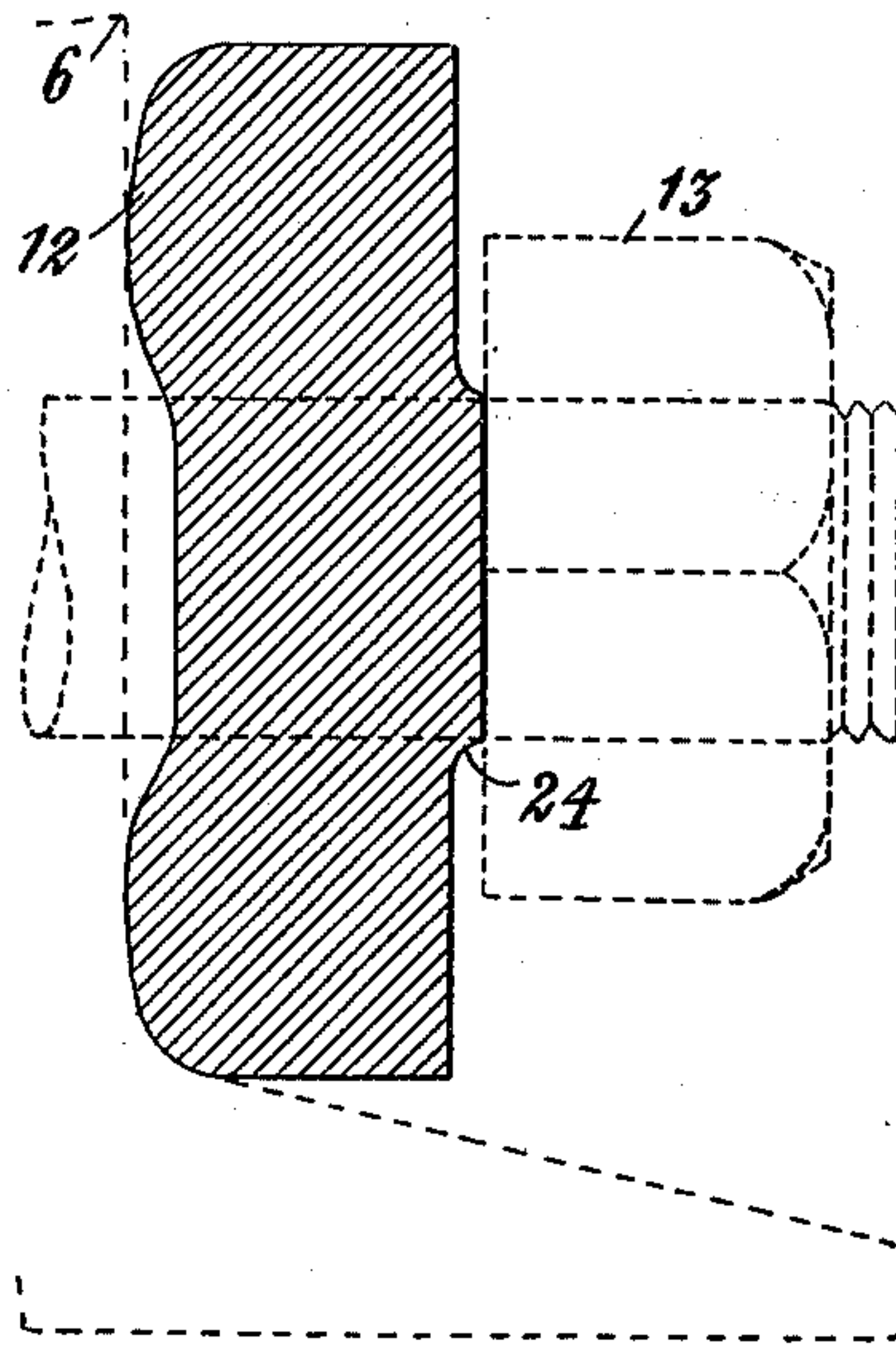
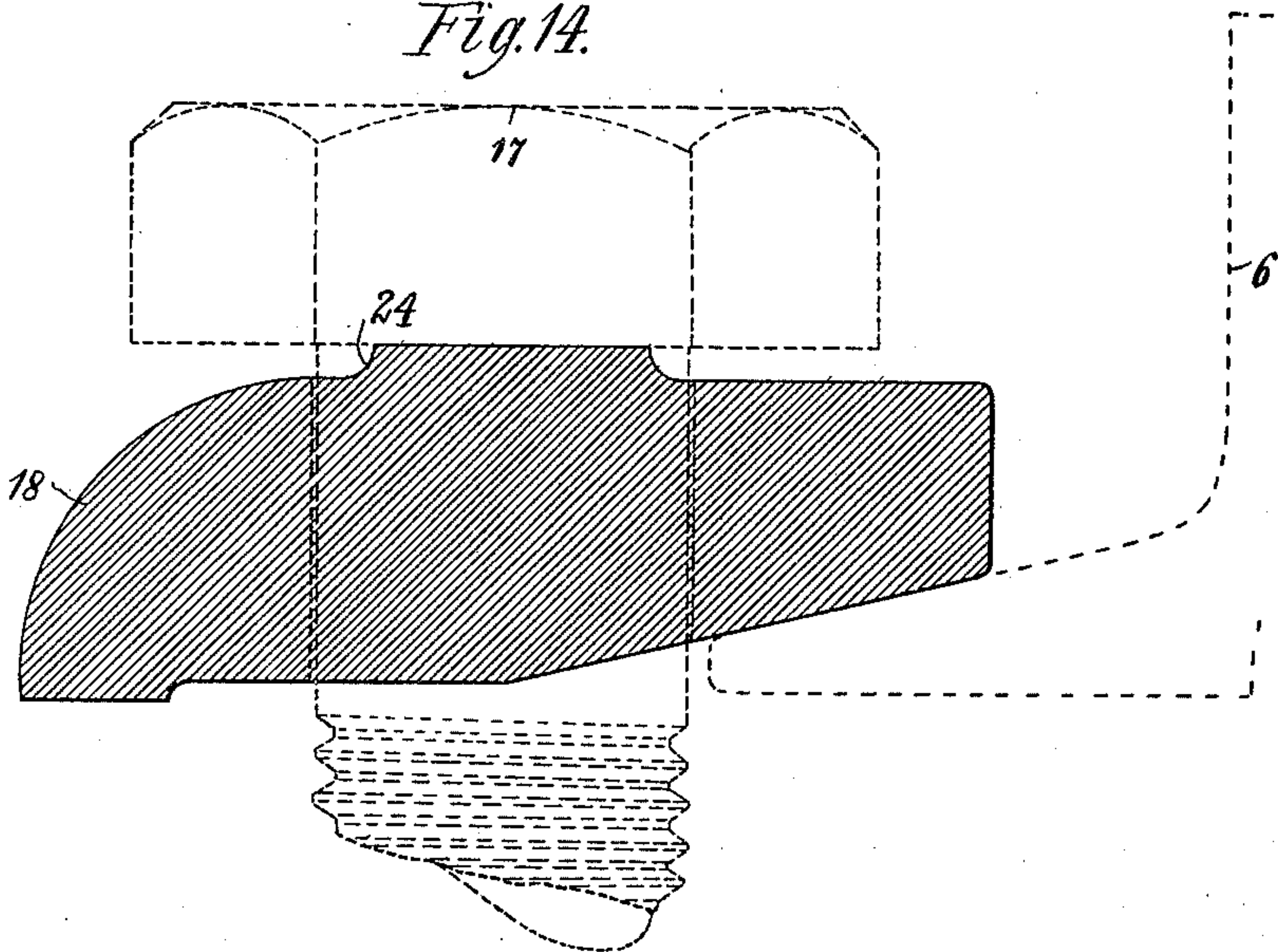


Fig. 14.



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UNITED STATES PATENT OFFICE.

GUSTAV LINDENTHAL, OF NEW YORK, N. Y.

CONSTRUCTION OF RAILROAD-TRACKS.

SPECIFICATION forming part of Letters Patent No. 656,986, dated August 28, 1900.

Application filed July 20, 1899. Serial No. 724,474. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV LINDENTHAL, of the city, county, and State of New York, have invented certain new and useful Improvements in the Construction of Railroad-Tracks, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, wherein—

Figure 1 is an isometric view of a part of a railroad-track constructed according to my invention. Fig. 2 is a side elevation; Figs. 3 and 4, cross-sectional views on lines 3 3 and 4 4, respectively indicated in Fig. 2. Fig. 5 is a plan view. Fig. 6 is a plan view; Fig. 7, a side view of a part of the longitudinal sleepers used in my improved construction; Figs. 8 and 9, sectional views on lines 8 8 and 9 9, respectively indicated in Fig. 6. Figs. 10 and 11 are cross-sectional views of a railroad-track constructed according to my invention. Fig. 12 is an enlarged elevation of a "fish-plate" used in the construction. Fig. 13 is a sectional view thereof, and Fig. 14 is an enlarged cross-sectional view of a detachable wedge used in securing the rails to the chairs and cross-rods.

My invention relates to railroad-track construction; and it consists of the hereinafter-described improvements of metallic foundation for rails and in the combinations of various devices hereinafter described and employed for the stated purpose.

The essential features of my invention are longitudinal sleepers for railroads, combined with rail-chairs or rail-supports on top to which the rails are firmly fastened, the whole resulting in greater longitudinal rigidity of the rail-track as compared with the ordinary cross-tie construction in which the rails alone furnish the longitudinal rigidity.

My combination permits the longitudinal sleepers to be deeply buried and tightly wedged in the ballast to resist upward bending of the track from the wave-like motion in the rails in front of the wheels of moving trains, the ballast on top of the sleepers aiding in counteracting the upward deflection under the passing wheel-loads. My improved construction of metallic foundations for rails is in these respects distinguished from certain constructions in which the rails are fastened

directly to longitudinal sleepers without the intervention of cross supports or chairs. In such combination the foundation for the track is too shallow and not rigid enough and is open to the further objection that the rail-fastenings do not permit of necessary lateral adjustment on the longitudinal sleepers. In my system of constructing railroad-tracks the same details of rail-fastenings may be used on curves as on tangents, which is another essential improvement over the prior art.

In practicing my invention I use continuous longitudinal sleepers made of rolled iron or steel. The cross-sections of the sleepers may be of double-rectangular-angle pattern, with reinforced edges, as shown in Fig. 1 and more clearly in Figs. 3 and 4, or of any other form affording a large bearing area on the ballast. The double-rectangular-angle sections are the preferable form on account of the easier and better tamping of the ballast under them. In the heretofore-used form, which is the inverted-trough section, simultaneous tamping from both sides is required, whereas for sleepers of the double-rectangular-angle section each side can be separately tamped, the material being compressed against the vertical leg, which is thus firmly wedged and anchored in the ballast. The longitudinal sleepers must not necessarily be composed of two sections joined by the rail-chairs; but this construction is preferable for the reasons already stated, and also for the further reason that one section may overlap the other at the joints, as shown, for instance, in Fig. 1. Without such overlapping of the joints there would be weak spots in the construction and the longitudinal rigidity of the track would be impaired. On curved portions of the track the longitudinal sleepers are laid in the form of a polygon, the overlapping joints permitting sufficient lateral clearance in the holes of the bolt connections for that purpose.

The rail-chairs 2 used for combining the two sections of the longitudinal sleepers and for supporting the rails are made of either rolled iron or steel of the form of Z-iron or of any other suitable rolled or cast form. They are riveted or bolted to the longitudinal sleepers at suitable intervals, forming sup-

ports for the rails, which are bolted to them. The wedge block or clip 7 has a rib, as shown, so that the nut of the bolt 5 shall always be center-bearing and free from cross strains.

5 Each of the rail-chairs 2, composed of two sections, has a slot 4 sufficiently wide to admit the shanks of bolts 5 for securing the rails to the chairs. This slot 4 permits of lateral adjustment of the rails during the laying of
10 the track, so that the rails may be brought into perfect alinement, whether on a tangent or a curve, without shifting the longitudinal sleepers which furnish the foundation for the track in the ballast. Similar slots 15 are pro-
15 vided in the bases of rail-chairs 14, which support the rails at the joints. These rail-chairs 14 under the rail-joints are of larger dimensions and heavier in cross-section, having to resist larger strains. They may be made of
20 cast-iron or steel and are also fastened down to the longitudinal sleepers by bolts 16. Slots 15 allow lateral adjustment of the rails in the same manner as explained with reference to slots 4 of rail-chairs 2. In this system of
25 construction the rail-joint is reinforced by the longitudinal stiffness of the sleeper to which the rail is rigidly joined by the chair 14, and the ends of the rails cannot possibly drop or
30 rise as usually is the case with the ordinary railroad-tie construction. For that reason it is not necessary that the rail-splices or fish-bars be of equal strength with the rail, be-
35 cause in my construction they serve only the purpose of keeping the rails in proper aline-
40 ment. The rail ends are supported from below, as hereinbefore explained, being firmly screwed down to the rail-chairs, which in turn are firmly secured to the longitudinal sleepers tightly embedded in the ballast. They are
45 thus secured against vertical deflection without the aid of fish-bars or rail-splices. For these reasons any of the usual forms of rail-splices may be used, but I prefer to use or-
50 dinary fish-bars of the angle pattern.

It will be seen in the drawings, and more particularly in enlarged detail views, Figs. 12, 13, and 14, that the fish-plates 12 and also the various wedge blocks or clips 7, 18, and 20 have raised bearing-surfaces under the screw-
50 nuts. They prevent, as before mentioned, undue bending strains on the screw-bolts from an unequal bearing of the nut.

The rails are held to gage by gage-angles 19, as shown in the drawings. These are se-
55 cured to the rails by means of wedge blocks or clips 20 in a similar manner as the rails are secured to the rail-chairs.

Another feature of my invention is embodied in the splice-plates 8 of the longitu-
60 dinal sleepers, whereby their creeping in the ballast is prevented. One or both ends of each splice-plate 8 are bent downward at right angles and form a sort of anchor embedded in the ballast and resisting longitudinal motion
65 of the track. The construction of these joints of the sections is shown in Figs. 6 to 9, inclusive, of the drawings.

Figs. 10 and 11 of the drawings show sectional views of a complete track constructed according to my invention. These figures 70 show also the means used for draining the road-bed by drain-pipes 21, carrying off the water which would otherwise accumulate in the material between the rails and by work-
75 ing under the ballast would impair the firm-
80 ness and safety of the track-foundation. Instead of draining the road-bed in the manner as shown and described the space between the layers may be paved with brick, stone, asphaltum, or cement.

I claim as my invention—

1. Longitudinal sleepers for railroad-tracks consisting of successive sections and of splice-plates joining the sections longitudinally and having ends bent downward and transversely 85 to the line of the longitudinal sleepers.

2. A rail-track foundation consisting of continuous longitudinal metallic sleepers, composed of sections and of splice-plates joining the sections longitudinally and having flanges 90 bent downwardly and transversely to the line of the longitudinal sleepers, rail-chairs secured thereto and of means for securing the rails to the rail-chairs.

3. A rail-track foundation consisting of lon- 95 gitudinal metallic sleepers composed of sections and of splice-plates joining the sections and having flanges bent transversely to the line of the sleepers, slotted cross-ties secured to the sleepers independently of the rails and
100 of means for securing the rails to the cross-ties.

4. A railroad-track foundation consisting of longitudinal metallic sleepers composed of parallel sections and of splice-plates joining the sections and having flanges bent trans- 105 versely to the line of the sleepers, rail-chairs set transversely upon the sections and adjustably secured thereto and of means for securing rails to the chairs.

5. A rail-track foundation consisting of con- 110 tinuous longitudinal metallic sleepers, composed of parallel sections and of splice-plates joining the sections longitudinally, slotted rail-chairs set transversely upon the sections and secured thereto, and of means for secur-
115 ing rails to the chairs.

6. A railroad-track foundation consisting of longitudinal metallic sleepers composed of parallel sections, rail-chairs provided with slots to admit of lateral adjustment of the 120 rails, affixed to the parallel sections independently of the rails and of means for securing thereto of rails.

7. A railroad-track foundation consisting of longitudinal metallic sleepers, rail-chairs 125 affixed thereto and provided with slots admitting of lateral adjustment of the rails, bolts fitted into the slots and wedge-blocks set on the bolts and adapted to engage with and secure the rails to the chairs. 130

8. A rail-track foundation consisting of longitudinal metallic sleepers composed of parallel sections and of rail-chairs composed of two Z-irons set transversely upon the sec-

tions opposite each other and so that a slot is left between their upper flanges, adapted to receive the shanks of bolts for securing the rails thereto.

5 9. The combination with longitudinal sleepers, of rail-chairs composed of two pieces of Z-irons secured to the sleepers opposite each other in such position that a slot is left between their upper flanges adapted to receive
10 the shanks of bolts for securing the rails to the chairs.

15 10. The combination of longitudinal sleepers composed of sections and of splice-plates joining the sections longitudinally, rail-chairs provided with transverse slots secured to the sleepers, rails set approximately in line with the longitudinal sleepers upon the rail-chairs, means for securing the rails to

the rail-chairs and means for securing the rails in alinement.

20 11. A rail-track, consisting of longitudinal sleepers of rolled iron or steel shapes, arranged parallel to each other; each sleeper consisting of sections and of splice-plates joining the sections and having flanges bent
25 transversely to the line of the sleepers, rail-chairs having slots admitting lateral adjustment of the rails, set in intervals across the sections of the sleepers and uniting them; rails mounted on the rail-chairs, and secured
30 thereto, and cross-rods connecting the rails of the track at intervals.

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