

No. 746,179.

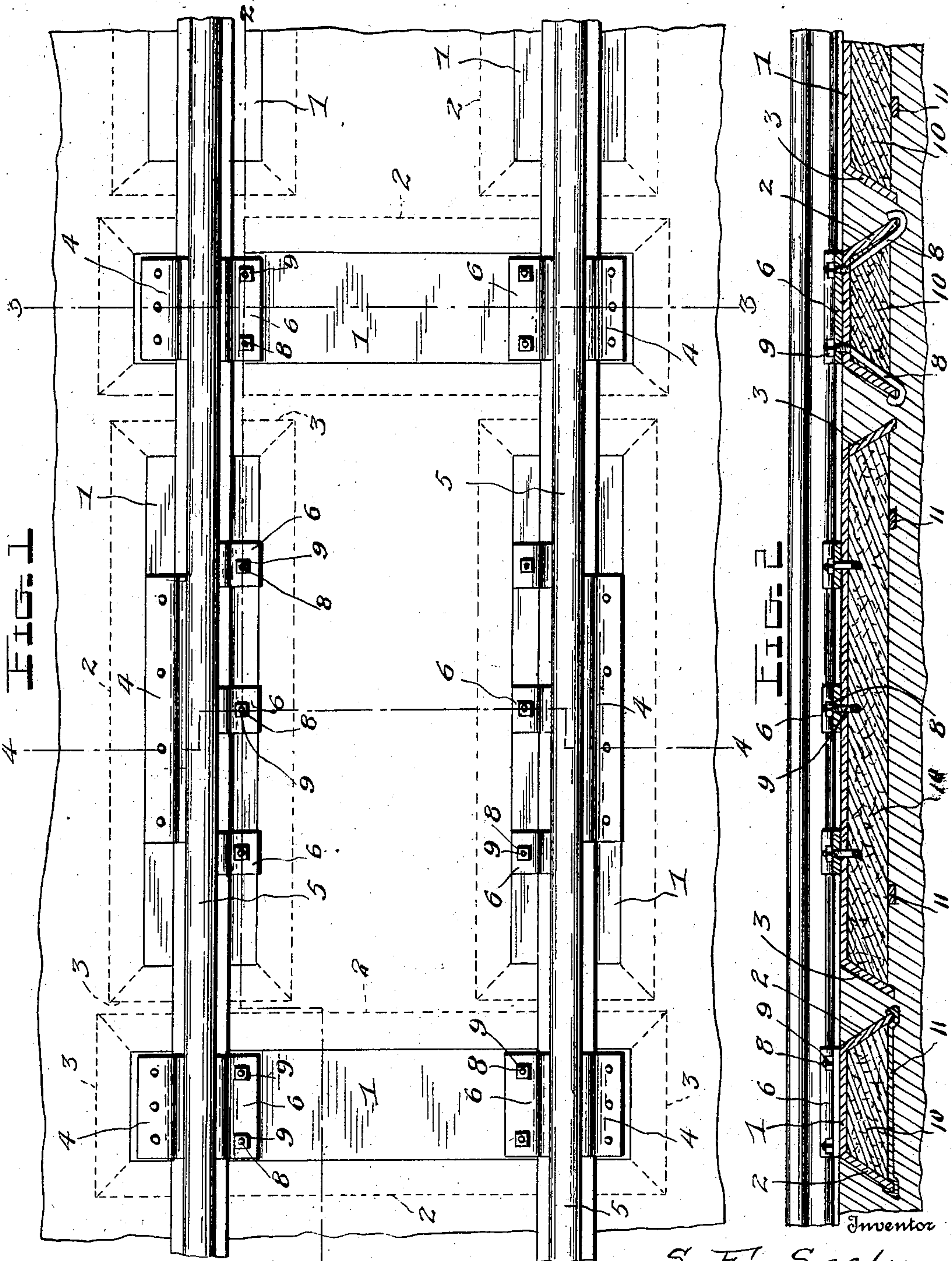
PATENTED DEC. 8, 1903.

S. F. SEELY.  
RAILWAY STRUCTURE.

APPLICATION FILED APR. 2, 1903.

NO MODEL.

3 SHEETS—SHEET 1.



Witnesses  
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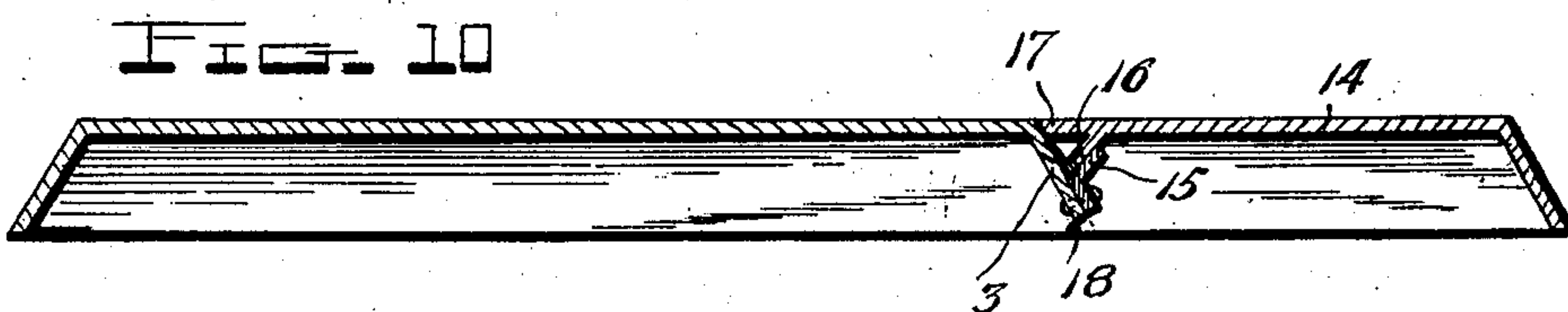
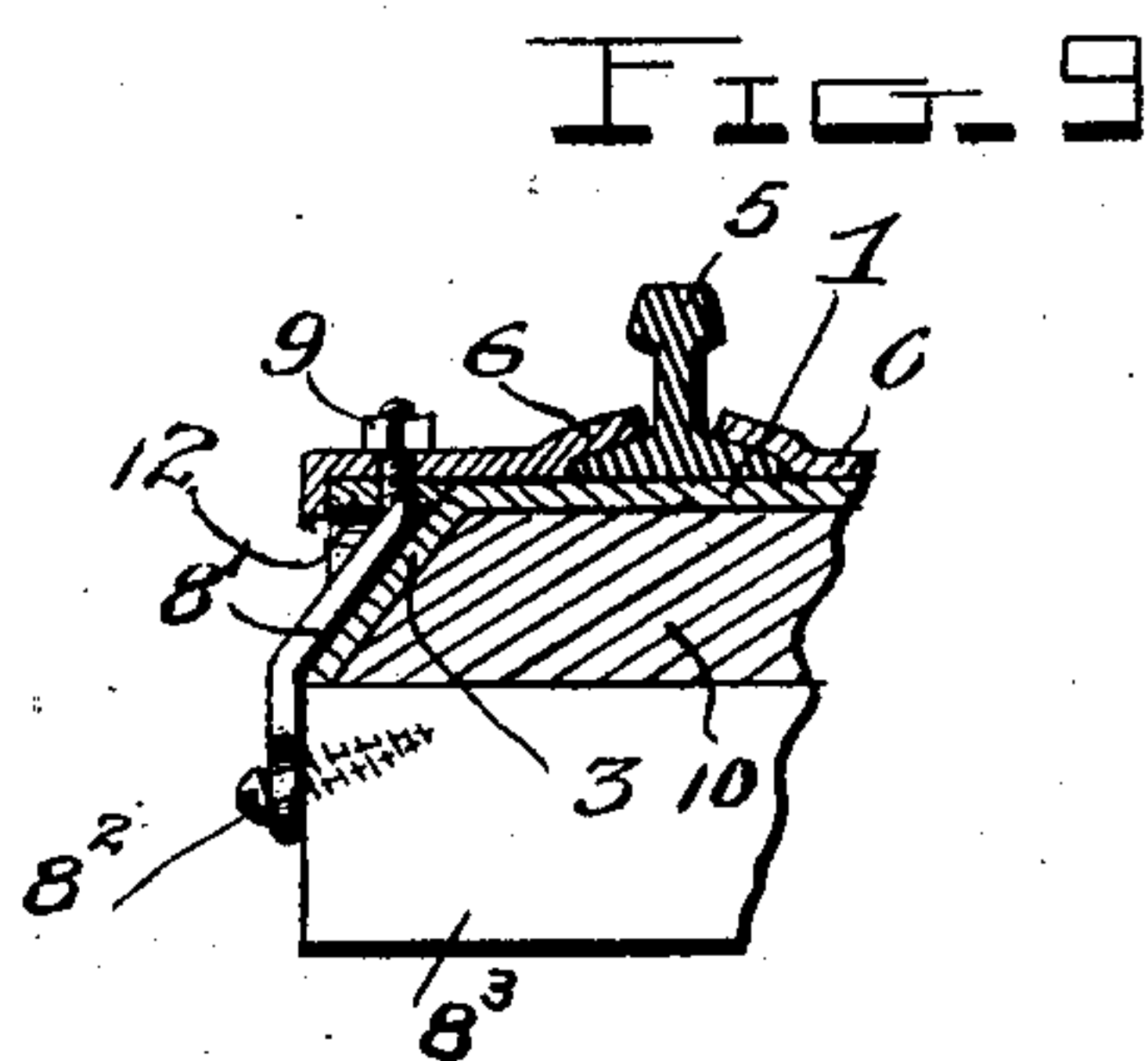
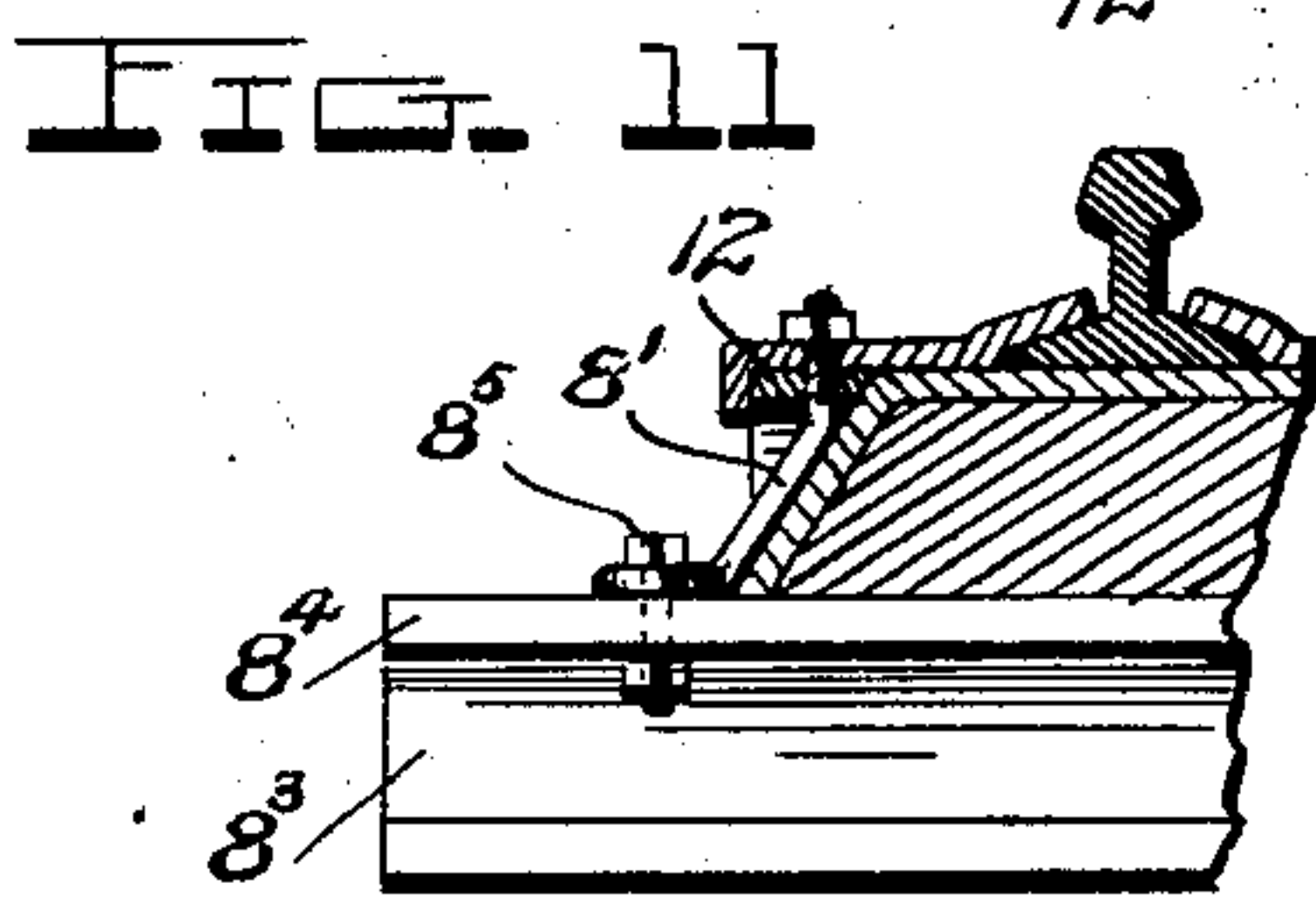
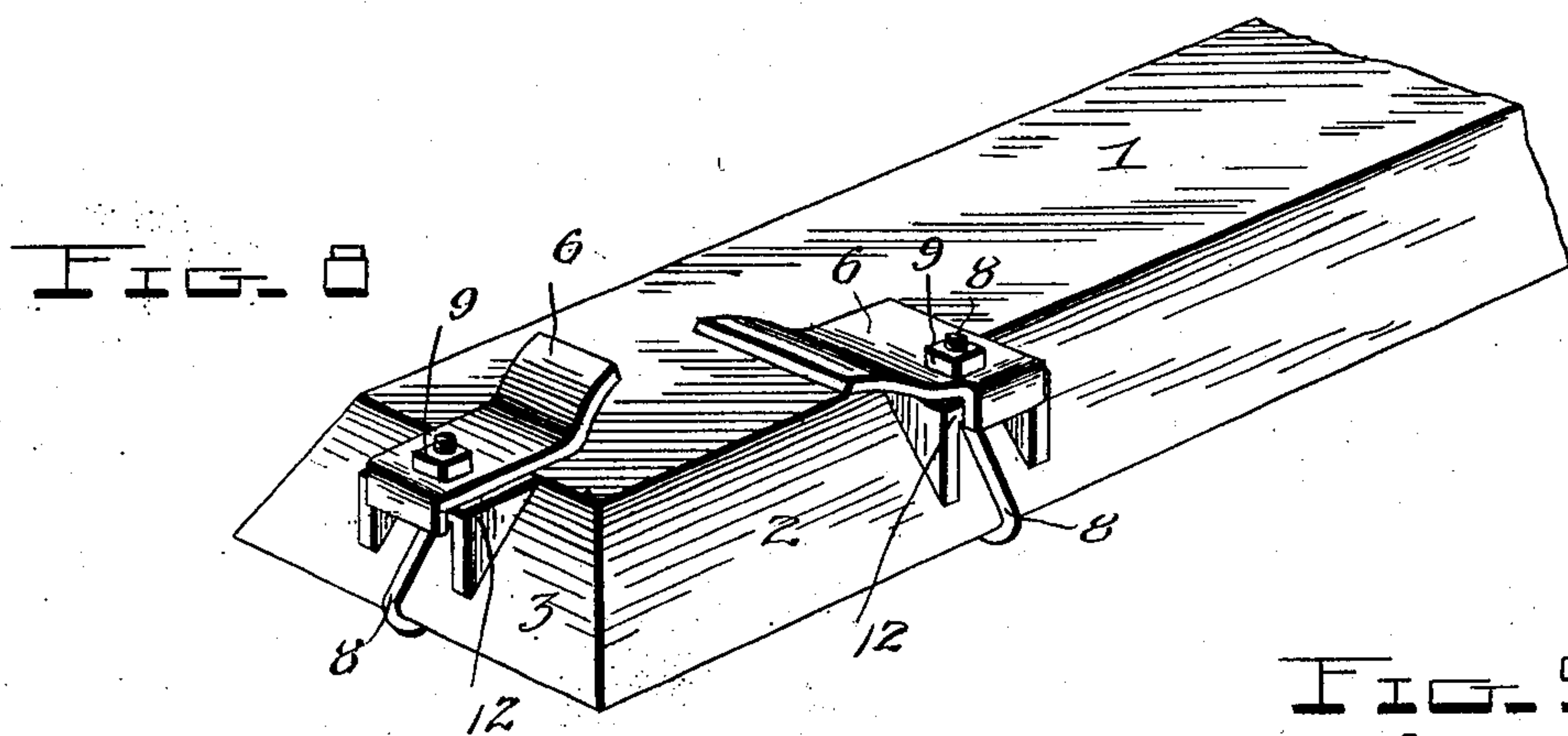
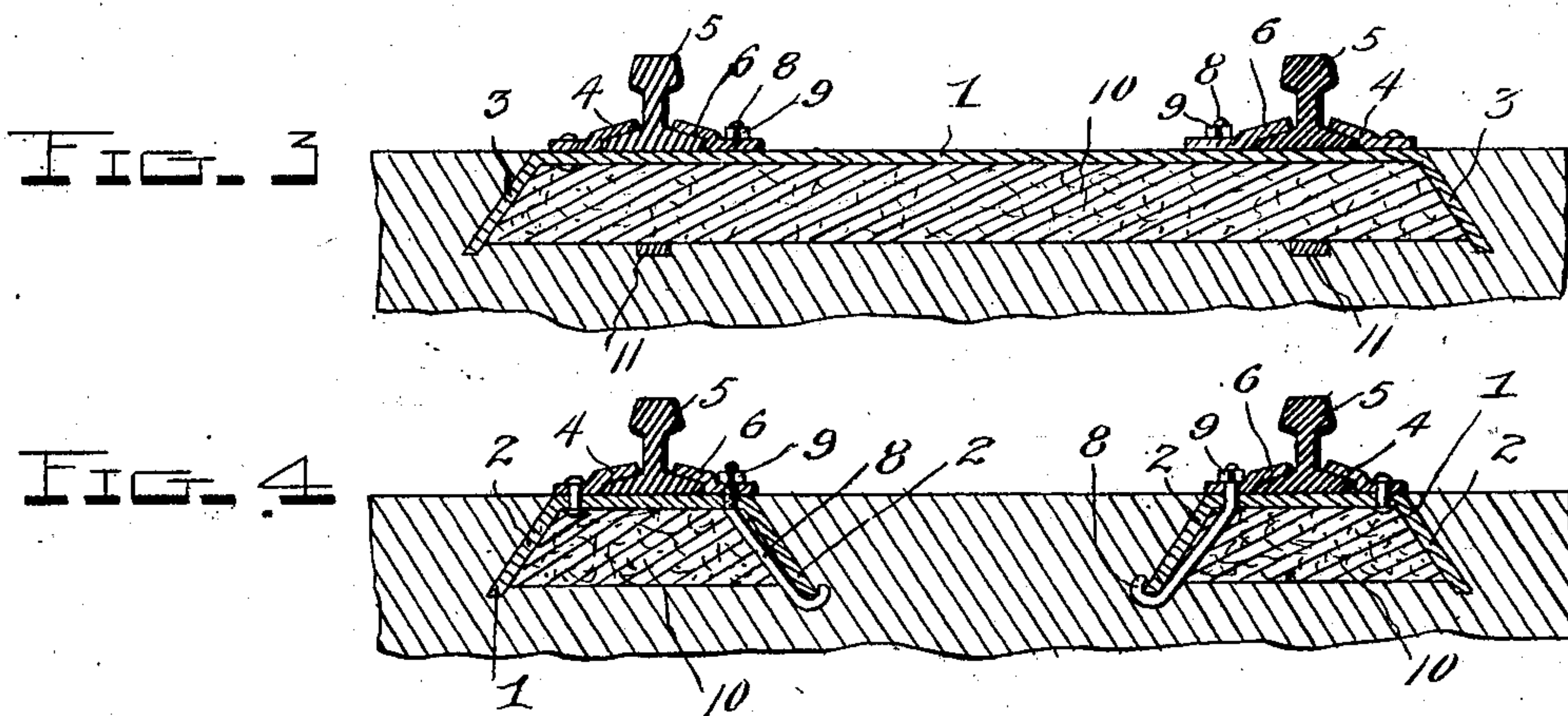
Attorney

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NO MODEL.

3 SHEETS—SHEET 2.



Inventor

Witnesses  
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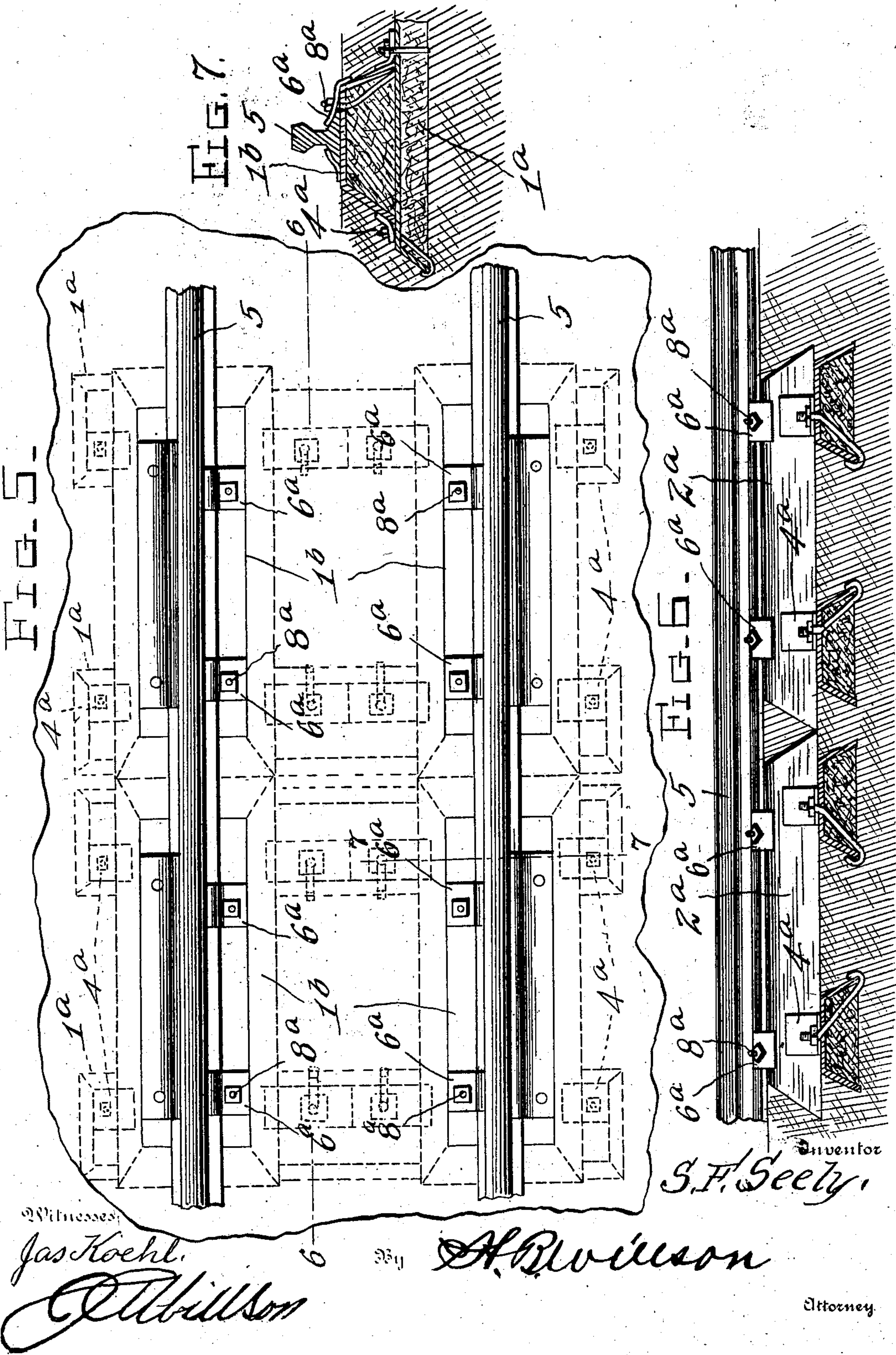
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NO MODEL.

3 SHEETS—SHEET 3.





# UNITED STATES PATENT OFFICE.

SAMUEL F. SEELY, OF TOLEDO, OHIO.

## RAILWAY STRUCTURE.

SPECIFICATION forming part of Letters Patent No. 746,179, dated December 8, 1903.

Application filed April 2, 1903. Serial No. 150,787. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL F. SEELY, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Railway Structures; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in railway construction; and its object is to produce a rail-supporting structure which is simple in construction and very durable in use.

With the above and other objects in view, which will readily appear as the nature of the invention is better understood, said invention consists in certain novel features of construction and combination and arrangement of parts, which will be hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a section of my improved railway structure. Fig. 2 is a longitudinal section on the line 2 2 of Fig. 1. Figs. 3 and 4 are cross-sections taken, respectively, on the lines 3 3 and 4 4 of Fig. 1. Fig. 5 is a plan view of a section of a modified form of my improved railway structure. Fig. 6 is a longitudinal section on the line 6 6 of Fig. 5. Fig. 7 is a cross-section on the line 7 7 of Fig. 5. Fig. 8 is a detail perspective view of the end of one of the metallic ties, showing another manner in which the rails may be secured. Fig. 9 is a detail view showing the manner of securing the rails and ties to bridges, trestles, and the like. Fig. 10 is a longitudinal sectional view through one of the ties adapted to be used as a longitudinal support and showing an extension applied thereto. Fig. 11 is a view similar to Fig. 9, showing another manner of securing the rails and ties to trestles and bridges.

Referring more particularly to Figs. 1 to 4 of the drawings, the numeral 1 denotes metallic cross-ties provided with beveled side and end flanges 2 and 3 and with hook-lugs 4, riveted upon the upper surface at each end, which are adapted to engage the outer base-flange of the track-rails 5 to hold the same and to prevent spreading. The inner base-flange of

the rails is secured to the ties by the plates or clips 6, which overlie said flange and which are adapted to be securely clamped by bolts 8, provided with hooked heads to engage the side flange 2 of the tie, said bolts passing upwardly through alining apertures in the top of the tie and the plate, and nuts 9, screwed upon their ends, securely clamp the said plates or clips upon the flanges of the rails.

In order to support the rail more perfectly, I arrange a tie longitudinally between each two cross-ties, as seen in Fig. 1. The rails are secured to these longitudinal supporting-ties in a manner similar to that in which they are held upon the cross-ties. These metallic ties, owing to the beveled flanges 2 and 3, are trough-shaped and are adapted to be filled or packed with any desired filling, but preferably with a cement composed of crushed stone or gravel, sand, water-lime, asphalt, coal-tar, or any desired materials mixed in any desired proportions. This waterproof filling 10 greatly strengthens the tie and increases the weight of the structure to give it firmness and durability. In preparing my ties the entire inside and outside is heavily coated with asphalt or pitch after the bolts have been placed in position, and the filling of cement is then put in and tamped down to within a quarter or half inch of the edge or bottom of the tie; but, if desired, I may fill the ties flush with the lower edge or bottom, and instead of a cement filling I may use any desired material which will stand the strain. Metal straps or braces 11 may also be used to strengthen the tie and to hold the cement filling in position.

In building the road the ties are first arranged, as shown in Fig. 1, upon a thoroughly-tamped foundation, and the rails are then secured in position. I tamp the soil of the road-bed solidly under the ties, so as to fill up the quarter or half inch space, as I find that by so doing the tie will have less tendency to slip. I then thoroughly saturate the road-bed all around the lower edge of the ties with asphalt, pitch, or coal or oil tar. Earth is then packed in around the ties to level with their upper surfaces. Both the middle of the road-bed and the outside portions to about a foot or more beyond the ends of the cross-ties are thus filled up, thoroughly tamped, and then



saturated with crude oil to the depth of two or three inches. It is thus seen that a track-way is produced which is both water and dust proof and which is extremely solid and durable in use. It will be understood that instead of having the hook-lugs 4 riveted to the tie they may be dispensed with and a hook-bolt and plate may be used to clamp the outer base-flange of the rail.

10 In the construction illustrated in Figs. 5, 6 and 7 I have placed the cross-ties 1<sup>a</sup> beneath the longitudinal ties 1<sup>b</sup>, which I place nearer to each other. In order to secure the longitudinal ties upon the cross-ties and to  
15 prevent the spreading of the former, I provide the cross-ties with the hook-lugs 4<sup>a</sup>, which may be riveted or otherwise secured upon the top of the ties and which engage the outer flanges 2<sup>a</sup> of the longitudinal ties. The plates  
20 or clips 6<sup>a</sup> engage the inner flanges of the longitudinal ties and are clamped upon the cross-ties by the hook-bolts 8<sup>a</sup>, similar to the manner in which the rails are secured to the ties. In this form of my invention I fill the longi-  
25 tudinal ties with cement flush with the bottom edges at each end where they rest upon the cross-ties, but I make the central portion concave, so that the soil will be forced up under the tie and hold the same more firmly.  
30 The cross-ties are not filled flush with the bottom edge and are also made slightly concave for the same reason. When this construction of road-bed is used, should the car leave the rails the damage would be much less than if  
35 the cross-ties were upon the same level as the longitudinal ones.

In the construction illustrated in Fig. 8 the hook-bolts 8 instead of being upon the inside of the tie are arranged upon the out-  
40 side and pass through apertures formed in projections 12 upon the flanges 2 and 3 of the tie. In this construction the clamp plates or clips are used both upon the inner and outer base-flanges of the rail to hold the same upon  
45 the ties. By having the bolts upon the outside of the tie they may be more easily removed and replaced.

Upon bridges and trestles I fill the ties flush to the bottom with wood thoroughly saturated  
50 with asphalt or pitch or boiled in oil-tar, as I find that this kind of filling will stand the jar and vibration better than cement. Upon bridges and trestles I may, if desired, place all the ties longitudinally and dispense with the cross-tie. When my structure is laid upon  
55 the ground, I prefer to use the bolts with hooked ends, as shown in Figs. 1 and 4, but upon bridges and trestles I prefer to use eye-bolts 8', as illustrated in Figs. 9 and 11. Fig.  
60 9 shows the bolt 8' with an eye upon its lower end and a lag-screw 8<sup>2</sup> passing through the same and into the wooden beam or girder 8<sup>3</sup> of the bridge or trestle. The screw 8<sup>2</sup> is first dipped in oil-tar and is then forced to enter the beam at an angle to prevent water work-  
65 ing in around it. Upon the bridges and tres-

ties in which the beams and girders are metal the eyes of the bolts 8' are bent at an angle, so as to lie flat upon the top flange 8<sup>4</sup> of the beam or girder 8<sup>3</sup>, and a bolt 8<sup>5</sup> is then passed  
70 through the eye and an opening in said flange, as illustrated in Fig. 11.

Upon piling where there are no girders the ties are filled to within an inch of the bottom with wood, thus giving a hold upon the head of  
75 the piles, and upon piles the cross-ties are always used to prevent the rails from spreading.

When it is desired to have longer ties, the ties may be lengthened by the extension 14, as shown in Fig. 10. A locking-rib 15 is riv-  
80 eted or otherwise secured upon the beveled flange 3 of the tie and is adapted to coact with a similar locking-rib 16, secured upon the under side of the extension 14. The said extension has a beveled end 17, which bears  
85 upon the beveled flange 3 of the tie, and shoulders or stops 18, formed upon the beveled end 17 of the extensions, engage the bottom of the flange 3 to lock the parts together.

The cross-ties in Figs. 5, 6, and 7 are pref-  
90 erably made half the depth of the longitudinal ties which they support.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the construction, operation,  
95 and advantages of my improved railway structure will be readily apparent without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be  
100 resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. A railway structure comprising metallic cross-ties filled with cement, longitudinal supporting-ties filled with cement and ar-  
110 ranged between said cross-ties, track-rails, plates adapted to engage the base-flanges of the rails, bolts formed with hooked heads to engage the tie and adapted to clamp the plates upon the rail and tie, substantially as  
115 set forth.

2. A railway structure comprising metallic trough-shaped cross-ties formed with sur-  
120 rounding flanges and filled with cement, longitudinal supporting-ties formed with surrounding flanges and filled with cement, straps or braces upon said ties to support the cement in position, track-rails, plates adapted to overlie the base-flanges of said rails, and bolts having hooked ends to engage the flanges  
125 of the ties and adapted to pass through the tie and plate to clamp the rail to said tie, substantially as set forth.

3. The combination with a metallic tie formed with side and end flanges, and a rib upon the end flange, of a tie extension hav-  
130 ing one end cut away to coact with the end flange of the tie and having a rib to coact with



the rib upon the tie, and shoulders formed upon the tie extension to coact with the end flanges of the tie, substantially as set forth.

5 4. A railway structure, comprising cross-ties filled with cement, longitudinal rail-supporting ties filled with cement and secured upon said cross-ties, track-rails, plates adapted to engage the base-flanges of the rails, bolts formed with hooked heads to engage

the tie and adapted to clamp the plates upon to the rail and tie, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL F. SEELY.

Witnesses:

H. HAACK,  
WM. HILL.