

No. 746,022.

PATENTED DEC. 8, 1903.

W. A. CHAPMAN.
RAILROAD FROG.

APPLICATION FILED MAY 28, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

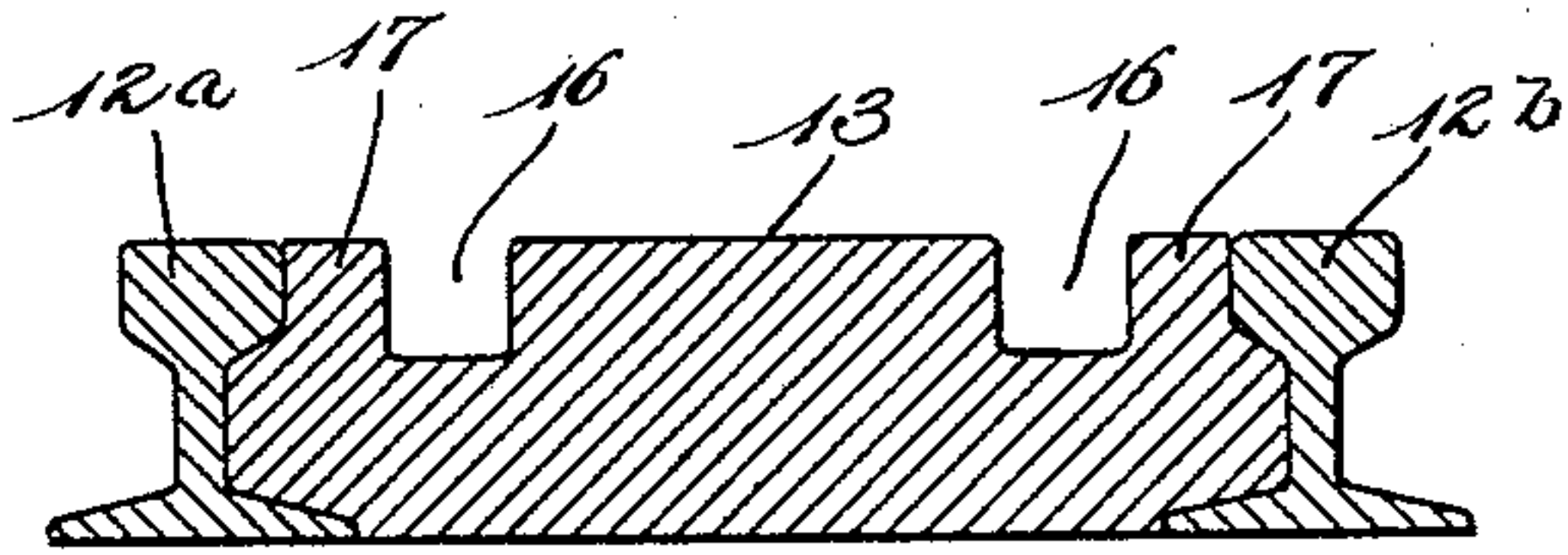
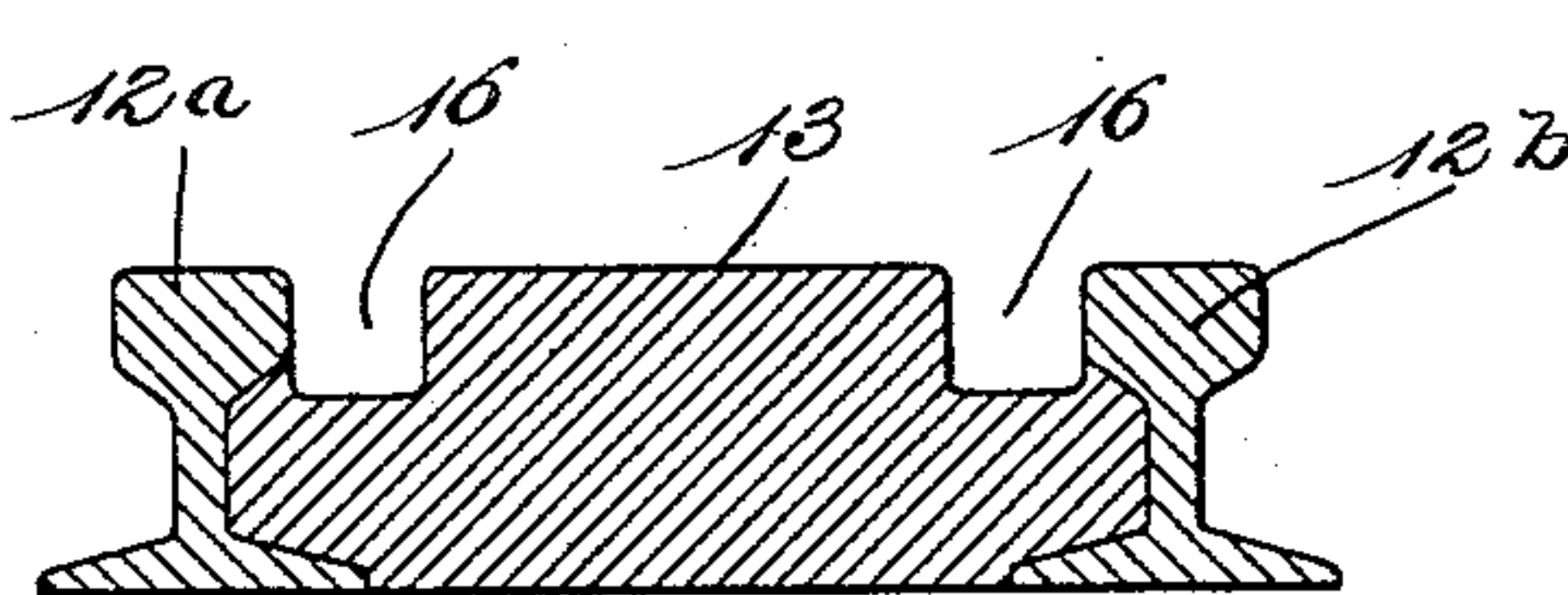
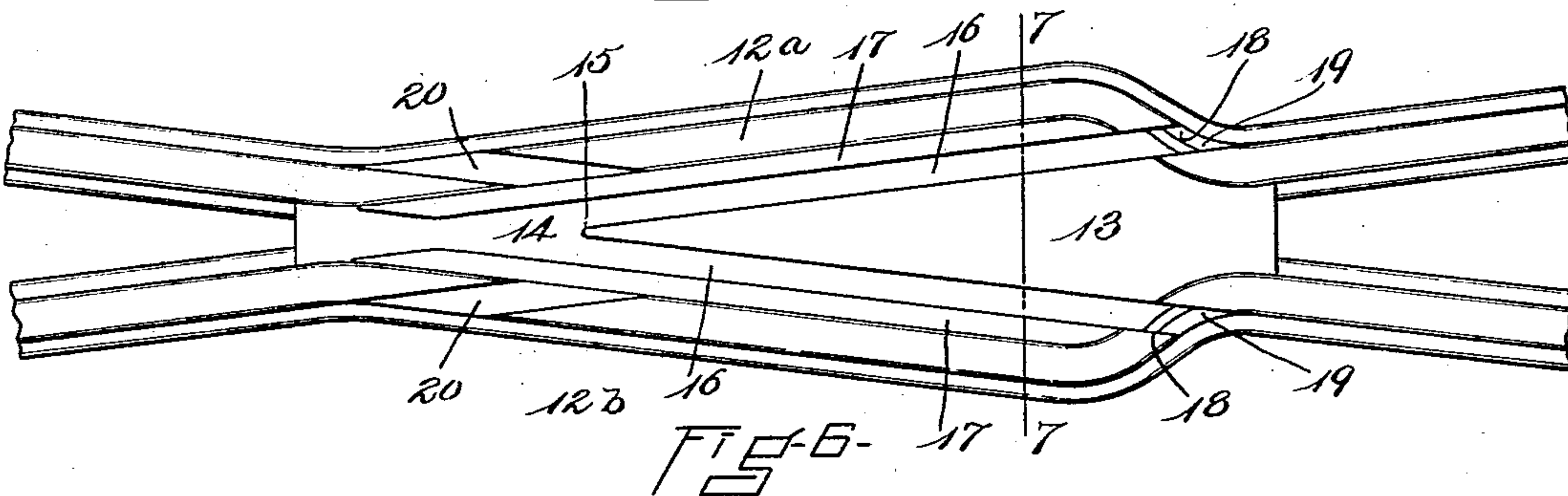
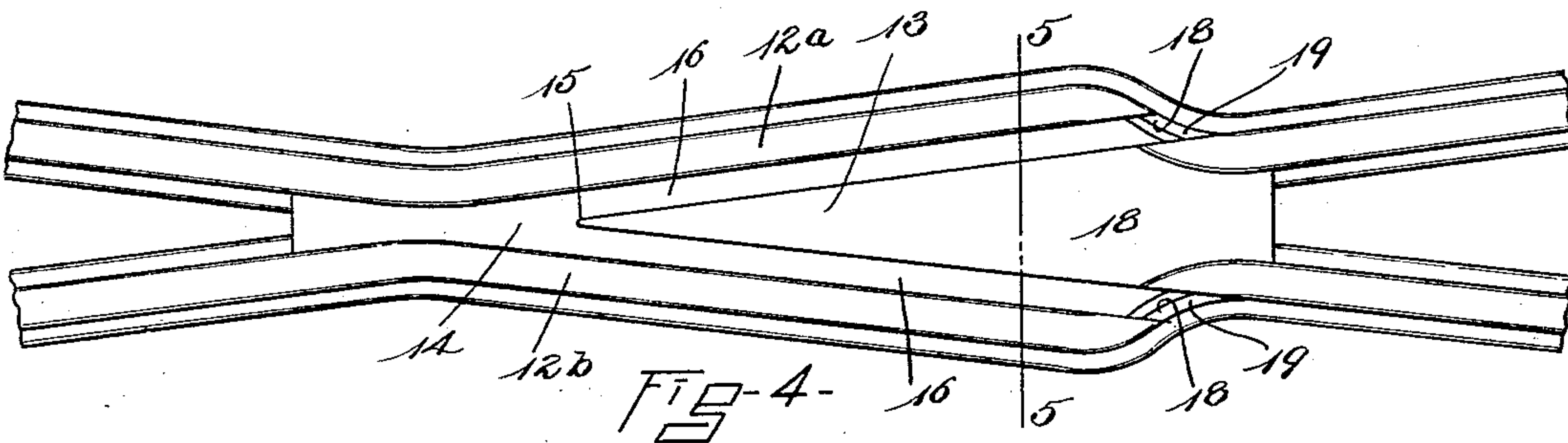
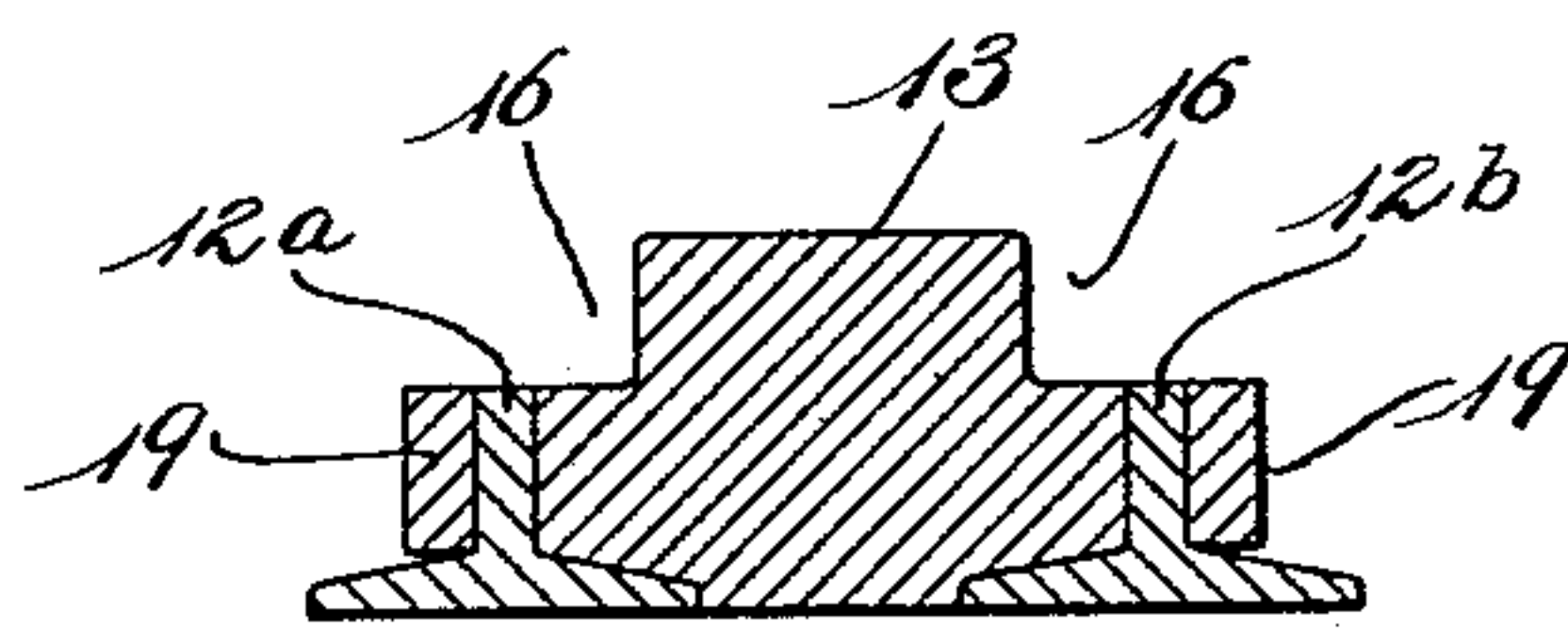
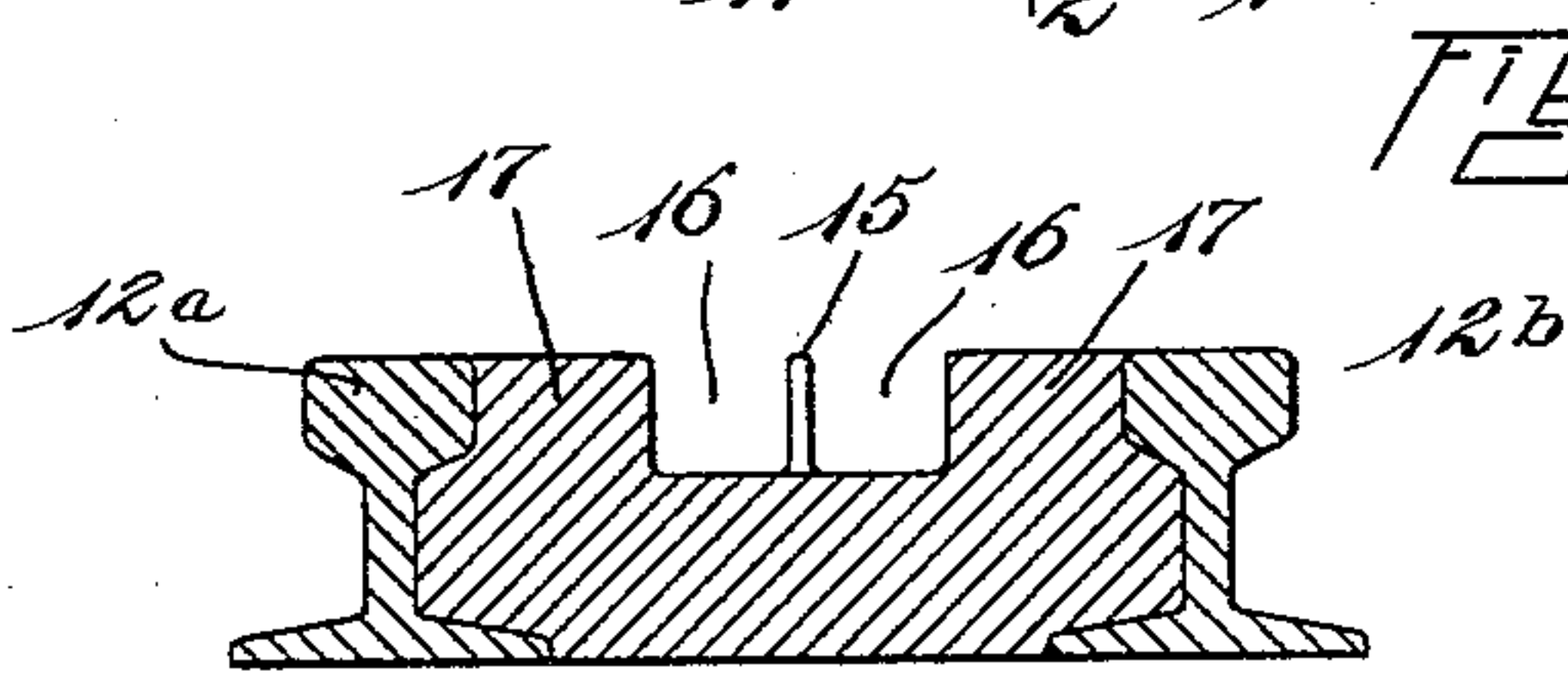
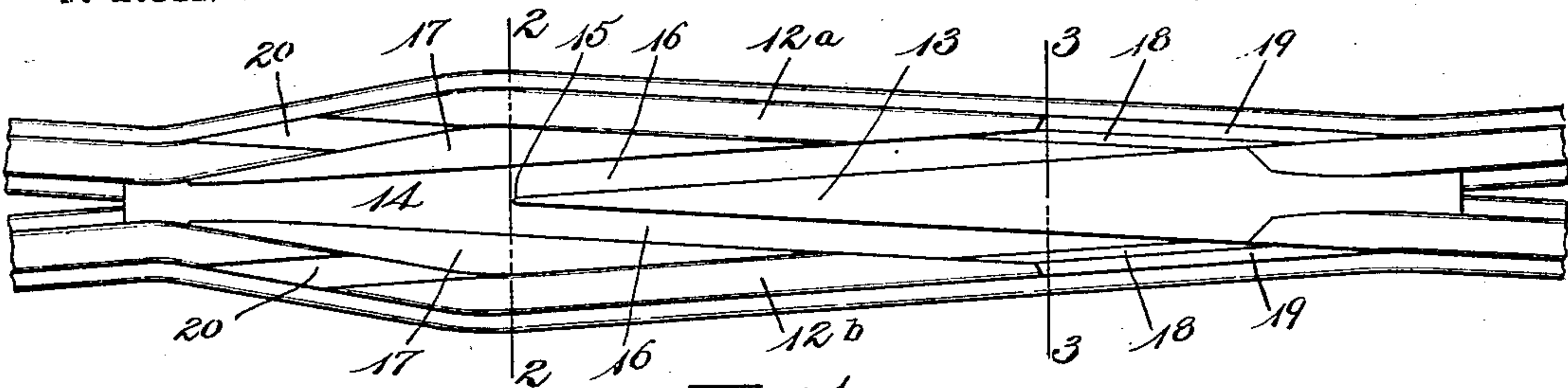


FIG-5-
WITNESSES:
Chas. F. Perkins.
Elihu L. Briggs.

FIG-7-
INVENTOR:
W. A. Chapman

No. 746,022.

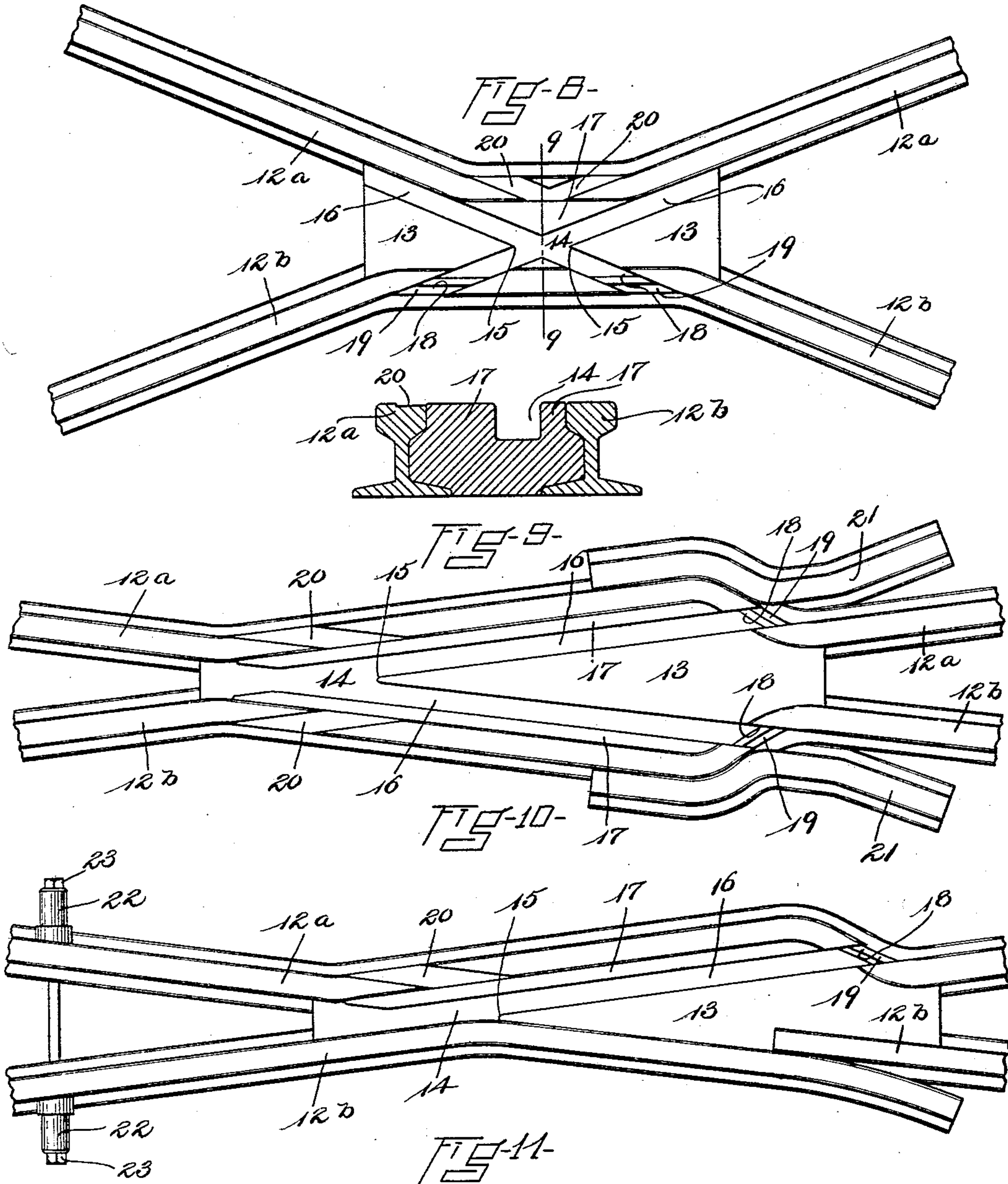
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2 SHEETS—SHEET 2.



WITNESSES:
Chas F. Perkins.
Elmer L. Briggs

INVENTOR:
W. A. Chapman

UNITED STATES PATENT OFFICE.

WILLIAM A. CHAPMAN, OF SAUGERTIES, NEW YORK.

RAILROAD-FROG.

SPECIFICATION forming part of Letters Patent No. 746,022, dated December 8, 1903.

Application filed May 28, 1903. Serial No. 159,090. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CHAPMAN, a citizen of the United States, residing at Saugerties, in the county of Ulster and State of New York, have invented new and useful Improvements in Railroad-Frogs, of which the following is a specification.

My invention consists of a railroad-frog composed of a central casting inclosed by rails, arranged and constructed in a novel manner.

The objects of my invention are to avoid transverse joints in the construction of the frog, to employ fewer parts than heretofore used in rail-frogs, and to produce a firmer, stronger, and more durable structure. I attain these objects by the construction shown in the accompanying drawings, in which—

Figure 1 is a plan view of the entire stiff frog. Fig. 2 is a vertical section through the line 2 2 in Fig. 1 looking to the right. Fig. 3 is vertical section through the line 3 3 in Fig. 1 looking in the same direction. Fig. 4 is a plan view of a stiff frog, showing the rails parallel with the sides of the point. Fig. 5 is a vertical section through the line 5 5 in Fig. 4 looking to the right. Fig. 6 is a plan view of a modification of the construction in Fig. 1, showing the rails bent at another point. Fig. 7 is a vertical section through the line 7 7 in Fig. 6 looking to the right. Fig. 8 is a plan view of a crossing-frog embodying my invention. Fig. 9 is a vertical section through the line 9 9 of Fig. 8. Fig. 10 is a plan view showing the employment of wing-rails with my invention, and Fig. 11 is a plan view of a spring-frog containing my invention.

Similar numerals of reference indicate corresponding parts throughout the several figures of the drawings.

Referring to the drawings, Figs. 1 to 7, inclusive, and Fig. 10, 12^a 12^b are two ordinary T-rails, having a cast center 13 interposed between them and securely fastened thereto.

14 is a groove or flangeway extending longitudinally through the center 13 at the throat of the frog and which is divided by the point 15 into the diverging grooves or flangeways 16 16. I prefer to bend the rails 12^a 12^b outwardly adjacent to the point, as shown in Fig. 1, so that a space of abnormal

width is formed between each rail and the side of the point 15 next to it, all of which space but the flangeway 16 is occupied by the raised portion 17 of the center 13. The surfaces of the raised portions 17 17 are flush with the top surfaces of the rails and form one side of each of the flangeways 16 16. Each of the raised portions 17 17 is of sufficient width and length to prevent the wheel-tread from coming in contact with the heads of the rails and to take the wear as the wheel is passing over the frog. A sufficient portion of each rail 12^a 12^b at 18 is cut away to allow the flangeways 16 16 to extend through the rails. Integral with the center 13 is the point 15, which is of the same height as the rails.

19 19 are reinforcing-straps, of iron or steel, resting on the flange of the rails, rising to the bottom of the flangeway, and of somewhat greater length than the opening in the head of the rail. These straps 19 19 fit snugly against the webs of the rails and are riveted, bolted, or otherwise secured thereto. The sole object of these reinforcements is to strengthen the rails where they are weakened by the flangeway cuts, and any suitable device for securing that end may be used. The center 13 is so formed that it fills the space between the rails, making a solid structure, as shown in Figs. 2 and 3.

The rails 12^a 12^b, the center 13, and the reinforcing-straps 19 19 are firmly secured together by bolts, clamps, plates, rivets, or in any of the well-known ways of firmly uniting the several parts of a frog.

In Fig. 4 the rails are shown as parallel to the sides of the point, so that the outer edges of the flangeways 16 16 are formed by the heads of the rails instead of by the raised portions 17 17 of the casting 13, as shown in Fig. 1. While this simplifies the construction by avoiding the bends in the rails at the points shown in Fig. 1, it exposes the rails themselves to the wear of the wheels. The heads of the rails at 20 (see Figs. 1 and 6) are slightly depressed or grooved out to allow the outer edge of the tread of the wheel to pass smoothly over the head of the rail when the tread of the wheel has become worn next to the flange, and a ridge or false flange is thereby formed at its outer edge. Instead of bending the

rails outwardly and gradually, as shown in Fig. 1, they may be extended parallel with the sides of the point and then bent abruptly inward, as shown in Figs. 4, 6, and 10, for the purpose of making a shorter opening in the head of the rail for the passage of the flanges of the wheels. It is obvious that it is necessary in this modification to extend the raised portions 17 nearly to the openings in the heads of the rails, as shown in Figs. 6 and 10. This construction would weaken the rail less than that shown in Fig. 1, since a smaller portion of the rail is removed.

In Fig. 8 I have shown my invention applied to a crossing-frog in which all the substantial parts of the construction shown in Fig. 1 are shown and adapted to the requirements of a crossing. There are two continuous rails 12^a 12^b , with a cast center 13 interposed between them, provided with two points 15 and flangeways 16 16, formed in the center 13. Portions of the rail are cut away at 18 to form passages for the flanges of the wheels. A raised portion 17 of the central casting 13 is provided integral therewith for the purpose indicated in the other figures of the drawings. Recesses 20 are made in the head of the rail to admit the false flange or outer edge of the wheel when crossing the rail and the wheel has become worn in the center of the tread.

If desired, flaring wing-rails 21 may be employed and secured to the rails 12^a 12^b at the openings 18, as shown in Fig. 10.

In Fig. 11 I have shown my invention applied to a spring-frog in which the floor-plate portion of the center 13 is cut away on one side of the point to allow the rail 12^b to lie against the side of the point under the pressure of the spring in any of the familiar ways of operating a spring-frog. The rail 12^b is made in two parts, one of which is movable and normally lies against the side of the point under the pressure of the springs 22, secured between the heads of the bolt 23 and the webs of the rails. The movable portion of the rail 12^b constitutes a wing-rail, and the other portion of the rail 12^b is firmly secured to the center 13. The rail 12^a is firmly secured to the side of the casting, with its opening 18 in line with the flangeway 14, as shown in the other figures of the drawings. A raised portion of the center 13 is employed next to the rail 12^a , as in the other cases. The movable rail 12^b may be provided with any well-known means to guide its movement and prevent it from rising up from the floor-plate.

My invention contains the advantages both of the old cast frog and the rail-frog, while avoiding many of the objections to either. It enables me to produce from a minimum of cast material an essentially cast frog of greater length than that commonly used in the old-style cast frog and to provide superior means for firmly splicing the frog to the rails of the track, thereby securing and preserving the same in true alinement.

My frog has the merit of the cast frog in that the parts exposed to the greatest shock and abrasion are integral, and it surpasses the cast frog in that the including-rails so closely confine the cast portion that in case of a rupture occurring in the latter the fragments will most probably be retained in place, and thus insure the safe passage of traffic until repairs are made. Since the parts exposed to the greatest wear are combined in an integral casting, it will be observed that my construction facilitates the selection of such material—as, for instance, cast-steel—as will provide strength, resist abrasion, and generally promote durability and safety without regard to the qualities of the containing-rails.

My invention therefore provides a firmer, stronger, safer, and more durable structure than either the cast or rail frog heretofore in use. Various modifications of the forms and dimensions of the several parts may be made without departing from the substance of my invention.

The gist of my invention resides in constructing a stiff frog so that two continuous rails serve the purpose of four pieces of rail, as heretofore, and so inclosing the point between them as to avoid transverse, abutted, scarfed, dovetail, or knuckle joints or connections between the rails and the center forming the point. In my construction the wheel running on the rail 12^a toward the point 15 will continue its course on the opposite rail 12^b after passing the opening 18. In prior constructions the wheel in such case will take one of the rails forming or jointed to the point or center of the frog. Therefore in my construction while the rail 12^a is a continuous rail throughout its length it also forms in practice the continuation of the rail 12^b , and likewise while the rail 12^b is a continuous rail throughout its length it operates as the continuation of the rail 12^a , as above described.

If one rail only, such as 12^a , were continuous and provided with an opening 18 in line with the flange way 16 and secured to the center 13, it would accomplish the objects of my invention to some extent and would be within its scope. This form is used by me in the case of a spring-frog, as shown in Fig. 11, and might be so used in the case of a stiff frog, but would not be so desirable as the employment of two continuous rails, as described and preferred by me.

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

1. In a railroad-frog, a pair of rails combined with a central casting interposed between them, said casting having a point integral therewith, and a flangeway formed in said casting, one of said rails extending the entire length of said casting and secured thereto, and having an opening in the head of the rail in alinement with said flangeway to provide a passage for the flange of the wheel.

2. In a railroad-frog, a pair of rails combined with a central casting interposed between them, said casting having a point integral therewith and a flangeway formed on each side of said point, said rails extending the entire length of said casting and secured thereto, and each rail having an opening in the head thereof in alinement with the flangeway located between it and the said point.

3. In a railroad-frog, a pair of rails combined with a central casting interposed between them, said casting having a point and flangeways formed thereon, one of said rails being bent outwardly adjacent to said point to form a space of abnormal width between the side of said rail and the side of the point, and having an opening in the head of the rail in alinement with one of said flangeways, said space next the head of the rail being occupied by a raised portion formed integral with said central casting and having its inner edge parallel with the side of the point, and with the latter forming the flangeway.

4. In a railroad-frog, a pair of rails combined with a central casting interposed between them, said casting having a point and flangeways formed thereon, said rails being bent outwardly adjacent to the point to form a space of abnormal width between each rail and the side of the point, each rail having an opening in its head in alinement with one of said flangeways, and said space next the head of each rail being occupied by a raised portion made integral with said central casting and having its inner edge parallel with the side of the point and with the latter forming the flangeway.

5. In a railroad-frog, a pair of rails combined with a central casting having a floor-plate, grooves and point, said rails inclosing said central casting and having openings in the heads of said rails cut in alinement with

said grooves to allow the passage of the flange of the wheel, said rails being bent outwardly adjacent to the point to form an abnormal space between the rails and the sides of the point, said space next the heads of the rails being occupied by a raised portion made integral with said central casting and having its top surface flush with the tread of the rail, and having its inner side substantially parallel with the side of the point and forming with the latter the flangeway.

6. In a railroad-frog, a pair of rails combined with a central casting inclosed between said rails, said casting next the rails having its upper surface flush with the treads of the rails, and filling the entire space between the heads and flanges of the rails, said casting having a point and flangeways formed therein, and said rails having openings in the heads thereof in alinement with the flangeways to allow the passage of the flange of the wheel.

7. In a railroad-frog, a pair of rails combined with a central casting interposed between them, said casting having a point integral therewith and a flangeway formed in said casting, one of said rails extending the entire length of said casting and secured thereto, and having an opening in the head of the rail in alinement with said flangeway, and having a recess or depression in the head of the rail at the place where the wheel leaves the rail and takes the point, and in the path of the outer edge of the tread of the wheel.

In testimony whereof I have hereunto set my hand, in presence of two subscribing witnesses, this 11th day of May, 1903.

WM. A. CHAPMAN.

Witnesses:

CHAS. F. PERKINS,
ELMER L. BRIGGS.