

No. 677,170.

Patented June 25, 1901.

A. F. BERNARD.

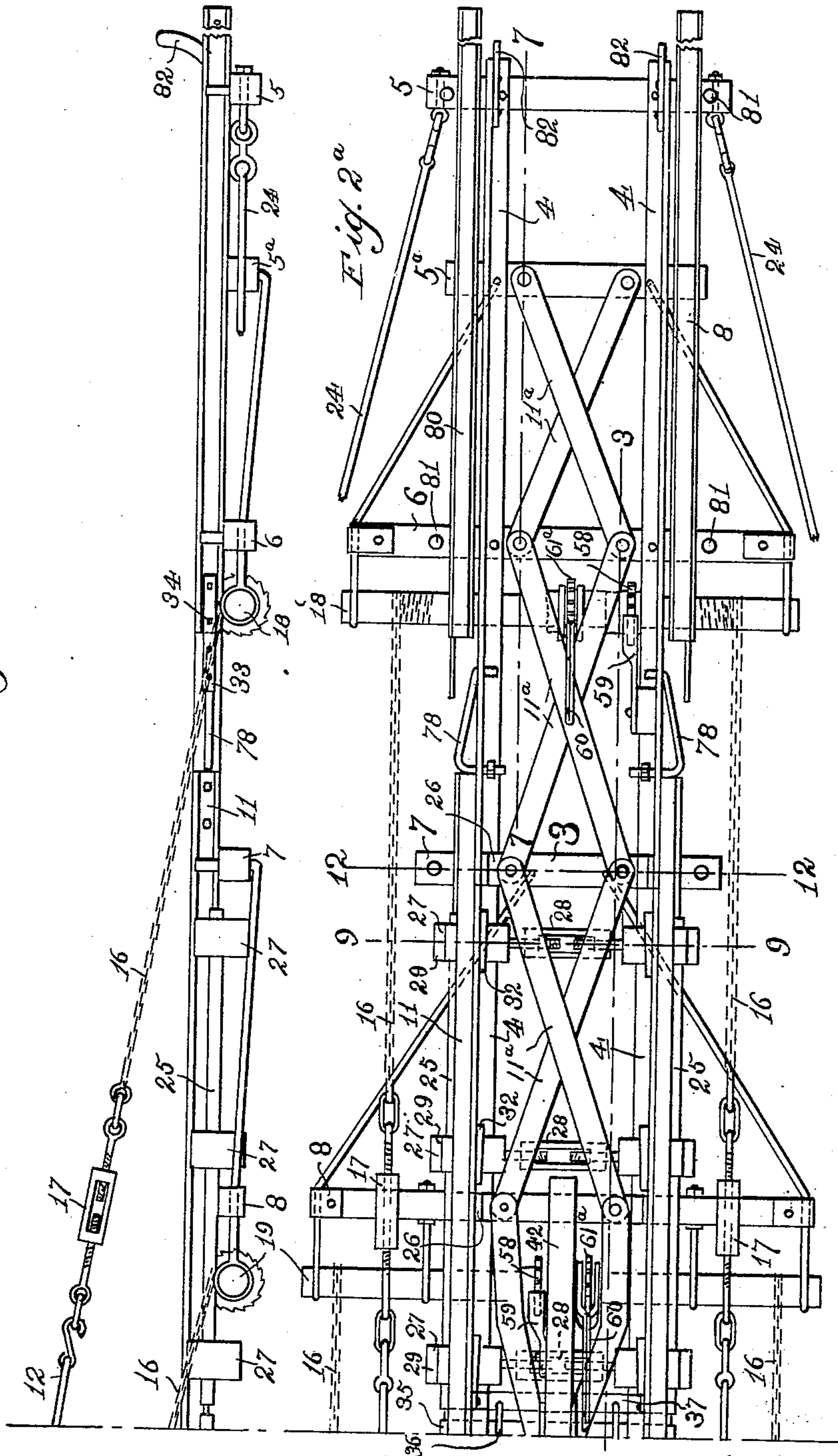
RAILROAD CONSTRUCTION APPARATUS.

(Application filed Apr. 11, 1901.)

(No Model.)

4 Sheets—Sheet 1.

Fig. 1^a



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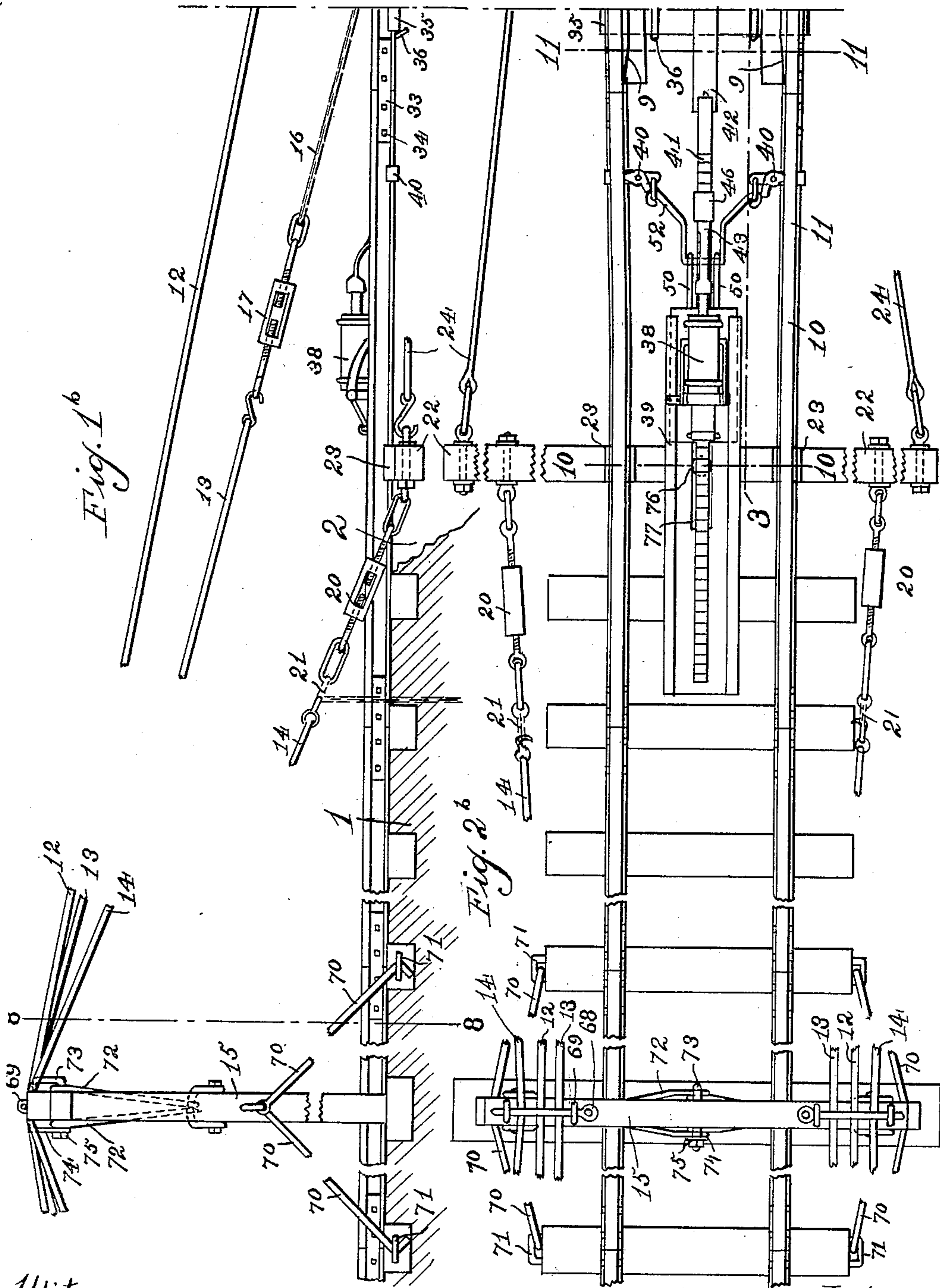
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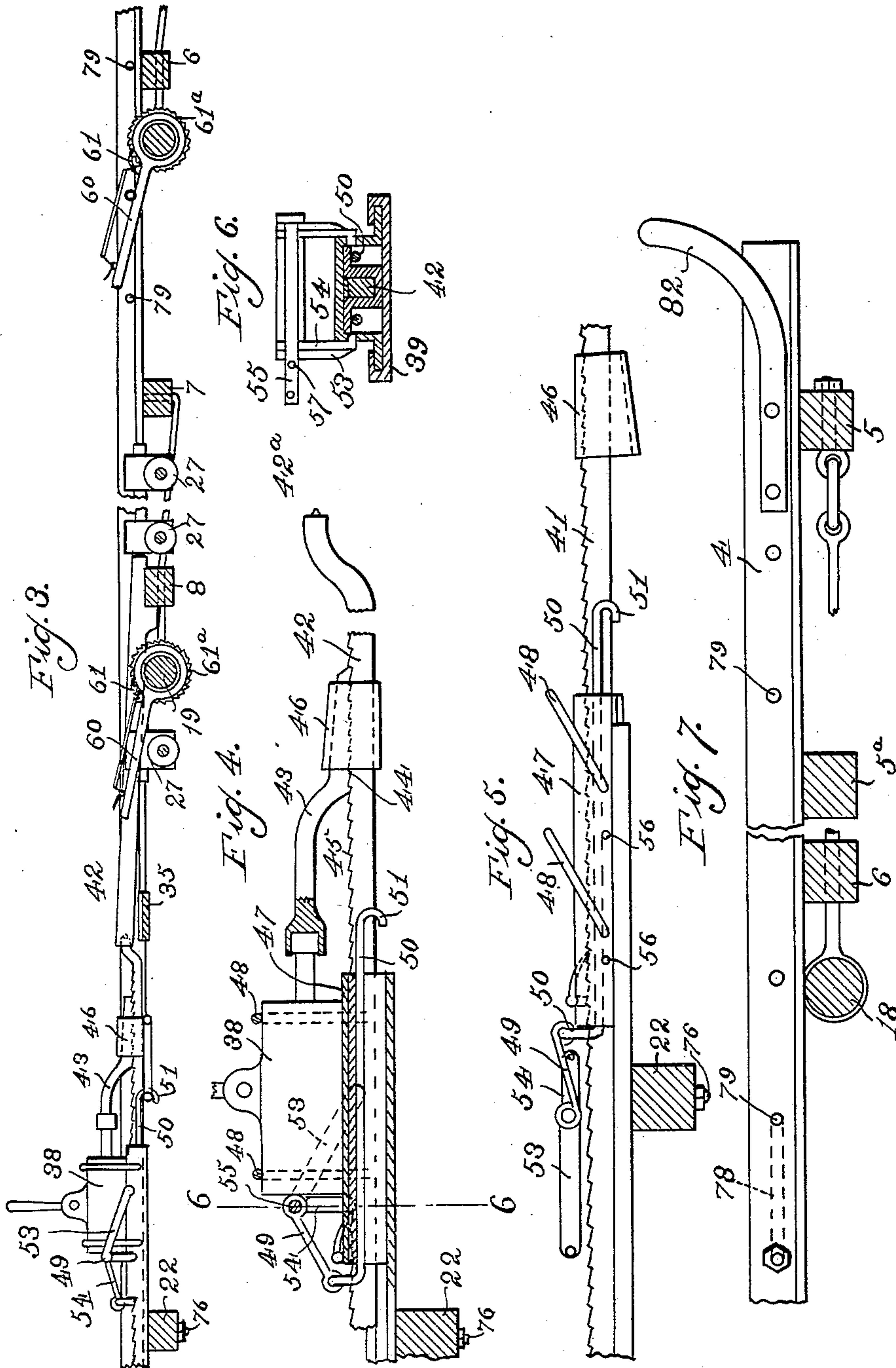
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4 Sheets—Sheet 3.



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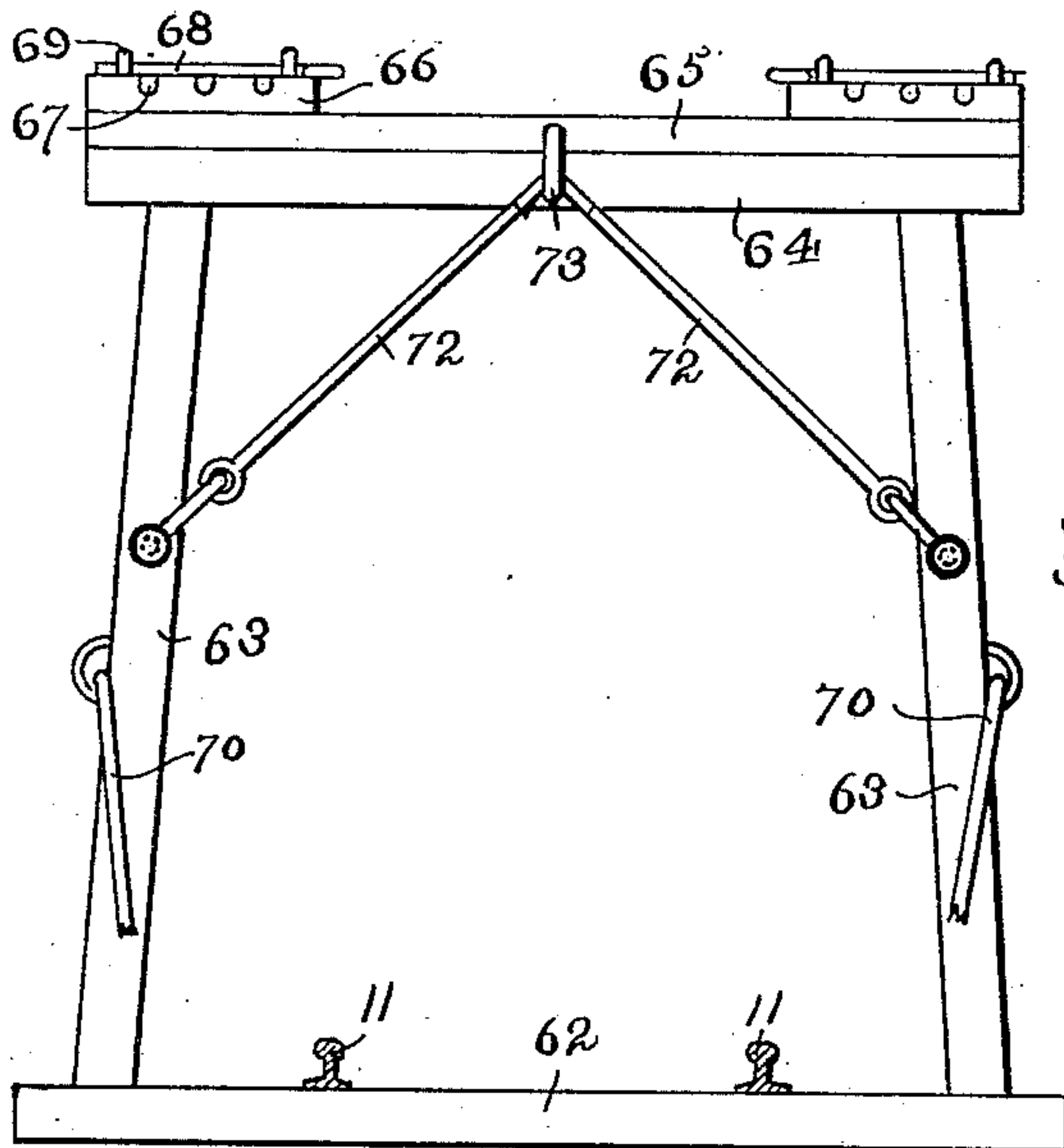


Fig. 8.

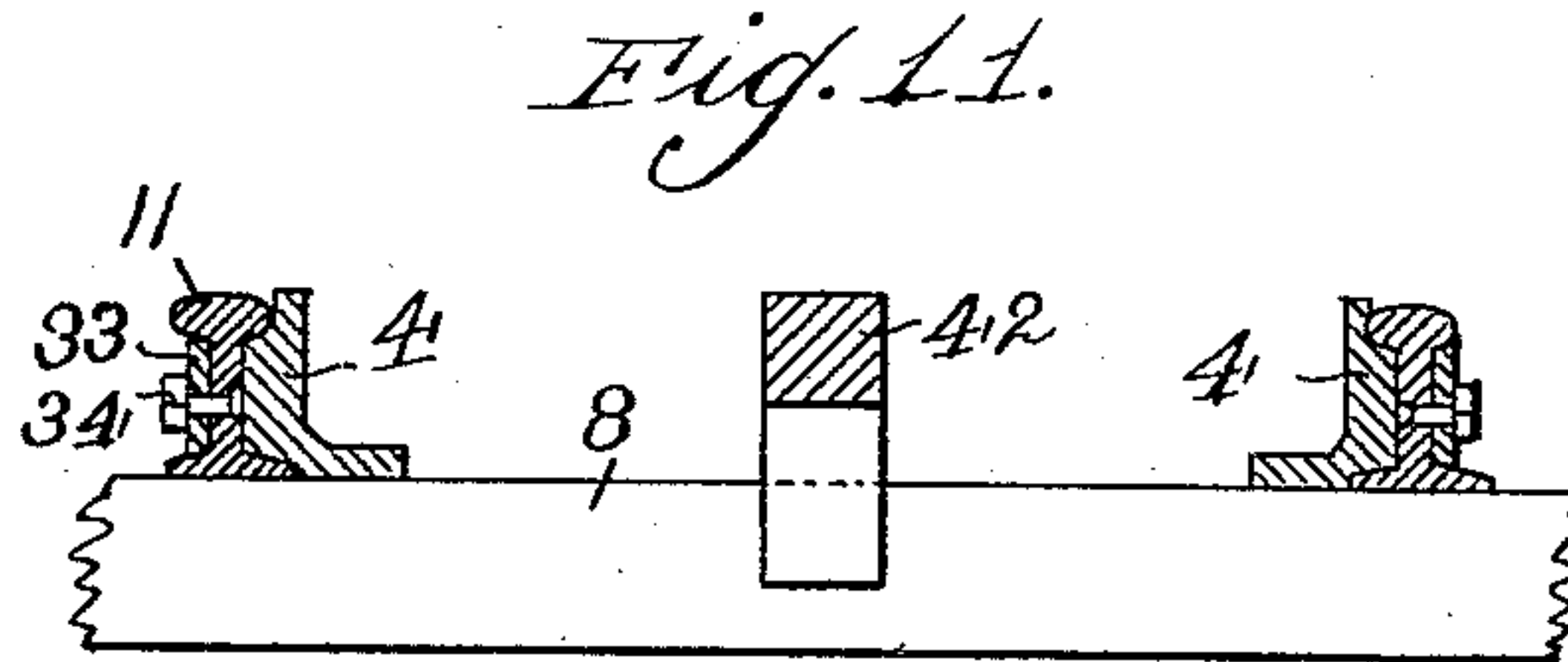


Fig. 11.

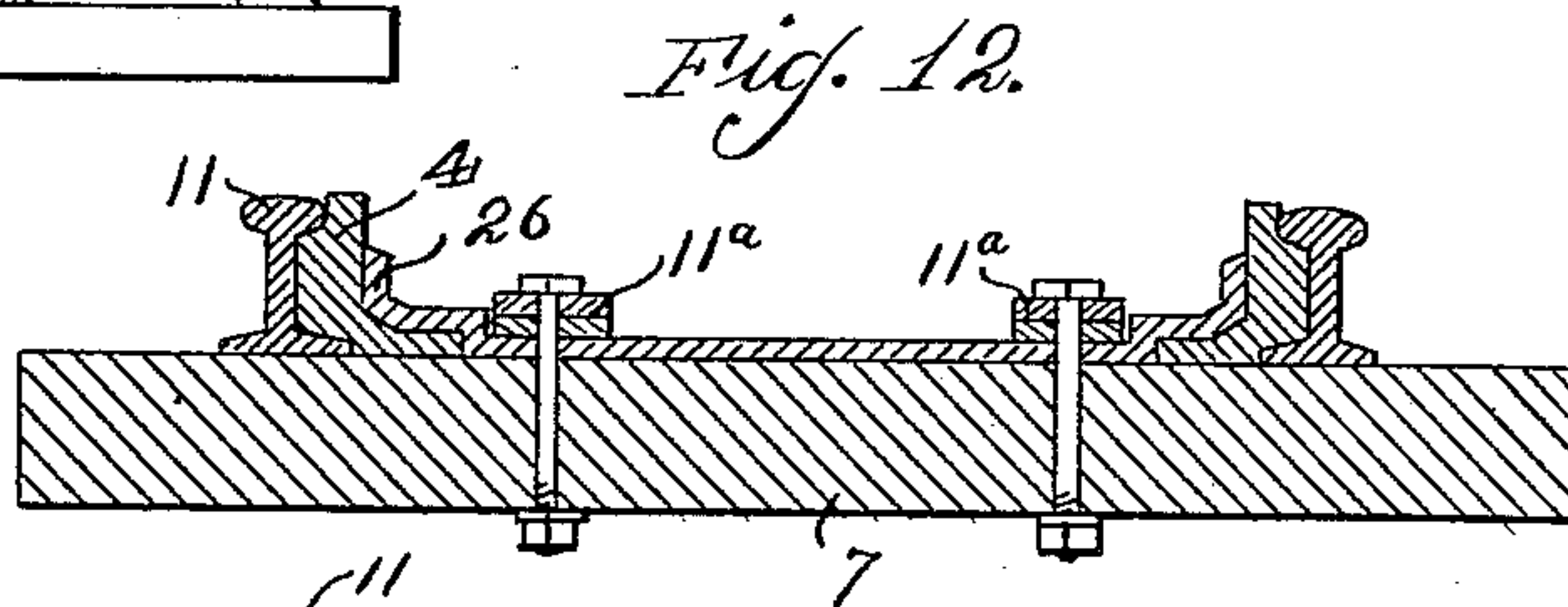


Fig. 12.

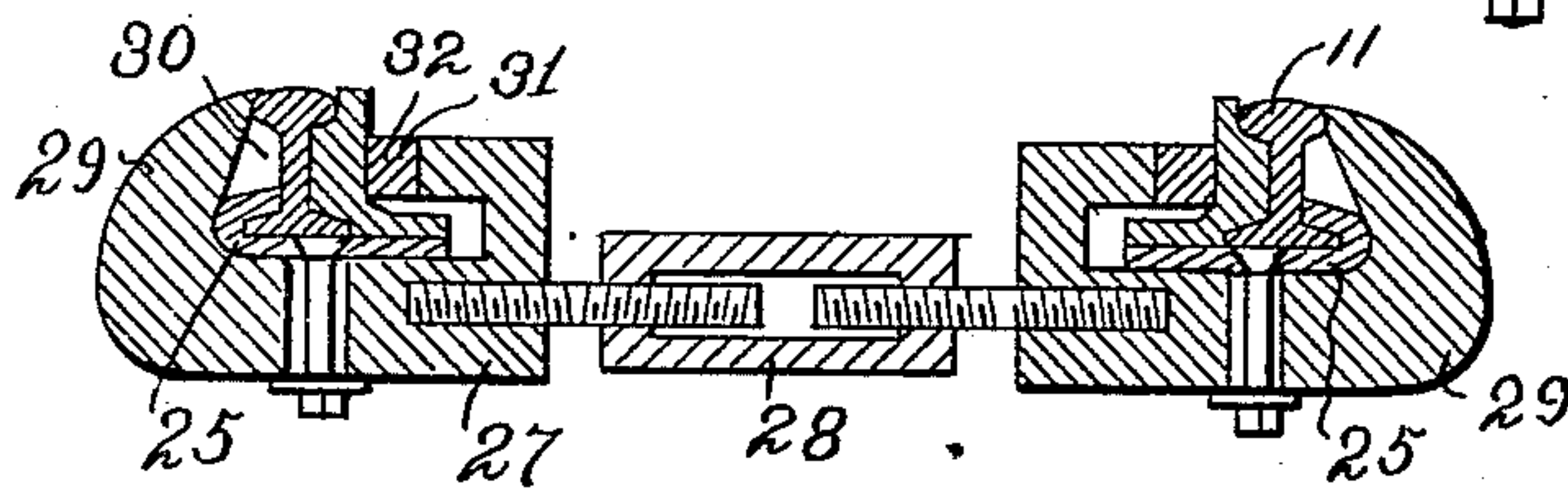


Fig. 9.

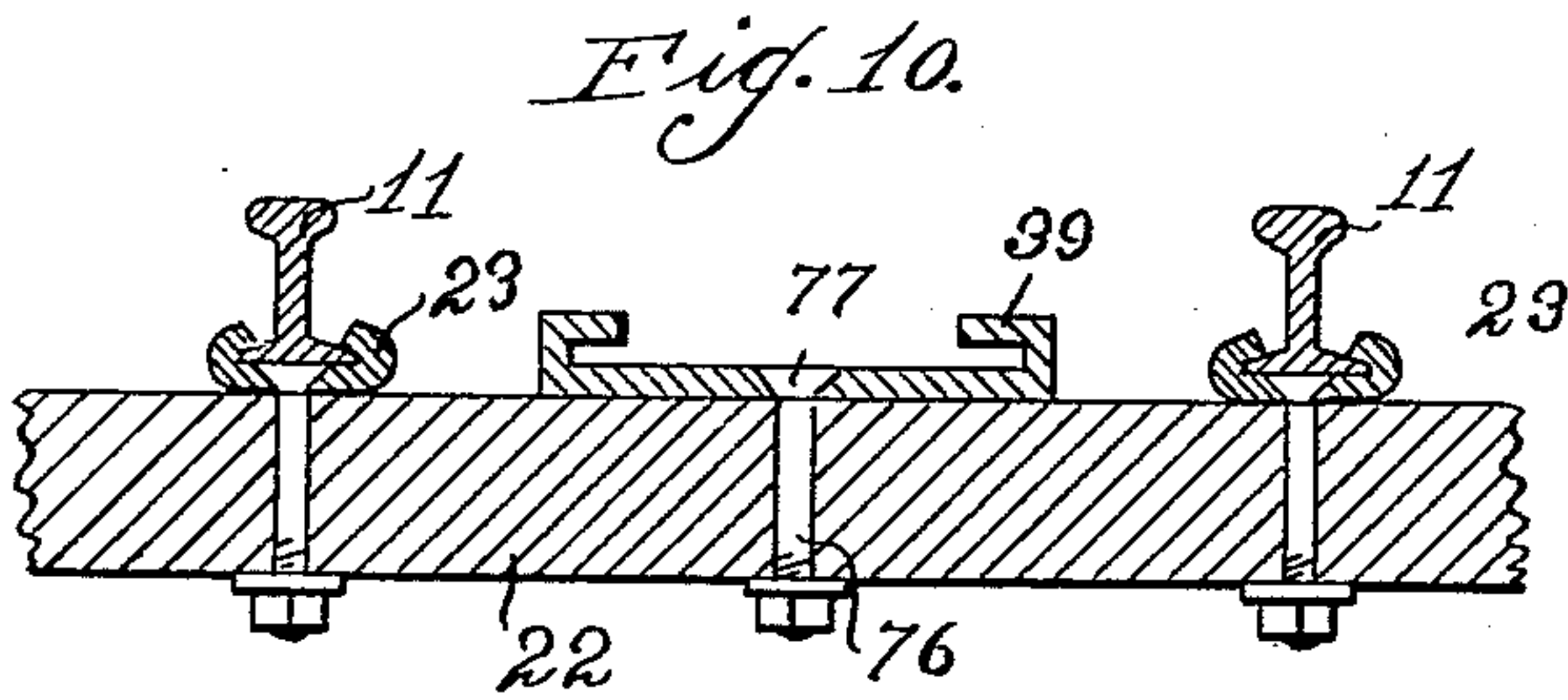


Fig. 10.

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UNITED STATES PATENT OFFICE.

ALFRED F. BERNARD, OF CHICAGO, ILLINOIS.

RAILROAD-CONSTRUCTION APPARATUS.

SPECIFICATION forming part of Letters Patent No. 677,170, dated June 25, 1901.

Application filed April 11, 1901. Serial No. 55,363. (No model.)

To all whom it may concern:

Be it known that I, ALFRED F. BERNARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railroad-Construction Apparatus; and I do hereby 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 a novel apparatus for use in constructing the roadbed for a railroad where more or less filling has to be done, the object being to do away with the necessity of the false trestle-work which is commonly employed and at the same time provide an apparatus of bridge-like construction which can be continuously advanced as the filling proceeds; and it consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings illustrating my invention, Figures 1^a and 1^b are a side elevation of an apparatus constructed in accordance with my invention. Figs. 2^a and 2^b are a plan view of same. Fig. 3 is a detail longitudinal section on line 3 3, Figs. 2^a and 2^b. Fig. 4 is a detail longitudinal section, on an enlarged scale, on line 4 4 of Fig. 2^b. Fig. 5 is a view similar to Fig. 4, with some of the parts removed and others in various positions. Fig. 6 is a detail cross-section on line 6 6 of Fig. 5. Fig. 7 is a detail longitudinal section on the line 7 7 of Fig. 2^a. Fig. 8 is a cross-section on line 8 8, Fig. 1^b. Fig. 9 is a cross-section on line 9 9, Fig. 2^a. Fig. 10 is a detail cross-section on line 10 10, Fig. 2^b. Fig. 11 is a detail cross-section on line 11 11, Fig. 2^b. Fig. 12 is a detail cross-section on line 12 12, Fig. 2^a.

My apparatus is especially useful in cases where very deep fillings are required and where the construction of false work would be very expensive. It is of bridge-like construction and is designed to be assembled at the edge of the fill or the end of the dump and be projected out over the space where it is desired to dump the filling material, the cars as they are emptied being pushed out on the structure until all the cars in the train have

been dumped or until the structure is full of empty cars.

Referring now to said drawings, 1 represents the permanent road-bed, 2 being approximately the end of the fill and the position where it is desired to dump the filling material.

My apparatus comprises a frame 3, built up of the two angle-irons 4, secured to cross-pieces 5, 5^a, 6, 7, and 8, the upright flanges of said angle-irons being spread on said supports to the gage of the track 10. The rear ends 9 of said angle-irons are tapered and adapted to enter between the T-rails 11 of said track 10. Said frame 3 is strongly braced by means of the diagonal braces 11^a, which are secured to said cross-pieces 5, 5^a, 6, 7, and 8 between said angle-irons 4. Said frame 3 is adapted to be advanced or pushed forward from time to time as the filling proceeds and is supported in its position over the fill by means of three pairs of cables 12, 13, and 14, which are carried over the top of a suitable support 15, which is erected back from the edge of the fill, the rear ends of said cables being firmly secured in any suitable manner. The forward ends of said cables 12 and 13 are secured by means of chains 16 and turnbuckles 17 to shafts 18 and 19, which are rotatively mounted on the under side of said frame 3. Said shaft 18 is mounted near the forward end of said frame and said shaft 19 near its rear end. The forward ends of said cables 14 are secured by means of turnbuckles 20 and chains 21 to a cross-beam 22, which is slidably mounted under said rails 11 to the rear of said frame 3 by means of clips 23 and is located at about the point where it is desired to dump the filling material. The forward end of said frame 3 is held sidewise by cables 24, which are secured to the outer ends of said cross-beam 22. Said frame 3 is slidably mounted on said rails 11 by means of the shoe-like members 25, which are secured on said cross-pieces 7 and 8 and in which the outer flanges of said rails 11 are adapted to fit. Said angle-irons 4 are held to their proper gage by means of the braces 26, which are secured to the upper side of said cross-pieces 7 and 8 and have their ends turned up and resting against the inner surface of the vertical flange of said angle-

irons. Three pairs of heavy clamps 27 are provided to draw the rails 11 and the frame 3 firmly together and are located to the rear of said cross-piece 8 and adjacent said shaft 19 and are adapted to clamp said shoes 25 and rails 11 firmly with the said angle-irons 4 of said frame 3, turnbuckles 28 being provided for the purpose of opening and closing said clamps. The jaws 29 of said clamps 27 are adapted to fit around the outer edge of said shoes 25, and the upper ends of said jaws are adapted to bear on the outer side of the ball of the T-rail 11, thus effectually bracing up said rails. The openings 30 in said jaws 29 of said clamps 27 are wider than the combined width of said T-rails 11 and angle-irons 4, thus leaving a space 31, which is adapted to receive a wedge 32 as an additional means of securing the various members rigidly together. Said opening 30 also allows said clamps to be opened and said frame 3 loosened from said rails 11, so that said frame 3 may be moved on said rails. Said angle-irons 4 are adapted to fit the contour of the surface of the inner side of said rails 11, so that when they are clamped together they will both be firmly braced. Said rails 11 are secured together end to end in the usual manner by means of fish-plates 33 and bolts 34; but no plates are placed on the inside of the rail, and the bolt-holes in the flange of the rails 11 are countersunk, so that the inside surface may be free of projections where said angle-irons 4 rest against same. As said frame is moved forward and the joints between rails 11 are freed from said angle-irons the countersunk head-bolts 34 are removed and a fish-plate placed on the inside of the rails and ordinary bolts put in place, the rails being held in their relative positions meanwhile by means of the cross-bar 35, which is adapted to engage the flanges of said rails. Said cross-bar is moved forward with said frame 3 by means of the hooks 36, which are secured to the cross-bar 37 of said frame 3 and are adapted to enter holes in said bar 35 and drag it along with said frame. When said bar 35 reaches a joint in its forward movement it is freed from said hooks and allowed to remain at the joint until said frame 3 has been moved forward far enough to free the bolts 34 of the joint from the ends of said angle-irons 4, when the change in the bolts and fish-plates can be made. Said frame 3 is adapted to be moved forward by means of a jack 38, which is slidingly mounted centrally between said rails 11 to the rear of said frame 3, being mounted in a member 39, which is secured to said cross-piece 22. Said jack is held against rearward thrust by means of the clamps 40, which are adapted to grip the flanges of said rails 11 in advance of said jack. Said jack is adapted to push on a long rack 41, which is slidingly mounted beneath said jack and is adapted to be forced against a member 42, which is secured to the cross-piece 8 of said frame 3. The forward end of said rack is provided with an upturned end and

has a centering-point 42^a, adapted to enter a recess in the end of said member 42 in order to prevent it from being displaced when pressure is being applied. A member 43 is provided having teeth 44 on its lower surface, adapted to engage the teeth 45 of said rack, and is adapted to be firmly clamped in its desired position on said rack by means of the tapered band 46, which is adapted to be wedged in place around said rack and said member 43. The rear end of said member 43 is raised to adapt it to receive the pushing-head of said jack 38. Said jack is removably mounted on a member 47, which is slidingly mounted on said member 39, to the end that when it is not being used it may be removed, so that it will not present any hindrance to the movement of the cars. Said jack is held in place on said member 47 by means of the bands 48, which are shown in Fig. 5 in their depressed position, and it pushes against a back-stop 49, which is also mounted on said member 47, being pivotally mounted on the rear end of a U-shaped bar 50. Said bar 50 is mounted in said member 47, its free ends extending forward beneath said jack and being formed into hooks 51, which are adapted to engage with a U-shaped member 52, the free ends of which are secured to said clamps 40. Said back-stop 49 is adapted to be held in position, as shown in Figs. 3 and 4, by means of the two pairs of braces 53 and 54, which are pivotally mounted on the outer ends of a pin 55, which passes through said back-stop at its upper end, the free ends of said braces being turned inwardly and adapted to enter holes 56 in the sides of said member 41. When the spring-cotter 57 which holds said pin 55 in place is removed, said braces 53 and 54 may be separated and withdrawn from said member 47 and turned back with said back-stop 49 to the position shown in Fig. 5 for the same purpose that said jack is removed. To hold said shafts 18 and 19 against the strain of said cables 12 and 13 ratchet-wheels 58 are mounted on same, and dogs 59, pivotally mounted on said frame 3, adapted to engage with same, are provided. Pivotal levers 60 are mounted on said shafts, having dogs 61 mounted on same, adapted to engage the teeth of ratchet-wheels 61^a, mounted on said shafts, adjacent said levers, for the purpose of rotating said shafts. Said support 15 is shown in elevation in Fig. 8 and consists of the foundation-piece 62, on which are erected the two uprights 63, which support on their upper ends the cross-pieces 64 and 65, on the outer ends of which the saddle-blocks 66 are supported. Said saddle-blocks 66 are each provided with three cross-grooves 67, each of which is adapted to receive one of said cables 12, 13, or 14. Pins 68 are provided to prevent said cables from getting out of their grooves, said pins being entered under staples 69. Said uprights 63 are held in place by means of hooks 70, which are pivotally mounted on said uprights and are adapted to

engage staples 71, which may be driven into the ends of suitable ties. Hooks 72 are also mounted on said uprights and are adapted to engage with a U-shaped bolt 73 in the center of said cross-pieces 64 and 65, said bolt 73 being held in place by means of the plate 74 and nuts 75. This construction provides for the taking apart of said support 15 for its removal and erection.

10 In operating my device, after it has been erected in position on the edge to the space which it is desired to fill the frame 3 is pushed forward from time to time as the work proceeds. To do this, the jack 38 is put in place
15 and the clamps 27 are loosened, when said frame can be forced forward on said rails 11. As this is done said shafts 18 and 19 are allowed to rotate by means of said levers 60, thus letting off some of said chains 16 and
20 preserving said frame in its level position. Said member 39 is secured to said cross-piece 22 by means of a bolt 76 and slot 77, thus permitting said cross-piece 22 to follow said frame. When said frame has been forced to its de-
25 sired position, U-shaped brace-bars 78 are put in place in holes 79 in the upright portion of said angle-irons 4, just in advance of the forward end of said T-rails 11, and said frame 3 is drawn back, so that said U-braces
30 will take the thrust. The upright portion of said angle-iron 4 is provided with a series of the holes 79, so that said braces 78 may always be placed close to the ends of said T-rails 11. As said frame 3 is advanced said
35 braces 78 recede from the forward end of said frame 3, and finally there will be sufficient free space on the forward end of said frame 3 to connect in an additional T-rail to the end of said track 10, when said U-braces 78 are
40 carried forward. Extra rails 80 may be carried on the outer ends of said cross-pieces 5, 5^a, 6, and 7, stakes 81 being provided to prevent same from being thrown off of said cross-pieces. Stops 82 are provided, secured to the
45 forward end of said angle-irons 4, to prevent the dump-cars from being pushed off of the end of said frame.

I claim as my invention—

1. In a device of the kind specified, the combination with a permanent track, of a movable frame carrying rails adapted to be guided by and partially supported by said permanent track, a bridge spanning said permanent track, guy-ropes anchored at one end and passing
55 over said bridge and connected at their other ends with said movable frame to support the same, stops on said frame bearing against the end portion of said permanent track to hold said frame against movement in one direction, and power appliances on said permanent track and engaging said movable frame for moving the latter to project same farther beyond the end of said permanent track.

2. In a device of the kind specified, the combination with a permanent rigid track, of a support for cars adapted to be projected beyond the end of said permanent track over a

fill, comprising a movable frame carrying rails and supported at one end on said permanent track, suspension devices supporting the free
70 end of said frame, movable stops carried by said frame and bearing against the end portion of said permanent track for holding said frame against retrogressive movement, means for clamping the inner end portions of the
75 rails carried by said frame to the outer end portions of the rails on said permanent track, and power appliances on said permanent track engaging a part of said movable frame for projecting the latter farther over said fill.

3. In a device of the kind specified, the combination with a permanent track, of a support for cars adapted to be projected beyond the end of said permanent track and over a fill, said support comprising a frame carrying
85 rails and movable longitudinally with relation to said permanent track, said frame being supported at one end on said permanent track, suspension devices supporting the free end of said frame, devices for moving said
90 frame relatively to said permanent track in one direction, and devices for holding said frame against retrogressive movement.

4. In a device of the kind specified, the combination with a permanent track, of a frame
95 carrying rails and movable longitudinally with relation to said permanent track, said frame being adapted to be projected beyond the end of said permanent track and over a fill, of guy ropes or cables supporting the free
100 end of said frame, a raised support over said permanent track upon which said guy-ropes are supported between their ends, a windlass carried by said frame with which said guy-ropes connect, a power appliance for moving
105 said frame in one direction, and stops for preventing retrogressive movement thereof.

5. In a device of the kind specified, the combination with a permanent track, of a frame carrying rails and movable longitudinally
110 with relation to said permanent track, said frame being adapted to be projected beyond the end of said permanent track and over a fill, of guy ropes or cables supporting the free end of said frame, a raised support over said
115 permanent track upon which said guy-ropes are supported between their ends, windlasses carried by said frame with which the end portions of said guy ropes or cables connect, power appliances on said permanent track en-
120 gaging a part of said frame to move the latter in one direction, and movable stops on said frame engaging the end portion of said permanent track to prevent retrogressive movement of said frame.

6. In a device of the kind specified, the combination with a permanent track, and a bridge spanning same, of a movable frame supported at one end upon said permanent track and adapted to project over a fill, rails on said
130 frame adapted to fit between the rails of said permanent track, devices for clamping the rails of said frame to said rails of said permanent track; movable stops on said rails of

said frame adapted to bear against the ends of the rails of said permanent track, power appliances on said permanent track adapted to engage and move said frame in one direction, windlasses carried by said frame, and 5 guy ropes or cables connected at one end with said windlasses, and passing over said bridge and anchored at their other ends.

7. In a device of the kind specified, the combination with a permanent track, and a bridge 10 spanning same, of a movable frame adapted to be supported at one end on said permanent track and project at its other end over a fill, rails on said frame extending at one end between the end portions of the rails of said 15 permanent track, devices for clamping said

rails of said frame rigid with the rails of said permanent track, power appliances engaging said permanent track and said frame for moving said frame in one direction, guy ropes or 20 cables passing over said bridge, anchored at one end and connected at their other ends with said frame, and devices carried by said frame and engaging said guy ropes or cables for raising and lowering the free end of said 25 frame.

In testimony whereof I affix my signature in presence of two witnesses.

ALFRED F. BERNARD.

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RUDOLPH WM. LOTZ.