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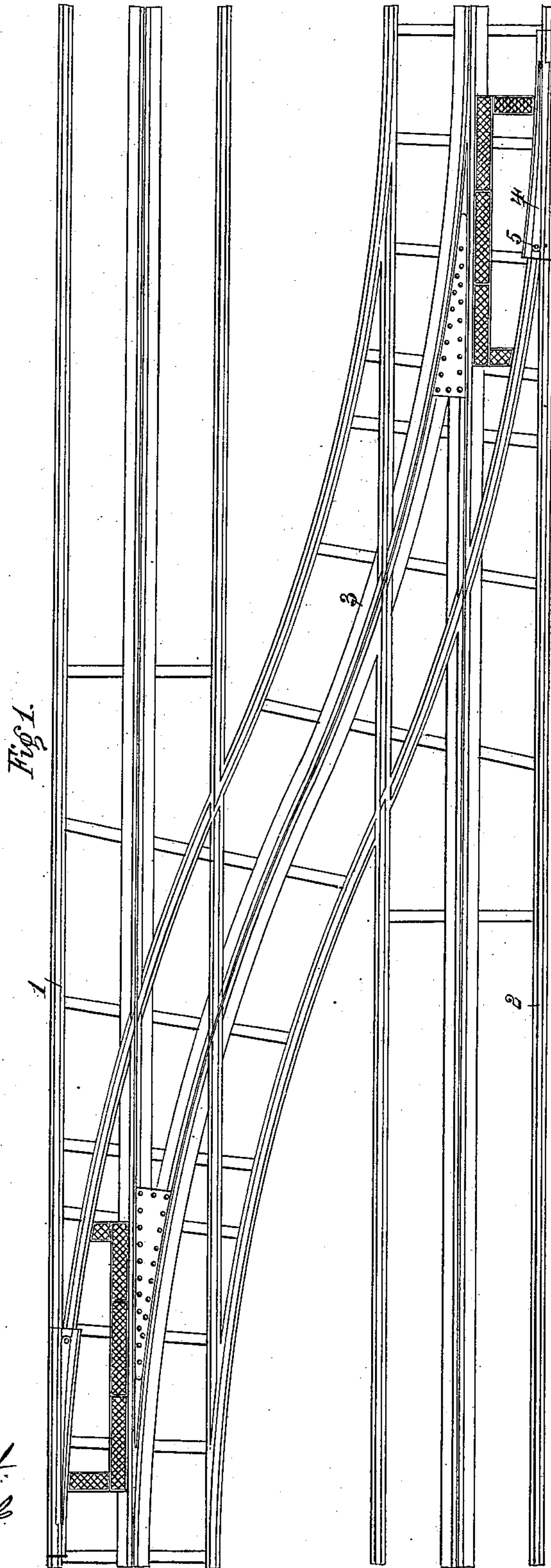
4 Sheets—Sheet 1.

D. J. MILLER.

SWITCHING DEVICE FOR CABLE RAILWAYS.

No. 332,932.

Patented Dec. 22, 1885.



Witnesses:
H. S. Knight
Geo. Wheelock

Daniel J. Miller
Inventor
By Knight Bros.
His Attorneys

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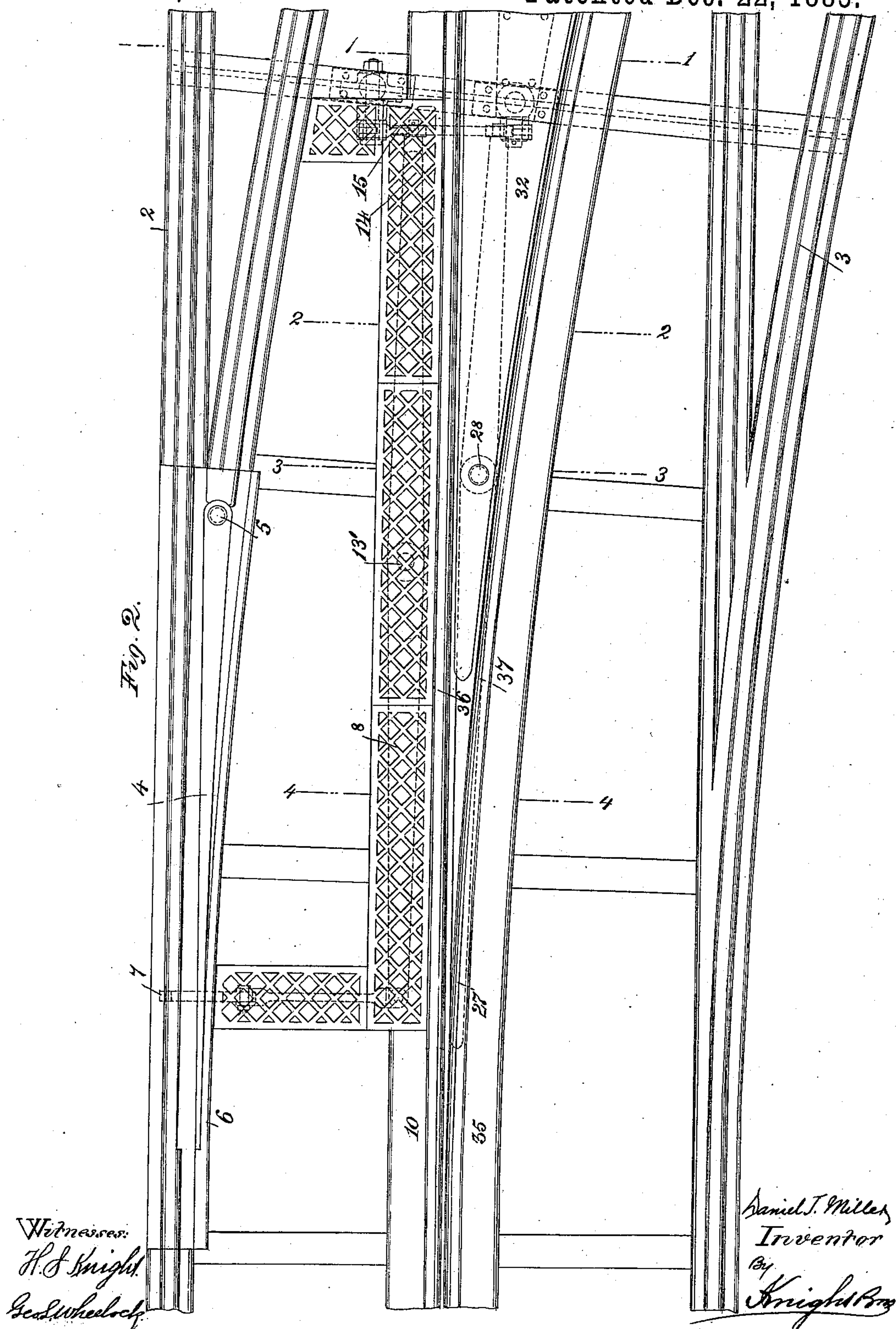
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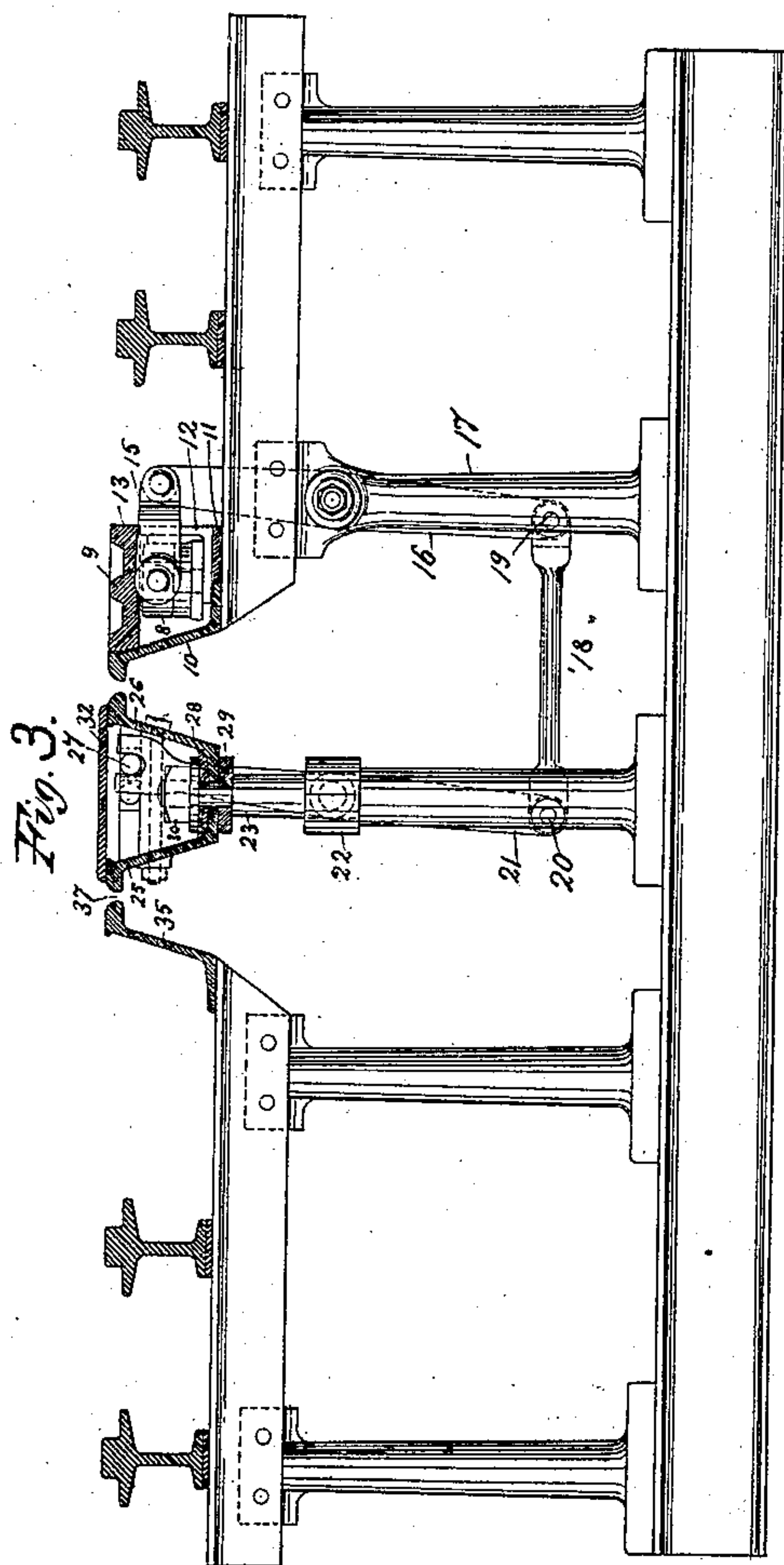
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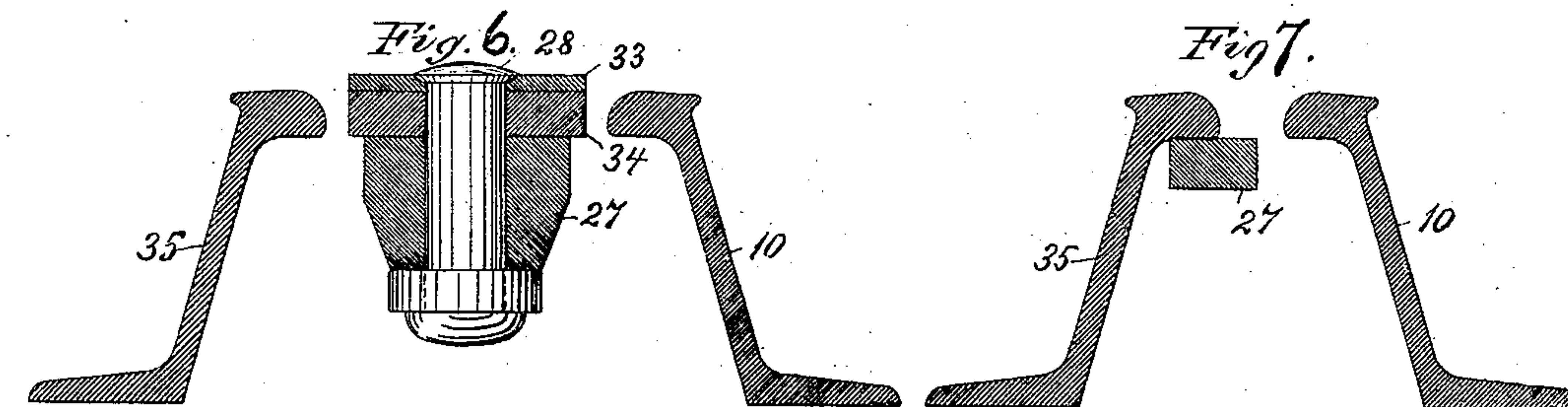
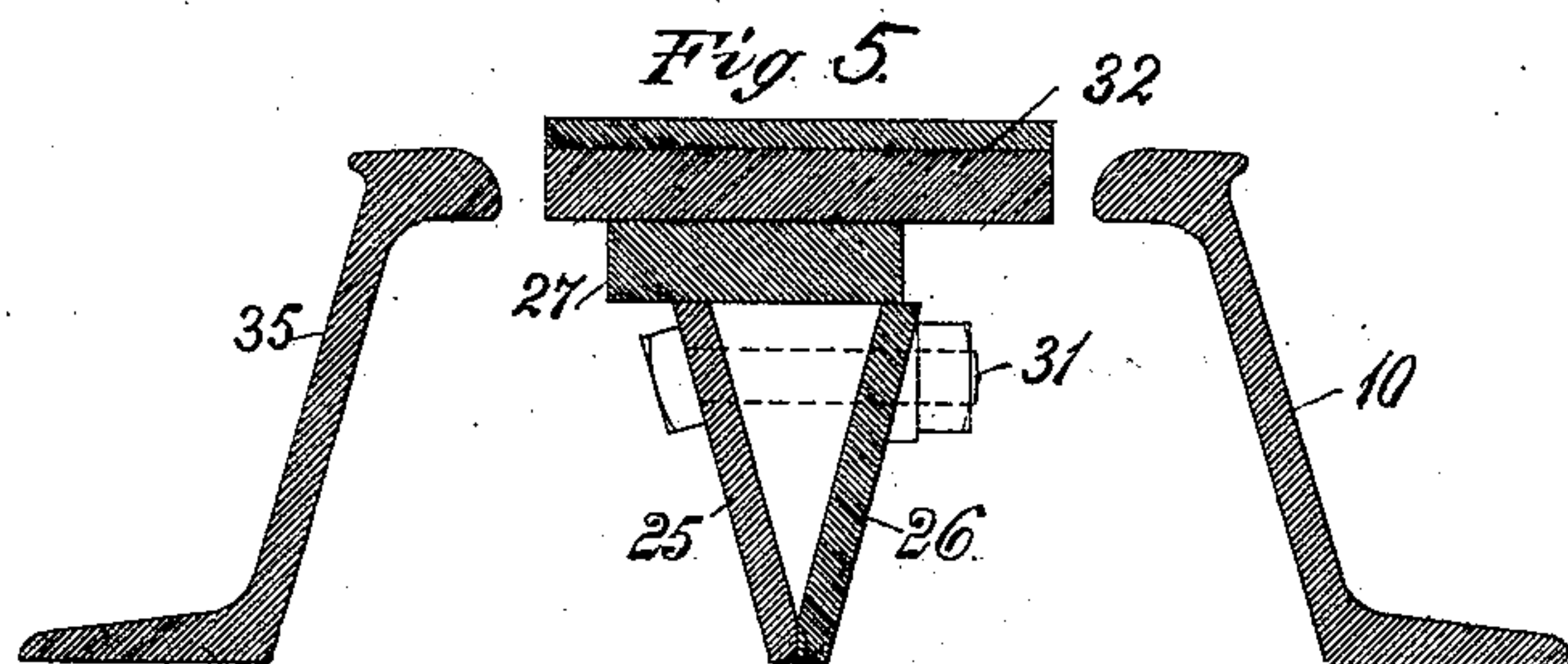
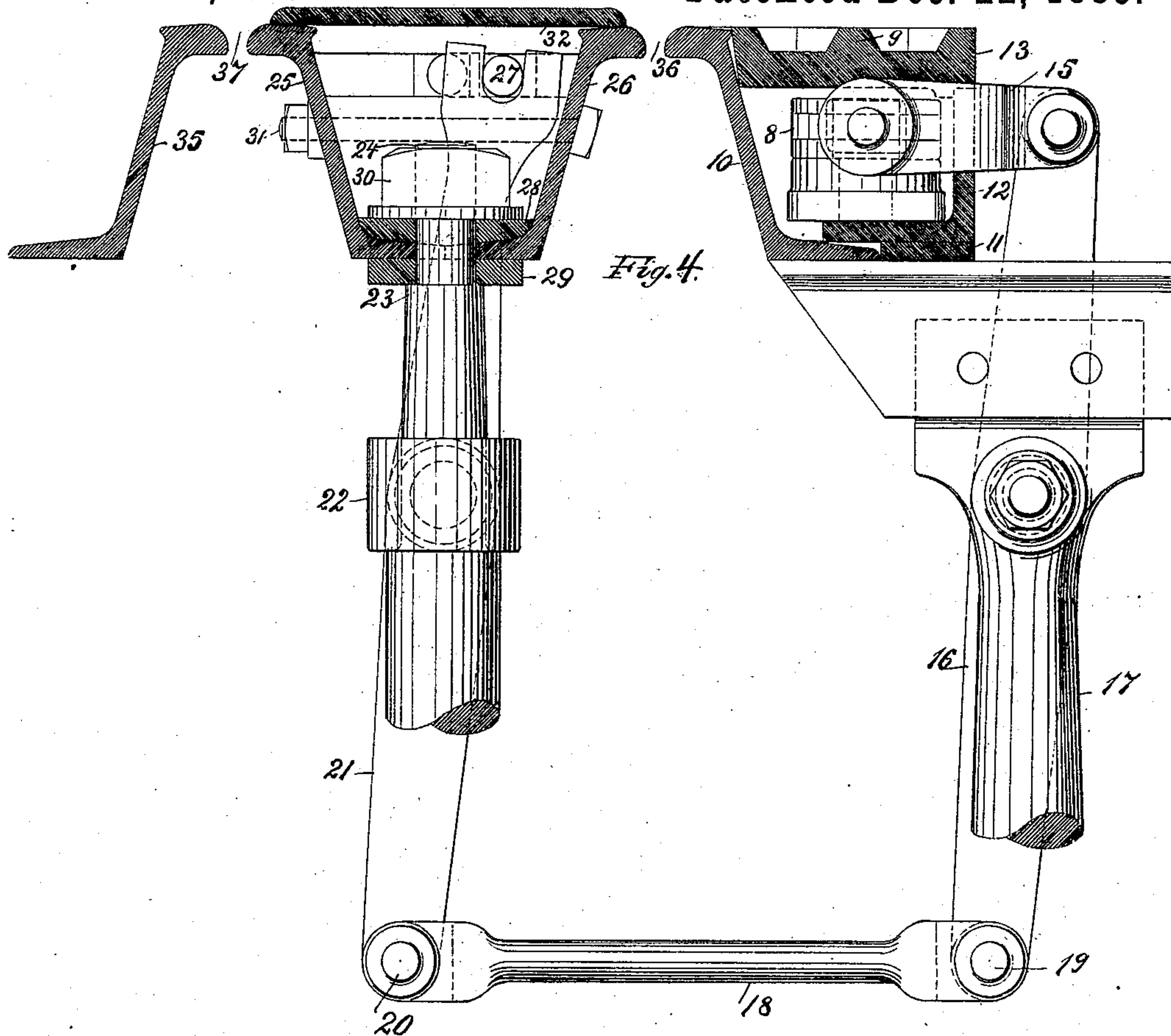
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UNITED STATES PATENT OFFICE.

DANIEL J. MILLER, OF NEW YORK, N. Y.

SWITCHING DEVICE FOR CABLE RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 332,932, dated December 22, 1885.

Application filed March 16, 1885. Serial No. 153,955. (No model.)

To all whom it may concern:

Be it known that I, DANIEL J. MILLER, a citizen of the United States, and residing in the city, county, and State of New York, have made certain new and useful Improvements in Switching Devices for Cable Railways, of which the following is a specification.

My invention relates to improvements in switching devices for cable railways; and it consists in means whereby both the cars and their grips are switched and guided upon side tracks and turn-outs simultaneously and from the same point of operation, and also in such an arrangement of parts as that a car and its grip may pass from a branch line or turn-out onto the main track without the interposition of an operator and without removing the gripping device from the conduit. To these ends I employ at the point of intersection of the rails of the branch-line siding or turn-out and the main tracks a pivoted tongue, which normally does not interfere with the continuity of the said main tracks. A pivoted grip-slot tongue having one of its ends extending to the point of intersection of the grip-slot of the main track and the grip-slot of the branch line or turn-out remains normally out of interference with the continuity of the main grip-slot. As a car passes from a branch line or turn-out onto the main line, the grip, simultaneously with the flange of the wheel of the car which operates to adjust the tongue of the track, adjusts the grip-slot tongue in such a position as that the grip readily passes into the conduit of the main line, as will be described in detail hereinafter. The tongue of the switch rests within a slot formed in a switch-bar, which latter is connected with a switch-lever having a suitable frame. Said switch-bar is extended and connected by a knuckle-joint to a horizontal pivoted lever, which latter is connected by intermediate levers, hereinafter to be more fully described, with the pivoted grip-slot tongue.

When it is desired to switch a car and its grip upon a side track, or upon another line, by operating the switch-lever both the switch-tongue and grip-slot tongue are simultaneously adjusted laterally in such a position as that the rails of the main track are made continuous with the rails of the branch track or turn-

out, and at the same time the grip is guided by the grip-slot tongue from the slot and conduit of the main track into the slot and conduit of the branch line, as aforesaid.

In the accompanying drawings, Figure 1 represents a plan view of two parallel tracks and a turn-out. Fig. 2 is a plan view of the switch enlarged. Fig. 3 is an end elevation on the line 1 1, Fig. 2, partly in section. Fig. 4 is a detail view partly in section, the supporting-pillars being broken away. Fig. 5 is a sectional detail view through the line 2 2, Fig. 2. Fig. 6 is a sectional detail view through the line 3 3 in Fig. 2, showing the pivotal pin of the grip-slot tongue in elevation. Fig. 7 is also a sectional detail view through the line 4 4, Fig. 2.

1 and 2 represent lines of track connected by a switch or turn-out 3.

Referring to Fig. 2, which is an enlarged view of the switching mechanism, 4 is the tongue of the switch, pivoted at 5, said tongue 4 normally being in a position, in conjunction with the opposite pointed rail, 6', to preserve the continuity of the main line. The said switch-tongue 4 rests within a slot formed in the switch-bar 7, which latter is connected by a knuckle-joint to a horizontal connecting-lever, 8, within an inclosing-box, 9, (shown in detail in Fig. 3,) consisting of the slot angle-iron 10, the base-piece 11, the side angle-iron, 12, and top casting, 13. The said horizontal connecting-lever is pivoted at 13', within said inclosing-box 9, at or near its central portion, and has its other end, 14, connected by a link, 15, which couples said lever 8 to a vertical lever, 16, pivoted at or near its central portion to the supporting-pillar 17. A bar, 18, secured at 19 by a knuckle-joint to the lower end of said vertical lever 16 and at 20 to the vertical lever 21, serves as a connecting-bar between the said vertical levers 16 and 21. The bar 18 is placed low enough to avoid the moving grip, and it may be situated on, below, or slightly above the bottom of the conduit. The vertical lever 21 is pivoted at or near its central portion to the central supporting pillar, 22, which latter has its upper end shouldered at 23 and screw-threaded at 24. Two slot-rails, 25 and 26, having semi-circular perforations on their respective bases

at a point where they rest upon the supporting-pillar, 22, together with the cover-plate 32, form an inclosing-box for the rear portion of the grip-slot tongue 27, which latter is pivoted
 5 at or near its central portion at 28 to the cover-piece 32. The upper end of the vertical lever 21 is bifurcated or forked, and within this fork the rear end of the said tongue 27 is placed. The other and opposite end of said
 10 tongue 27 extends to the point of intersection of the grip-slot of the main and the grip-slot of the siding or turn-out. The slot-rails 25 and 26 rest upon the central supporting pillar, 22, and are secured to the same by two plates,
 15 28 and 29, the semicircular perforations on the base of said flanges meeting around the shoulder of the said pillar 22, and are securely held between said plates by means of the nut 30. Confining-bolts 31 serve to keep the
 20 said angles 25 and 26 in their proper relative positions. The cover-piece 32 consists of two parts, 33 and 34, attached to the slot-rails 25 and 26. The lower part, 34, being cut away at a point above the vertical lever 22
 25 to allow the same to describe its arc, extends beyond said supporting-pillar 22, and serves as a support for the pivot-point 28 of the tongue 27, as aforesaid. (See Fig. 7.) This latter consists of a bolt, which passes through
 30 a perforation in the tongue 27. The slot-rails 25 and 26 also extend beyond said central supporting-pillar, 22, and have the form shown in Fig. 4 until they reach the line 2 2, Fig. 2, when they assume the form shown in Fig. 5,
 35 terminating at the line 3 3, Fig. 2, when the slot-rail 10 of the main and the slot-rail 35 of the branch line form a single slot of such a width, as shown in Fig. 7, as will permit the
 40 point or end of the tongue 27 to guide the grip into either the slot of the branch or the slot of the main line. 36 is the slot of the main, and 37 the slot of the siding or turn-out.

The operation of this device is as follows: Normally, the switch is so set as that the continuity of the main track is preserved, as
 45 shown in Fig. 2. When it is desired to switch a car and its grip upon a side track, or upon a turn-out which connects with a parallel line of track having another cable, as shown in
 50 Fig. 1, the operator, by throwing the switch-lever over, draws upon the switch-bar 7, which latter in turn draws upon the switch-tongue 4, placing the same in such a position as that a connection is made between the rails of the
 55 main track and the siding or turn-out. At the same time the said switch-bar 7 draws upon the pivoted horizontal lever 8 at the point of connection, causing its opposite end, which is connected to the link 15, to move in a direction
 60 toward the slot 36 of the main track. Said link 15 transmits said motion to the pivoted vertical lever 16, the lower end of which moves in an opposite direction, the motion of the latter being transmitted by means of the connecting-bar 18 to the vertical lever 21, the bifurcated upper end of which, having the rear

end of the pivoted tongue 27, moves in a direction toward the slot 37 of the siding, its opposite and remaining end moving away from
 70 under the slot-rail 35 and assuming a position partially under the slot-rail 10, so that the grip, as it moves through the main slot and arrives at the point of intersection, is diverted and guided from its normal course into the
 75 slot 37 of the siding or turn-out. It will thus be seen that the relative adjustment of both the grip-slot tongue 27 and the switch-tongue 4 is isochronal and from the same point of operation. It will also be seen that the grip can
 80 be easily transferred from one conduit to another without lifting or lowering it or shifting it in any way relatively to the car.

In placing the supporting-pillar for the triangular-shaped cover centrally between the slot-rails in the position shown in the drawings I afford a substantial and economically-
 85 constructed prop or stay for said cover at a point nearest the intersection of the conduits, which will not interfere with the travel of the grip.
 90

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

1. In a cable railway, the combination of the diverging conduits and a tongue extending
 95 from the intersection of the two slots to and beyond a pivot on which said tongue is swiveled, with the mechanism for operating the tongue.

2. In a cable railway, the combination of the
 100 horizontally-movable tongue, the vertically-swinging lever connected to one end thereof, and the operating mechanism.

3. In a cable railway, the combination, with a pivoted slot-tongue, of a vertically-swinging
 105 lever engaging at one end therewith, a connecting-bar located transversely of the tunnel and beneath the travel of the grip, and the operating mechanism, said connecting-bar being connected at its respective ends with said
 110 vertically-swinging lever and the operating mechanism, substantially as set forth.

4. In a cable railway, the combination of the main and branch conduits, said conduits provided with slot-rails, substantially as shown
 115 and described, the contiguous slot-rails of the two conduits terminating in and being firmly secured to a single stationary plate, with a movable tongue or extension for opening the slot of the main conduits and closing that of
 120 the branch conduit, and vice versa, as set forth.

5. In a cable railway, the combination of the outer slot-rails and a single cover-piece supported centrally by a single pillar between the
 125 said diverging outer slot-rails.

6. In a cable railway, the combination of the main and branch conduits, with their corresponding openings or slots, of the triangular cover-piece supported from a single central
 130 pillar, with the tongue situated beneath and pivoted to the cover-piece, as shown and described.

7. In a cable railway, the combination of the main and branch conduits, the swinging tongue of the slot-rails, supported by and beneath the triangular cover-piece, the system of levers 5 connecting said tongue with the source of operation, and the operating-lever, all arranged substantially as and for the purposes set forth.

8. In a cable railway, the combination of the slot-tongue pivoted and supported as described, the vertical levers pivoted on the supporting-pillars, the connecting-bar extending between the levers and beneath the travel of the grip, within the conduit, and a system of levers extending to the source of operation, 15 and the operating-lever, substantially as shown and described.

9. In a cable railway, the main and branch conduits, the main and branch slots and slot-rails, and the cover-piece arranged and supported centrally and from a single pillar between the branching conduits, with the tongue

pivoted to and beneath the cover-piece, the vertical lever for operating the tongue and pivoted to aforesaid central pillar, a bar extending beneath the travel of the grip within 25 one of the conduits, and a series of levers extending to the operating-lever, with said operating-lever, as set forth.

10. In a cable railway, the combination of the slot-tongue pivoted as described, the vertical lever pivoted to the central pillar for 30 throwing the tongue from one position to another, the bar extending beneath the travel of the grip within the conduit, the vertical and horizontal levers arranged and distributed as 35 shown and extending to the operating-lever, with said operating-lever, as set forth.

DANIEL J. MILLER.

Witnesses:

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C. HAAG.