

**No. 701,889.**

**Patented June 10, 1902.**

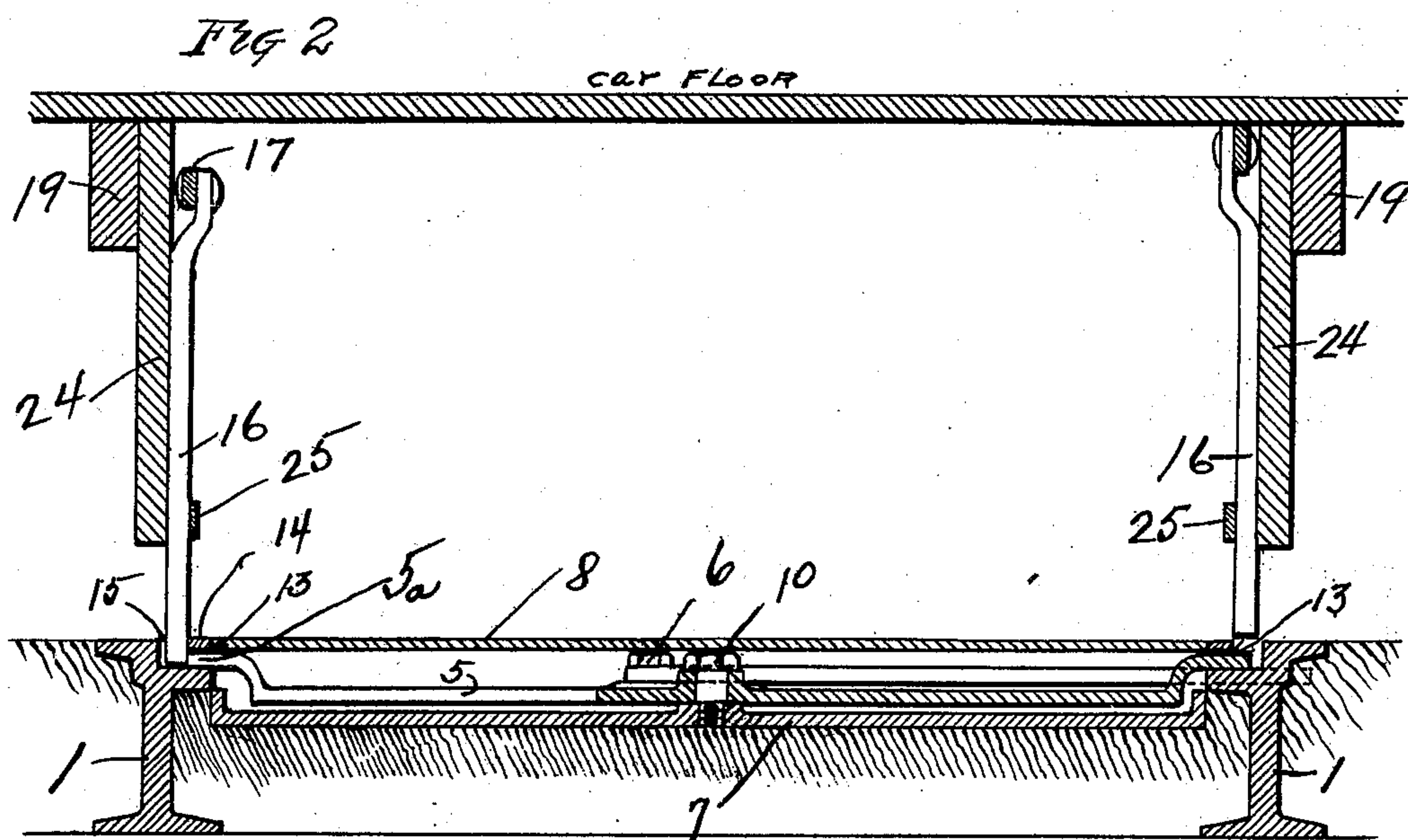
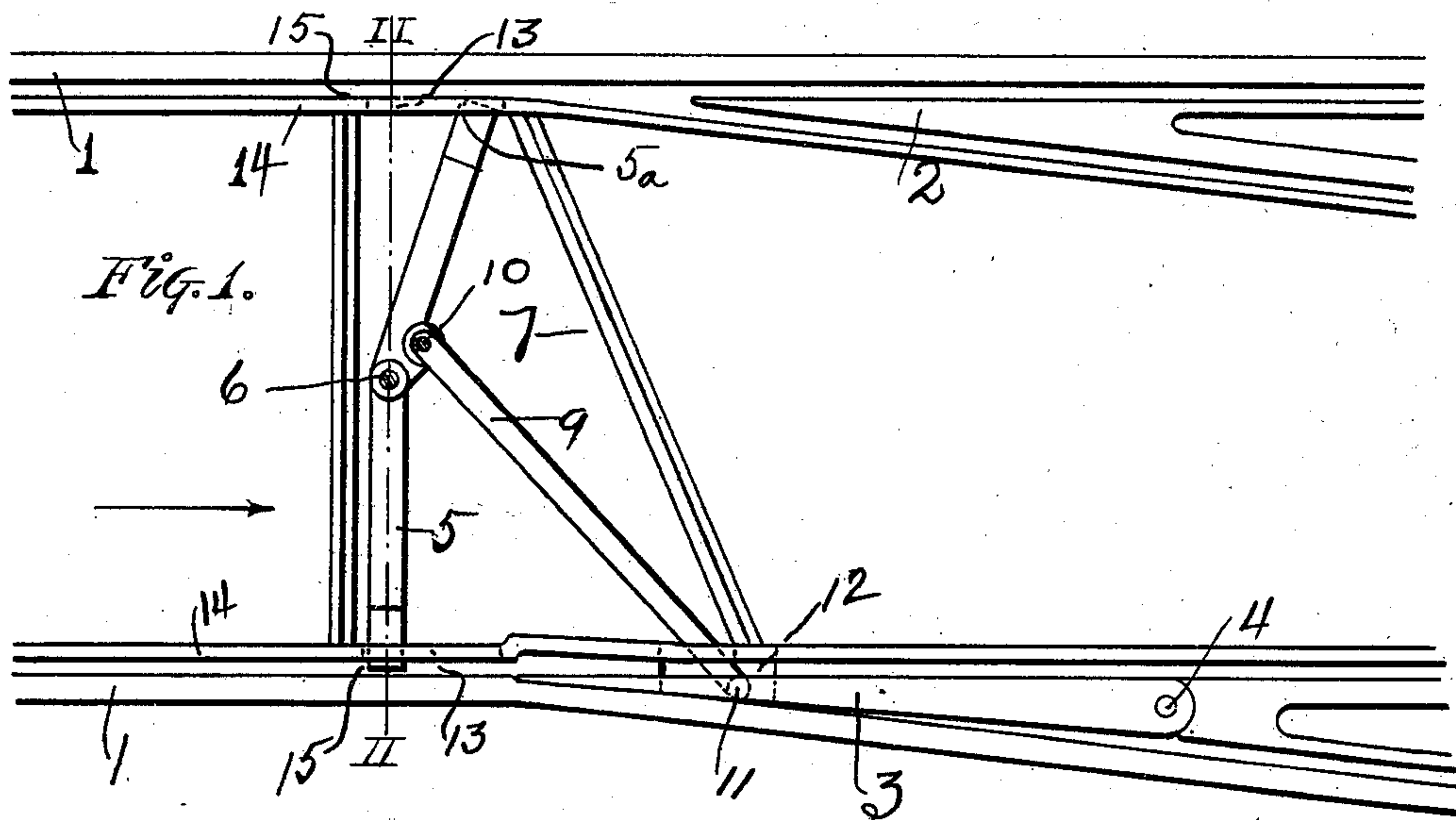
**C. C. JAMES.**

**SWITCH THROWING DEVICE.**

(Application filed Sept. 6, 1901.)

(No Model.)

**2 Sheets—Sheet 1.**



**WITNESSES :**

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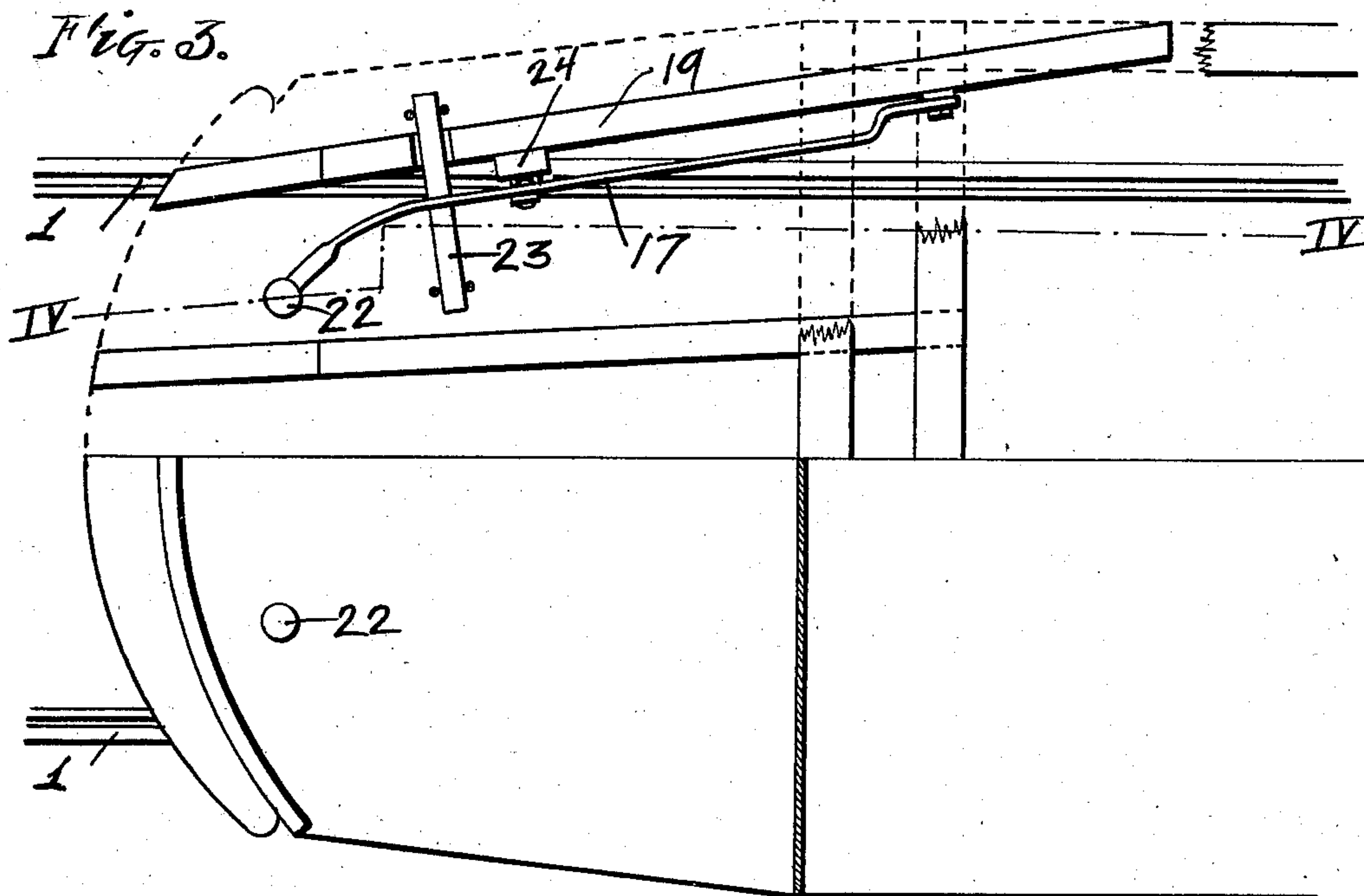
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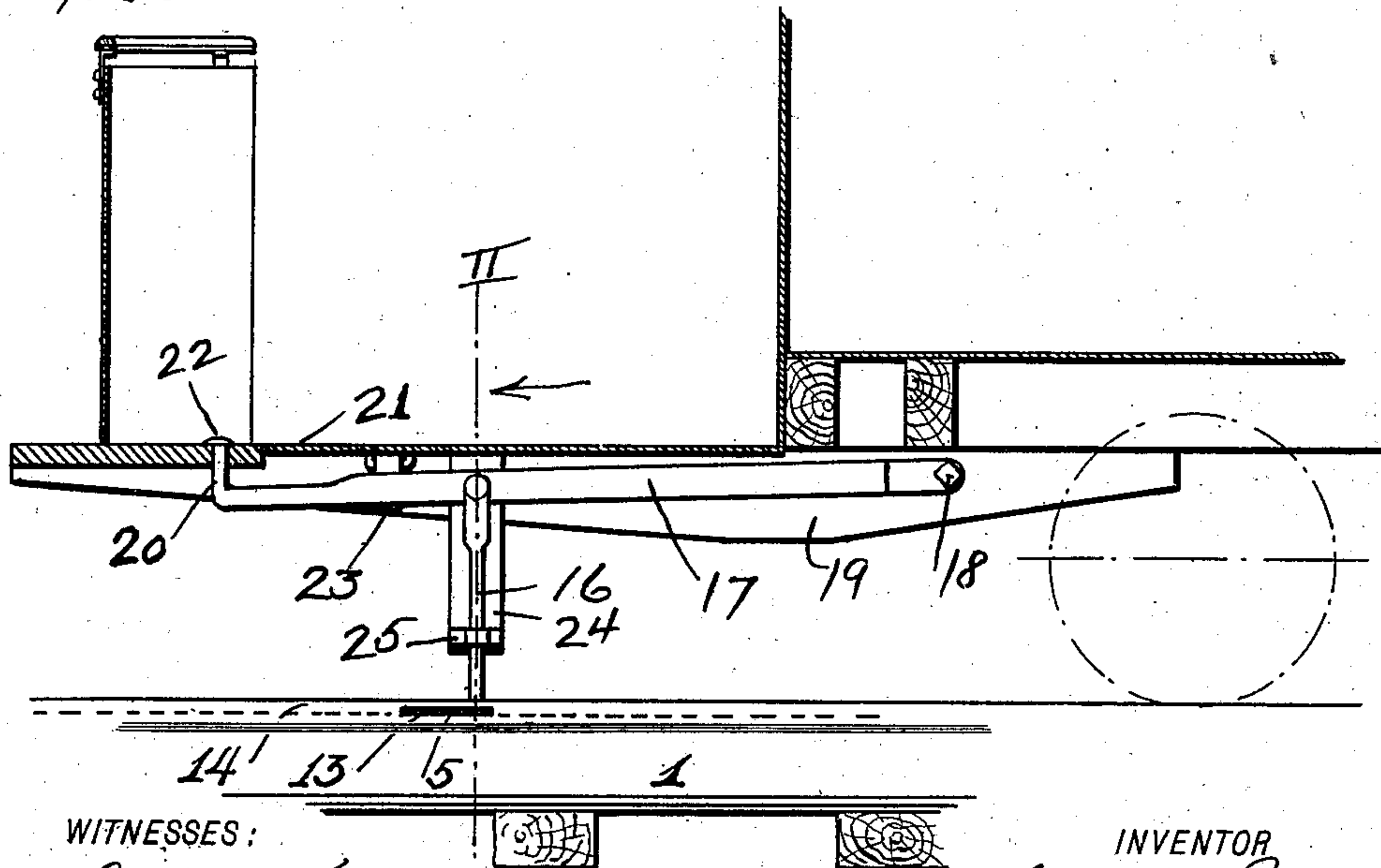
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2 Sheets—Sheet 2.



*Fig. 4.*



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# UNITED STATES PATENT OFFICE.

CHARLES C. JAMES, OF MEMPHIS, TENNESSEE.

## SWITCH-THROWING DEVICE.

SPECIFICATION forming part of Letters Patent No. 701,889, dated June 10, 1902.

Application filed September 6, 1901. Serial No. 74,561. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES C. JAMES, a citizen of the United States, residing at Memphis, Shelby county, State of Tennessee, have  
5 invented certain new and useful Improvements in Switch-Throwing Devices, of which the following is a specification.

My invention relates to certain new and useful improvements in switch-throwing devices, and more especially to simple and effective means for throwing a street-railway switch by means controlled from the front platform of the car.

The objects of my invention are to provide  
15 simple and efficient means whereby the motor-man on a street-car may throw the switch which he is approaching by depressing foot-operated mechanism on the car and engaging same with the cross-arm operatively fixed in  
20 advance of the switch and directly connected thereto and to improve the details of construction of such mechanism.

In the drawings which illustrate my invention and the means of operating same from  
25 the car, Figure 1 is a plan of a street-railway track with a switch and operating-lever with the cover-plate removed to show the operation of same. Fig. 2 is a sectional elevation on the line II II of Figs. 1 and 4 looking in  
30 the direction of the arrows shown and toward the point of the switch, made to twice the scale. Fig. 3 is a plan of the front end of the car, showing the switch-operating mechanism on same. Fig. 4 is a sectional elevation on the line IV IV of Fig. 3.

Referring now to the drawings, in which like numerals refer to the same or like parts in all the figures, 1 1 are the track-rails.

2 is the fixed switch-point, such as is commonly used in street-railway work, and 3 the  
40 movable or operative switch-point which is pivoted at 4.

5 is the switch-throwing arm, which is pivoted at 6 in a depressed box 7, situated between the rails 1 1 and preferably having a removable cover-plate 8 to permit access to the working parts. In Fig. 1 this cover-plate is shown removed to more clearly illustrate these parts.

50 9 is a connecting-rod connecting the arm 5, to which it is pivoted at 10, to the switch-point 3, to which it is pivoted at 11.

12 is a slot or opening cut in the rail below the switch-point 3 to allow free movement of the connecting-rod 9.

The arm 5 works in slots 13 in the rails 1 and is bent so that one end comes flush with the inner edge of the guard-rail 14 on the rails 1, while the other end is squarely across the slot 15, formed by the guard-rail 14 and  
60 the body of the rail 1. The line of centers of the pivots 6 and 10, as shown in Fig. 1, is at right angles to the center line of the connecting-rod 9, so that the maximum movement of the said connecting-rod is secured by the  
65 movement of the switch-throwing arm 5, and the said line of centers of the pivots 6 and 10 makes an obtuse angle with the center line of the switch-throwing arm 5, and by being so  
70 situated gives the connecting-rod 9 equal movement for either a right-hand or left-hand throw of the switch-point. By this method of locating the line of centers of the arm and the pivots a very powerful movement of the  
75 switch-point is secured by a direct connection through a diagonally-located connecting-rod 9 to the switch-point 3. The arm 5 is operated by rods 16, situated on opposite sides of the car, which rods are adapted to be depressed by levers 17, pivoted at 18 to the car-  
80 framing 19. These levers 17 terminate at the ends opposite the pivots 18 in pins 20, which project through the floor 21 of the car.

22 represents buttons which prevent the levers 17 from being depressed too far.

23 represents springs suspended from the floor of the car, which normally hold the arms 17 up and therefore hold the rods 16 out of engagement with the rail 1.

24 represents posts fastened to the timbers 19 and extended downward therefrom to guide the rods 16.

25 represents guide-loops through which the rods 16 slide and by which they are guided.

In Figs. 2 and 4 I have shown one of the  
95 rods 16 as depressed to engage the switch-operating arm 5, and in Fig. 2 I have shown the opposite rod 16 as it is normally held by the spring out of engagement with the rail.

In operation as the car approaches the  
100 switch the motorman depresses one of the buttons 22 and through it one of the rods 16 into the groove 15 between the rail 1 and the guard-rail 14. If he desires to take the switch



to the right in the view shown in Fig. 1, he would press on the right-hand button. To continue up the main track, he would press on the left-hand button, though of course it would only be necessary to do this in case the preceding car had thrown the switch in the opposite direction to that which he desired to take. The rod 16 engages with the end of the switch-operating arm 5 and pushes it forward until it carries it completely out of the slot 15 and with the corner 5<sup>a</sup> just flush with the rail edge of the guard-rail 14. When this has been done, the switch-point 3 has been moved by the connecting-rod 9 until it is in the desired position, and since the switch-operating arm 5 is located in advance of the switch-point it follows that the car-wheel will find the switch-point thrown ready for it. It is only necessary that the proportionate length of the switch-throwing arm 5 to the distance between the centers 6 and 10 shall be exactly right to throw the switch to its position at the exact moment when the end of the arm 5 is brought out of the groove 15. The bend in the arm 5 must be just sufficient to bring one end into place when the other is moved to its limiting position by the throwing-rod 16.

While it will be found that the especial form of car mechanism which I have shown and described is best adapted to the form of switch-throwing device shown and while it is my intention to use these in connection with each other, it is of course evident that I do not thereby exclude myself from the use of some other form, if I should so desire.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a switch-throwing device, the combination with operative devices on the car, of a switch-point, an arm pivoted in advance of the switch-point and a connecting-rod pivotally connected to said switch-point and said arm, and extending diagonally from said arm to said switch-point, all substantially as and for the purposes set forth.

2. In a switch-throwing device, the combination with means of operating said device, of a pivoted switch-point, a switch-throwing arm pivotally mounted between the rails of the track, a second pivot in said arm so located that the line of centers of it and the center pivot of the arm make an obtuse angle with the center line of the arm and a connecting-rod extending from said second center to the switch-point and pivotally connected thereto, substantially as and for the purposes described.

3. In a switch-throwing device, the combination with operative mechanism carried by

a car, of a pivoted switch-point, a switch-throwing arm pivoted between the rails in advance of the switch-point, a short lever-arm extending from said throwing-arm at an obtuse angle thereto and a connecting-rod extending diagonally from said lever-arm to the switch-point, substantially as shown and described.

4. In a switch-throwing device, the combination with operating mechanism carried by a car, of a depressed box situated between the rails slightly in advance of the switch-point, a removable cover-plate for said box, a pivoted switch-point, a switch-throwing arm pivoted in said box and having its ends of such length that they swing just within the tread of the rail and a connecting-rod extending diagonally from said throwing-arm to said switch-point, substantially as shown and described.

5. In a switch-throwing device for a track having a grooved rail, the combination with operating mechanism carried by a car, of a pivoted switch-point, a switch-throwing arm pivoted between the rails in advance of the switch-point and having its ends of such length that they swing just within the tread of the rail and so located that they swing just above the bottom of the groove in said rail, slots cut through the guard-flange of said rail to permit the ends of said throwing-arm to swing into said groove and a connecting-rod extending diagonally from said throwing-arm to the switch-point, substantially as shown and described.

6. In a switch-throwing device, the combination with a pivoted switch-point, a switch-throwing arm pivoted between the rails in advance of said point, and operatively connected with said point, of means carried by the cars of operating said switch, consisting of arms pivoted at one end to the underframing of the car and extending forward and terminating in pins which extend upward through the car-platform, a spring for each normally holding the arms in a raised position, switch-operating rods extending downward from same and which when depressed come directly in the path of the switch-throwing arm and guide-posts fastened to the underframing of the car and extending downward therefrom to guide the said operating-rods, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES C. JAMES.

Witnesses:

J. H. WEATHERFORD,  
GEO. E. NEUHARDT.