S. L. BATCHELOR.

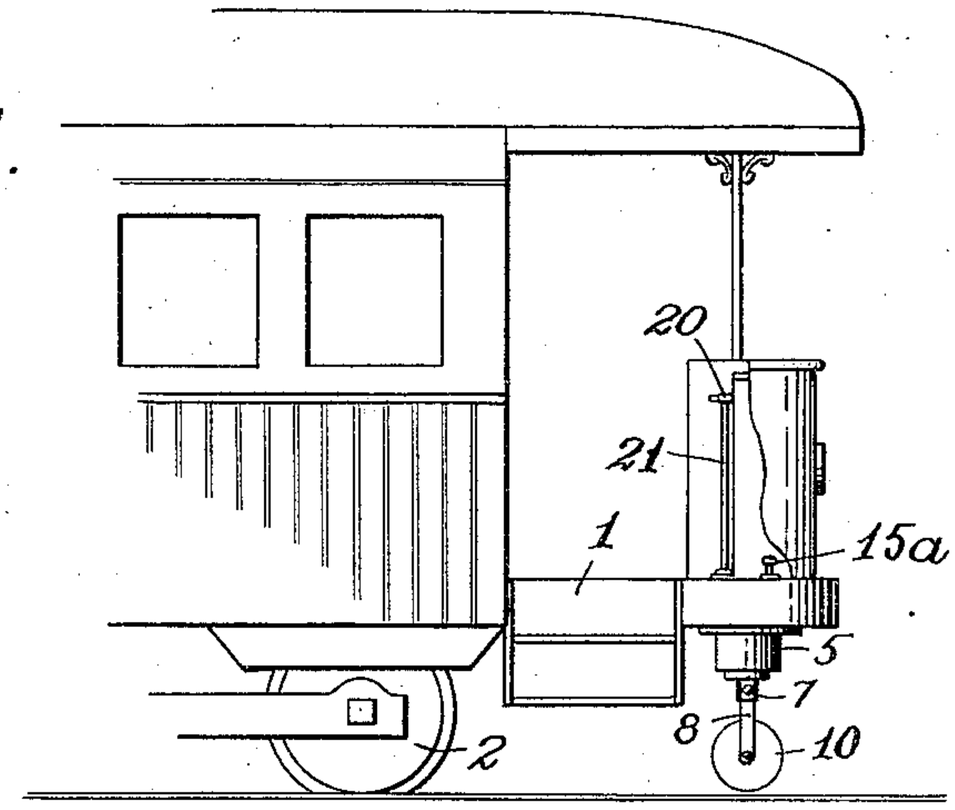
RAILWAY SWITCH OPERATING MECHANISM.

APPLICATION FILED OCT. 24, 1908.

966,072.

Patented Aug. 2, 1910.

Fig. 1.



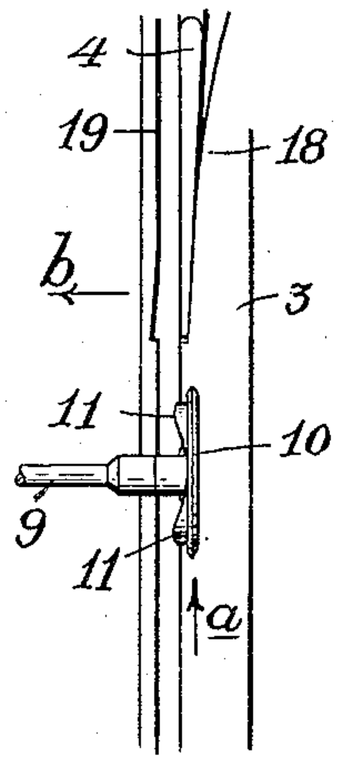


Fig. 5.

Fig. 2.

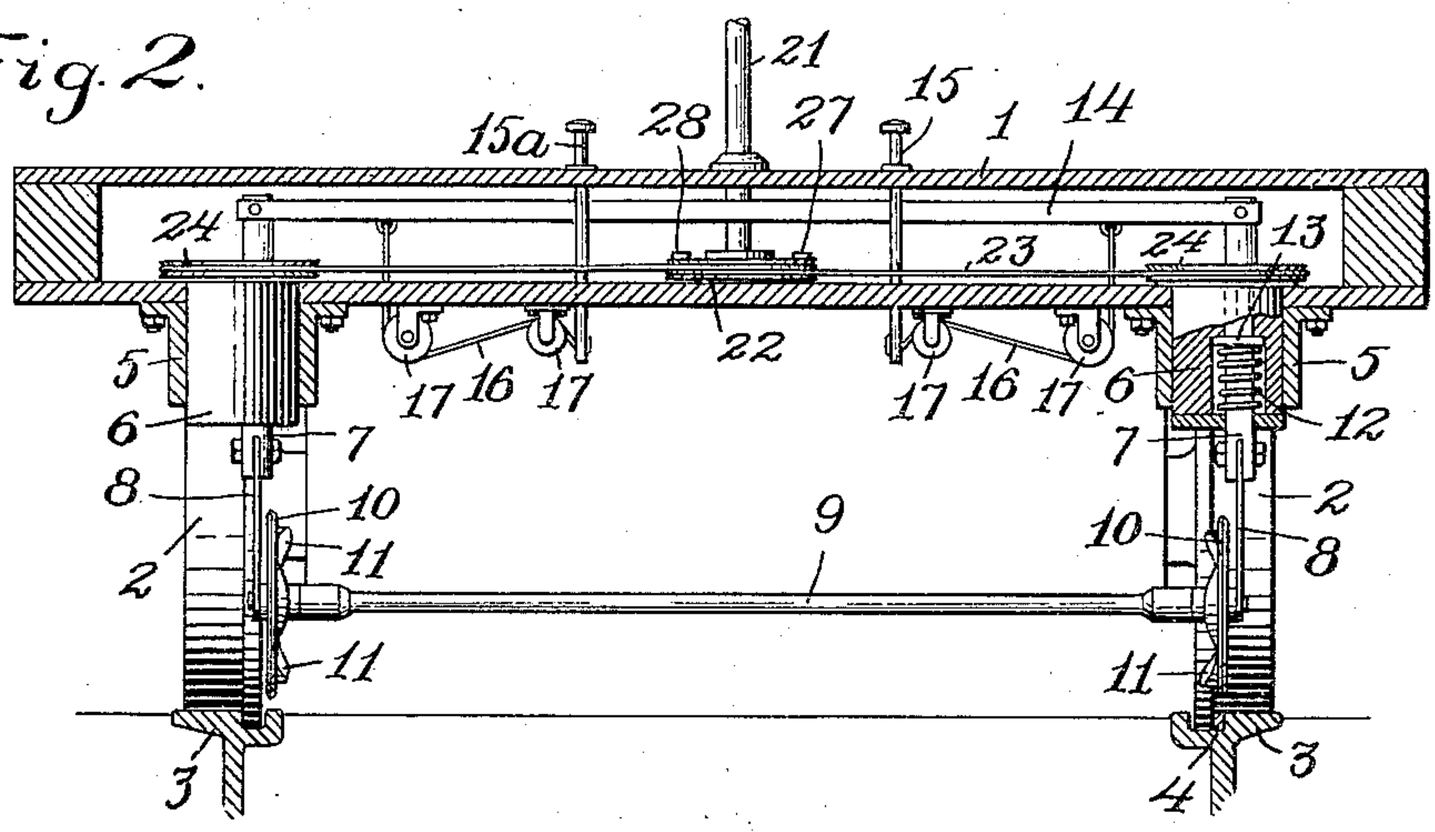
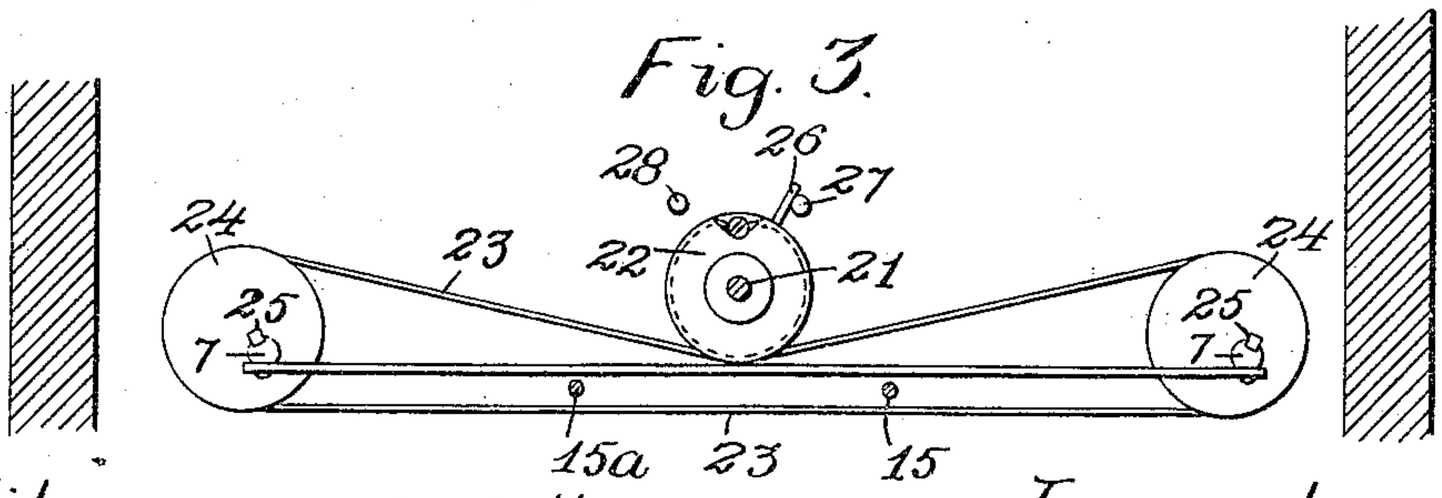


Fig. 3.



Witnesses

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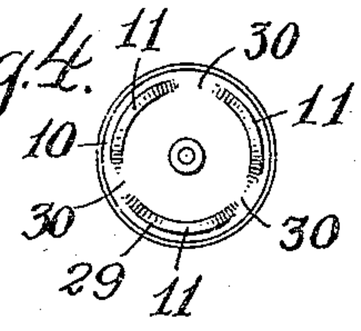
Fig. 4.



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RAILWAY-SWITCH-OPERATING MECHANISM.

966,072. Specification of Letters Patent. **Patented Aug. 2, 1910.**

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To all whom it may concern:

Be it known that I, SANFORD L. BATCHELOR, a citizen of the United States residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Railway-Switch-Operating Mechanism, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 shows a side elevation of one end of an electric street car, with a portion of the dashboard broken away to disclose parts of a switch operating mechanism, capable of being operated from the platform by the motor-man. Fig. 2 is an end view shown in cross section of my switch operating device. Fig. 3 is a detached plan view of a portion of the operating mechanism. Fig. 4 is an end view of the switch shifting cam wheel, and, Fig. 5 is a top view of the same, showing its application to the switch.

Similar reference figures refer to similar parts in the different views.

The object of my present invention is to provide a convenient, reliable and efficient means of throwing the pivoted tongue or switch rail of a street railway switch to the right or left as required through mechanism capable of being operated by the attendant from the platform of the car, and my invention consists in the construction and arrangement of parts as hereinafter described and pointed out in the annexed claims.

Referring to the accompanying drawings 1 denotes the platform of a street car, 2 the truck wheels, 3 the rails of the track, and 4 a pivoted switch rail or tongue. Mounted upon the under side of the platform and over each of the rails 3 is a tubular bearing 5 for a rotating cylinder 6 in which is eccentrically held a vertically sliding spindle 7. Attached to the lower ends of the spindle 7 are flexible blade springs 8, the free ends of which support a transverse shaft 9 on which the switch operating cam wheels 10 turn loosely. The wheels 10 consist of steel disks having their outer sides plane and provided on their inner sides with projecting cam shaped lips 11, preferably three in number. The cam wheels 10, 10, are normally supported at the proper height to clear the rails 3, and they are held at their highest position by means of spiral springs 12 which inclose the sliding spindles 7 and are contained in chambers in the cylinders 6, said spring acting against the bottom wall of the chambers and collars 13 attached to the sliding spindles 7. The upper ends of the spindles are pivotally connected by a cross bar 14. Pedals 15, 15[a] are held in the platform of the car in convenient position to be pressed down by the foot of the motor-man, and the lower ends of the pedals 15, 15[a] are connected by flexible connections 16, passing over pulleys 17, with the bar 14 near the ends thereof.

When the pedal 15 is depressed by the motor-man the right hand end of the cross bar 14 is depressed, together with its connected spindle 7, the pivotal connection of the opposite end of the bar 14 with the opposite spindle 7 serving as a fulcrum. By this means the cam wheel over one of the rails is depressed, while the other remains held up by its spring 12. By depressing the other pedal 15[a] the cam wheel over the opposite wheel is depressed. If the cam wheel is moving in the direction of the arrow *a*, Fig. 5, the depression of the cam wheel upon the upper surface of the rail will cause it to be carried into the recess 18 between the side of the rail 3 and the switch tongue 4. The contact of the cam wheel 10 with the track causes it to be rotated, carrying one of the cam lips forcibly against the side of the switch tongue and swinging it in the direction of the arrow *b*, Fig. 5. If the switch tongue occurs upon the opposite rail of the track the other pedal 15[a] is depressed with like result. After the switch tongue has been moved in the direction of the arrow *b*, Fig. 5, in order to reverse it, it is necessary to move the cam wheel sidewise to bring its periphery in line with the side 19 of the rail. In other words the cam wheels 10 10, and shaft 9 are shifted bodily a distance sufficient to bring the operating cam wheel in line with the opposite side of the pivoted switch tongue. This shifting of the cam wheels 10 is accomplished by rotating the cylinders 6, 6, a partial revolution. This is accomplished by the motor-man by means of a lever handle 20 attached to the top of a rotating vertical shaft 21 which carries at its lower end a scored wheel 22. Around the scored wheel 22 is wrapped a flexible cable 23. The cable 23 is carried around the scored disks 24 which have a spline connection 25 with the spindles 7. The rotating scored disk 22 is provided with a radial arm 26 which extends into the space between the

two fixed studs 27, 28, in order to limit the rotative movement of the disks 22 and 24, and thereby determine the exact positions of the cam wheels 10, 10. The periphery of the cam wheels 10, 10 projects slightly beyond the cam lips 11, as shown at 29, Fig. 4, so that a downward pressure upon the cam wheel as it rolls over the face of the rail will cause it to enter at once into the open crack or space between the side of the rail groove and the pivoted switch tongue, and whenever either of the spaces 30 between the cam lips 11 pass beneath the axis of the cam wheel the latter will be forced into the space between the rail and the switch tongue, and the continued rotary movement of the cam wheel will carry one of the cam lips against the side of the pivoted switch tongue and move it in the direction of the arrow *b*, Fig. 5. If the cam wheel, however, is entered between the edge 19 of the rail and the switch tongue, so that the outer or plane surface of the cam wheel bears against the switch tongue then the action of the cam lip against the fixed rail will impart a sidewise movement to the shaft 9 and cam wheels 10, and also to the pivoted switch tongue bearing against the outer or plane surface of one of the cam wheels.

The operation of my device is as follows:—As the car approaches the switch, the cam wheels are set in proper position relatively to the rail to be forced into the crevice or recess between the rail and one side of the switch tongue, depending upon the direction in which the switch tongue is to be moved. The motor-man then places his foot upon one of the pedals 15 or 15[a] and forces down the cam wheel upon the same side of the track as the switch tongue. As the cam wheel moves along the rail it enters the space between the rail and switch tongue, and as it rotates by its contact with the rail, one of the cam lips 11 is brought into contact with the side of the switch tongue or with the side of the rail as the case may be, causing the switch tongue to be moved.

I claim,

1. In a switch operating mechanism, a rotatable disk provided with a cam surface on its side and adapted to be inserted between the fixed and movable parts of a switch.

2. A switch operating mechanism, comprising a rotatable disk provided on its side with a cam shaped lip, and means for depressing said disk between the fixed and movable parts of a switch.

3. A switch controlling mechanism, comprising a rotatable wheel having a cam lip on its side, means for normally supporting said wheel above the rail, and means for depressing said wheel.

4. A switch operating mechanism, comprising a rotatable wheel provided with a cam shaped projection on one side, a spring for normally holding said wheel above the rail, and means for depressing said wheel into operative position.

5. A switch operating mechanism, comprising a laterally movable rotatable disk having on one side a cam lip of gradually increasing thickness, means for normally supporting said disk above the rail, means for depressing said disk to force the narrow portion of said disk between the fixed and movable parts of the switch, in which position by continued rotation of said disk said cam lip operates to change the position of the movable part of the switch.

6. In a switch operating mechanism, the combination with a rotatable cam wheel and means for normally supporting said wheel above the rail, of means for depressing said wheel at will, and means for laterally varying the position of said wheel relatively to the rail.

7. A switch operating mechanism for a car, comprising a transverse shaft, a rotatable disk at each end of said shaft, means for supporting said shaft at each end from said car, and means for laterally moving said supporting means to bring said disks into the desired position with relation to the switch.

8. In a switch operating mechanism, the combination of a cylinder journaled in a vertical bearing, a vertically sliding spindle held eccentrically in said cylinder, a spring for normally holding said spindle in a raised position, means for depressing said spindle, means for partially rotating said cylinder to determine the position of said spindle, and a rotatable cam wheel supported by the lower end of said spindle.

9. The combination of a cylinder journaled in a vertical bearing, a spindle eccentrically held in said cylinder, means for partially rotating said cylinder to determine the position of said spindle, means for yieldingly supporting said spindle at its highest position, means for depressing said spindle, a blade spring attached to said spindle, and a cam wheel supported by said spindle.

10. The combination with a pair of cylinders journaled in vertical bearings, means for simultaneously rotating said cylinders, means for limiting the rotative movement of said cylinders, vertically slidable spindles held in said cylinders, means for yieldingly supporting said spindles in a raised position, means for depressing said spindle, and cam wheels carried by said spindles and capable of a lateral movement.

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Witnesses:
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