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C. W. ROBERTS.

STREET RAILWAY OPERATING MECHANISM.

(Application filed July 3, 1896.)

(No Model.)

Fig. 1.

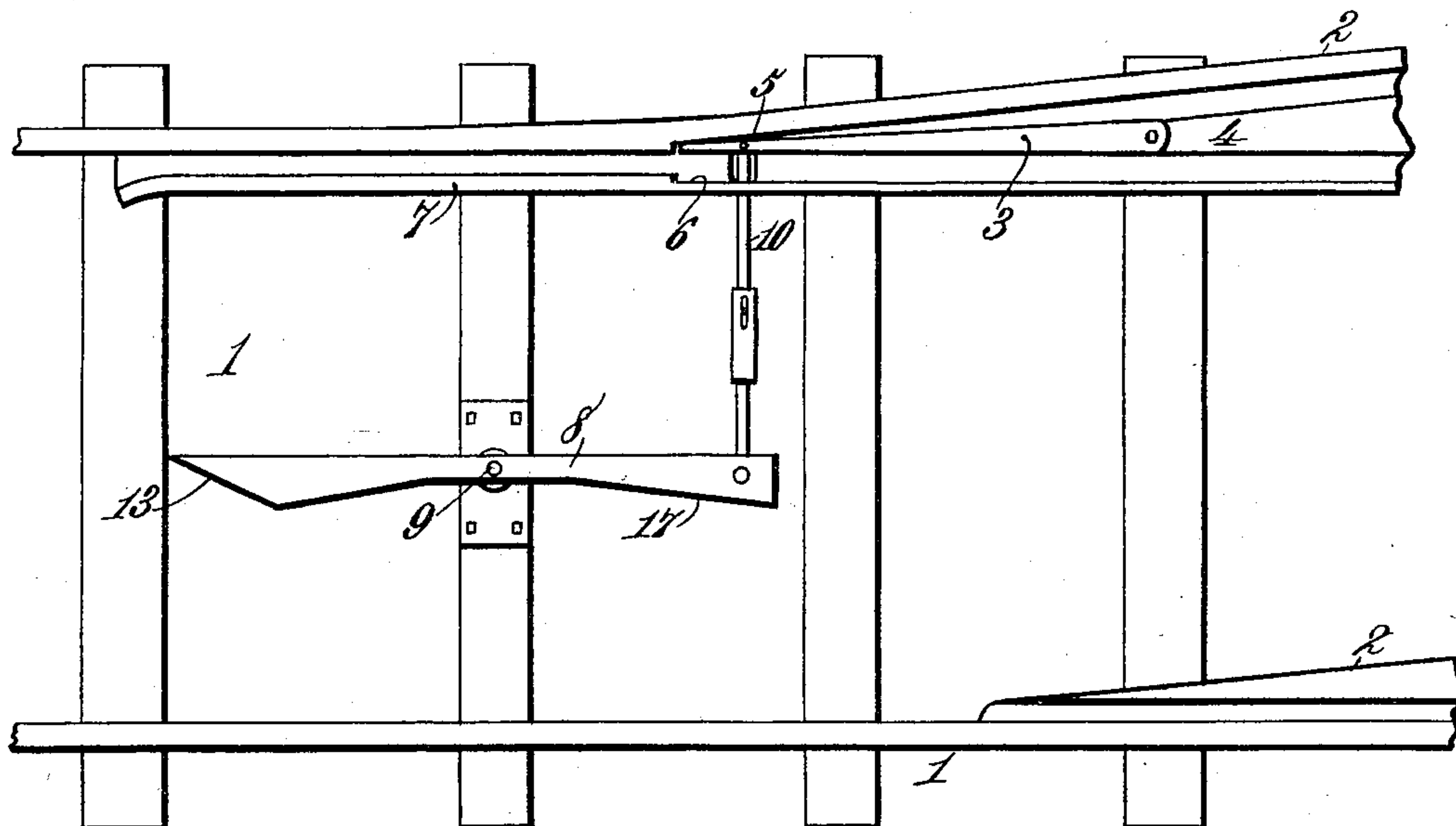


Fig. 2.

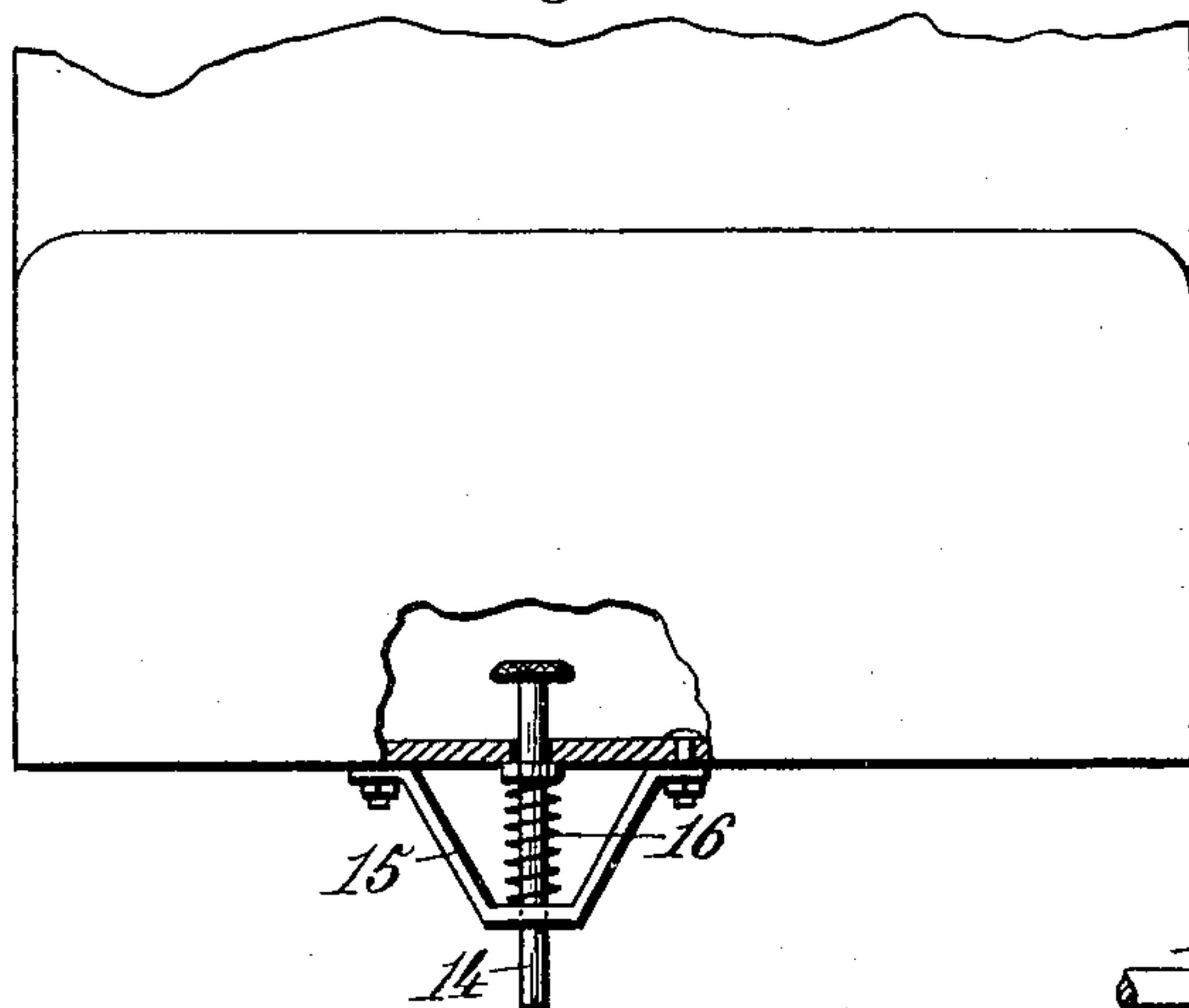
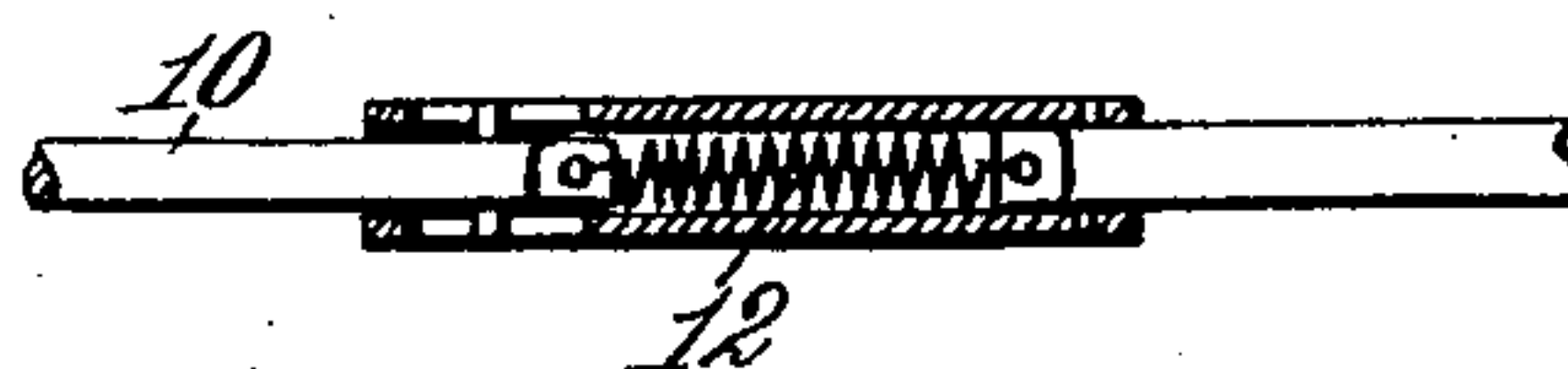


Fig. 3.



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STREET-RAILWAY-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 611,819, dated October 4, 1898.

Application filed July 3, 1896. Serial No. 598,011. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WESLEY ROBERTS, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Street-Railway-Switch-Operating Mechanism; and I do hereby declare that the following is a full, clear, and exact description of the same, reference
10 being had to the annexed drawings, making a part of this specification, and to the figures of reference marked thereon.

My invention relates to switch-operating mechanism for street-railways.

15 It is my purpose to provide simple, inexpensive, and easily-controlled means whereby the driver, motorman, or gripman may set any switch while on his own car without previously knowing the condition or "set" of the
20 switch, without stopping, and without diverting his attention from the other duties incident to his position or interfering with their proper performance. It is my purpose also to provide a switch-operating mechanism so
25 constructed and organized that the same devices can be used upon one car to operate the switch in one direction and upon another car to restore it to its original position, avoiding the duplication and complication of mechanism which has heretofore been used in certain
30 cases for this purpose and materially simplifying the work of the motorman or other person who operates the switch.

It is a further purpose of my invention to
35 provide a mechanism of this type so constructed that it shall be effectually protected from accumulating dirt and dust, by which its prompt and complete action might be prevented.

40 Other novel features of construction and new combinations of parts are embraced in my invention, all of which will be fully explained hereinafter, and then particularly pointed out and defined in the claims which
45 conclude this specification.

For the purpose of the following description reference will be made to the accompanying drawings, in which—

50 Figure 1 is a plan view showing a railway-switch constructed in accordance with my invention. Fig. 2 is a sectional end elevation

showing the switch-operating devices carried by each car. Fig. 3 is a detail view of the rod connecting the point-rail to the device by which it is operated.

55 The reference-numeral 1 in said drawings indicates a section of a street-railway of any known construction and without regard to the motive power employed, my invention being applicable to animal traction, cable traction,
60 or electric propulsion.

The numeral 2 denotes a branch, side track, or other line which unites with the line 1, and 3 indicates the point-rail or movable part of the switch, which is not materially different
65 from those heretofore in use. The point-rail is pivoted at its broadest end in a casting 4, upon which its entire length is supported, its point or movable end being adapted to lie either in a shallow recess 5 in the inner edge
70 of the main rail at the point where the latter intersects with the switch-rail or in a similar recess 6 in the outer edge of a guard-rail 7, which lies parallel with the main rail at a little distance inside and extending a little
75 way beyond the ends of the point-rail.

Between the main rails is arranged a switch-operating lever 8, having a pivotal attachment 9 to one of the sleepers or to a support resting on the latter. The pivotal point is
80 usually arranged about midway between the ends of the lever, one end of which lies on a transverse line passing through the movable end of the point-rail, the other end of the lever extending in substantial parallelism be-
85 tween the main rails toward the point from which a car must come in order to pass from the main track to the switch-track. A connecting-bar 10 passes beneath the guard-rail and has its ends pivotally connected to the
90 under side of the point-rail and to the end of the lever 8. I preferably make this connecting-bar in two parts, which are united by a strong spring 12, capable of yielding in case
95 stones or other obstructions prevent the point-rail from moving. This yield of the spring prevents the danger of breaking some part of the switch mechanism should such obstructions occur. At its disconnected end upon
100 the far side from the switch-rail the lever is provided with a cam-face 13, inclined at an angle to the longitudinal line of the lever 8.

This construction is such that an object moving in parallelism with the rails and abutting against the cam-face 13 will throw that end of the lever toward the guard-rail 7 and move the other end in the opposite direction, thereby shifting the point-rail 3 to the position it occupies in switching a car from the main track 1 to the side track 2.

To enable the driver, gripman, or motor-man to operate the switch without stopping his car, I mount upon the platform at a point where he can conveniently reach it with either foot a push-bar 14, passing vertically through the platform and through a hanging bracket 15, in which it has support and guidance. The push-bar is normally raised by a spring of any suitable form; but for some reasons I prefer to employ a spiral spring 16, coiled upon said bar and resting at its lower end upon the hanging bracket 15. By depressing the push-bar with his foot its end is carried to a point below the car, where it can, as the latter moves onward, engage the cam-face 13 on the end of the lever and shift the point-rail. As soon as the push-bar has passed off the cam-face 13 the foot is removed, and the spring 16 raises it to its normal position, leaving the switch set to carry the car upon the side track. Any suitable device may be used in place of the push-bar to accomplish the same purpose.

To enable a following car to keep the main track, the lever 8 is provided with a second cam-face 17, lying upon the same side as the cam-face 13, but upon the other side of the pivotal point 9. The cam-face 17 is usually inclined at a smaller angle than the other and is therefore of greater length. It is operated by the push-bar 14 in the same manner already described, save that said bar engages the cam-face 17 instead of 13 and swings the lever back to its original position, thus restoring the point-rail to the position shown in full lines in Fig. 1. As the lever is thrown by the preceding car into such position that the push-bar on said car can pass the highest point of the cam-face 13 and is left in that position the car following can have its push-bar lowered at any point before reaching the switch and can remain in that position until the car passes entirely beyond the switch; but where the switch is in the position shown in Fig. 1 and a car is to take the side track the push-bar must be permitted to rise before it reaches the cam-face 17. The surfaces 13 and 17 of the lever constitute bearing-points and, it will be seen, are both located at the rear of the switch-point. This enables the push-bar 14 of the car approaching the switch to strike either of the bearing-points and by exerting lateral pressure to open and close the switch before the first wheels of the car reach the switch. Suppose, for example, the switch were closed, as shown in Fig. 1—i. e., thrown for main-line traffic—and an approaching car was destined to be turned off upon the branching track. The carman, without seeing the switch or know-

ing its condition, would only have to hold his push-bar down till he had passed the bearing-point 13, and the switch would be turned for the branch track. If the car were destined to continue on the main track, the push-bar would be kept down while passing the bearing-point 17, and the carman need not wait to lower his push-bar till he has passed the bearing-point 13, because whatever the position of the point-rail if the push-bar were kept down while passing point 17 the car would be kept on the main track. Thus it will be seen that the switch, while very simple in construction and inexpensive, enables a carman with absolute certainty to open or close the switch, so as to turn his car onto the side track or keep it on the main track, as he may desire, and this without requiring him to know the condition of the switch before he reaches it. The bearing point or surface 13 must always be located in the rear of the point-rail; but the bearing point or surface 17 need not necessarily in all cases be located in the rear of the point-rail. For example, if the push-bar or other device carried by the car for actuating the lever 8 were located, say, two feet in advance of the front wheels of the car, then the bearing-point 17 might be a foot or eighteen inches in the rear of the free end of the rail-point, because the push-bar would strike the bearing-point 17 and set the switch before the front wheels of the car reached the point-rail. The bearing point or surface 17 may therefore be located in the rear or nearly opposite the point-rail. While the bearing-points or cam-surfaces 13 and 17 are useful in the form of inclined surfaces, as described, yet the bearing-points may vary widely in form.

The invention is not to be limited to any particular form of laterally-operated bearing-points or to any particular form of push-bar or other operating device carried by the car.

What I claim is—

1. In a switch, the combination with a point-rail, of a lever medially pivoted at the rear of the point-rail so as to swing in a horizontal plane and located lengthwise of the track, said lever being connected in advance of its pivot with the point-rail so as to open or close the switch when the lever swings on its pivot, the lever being provided with two lateral bearing-points, one in the rear of the point-rail and the other in the rear or nearly opposite the point-rail, and one on each side of the pivot whereby a moving car by applying lateral pressure against the lever at its bearing-points may throw the switch in either direction as desired before the front wheels of the car reach the switch, substantially as set forth.

2. In a switch, the combination with a point-rail, of a lever medially pivoted at the rear of the point-rail so as to swing in a horizontal plane and located lengthwise of the track, said lever being connected in advance of its pivot with the point-rail so as to open or

close the switch when it swings on its pivot, and a rod or other device carried by a car and adapted to operate the switch, said lever being provided with two lateral bearing-points 5 one on each side of its pivot and both so disposed with respect to the point-rail that the said rod may strike both bearing-points and throw the switch in either direction as desired before the front wheels of the car reach the 10 switch, substantially as set forth.

3. In a switch, the combination with a point-rail, of a lever medially pivoted at the rear of the point-rail so as to swing in a horizontal plane and located lengthwise of the track, 15 said lever being connected in advance of its pivot with the point-rail so as to open or close the switch when it swings on its pivot, and a rod or other device carried by a car and adapted to push against the lever on either 20 side of its pivot and operate the switch, said lever being provided with two lateral bearing-points one on each side of its pivot and

both so disposed with respect to the point-rail that the said rod may strike both bearing-points and throw the switch in either direction as desired before the front wheels of the car reach the switch, substantially as set forth. 25

4. In a switch for street-railways, the combination with a point-rail of a lever pivoted 30 between the rails, and provided with two similarly-inclined cam-faces, one on each side of its pivot, a connecting-bar pivotally connected to the lever and point-rail and formed in two parts connected by a spring, and a push-bar 35 on the car to engage either one of said cam-faces, substantially as described.

In testimony whereof I have hereunto subscribed my name in the presence of two witnesses.

CHARLES WESLEY ROBERTS.

Witnesses:

R. E. L. C. RIES,

W. B. STOUT.