

R. E. JOHNSON.
AUTOMATIC RAILWAY SWITCH.
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911,129.

Patented Feb. 2, 1909.

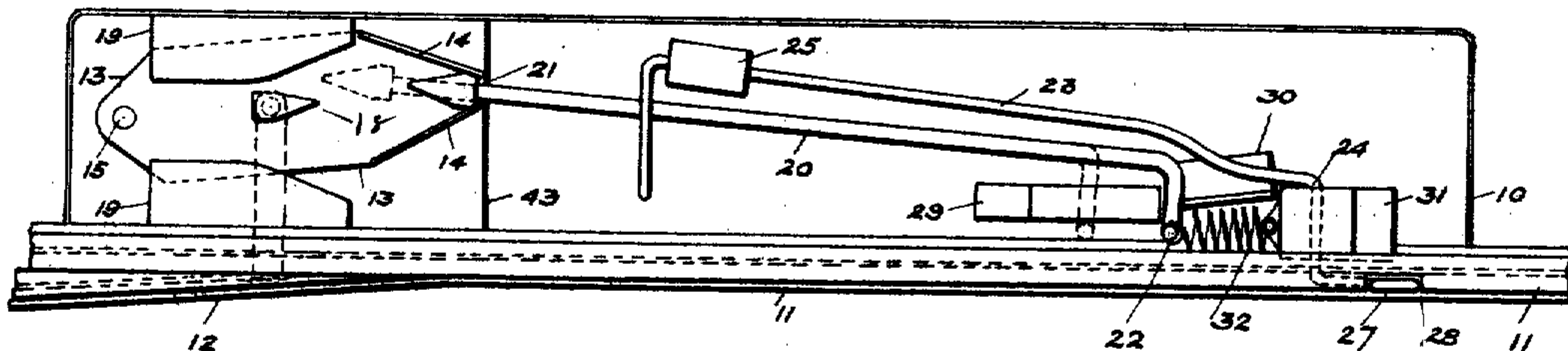


Fig. 1.

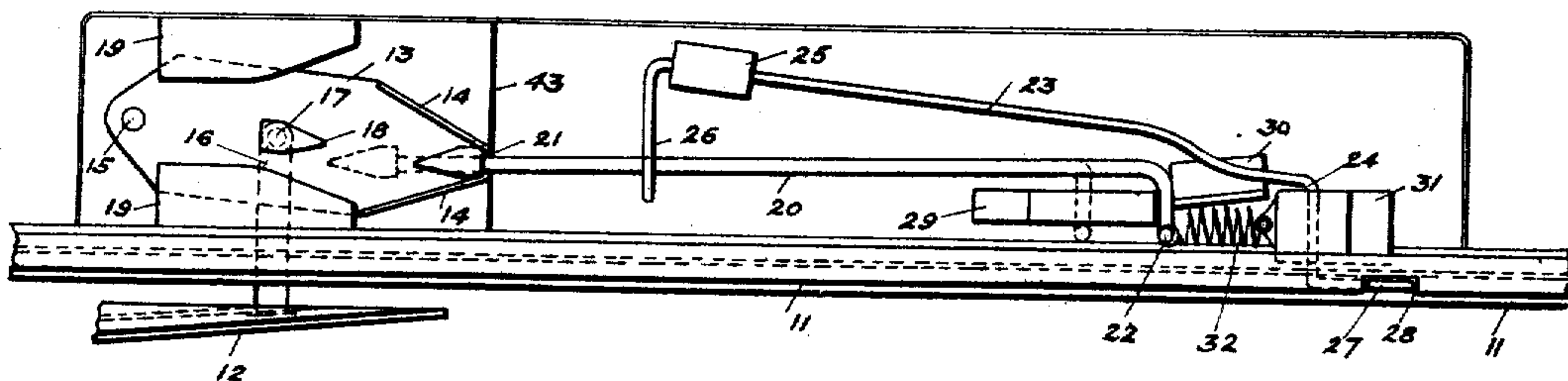


Fig. 2.

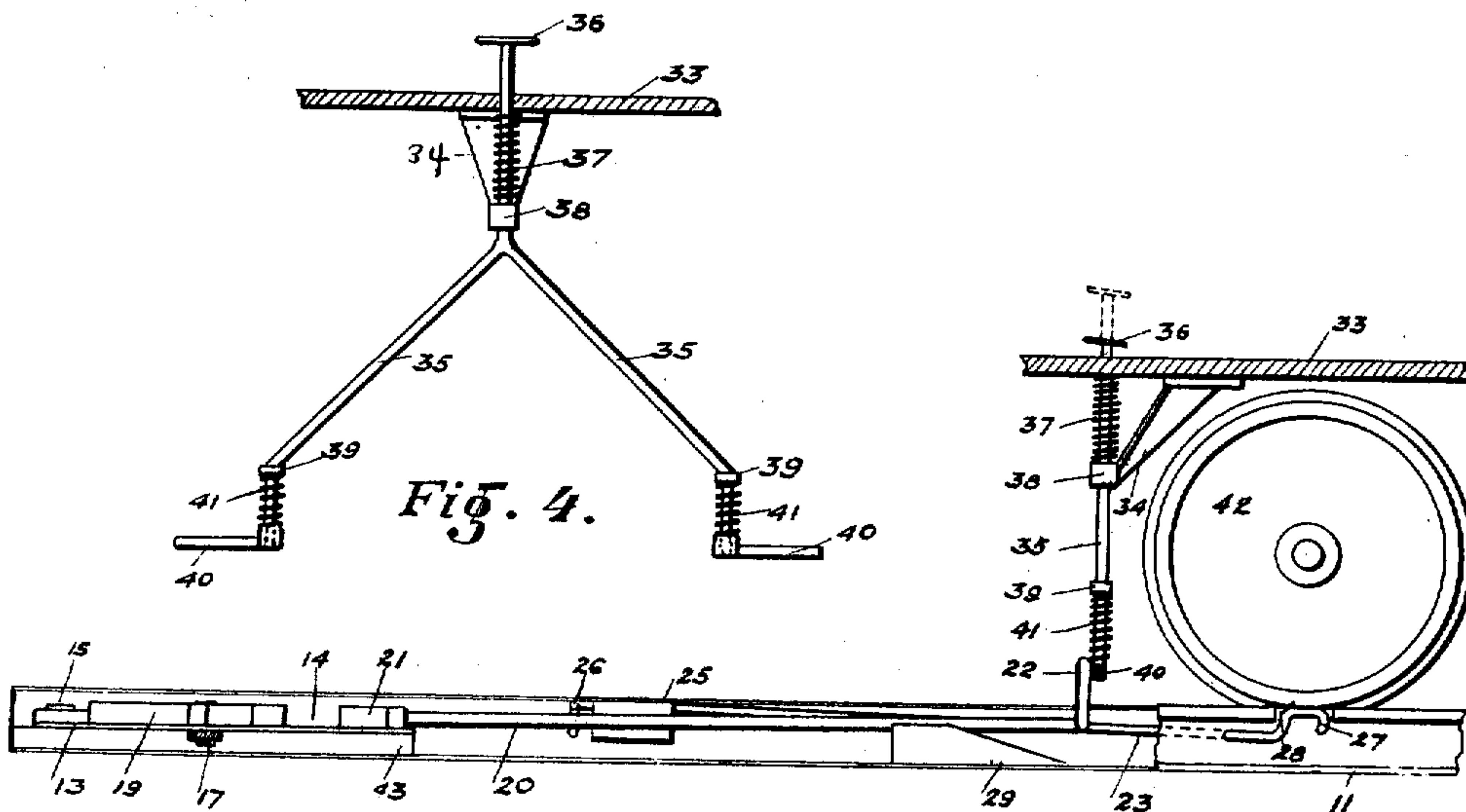


Fig. 3.

WITNESSES:
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UNITED STATES PATENT OFFICE

RANSOM E. JOHNSON, OF SPOKANE, WASHINGTON, ASSIGNOR OF ONE-THIRD TO ORLANDO B. JOHNSON AND ONE-THIRD TO GERD JANSSEN, OF SPOKANE, WASHINGTON.

AUTOMATIC RAILWAY-SWITCH.

No. 911,129.

Specification of Letters Patent.

Patented Feb. 2, 1909.

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To all whom it may concern:

Be it known that I, RANSOM E. JOHNSON, a citizen of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Automatic Railway-Switches, of which the following is a specification.

This invention relates to railway switches of the kind adapted especially for street railway and electricized roads. The switch is opened and closed entirely automatically with the exception that the motorman or other person operating the car presses down a rod with his foot in order to throw a key into connection with the mechanism. The mechanism used to operate the switch is inclosed in a casing and secured to the outside of the rail overlapping the end of the switch rail desired to be operated.

A special object of the invention is to provide a mechanism whereby a switch may be opened and closed by a simple process operated by a motorman or other person on board the car without the necessity of stopping the car or taking any particular pains in so doing. This and other objects will be disclosed in the specification and in the accompanying drawing in which,

Figures 1, and 2, are plan views of the mechanism secured to the rail, the former with the switch closed and the latter with the switch open, Fig. 3, is a side elevation of the same with a portion of the rail cut away and showing the application of the key attached to a rod reaching through the floor of a car and made available for operation by the foot of the person within the car, and Fig. 4, is a front elevation of the mechanism attached to the car and used to actuate the switching mechanism.

A casing 10 is secured longitudinally to the outside of the rail 11 at a point thereon where the casing will reach beyond the point of the switch 12. A plate 13 with guides 14 is secured by the pivot 15 at one end of the bottom of the casing 10. A rod 16 is secured to the switch point 12, passes through an opening provided in the rail 11, and is secured by the pivot 17 to the center of the plate 13. Secured by the same pivot 17 to the center of the plate 13 above the rod 16 is also an approximately triangular block 18. Blocks 19 with beveled edges are secured to the inner sides of the casing 10 above and

overlapping the plate 13. Longitudinally arranged within the casing 10 is a rod 20 with an approximately triangular head 21 secured to one end thereof and the other end bent, first at right angles horizontally and then at right angles perpendicularly, so that the end 22 thereof extends a slight distance above the upper surface of the casing 10, the triangular head 21 thereof extending onto the plate 13 to a point between the guides 14. Within the casing 10 also and longitudinally arranged therein is a lever 23 fulcrumed at the bearing 24, carrying a weight 25 near one end thereof, and encircling within a loop 26 at the extreme end thereof the rod 20. The opposite end of the lever 23 passes at right angles through the bearings 24 and the rail 11, parallels the rail 11 a short distance and is then formed into a loop 27, the loop 27 extending upwards through a cut 28 in the rail 11. Secured to the bottom of the casing 10 near one end thereof is a beveled block 29. Secured also to the bottom of the casing 10 near the same end is a guide 30 and a block 31. A coil spring 32 is fastened at one end to the end of the rod 20 and at the other end to the block 31 between the rail 11 and the guide 30.

Through the car bottom 33 and braced by the bracket 34 is a rod 35 with a foot rest secured to the top thereof, a coil spring 37 encircling the same between the car floor 33 and the end 38 of the bracket 34 and a coil spring 41 encircling the same between the block 39 and the horizontal rod or key 40, with one end thereof secured firmly in the block 39 and the other end secured firmly in the horizontal rod or key 40. The rod 35 is attached to and through the floor 33 of the car at a point where the same will extend downward in front of the car wheel 42. The keys 40 are pivoted to the lower ends of the rods 35 and adapted to rotate thereon.

The plate 13 at the end of the casing 10 is placed upon a slight elevation 43 in order that the same may be horizontal with the rod 20.

In the practical working of the mechanism a car wheel 42 traveling over the rail 11 would come in contact with the loop 27 of the lever 23 and force the same downward and the lever 23 fulcrumed at the bearing 24 would be elevated at the loop end 26 carrying with it the rod 20 which would also ele-

vate the perpendicular end 22 thereof and if it is desired to throw the switch the operator of the car would press down the rod 35 with his foot upon the rest 36 which would throw the key 40 at right angles against the perpendicular end 32 of the rod 20, the forward motion of the car would thus cause the rod 20 to be thrust forward and if the switch was closed the triangular head 21 of the rod 20 would be forced in the direction of the dotted lines between the beveled side of the block 19 and the triangular block 18 as shown in Fig. 1 and the plate 13 would be wedged to the position shown in Fig. 2 and the switch 12 thrown open as shown in Fig. 2, while if the switch was originally open and the mechanism was actuated by the same process then the triangular head 21 of the rod 20 would be thrust between the beveled side of the block 19 and the triangular block 18 as shown by dotted lines in Fig. 2 and the switch 12 would be closed. The plate 13 rotates backward and forward upon the pivot 15 and the triangular head 21 is governed as to its position by the guides 14. It will thus be seen that the continuous operation of the mechanism alternately opens and closes the switch by the same identical process and the operator has but one and the same thing to do to either open or close the switch, as the case may require. If the switch is already in the position desired then no action upon the part of the operator is necessary, the keys 40 will pass over and above the perpendicular end 22 of the rod 20 and the position of the mechanism would be unchanged. The dotted lines of the rod 35 and foot rest 36 illustrate approximately the elevation thereof when not in use to throw the switch and the position to which they will be thrown by the coil spring 37 as soon as the operator releases the same.

The keys 40 are held in their position at right angles with the rail 11 by means of the coil springs 41 and adapted to rotate or swing backward and forward upon the ends of the rods 35 when met by a sufficient resistance. It will be seen that it is necessary to have the coil springs 41 stronger than the coil spring 32 in that it is necessary that the keys 40 should be able to retain their positions at right angles with the rail sufficient to permit of the rod 20 being carried forward by the contact of the keys 40 with the perpendicular end 22 of the rod 20 to throw the switch, but after this is done, keys 40 must be permitted to rotate far enough to permit of the perpendicular end 22 of the rod 20 slipping by and being drawn back to its

original position by the coil spring 32. The mechanism is dependent upon the coil spring 32 to always return the rod 20 carrying the triangular head 21 at one end and the perpendicular end at the other, to its original position as shown in Figs. 1 and 2 and is dependent upon the coil springs 41 to hold the keys 40 sufficiently firm at right angles with the rail 11 to carry forward the rod 20 with its said ends 21 and 22, and to release the same by the giving, of the springs 41 after the switch has been thrown, to permit the keys 40 to rotate a sufficient distance upon the ends of the rods 35 to permit the perpendicular ends 22 to pass the same.

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

A railway switch appliance consisting of a casing attached to the outside of the rail of a railway at the juncture of a switch rail, said casing inclosing at one end thereof a plate pivoted to the bottom thereof between two beveled stationary blocks which overlap the same, said plate having pivoted to its center an approximately triangular block and a rod connected with the end of the switch rail and at one end guides coöperating with an approximately triangular head of a rod stationed longitudinally within the casing, the other end of the rod bent at right angles horizontally and then at right angles perpendicularly and reaching above the top of the casing, a lever stationed horizontally within the casing having a loop at one end inclosing the horizontally arranged rod, a weight near the same end, fulcrumed in a bearing near the other end of the lever, said other end being first bent at right angles horizontally thence back to a longitudinal position, thence into a loop, the loop extending upwards through an opening in the rail of the railway, a coil spring secured at one end to one end of the rod arranged horizontally within the casing and at the other end to a stationary block within the casing and between a guide and the rail of the railway, such switch appliance adapted to be operated by keys attached to frame work on the cars running over the railway and actuated by workmen accompanying the cars, substantially as set forth.

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

RANSOM E. JOHNSON.

Witnesses:

ALONZO M. MURPHEY,
MARY SHOLDERER.