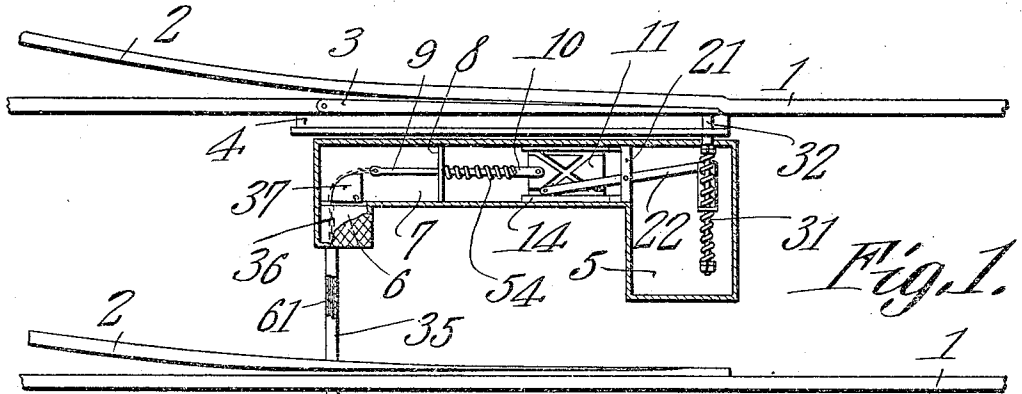


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 AUTOMATIC SWITCH THROWING DEVICE.  
 APPLICATION FILED SEPT. 2, 1909.

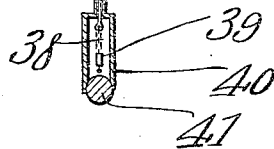
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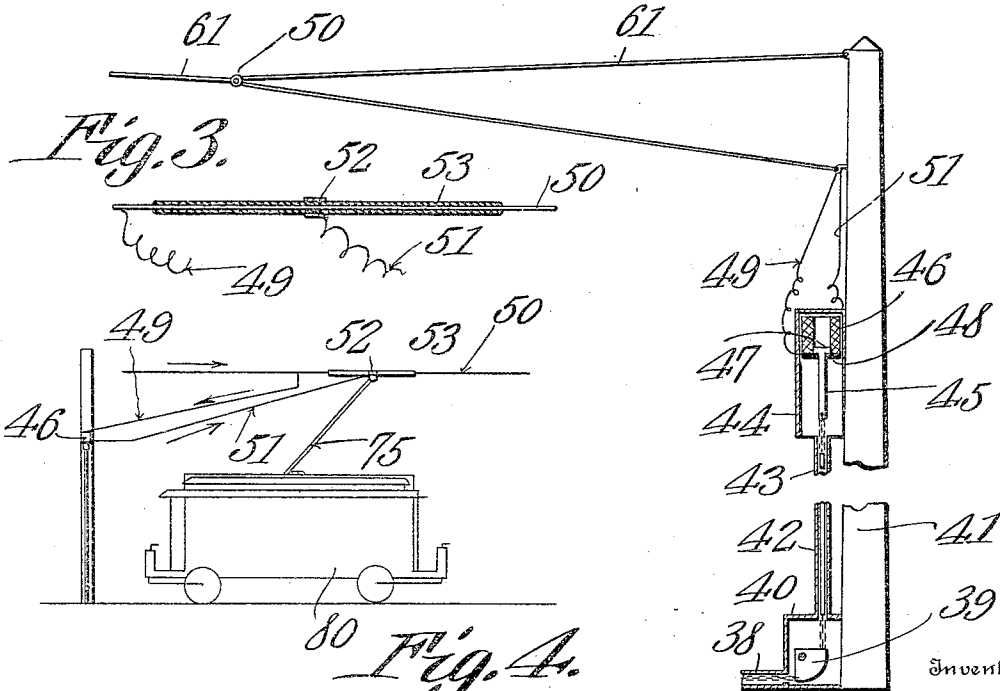
2 SHEETS—SHEET 1.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

*Fig. 4.*

Witnesses

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*Mason B. Lawton*

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 Attorneys

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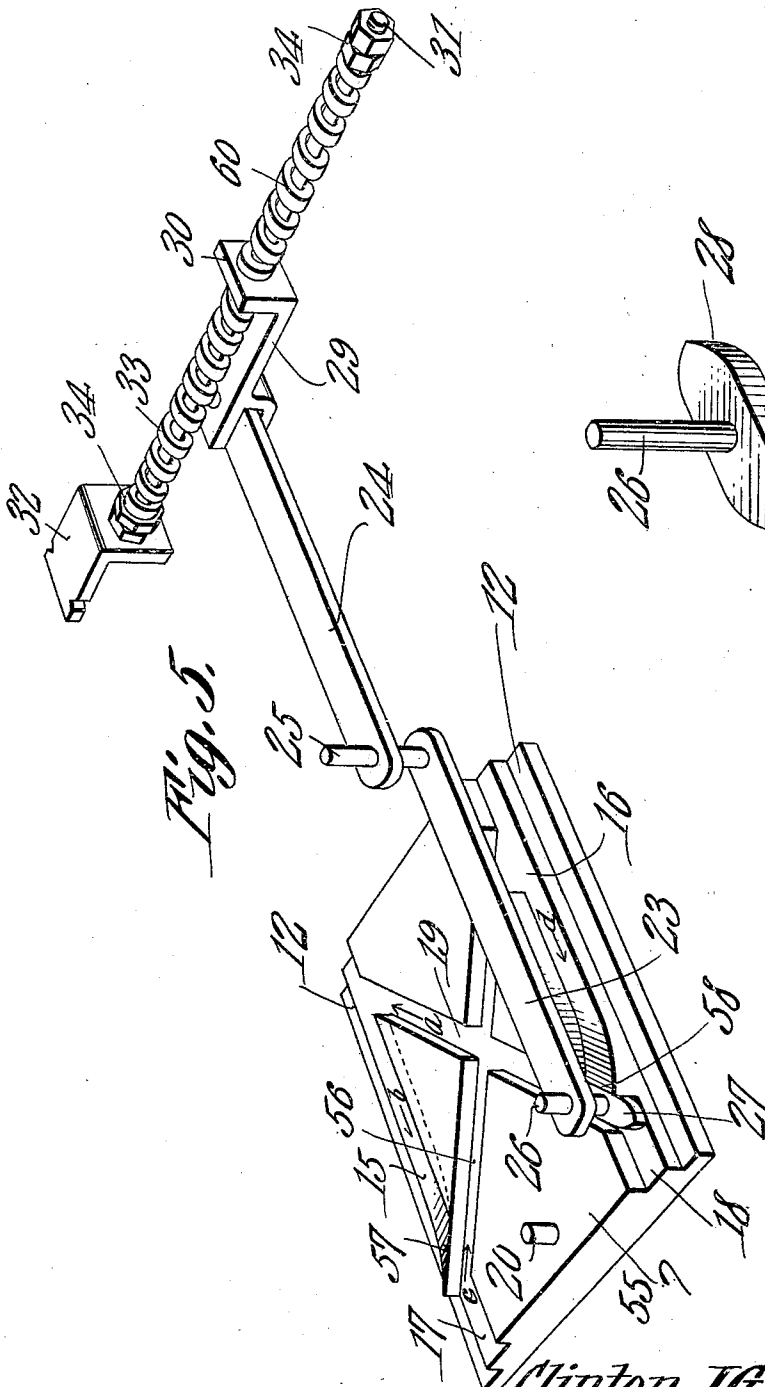


Fig. 5.

Fig. 6.

Witnesses

*Mason B. Lawton*

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By

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# UNITED STATES PATENT OFFICE.

CLINTON J. G. RICKERSON, OF COLORADO SPRINGS, COLORADO.

AUTOMATIC SWITCH-THROWING DEVICE.

959,884.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed September 2, 1909. Serial No. 515,812.

*To all whom it may concern:*

Be it known that I, CLINTON J. G. RICKERSON, a citizen of the United States, residing at Colorado Springs, in the county of El Paso and State of Colorado, have invented a new and useful Automatic Switch-Throwing Device, of which the following is a specification.

The objects of the invention are, generally, the provision, in a merchantable form, of a device of the above-mentioned class which shall be inexpensive to manufacture, facile in operation, and devoid of complicated parts; specifically, the provision of a head of novel and improved construction, which, through its reciprocation, shall be effective to move a switch point from one position to another, novel means being provided for operatively connecting the head with the switch point, and for reciprocating the head; other and further objects being made manifest hereinafter as the description of the invention progresses.

The invention consists in the novel construction and arrangement of parts hereinafter described, delineated in the accompanying drawing, and particularly pointed out in that portion of this instrument wherein patentable novelty is claimed for certain distinctive features of the device, it being understood, that, within the scope of what hereinafter thus is claimed, divers changes in the form, proportions, size, and minor details of the structure may be made, without departing from the spirit or sacrificing any of the advantages of the invention.

Similar characters of reference are employed to denote corresponding parts throughout the several figures of the drawing.

In the accompanying drawing, Figure 1 shows my invention in top plan; Fig. 2 is a side elevation, partly in section, of that portion of the device which is located at one side of the right of way; Fig. 3 is a longitudinal section showing a connection which is carried by the trolley wire; Fig. 4 shows the invention in side elevation, the view being designed to show the manner in which the car operates to throw the switch point; Fig. 5 is a detail perspective, upon an enlarged scale, of the movable head, and of the parts

whereby the head is operatively connected with the switch point; Fig. 6 is a detailed perspective of the shoe.

In the accompanying drawing, the numeral 1 denotes the main line rails, 2 the siding rails, 3 the switch point, and 4 the guard rails.

In carrying out my invention, I provide a casing which is adapted to be located, as shown in Fig. 1, preferably, between the rails, although another location might be selected in particular instances, with profitable results, and without altering the essential features of the device, or changing its mode of operation. This casing comprises a relatively large chamber 5, located at one end of the casing, a smaller chamber 6, located at the other end of the casing, and a compartment 7, long and relatively narrow, connecting the chambers 5 and 6. Intermediate its ends, the compartment 5 is provided with a transversely disposed partition 8 in which is slidably mounted a rod 9 enlarged at one end as denoted by the numeral 10, a compression spring 54 encircling the rod 9 intermediate the partition 8 and the enlargement 10 of the rod. This enlarged portion 10 of the rod is apertured to receive a pin 20 rising from a head 11, adapted to reciprocate in the compartment 7, longitudinally of the same, beneath guides 14, adapted to engage outstanding flanges 12 upon the sides of the head 11.

Disposed toward the center of the head with respect to the flanges 12, and located upon either side of the head, are guideways 15 and 16, alined, longitudinally of the head, with other, shorter guideways 17 and 18, the guideways 15 and 16 sloping upwardly as they approach the guideways 17 and 18, so that there is formed between the guideways 15 and 17, a shoulder 57, and between the guideways 16 and 18, a shoulder 58. Rising above the guideways 15, 16, 17 and 18, and constituting the culminating portion of the head 11, is a rib 55, provided with diagonally disposed slots 19 and 56, intersecting in their intermediate portions, the slots, at one end opening upon the guideways 15 and 16, and at the other end opening upon the guideways 17 and 18, adjacent the shoulders 57 and 58.

Compartment 7 is separated from the

chamber 5 by means of a transversely disposed partition 21, spaced from the bottom of the casing. Pivoted intermediate its ends, in the partition is a lever 22, located beneath the partition in which it is pivoted. This lever 22 is shown in detail in Fig. 5, and it will be seen that the same comprises two portions 23 and 24, the portion 24 being spaced above the plane of the portion 23, the portions being alined, and rigidly united at their adjacent ends, by a pivot pin, the upper extremity 25 of which is pivotally mounted in the partition 21. By thus fashioning the lever 22 in two parts, one of which is disposed in a plane above the other, the switch-throwing mechanism which is assembled with the portion 23 of the lever may be disposed in a depressed position, and flush with the surface of the track.

The extremity of the portion 23 of the lever which is adjacent the head 11, is apertured, to receive, slidably and rotatably, a stub shaft 26, carrying at its lower end, a shoe 27, which, as shown in Fig. 6, is provided with pointed ends 28. The ends of the portion 24 of the lever which is disposed in the chamber 5, carries, pivotally connected therewith, a rider 29, having an upright extension 30 which is apertured to receive, slidably, a rod 31. Disposed about the rod 31, upon either side of the extension 30, are compression springs 33 and 60 which are held in place and adjusted by means of nuts 34. One extremity of the rod 31 is provided with an angle piece 32, the horizontally disposed portion of which extends transversely through the guard rail 4, in sliding relation, and is assembled in any suitable manner with the switch point 3.

Extending laterally from the chamber 6 is a tube 35 in which is slidably mounted a rod 61, one end of which is connected with a chain 36, passing over a horizontally disposed segmental pulley 37, into the compartment 7 of the casing. Extending from the opposite end of the rod 61 is a chain 38 extending over a vertically disposed segmental pulley 39, mounted in a casing 40 disposed at the base of a pole 41. A tube 43 connects the casing 40 with an upper casing 44, mounted upon the pole, and in this tube 43 is slidably mounted a rod 42, the lower end of which is assembled with the chain 38. The upper end of the rod 42 is connected with a core 45, adapted to reciprocate in a solenoid 46, located within the upper casing 44. The core 45 is provided at its upper end with a laterally extending head 47 which is adapted to be engaged by a shoulder 48 extending across the lower end of the solenoid, so that the core may not fall therefrom. One end 49 of the wire which constitutes the solenoid is connected with the trolley wire 50, the other end 51 of the wire which forms the solenoid being provided

with an annular contact 52, adapted to inclose an insulation 53, inclosing a short portion of the trolley wire 50.

The numeral 61 denotes the guy wires whereby the trolley wire is supported, and the numeral 75 the trolley pole, a car being indicated conventionally, and denoted by the numeral 80.

Beginning at the switch point 3, I will now trace the operation of the device to the point where the element 52 is engageable by the trolley wheel of the car to operate the switch. It is obvious that when the end of the portion 23 of the lever which carries the stub shaft 26 is moved laterally in one direction, the rider 29, bearing against the spring 60, will draw the switch point 3 away from the siding rails so that the car may take the siding; and that, when the end of the portion 23 of the lever which carries the stub shaft 26 is moved laterally in an opposite direction, the rider 29, bearing against the spring 33, will push the switch point 3 so that the car may continue along the main line 1.

In Figs. 1 and 5, the shoe 27 is shown as just entering the diagonal slot 19, a pull upon the rod 9 having just commenced. As this pull is continued, the spring 54 will be compressed, and the head 11 slid toward the chamber 6. This sliding of the head 11 will cause the shoe 27 to move in the slot 19 in the direction of the arrow *a*, tilting the lever 22 and throwing the switch point 3 from its main line position to its siding position. When the shoe 27 has moved in the direction of the arrow *a*, to the end of the slot 19, the pointed end 28 of the shoe 27, engaging the wall of the compartment 7, will tilt the shoe 27 out of the slot 19, into a position upon, and alined with, the guideway 15. When the rod 9 is released, the spring 54 will cause the head 11 to travel toward the chamber 5, the shoe 27 moving in the direction of the arrow *b* along the guideway 15, ultimately dropping behind the shoulder 57 and resting upon the guideway 17, the switchpoint 3 by pulling upon the rod 9 and subsequently releasing the same, being moved from its main line to its siding position and there securely locked. When the rod 9 is again drawn upon, the shoe 27, engaging the shoulder 57, as the head slides, will be deflected from the guideway 17 into the slot 56, moving along the slot in the direction of the arrow *c*, and, engaging with its pointed end 28, the wall of the compartment 7, be tilted out of the slot 56, into a position upon, and in alinement with, the guideway 16. This movement of the shoe 27 from one end of the slot 56 to the other will move the switchpoint 3 from its siding position to its main line position. When the rod 9 is released, the spring 54 will cause the head 11 to move toward the chamber 5, the shoe 27 moving

along the guideway 16 in the direction of the arrow *d*, and ultimately dropping behind the shoulder 58, and upon the guideway 18, thus locking the switch point in its main line position. When the rod 9 is again drawn upon, the shoe 27, engaging the shoulder 58, will in its movement assume the position shown in Fig. 5 of the drawing, subsequently following the arrows *a*, *b*, *c*, and *d*, completing the cycle in the course of two successive pulls upon the rod 9.

It is obvious that the rod 9 may be drawn upon in any desired manner to throw the switch point, but it is one of the objects of this invention to devise a means whereby as a trolley car approaches the switch, the head 11 may be actuated electrically, to throw the switch point.

When the trolley car is in the position shown in Fig. 4 of the drawing, the trolley wheel being in engagement with the annular member 52 which surrounds the insulation 53, the current will, during the time that the trolley wheel is in engagement with the member 52, travel as shown by the arrows, passing from the trolley wire 50 through the wire 49, through the solenoid 46, through the wire 51, into the trolley pole 75, and thence to the ground. When the solenoid 46 is thus energized, it will draw upwardly, the core 45, which, through the medium of the rod 42, the chain 38, the rod 61, and the chain 36, will operate to exert a pull upon the rod 9, sliding the head 11 toward the chamber 6. As soon as the trolley wheel has passed off the member 52, the solenoid 46 will be demagnetized, and the core 45 will drop into the position shown in Fig. 2 of the drawing, whereupon the spring 54 will be effective to push the head 11 toward the compartment 5.

From the foregoing description of the manner in which the trolley car operates to throw the switch, it is obvious that the switch must be thrown, no matter, whether, upon the approach of the car, the switch point is in its main line position or in its siding position. In order to overcome this difficulty, and to throw the switch point only when it is desired so to do, the motorman, before the trolley wheel engages the member 52, manipulates the controller to break the circuit through the trolley car. In such case, the trolley car will pass by its momentum only, across the member 52, whereupon, when the trolley wheel has passed over the member 52, the controller may again be manipulated to close the circuit through the car and to actuate the motors. It is obvious that if the circuit through the car is thus opened when the trolley wheel comes in contact with the member 52, there will be no current flowing through the solenoid 56, the core 45 remaining in the position shown in Fig. 2, and the switch point, in its turn,

remaining undisturbed by the passage of the car. The springs 33 and 60 serve to hold the switch point 3 yieldingly in position, so that it may readily be displaced by the flanges of the wheels of cars passing from the siding 2 out on to the main track 1.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:—

1. In a device of the class described, a switch point; a casing; a rod arranged to slide transversely of the casing and connected with the switch point; a lever pivoted intermediate its ends in the casing and yieldingly connected at one end with the rod to move the rod; a slotted head slidably mounted in the casing; means arranged to engage the other end of the lever and to reciprocate in the slot of the head to tilt the lever; and means for operating the head.

2. In a device of the class described, a switch point; a casing; a threaded rod arranged to slide transversely of the casing and connected with the switch point; a lever pivoted intermediate its ends in the casing and slidably connected at one end with the rod; compression springs carried by the rod upon either side of the lever; nuts upon the rod to engage the compression springs; a slotted head slidably mounted in the casing; means arranged to engage the other end of the lever and to reciprocate in the slot of the head to tilt the lever; and means for operating the head.

3. In a device of the class described, a switch point; a casing; a rod arranged to slide transversely of the casing and connected with the switch point; a lever pivoted intermediate its ends in the casing; a rider pivoted to one end of the lever and having an upright extension to slide upon the rod; compression springs carried by the rod on either side of the rider; means mounted upon the rod for adjusting the springs; a slotted head slidably mounted in the casing; means arranged to engage the other end of the lever and to reciprocate in the slot of the head to tilt the lever; and means for operating the head.

4. In a device of the class described, a casing; a lever comprising longitudinally aligned members spaced vertically from each other, there being a pivot pin forming a rigid connection between the adjacent ends of the members and arranged to be received by the casing to form a pivotal mounting for the lever; a rod slidably mounted in the casing transversely of the same and connected with one end of the lever; a switch point connected with the rod; a head slidably mounted in the casing and arranged to engage the other end of the lever to tilt the same; and means for operating the head.

5. In a device of the class described, a switch point; a casing; a lever pivoted in-

9. In a device of the class described, a casing; a head slidably mounted in the casing and provided in its upper face with diagonal slots intersecting at their intermediate portions, and with guideways upon its sides connecting the ends of the slots, the

In testimony that I claim the foregoing as 110  
my own, I have hereto affixed my signature  
in the presence of two witnesses.

Witnesses:  
J. F. SCHLOTTER,  
L. NOBLE.