



# UNITED STATES PATENT OFFICE.

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## AUTOMATIC ELECTRIC SWITCHING MECHANISM.

980,620.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed February 17, 1910. Serial No. 544,470.

*To all whom it may concern:*

Be it known that I, JOHN JAMES FANNING, of Cantley, in the Province of Quebec, Canada, have invented a certain new and useful Improvement in Automatic Electric Switching Mechanisms, of which the following is a specification.

My invention relates to an improved automatic electric switching mechanism, and the objects of my invention are to provide a simple and effective device by means of which the switching point for electrically operated railway cars or the like may be moved the desired position without the necessity of stopping the car, or reducing the speed thereof.

Further objects are to provide an improved form of operating mechanism for the switch point which will be of simple construction and water and weather proof.

Further objects still are to provide a safety contact member which will eliminate the possibility of the motorman or others about the car receiving a shock from the current passing through the mechanism.

With these and other objects in view, the invention consists of the improved construction hereinafter described in detail in the accompanying specifications, the features of novelty being specifically set forth in the claims.

In the drawings: Figure 1 is a side view partially in section showing a portion of the car and the mechanism forming the present invention. Fig. 2 is a plan view of the track with a portion removed to show the tubes for carrying the conductors beneath the pavement. Fig. 3 is a plan view of the car floor with a portion broken away to show the contact member. Fig. 4 is a perspective view of the switch point and the operating mechanism for the same.

In the drawings, like characters of reference indicate corresponding parts in each figure.

Referring to the drawings, A represents the car tracks of usual form and B represents a movable switch point such as usually located in the branch parts in the track. In accordance with the present invention, the pivoting pin 10 and the switch point move with the switch point and extend into a casing member C, preferably located beneath the surface of the pavement, said pin having one end journaled in the side of the

casing, and the casing being of such character as to exclude water and weather from the interior.

Secured to the pin, and within the casing is an armature 11 of suitable magnetic material which is adapted to be moved to different positions by electrically operated means to cause the switch point to assume either one of its positions. In the particular improved construction illustrated the armature 11 is in the form of a thin flat bar and extends through a slot in the pin 10. Each of the magnets 12 and 13 have cores of their own which are disconnected from the armatures.

The means I have illustrated to operate the armature comprise electro-magnets 12 and 13 located on opposite sides thereof, and only one of which is adapted to be energized at a time, the current for the energization being received from the approaching car through the means of one or the other of a pair of contact plates 14 and 15, preferably located within the track A and connected to the magnets by electric conductors 16 and 17 leading through protecting tubes 18 and 19, the opposite sides of the magnet coils to that with which the conductors connect being grounded or connected to the rails.

D represents the car of usual form which carries two depressible contact members 20 and 21 adapted to cooperate with the contact plates to complete the circuit through the electro-magnet. These contact members are supported in such position on the car that they will come opposite the contact plates 14 and 15. In the embodiment illustrated, these contact members are in the form of levers pivoted at 22 and having rollers 23 at their extremities adapted to engage and roll in the contact plates. It is of course to be understood, that the form and shape of the contact member is not essential to the present invention and might be varied considerably in detail, and the term "contact member" as used herein, is intended to show any member carried by the car which is adapted to be depressed to engage the fixed contact plates supported near the tracks.

As it would be a considerable source of danger to have the contact members in continuous connection with the electric current, it is desirable to provide some means for cutting the supply of current off from

them when they are not in use, and the improved means which I have provided comprise an auxiliary switch member 24 having spring fingers 25 thereon adapted to engage  
 5 a contact point 26 on the contact member, the switch member and contact member being normally held separate from each other. In the embodiment illustrated, a stop rod  
 10 27 is provided limiting the upward movement of the contact member, said contact member being normally held in uppermost position by means of a tension spring 28  
 15 extending between the contact member and the switch member, the switch member itself being held in uppermost position by means of a spring 29 which surrounds a projection 30  
 20 thereon, the upper end of which is formed with a button 31 adapted to be depressed by the foot of the motorman, the spring 29 extending between the underside of the button and the floor 32 of the car.

The spring fingers 25 are insulated from the switch member 24, or if desired the switch member may be formed wholly of  
 25 insulating material. The contact fingers 25 are placed in circuit with a suitable supply of electrical energy. This when the car is electrically operated may be the ordinary line circuit, and it will be found convenient  
 30 in order to avoid excessive voltage to include a resistance in the circuit, and I prefer to include a resistance coil 33 and which will form part of the controller 34 for the car.

35 In operation: on approaching the corner at which it is desired to operate the switch, the motorman will depress either one of the contact members, according to the direction he intends the car to go. This he does by  
 40 depressing the button 31, by his foot moving the switch member 24, causing the spring fingers 25 to contact with the point 26, thereby, completing the circuit to the contact member and on the pressure being further continued moving the contact member  
 45 downwardly, when the roller 23 will en-

gage one of the contact plates 14 or 15 in passing, energizing one of the magnets and moving the armature 11 and the switch point B to the proper position. It will also  
 50 be noted that it is not necessary for the motorman to know whether the switch is in any given position, because if he operates the proper lever to move it to that position, then the switch if it is not in that position will  
 55 be moved to it, and if it is in that position it will remain there. It will also be noted that the automatic arrangement does not interfere with the operation or turning of the switch by hand, and no complicated or interfering mechanism is provided about the  
 60 switch point on the surface of the street.

What I claim as my invention is:

1. In an electric switch mechanism of the character described and in combination a  
 65 depressible contact member, a depressible switch member adapted to engage the same and conduct electric current to the same, means for limiting the upward movement of the contact member, spring means for  
 70 raising the contact member, spring means for raising the switch member out of contact with the contact member and electrically operated switch means adapted to be engaged by the contact member when depressed.  
 75

2. In an electric switch mechanism of the character described and in combination a contact member and a switching member normally disengaged and so arranged that when the switching member is depressed it  
 80 will engage and depress the contact member, a fixed contact plate adapted to be engaged by the contact member, and an electric circuit completed through the switching member and contact plate and including switching means.  
 85

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JOHN JAMES FANNING.

Witnesses:

RUSSEL S. SMART,  
 M. GILBERTSON.