

C. R. BAILEY.
AUTOMATIC SWITCH.
APPLICATION FILED MAY 9, 1910.

982,410.

Patented Jan. 24, 1911.

Fig. 1.

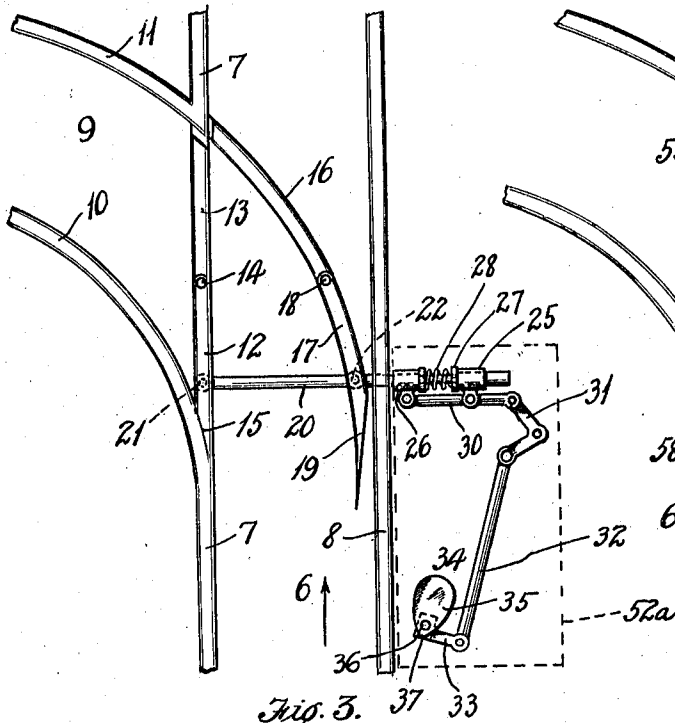


Fig. 2.

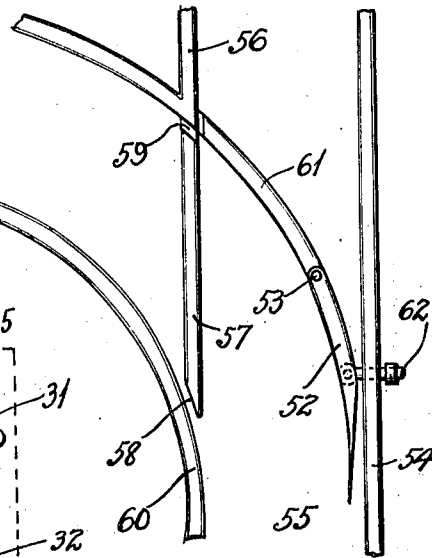


Fig. 3.

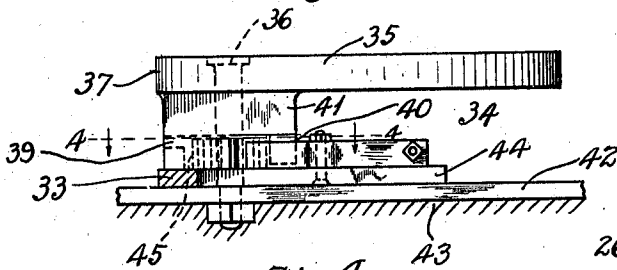


Fig. 4.

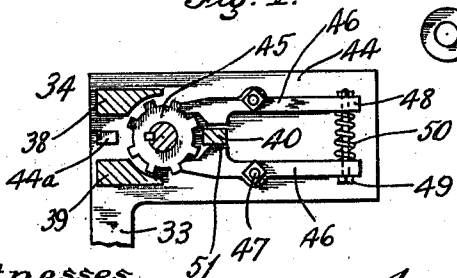
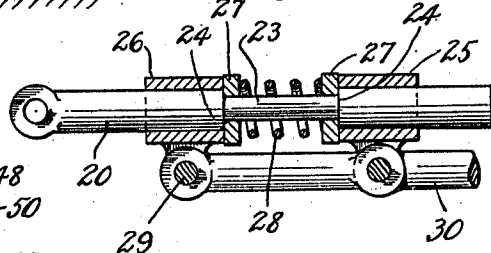


Fig. 5.



Witnesses:

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UNITED STATES PATENT OFFICE.

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AUTOMATIC SWITCH.

982,410.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CLARENCE R. BAILEY, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Automatic Switches, of which the following is a specification.

This invention relates to railway switches and particularly to automatic switches, which are adapted to be operated by a passing car or train. The switch is expected to be useful in steam roads or electric roads carrying heavy traffic, and also for street railways.

The object of this invention is to produce a switch of this type, which will be of simple construction and which will operate to lock the switch mechanism in the open or closed position, but which will permit a resilient movement of the switch points by a train passing in the direction in which the switch points project.

In the annexed drawing which fully illustrates my invention, Figure 1, is a plan showing the invention applied to a double point switch. Fig. 2 is a view indicating the manner of applying the invention to a single point switch, certain parts being broken away. Fig. 3 is a side elevation and partial section illustrating the construction of the track device which operates the switch bar which locks itself automatically in an open or closed position. This view is upon an enlarged scale. Fig. 4 is a section taken on the line 4-4 of Fig. 3, and further illustrating details of the track device, certain parts being broken away. Fig. 5 is a longitudinal section taken at the switch bar and illustrating details of the construction at this point.

Referring more particularly to the parts, 6 represents the main track in Fig. 1 formed of rails 7 and 8 and connecting with the siding 9 having rails 10 and 11 which connect respectively with the rails 7 and 8. This switch is a double point switch, one of the switch points 12 being in line with a frog 13 alined with the rail 7 and pivotally attached at 14 to the end of the frog, as shown. The forward end of this switch point 12 has an inclined face 15 adapted to come against the side of the rail 7 where it connects with the rail 10, so as to straighten the main track and guide the wheel across the frog 13 and onto the rail

7. Alining with the rail 11 there is provided a frog 16, which extends toward the rail 8, and at inner end of this frog a switch point 17 is pivotally attached at 18, and this switch point has an inclined forward face 19 adapted to lie against the side rail 8 when the switch is open. When the switch is closed this switch point lies away from the rail 8 and permits the flange of the car to pass. I provide a transverse switch bar 20, which is pivotally attached at 21 to the switch point 12 and pivotally attached at 22 to the switch point 17. This switch bar projects at the side of the track, as shown, and at a suitable point is formed with a reduced neck 23 between abrupt shoulders 24, as indicated in Fig. 5. Adjacent to these shoulders 24, the switch bar is provided with loose sleeves 25 and 26, and in the normal position of the mechanism, the adjacent ends of these sleeves aline with the shoulders 24, as shown. On the ends of the neck 23, washers 27 are provided, which seat against the shoulders 24 and against the end of the sleeves, and between these washers 27 a coil spring 28 is formed, which tends to hold the washers 27 pressed against the shoulders and against the ends of the sleeves, as will be readily understood.

The sleeves 25 and 26 are attached by pivot pins 29 to a link 30, which extends toward the right, as shown, and this link is connected pivotally with a bell crank lever 31, the opposite arm of which is connected by a link 32 with the arm 33 of a track device 34. The construction of this track device is clearly shown in Figs. 3 and 4. It comprises a cam plate 35, which is mounted on a vertical pin 36. The body of this cam plate is shown in Fig. 1, being of oval form with a pointed extremity or toe 37 at the end thereof adjacent to the pivot pin 36. On the under side of the cam plate at this point, two downwardly projecting dogs 38 and 39 are formed, and on the opposite side of the pivot pin a downwardly projecting trip or trip lug 40 is formed. These parts 38, 39, and 40 project down from a boss or hub 41 formed on the under side of the pin, as shown.

The cam plate 35 is arranged over a base plate resting upon a suitable foundation 43, and on this base plate is mounted a rocker plate 44, which is arranged to rock on the pivot pin 36. This rocker plate is of substantially rectangular form and carries the

aforesaid arm 33, which is attached to the link 32 as described above.

On the pivot pin 36 just above the rocker plate 44, a segment 45 is rigidly attached, said segment being in the form of a gear having projecting teeth on the periphery, as shown. On the upper face of the rocker plate 44, a pair of pawls 46 are pivotally mounted on bolts 47, and the noses of these pawls engage the teeth of the segment 45, as indicated. These pawls 46 have tails 48 connected by a tie bolt 49, which limits the outward movement of the tails; and on the tie bolt 49^a spring 50 is mounted, which tends to force the tails apart, to hold the pawls against the segment, as will be readily understood. Near their noses, the pawls 46 are formed with toes 51, which project toward the sides of the trip 40, and these toes are adapted to be struck by the trip 40, so as to release either of the pawls from the segment 45. The mechanism of the switch may be inclosed in a suitable box, indicated by dotted line 52^a in Fig. 1, but it should be understood that the cam plate 35 is disposed above this box, so as to be in the path of the shoe or shifting device carried by the car or passing train.

The mode of operation of this form will now be described.

Suppose that the train is approaching the switch in the direction of the arrow in Fig. 1, and suppose that it is desired to pass upon the switch, in the straight position of the track shown in Fig. 1, the cam plate 35 will incline outwardly toward its free end as indicated in Fig. 1. As the train or car arrives at the switch, the shoe or trip device carried by the car will strike the right side of the cam plate 35, and tend to swing the cam plate toward the left, that is, toward the track. This movement of the cam plate moves the trip 40 against the pawl 46, which lies adjacent the track and unlocks the pawl at the same time. This same movement will bring the dog 38 against the lug 44^a which projects upwardly from the rocker plate 44 between the dogs 38 and 39. In this way the dog 38 will move the lug 44^a so as to swing the rocker plate 44 on the pivot 36 as an axis. This will swing the arm 33 toward the switch and will operate through the bell crank lever 31 to throw the link 30 away from the track. This movement of the link is imparted to the sleeves 25 and 26, and they will shift the switch bar toward the right, so as to bring the switch point 17 against the rail 8 and open the switch point 12. This opens the switch so that the train can pass upon it. It will be evident that as soon as the cam plate comes out of contact with the shoe carried by the train, the spring 50 will throw both of the pawls 46 into engagement with the segment and hold the switch mechanism locked. On this account

it will be seen that the switch is always locked in a closed position, but the locking mechanism is released by the first movement of the cam plate when struck by the shoe carried by the car. It will be seen also that the spring 28 cooperating with the washers 27 and the shoulders 24 gives a resilient connection between the switch mechanism and the switch bar 20, which will permit the switch points to be displaced in spite of the fact that the switch mechanism is locked, for instance, in a position of the switch shown in Fig. 1, if a car should attempt to pass from the switch onto the main track, the switch will permit this as the flange of the wheel on the right side of the advancing car will engage the outer side of the switch point 12, and move this switch point inwardly, likewise the flange on the opposite wheel will strike the inner edge of the switch point 17 and shove this point over against the rail 8. This movement of the switch points simply compresses the spring 28 without displacing the bell crank lever 31 or any of the mechanism connected therewith. It will be evident that if the switch is open a car can pass onto the main track in a direction opposite to that indicated by the arrow in Fig. 1, as the switch point can spring in one direction as well as the other through the operation of the spring 28.

In Fig. 2, I have illustrated the device applied to a switch having a single movable switch point 52, which is pivoted at 53 and adapted to approach or recede from the rail 54 of the main track 55, the opposite rail 56 of the main track has a fixed frog 57 in alinement therewith, which runs across the switch and gaps 58 and 59 are left between the ends of this frog and the rails to permit the flanges of the wheels to pass. The bent rail 60 is then put in position giving a continuous curve in alinement with the rail 56 and passing into the siding track. A fixed frog 61 is arranged opposite to this rail 60, and to the inner end of the frog 61, the switch point 52 is attached, as shown. To the switch point 52 a switch bar 62 is attached, which corresponds to the bar 20, and the mechanism for operating this bar is the same as that illustrated in connection with Fig. 1. With a switch of this form it will be evident that the mode of operation is substantially the same as that shown in Fig. 1, except that there is only one movable switch point.

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

1. A main track, a siding, a movable switch point, adapted to connect said main track with said siding, a track device, mechanism connecting said track device with said switch point, means for locking said mechanism against movement, and a resilient con-

nection between said mechanism and said switch point permitting a movement of said switch point in either direction independently of said mechanism.

5 2. A main track, a side track, a movable switch point connecting said main track with said side track, a switch bar connected with said switch point, a link extending longitudinally of said switch bar, members carried by said link sliding on said switch bar, resilient means between said members for holding said switch bar normally fixed with respect thereto, a track device, and mechanism connecting said track device with said link for controlling said switch point.

3. A main track, a siding, a movable switch point adapted to connect said siding with said main track, a switch bar connected with said switch point and having a reduced neck formed thereupon, sleeves mounted to slide on said switch bar adjacent to the ends of said neck, a spring disposed around said neck and thrusting against the ends of said sleeves and permitting a longitudinal displacement of said switch bar in said sleeves, and a track device for actuating said sleeves to shift said switch bar.

4. In combination a movable switch point, a switch bar connected with said switch point and having a reduced neck thereupon with shoulders formed at the end of said neck, sleeves mounted to slide on said switch bar adjacent to said shoulders, a spring disposed around said neck, washers at the ends of said neck thrusting against said shoulders and against the ends of said sleeves, and a track device for actuating said sleeves to shift said switch point.

5. In combination, a movable switch point, a switch bar attached thereto having a reduced neck thereupon with shoulders formed at the end of said neck, sleeves mounted to slide on said switch bar and having their adjacent ends substantially alining with said shoulders, washers mounted on said neck, a spring disposed around said neck pressing said washers against said shoulders and against the ends of said sleeves, a link connected with said sleeves and adapted to move the same longitudinally to move said switch

point, a track device, mechanism connecting said track device with said link, and means for locking said mechanism normally against movement.

6. In combination, a movable switch point, a switch bar connected therewith, a member adapted to be struck by a passing train, mechanism connecting said member with said switch bar including a resilient connection with said switch bar permitting an independent movement of said switch bar, means for normally locking said mechanism, and means for unlocking said mechanism actuated by said member.

7. In combination, a switch point, a switch bar connected therewith, a track device including a cam adapted to be struck by a passing car, a rocker adjacent to said cam, means connecting said rocker with said switch bar for shifting the same, pawls normally locking said rocker against movement in either direction, and means for disengaging either of said pawls by the actuation of said cam.

8. In combination, a pivoted cam plate, a rocker pivotally mounted on the same axis therewith, a rigid segment, means for normally locking said rocker to said segment, means for disengaging said last means by the actuation of said cam plate, a switch point, and means for actuating said switch point from said rocker.

9. In combination, a pivot pin, a cam plate, mounted to swing on said pivot pin, a rocker plate also pivotally mounted on said pivot pin, a segment rigid with said pivot pin, pawls carried by said rocker cooperating with said segment to lock said rocker against movement, means for disengaging either of said pawls carried by said cam plate, a movable switch point, and means for actuating said switch point from said rocker.

In witness that I claim the foregoing I have hereunto subscribed my name this 2nd day of May, 1910.

CLARENCE R. BAILEY.

Witnesses:

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ETHEL COLEMAN.