

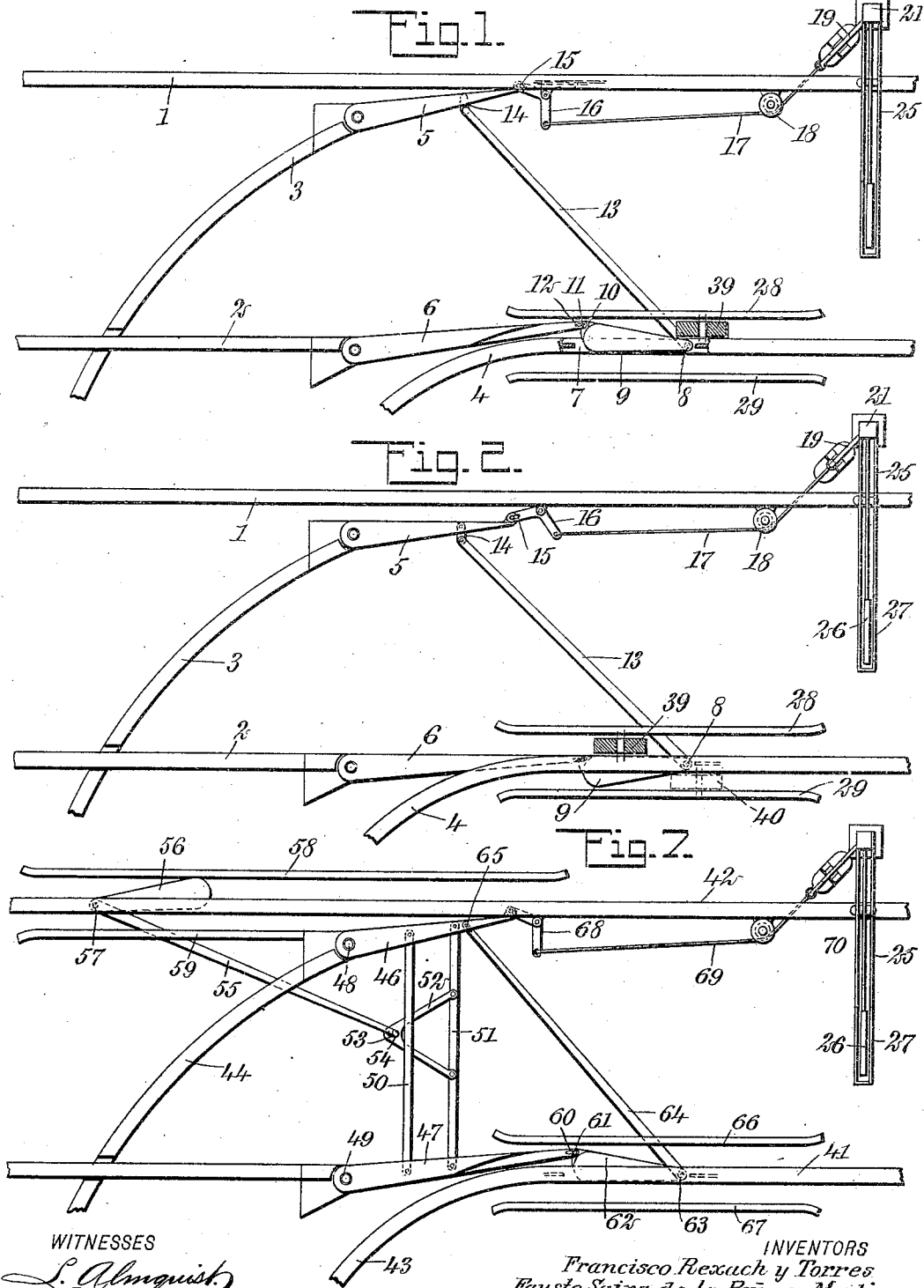
F. REXACH Y TORRES & F. S. DE LA PEÑA Y MARTINEZ.  
AUTOMATIC SWITCH FOR RAILWAYS.

APPLICATION FILED OCT. 24, 1908.

942,600.

Patented Dec. 7, 1909.

2 SHEETS—SHEET 1.



WITNESSES

*L. Almqvist.*  
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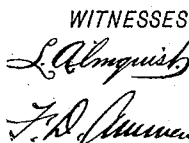
INVENTORS  
Francisco Rexach y Torres  
Fausto Sainz de la Peña y Martínez  
BY *Munro*  
ATTORNEYS

# AUTOMATIC SWITCH FOR RAILWAYS.

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Francisco Rexach y Torres  
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# UNITED STATES PATENT OFFICE.

FRANCISCO REXACH Y TORRES AND FAUSTO SAINZ DE LA PEÑA Y MARTINEZ, OF HABANA, CUBA, ASSIGNORS OF ONE-THIRD TO ULPIANO REXACH, OF HABANA, CUBA.

AUTOMATIC SWITCH FOR RAILWAYS.

942,600.

Specification of Letters Patent.

Patented Dec. 7, 1909.

Application filed October 24, 1908. Serial No. 459,350.

*To all whom it may concern:*

Be it known that we, FRANCISCO REXACH Y TORRES and FAUSTO SAINZ DE LA PEÑA Y MARTINEZ, both citizens of the Republic of Cuba, and residents of Vedado, Habana, Cuba, have invented a new and Improved Automatic Switch for Railways, of which the following is a full, clear, and exact description.

10 This invention relates to railways, and especially to their switches and means for operating their switches.

15 The object of the invention is to produce a switch having an improved construction co-operating with means carried by the car, which will enable the operator of the car to throw the switch to open or closed position in advance of the car. In this way the operator of the car can advance the car on the 20 main track or turn it into the siding or switch without leaving his platform.

25 The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth in the claims.

30 Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

35 Figure 1 is a plan showing a short portion of a main track and a switch constructed according to our invention, this view shows the switch in its open position; Fig. 2 is a view similar to Fig. 1, but showing the switch in its closed position and with the main track "straight"; Fig. 3 is a perspective illustrating details of the switch construction; Fig. 4 is a fragmentary view 40 and is a vertical section taken through a portion of a rail where one of the switch points is mounted; Fig. 5 is a perspective further illustrating details of the invention; Fig. 6 is a vertical section taken through a 45 signal device which is adapted to be operated when the switch is open or closed; Fig. 7 is a plan showing a modified form of the device in which the switch may be operated from a car passing in either direction 50 along the track; and Fig. 8 is a side elevation showing a portion of the front end of a car and illustrating the device carried by the car and by means of which the switch is controlled.

55 Referring more particularly to the parts,

and especially to Figs. 1 and 2, 1 and 2 represent the rails of the main track, while 3, 4 represent the rails of the switch track. On opposite sides of the main track, switch points 5 and 6 are pivotally attached. The switch point 5 is adapted to connect the rail 3 with the rail 1 when the switch is open, as indicated in Fig. 1, while the switch point 6 is adapted to form a continuation of the rail 2 when the switch is closed. In the rail 65 2, just to the right of the switch point 6, as indicated in Fig. 1, an opening 7 is formed in the web of the rail, and in this opening, at the right end thereof, there is provided a pivot 8 on which there is mounted a trip 70 arm 9 which extends toward the left. This trip arm 9 is tapered and enlarges, as indicated, toward its free end. At this point it is provided with a fin 10 of reduced thickness, which is attached by means of a pin 11 75 in a slot 12 formed longitudinally in the end of the switch point 6. This arrangement is clearly illustrated in Fig. 5.

On the pivot 8 there is rigidly attached an arm 13 which extends across the track in a 80 diagonal direction, and this arm is attached at its free end by means of a link 14 to the switch point 5. The end of the switch point 5 is attached by a pin and slot connection 15 to a bell crank lever 16, and one arm of 85 this bell crank lever is connected to a cord 17. This cord passes around a guide pulley 18 and is attached to a bell crank lever 19 mounted at the side of the track, as indicated in Fig. 6. This bell crank lever has 90 an arm 20 which extends into a tubular post 21. In this post there is arranged a link 22 which extends upwardly therein, and the upper end of this link is attached to a signal arm 23 which is pivotally mounted at 24 on 95 a semaphore arm 25. When the switch is closed, the signal arm 23 is disposed behind the semaphore arm 25 so that it is concealed thereby, the disk 26 of the signal being received behind the circular shield 27 formed 100 on the end of the arm 25. Near the switch point 6 on opposite sides of the rail 2, guard rails 28 and 29 are set in the roadway.

The manner of mounting the trip arm 9 in the web of the track is illustrated very 105 clearly in Fig. 4. Near the pivot bolt 8, the arm 13 is rigidly attached to the trip arm 9 by a fastening device or screw 30, as shown in this figure.

Referring now to Fig. 8, on the car plat- 110

form 31, a lever 32 is mounted to swing in a vertical position. The upper end of this lever is adapted to be held in any desired position by means of a quadrant 33. The normal position of the lever is shown by the full lines. The lever arm is connected by means of a link 34 with an arm 35 which extends up from a stub shaft 36 disposed near the left rail 2. This stub shaft 36 has arms 37 and 38 respectively, carrying trip rollers 39 and 40. These arms 37 and 38 are not in alinement with each other, but the arm 37 is disposed toward the inner side so that the roller 39 carried thereby may pass between the guard rail 28 and the rail 2, as shown. The roller 40 is arranged so that it may pass between the guard rail 29 and the rail 2. When the lever 32 is thrown to the position shown in Fig. 8 in dotted lines, the roller 39 will be depressed, so that as the car advances it will strike the inner edge of the trip arm 9 if the switch is in its open position. As the car advances, the side of the roller will force the trip arm 9 toward the left and this will rotate the switch points 6 and 5 into the position shown in Fig. 2. In this way the switch will be closed. As the switch moves from its open to its closed position, the signal disk 26 which has been displaced will become concealed. If the approaching car should find the switch in its closed position, and it is desired to throw it to the open position, this can be accomplished by throwing the lever 32 to the opposite position from that shown in dotted lines in Fig. 8. This will depress the trip roller 40 so that it will strike the outer side of the trip arm 9 and rotate the arm 9 back to the position in which it is shown in Fig. 1. This will enable the car to pass onto the switch.

In Fig. 7 we illustrate a modified form of the invention in which the switch can be opened or closed by a car coming from either direction. In this construction, 41 and 42 represent the rails of the main track, while 43 and 44 represent the switch rails. Switch points 46 and 47 are provided which are pivotally mounted at 48 and 49 respectively. These switch points are connected by links 50 and 51. The link 51 is provided with a V-shaped yoke 52, and this yoke is provided with a slot 53 which receives a pin 54 mounted in the end of a switch arm 55. This switch arm is rigid with a trip arm 56 which is mounted at the right of the track. This trip arm 56 is mounted on a pivot bolt 57 disposed centrally in the rail 42. At the outer side of the rail 42, a guard rail 58 is provided, and a similar guard rail 59 is provided on the inner side. The trip arm 56 extends toward the right from this pivot bolt 57, and is adapted to be operated by a device on the car coming from the left. In the position shown, the switch is open, but if the trip arm 56 is struck it can be thrown

over against the guard rail 59 which will close the switch and straighten the track. The switch point 47 is provided at its end with a slot 60 which receives a pin 61 in the free end of a trip arm 62 which is mounted in the rail 41. This trip arm 62 is attached to a pivot bolt 63 and has a rigid arm 64 which extends diagonally across the track and has a pin and slot connection 65 with the switch point 46. This arm 64 assists in operating the switch points in unison and assists the moving of the arm 62 also in unison with the switch points. The arm 62 extends toward the left from its pivot bolt 63. On opposite sides of the rail 41, guard rails 66 and 67 are provided which are similar to the guard rails above described. The switch point 46 is connected by a bell crank lever 68 and a cord 69 with a signal 70 disposed near the track, which signal is similar to the signal described in connection with the first form of the invention. It will be evident that cars passing from left to right can operate the switch through the medium of the arm 56, while the car passing from the right to the left can operate the switch through the medium of the arm 62. The links 50 and 51 connect the switch points and assist in keeping them in parallelism when they move from their open to their closed position, and vice versa. The guard rails operate to limit the outward movement of the trip arms and hold them in their proper position in the path of the actuating rollers carried by the car.

Having thus described our invention, we claim as new and desire to secure by Letters Patent,—

1. In combination, a main track, a switch, switch points adapted to open and close said switch, an elongated trip arm pivotally mounted in longitudinal alinement with one of the rails of said main track and adapted to swing across the same so as to project on one side thereof, and means carried by the car for engaging said trip arm on either side of said rail.

2. In combination, a main track, a switch, switch points adapted to open or close said switch, a trip arm pivotally mounted in longitudinal alinement with one of the rails of said track, adapted to swing across the rail and having a pin and slot connection at one end with one of said switch points, said trip arm being adapted to project on either side of said rail, and means for operating the other switch point from said trip arm.

3. In combination, a main track, a switch, switch points adapted to open or close said switch, one of the rails of said track having an opening in the web thereof, an elongated trip arm pivotally mounted in said opening and adapted to have its free end swing through said opening from one side to the other side of said rail, means for connecting

the free end of said trip arm with one of said switch points, and means for operating the other of said switch points from said trip arm.

- 5 4. In combination, a main track, a switch, switch points adapted to open or close said switch, one of the rails of said track having an opening in the web thereof, a trip arm pivotally mounted in said opening and  
10 adapted to have its free end swing through said opening to either side of said rail, means for connecting the free end of said trip arm with one of said switch points,

means for operating the other of said switch points from said trip arm, and guard rails 15 at the sides of said rail limiting the movement of said trip arm.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

FRANCISCO REXACH Y TORRES.

FAUSTO SAINZ DE LA PEÑA Y MARTINEZ.

Witnesses:

ULPIANO REXACH,

VICTOR NORMAND.