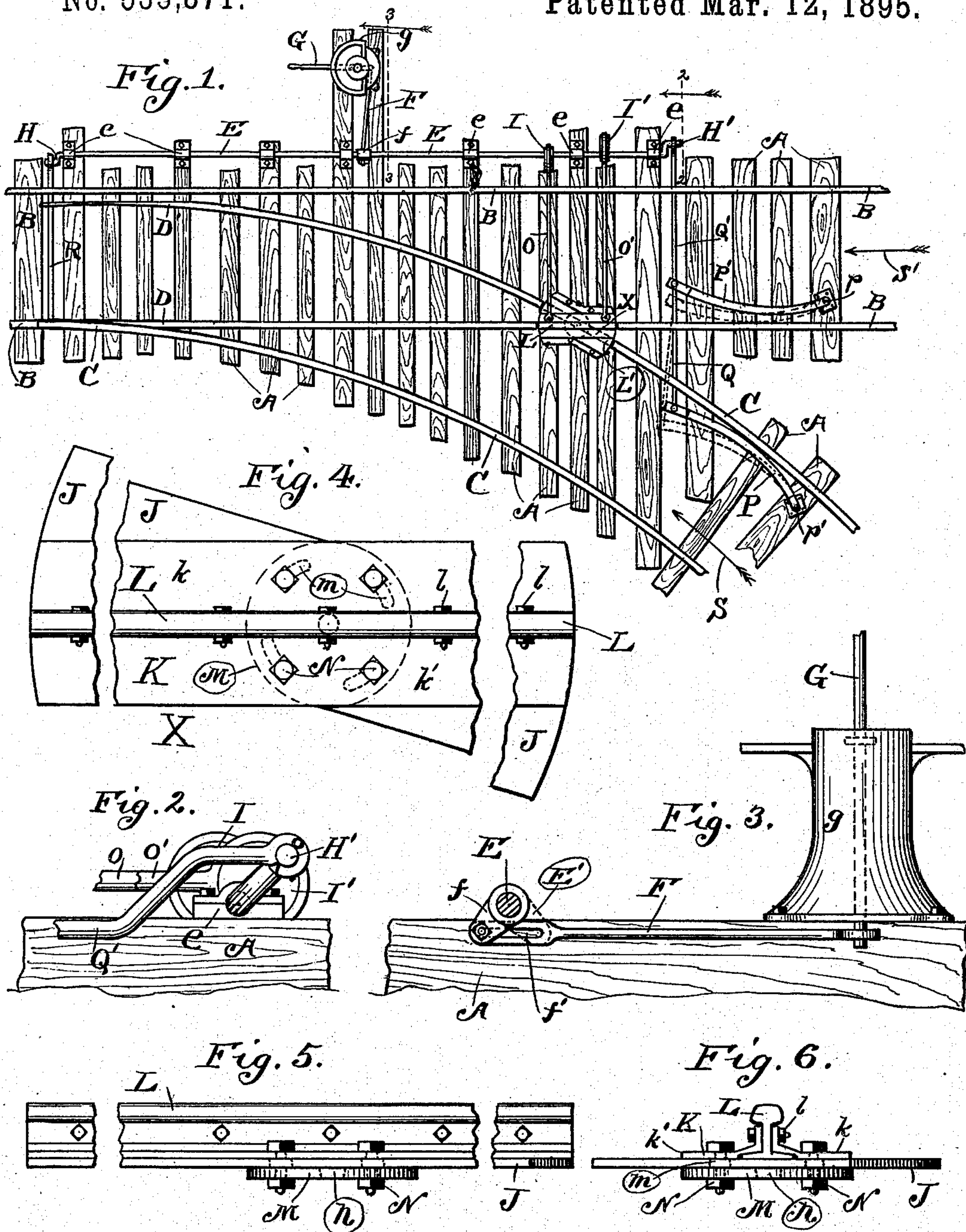


(No Model.)

D. GRUHLKEY.  
AUTOMATIC RAILWAY FROG AND SWITCH.

No. 535,371.

Patented Mar. 12, 1895.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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TO RICHARD F. KNOTT, OF SAME PLACE.

## AUTOMATIC RAILWAY FROG AND SWITCH.

SPECIFICATION forming part of Letters Patent No. 535,371, dated March 12, 1895.

Application filed July 7, 1893. Serial No. 479,781. (No model.)

*To all whom it may concern:*

Be it known that I, DANIEL GRUHLKEY, a resident of Marseilles, in the county of La Salle, State of Illinois, have invented certain  
5 new and useful Improvements in Automatic Railroad Frogs and Switches, of which the following, when taken in connection with the drawings forming a part hereof, is a full and complete specification, sufficient to enable  
10 those skilled in the art to understand, make, and use the same.

The object of my invention is to obtain a railroad frog which is adapted to form when set, in conjunction with the rails adjacent  
15 thereto, a continuous way for the wheels of the engine, cars or trucks running along the track, to pass thereover.

In the drawings referred to, Figure 1 is a plan view of an automatic railroad frog and  
20 switch embodying my invention. Fig. 2, is an end elevation on line 2—2 of Fig. 1, viewed in the direction indicated by the arrow; Fig. 3, an end elevation on line 3—3 of Fig. 1, also viewed in the direction indicated by the ar-  
25 row. Fig. 4 is a plan view of a frog embodying a portion of my invention; Fig. 5, an elevation thereof, and Fig. 6, an end view thereof.

The same letter of reference is employed to designate a part where more than one view  
30 thereof is given in the several figures of the drawings.

A, A, are the ties or sleepers of the tracks; B, B, the rails of the main track; C, C, the rails of the switch track.

35 D, D' are the rails forming the movable points of the switch.

E, is a rod rotatively mounted in the bearings *e, e, e*.

40 F, is a rod extending from crank-arm *f* on rod E to the switch-lever G of switch-stand *g*. *f'* is a slot in rod F. By means of the rod F, crank-arm *f* and slot *f'* movement of the switch-lever G produces a partial turning or rotation of the rod E.

45 H, H' are crank-arms at the respective ends of rod E, and I, I' are cams or eccentrics, rigidly secured on such rod.

X is the frog embodying that portion of my invention and consists of foundation plate J,  
50 rigidly secured to ties A, A, movable plate K

composed of angle irons *k, k'*, rail L to which are secured irons *k, k'*, by bolts *l, l*, plate M having holes *m, m*, therein and bolts N extending through holes *m*.

*n*, is a hub extending downward from the  
55 under side of the plate J, fitting into a corresponding hole in the plate M and tending to maintain the plate M in suitable position, as the same is turned by the turning of the plate K.  
60

Q Q' are rods secured to plate K, and extending therefrom to the cams or eccentrics I I' on rod E.

P P' are rails fulcrumed at end *p* thereof, respectively, to a tie or sleeper A.  
65

Q is a rod extending from rail P to rail P' and Q' is a rod extending from rail P' to crank-arm H'. By means of the rods Q Q', rails P P' are connected or tied to the crank-arm H in such a manner that rotation of the  
70 rod E (and consequent rotation of crank-arm H') produces movement in rails P P'. Assuming such rails P P' to be in the position illustrated by full lines in Fig. 1 of the drawings, rotation of the rod E will draw (by means  
75 of the rod R connecting crank-arm H with rails D D',) rails D D' into position so that rail D will be free from contact with the switch rail C, while rail D' is in contact with rail B in the main track, that is to say, such  
80 rotation of rod E will move the points of rails D D' so as to open the switch for a train to enter thereon from the main track. At the same time the turning of the eccentrics I I' will actuate the rods O O' and thereby move  
85 the frog rail L from the position thereof illustrated by the full lines in Fig. 1 to the position thereof indicated by the dotted lines in said figure.

When switch-lever G is in the position in  
90 which the same is illustrated in Fig. 1, the several parts are in the position illustrated by full lines and the main track is open for the passage of trains; switch rail D' being free from rail B and switch rail D being in  
95 contact with switch rail C. Frog X will then be in position, and there maintained by rods O and O', so that rail L of the frog will form a part of the main track; and hence there will be no jar or strain to the trucks of engine  
100



or cars crossing over the frog. At the same time the rails P P' will be maintained in the position illustrated by the full lines in Fig. 1.

If, when the respective parts of the frog and switch are in the position illustrated in Fig. 1 an engine or car on the switch rails C C' be moved toward the main track, (that is in the direction indicated by the arrow lettered S in Fig. 1,) the rail P will be thrown, by the flange of the wheel coming between such rail P and rail C, from, substantially, the position in which such rail is illustrated by full lines into about the position thereof indicated by dotted lines, thereby drawing the rod Q, rail P and rod Q' into the position thereof, indicated by the dotted lines in said Fig. 1, and thereby turn rod E (by means of crank-arm H and connecting rod Q') partially round, and into substantially the position thereof indicated by dotted lines lettered E' in Fig. 3. The turning of such rod E will, by means of the rod R, move rail D from rail C and rail D' into contact with rail B adjacent thereto. Such partial rotation of rod E will also move the eccentrics I I' and by means of the rods O O' actuate frog X; that is, move rail L from the position in which the same is illustrated in Fig. 1, by the full lines, into substantially the position thereof indicated by the dotted lines, lettered L' in said figure. The switch rails D, D', and the frog X are thus automatically thrown into position, so that such engine or car may pass over the switch rails C, C, on to the main track. The switch rails D, D' and the frog X and rails B, B' may be turned into the last described position by the turning of the switch lever G as hereinbefore described; and ordinarily, when it is desired that the several parts of the device be brought into such a position, it is to be understood that they are so brought by the switch lever G.

When the several parts of my automatic frog and switch are in position so that rail D' is against rail B (as indicated by the dotted lines in Fig. 1), and a train or a car passes over the main track in the direction indicated by the arrow lettered S', the flange of the wheels passing between rail B and such rail

P', will turn such rail from the position thereof indicated by the dotted lines into substantially the position illustrated by the full lines and thereby automatically operate the device in the same manner as last above described.

By the means thus described, when the several parts of the device are set in the manner illustrated by the full lines in Fig. 1, a train can go in either direction on the main track, and a train going in the direction indicated by the arrow lettered S on the switch-track, can safely pass therefrom to the main track; and when the several parts are in position with the switch-rail D, free from contact with rail C and switch rail D' in close contact with rail B, with the frog X in position so that the rail L thereof is in the position indicated by the dotted lines in Fig. 1, a train may pass in safety in either direction from the main track to the switch or from the switch to the main track, while a train on the main track going in the direction indicated by arrow S, will automatically throw the several parts, (the frog X and switch points D, D',) so that such train will safely pass the switch and frog, by means of rail P' and connecting mechanism.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

In an automatic frog and switch, the combination of a rotatable base plate, a rail mounted thereon, a rotatable rod extending along the track at one side thereof, crank arms and cams on the rod, horizontally movable rails near the rails of the track, and connecting rods extending from the cams to the rotatable base plate, and from the crank arms to the horizontally movable rails and the points of the switch rails, with a slot in the connecting rod extending from the switch lever to the crank arm on the rotatable rod, whereby rotation of the rotatable rod may occur without producing corresponding movement of the switch lever; substantially as described.

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Witnesses:

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