

R. D. LIVINGSTON.
 SWITCH MECHANISM FOR RAILWAYS.
 APPLICATION FILED JULY 28, 1913.

1,132,860.

Patented Mar. 23, 1915.
 2 SHEETS—SHEET 1.

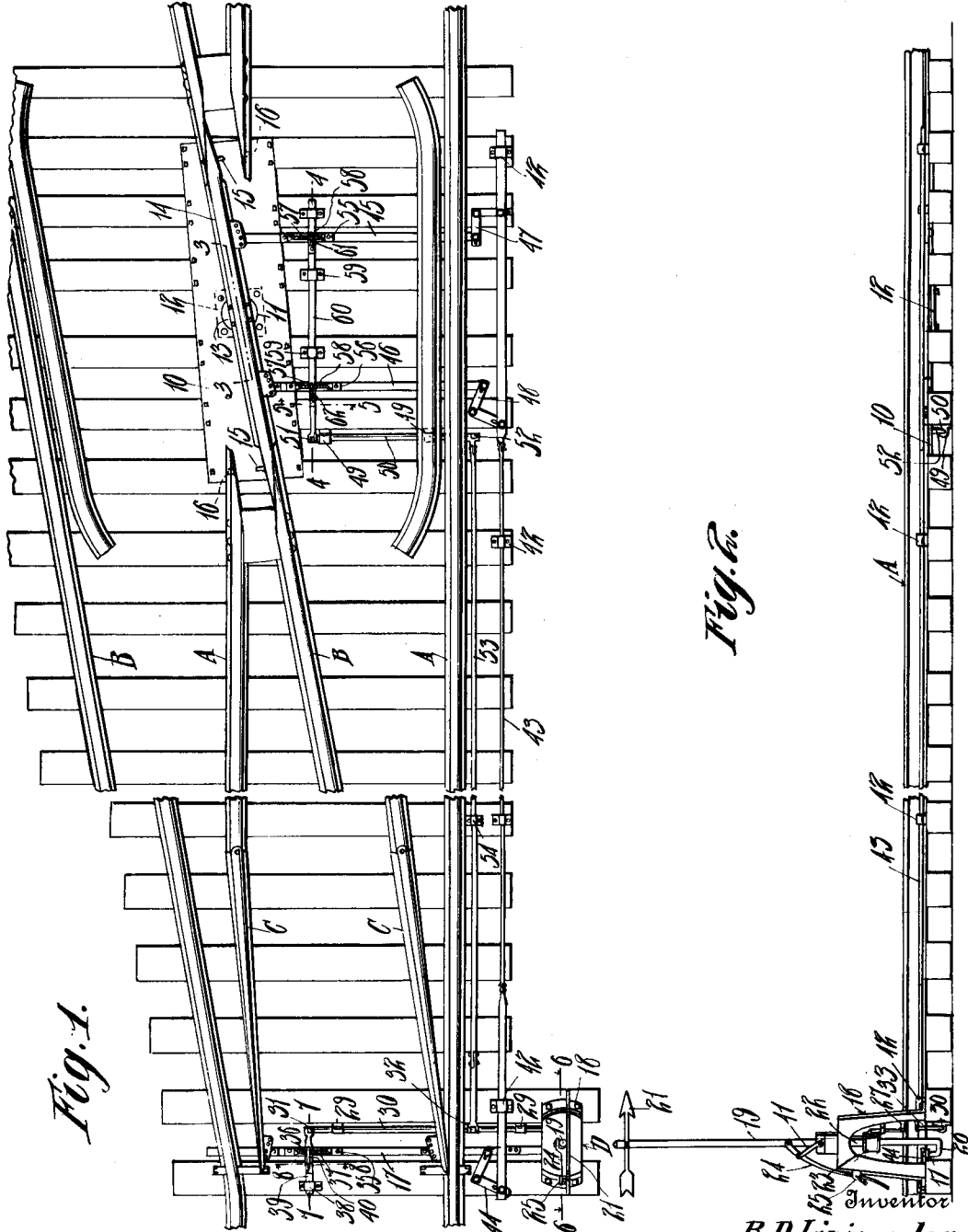


Fig. 1.

Fig. 2.

Witnesses
W. C. Fielding
Henry P. Blight

By *Charles C. Spaulding*
 Attorney

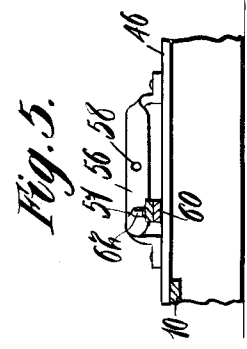
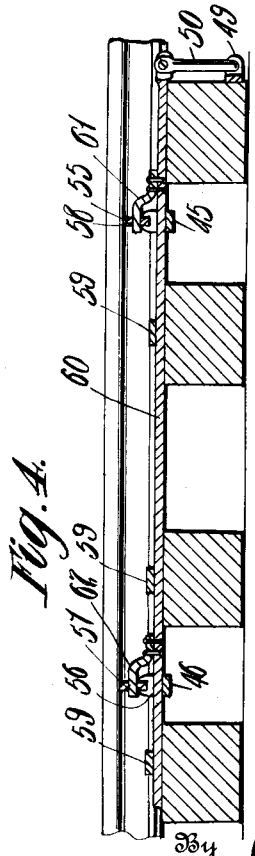
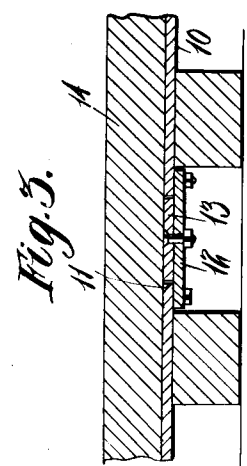
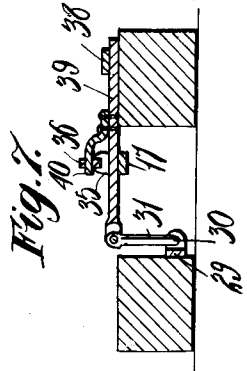
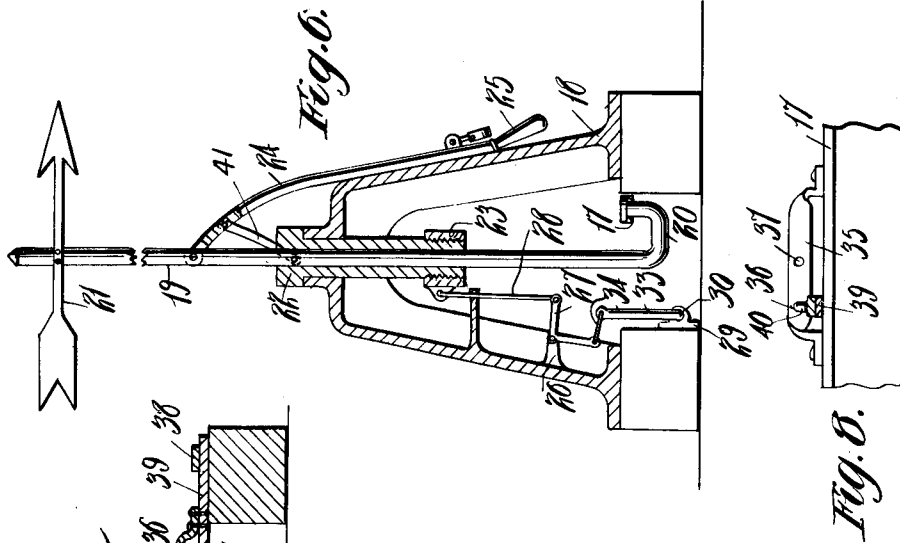
Inventor
R. D. Livingston

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Witnesses
H. C. Fielding
Henry S. King

Inventor
R. D. Livingston
Charles Chavabe
 Attorneys

UNITED STATES PATENT OFFICE.

ROBERT D. LIVINGSTON, OF DES MOINES, IOWA.

SWITCH MECHANISM FOR RAILWAYS.

1,132,860.

Specification of Letters Patent.

Patented Mar. 23, 1915.

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To all whom it may concern:

Be it known that I, ROBERT D. LIVINGSTON, a citizen of the United States, residing at Des Moines, in the county of Polk, State of Iowa, have invented certain new and useful Improvements in Switch Mechanisms for Railways; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to switch mechanisms for railways.

The object of the invention resides in the provision of a switch mechanism for railways which embodies a movable rail-frog for the point of intersection of diverging tracks whereby a continuous or unbroken rail bearing is provided for the wheels of the car moving on either track, thus overcoming the danger of the derailment, excessive wear imposed upon a fixed frog when the latter is used and obviating all jarring and jolting incident to the passage of the car over the switch.

A further object of the invention resides in the provision of means for connecting the frog with the switch operating mechanism and for moving and locking the same in position simultaneously with the operation of the switch.

With the above and other objects in view the invention consists in the details of construction and in the arrangement and combination of parts to be hereinafter more fully described and particularly pointed out in the appended claims.

In describing the invention in detail reference will be had to the accompanying drawings wherein like characters of reference denote corresponding parts in the several views, and in which—

Figure 1 is a plan view of a section of railway trackage embodying the invention; Fig. 2, a side elevation of what is shown in Fig. 1; Fig. 3, a section on the line 3—3 of Fig. 1, same being shown on an enlarged scale; Fig. 4, an enlarged section on the line 4—4 of Fig. 1; Fig. 5, a section on the line 5—5 of Fig. 1 on an enlarged scale; Fig. 6, an enlarged section on the line 6—6 of Fig. 1; Fig. 7, an enlarged section on the line 7—7 of Fig. 1; and Fig. 8, a section on the line 8—8 of Fig. 1.

Referring to the drawings A indicates the rails of the main track and B the rails of

a side track. The inner rails A and B are interrupted at their point of intersection and mounted upon the ties of the trackage and spanning the space between the resulting ends of the inner rails A and B is a plate 10. This plate 10 is provided centrally with a circular opening 11 and secured to the under side of the plate 10 across the opening 11 is a plate 12. Rotatably mounted in the opening 11 is a disk 13 to which is secured the central portion of a frog 14 whereby said frog may be moved to render either the inner rail B or the inner rail A continuous. The ends of the frog 14 are pointed as are likewise the adjacent ends of the inner rails A and B. The frog 14 is provided at each end with a cross pin 15 and these pins are adapted to interchangeably engage in openings 16 formed in the webs of the adjacent ends of the rails A and B to lock the frog to said rails respectively when the latter is disposed to form a continuation thereof.

The switch points of the mechanism are indicated at C and are shown connected by a throwing bar 17 whereby said points may be operated in unison to close or open the switch.

Mounted upon the ties of the trackage adjacent the outer side of the outer rail A is a switch stand D which embodies a bracket 18 having rotatably mounted therein a vertical shaft 19 the lower end of which terminates in a crank portion 20 pivotally connected to the adjacent end of the bar 17 while the upper end thereof carries a signal 21 of the usual type for indicating the status of the switch. Slidably mounted in the bracket 18 and on the shaft 19 is a sleeve 22 which has rotatably mounted on the lower end thereof a collar 23 for a purpose that will presently appear. Pivotaly mounted upon the shaft 19 above the bracket 18 for movement in a vertical plane is a lever 24 which is adapted to be secured against pivotal movement through a medium of a suitable locking device 25. Formed on the bracket 18 is an ear 26 upon which is pivotaly mounted an angle lever 27 one end of which latter is connected to the collar 23 by means of a link 28.

Rotatably mounted in brackets 29 carried by one of the ties of the trackage is a shaft 30 the inner and outer ends of which are provided respectively with laterally directed arms 31 and 32, the arm 31 being located between the rails A and the arm 32 just out-

ward of the outer rail A. The shaft 30 is also provided on its extreme outer end with a laterally directed arm 33 which is connected by a link 34 with the end of the angle lever 27 remote from the end connected with the link 28.

Mounted on the upper side of the bar 17 is a plate 35 provided with spaced openings 36 and 37. Slidably mounted in a guide member 38 for movement transversely of the bar 17 is a bar 39, it being noted that the guide member 38 is directly connected to one of the ties of the trackage which tie also directly supports the bar 39. This bar 39 carries a finger 40 adapted to be interchangeably engaged in the openings 36 and 37 of the plate 35 as will hereinafter appear. The end of the bar 39 remote from the guide member 38 is pivotally connected to the free end of the arm 31. The lever 24 is connected to the sleeve 22 by means of a link 41.

From the construction so far described it will be apparent that if it is desired to throw the switch points C from open position as shown in Fig. 1 to closed position it is only necessary to release the locking device 25 and elevate the free end of the lever 24. This movement of the lever 24 will raise the sleeve 22 and collar 23 so as to swing the angle lever 27 on its pivot. This movement of the angle lever 27 will in turn rock the shaft 30 so as to move the free end of the arm 31 toward the bar 17. This movement of the arm 31 will slide the bar 39 so as to disengage the finger 40 from the opening 36 and thereby unlock the switch. The shaft 19 is then rotated through the medium of the lever 24 to throw the switch points C to closed position as will be obvious. As the lever 24 is lowered to move same to locking position the collar 23 will move downwardly under the influence of gravity and rotate the angle lever 27 which will effect rotation of the shaft 30 and the rotation of the latter will slide the bar 39 so as to engage the finger 40 in the opening 37 and thereby lock the switch in closed position.

In order to operate the frog 14 simultaneously with the switch points C there is slidably mounted in guide members 42 carried by the ties of the trackage a bar 43, said bar extending parallel with the outer rail A. The end of the bar 43 adjacent the switch stand D is pivotally connected to one end of an angle lever 44, the latter being pivotally mounted upon one of the ties of the trackage between the outer rail A and the bar 43. The end of the angle lever 44 remote from that connected with the bar 43 is pivotally connected to the bar 17 so that when the latter is moved to throw the switch point the bar 43 will also be moved longitudinally. Pivotally connected to the frog

14 on opposite sides of the pivot of said frog are corresponding ends of bars 45 and 46 respectively. The end of the bar 45 remote from the frog 14 is pivotally connected to one end of an angle lever 47, while the other end of said angle lever is pivotally connected to the bar 43, it being noted that the angle lever 47 is pivotally mounted upon one of the ties of the trackage between the outer rail A and the bar 43. The end of the bar 46 remote from the frog 14 is pivotally connected to one end of an angle lever 48, while the other end of said lever is pivotally connected to the bar 43, it being noted that the angle lever 48 is pivotally mounted upon one of the ties of the trackage between the outer rail A and the bar 43.

Rotatably mounted in brackets 49 carried by the same tie of the trackage that supports the angle lever 48 is a shaft 50 provided with lateral arms 51 and 52 formed on the ends thereof respectively, the arm 52 being disposed between the outer rail A and the bar 43. The arm 52 is connected to the arm 32 of the shaft 30 by means of a link 53 slidably mounted in guide members 54 carried by the ties of the trackage whereby the rotation of the shaft 30 will produce a corresponding rotation of the shaft 50.

Mounted upon the bars 45 and 46 are plates 55 and 56 respectively and these plates are each provided with spaced openings 57 and 58. Slidably mounted in guide members 59 for movement transversely of the bars 45 and 46 is a bar 60 upon which is mounted fingers 61 and 62 adapted to interchangeably engage in the openings 57 and 58 of respective plates 55 and 56. The end of the bar 60 adjacent the bar 46 is pivotally connected to the arm 51 carried by the shaft 50 so that rotation of the shaft 50 will effect a sliding movement of the bar 60.

When the switch points C are thrown from open position shown in Fig. 1 to closed position it will be obvious that the rotation of the shaft 30 will rotate the shaft 50 to disengage the fingers 61 and 62 from the openings 58 and 57 of respective plates 55 and 56 and that rotation of the shaft 19 will operate the angle lever 44 to slide the bar 43 and this sliding movement of the bar 43 will in turn operate the angle levers 47 and 48 to move the bars 45 and 46 so as to swing the frog 14 to a position to form a continuation of the inner rail A. When the shaft 30 is rotated in the opposite direction by the depression of the lever 24 the shaft 50 will be rotated to move the bar 60 so as to engage the fingers 61 and 62 in the openings 57 and 58 of respective plates 55 and 56 and thus lock the frog 14 against movement simultaneously with the locking of the switch points C as has been previously referred to.

What is claimed is:—

1. In a switch mechanism, the combina-

tion of pivoted switch points, a throw bar connecting said switch points, a plate carried by said throw bar provided with a pair of perforations, a sliding pin adapted to re-
5 spectively engage in said perforations in the closed and open positions of the switch points, means for operating the throw bar to move the switch points to open and closed positions, and means operated by the actua-
10 tion of the throw bar operating means for sliding said pin out of a given perforation previous to the movement of the throw bar and into a given perforation after the move-
15 ment of the throw bar has been completed.
2. In a switch mechanism, the combina-
tion of a pivoted switch point, a throw bar connected to said switch point, a plate car-
ried by said throw bar provided with per-
20 forations, a sliding pin adapted to respec-
tively engage in said perforations in the

closed and open position of the switch point, a rotatable shaft, an arm on said shaft connected to the sliding pin whereby the rota-
tion of the shaft will move said pin into and
out of the perforations, means for operating 25
the throw bar to move the switch point to
open and closed position, and means oper-
ated by the actuation of the throw bar, op-
erating means for rotating said shaft to
slide the pin out of a given perforation pre- 30
vious to the movement of the throw bar and
into a given perforation after the movement
of the throw bar has been completed.

In testimony whereof, I affix my signature, in the presence of two witnesses.

ROBERT D. LIVINGSTON.

Witnesses:

SUSAN HUNT,
JOHN VICKER.