

G. D. SNYDER.  
 AUTOMATIC RAILWAY SWITCH.  
 APPLICATION FILED OCT. 3, 1913.

1,112,035.

Patented Sept. 29, 1914.  
 3 SHEETS-SHEET 1.

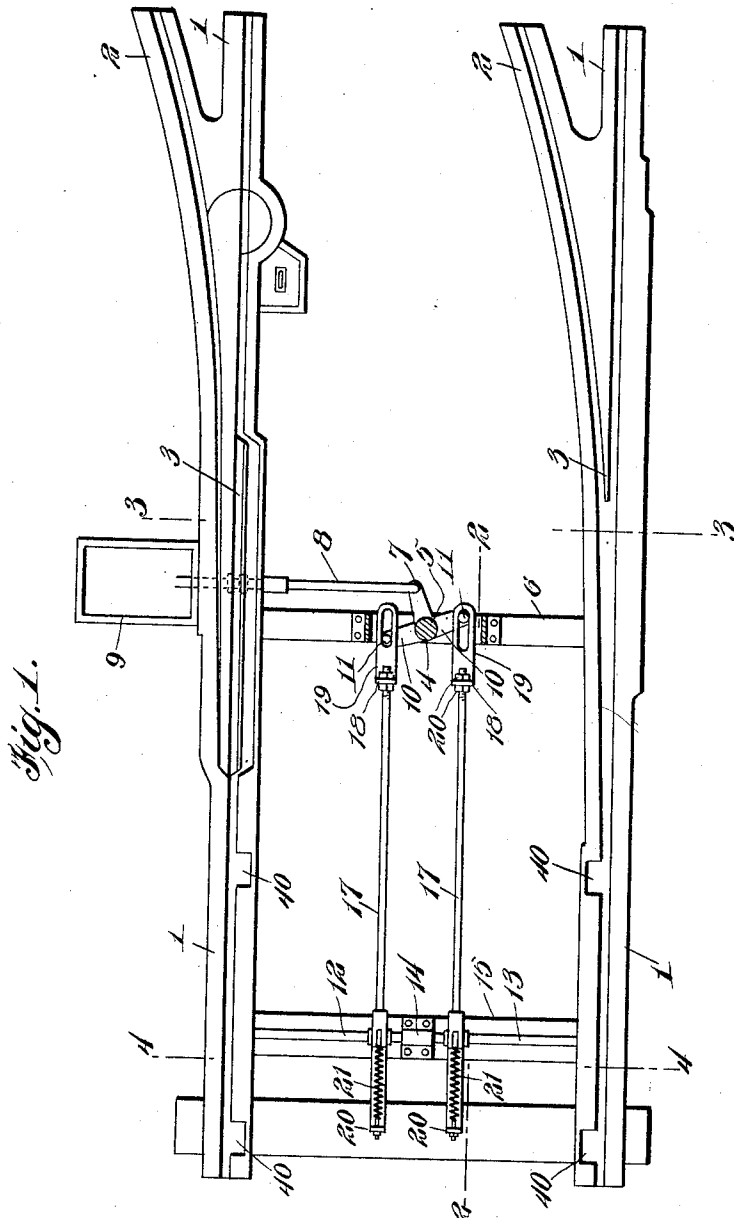


Fig. 1.

Witnesses

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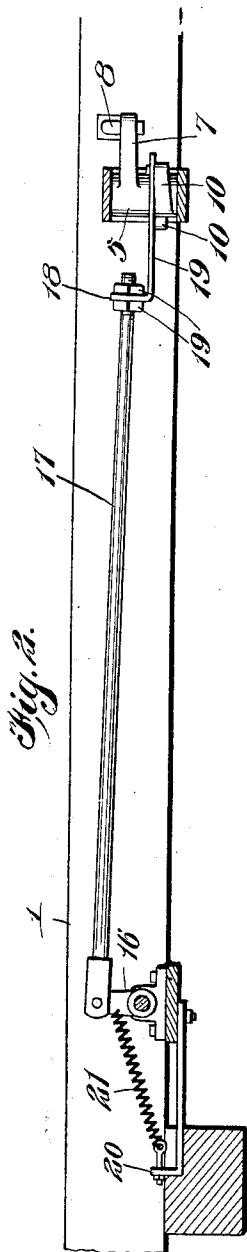


Fig. 2.

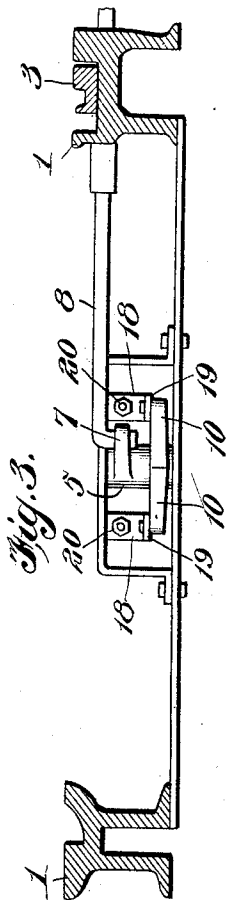


Fig. 3.

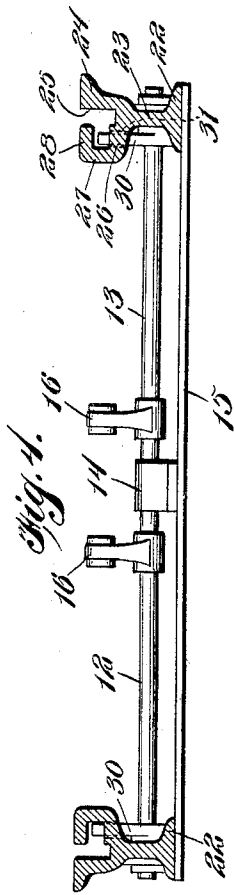


Fig. 4.

Witnesses

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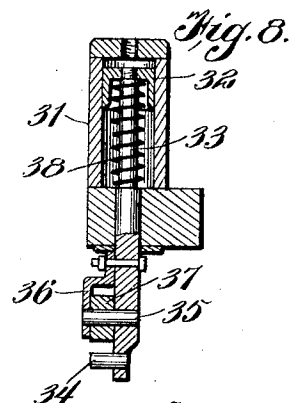
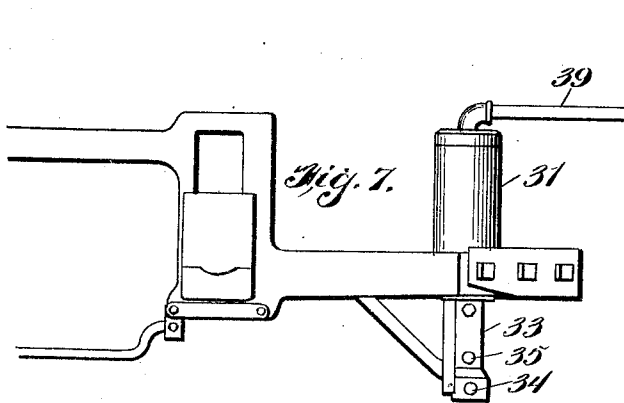
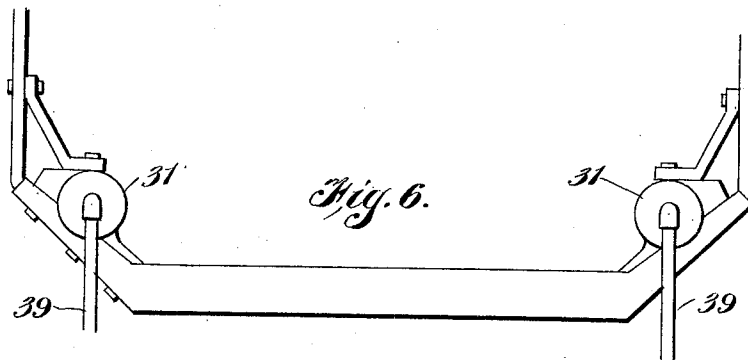
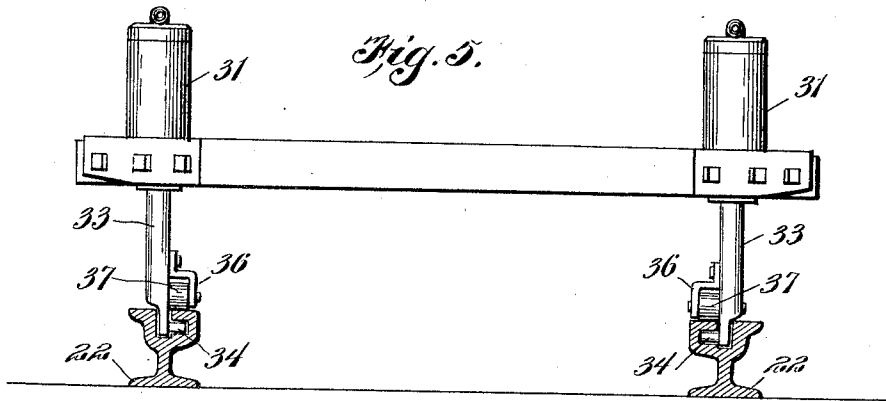
Attorney

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# UNITED STATES PATENT OFFICE.

GARRETT D. SNYDER, OF CALGARY, ALBERTA, CANADA.

## AUTOMATIC RAILWAY-SWITCH.

1,112,035.

Specification of Letters Patent. Patented Sept. 29, 1914.

Application filed October 3, 1913. Serial No. 793,240.

*To all whom it may concern:*

Be it known that I, GARRETT D. SNYDER, a citizen of Canada, residing at Calgary, in the Province of Alberta and Dominion of Canada, have invented new and useful Improvements in Automatic Railway-Switches, of which the following is a specification.

This invention relates to improvements in automatic railway switches and has particular application to a pneumatically operated switch.

In carrying out the present invention, it is my purpose to provide an automatic railway switch whereby the switch points may be automatically thrown from one position to the other by the motorman of the car and while the latter is in motion so that traffic may leave the main line and enter a branch line or siding or continue on the main line at the pleasure of the motorman of the car.

It is also my purpose to provide an automatic railway switch wherein the car carried operating devices for the switch throwing mechanism will be of the pneumatic or fluid operated type and under the control of the motorman or other operator of the car.

With the above and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter set forth in and falling within the scope of the claims.

In the accompanying drawings: Figure 1 is a plan view of a railway switch equipped with a switch throwing mechanism constructed in accordance with my present invention. Fig. 2 is a sectional view on the line 2—2 of Fig. 1. Fig. 3 is a similar view taken at right angles to Fig. 2 on the line 3—3 of Fig. 1. Fig. 4 is a sectional view on the line 4—4 of Fig. 1. Fig. 5 is a fragmentary end elevation of a car showing the operating devices carried thereby. Fig. 6 is a fragmentary top plan view of the car. Fig. 7 is a fragmentary side elevation thereof. Fig. 8 is an enlarged vertical sectional view through one of the car carried operating devices.

Referring now to the accompanying drawings in detail, 1, 1 designate the rails of the main line, while 2, 2 indicate the rails of a branch line or siding, the switch points controlling traffic from the main line to the branch line or siding being indicated at 3, 3.

My improved switch throwing mechanism comprises a hub 4 rotatable about a vertical

pin 5 upstanding from a metallic plate 6 arranged transversely of the rails and secured to the under sides thereof in proximity to the switch points. Extending outwardly from the hub 4 is a connecting arm 7 pivotally connected to one end of a switch throwing rod 8, the latter being connected with the movable switch points and having the extremity thereof projecting into a box 9 and connected with suitable mechanism whereby the switch points may be thrown manually when the occasion requires. Extending outwardly from the hub 4 at diametrically opposite points and at right angles to the arm 7 are operating arms 10, 10 each having the outer end thereof provided with an upstanding pin 11.

Journalled in horizontally alining bearings carried by the rails 1, 1 in advance of the switch points with respect to the siding or branch line is a shaft composed of axially alining sections 12, 13 having the meeting ends thereof journalled in a bearing 14 carried by a plate 15 arranged transversely of the rails in parallelism with the plate 6 and having the opposite ends thereof fastened to the bases of the rails. Extending upwardly from each section 12, 13 is an arm 16 and pivotally connected to such arm is one end of a push rod 17 having the opposite end thereof passed through an eye formed in the upturned end 18 of a slotted link 19 receiving the pin 11 on the adjacent arm 10, binding nuts 20 being threaded onto the ends of the push rods 17, 17 at the opposite sides of the eyes formed in the upturned end portions 18 of the slotted links so as to maintain the connection between the links and the rods. Suitably fastened to the under surface of the plate 15 and extending rearwardly therefrom in alinement with the push rods 17, 17 are brackets 20, 20 and connected to each bracket is one end of a coiled contractile spring 21 having the opposite end thereof fastened to the adjacent arm 16, such springs acting to hold the arms normally in vertical position and the push rods 17 in normal position.

In the present instance, each line of rails 1 in advance of the switch points 3, 3 includes a rail section comprising a base 22 to which the adjacent end of the plate 15 is fastened, a web 23 uprising from the base and receiving the outer end of the respective shaft section 12, 13 and a tread portion 24 having the gage side thereof formed with

a vertical wall 25. Extending outwardly from the gage side of the web 23 is a horizontal flange 26 and extending upwardly from such horizontal flange is a vertical web 27 carrying an inwardly projecting horizontal flange 28 having the upper surface thereof coextensive with the tread surface of the portion 24 and the inner edge thereof spaced apart from the vertical wall 25 a distance sufficient to admit the flange of the car wheel, the contiguous inner walls of the flanges 26 and 28 and the vertical web 27 forming a way 29. Extending upwardly from the outer ends of the shaft sections 12, 13 are trip arms 30 projecting through and designed to work within slots 31 formed in the flanges 26, the upper ends of the trip arms projecting into the ways 29.

Assuming the movable switch point 3 to be in the position illustrated in Fig. 1 so that traffic may continue on the main line, and a car approaching the switch desires to take the siding or branch line, the trip arm 30 on the outer end of the section 12 of the shaft is operated to rock the shaft within its bearings whereby the arm 16 will impart movement to the respective push rod 17 and the latter through the pin and slot connection with the respective operating arm 10 swing the hub 4 about the pivot 5 with the effect to slide the switch throwing bar 8 and so move the switch point to open position. Thus, traffic may pass from the main line onto the siding or branch line. In the sliding of the respective push rod 17 the spring 21 connected thereto is placed under tension so that when the trip arm is relieved of the influence of the operating device the push rod will be restored to normal position. On the other hand, should the switch be open and a car approaching the switch desire to continue on the main line, the trip arm connected with the section 13 of the shaft is operated so that the respective push rod 17 through the medium of the pin and slot connection with the operating arm 10 actuates the switch throwing bar 8 to throw the switch point to the desired position, the spring 21 reacting to restore the push rod to normal position subsequent to the release of the trip arm connected to the shaft section 13. As one push rod operates to throw the switch, it will be seen that the pin 11 will ride within the slot in the link 19 connected with the other push rod thereby permitting the switch to be operated independently of the inactive rod 17, while when the active rod is restored to normal position, under the action of the spring 21, the switch point will remain unaffected, incident to the pin and slot connection between the rods and the arms 10.

The car carried operating devices are secured to the outer ends of the forward car trucks adjacent to the opposite sides of the

car as clearly illustrated in Figs. 6 and 7 of the drawings and each comprises a vertical cylinder 31 in which is mounted for sliding movement a piston or plunger 32 having the plunger rod 33 thereof extending outwardly of the lower end of the cylinder and equipped at its lower end with a right angularly extending pin 34. Fixed to the plunger rod 33 at a point above the pin 34 is an axle 35 extending at right angles to the plunger rod and parallel with the pin 34 and having the outer end thereof fixed within a bearing bracket 36 carried by the rod 33. Rotatably mounted upon the axle 35 is a roller 37 disposed immediately above the pin 34. Encircling the plunger rod within the cylinder is a coiled expansion spring 38 having one end bearing against the lower end of the cylinder and the opposite end abutting the under face of the piston or plunger 32, such spring acting to hold the plunger normally elevated. The upper ends of the cylinders 31 at each end of the car are connected with a fluid supply pipe 39 provided with a controlling valve located within convenient reach of the motorman or operator of the car, the pipe 39 being connected up to a suitable source of fluid supply as the main air reservoir of the brake system. The horizontal flange 28 adjacent to the opposite ends of the way 29 in the respective section of each line of rails 1 and upon opposite sides of the trip arm 30 is formed with slots 40, 40 leading into the way.

From the foregoing description taken in connection with the accompanying drawings, the construction and mode of operation of my invention will be readily apparent. Should the switch points be closed to the siding or branch line and a car approaching the switch is to take the siding, the motorman in charge of such car will manipulate the valve in the pipe 39 whereby the air will enter the respective cylinder 31 and so force the piston 32 therein downwardly against the action of the spring 38 whereby the piston rod 33 will be depressed so that the pin 34 will enter the slot 39 while the roller 37 will ride upon the tread surface of the horizontal flange 38. In the passage of the pin 34 through the way the former will engage the upper end of the respective trip arm 30 and so swing the respective shaft section to throw the switch points as aforesaid. Succeeding the pin 34 entering the way by way of the slot 40, the motorman's valve is reversed so that the pressure on the upper surface of the piston is removed whereby the spring 38 will react when the pin 34 registers with the other slot 40 whereby the pin and piston will be elevated.

While I have herein shown and described one preferred form of my invention by way

of illustration, I wish it to be understood that I do not limit or confine myself to the precise details of construction herein described and delineated, as modification and variation may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. In a railway switch, the combination  
10 with the switch points, of a hub, a connecting arm extending outwardly from said hub, a rod connecting said arm with the switch points, operating arms extending outwardly  
15 from said hub at diametrically opposite points and at right angles to said first arm, push rods, a pin and slot connection between each push rod and one of said operating  
20 arms, a shaft comprising coaxial sections, an arm secured to each section and connected to one of said push rods, and means for rotating said sections independently of one another whereby the switch points may be thrown to the desired position.

2. In a railway switch, the combination  
25 with the switch points, of a hub, a connecting arm extending outwardly from said hub, a rod connecting said arm with the switch points, operating arms extending outwardly from said hub at diametrically opposite  
30 points and at right angles to said first arm, push rods, a slotted link carried by one end of each push rod, a pin carried by each of said operating arms and in engagement with the slot in one of said links,  
35 a shaft comprising coaxial sections, an arm secured to each section and connected to one of said push rods, and means for rotating said sections independently of one another  
40 whereby the switch points may be thrown to the desired position.

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

GARRETT D. SNYDER.

Witnesses:

W. G. MICHAEL,  
E. S. HOTCHKISS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."