

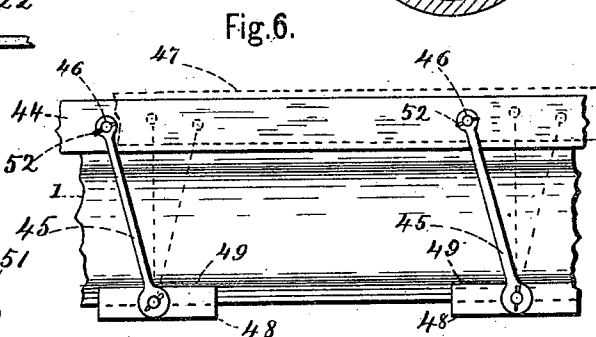
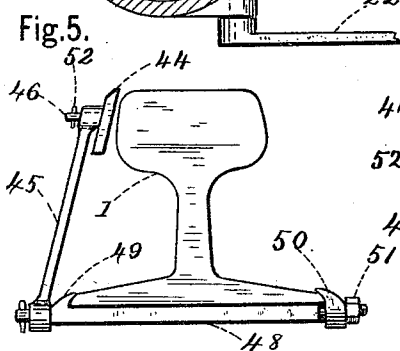
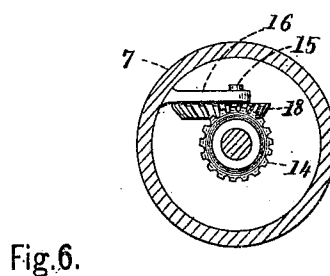
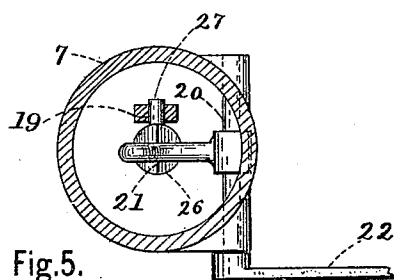
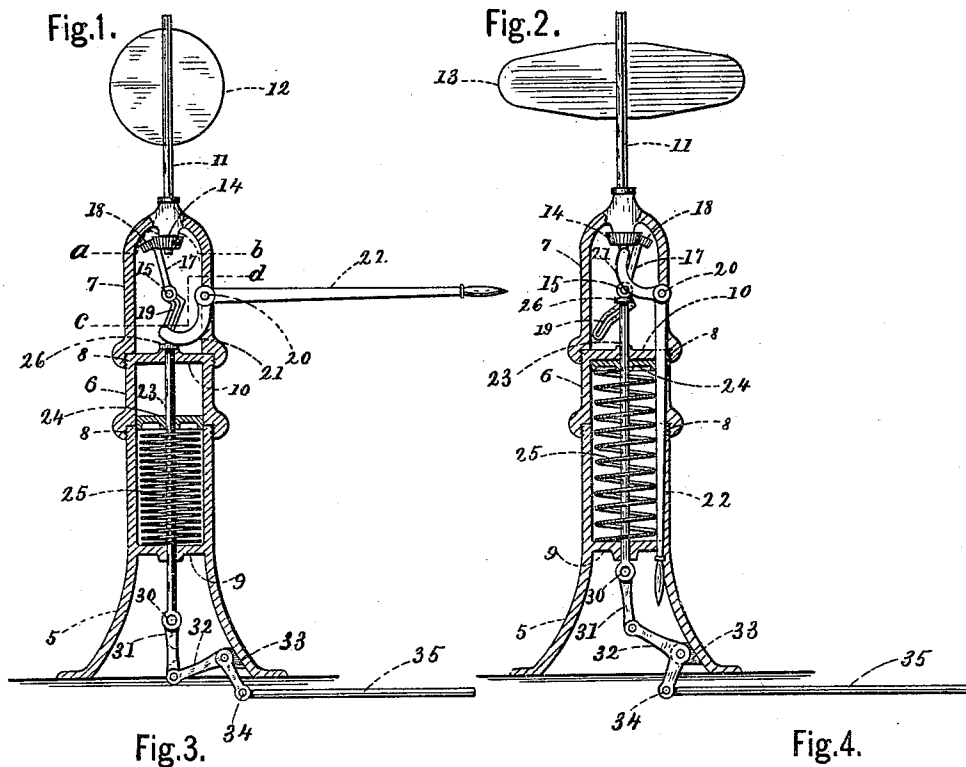
(No Model.)

2 Sheets—Sheet 1.

J. H. WHITTINGTON, Jr.  
SELF CLOSING RAILROAD SWITCH.

No. 460,516.

Patented Sept. 29, 1891.



Witnesses.

J. M. Caldwell,  
Joseph Focin

Joseph H. Whittington, Jr. Inventor.  
By James S. Sauter  
Attorney.

(No Model.)

2 Sheets—Sheet 2.

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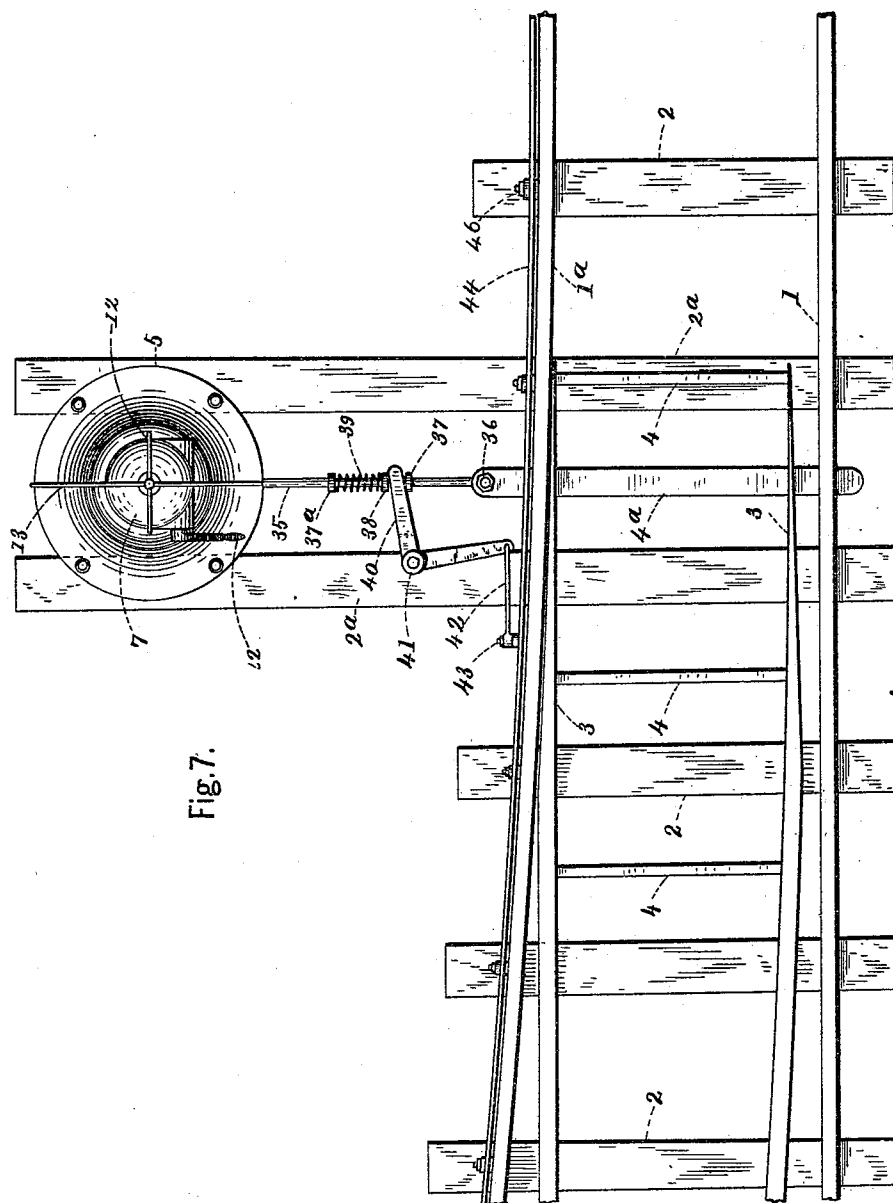


Fig. 7.

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# UNITED STATES PATENT OFFICE.

JOSEPH H. WHITTINGTON, JR., OF BUFFALO, NEW YORK, ASSIGNOR TO  
HIMSELF AND THOMAS S. BELDEN, OF SAME PLACE.

## SELF-CLOSING RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 460,516, dated September 29, 1891.

Application filed January 19, 1891. Serial No. 378,245. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH H. WHITTINGTON, Jr., a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Self-Closing Railroad-Switches, of which the following is a specification.

My invention consists in certain improvements whereby a switch when opened by the switchman to permit a train of cars to either leave or enter a side track will be automatically closed the moment the train has either entered or left the same, so that the main track will always be open when the train is on either the main or side track, the construction being such that when the train has passed a certain distance beyond the switch in either direction the switch is operated so as to leave the main track open, all of which will be fully and clearly hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side sectional elevation of a portion of the automatic switch-operating mechanism, showing the position of the several parts when the switchman opens the switch to admit the cars to the side track. Fig. 2 is a side sectional elevation of the switch-operating mechanism, showing the position of the several parts after the train has passed onto the main track beyond the switch and the main track is open. Fig. 3 is an enlarged horizontal section in or about line *cd*, Fig. 1. Fig. 4 is an enlarged horizontal section on or about line *ab*, Fig. 1. Fig. 5 is an end elevation of a rail and curved bar connected with it, showing also the mechanism for connecting it with the rail. Fig. 6 is a side elevation of a portion of the same. Fig. 7 is a top plan view of the switch and a portion of the track with which it is connected.

In said drawings, (see Fig. 7,) 1 represents the rails of an ordinary railroad-track, resting upon the usual ties 2. The movable switch-rails 3 are secured in the well-known way, so that they can be moved to open and close the switch. They are connected together by the cross-bars 4, which brace and hold them in position. Two of the ties 2<sup>a</sup> (shown in Fig. 7) are

preferably made long enough to receive and hold the base portion 5 of the switch-case. This switch-case, as shown, is composed of the several tubular portions, the base portion 5, the portion above it 6, and a top portion 7, which, as represented, are screwed together by means of the screw-portions 8; but those parts may be put together in any well-known way, and the case may be made of any other desired form otherwise than that shown, so that it is adapted to hold the mechanism within it. A little above the base of the portion 5 of the case is a cross-piece or diaphragm 9, and at the top of the portion 6 is another cross-piece or diaphragm 10. At the top of the case is mounted in a vertical bearing a vertical shaft 11, which carries the two signals 12 and 13. At the bottom of the shaft 11 is rigidly secured in any well-known way a bevel-wheel 14, and pivoted by a pin 15 to a supporting bracket 16, projecting from the inside of the case, is an arm 17, (shown in Figs. 1 and 2,) having at the top a curved rack-bar 18, adapted to gear in with the bevel gear-wheel 14, and at the lower part of this arm 17 is a slotted portion 19. To one side of the case is mounted a short shaft 20 in horizontal bearings in the side of the case. On the interior of the case is rigidly secured to the shaft 20 a curved cam-arm 21, and at the end of the shaft, outside of the case, is rigidly secured a hand-lever or arm 22. (Shown in Figs. 1, 2, and 7.)

23 represents a vertical shaft mounted loosely in openings through the diaphragms 9 and 10, so as to move easily up and down therein, and to this vertical shaft 23 is rigidly secured in any well-known way a circular disk 24. (Shown in Figs. 1 and 2.) This circular disk is made to fit loosely in the cylinder or case 6. Within the case, between the disk 24 and the diaphragm 9, is a strong spiral spring 25, so that when left to expand it will force the shaft 23 and disk 24 upward from the position shown in Fig. 1 to the position shown in Fig. 2.

The upper end of the shaft 23 is provided with an enlarged portion 26, having its top beveled off each way, substantially as shown in Figs. 1 and 2, against which the cam-arm

21 bears and by which it may be forced downward by the cam-arm and lever 22. To one side of the upper end of the shaft 23 is rigidly secured a short pin 27, (shown in Fig. 3.) which projects into the slotted portion 19 of the arm 17. By this construction a movement of the shaft 23 up and down will cause the upper vertical shaft to turn and present the different signals. When it is down, as in Fig. 1, it will present the circular signal 12, and when at the limit of its upward movement it will present the signal 13, as in Fig. 2.

At the bottom of the shaft 23 is pivoted by a pin 30 a short connecting-arm 31, having its opposite end pivoted to a bell-crank 32. This bell-crank 32 is pivoted to a short lug 33, projecting from the base portion of the lower part of the case. (See Figs. 1 and 2.) To the other end of this bell-crank is pivoted by a pin 34 a connecting-rod 35, also shown in Figs. 1 and 2. This connecting-rod 35 extends forward and connects by a bolt and nut 36 with the cross-bar 4<sup>a</sup>, which is secured rigidly to the movable switch-rails 3. (See Fig. 7.) The connecting-rod 35 is also provided with two collars 37 and 37<sup>a</sup>, rigidly secured thereto, (see Fig. 7,) and a loose or movable collar 38. Between the movable collar 38 and the collar 37<sup>a</sup> is interposed a strong spiral spring 39.

40 represents a bell-crank secured by a pin 41 to one of the ties 2<sup>a</sup>, so as to turn on the pin. One end of this bell-crank 40 rests on the shaft 35 between the collars 37 and 38, so that as the connecting-rod 35 is moved back and forth it vibrates the bell-crank 40. At the other end of the said bell-crank is pivoted a connecting-rod 42, having its opposite end jointed by a pin 43 to a long curved bar 44, which lies close along the outer side of the curved rail 1<sup>a</sup> and is supported by arms 45, pivoted thereto by pins 46, (shown in Figs. 5, 6, and 7,) so that it (the bar 44) has a longitudinal movement back and forth and a slight vertical movement, substantially as shown by the dotted lines 47 in Fig. 6. The lower ends of the supporting-arms 45 are each pivoted to a cross-bar 48, which is rigidly secured to the under side of the rail by means of the hook portion 49, the movable hook portion 50, and a screw-nut 51. (Shown in Fig. 5.) At the top the arms 45 are each secured on the pins by a small pin 52. (Shown in Figs. 5 and 6.) From this construction it will be seen that the switch may be opened to the side track by turning the arm 22 up into substantially the position shown in Fig. 1, which operation depresses the spring 25 and brings all the movable parts into the position substantially as shown in Fig. 1, thereby opening the switch to the side track and closing it to the main track. While in this position the arm 22 is held up, as shown in Fig. 1. A train of cars now passing onto the side track strikes the horizontal bar 44, (which, when at its normally lowest point, is still slightly above the top of the track,) and as the car-wheels bear upon the bar 44 they depress the

said bar, which operation, by means of its several connecting parts, draws the vertical shaft 23, so as to bring the portion 26 down far enough to loosen the connection between it and the cam-arm 21 and allows the arm 22 to drop down, as shown in Fig. 2. It is now in position so that when the train passes either in or out of the side track far enough for the wheels of the cars to leave the long horizontal bar 44 the spiral spring 25 will be released, so as to expand into the position shown in Fig. 2, thereby moving the rails 3 and opening the way for cars passing on the main track. To prevent a too sudden movement of the powerful spring 25 and concussion of the several parts, I employ the piston or disk 24, which passes up against the inclosed air within the cylinder 6, forming a portion of the switch-case, the piston or disk 24 being a little smaller than the cylinder in which it is, so as to allow the air to gradually pass out, and thus cause the parts to move comparatively slowly.

If required in some cases, the switch may be set for the side track and the lever 22 held in the position shown in Fig. 1 until it is necessary to open the way for the main track. The lever may be then lowered and the spring 25 allowed to set the switch, in which case the horizontal bar 44 and its connecting parts can be omitted.

The signals may be operated alone without operating the switch, if required, by means of the cam-lever, spiral spring, rod 23, the rack-and-pinion gearing, slotted pivoted arm, and pin 27 for operating in said slot, as above described, the parts connecting with the switch being omitted.

I claim as my invention—

1. In a railroad-switch, the combination, with a switch-case or supporting-frame, of two switch-signals mounted on a vertical shaft set in bearings in the supporting-frame, so as to turn easily back and forth, and provided with a bevel-wheel at its lower end, a rack adapted to gear in with said pinion and mounted on a pivoted arm having a lower slotted portion, a pin engaging with said slot connected to a vertically-movable shaft, and a means for giving the said shaft a vertical up-and-down movement for operating the signals, substantially as described.

2. In a railroad-switch, the combination, with the supporting-case, of a shaft mounted in bearings within the case, a spiral spring for giving said shaft a movement one way, a cam-lever for giving it a reverse movement against the force of the spring, and a means, consisting of a bell-crank and connecting-rods connecting with it, for operating the switch, substantially as described.

3. In a railroad-switch, the combination, with a supporting-case, of a vertical shaft mounted in bearings on the case, gearing, consisting of a bevel-pinion and pivoted slotted rack-arm, for turning the signals, substantially as above described, the vertical shaft

provided with a spiral spring for giving it an upward movement and having a pin engaging with said slotted arm, a bell-crank connected to the vertical shaft and by connecting-rods with the switch, a pivoted bell-crank having one end connected with the rod 35 between two collars and the other end connected by a pin with a horizontal bar located alongside of the rail, and a series of arms pivoted to and for supporting said bar, the whole combined for joint operation substantially as described.

4. In a railroad-switch, the combination, with the supporting-case, of a shaft mounted in bearings in the case carrying the signals,

a means, substantially as described, for operating the signals, a shaft mounted in bearings within the case and connected by a bell-crank and connecting-rods with the switch and its operating mechanism, a cam-lever for giving it its downward movement, a spring for moving it upward, an air-chamber connected with the switch-case, and a disk or piston on the shaft adapted to move into said air-chamber and limit the speed of the shaft upward, substantially as described.

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