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G. M. PATTERSON.

RAILWAY SWITCH OPERATING DEVICE.

No. 588,467. Patented Aug. 17, 1897.

Fig. 1.

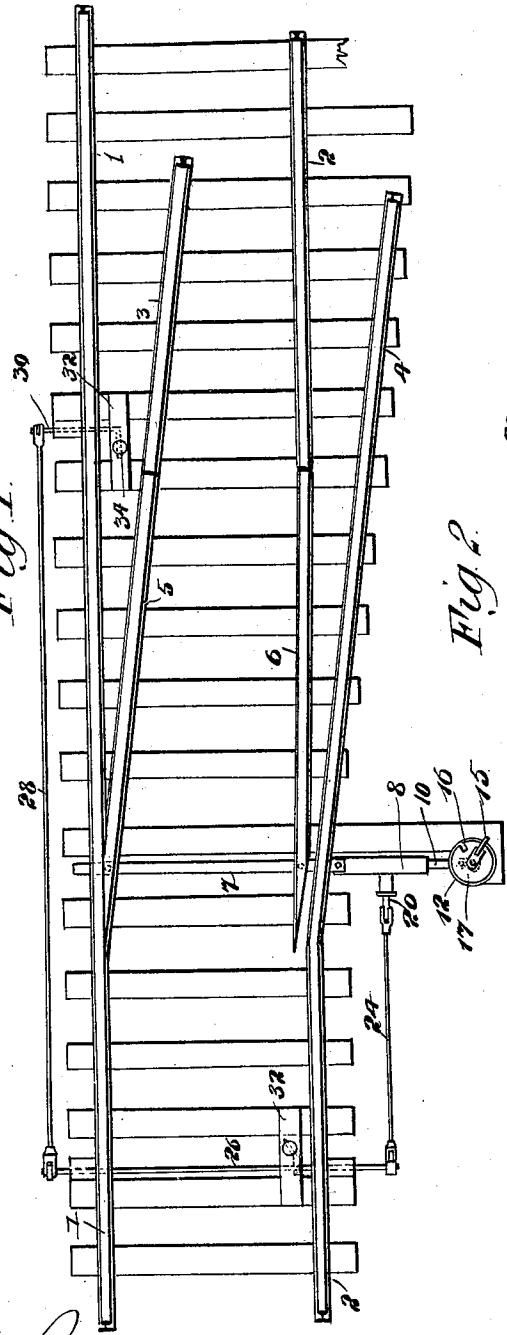
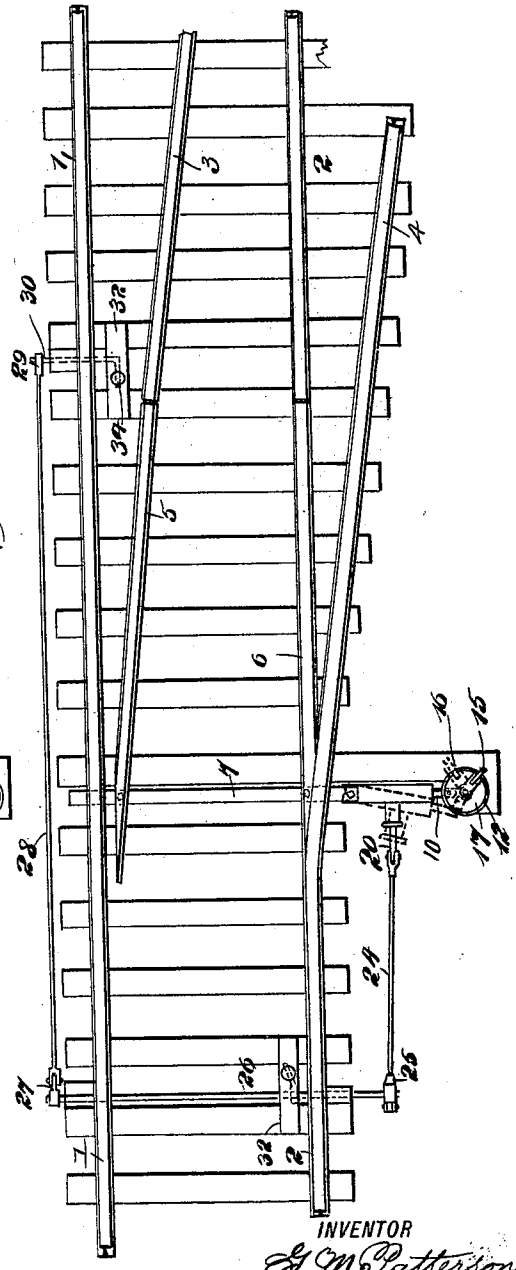


Fig. 2.



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Fig. 3.

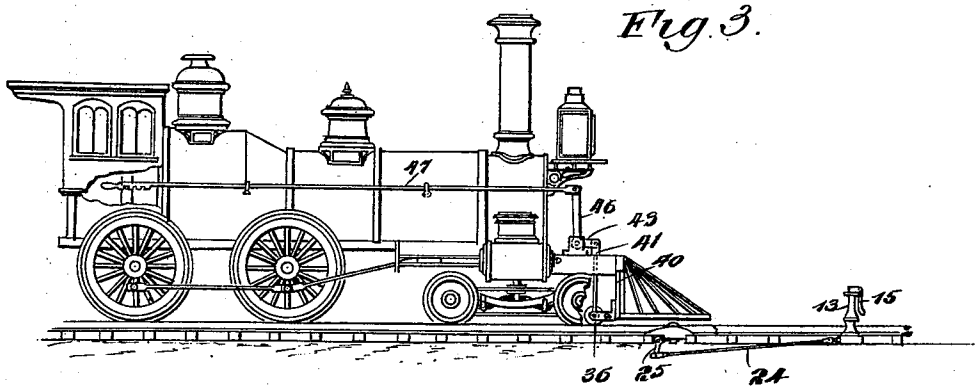


Fig 4.

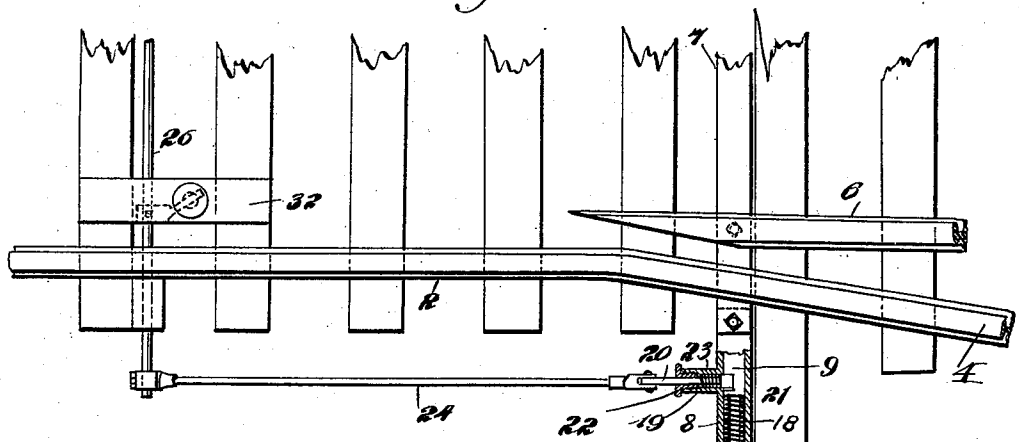
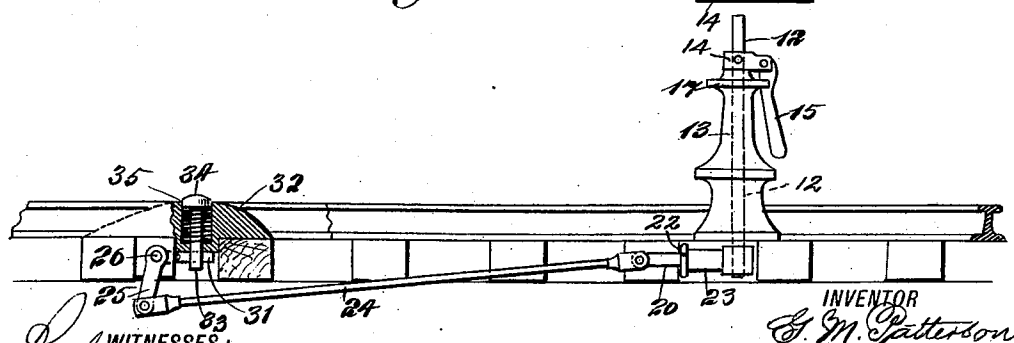


Fig 5



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Fig. 6.

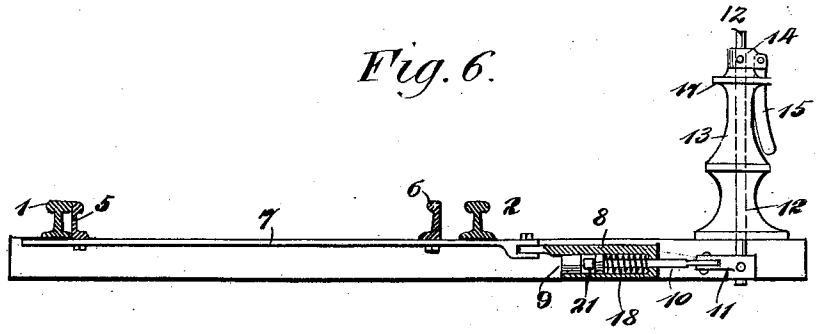


Fig. 7.

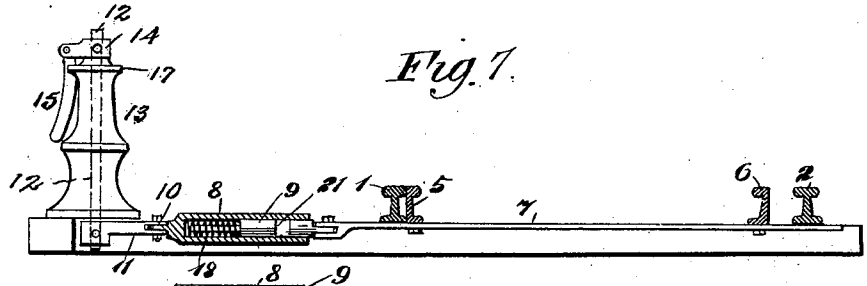


Fig. 8.

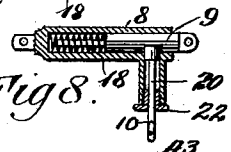
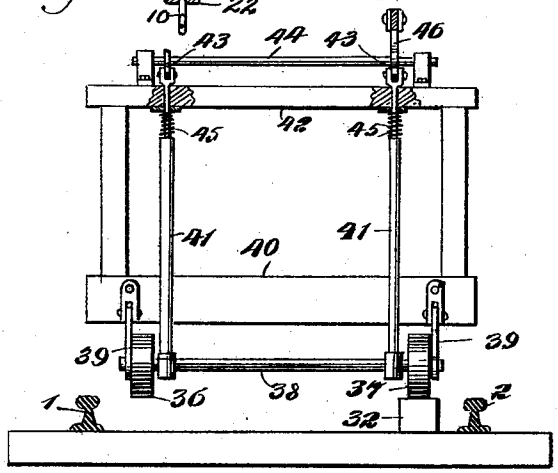


Fig. 9.



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UNITED STATES PATENT OFFICE.

GEORGE M. PATTERSON, OF PROVIDENCE, RHODE ISLAND.

RAILWAY-SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 588,467, dated August 17, 1897.

Application filed October 8, 1896. Serial No. 608,251. (No model.)

To all whom it may concern:

Be it known that I, GEORGE M. PATTERSON, of Providence, in the county of Providence and State of Rhode Island, have invented a new and Improved Railway-Switch-Operating Device, of which the following is a full, clear, and exact description.

This invention relates to devices for automatically shifting switch-rails from a siding to the main track, thus obviating the danger of side-tracking a train by a switch accidentally left open.

I will describe a switch-operating device embodying my invention, and then point out the novel features in the appended claims.

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 views.

Figure 1 is a plan view of a switch-operating device embodying my invention and showing the switch set to the siding. Fig. 2 is a plan view showing the switch set to the main line. Fig. 3 is a side elevation showing a locomotive and means carried thereby for releasing the switch-operating mechanism. Fig. 4 is a plan view, in partial section, of the switch-operating mechanism. Fig. 5 is a side elevation and partial section thereof. Fig. 6 is a cross-section through the tracks and showing the operating mechanism in section. Fig. 7 is a similar view, but showing a modification. Fig. 8 is a section of said modification at right angles to that shown in Fig. 7, and Fig. 9 is an elevation of a device carried by a locomotive for releasing the switch-operating mechanism.

Referring to the drawings, 1 2 designate the rails of a main track, and 3 4 show the rails of the siding. Connected with the siding-rail 3 is a switch-tongue 5, adapted to swing into and out of engagement with the rail 1, and connected to the rail 2 of the main track is a switch-tongue 6, adapted to swing into and out of engagement with the rail 2. Extended transversely below the rails is a switch-rod 7, and to this switch-rod the free ends of the switch-tongues 5 and 6 are pivotally connected. One end of this switch-rod 7 has a pivotal connection with a boxing 8, and movable longitudinally in said boxing 8 is a block 9, having a stem portion 10, extended through a hole in the end wall of the boxing and having pivotal connection at its outer end with a crank-arm 11, attached to a vertical shaft 12, supported in a switch-post 13. On the upper end of this shaft 12 is secured a collar 14, and pivotally connected to this collar 14 is a shifting and locking lever 15. This shifting and locking lever may be raised to a substantially horizontal position when it is desired to rotate the shaft 12 and to be moved downward to engage in either one of the notches 16, formed in the periphery of a disk 17 on the top of the post 13. A spring 18 within the boxing 8 engages at one end against the block 9 and at the other end against the end wall of said boxing 8.

Extended laterally from the boxing 8 is a tube 19, within which is movable a plunger 20, the inner end of said plunger being adapted to engage in a notch 21, formed in the block 9. This tube 19 is provided with a perforated screw-cap 22, through which the plunger-rod 20 moves, and between the inner end of this cap 22 and the enlarged end of the plunger-rod is mounted a spring 23.

From the plunger-rod 20 a drawing-rod 24 extends to a connection with a crank-arm 25, secured on the end of a shaft 26, extended across the track and having at its opposite end a crank-arm 27, from which a draw-rod 28 extends to a connection with a crank 29 on a short shaft 30, which extends underneath the track-rail 1. From the shaft 26 an arm 31 is extended underneath a block 32, supported on the railway-ties near the main-track rail 2. Movable vertically in an opening in the block 32 is a pin 33, the lower end of said pin having an engagement with the arm 32, and the upper end of said pin is provided with a head 34, which extends above the upper surface of the block 32, and, as here shown, this pin is held normally in its upper position by means of a spring 35.

It will be seen that the shafts 26 and 30 are located at opposite sides of the switch, so that the switch-operating mechanism may be released by a train moving in either direction. Connected with the shaft 30 is a pin 33, similar to the one first described and mounted in a block 32, like the first block 32 described, but located near the track-rail 1.

I will now describe a device carried by the

locomotive for engaging with and depressing the pins 33. This device comprises rollers 36 37, mounted on a shaft 38, which has link connections 39 with the frame 40 of the cow-catcher on the locomotive. From the shaft 38 rods 41 extend upward through the platform 42 and have pivotal connection with arms 43, extended from a shaft 44, having bearings secured in blocks in the upper side of said platform 42. Springs 45 may be placed between the lower side of the platform 42 and the enlarged portions of the rods 41, whereby the rollers 36 and 37 may be forced yieldingly downward. Extended upward from the shaft 44 is an arm 46, and from this arm 46 a pull-rod 47 extends along the locomotive and into the cab thereof. The end of said rod within the cab may be provided with rack-teeth to engage a locking-lug, as plainly indicated in Fig. 3.

It will be understood that when the springs 45 are employed for yieldingly forcing the wheels downward the rack end of the pull-rod 47 will be disengaged from the locking-pin, it only being engaged with the said pin when it is desired to raise the wheels and hold them out of the path of the depressing-pins 33.

In operation and when a switch is set to the siding, as indicated in Fig. 1, the plunger 20 will engage in the notch 21, formed in the block 9, and when in this condition should it be desired to run a train from the main track to the siding the engineer by drawing upon the draw-rod 47 may elevate the rollers 36 37 above the plane of the heads 34 on the pins 33; but should it be desired to run the train along the main track and should the switch be accidentally left set to the siding the rollers will be lowered, so that one of the rollers will engage with the head 34 on the pin 33 and by pressing down the pin rock the shaft 26 and consequently draw the plunger 20 out of engagement with the block 9. When thus disengaged, the spring 18 will force the boxing 8 outward with relation to the block 9, and this movement of the boxing will set the switch to the main line, or, in other words, put the switch-tongue 6 in engagement with the track-rail 2, disengaging the switch-tongue 5 from the track-rail 1, and thus the main track will be clear and the train may proceed in safety.

In setting the switch to the siding the switch-tender will rotate the shaft 12, and this rotation of the shaft 12 will draw the block 9 outward relatively to the boxing 8, and when the notch 21 in said block shall have reached the proper position the plunger 20 will be forced therein by means of the spring 23. Thus it will be seen that the block 9 and the boxing 8 will be locked together. Then upon a reverse rotation of the shaft 12 the switch-tongues will be set to the siding. It will be seen in this example of my improvement that the spring 18 operates by expansion to shift the switch-tongues.

In the example of my improvement shown in Figs. 7 and 8 the parts for operating the switch-tongues are in a reverse position to that shown in the first example—that is, the rod 7 has pivotal connection with the block 9 and the boxing 8 has pivotal connection with the crank-arm 11. Therefore it will be seen that in this example of my improvement the spring 18 will operate to push the rod 7, while in the first example of my improvement the spring 18 will operate to draw the rod 7.

It will be seen that as the rollers 36 and 37 are between the track-rails they will prevent to a great extent the engine or locomotive from entirely leaving the track-bed should the locomotive be derailed—that is, upon the derailing of the locomotive a roller will engage against the inner side of the track-rail.

From the above description it will be seen that a switch-operating mechanism embodying my invention is under the full control of the engineer or fireman on the locomotive, and therefore there is very little or no danger of accident by side-tracking a train.

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

1. A switch-operating device, comprising switch-tongues, a bar having pivotal connection with the switch-tongues, a vertical shaft, a connection between said bar and shaft, comprising a boxing, a block in said boxing, and a spring between the end of the boxing and block, a locking device engaging the block and holding said boxing and block from movement, one relatively to the other, a releasing device for operating the locking device, and means operated by a moving train for operating the releasing device, substantially as specified.

2. A switch-operating device, comprising switch-tongues, a boxing pivotally connected with the tongues and having a tubular projection, a spring-actuated block in the boxing, an operating-shaft with which the boxing is connected, a spring-actuated plunger in the tubular projection and engaging the said block, a releasing device for releasing the plunger from the block, and means for operating the releasing device from a moving train, substantially as described.

3. A switch-operating device, comprising switch-tongues, a bar having pivotal connection with the switch-tongues, a vertical shaft, a boxing having pivotal connection with the bar, a block provided with a notch and movable in the boxing and having pivotal connection with an arm extended from the vertical shaft, a spring engaging at one end with said block and at the other end with the end wall of the boxing, a tube extended outward from the boxing, a plunger movable in said tube and adapted to engage in the notch formed in the block, a rod extended from said plunger, a shaft extended transversely of the track and having a crank-arm engagement with said rod, a push-pin mounted to move

vertically in a block, and having connection with an arm extended from said transverse shaft, and means carried by a locomotive for depressing said pin, substantially as specified.

4. A switch-operating device, comprising switch-tongues, a bar having pivotal connection with the switch-tongues, a vertical shaft, a boxing having pivotal connection with the bar, a block provided with a notch and movable in the boxing and having pivotal connection with an arm extended from the vertical shaft, a spring engaging at one end with said block and at the other end with the end wall of the boxing, a tube extended outward from the boxing, a plunger movable in said tube and adapted to engage in the notch formed in the block, a rod extended from said plunger, a shaft extended transversely of the track and having a crank-arm engagement with said rod, a push-pin mounted to move vertically in a block, and having connection with an arm extended from said transverse shaft, a crank on the opposite end of said transverse shaft, a rod extended from said crank-arm to a crank-arm on another transverse shaft, a push-pin having an engagement with said other transverse shaft, and means carried by a locomotive for engaging said pin and depressing the same, substantially as specified.

5. The combination, with switch releasing and operating mechanism substantially such as described, of rollers, a shaft upon which said rollers are mounted, swinging link connections between said shaft and the frame of a cow-catcher on a locomotive, rods extended upward from said shaft, through the platform of a locomotive, springs on the rods between shoulders thereof and the platform, a shaft having crank-arms engaging with the upper ends of said rods, an arm extended upward from said shaft, and a pull-rod extended from said upwardly-extended arm to the cab of the locomotive, substantially as specified.

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