

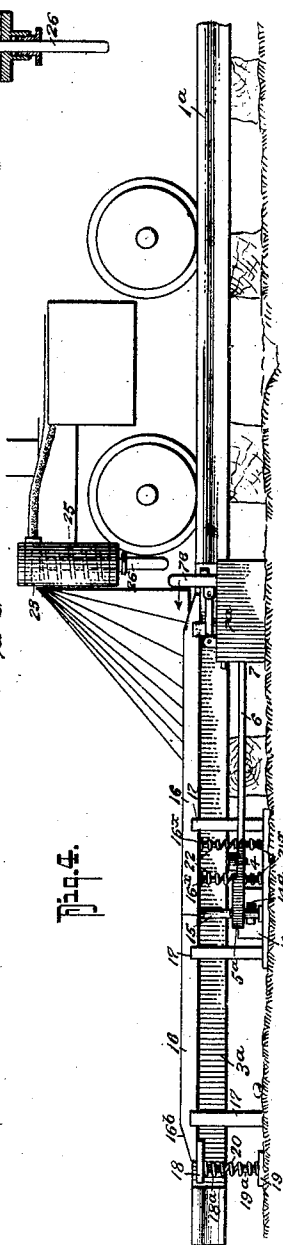
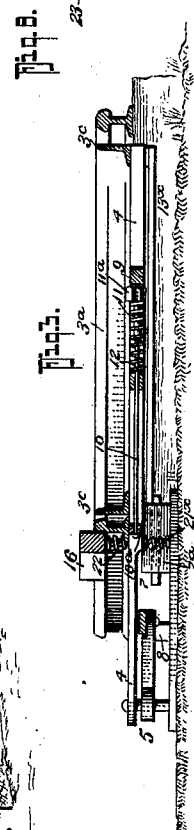
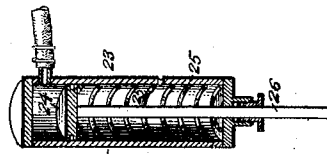
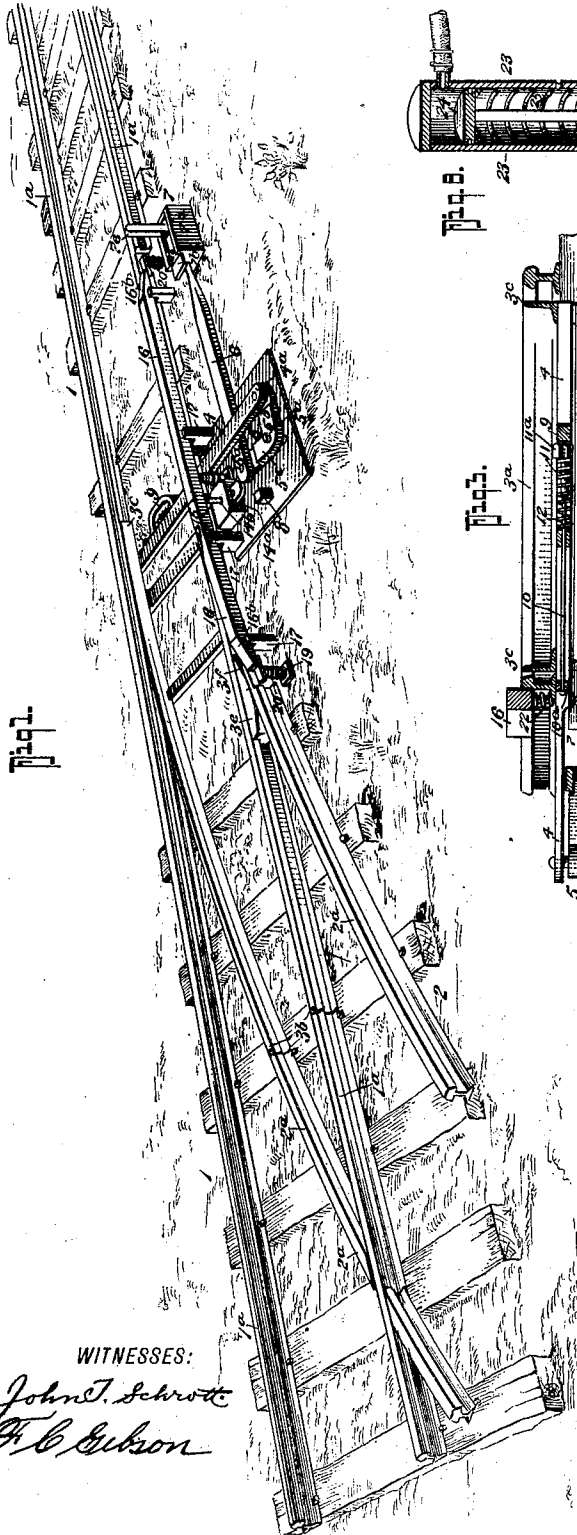
No. 831,229.

PATENTED SEPT. 18, 1906.

C. L. KEE.  
RAILWAY SWITCH MECHANISM.

APPLICATION FILED JUNE 11, 1906.

2 SHEETS—SHEET 1.



WITNESSES:  
*John T. Schwab*  
*A. C. Gibson*

INVENTOR  
*Charlie Lee Kee.*  
BY  
*Fred G. Dietrich & Co.*  
ATTORNEYS

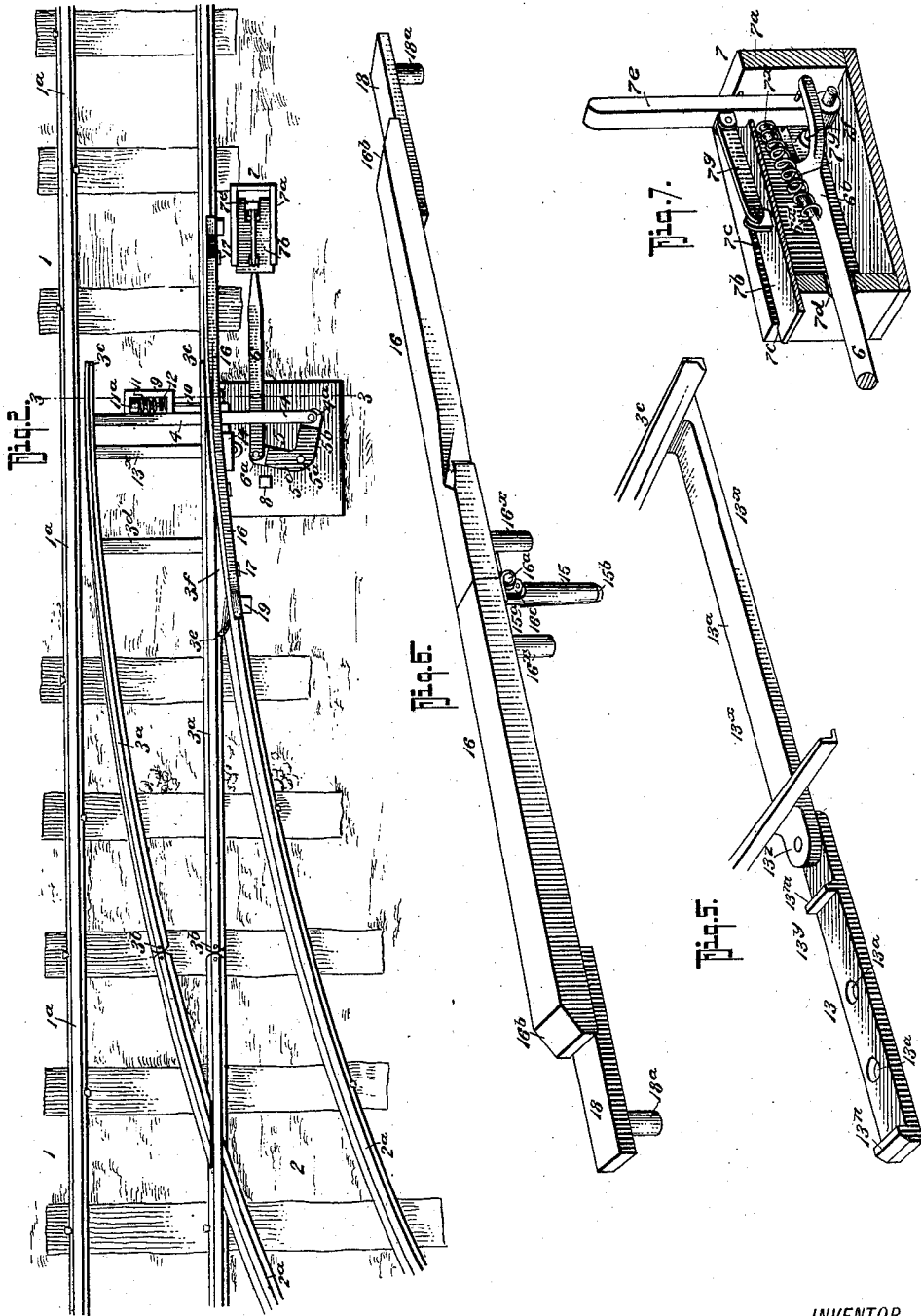
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# UNITED STATES PATENT OFFICE.

CHARLIE LEE KEE, OF PORTSMOUTH, VIRGINIA.

## RAILWAY-SWITCH MECHANISM.

No. 831,229.

Specification of Letters Patent.

Patented Sept. 18, 1906.

Application filed June 11, 1906. Serial No. 321,254.

*To all whom it may concern:*

Be it known that I, CHARLIE LEE KEE, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Railway-Switch Mechanism, of which the following is a specification.

My invention relates to certain new and useful improvements in railway-switch setting and locking mechanism in which means are provided under control from the train for setting the switch and also for locking the switch to its set position (open or closed) during the entire time the train is passing there-  
15 over.

Primarily the invention has for its object to provide a device of this character of a very simple and effective construction which can be readily and cheaply manufactured and  
20 which will effectively serve its intended purposes.

Generically, my invention comprises a switch-setting mechanism coöperatively connected with the switch-blades and including  
25 tripper devices arranged alongside of the track, which devices are arranged to coöperate with a train-carried device for operating the tripper devices to set the switch.

My invention also includes means coöperating with the switch-setting mechanism and controlled by the weight of the passing train for locking the switch from movement during the entire time the train is passing there-  
30 over, thus insuring absolute security to the train and preventing the switch jarring open or being tampered with while the train is passing thereover.

With other objects in view than have been heretofore specified the invention also includes certain novel construction, combination, and arrangement of parts, all of which  
40 will be first fully described and then specifically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view, showing my invention applied for use. Fig. 2 is a top plan view thereof. Fig. 3 is a cross-section on the line 3 3 of Fig. 2. Fig. 4 is a side elevation of a section of track and switch, showing the manner in which the train controls the same. Fig. 5 is a detail perspective view of the locking-bar attached to the switch. Fig. 6 is a similar view of the train-engaging  
55 latch-carrying bar that coöperates with the bar shown in Fig. 5. Fig. 7 is a detail per-

spective view, partly in section, of the tripper. Fig. 8 is a similar view of the train-carried tripper-engaging devices.

Referring now to the accompanying drawings, in which like numerals of reference indicate like parts in all of the figures, the main trackway is designated by the reference-numeral 1, and the siding by the reference-  
60 numeral 2.

1<sup>a</sup> 1<sup>a</sup> designate the rails of the main trackway, and 2<sup>a</sup> 2<sup>a</sup> the rails of the siding, as will be clearly understood by reference to the drawings.

The switch-rails in my present invention are designated by 3<sup>a</sup> 3<sup>a</sup> and are fulcrumed at one end, as at 3<sup>b</sup> 3<sup>b</sup>, as shown. Adjacent the  
70 switch-points 3<sup>c</sup> 3<sup>c</sup> the switch-rails 3<sup>b</sup> are united by a brace 3<sup>d</sup> to give them proper strength. Connected with each switch-rail 3<sup>a</sup> 3<sup>a</sup> at a suitable place, preferably adjacent the switch-points 3<sup>c</sup>, is the switch-operating  
75 rod 4, which is pivotally connected at 4<sup>a</sup> to a bell-crank lever 5, fulcrumed at 5<sup>a</sup> adjacent the switch and track, the switch-rod 4 being  
80 connected to the arm 5<sup>b</sup> of the bell-crank lever, while the arm 5<sup>c</sup> of the bell-crank lever is pivotally connected at 6<sup>a</sup> to the switch-setting rod 6, which connects with the tripper mechanism 7, presently again referred to.  
85

To limit the movement of the bell-crank lever 5, I place a stop 8 in such a position that when the switch-rails 3<sup>a</sup> are moved over to open up the switch to the siding, the stop 8 will engage the arm 5<sup>c</sup> of the bell-crank lever  
90 5 and prevent further movement thereof.

To normally hold the switch-rails 3<sup>a</sup> in their closed position to pass the train along the main-track rails 1<sup>a</sup>, I attach a U-shaped housing 9 to the switch-rod 4, through which  
95 a rod 10 passes, and the rod 10 at one end is attached to a suitable support, which may be the rail 1<sup>a</sup>, as indicated at 10<sup>a</sup>. The other end of the rod 10 in practice may be threaded, and carries a barrel-shaped nut 11, provided  
100 with a squared head 11<sup>a</sup>. Surrounding the stem portion of the nut 11 and abutting the housing 9 is a coil-spring 12, which normally holds the switch-rails 3<sup>a</sup> in their closed position. The tension on the coil-spring 12 may  
105 be regulated by adjusting the nut member 11.

One of the switch-rails 3<sup>b</sup> carries a lug 3<sup>e</sup>, which has its edge beveled, as at 3<sup>f</sup>, and is adapted to be engaged by the flange of the car or locomotive wheel as the train passes  
110 off of the siding onto the main track to throw the switch-blades 3<sup>a</sup> 3<sup>a</sup> to their open position

to permit the train to pass off the siding onto the main line.

The tripper mechanism 7 comprises a housing 7<sup>a</sup>, closed on its top by a slide 7<sup>b</sup>, that works in grooves 7<sup>c</sup> in the housing 7<sup>a</sup> and forms a closure therefor to prevent the entrance of dirt and water, &c., into the housing 7<sup>a</sup>, and in winter prevents freezing up of the tripper mechanism, so that it will always operate properly. The housing 7<sup>a</sup> is apertured in its front end, as at 7<sup>d</sup>, to permit passage of the switch-setting rod 6, which has its inner end 6<sup>b</sup> bifurcated and pivotally connected to the trigger 7<sup>e</sup>, which is fulcrumed at 7<sup>f</sup> at the bottom of the housing 7<sup>a</sup>, and to which the cover-operating rod 7<sup>g</sup> is pivotally connected, as well as to the cover 7<sup>b</sup>.

In practice, if found desirable, I may form the end of the switch-setting rod 6 within the housing 7<sup>a</sup> with a lug 6<sup>x</sup>, and form a similar lug 7<sup>x</sup> on the trigger 7<sup>e</sup>, between which lugs a coil-spring 7<sup>y</sup> may be secured to aid in returning the trigger 7<sup>e</sup> to its normal position, as well as serving as a buffer when the engine-carried trigger-operating arm engages the trigger, as will be more fully understood hereinafter.

In order to maintain the switch-blades 3<sup>a</sup> in either of their normal positions, it is necessary to provide a suitable locking means that will hold the switch-blades locked during the passage of a train thereover; otherwise the switch-blades might jar out of their set position and derail the train. Thus I have provided a locking means which comprises a locking rod or bar 13, secured to each of the switch-rails 3<sup>a</sup> adjacent the switch-bar 4, which rod or bar 13 passes through a block 14, which is provided with a slot 14<sup>a</sup> to permit passage of the rod 13 and is also provided with a latch-receiving aperture 14<sup>b</sup> in its top face to permit passage of the latch-bolt 15 on the locking-rail 16, presently to be described.

In practice I prefer to make the locking-bar 13 in two sections 13<sup>x</sup> 13<sup>y</sup> and pivotally connect the same together at 13<sup>z</sup>, so as to allow free movement of the switch-rails in setting them from one position to another, and to limit the movement of the bar 13<sup>y</sup> in each direction I provide stops 13<sup>m</sup> 13<sup>n</sup>, as shown.

16 designates what I term a "locking-rail," which I form in two sections, hingedly connected together at 16<sup>a</sup>, and provided at its ends with beveled portions 16<sup>b</sup> 16<sup>b</sup> on its upper face to permit the car-wheels riding upon the rails 16, in a manner presently explained. The rail 16 is arranged adjacent the switch mechanism with its pivotal connection in alinement with the block 14, and the rail 16 where it is pivotally connected is provided with a pair of ears 16<sup>c</sup> 16<sup>c</sup>, between which is fulcrumed the latch-bolt 15, as at 15<sup>a</sup>, and the latch-bolt 15 has its lower end tapered, as at 15<sup>b</sup>, so as to readily enter the apertures 13<sup>a</sup>

in the locking-rod 13, as will be hereinafter fully understood. The locking-rail 16 is of sufficient length so that the wheels of the locomotive or car will always be thereon so long as a train is passing over the switch, and the rail 16 passes alongside of the main-line rail 1<sup>a</sup> and also the siding-rail 2<sup>a</sup> projecting in each direction a suitable distance.

In order to guide the rail 16, as well as to aid in supporting the same in position, I arranged U-shaped bearing members 17 at suitable intervals along the track to receive the rail 16, and at each end of the rail 16 on the under side thereof I provide extension members 18, likewise held in suitable bearing members 17, as indicated in the drawings, and at the outer ends of the extension members 18 on the under face thereof I provide lugs 18<sup>a</sup>, which cooperate with similar lugs 19<sup>a</sup>, carried by blocks 19, arranged directly under the lugs 18<sup>a</sup> and adjacent the track. Between the lugs 18<sup>a</sup> and 19<sup>a</sup> coil-springs 20 are held, and these coil-springs 20 serve to hold the ends of the rail 16 elevated above the level of the track-rails 1<sup>a</sup> and 2<sup>a</sup>, and to aid the springs 20 I provide additional springs 21 on each side of the hinged or fulcrum point of the sections of the rail 16, and lugs 16<sup>x</sup> 16<sup>x</sup> being provided at each side of the fulcrum-point of the sections of the rails 16 to cooperate with similar lugs 21<sup>x</sup> on blocks 21, arranged beneath the lugs 16<sup>x</sup>, and between which lugs 16<sup>x</sup> and lugs 21<sup>x</sup> coil-springs 22 are held.

The springs 22 and 20 serve to hold the rail 16 in its elevated position with the latch-bolt 15 out of engagement with the rod or bar 13 to leave the switch-rails free to be moved in their various positions.

In order to operate the tripper mechanism to cause the switch-setting rod 6 to set the switch for the siding, I provide a suitable trigger-engaging mechanism located on the locomotive between the pilot and the steam-chest, and this mechanism consists of a cylinder 23, in which a piston 24 is moved to its downward position by air-pressure under control of the engineer and against the tension of a coil-spring 25, which passes around the piston-rod 26, that forms the arm for engaging the trigger 7<sup>e</sup> of the tripper mechanism when the piston 24 has been forced downward by air-pressure.

So far as described the manner in which my invention operates can be best explained as follows: Assuming a train to be passing along the main line toward the siding and it is desired that the train pass upon the siding, the engineer then turns on the air-supply to the cylinder 23 to force the piston 24 downward and causing the piston rod or arm to engage the trigger 7<sup>e</sup> of the tripper mechanism and move it in the direction of the arrow in Fig. 4, thus moving the switch-rails from their closed to their open position. As soon

as the rails have been moved to their open position and before the piston-rod or arm has disengaged the tripper mechanism the pilot-wheels of the locomotive will have engaged the rails 16 and depressed the same, thus causing the locking-bolt 15 to enter the outer aperture 13<sup>a</sup> in the bar 13 and lock the switch-rails to their set position so long as the wheels of the train are on the rail 16, and as soon as the last car has passed over the switch and the rear wheels thereof have passed off of the rail 16 the springs 20 and 22 again raise the rail 16 above the level of the track and permit the spring 12 to return the switch-rails to their normal position to open up track-traffic across the switch for the main line. Now assume the train to be passing toward the switch and it is not desired that the train pass on the siding, then the engineer does not cause the piston 24 to operate, and hence, the locomotive-carried arm will not engage the tripper mechanism. The wheels of the car, however, as soon as they ride upon the rail 16 will depress the same as before and this time cause the locking-bolt 15 to enter the inner aperture 13<sup>a</sup> of the rod or bar 13 and lock the switch in its closed position until a train has passed thereover, as before. Should a train be coming along the main line from left to right in Fig. 2, the wheels of the train will ride upon the bevel portion 16<sup>v</sup> of the rail 16 and depress the same to lock the switch during the time the train is passing thereover. When the train on the siding passes over the switch onto the main line, the wheels of the locomotive will engage the member 3<sup>e</sup> and open the switch, and as soon as the switch has been opened the wheels of the locomotive will ride upon the rail 16 and depress the same to lock the switch open until the train has passed off of the siding onto the main line again, it being understood that a similar switch is provided at each end of the siding.

Whenever it may be found desirable I may use my improved locking means in connection with a tower-operated switch-setting mechanism by simply connecting the switch-setting rod 6 with the lever in the tower operator's chamber in any approved manner; although I prefer to use the automatic setting mechanism hereinbefore described.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the complete construction, operation, and numerous advantages of my invention will be readily understood by those skilled in the art to which it appertains, and I desire it understood that many slight changes in the detail, combination, construction, and arrangement of parts may be made without departing from the scope of the appended claims or the spirit of the invention.

What I claim is—

1. The combination with movable switch-rails, a main-track and siding rails, of means

for automatically shifting said switch-rails from one position to another, independent means controllable by the passing train for locking said switch-rails to their set position, said last-named means comprising a bar carried by the switch-rails and having latch-receiving portions, a supplemental rail arranged adjacent the switch, means for normally holding said supplemental rail elevated, a latch-bolt carried by said supplemental rail for entering the latch-receiving portions of the switch-rail-carried rod, said supplemental rail having provisions in virtue of which the passing train will ride thereover and depress the same to cause the latch-bolt to enter the latch-receiving portions of the switch-carried locking-bar, substantially as shown and described.

2. The combination with main-track rails, side rails and switch-rails, one of said switch-rails having a wheel-engaging member secured thereto, means for moving said switch-rails to their various positions, of a latch-bar carried by the switch-rail, a housing slotted to permit passage of said latch-bar, said latch-bar having latch-receiving apertures, of a latch-bolt passing through said housing, means for normally holding said latch-bolt out of engagement with the latch-bar, and means controllable by a passing train for forcing said latch-bolt into the latch-receiving apertures of said latch-bar after the switch has been set, substantially as shown and described.

3. The combination with a railway-switch having movable switch-rails, of a tripper mechanism arranged adjacent the track in advance of the switch, means coöperatively connecting said tripper mechanism with said switch-rails, said tripper mechanism including a housing and a trigger fulcrumed therein, a buffer within said housing for said trigger, a shiftable closure-cap for said housing coöperatively connected with said trigger, a train-carried cylinder, piston and piston-rod, means for normally holding said piston with the piston-rod out of alinement with the trigger, pneumatic means under control of the engineer for operating said engine-carried piston to project out into the path of the trigger, to operate the same to set the switch, and means for locking the switch to its set position, substantially as shown and described.

4. The combination with a railway-switch having movable switch-rails, of a tripper mechanism arranged adjacent the track in advance of the switch, means coöperatively connecting said tripper mechanism with said switch-rails, said tripper mechanism including a housing and a trigger fulcrumed therein, a buffer within said housing for said trigger, a shiftable closure-cap for said housing coöperatively connected with said trigger, a train-carried cylinder, piston and piston-rod, means for normally holding said piston with

the piston-rod out of alinement with the trigger, pneumatic means under control of the engineer for operating said engine-carried piston-rod to project out into the path of the trigger, to operate the same to set the switch, means for locking the switch to its set position, said last-named means comprising a supplemental rail arranged adjacent the switch, means for normally elevating said rail, a latch-bolt carried by said supplemental rail, a latch-bar carried by the switch for cooperating with the latch-bolt, said supplemental rail arranged to be depressed by the passing train to cause its latch-bolt to engage the latch-bar of the switch-rails to lock the same at times, substantially as shown and described.

5. The combination with a railway-switch having movable switch-rails, of a tripper mechanism arranged adjacent the track in advance of the switch, means cooperatively connecting said tripper mechanism with said switch-rails, said tripper mechanism including a housing and a trigger fulcrumed therein, a buffer within said housing for said trigger, a shiftable closure-cap for said housing cooperatively connected with said trigger, a train-carried cylinder, piston and piston-rod, means for normally holding said piston with the piston-rod out of alinement with the trigger, pneumatic means under control of the engineer for operating said engine-carried piston to project the rod out into the path of the trigger, to operate the same to set the switch, means for locking the switch to its set position, said last-named means comprising a supplemental rail arranged adjacent the switch, means for normally elevating said rail, a latch-bolt carried by said supplemental rail, a latch-bar carried by the switch for cooperating with the latch-bolt, said supplemental rail arranged to be depressed by the passing train to cause its latch-bolt to engage the latch-bar of the switch-rails to lock the same at times, said supplemental rail comprising a plurality of sections slidably connected together and having their outer ends beveled, substantially as shown and described.

6. The combination with a railway-switch having movable switch-rails, of a tripper mechanism arranged adjacent the track in advance of the switch, means cooperatively connecting said tripper mechanism with said switch-rails, said tripper mechanism including a housing and a trigger fulcrumed therein, a buffer within said housing for said trigger, a shiftable closure-cap for said housing cooperatively connected with said trigger, a train-carried cylinder, piston and piston-rod, means for normally holding said piston with the piston-rod out of alinement with the trigger, pneumatic means under control of the engineer for operating said engine-carried piston to project out into the path of the trigger, to operate the same to set the switch,

means for locking the switch to its set position, said last-named means comprising a supplemental rail arranged adjacent the switch, means for normally elevating said rail, a latch-bolt carried by the supplemental rail, a latch-bar carried by the switch for cooperating with the latch-bolt, said supplemental rail arranged to be depressed by the passing train to cause its latch-bolt to engage the latch-bar of the switch-rails to lock the same at times, said supplemental rail comprising a plurality of sections hingedly connected together and having their outer ends beveled, and one of said supplemental rail-sections having a beveled portion adjacent the track-rail, substantially as shown and described.

7. The combination with a railway-switch having movable switch-rails, of a tripper mechanism arranged adjacent the track in advance of the switch, means cooperatively connecting said tripper mechanism with said switch-rails, said tripper mechanism including a housing and a trigger fulcrumed therein, a buffer within said housing for said trigger, a shiftable closure-cap for said housing cooperatively connected with said trigger, a train-carried cylinder, piston and piston-rod, means for normally holding said piston with the piston-rod out of alinement with the trigger, pneumatic means under control of the engineer for operating said engine-carried piston to project out into the path of the trigger, to operate the same to set the switch, means for locking the switch to its set position, said last-named means comprising a supplemental rail arranged adjacent the switch, means for normally elevating said rail, a latch-bolt carried by the supplemental rail, a latch-bar carried by the switch for cooperating with the latch-bolt, said supplemental rail arranged to be depressed by the passing train to cause its latch-bolt to engage the latch-bar of the switch-rails to lock the same at times, said supplemental rail comprising a plurality of sections hingedly connected together and having their outer ends beveled, one of said supplemental rail-sections having a beveled portion adjacent the track-rail, and one of said switch-rails having a projecting portion to cooperate with the wheels of the train for moving the switch to its open position as the train passes off the siding, substantially as shown and described.

8. The combination with main-track rails, siding-rails and switch-rails, one of said switch-rails having a wheel-engaging member secured thereto, means for moving said switch-rails to their various positions, of a latch-bar carried by the switch-rail, a housing slotted to permit passage of said latch-bar, said latch-bar having latch-receiving apertures, of a latch-bolt passing through said housing, means for normally holding said latch-bolt out of engagement with the

latch-bar, means controllable by a passing train for forcing said latch-bolt into the latch-receiving apertures of said latch-bar after the switch has been set, said latch-bar comprising two sections pivotally connected together, stops carried by the section having the latch-bolt-receiving apertures, to limit the movement of the bar in each direction, substantially as shown and described.

CHARLIE LEE KEE.

Witnesses:

J. A. PERSON,  
ALBERT E. DIETERICH.