E. ROUTT.

AUTOMATIC SAFETY SWITCH.

APPLICATION FILED MAR. 3, 1911.

1,014,906.

Patented Jan. 16, 1912.

2 SHEETS—SHEET 1.

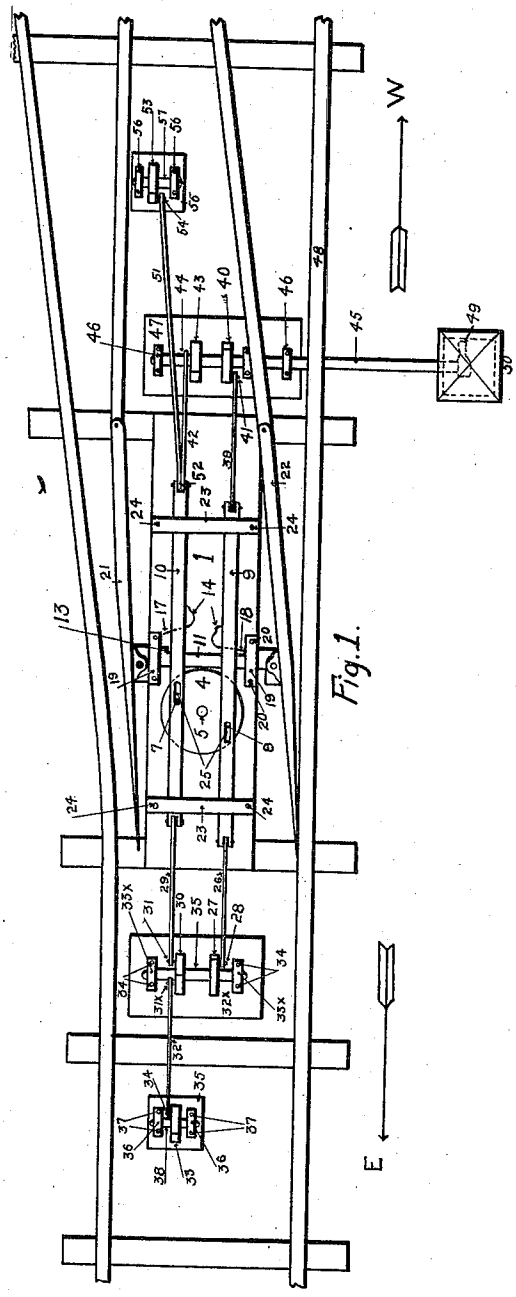

Fig. 1.

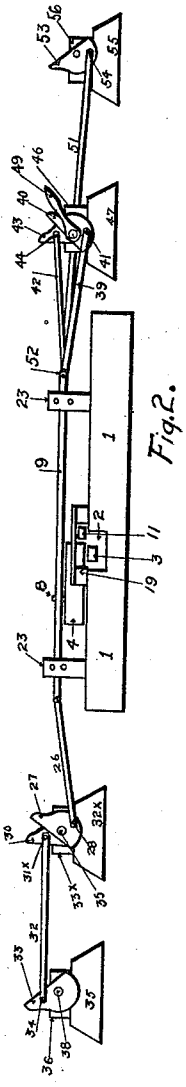

Fig. 2.

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Fig. 5.

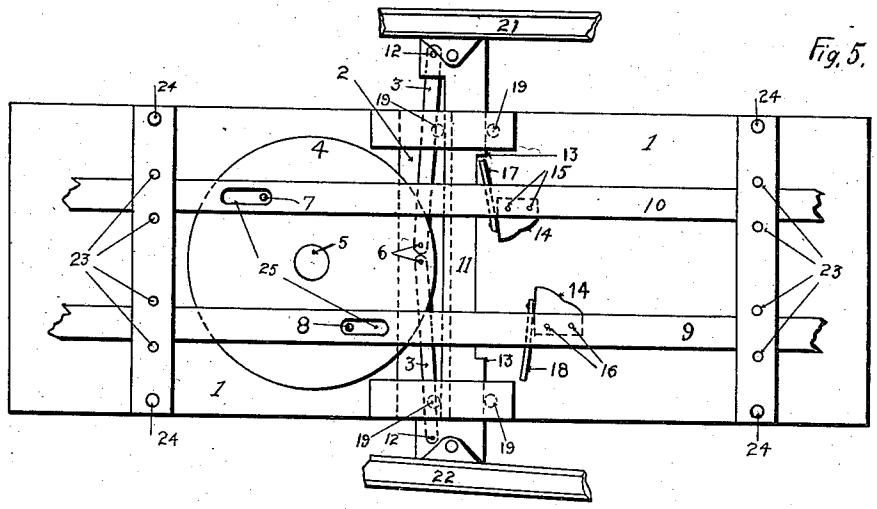


Fig. 3

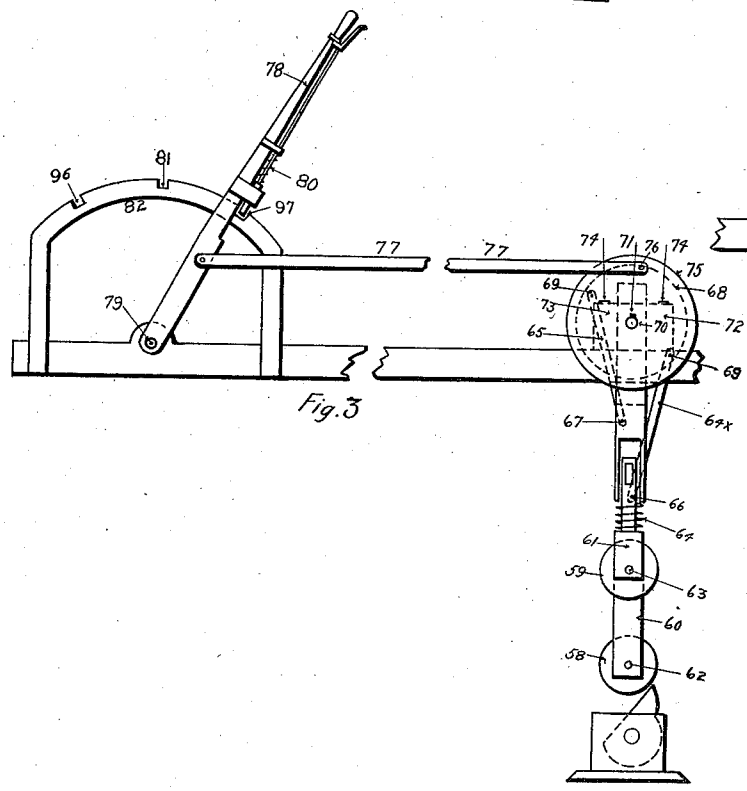
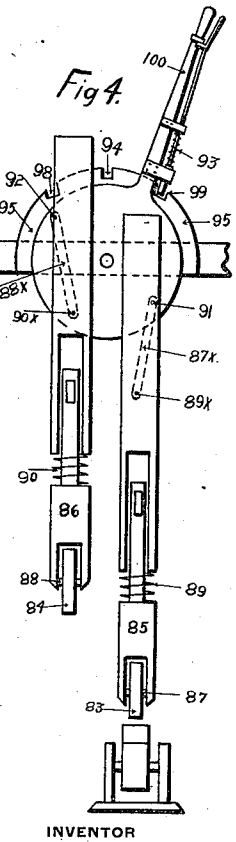


Fig 4.



WITNESSES

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AUTOMATIC SAFETY-SWITCH.

1,014,906. Specification of Letters Patent. Patented Jan. 16, 1912.

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To all whom it may concern:

Be it known that I, EDMAN ROUTT, a citizen of the United States, residing at Santa Clara, in the county of Santa Clara and State of California, have invented a new and useful Improvement in Automatic Safety-Switches, of which the following is a specification.

My invention relates to an automatic railroad self locking switch device, that can be operated from the cab of the engine, or from the rear of the train as the case may be without stopping, unlocking and with the same motion setting the switch and locking the same in any direction desired. The same switch can be operated by man from the ground, unlocked, thrown over and locked automatically by the use of one lever.

The object of my invention is to provide an automatic railroad self locking switch device; one that can be controlled from the cab of the engine and from the rear of the train, to unlock set and lock with one motion in any direction desired and one that can be unlocked, set and locked to the main line as the train leaves the siding without stopping.

Another object of my invention is to produce a railroad switch that can be operated from the cab of the engine in such a manner, that should the switch be set wrong, it will be unlocked, set right and locked to the main line before the engine passes over the same, thereby saving life and property.

It also comprises parts and details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a plan view of my automatic railroad self locking switch device. Fig. 2 is a side elevation showing the levers, cams and connecting rods. Fig. 3 is a side elevation showing reverse lever in cab and connections on front of engine. Fig. 4 is an end elevation showing the trip wheels, lever and connections on the rear end of the last car of the train. Fig. 5 is a plan view of the shifting and locking device.

Similar numerals refer to similar parts throughout the several views.

In the present case I have shown my automatic railroad self locking switch device, consisting of a foundation plate shown at 1; the same having a channel cut cross-wise shown at 2, Figs. 2 and 5 to receive the shifting bar levers shown at 3 which operate in this channel, connected to wheel shown at 4, Figs. 1, 2 and 5, which is held in place on foundation plate 1 by pinion shown at 5, Figs. 1 and 5; and to this wheel are connected shift bar levers shown at 3, Fig. 5 by pinions shown at 6 on the underside of wheel 4. On the upper side of wheel 4 are two pins, 7 and 8 shown at Figs. 1 and 5, connecting with sliding bars 9 and 10, Figs. 1, 2 and 5.

Shift bar is here shown at 11, Figs. 1 and 5, connected to shift bar levers 3 by pinions shown at 12, Fig. 5. Shift bar 11 has two shoulders shown at 13, Figs. 1 and 5 for the purpose of locking the shift bar in each direction. On sliding bars 9 and 10 are brackets shown at 14 bolted to sliding bars 9 and 10 at 15 and 16; said brackets having springs shown at 17 and 18, Fig. 5. These springs drop into shoulders 13 as shift bar 11 is thrown back and forth and at the same time lock the switch in either direction. Roller bearings are here shown at 19, Figs. 1, 2 and 5 bolted to plate 1 by bolts shown at 20, Fig. 1. These bearings are for the purpose of holding shift bar 11 in place. Shift rail 21 is connected to one end of shift bar 11, and shift rail 22 is connected to the opposite end of said bar, as shown at Fig. 5. Sliding bars shown at 9 and 10 are held in place on plate 1 by friction rollers shown at 23, the same being fastened to plate 1 by bolts shown at 24. Sliding bars 9 and 10 have oblong slots cut through them as shown at 25, into which pins 7 and 8 on wheel 4 are connected. Sliding bar 9 has a connecting rod shown at 26, Figs. 1 and 2, running back to cam shown at 27 and connecting to the underside of said cam at 28. Sliding bar 10 has a connecting rod shown at 29, running back to cam shown at 30 and connected to the underside of said cam at 31, Fig. 1. These cams are held in place by a foundation plate shown at $32^{\times}$, Figs. 1 and 2. On this foundation plate are two brackets shown at $33^{\times}$. These brackets are bolted to the foundation plate $32^{\times}$ by bolts shown at 34. Between these two brackets is a round unmovable shaft shown at 35. On this shaft are cams 27 and 30, loosely fitted. To the upper side of cam 30 is connected at $31^{\times}$ a connecting rod 32 running back to cam shown at 33 and connected to the upper side of cam 33 at 34. Cam 33 is held in place by foundation plate shown at 35. To this plate is bolted brackets, shown at 36 by bolts shown at 37. Between these brackets is fastened an unmovable shaft 38; on this shaft loosely fitted

is cam 33 for the purpose of closing the switch to the side track when the train is leaving the switch. At the other end of sliding bar 9 is a connecting rod 39, running back to cam 40 and connected to the underside of said cam at crank pin 41.

Sliding bar 10 has a connecting rod 42 connected at 52, running back to cam 43 and connected to the upper side of said cam at crank pin 44. These cams 40 and 43 are keyed to shaft shown at 45; said shaft is held in place by bearings shown at 46, bolted to foundation plate shown at 47. Said shaft runs outside of rail 48 so as to clear all cars. On the end of this shaft is a lever arm shown at 49 for the purpose of shifting the switch by hand. This hand lever is covered by a housing shown at 50, which may have a door and lock. Rod 51 is connected to sliding bar 10 by pin 52, and to cam 53 by pin 54. Said cam is held in place by brackets bolted to foundation plate shown at 55 by bolts shown at 56; said cam works loosely on shaft shown at 57. Trip wheels are shown at 58 and 59, Fig. 3. Trip wheel 58 is pinioned to fork bar 60, as shown at 62, Fig. 3. Bar 60 is connected to wheel 68 by connecting rod 64×. Said rod is connected to said bar as shown at 66, and said rod is connected to wheel 68 as shown at the upper end of said rod. Trip wheel 59 is pinioned to fork bar 61, as shown at 63. Bar 61 is connected to wheel 68 by connecting rod 65. The lower end of said rod is pivoted to said bar, as shown at 67, and the upper end of said rod is pivoted to said wheel, as shown at 69. Fork bars 60 and 61 are each provided with a spring, as shown at 64, for the purpose of overcoming any sudden jar in the operation of the trip wheel. Wheel 68 is keyed to shaft 70 at 71, Fig. 3, which is held in place by bearings 72 and 73. This shaft is attached to the front end of the engine by bolts 74. Wheel 75 is keyed to shaft 70 at the outer end thereof. Wheel 75 is connected to connecting rod 77 by pinion 76. This rod runs back to the cab of the engine and is pinioned to the reverse lever 78. Lever 78 is held in place by pinion 79.

Spring on handle of reverse lever shown at 80 is to hold said lever in place at notches shown at 81—96 and 97 cut in half circle bar shown at 82, fastened in any suitable place in the cab of the engine.

Trip wheels shown at 83 and 84, Fig. 4 on the rear end of the last car of the train are held in place by fork bars 85 and 86 and pinions 87 and 88. These bars have springs connected as shown at 89 and 90 for the purpose of taking off any sudden jar that may come to the trip wheels.

Fork bars 85 and 86 have connecting rods shown at 87× and 88× connected to fork bars at pinions 89× and 90× and connected to lever wheel and lever arm at 91 and 92. Spring on handle of lever 100 shown at 93 is to hold said lever in place at notches shown at 94—98 and 99 cut in half circle bar shown at 95; the same being fastened in any suitable place on the rear end of the last car of the train.

Pins 7 and 8 on wheel 4 work in slots on sliding bars 9 and 10. These slots are oblong for the purpose of giving sliding bars 9 and 10 enough motion so as to release springs 17 and 18 from notches 13 and unlock shift bar 11 before closing or opening the switch to the main line or to the side track. Lever arm, shown at 49, Figs. 1 and 2, is for the purpose of shifting the switch by hand. This lever can be covered by a housing, as shown at 50.

The switch is operated as follows:—When a train is traveling west (Fig. 1) trip wheel 58 is on the left side of the engine and immediately over the cams desired to be operated thereby; it is lowered by throwing the reverse lever forward to notch 97. Wheel 59 is on the right side of the engine and over the cams it operates. This wheel is lowered by pulling the lever back to notch 96. Wheel 84 is located at the rear of the train and on the same side as wheel 58, it is lowered by throwing lever 100 over to notch 98. Wheel 83 is on the rear of the train and on the same side as wheel 59 and is operated by throwing said lever over to notch 99. Each of these wheels is immediately over the cams operated by them. With the switch on the right hand side and the main track on the left, as shown at Fig. 1, wheel 58 is lowered and comes in contact with cam 30 and opens the switch; cam 27 is operated by lowering wheel 59 to close the switch. When a train is traveling east on the main line with the switch set for the side track the trip wheel 58 is lowered and it comes in contact with cam 53 and closes the switch. Cam 33 is operated from the rear of an east bound train which has left the switch by lowering wheel 83 for the purpose of closing the switch. A train going east on the side track, in order to close the switch before it, lowers wheel 59 which strikes cam 43.

To close the switch behind the train, trip wheel 83 on the rear end of the last car of the train is set in place by reverse lever 100 being thrown over to notch 99. Trip wheel 83 then comes in contact with cam 40 and closes the switch behind the train.

On backing off of the side track, trip wheel 84 is set in place by throwing reverse lever 100 over to notch 98 causing wheel 84 to come in contact with cam 43, which sets the switch open to the main line, allowing this train to back off the switch onto the main line.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent of the United States is as follows:

1. In an automatic safety switch, the combination with the main track, the switch rails and a foundation plate; of a wheel pivoted to said foundation plate, a shift bar with shoulders cut therein and connected at each end to a switch rail, shift bar levers pivoted to said wheel and running in opposite directions, the other ends thereof being pivoted at the ends of the shift bar, sliding bars, parallel with each other and the main track, passing over said wheel each at an equal distance from the center of said wheel, an oblong slot cut in each parallel bar, pins set in said wheel and passing upward through said slots, a bracket attached to each of said sliding bars, and springs attached to said brackets adapted to engage the shoulders in the shift bar, as shown and described.

2. In an automatic safety switch, the combination of a wheel between the switch rails, parallel sliding bars passing across said wheel at an equal distance from the center thereof, an oblong slot cut in each bar, pins set in said wheel passing upward through said slots, the switch rails, a shift bar connecting said rails, shift bar levers pivoted to said wheel and to said bar, a bracket attached to each of said parallel bars, springs attached to said brackets adapted to engage shoulders cut in the shift bar, cams set at a predetermined distance from said switch rails within said switch, rods connecting said cams and said parallel sliding bars, a shaft, running a distance beyond an outer rail, on which said cams are rigidly attached, and a lever adapted to turn said shaft by hand, as shown and described.

3. In an automatic safety switch, the switch unlocking device comprising a wheel between the switch rails, parallel sliding bars passing across said wheel at an equal distance from the center thereof, an oblong slot cut in each of said bars, pins set in said wheel passing upward through said slots, a pair of switch rails, a shift bar connecting said rails, and levers pivoted to the ends of said bar extending inward a like distance and pivoted to the under side of said wheel near the rim thereof, as shown and described.

4. In an automatic safety switch, the device for unlocking, resetting and locking the switch rails, consisting of a wheel with pins set in the side thereof and passing upward, parallel sliding bars with oblong slots cut therein through which said pins pass, a shifting bar, with shoulders cut therein, connecting the switch rails, switch bar levers attached to said wheel and to said shift bar, brackets attached to said sliding bars, springs attached to said brackets adapted to engage the shoulders in the shifting bar, cams set between the rails at predetermined distances at the approach of the switch, cams set at predetermined distances between said rails within the switch, rods connecting said cams and said sliding bars, and the means of operating the same from a moving train, as shown and described.

5. An automatic safety switch, adapted to be unlocked, reset and locked from the rear of a moving train while on said switch, and consisting of a main track, a switch, switch rails, a wheel located between said switch rails, parallel bars passing over said wheel, pins in said wheel passing upward through oblong slots in said parallel bars, a shift bar connected at each end to a switch rail, shift bar levers pivoted to the ends of the shift bar, the opposite ends of said levers being pivoted to said wheel, brackets on said parallel bars, springs contained in said brackets adapted to engage shoulders cut in the shift bar, cams at a predetermined distance within said switch, rods connecting said cams and said parallel bars, and mechanism attached to the rear of said train adapted to turn said cams and operate said switch, as shown and described.

6. In an automatic safety switch, the combination with a main track, a side track and switch rails, a wheel between said switch rails, parallel bars passing over said wheel, pins set in said wheel passing upward therefrom and through oblong slots in said parallel bars, a shift bar, with shoulders cut therein, connecting said switch rails, shift bar levers pivoted to the ends of said shift bar and to said wheel, brackets attached to said parallel bars, springs attached to said brackets adapted to engage the shoulders in the shift bar, cams set between the rails at predetermined distances, both within and without the switch, and rods connecting said cams and said parallel bars; of trip wheels attached to the engine or at the rear of the train, adapted to be lowered to come in contact with and turn any of said cams, and the mechanism to operate said trip wheels, as shown and described.

In testimony whereof, I have hereunto set my hand in the presence of two subscribed witnesses.

EDMAN ROUTT.

Witnesses:
E. COZZENS,
M. W. SHARP.