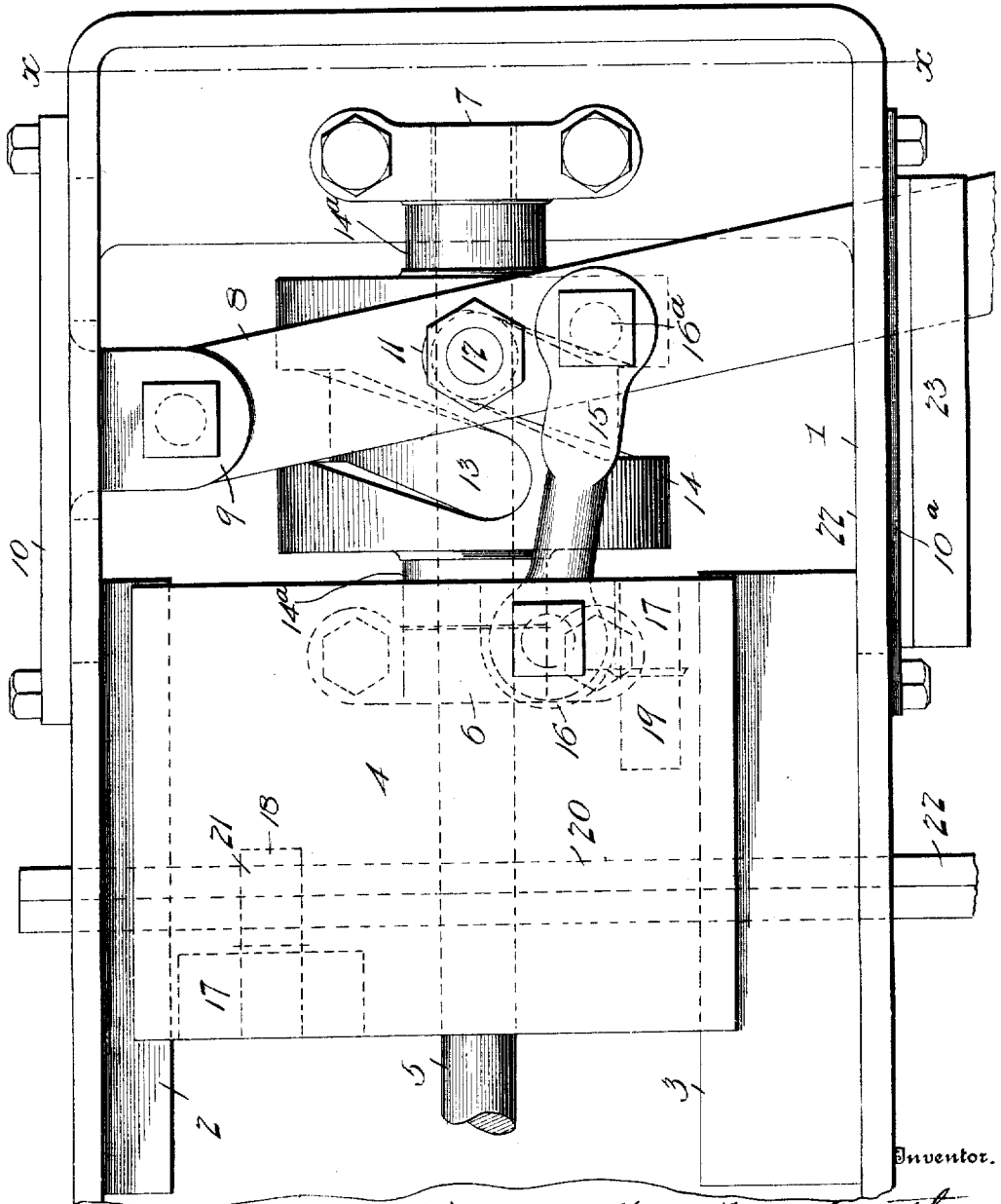


H. M. ABERNETHY.
RAILWAY SAFETY SWITCH AND SIGNAL DEVICE.
APPLICATION FILED APR. 3, 1908.

947,219.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 1.



Witnesses
T. L. Macomber
J. P. Macomber.

Fig. 1.

By

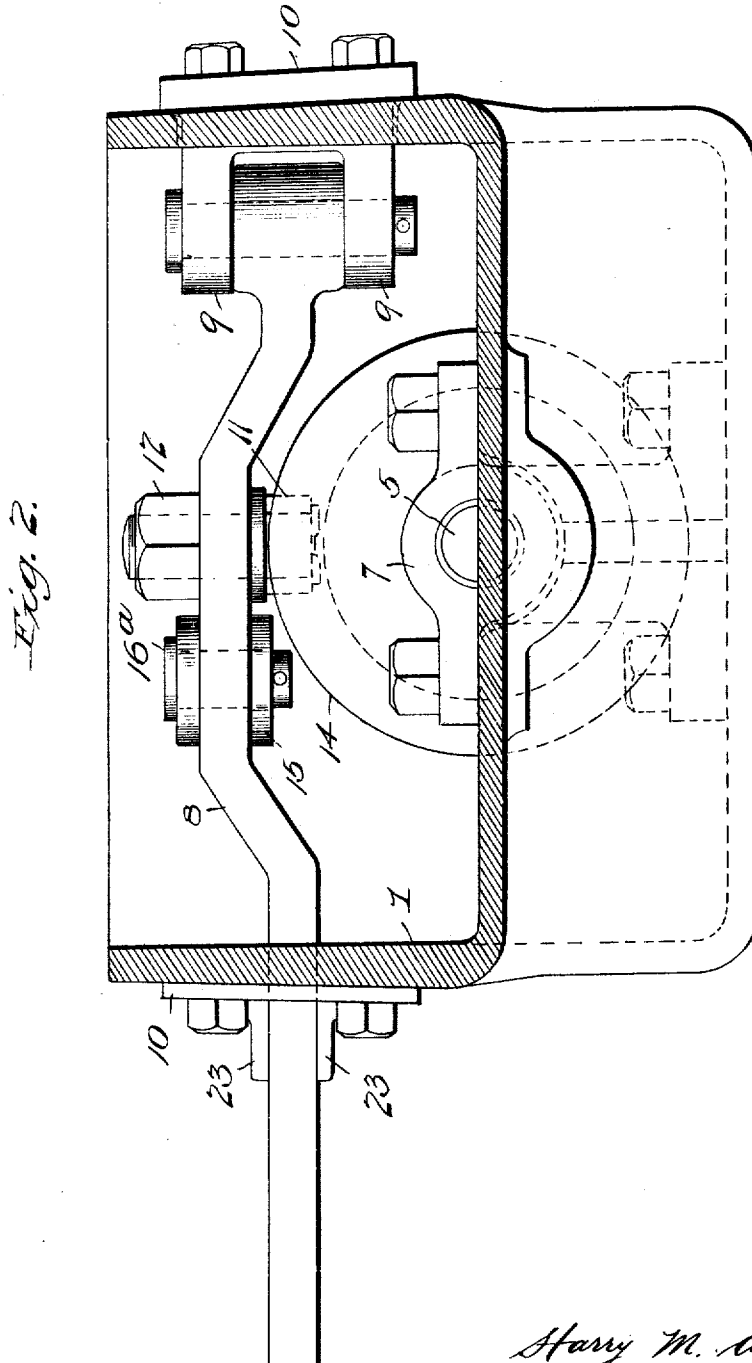
Harry M. Abernethy
Jas. L. Skidmore
His Attorney.

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Witnesses
J. L. Knochman
F. M. Cleary.

Harry M. Abernethy ^{Inventor.}
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UNITED STATES PATENT OFFICE.

HARRY M. ABERNETHY, OF CLEVELAND, OHIO.

RAILWAY SAFETY SWITCH AND SIGNAL DEVICE.

947,219.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed April 3, 1908. Serial No. 424,895.

To all whom it may concern:

Be it known that I, HARRY M. ABERNETHY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Railway Safety Switch and Signal Devices, of which the following is a specification.

This invention relates to railway safety switch and signal devices, and its primary object is to provide novel and effective means for preventing the setting of signals until after a switch has been thrown.

In the operation of switch and signal devices of the class to which the present invention relates, the first step on the part of the tower operator is to withdraw a bolt which secures the switch-locking rod. When this is done, the switch is thrown and the locking rod is again locked, after which the signals are set by the operator.

The switch locking rod in devices as heretofore constructed is provided with two openings one adapted to receive a locking bolt to secure the rod when the switch is open, and the other to receive the bolt when the switch is in its closed position. As there is no connection between the switch-operating rod and the mechanism for operating the locking bolt of the switch locking rod in case of breakage or disarrangement of the switch-operating devices the locking bolt may be withdrawn from one opening in the locking rod and returned through the same opening the locking rod remaining stationary owing to the failure of the switch to move. As this second or return movement of the locking bolt indicates to the operator that the switch has been thrown he proceeds to set the signals, the same as if the switch had been moved, thus giving a false signal. The present invention aims to avoid this difficulty by providing two independent and oppositely-disposed bolts for the switch locking rod, so constructed and operated as to prevent the setting of the signals in case of failure of the switch to move.

The invention comprises a switch-locking rod, means for locking said rod in one position, and independent means for locking said rod in another position.

The construction of the improvement will be fully described hereinafter, in connection

with the accompanying drawings which form a part of the specification and its features of novelty will be set forth in the appended claims.

In the drawing—Figure 1 is a top plan of mechanism embodying the invention, inclosed within a box or casing the cover-plate of which is omitted, and Fig. 2 is a transverse vertical section on the line $x-x$ of Fig. 1.

The reference numeral 1 designates a box or casing adapted to be located adjacent to a railway track at one side thereof, and provided on opposite sides with parallel flanges 2 and 3 serving as guides to support a slidable plate 4.

The numeral 5 designates a shaft adapted to be driven by an electric motor, and supported in bearings 6 and 7 projecting from the bottom of the box 1. A lever 8 pivotally secured at one end between a pair of lugs 9 projecting centrally from a plate 10 bolted to one side of the box 1, extends across the box and is adapted to be secured to the detector bar. This lever 8, carries on its under side a roller 11 pivotally secured upon a bolt 12 and adapted to travel within a cam-groove 13 formed upon the periphery of a drum 14 mounted upon the motor shaft 5. The groove 13 is inclined at its ends to provide cam guide-ways for the roller, but the greater portion of said groove is straight or parallel to the ends of the drum. Between the ends of the drum 14 and the shaft bearings 6 and 7 are interposed ball bearings 14^a to take up the end thrust of said drum. The lever 8 is connected to the plate 4 by a link 15 pivotally secured at one end within a recess 16 formed on the under side of the plate, and at its opposite end to the lever 8 by a pin 16^a. This link connection between the plate and lever insures the movement of the plate when the lever is operated and the roller 11 is traveling in the cam portions of the groove 13 causing the required forward and backward movement of the plate.

Depending from diagonally-opposite corners of the plate 4 are lugs 17 from each of which projects a pin designated by the numerals 18 and 19 respectively. These pins as shown project in opposite directions and on opposite sides of the switch locking rod 20. The rod 20 may consist of a single flat

bar or of two bars arranged parallel to each other as shown, and it is formed with an opening 21 adapted to receive either of the pins 18 and 19. The end 22 of the rod 20 is connected to the switch point (not shown).

The utility and operation of the mechanism constructed as thus described will be readily understood. The initial movement of the plate 4 withdraws the pin 18 from the opening 21 in the locking rod 20. The switch is then thrown and this operation moves the rod 20 until its opening 21 registers with the pin 19 of the plate 4. The return movement of the plate then projects the pin 19 through the opening 21, after which the operator sets the signals. If through any disarrangement of the mechanism the switch is not thrown, the locking rod 20 will not be moved, and as a consequence the pin 19 will strike against the side of said locking rod instead of extending through the opening therein and the operator will thus be notified that the switch has not been thrown, since the failure of the pin 19 to enter the opening 21 immediately affects the operation of the locking-rod lever and the operator will not set the signals.

The plate 10 provided with the lug 9 is interchangeable with a plate 10^a at the opposite side of the box, thus permitting the lever 8 connected to a detector bar (not shown) to be operated from either side of the track. The lever 8 extends through a slot 22 formed in the side wall of the box, and is guided between flanges 23 projecting from the plate 10^a.

It will be apparent from the foregoing description that the improvement provides a safety switch and signal device which will effectually prevent the setting of false signals, and one which is capable of use as either a right-hand or left-hand switch throwing apparatus.

Having thus described my invention what I desire to secure by Letters Patent and claim is:—

1. A safety-switch and signal device, comprising a switch locking rod formed with an opening, a movable plate, and oppositely-disposed pins carried by said plate adapted to enter said opening.

2. A safety-switch and signal device, comprising a switch locking-rod formed with an opening, a movable plate, pins carried by said plate and disposed on opposite sides of said locking rod, a motor shaft and mechanism

operated by said shaft for moving said plate.

3. A safety-switch and signal device comprising a switch locking rod formed with an opening, a movable plate, oppositely-disposed pins carried by said plate, and means for moving said plate consisting of a motor shaft, a drum mounted upon said shaft and formed with a cam groove, a switch-throwing lever, a roller carried by said lever and traveling in said groove, and a link connection between said plate and lever.

4. A safety-switch and signal device, comprising a box or casing, interchangeable plates on opposite sides of said box, a lever fulcrumed upon one of said side plates, a motor shaft, a drum mounted upon said shaft and formed with a cam groove, a roller carried by said lever and adapted to travel in said groove, a switch locking-rod formed with an opening, a movable plate, oppositely-disposed pins carried by said movable plate, and a link connection between said lever and said movable plate.

5. A safety-switch and signal device, comprising a box or casing, interchangeable plates secured to opposite sides of said box, one of said plates having a pair of lugs, and the other being provided with guide flanges, a lever fulcrumed between said lugs, and adapted to be guided by said flanges, a motor shaft supported in bearings within the box, a drum mounted on said shaft, and formed with a cam groove, a roller carried by said lever and adapted to travel within said groove, a switch locking-rod formed with an opening, a movable plate having a link connection with said lever, and oppositely-disposed pins carried by said movable plate and adapted to enter said opening from opposite sides thereof.

6. A safety switch and signal device, comprising a box or casing, a motor shaft supported in bearings within said box, a drum mounted upon said shaft and formed with a cam groove, end bearings on said shaft on opposite sides of said drum, a lever fulcrumed at one end within said box, a roller carried by said lever and adapted to travel in said groove, a switch locking rod, and means operated by said lever for locking said rod.

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Witnesses:

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