

F. McKNIGHT.
SWITCH.

APPLICATION FILED OCT. 3, 1908.

933,100.

Patented Sept. 7, 1909.

2 SHEETS—SHEET 1.

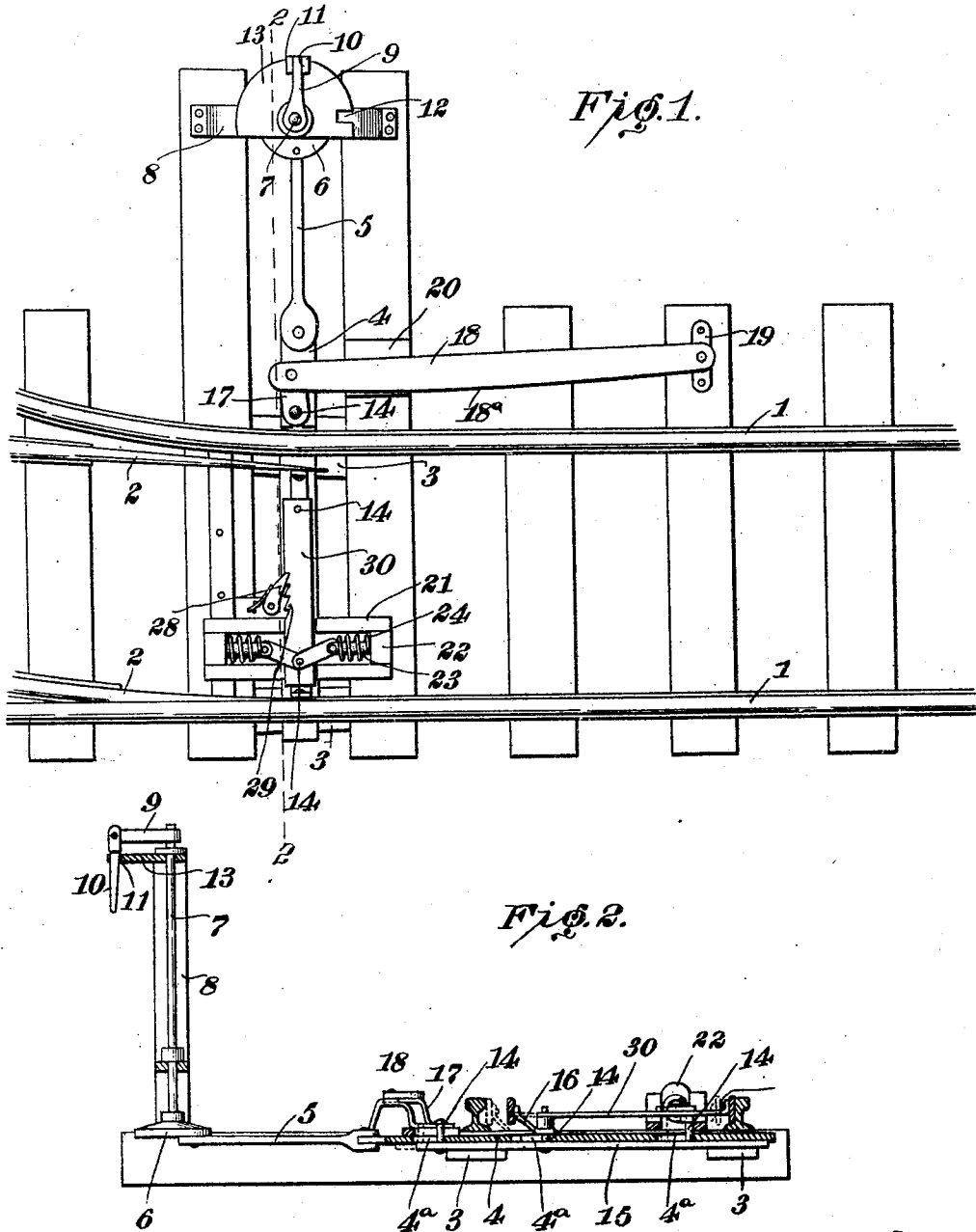


Fig. 2.

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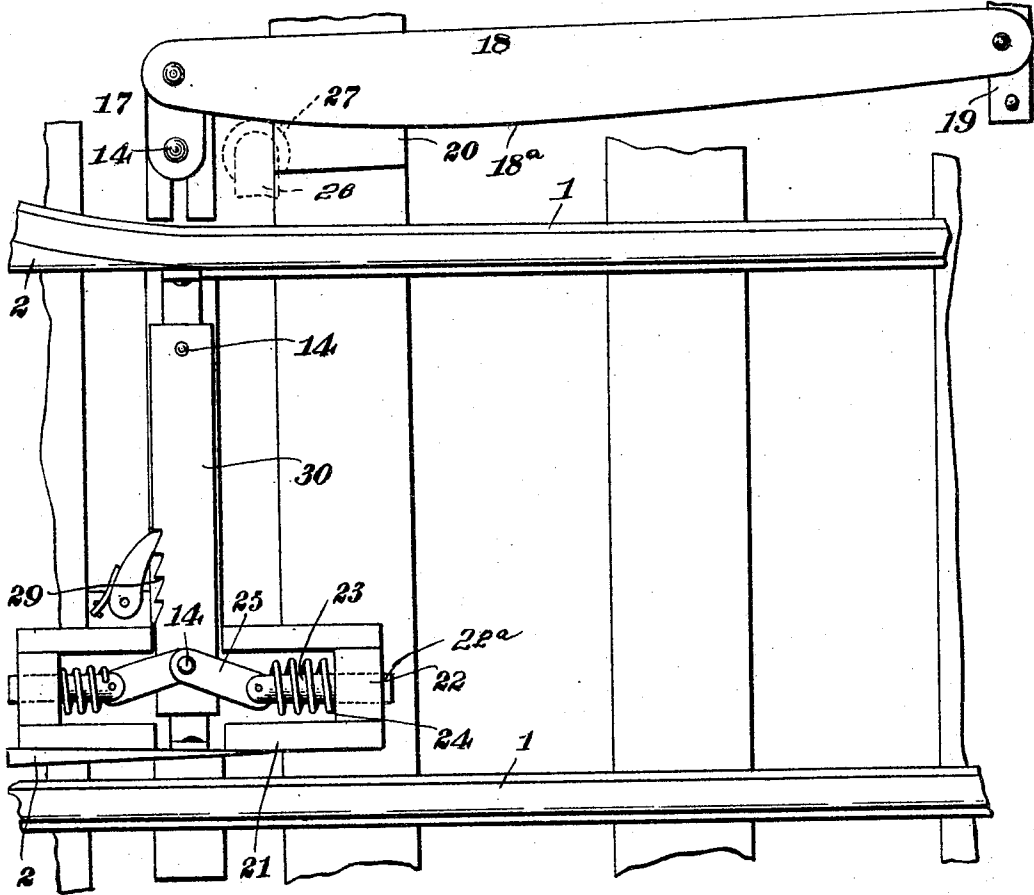


Fig. 3.

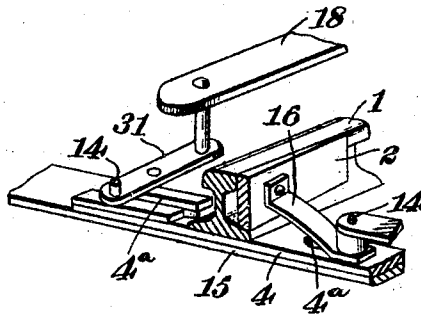


Fig. 4.

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UNITED STATES PATENT OFFICE.

FRANK McKNIGHT, OF ST. LOUIS, MISSOURI.

SWITCH.

933,100.

Specification of Letters Patent.

Patented Sept. 7, 1909.

Application filed October 3, 1908. Serial No. 455,999.

To all whom it may concern:

Be it known that I, FRANK McKNIGHT, citizen of the United States, residing at St. Louis, State of Missouri, have invented certain new and useful Improvements in Switches, of which the following is a specification.

The present invention relates to improvements in that class of switches which are so constructed that should the switch be inadvertently or maliciously left in an open position it will be automatically closed by a train approaching upon the main track, thereby enabling the train to proceed upon the main track and averting an accident.

The object of the invention is the provision of a simple and inexpensive safety switch which is positive and reliable in its action.

For a full understanding of the invention and the merits thereof and also to acquire a knowledge of the details of construction and the means for effecting the result, reference is to be had to the following description and accompanying drawings, in which:

Figure 1 is a plan view of a safety switch mechanism embodying the invention, the switch being shown in an open position, Fig. 2 is a transverse sectional view on the line 2—2 of Fig. 1, the switch points being shown in full lines in the position assumed when thrown into an open position by the switch stand and in dotted lines in the position assumed when closed by the operating lever, Fig. 3 is a plan view of the switch, the switch points having been moved into a closed position by the operating lever, and Fig. 4 is a perspective view of a portion of a switch, showing a slight modification.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

Referring to the drawings the numeral 1 designates the rails of the main track and 2 the switch points which are of the conventional construction. Slidably mounted within guide-ways 3 under the rails 1, is a switch bar 4 one end of which projects laterally upon one side of the track and is connected by a pitman 5 to a crank disk 6 upon the lower end of a vertical shaft 7 journaled in a switch stand 8. The upper end of this shaft 7 is provided with the usual handle 9 having a latch member 10 pivotally mounted thereon and designed to engage either one,

of a pair of notches 11 and 12 in a latch plate 13 upon the switch stand. The switch bar 4 is formed with three longitudinally disposed slots 4^a loosely receiving pins 14 projecting upwardly through the slots from a bar 15 located immediately under the switch bar. A pair of the pins 14 are connected by the members 16 to the switch points while the third pin is connected by the arm 17 to the swinging end of an operating lever 18. This lever 18 is arranged substantially parallel to the main track and has one end thereof pivotally mounted upon a fulcrum member 19 while the opposite end slides freely upon a block 20 which serves as a guide for the same. This fulcrum member 19 may be of any suitable construction and may be either secured to the ties as in the present instance or to the rails of the track.

A cross head 21 is applied to the switch bar 4 between the rails 1 of the main track, and slidably mounted upon each end of the cross head is a block 22, the said blocks being connected by a rod 22^a one end of which is formed with a head while the opposite end is threaded and capped by a nut. It will thus be obvious that by turning this rod, the blocks 22 may be moved upon the cross head and thereby either drawn closer together or permitted to spread farther apart. Slidably mounted within each of the blocks 22 is a rod 23, the inner end of each of the rods being connected by a link 25 to one of the pins 14. Coil springs 24 surround the rods 23 and are interposed between the blocks 22 and the links 25 so as to normally tend to move the rods 23 inwardly. This construction admits of the switch points and bar 15 being moved independently of the switch bar 4, and yet holds the said members yieldingly together so that they normally move in unison. When the switch points are moved from one position to the opposite position independently of the switch bars, the links 25 are swung from one side of the rods 23 to the opposite side, the springs 24 being compressed to the maximum extent when the links are in alinement with each other and also with the rods, and expanding as the links are swung to either side of the rods. It will thus be obvious that the switch points are held yieldingly in either position to which they may have been moved, and are normally locked with the switch bar 4, but can be moved independently thereof

when a sufficient force is applied thereto to overcome the action of the springs 24. The tension in these springs may be adjusted as required by manipulating the tie rods 22^a as previously set forth to draw the blocks 22 together or force them apart.

The longitudinal edge of the operating lever 18 adjacent the main track has an outwardly curved edge indicated at 18^a and when the latch member 10 has been caused to engage the notch 11 to hold the switch in an open position the operating lever 18 is inclined inwardly toward the track from its pivot end. Trains traveling upon the track are designed to be provided with trip arms 26 which may be moved either into or out of operative position and are preferably provided with rollers 27. Should a train be approaching an open switch with the trip arm 26 in an operative position, the roller 27 thereof will engage the curved edge 18^a of the operating lever 18 and swing the said operating lever outwardly away from the track. This movement of the operating lever will serve to move the bar 15 and throw the switch points from an open to a closed position. As the switch points are thus moved, the links 25 will be swung upon the opposite side of the rods 23 and the springs 24 which previously held the switch points 26 in an open position, will now hold them yielding in a closed position. For the purpose of locking the switch points in a closed position after they have thus been thrown by the trip member upon the rolling stock, a spring catch 28 is utilized, which is shown in the present instance as pivoted upon the cross head 21 and adapted to engage teeth 29 upon a plate 30 connecting the two pins 14 having the switch points secured thereto. Should it be desired to again open the switch after the train has passed, it will be necessary to manually release the catch 28 from engagement with the teeth 29 and to swing the handle 9 upon the switch stand until the latch 10 can engage the notch 12, the switch bar 4 being thereby moved independently of the switch points and bar 15 and the links 25 being swung to the opposite side of the rod 23. When the handle 9 of the switch stand is again swung back to its original position so that the latch 10 can engage the notch 11, the switch bar 4 and bar 5 will move in unison and the switch points will be thrown from a closed to an open position.

A slight modification of the invention is

shown in Fig. 3, in which the side track is located on the opposite side of the main track to the switch stand and it is desired to mount the operating lever 18 upon the same side of the track as the switch stand. With this arrangement of the parts it would be necessary to move the bar 15 in an opposite direction to that previously described and in order to accomplish this result, a lever 31 is utilized, the said lever being pivoted upon a fixed support at a point between its ends and having one of its extremities loosely connected to the bar 15 while the opposite extremity is loosely connected to the operating lever. It will thus be obvious that when the operating lever has engaged the roller 27 upon the trip arm 26 carried by the rolling stock and been swung outwardly, the bar 15 will be moved in a direction away from the switch stand and the switch will be thrown from an open to a closed position.

Having thus described the invention, what is claimed as new is:

1. The combination of a main track, a switch bar, a switch loosely connected to the switch bar and movable independently thereof, means for moving the switch bar, a block carried by the switch bar, a rod slidably mounted upon the block and spring pressed outwardly, a link connecting the rod and the switch and causing the switch bar and switch to normally move in unison, and means for moving the switch independently of the switch bar.

2. The combination of a main track, a switch bar provided with a plurality of slots, a switch stand having an operative connection with the switch bar, a bar loosely connected to the switch bar and provided with pins passing through the slots therein, switch points connected to a pair of the pins, and an operating lever connected to one of the pins, means for normally causing the switch bar and bar to move in unison, and means upon the rolling stock for cooperation with the lever to move the switch independently of the switch bar.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK McKNIGHT. [L. S.]

Witnesses:

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