

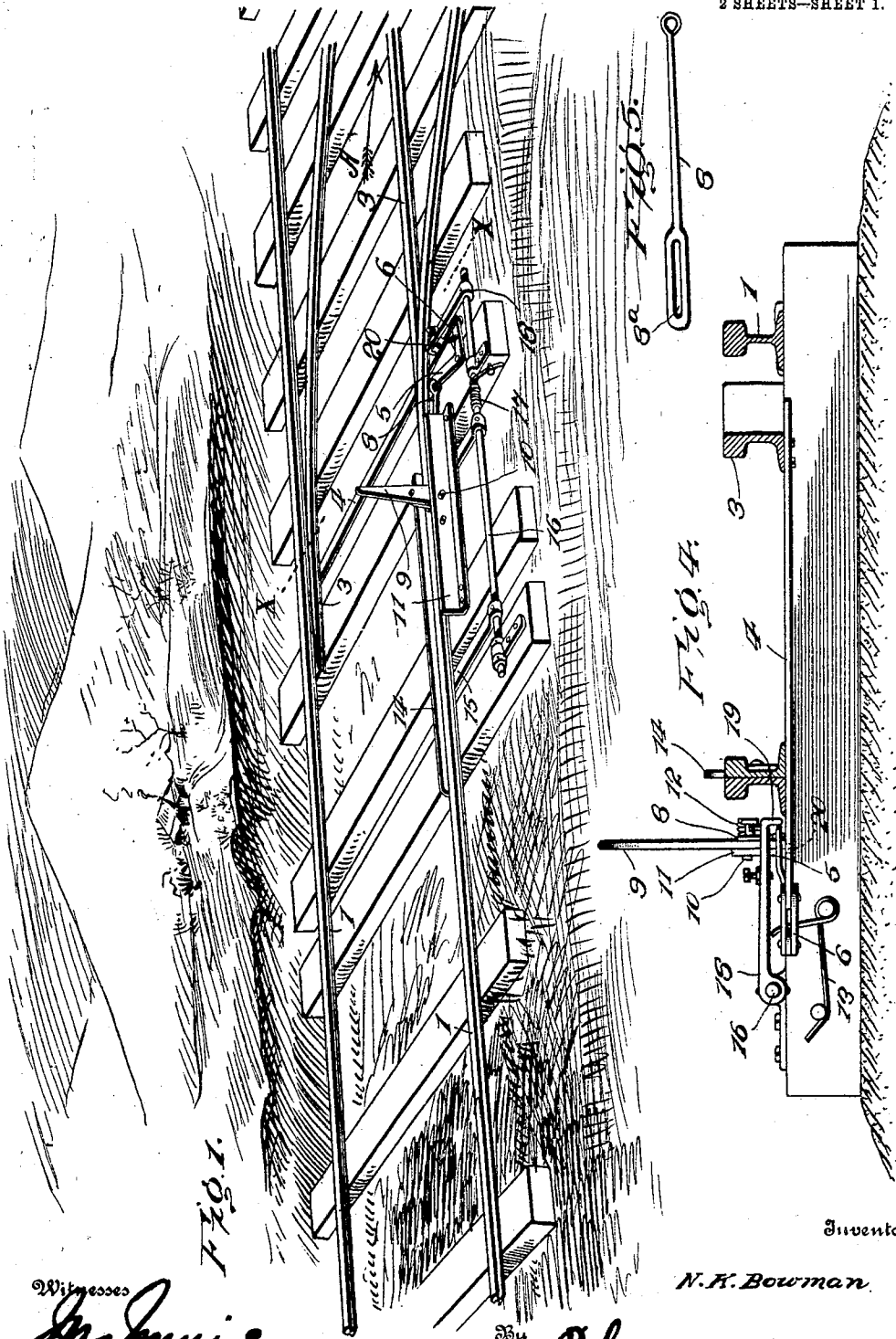
No. 814,582.

PATENTED MAR. 6, 1906.

N. K. BOWMAN.  
SWITCH OPERATING MECHANISM.

APPLICATION FILED MAY 25, 1905.

2 SHEETS—SHEET 1.



Inventor

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Witnesses  
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By  
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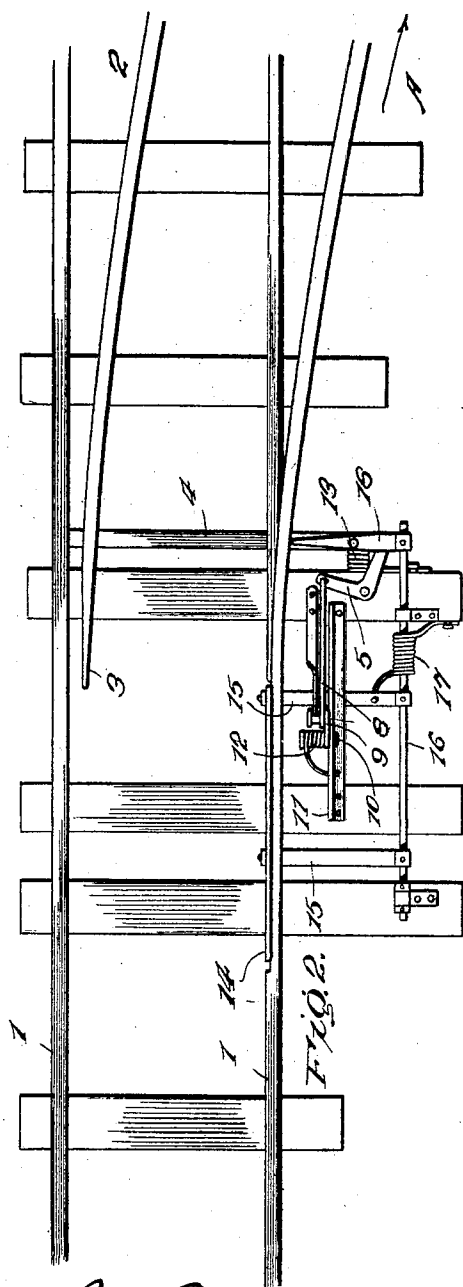
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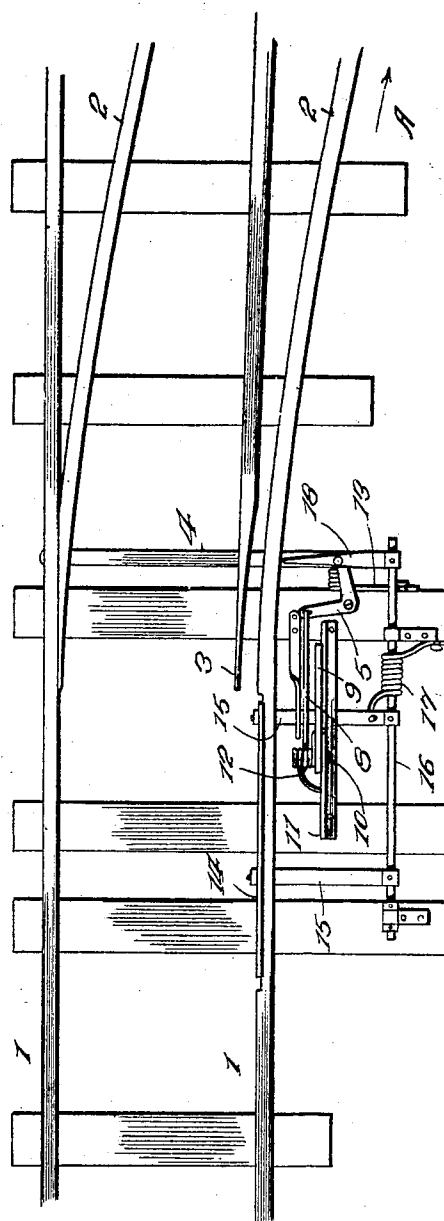


Fig. 3.

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# UNITED STATES PATENT OFFICE.

NEWTON K. BOWMAN, OF NORTH LAWRENCE, OHIO.

## SWITCH-OPERATING MECHANISM.

No. 814,582.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed May 25, 1905. Serial No. 262,255.

*To all whom it may concern:*

Be it known that I, NEWTON K. BOWMAN, a citizen of the United States, residing at North Lawrence, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Switch-Operating Mechanisms, of which the following is a specification.

This invention embodies improvements in that type of switch-operating mechanism in which the switch is actuated by means carried by the rolling-stock; and the essential feature of the invention is comprised in the provision of a simple mechanism designed particularly for use on motor haulage-lines in mines.

The invention involves the provision of trip mechanism directly connected with the switch-points for actuating the latter to throw the switch open, and special lock mechanism coöperates with the trip mechanism to lock the switch in its open condition until the cars have passed the same.

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

Figure 1 is a perspective view of switch-operating mechanism embodying the essential features of this invention. Fig. 2 is a plan view of the mechanism, parts arranged in normal positions. Fig. 3 is a view similar to Fig. 2, showing the trip-lever actuated to open the switch and the lock mechanism co-operating with the switch-bar to hold the switch open. Fig. 4 is a transverse sectional view on the line X X of Fig. 1, showing the switch-points open and the lock-arm in co-operation with the switch-bar. Fig. 5 is a detail view of the connecting-rod.

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.

The numeral 1 designates the rails of the main track, and the numeral 2 the rails of the siding-track. The switch-points are indicated at 3 and are preferably operated by means of ordinary switch-bar 4.

A bell-crank lever 5 is connected by a link 6 with the switch-bar 4, said link 6 connecting with one arm of the bell-crank lever 5, the other arm of said lever 5 being connected by a rod 8 with a trip-lever 9. The trip-le-

ver 9 is disposed at one side of the main track a suitable distance from the switch, and said lever is preferably pivoted between its upper and lower extremities, as shown at 10, to a suitable bar 11 at one side of the main track and secured preferably to the ties in any substantial manner. The lever 9 is normally held in a vertical position by means of a spring 12 or the like, and this lever is so located that the same may be struck and tilted by a shoe or other actuating member carried by the engine pulling the train of cars, said shoe or actuating member upon the engine being operable by the motorman or engineer, so that the same may be thrown into a position for operating the trip-lever 9 whenever it is desired to throw the switch-points 3 to take the siding 2. A spring 13 or similar means coöperates with the switch-bar 4, so that said switch-bar normally holds the switch-points in a position with the main line open. The spring 13 may directly connect with the bell-crank lever 5 to accomplish the above.

The lock mechanism for holding the switch-points open, so that the cars may take the siding 2, consists mainly of a depressible rail 14 or like rolling-stock-operated device, which rail 14 is located upon the inner side of one of the rails 1 of the main track and carried by laterally-extending arms 15, projecting from a rock-shaft 16, preferably mounted in suitable bearings and located at the side of the main track at which the trip-lever 9 and adjacent connecting parts are disposed. The depressible rail 14 is normally held above the top or ball of the adjacent main rail 1 by the provision of a spring 17, which is carried by the rock-shaft 16. An end of the rock-shaft 16 has a lock-arm 18 extended therefrom, said lock-arm being movable above an end portion of the switch-bar 4. The lock-arm 18 is provided at its outer end with a projection or lug 19, adapted to enter an opening 20 in or otherwise engaged with the switch-bar 4 to hold said switch-bar in a position with the switch-points 3 open to permit the cars to take the siding 2.

Describing the operation of the mechanism before set forth, when the train of cars is approaching the switch from the direction indicated by the arrow A if it is desired to take the siding 2 the motorman will operate the actuating member or shoe upon the motor-car, so that the same will strike the trip-lever 9 and tilt the same, pulling upon the rod 8

and actuating the bell-crank lever 5 to throw the switch-points 3 open. As soon as the wheels of the motor-car or engine come in contact with the depressible rail 14 said rail 5 14 is moved downwardly, rocking the shaft 16 and causing the lug 19 of the lock-arm 18 to engage the switch-bar 4, preventing the switch-bar from moving even though the trip-lever assumes its normal position as soon 10 as the device carried by the motor-car disengages therefrom. In other words, the wheels of the cars keep the rail 14 depressed as long as the cars are passing thereover, and the lock-arm 18 is thus held in engagement with 15 the switch-bar to hold the switch-points open to the siding until the last car of the train has taken the siding, whereupon the depressible rail 14 will move upwardly under the actuation of the spring 17, coöperating with the 20 rock-shaft 16, and the arm 18 will also disengage from the switch-bar, permitting the switch-bar to return to its normal position under the action of the spring 13.

It will be seen that under certain conditions the lug 19 of the arm 18 will be thrown 25 downwardly against the upper side of the switch-bar before the switch-points 3 have been entirely opened to the siding, and it is therefore desirable that this arm 18 be a 30 spring-arm in order that the same will cause the lug 19 to spring into the opening 20 as soon as the switch-bar 4 has been actuated by the lever 9 to cause the opening 20 to move beneath the lug 19, the rail 14 being 35 depressed.

The rod 8 is formed with a slot 8<sup>a</sup>, through which a pin at the lower extremity of the lever 9 passes, and this slot permits movement of the switch-bar when the latter returns to 40 its normal position without actuating the lever 9, previously returned to its normal position, after being struck by the car operating mechanism. Also when the cars approach 45 opposite to that indicated by the arrow the flanges of the wheels will force the switch-points open, and as soon as the wheels depress the rail 14 the lock-arm 18 will lock the switch-bar in a manner which has been above 50 described.

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

1. In switch-operating mechanism of the

type described, the combination of main rails, siding-rails, a switch-point, a switch- 55 bar, means for holding the switch-bar in a position with the switch-point closed, means operable by the rolling-stock for actuating the switch-bar to open the switch-point, a 60 rock-shaft, means for operating the rock-shaft, and a lock-arm carried by the rock-shaft for engagement with the switch-bar.

2. In switch-operating mechanism of the type described, the combination of main rails, siding-rails, a switch-point, a switch- 65 bar, means for holding the switch-bar in a position with the switch-point closed, means operable by the rolling-stock for actuating the switch-bar to open the switch-point, a 70 rock-shaft, a lock-arm carried by the rock-shaft for engagement with the switch-bar, said rock-shaft being operable by the rolling-stock, and spring means coöperating with the rock-shaft.

3. In switch-operating mechanism of the 75 type described, the combination of a main track, a siding-track, switch-points and a switch-bar, a trip-lever operable by the rolling-stock, a bell-crank lever connected with the switch-bar, a rod connecting the trip-lever 80 with the bell-crank lever, a rock-shaft, a depressible rail connected with the rock-shaft, a lock-arm projected from the rock-shaft, a lug extended from the lock-arm to engage the switch-bar, and spring means co- 85 operating with the switch-bar, the trip-lever, and the rock-shaft.

4. In switch-operating mechanism, the combination of a switch-bar, means normally holding said switch-bar in a predetermined 90 position, means operable by the rolling-stock for throwing the switch-bar out of its normal position, and means actuated by the rolling-stock and including a spring-actuated spring-arm adapted to positively engage with the 95 switch-bar after it has been thrown out of its normal position, said arm being automatically operable to release the bar when the rolling-stock has passed the switch to permit said bar to return to its normal position. 100

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

NEWTON K. BOWMAN. [L. S.]

Witnesses:

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UNA C. B. MORROW.