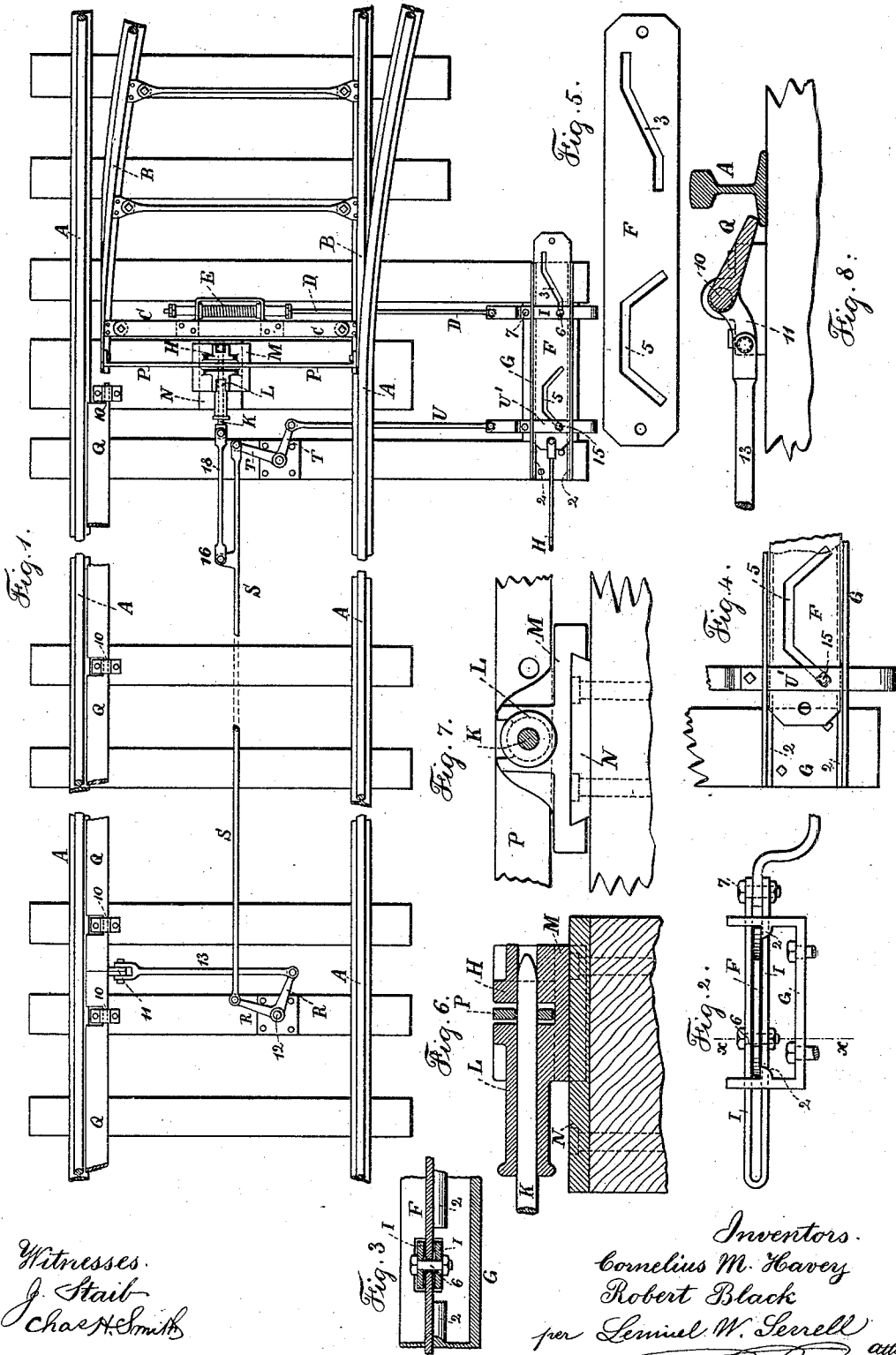


(No Model.)

C. M. HAVEY & R. BLACK.  
SWITCH LOCK FOR RAILWAYS.

No. 431,208.

Patented July 1, 1890.



Witnesses.  
J. Stair  
Chas. H. Smith

Inventors.  
Cornelius M. Havey  
Robert Black  
per Lemuel W. Serrell atty.

# UNITED STATES PATENT OFFICE.

CORNELIUS M. HAVEY AND ROBERT BLACK, OF NEW YORK, N. Y.

## SWITCH-LOCK FOR RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 431,208, dated June 1, 1890.

Application filed December 2, 1889. Serial No. 332,178. (No model.)

*To all whom it may concern:*

Be it known that we, CORNELIUS M. HAVEY and ROBERT BLACK, citizens of the United States, residing in the city and State of New York, have invented an Improvement in Switch-Locks for Railways, of which the following is a specification.

The object of this invention is to simplify the construction of the parts made use of in moving and locking the switches of railways, whereby the parts will be less liable to injury while in use or to obstruction from snow and ice, and the expansion and contraction of the switch-rails will not interfere with the freedom of movement of the respective parts.

In the drawings, Figure 1 is a plan view of the improvement as applied to the switch on a railway-track. Fig. 2 is an elevation endwise of the bed-plate and slotted cam-plate. Fig. 3 is a longitudinal section at the line *xx*, Fig. 2. Fig. 4 is a partial plan view of the slotted cam-plate and bed-plate. Fig. 5 is a plan view of the slotted cam-plate detached. Fig. 6 is a longitudinal section through the bolt-socket, slide-rest, and base. Fig. 7 is an elevation of the same and section of the bolt at right angles to Fig. 6; and Fig. 8 is a cross-section of the rail and detector-bar, showing crank-arm and link-connection.

The track-rails are represented at A, and the movable switch points or rails at B, and these switch-rails are connected together by the cross-bar C, and the rod D is made use of for giving motion to the switch-rails, and usually there is a spring E, intervening between the rod D and the cross-bar C, for pressing the switch-rails in either one direction or the other tightly against the inner face of one of the track-rails, in order that there may not be vibration or noise at the points of contact in consequence of the jar from an approaching train.

The slotted cam-plate F is supported upon ledges 2 upon the bed-plate G, and this slotted cam-plate is moved endwise by a rod H to any suitable lever or switch-moving device. The bed G is permanently fastened to the cross-ties of a railway, and the slotted cam-plate F is to free to move endwise upon the ledges 2, and in this cam-plate F are slots, the slot 3 having end portions that are parallel with the edges of the cam-plate, and a

diagonal portion between such parallel end portions, and the slot 5 has a central portion that is parallel to the edges of the plate, and two end portions that stand diagonally in opposite directions, for a purpose hereinafter named.

The slide-bar I is folded double, with an opening between the two portions thereof, in which the cam-plate F can be moved freely, and there are mortises through the vertical flanges of the bed-plate G, through which this slide-bar I passes freely, and there is a pin 6 passing vertically through the two parts of the vertical slide-bar and through the slot 3, and there is a bolt 7 uniting the end of the slide-bar I with rod D; hence when the slotted cam-plate F is moved endwise the switch-bars B are moved and held in either one position or the other by the action of the cam-slot upon the pin 6.

In railway-switches of the general character before mentioned a bolt has been made use of, acting longitudinally of the track and passing into a cross-bar, uniting the two ends of the switch-rails, so as to hold such switch-rails in either one position or the other; but difficulty has been experienced not only in operating the bolt itself, but also in consequence of the expansion and contraction of the switch-rails moving the cross-bar bodily in one direction or the other. To overcome this difficulty, we have provided a locking-bolt K in a stock L upon the slide-rest M, that is supported by a dovetailed base N, that is permanently secured to one of the cross-ties, and the cross-bar P, that is connected with the moving ends of the switch-rails B, passes in between the end of the stock L and the vertical flange H upon the slide-rest M; hence as the switch-rails B expand or contract, the slide-rest M and the parts upon it will be moved bodily in one direction or the other upon the dovetailed base N, and the cross-bar P is thus prevented from becoming bound by pressure against either the stock L or the vertical flange H, as has frequently occurred heretofore, not only in consequence of the expansion of the switch-rails, but also from the action of frost in slightly displacing the cross-ties or from a creeping motion that is sometimes given to the rails by a passing train.

Detector-bars have heretofore been made

use of adjacent to a switch, and such detector-bars have in some instances been pivoted near one edge in order that the other edge, which is adjacent to the rail, may be raised or lowered. We have shown such a detector-bar at Q, pivoted at 10 and provided with a crank-arm 11, by which the edge of the detector-bar that is adjacent to the rail may be raised or lowered.

The detector-bar we make use of is of ordinary character, and the object is to prevent the switch being moved when there is a train upon the switch or adjacent to the same, because the normal position of the detector-bar is depressed and out of the way of the flanges of the wheels; but when there are wheels adjacent to such detector-bar, the said detector-bar cannot be raised, and hence the parts of the switch cannot be moved until the train passes sufficiently far from the switch. The bent lever R, pivoted at 12 and connected by a link 13 to the crank 11, are the devices made use of for moving the detector-bar, and the longitudinal rod S, connected to one end of the bent lever R, extends to the bent lever T, and from this a rod U extends to the second folded slide-bar U', the construction of which is the same as the folded slide-bar I, and it passes across through mortises in the vertical flanges of the bed G above and below the slotted cam-plate F, and the pin 15 passes through such folded slide-bar and through the slot 5 in the cam-plate F, and upon the longitudinal rod S is a knuckle-joint 16 and connecting-rod 18 to the end of the locking-bolt K. It will now be understood that when the switch is in either position and a motion is given endwise to the cam-plate F, the diagonal portion of the slot 5 acts upon the pin 15 to move the horizontal slide-bar U' and rod U, and withdraw the locking-bolt and move the detector-bar simultaneously, and during this movement the pin 6 is not moved, because it is in the parallel end portion of the slot 3; but the further movement causes the diagonal part of the slot 3 to act upon the pin 6 and shift the switch-rails in either one direction or the other, and as the parallel end portion of the slot 3 receives the pin 6, the pin 15 is moved in the opposite direction by the diagonal end portion of the slot 5, thereby restoring the locking-bolt into position by passing it through the second hole in the cross-bar P and at the same time lowering the detector-bar Q and restoring the parts to their normal position.

The locking-bolt K is usually applied on a cross-tie near the moving end of the switch,

and it is advantageous to connect the moving end of the switch adjacent to the locking-bolt to the rod D that moves such switch laterally, and it is also advantageous to have the bar U that moves the lock-bolt near to the bar D in order that the cam-plate F that gives motion to these bars D and U may not be too long. These conditions render it difficult to make a direct connection from the end of the bent lever T to the bolt K; hence by providing the knuckle 16 upon the rod S, the connecting-rod 18 can be of a suitable length for connecting the rod S and bolt K, even when the bent lever T is close to the bolt K.

We claim as our invention—

1. The combination, with the movable switch-rails and cross-bar, of a locking-bolt, a stock and slide-rest for the locking-bolt, and a dovetailed or undercut base fastened to the cross-tie and receiving the slide-rest, whereby the stock of the locking-bolt is free to move longitudinally of the track upon the dovetailed base, substantially as set forth.

2. The combination, with the movable switch-rails and the cross-bars between the same, of the locking-bolt, a cam-plate having two slots in the same, a bed for the cam-plate, folded slide-bars passing through mortises in the flanges of the bed-plate and above and below the slotted cam-plate, a connection from one of the folded slide-bars to the movable switch-rails, a bent lever, and a connection from the same to the other folded slide-bar, the rod S, knuckle 16, and link 18, forming a connection between the bent lever and the locking-bolt, substantially as set forth.

3. The combination, with the movable switch-rails and the cross-bars between the same, and the detector-bar and its crank-arm, of the locking-bolt, a cam-plate having two slots in the same, a bed for the cam-plate, two slide-bars passing through mortises in the flanges of the bed-plate, a connection from one of the slide-bars to the movable switch-rails, bent levers and connections between them and from one of the bent levers to one of the slide-bars and from the other bent lever to the crank-arm of the detector-bar, and a knuckle-joint and link to the locking-bolt, substantially as specified.

Signed by us this 26th day of November, 1889.

C. M. HAVEY.  
ROBERT BLACK.

Witnesses:

GEO. T. PINCKNEY,  
WILLIAM G. MOTT.