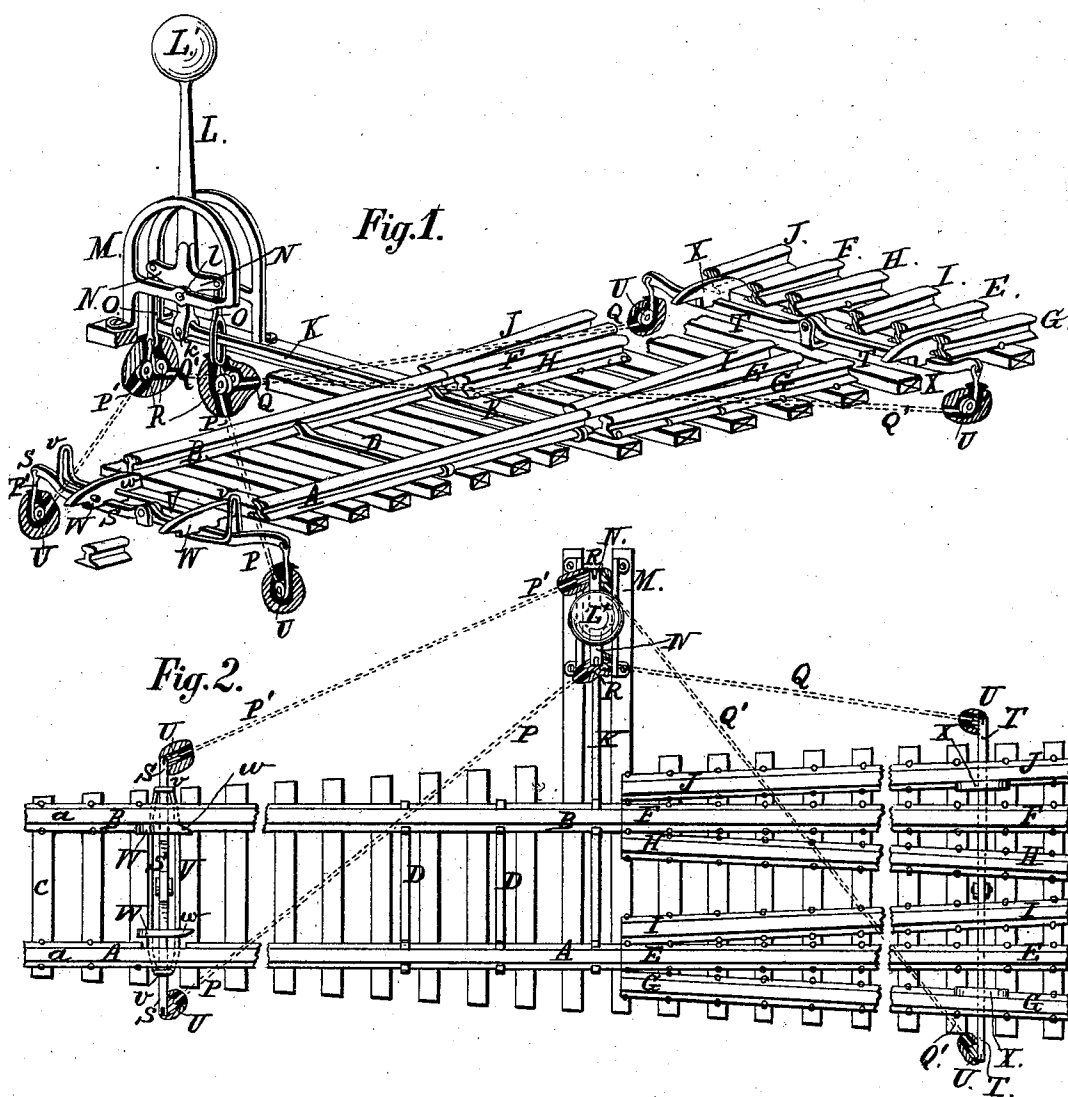


C. H. KOCK.
Railway-Switches.

No. 148,220.

Patented March 3, 1874.



ATTEST:

Geo. L. Swin

Walter Allen

INVENTOR:

Christian H. Kock
By Knights Bros
Atty.

UNITED STATES PATENT OFFICE.

CHRISTIAN H. KOCK, OF ST. LOUIS, MISSOURI, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO JAMES EDWARDS AND JOHN V. HOGAN, OF SAME PLACE.

IMPROVEMENT IN RAILWAY-SWITCHES.

Specification forming part of Letters Patent No. **148,220**, dated March 3, 1874; application filed August 13, 1873.

To all whom it may concern:

Be it known that I, CHRISTIAN H. KOCK, of St. Louis, St. Louis county, Missouri, have invented a certain Improvement in Automatic Railway-Switches, of which the following is a specification:

My invention relates to an apparatus for operating the switch by the weight of the locomotive; and my invention consists in the following arrangement of devices for that purpose: The switch-rails are connected to the switch-lever in the ordinary manner. Upon the switch or signal lever are horizontal arms, to whose ends are attached chains that pass beneath pulleys, and extend horizontally to pulleys beneath the sides of the track, from which they extend upward to levers fulcrumed at the middle of the track, and lying transversely thereto. Upon these levers are blocks, which are acted upon by the flange of the locomotive-wheel, to change the switch, by means of the chains acting on the switch-lever. The transverse lever in the single track leading to the switch from one direction, has upon it a sliding frame, upon which the blocks are placed which are acted on by the wheel-flanges. This is to allow either block to be brought in position to be acted on by the wheel-flange to turn the switch-rails to the desired side track.

Figure 1 is a perspective view of my improvement. Fig. 2 is a plan of the same, part of the track being removed in each case to bring the transverse levers on which the wheel-flanges act directly into the limit of the drawing.

A B are the switch-rails of the single or main track, arranged in the ordinary manner, being rigidly secured at one end to the ties C, at *a a*, and detached together at the moving end by tie-bars D'. E F are the rails of the middle or main track, directly in line with the track A B, when the latter is in its normal situation. G H and I J are the rails of the side or converging tracks. The switch-rails A B may be sprung over to either side by my improved mechanism, (operated by the locomotive-wheels,) to bring them in conjunction with the rails of either side track; and when released from the action of the mechanism and the weight of the train, the rails A B, by their

flexibility, spring back into line with the main or middle track E F. K is the draw-bar of the switch, hinged at *k* to the bottom of the signal-lever L, fulcrumed at *l* to the stand M. N N are cross-arms, extending from the lever L and connected by links O to chains P P' Q Q'. These chains pass beneath pulleys R; extend respectively to the levers S and T, lying transversely to and beneath the track, at a proper distance from the switch to enable the moving of the same in time for the passage of the train. The horizontal parts of the chains P P' Q Q' may consist of simple metallic bars, as no flexibility is required in these parts. The chains P P' Q Q' pass beneath pulleys U under the ends of the levers S and T. Upon the lever S is a sliding frame, V, whose ends *v* are upturned, so as to be acted on by adjustable projections at the sides of the "cow-catcher" of the locomotive, the projections being adjusted in position to operate the sliding frame by the engineer. The salient part of the projection may consist of an anti-friction roller of twelve inches, more or less, in diameter, to act easily on the upturned ends *v*. Upon the sliding frame V are blocks W, whose upper sides are convex in the direction of the track. Either of the blocks W may, by the sliding of the frame V, be brought into position to be acted on by the flange of the locomotive-wheels, so as to depress that end of the lever, the blocks being placed at such a distance asunder that the flanges of the wheels, at opposite sides of the axle, may pass on the outer sides of both of them when neither of the blocks is in contact with the rails, the lever S being inoperative when the train runs through on the main track, in which case the sliding frame V is in its central position, and the blocks W out of the lines of the wheel-flanges. The chains Q Q' extend from the arms N N, in a manner substantially similar to those P P', and are connected to the lever T, which has fixed blocks X, which are placed close to the inner sides of the rails G J, so that the flange of a wheel passing along either of those rails would depress that end of the lever and draw the switch-rails A B into conjunction with that side track of which the said rail forms a part.

The operation of my switch is as follows: The switch-rails may be moved in any manner by the lever L, and when left free always spring into line with the main track E F. Supposing a locomotive to be approaching the switch or the track A B, and it is desired to continue on the main track, the projections on the cow-catcher are made to extend an equal distance on each side, so as to restore the sliding frame V to its central position, (if it is not there already,) so that both blocks W will be so far from the rails as to be inside the course of the wheels, so that neither block will be depressed by a wheel. The rails A B will then continue in conjunction with those E F, and the train run straight onto the latter. If it is desired to run onto either of the side tracks, the projection on that side of the cow-catcher is forced outward before reaching the lever S, which brings the projection in contact with the upturned end V upon that side, and the block W on that side is brought in contact with the rail, so that the wheel-flange will depress it, and with it that end of the lever, and one chain, say P', being slacked up and the other, P, drawn up, the switch-rails A B are carried over to the side track I J, through the means of the lever L and draw-bar K. By reversing the position of the projections on the cow-catcher, and, consequently, bringing the other block W in line with the wheel-flange, the train may be carried, by a reverse motion of these parts, onto the other side track G H. On the other hand, when the train is approaching the switch from the opposite direction, if it is running on the main track E F, it runs straight through onto the track A B, but if it be approaching on either of the sidetracks, it turns the switch-rails A B to that track in the following manner: Supposing the train to be approaching on the track G H, the wheel-flange of the locomotive depresses the block *v* in contact with the inner side of the rail G, and the chain Q' is slacked up, and that, Q, drawn up,

so as to throw over the upper ends of the lever L from the track, and force the rails A B in the contrary direction. In case the train is approaching on the track I J, the operation of the lever T, chains Q Q', lever L, and switch-rails A B is reversed, and the switch-rails brought in conjunction with the track I J. The end *w* of the blocks W upon the slider V are beveled on the outside and not on the top, so that a wheel-flange impinging against that end of the block first will not act on the block to operate the switch, but will merely force the block transversely from the rail, out of the line of the flange. The weight L', by its momentum, insures the switch-rails A B being carried fully to their proper position, in conjunction with the side tracks, when moving to either side. The weight L' also tends, by its gravity and inertia, to prevent the rapid movement of the switch-rails A B from their position in conjunction with a side track, when there may for a short period be no wheels on the moving end of said rails, to hold them in place; but the strength and flexibility of the rails will always be sufficient to restore the switch-rails A B to their normal position, in line with those E F, when the train has passed on.

I claim—

1. In combination with the switch-rails A B, bar K, lever L, and stand M, the chains P P' Q Q', levers S T, slider V, and blocks W, all substantially as set forth.

2. The weight L', arranged and operating substantially as described, in combination with the lever L, chains P P' Q Q', levers S T, sliding frame V, blocks W, bar K, and switch-rails A B, for the purposes specified.

In testimony of which invention I have hereunto set my hand.

CHRISTIAN H. KOCK.

Witnesses:

SAMUEL KNIGHT,
ROBERT BURNS.