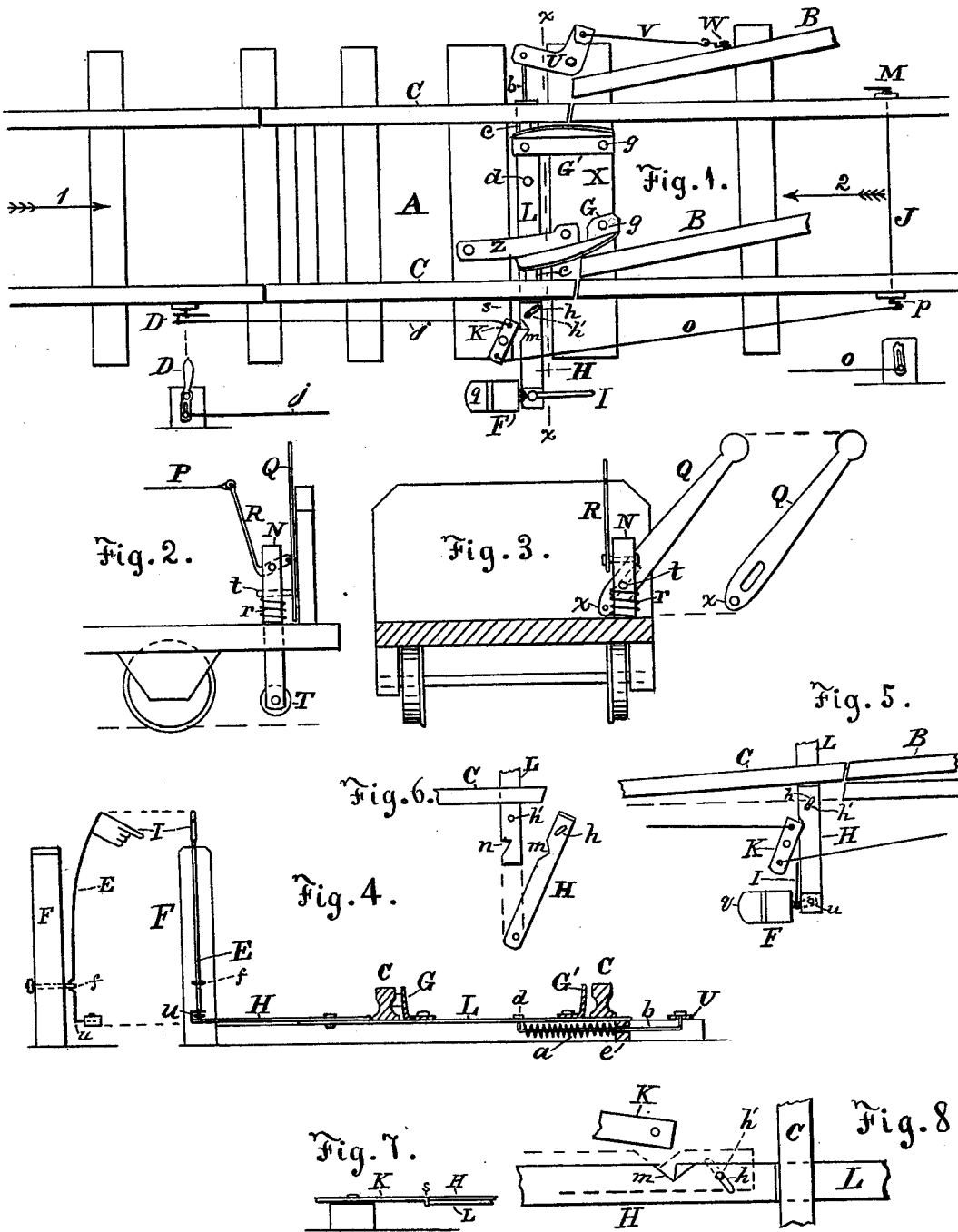


B. RICE.  
Railway Switch.

No. 213,347

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## IMPROVEMENT IN RAILWAY-SWITCHES.

Specification forming part of Letters Patent No. 213,347, dated March 18, 1879; application filed November 30, 1877.

*To all whom it may concern:*

Be it known that I, BYRON RICE, of West Schuyler, in the county of Herkimer and State of New York, have invented certain new and useful Improvements in Railroad-Switches and the Means and Mode of Operating the Same; and do hereby declare that the following specification contains a full description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, in which said drawings—

Figure 1 represents a plan of my improved railway-switch. Figs. 2 and 3 represent side and section views of a car provided with means for operating the switch. Fig. 4 is a section taken on line *xx* of Fig. 1. Fig. 5 illustrates, in plan, the pivoted lever or catch K and bars connecting with the movable rails. Fig. 6 represents the notched bars H and L detached. Fig. 7 illustrates an edge view of the locking-catch K. Fig. 8 further illustrates catch K and connections.

The object of my invention is to provide for railways a switch and signal mechanism that may be operated by either the engineer, conductor, or switchman, and which shall be efficient in preventing accidents caused by the cars running from the track or upon the wrong track.

A designates the main line of a railway, having movable rails C, a lateral movement of such rails being effected by a movement of the bar L, placed transversely under the rails and secured thereto. B indicates side rails leading to another track, to which the rails C may be shifted.

The guard-rails G and G' are placed opposite the meeting ends of the fixed and movable rails and bolted to bar L at *c*, the upper edges of guard-rails G and G' being somewhat rounded and extending about as high as the rail C, so as to be operated against by the car-wheels. (See Fig. 4.) A lateral movement of the said guard-rails shifts the rails C to the desired position. Such lateral movement of the bar L and rails C in one direction is caused by the spring *a* on draw-rod *b* under the bar L, said rod connecting with bar L at *d*, and the spring bearing against a perforated block, *e*, through which rod *b* passes. As a precaution against derailment by reason of the spring *a* failing to act, the guard-rail G' operates (if the switch be set to the side track) to reset it

by a train approaching from the right on the main line. A tie-bar, Z, bolted to sleepers, as shown, serves to hold in position the bar L and connecting parts.

The bar L, near one end, has a notch, *n*, as shown, one side of which is square to the edge of the bar, and the other side of which is inclined from the rail. It also has a loose connection with the horizontal bar H, the latter having a diagonal slot, *h*, through which the connecting-pin *h'*, fastened to L, passes. When shifting the notch from the siding to main line by hand this diagonal slot *h* causes bar H to make a slightly-inclined movement against catch K, pressing it from the notch *n*.

It will be observed that the notch *n* in bar L is formed to act as a stop against the end of the catch K, and the notch *m* in bar H has two oblique edges, like the tooth of a saw, so that the bar H, having a slightly independent movement, caused by the slot *h* and pin *h'*, as indicated in Fig. 8, pushes the catch K from the notch *n*. One of these bars, usually L, extends under the other a short distance beyond the point of connection, and the other bar, H, is pivoted at its outer end to the foot *u* of the vertical index standard and lever E, which is coupled to the post F by means of an eyebolt, *f*, passing through the post and secured by a nut, as shown. An indicator, I, is fixed to the upper end of E, the latter being somewhat curved to incline forward, as shown, and bent at the point where it is held by the eyebolt *f*. The end of bar H is bent over the foot *u* of E, which is pivoted to it, so as to form a stop and limit the horizontal turning of the indicator to about ninety degrees. The standard E has also a swinging movement, the eyebolt *f* turning in the post F, which facilitates the operation of bar H. When the rails C are shifted to rails B the indicator I points in a direction across the track, and when the rails C are in line with the main track A the indicator points in a direction parallel with it.

The switch-tender, standing at post F, may use the standard E as a lever to move bars H and L in shifting rails C. The post is provided with a seat, *g*, for the use of the switch-tender.

K is a bar, which is pivoted at its center to a sleeper, and forms a catch to hold the bars H and L in position when rails C are shifted

to B. When thus shifted the catch K is turned so that its end *s* engages with the notch *m* in bar H and with the notch *n* in bar L, one of these notches, in certain adjustments of the bars, being directly over the other, and the bar K, having the end *s* turned down, as shown in Fig. 7, or being made straight, in which case it should be made thick enough to sit in both notches and against both bars.

D indicates a trigger, pivoted to a rail of the main track, or to a proper support on the outside thereof, and at a suitable distance from the rail C, to allow time for the shifting movement of rails C after the catch K has been withdrawn and before the train reaches said rails. The lower end of trigger D is formed with a crank, which connects by means of rod *j* with one end of pivoted bar K, so that by a movement of trigger D, by means hereinafter stated, the catch K is withdrawn from bar L, and the rails C are shifted from B to A by the spring *a*.

Another trigger, M, located at the outside of one of the main-line rails on the other side of the switch, as shown, is fixed to the transverse rod J, which is provided with a crank, *p*, and connects by means of rod *o* with the other end of pivoted bar K, so that the bar K may also be unlocked by a movement of said trigger M.

To enable the engineers or conductors of trains to operate the switch mechanism by moving the triggers, the locomotive or advance car is provided with a vertically-sliding post, N, placed at the end of the car, and passing through an aperture in the platform or otherwise, which is held in position, so that it goes directly over the trigger. The post N is supported by a spiral spring, *r*, which permits it to be pushed downward far enough to strike the trigger as the train passes when approaching the switch, the post being provided with a roller, T, at its lower end.

A lever, R, is pivoted to the frame of the car, and is also pivoted to the post N, so that by a movement of the lever the post is readily moved down, so that the roller T will strike the upward-projecting trigger.

A signal, Q, has its lower end pivoted to the car at *x*, a bolt, *t*, passing from the post N into a slot in the signal Q, so that when the post is moved down the signal is also depressed, thus indicating said movement. (See Fig. 3.)

Supposing the bar L to be locked in position by the catch K, so as to hold the rails C in connection with the side rails B, and a train is approaching the switch, as indicated by the arrow 1 in the drawings, and the conductor or engineer desires to shift the rails C from B to A, he draws the cord P, attached to lever R, thus lowering the post N, so that the trigger D is struck by the roller T, and the trigger, turning on its pivot, draws the rod *j*, withdrawing the catch K and releasing the bar L, and the rails C are immediately shifted by the spring *a*.

In like manner, when a train is approaching from the opposite direction, as indicated by the arrow 2, the catch K may be withdrawn by means of trigger M and rods J and O.

U indicates a rectangular lever, pivoted at or near its apex to a sleeper, one end of the lever connecting with the rod *b*, upon which is the spring *a*. The other end of lever U connects by means of a rod, V, with a trigger, W, pivoted at the outside of a branch rail, B, to be operated by means of the post N when a train is approaching the switch over the side rails B.

It will be seen that, by the operation of the lever U, by the drawing of rod V the movable rails C may be shifted to the rails B, the spring *a* being contracted.

When the rails C are shifted to B, the notch *n* in bar L is brought in position to receive the catch K, and the locking is effected by the end-thrust caused by the weight of the rods *j* and *o*, the rod *j* connecting with the crank at the lower end of pivoted trigger D, and the rod *o* connecting with crank *p* at the end of rod J.

The end-thrust of the rods upon catch K will be sufficient to accomplish this, even readjusting the bar H from position shown by dotted lines in Fig. 8 (in which it is left by the operation of trigger W) to that shown in Fig. 5, so locking the switch in connection with the siding for a train coming therefrom.

I claim—

1. The post N, connected with a car, as shown, and provided with a lever, R, a spring, *r*, and roller T, in combination with pivoted signal Q and bolt *t*, substantially as and for the purposes described.

2. The trigger D, with rod *j*, connecting with pivoted bar K, the connecting-bars H and L, having the notches *m* and *n* and diagonal slot *h*, and pin *h'*, and the spring *a*, to move bar L, combined and operating substantially as set forth.

3. The pivoted catch-bar K, connecting with pivoted triggers D and M, which are provided with cranks, as shown, in combination with the notched bars H and L, having a loose connection in slot *h*, the guard-rail G being secured to the bar L, substantially as set forth.

4. In the switch mechanism, the index-standard and lever E, coupled to the post F, and bent, as shown, at the coupling-point, said lever E having the foot *u*, in combination with bar H, as herein specified.

5. In combination with the notched bars H and L, connected, as shown, and provided with locking mechanism, as described, the rod *b*, having spring *a*, and the rectangular lever U, connecting with trigger W, substantially as and for the purposes described.

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