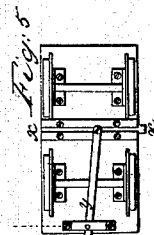
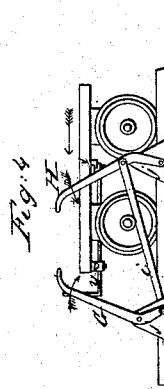
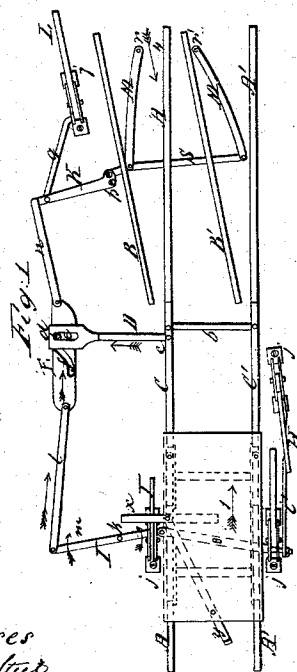
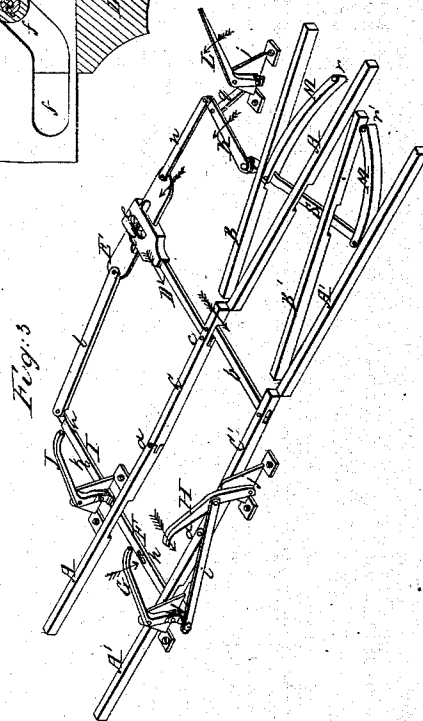
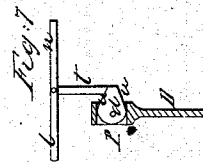
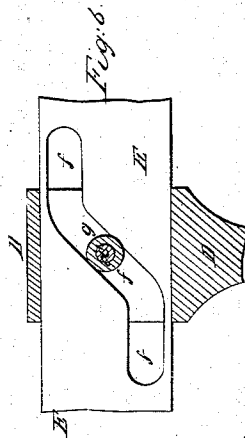
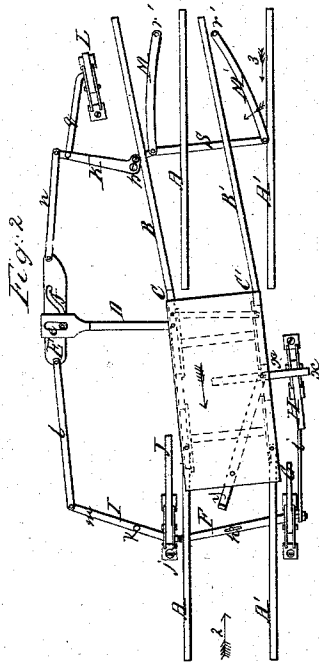


E. B. Lake.

Railroad Switch.

N^o 62,041.

Patented Feb. 12, 1867.



Witnesses
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John Parker

Inventor
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By his Atty.
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United States Patent Office.

EZRA B. LAKE, OF BRIDGEPORT, NEW JERSEY.

Letters Patent No. 62,041, dated February 12, 1867.

IMPROVED RAILWAY SWITCH.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, EZRA B. LAKE, of Bridgeport, Gloucester county, New Jersey, have invented an improvement in Railroad Switches; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention consists of certain devices, fully described hereafter, by which I am enabled, by the aid of a rod projecting from the side of the car, to turn the switch rails from the main track to the siding, or *vice versa*, and by the same means, after the car has passed, to restore the switch rails to their original position, thus dispensing with the services of a switch-tender.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation. On reference to the accompanying drawing, which forms a part of this specification—

Figures 1 and 2 are plan views of my improved switch.

Figure 3 is a perspective view of the same.

Figure 4, a side view, showing two of the operating levers.

Figure 5, an inverted plan view of a car, showing the device by which the switch is operated.

Figure 6, a detached view of part of my invention, drawn to an enlarged scale; and

Figure 7, a modification of part of my invention.

Similar letters refer to similar parts through the several views.

A and A' are the permanent rails of the main track; B and B' the rails of the turn-out, and C and C' the switch-rails. The latter are so connected to the main track at *a a* (fig. 3) that their outer ends can be moved either to the position shown in fig. 1, where they coincide with the main-track rails A and A', or to that shown in fig. 2, where they coincide with the turn-out rails B and B'. One end of a bar, *b*, is jointed to one rail of the switch, and the other end of the bar to the opposite rail. A bar, D, situated at right angles to the main track, is connected to the switch-rail C, at the point *c*, and is maintained in its position and allowed a limited longitudinal movement on a guide-pin, *d*, secured to a suitable foundation, and passing through a longitudinal slot, *e*, formed in an enlargement at the outer end of the said bar D. Through a horizontal slot formed in this enlargement of the bar D, and at right angles to the slot *e*, passes a plate, E, in which is cut a slot, *f*, partly straight and partly inclined, as will be best observed on reference to fig. 6. The pin *d*, which maintains the bar D in position, passes also through this slot, and a roller, *g*, turning upon the said pin, serves to reduce the friction when the bar and plate are operated. It will be evident, on reference to fig. 6, that by reason of the inclination of the slot *f* the operation of the plate E will result in its combined longitudinal and lateral motion, and in the operation of the switch-rails C and C'. A lever, F, figs. 2 and 3, having its fulcrum at *h*, passes under the rails A and A' of the main track, and to one arm of this lever is pivoted the slot of an operating lever G. To the same arm of the lever F is jointed one end of a rod, *i*, its opposite end being connected to a second operating lever H, (see figs. 3 and 4,) and each of the operating levers is hung to a frame, *j*, secured to suitable foundations. The lever F is connected to the short arm of a horizontal lever I, which has its fulcrum at *k*, and is operated by a lever, J, similar to the operating lever G, above described. The long arm of the lever I is connected by a rod, *l*, to one end of the plate E, the opposite end of which is connected by a rod, *n*, to a lever, K, which is pivoted at *p*, and operated by an upright lever, L, through the medium of a rod, *q*. Two curved arms, M and M', the former situated between the rails A and B, and pivoted at *r*, and the latter between the rails A' and B', and pivoted at *r'*, have their outer ends connected together by a rod, *s*, which is hung to the short arm of the lever K. The device for operating my improved switch is shown in fig. 5, and consists of a bar, *x*, moving in transverse guides secured to the under side of the car, and operated by a hand-lever, *y*. By means of this lever either end of the bar *x* may be projected from the side of the car so as to strike one of the operating levers, and thus move the switch-rails in the manner I will now proceed to describe.

When the main track is continuous, as shown in fig. 1, the operating levers, with the exception of the lever J, are depressed. Consequently a car having its bar, *x*, projected, as shown in fig. 1, and moving on the main track in the direction of the arrow 1, will strike and depress the lever J; the lever I, rod *l*, and plate E, will consequently be moved in the direction of their arrows, and in consequence of the inclination of the slot *f*,

the positions of the bar D, and switch-rails C and C' will be changed to that shown in fig. 2. The switch-rails are effectually locked either in this position or in that shown in fig. 1, as the pin *d* is in a straight portion of the slot *f*, and it is only when the switch-rails are being moved from the siding to the main track, or *vice versa*, that the pin is in the inclined portion of the slot. The lever J is depressed sufficiently by the bar *x* to allow the latter to pass over it when the car moves on the switch-rails and siding, whence it still continues its motion, and its bar, *x*, which has been projected but half way, passes the lever I without striking it. The bar *x* attached to the last car of the train, projected to its full extent, strikes and depresses the lever L, as shown in fig. 3, and by means of the rod *g*, lever K, and rod *n*, moving in the direction of their arrows, fig. 3, the plate E and switch-rails are returned to their original positions, and the main track is again continuous. After having passed the lever L, the bar *x* is drawn inwards beneath the car, and the lever *y* locked, so that no accidents may occur. It will be evident that when it is desired to transfer a single car from the main track to the siding or turn-out, it is necessary to project its bar to full extent, so that it may strike both of the operating levers, but that when a train is to be transferred the operating bars of the first and last car only are employed, the bars of the intermediate cars being locked beneath the same. The extent of the movement of the operating levers depends in a great measure upon the height of the bars *x* above the rails, consequently the bar of a heavily loaded car will turn the levers more than the one attached to an empty car; to provide for this extended movement, the straight portions of the slot *f*, cut in the plate E, are made of a sufficient length. If by any accident, after a car has passed on to the siding, the switch-rails should remain turned, as shown in fig. 2, a car upon the main track, running in either direction towards the switch, would turn the switch-rails to their proper position by the following means: If the car be moving in the direction of the arrow 2, fig. 2, the bar *x* is projected so that it shall strike and depress the lever G. The levers F and I are turned upon their fulcrums, and by means of the devices before described, the switch-rails are turned until they coincide with the rails of the main track, while, as the rod *i* connects the operating levers G and H, they are simultaneously depressed and the bar *x* passes over them. When, however, the car traverses in the direction of the arrow 3, fig. 2, and the switch-rails are turned to the siding or turn-out, the operation is somewhat different. In such a case, the flange of the first wheel upon the track A' strikes the outer end of the arm M' and turns the same upon its pivot, *r'*, then, by means of the rod *s*, the lever K, and the parts connected with it, are operated, and the switch-rails again turned until they coincide with the rails of the main track. If a car be running upon the siding in the direction of the arrow 4, fig. 1, the flange of the foremost wheel upon the rail B will strike the end of the arm M, and turn the latter upon its pivot *x*; then, as before described, by means of the rod *s*, and lever K, the switch-rails will be operated and turned to the siding. The car passes on to the switch rails, as shown in figs. 2 and 4, and its rod *x* being projected strikes the lever H, the latter is depressed, and by means of its rod *i*, the levers F and I, and rod *l*, making the connection with the plate E, are operated, and the switch-rails turned to their original position. In the modification of part of my invention, shown in fig. 2, a cam, P, turning upon the pin *d*, is used instead of the slotted plate E. The cam is operated by an arm, *t*, to the end of which are hung the rods *l* and *n*. The surfaces *u u* of the cam P take the place of the straight portions of the slot *f*, the bar D being locked by the same at either end of its movement.

I claim as my invention, and desire to secure by Letters Patent—

1. The rails A and A' of the main track, and the rails B and B' of the turn-out, and switch-rails C and C', in combination with the operating lever J, and the devices herein described, or their equivalents, for communicating motion from the said operating lever to the switch-rails.
2. The operating levers G, H, and D, and their connections, in combination with the switch-rails.
3. The combination of the above-mentioned operating levers with the movable bars *x*, situated beneath the cars.
4. The combination of the slotted bar D, eccentric P, its arm *t*, and rods *l* and *n*.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

Witnesses:

WM. HALL WAXLER,
W. J. R. DELANY.

EZRA B. LAKE.