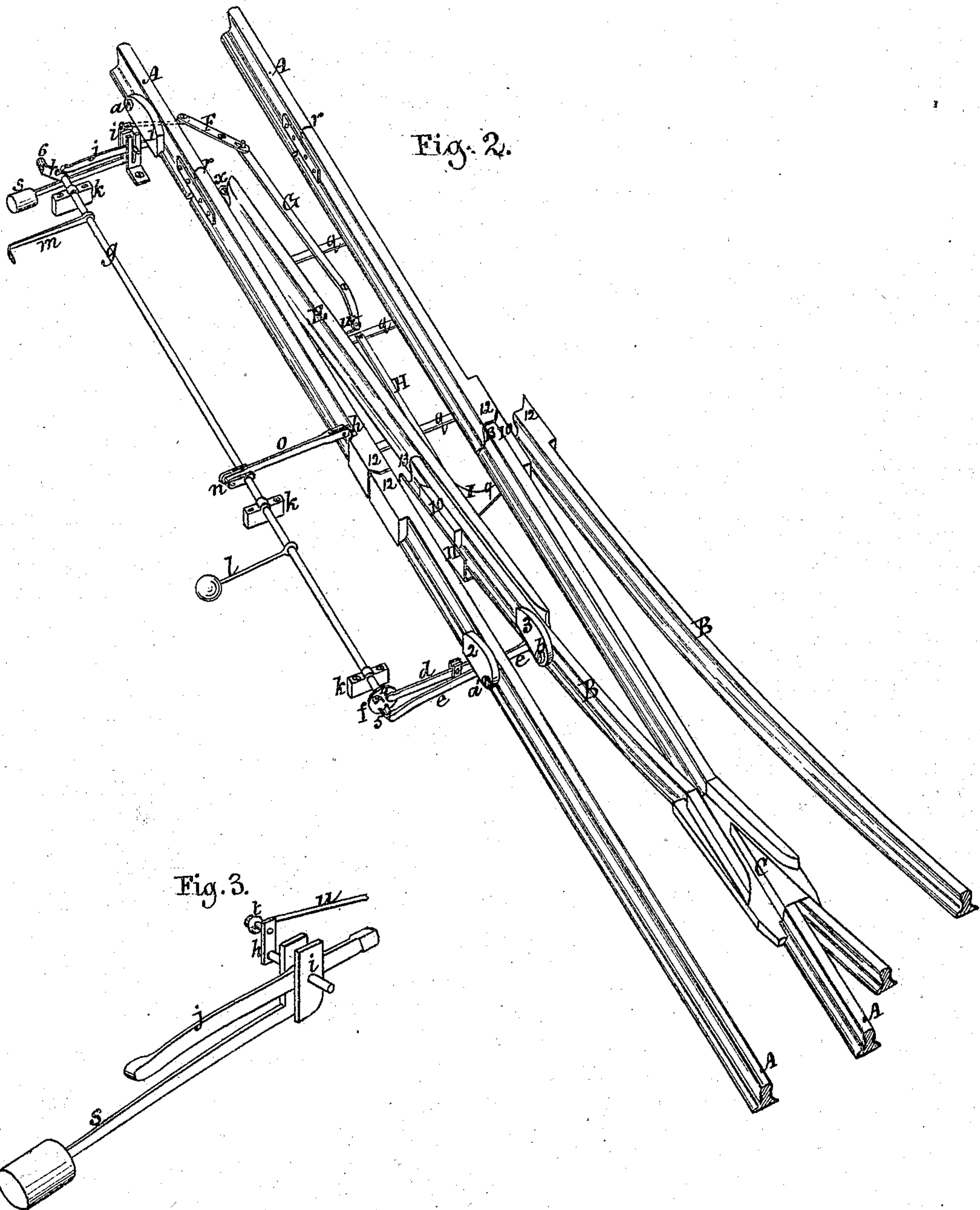


JOHN J. PARDEE.

Improvement in Railway Switches.

No. 125,611.

Patented April 9, 1872.



Witnesses.
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN RAILWAY SWITCHES.

Specification forming part of Letters Patent No. 125,611, dated April 9, 1872.

To all whom it may concern:

Be it known that I, JOHN JAY PARDEE, of the city, county, and State of New York, have invented certain new and useful Improvements 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 making a part of this specification, in which—

Figure 1 represents a top plan of my railroad switch with so much of the main tracks shown as will illustrate my invention. Fig. 2 represents a perspective view of the same. Fig. 3 represents, on an enlarged scale, some of the details of the switch not so distinctly seen in the other figures.

Similar letters of reference, where they occur in the separate figures, denote like parts in all of the drawings.

The object of my invention is to so construct and arrange the several devices for operating and controlling railroad switches as that, while they are readily operated by hand, they may also be operated by the locomotive as it is about to be switched from one track to another; and my invention consists, first, in combining with certain rising and falling cams pivoted to the rails in the path of the passing wheels of the locomotive mechanical appliances adjacent thereto, and arranging them with regard to the movable switch, so that the weight of the wheels passing over said cams will shift the switch; and my invention further consists in combining with the rolling shaft or rod that moves the switch an overpoise, the dropping of which facilitates or completes the movement of said rock-shaft in so moving or shifting the switch; and my invention further consists in combining, with a movable switch, bridge-pieces, which, as the switch is moved, slide up and bridge the joint between the switch and the ends of the rails; and my invention further consists in combining with the switch guard-rail certain mechanism for holding up or steadying the cam that restores the switch to the main track so as to be ready to act at the proper time.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawing.

The permanent straight track is represented

at A A A A and the permanent portion of the turn-out or crossing at B B, the usual frog C being interposed at the crossing of the rails. D D represents the switch or movable portion of the track, and E represents a pivoted guard-rail acting in connection with the track B and the flange of the passing locomotive-wheel for a purpose that will be hereafter explained. To the rails A of the straight or main track, and at the points *a a'* thereon, are pivoted the cams 1 2; and at the point *b* on the permanent part of the track or rail B of the turn-out or crossing is pivoted another cam, 3, said cams being so arranged as that, under certain circumstances, they will be struck or pressed down by one of the wheels of the locomotive when passing over that part of the track, and so operate the switch. In suitable supports, as at *c*, are pivoted two levers, *d e*, the inner ends of which, respectively, project to and under the cams 2 3, and the outer ends of which extend out so as to come against or in contact with cam-projections 4 5 on a disk or wheel, *f*, which is fastened to the end of the rock-shaft or rod *g*. The levers *d e*, though acted upon or operated by the cams 2 3, and, in turn, acting upon or operating the rock-shaft *g* through the cams 4 5, are not connected to either the cams or rock-shaft. At the opposite end of the rock-shaft *g* from where the cams 4 5 are placed there is a crank, *h*, which has upon it a snail-cam, 6; and in a bearing, *i*, there is arranged a pivoted lever, *j*, the outer end of which acts upon and, in turn, is operated by the snail-cam 6, and the inner end of which projects under the track-cam 1. This lever *j*, though acting in connection with both of the cams 1 6, is not attached permanently to either.

The rocking-shaft or rod *g* is supported in suitable bearings at *k*, and lies parallel to and a short distance from the outer rail A of the straight track, and has upon it, in addition to the cams 4 5 6, as described, an overpoise or weighted lever, *l*, and an arm, handle, or lever, *m*, by which it may be operated by hand when so desired. At about midway of the rock-shaft there is on it a crank, *n*, to which one end of a connecting-rod, *o*, is pivoted, the other end of said rod being pivoted to the switch or movable rails at *p*, said rails D being connected by tie-rods *q* and connected to

or united with the permanent rails A at *r* by yielding tie-plates, or by pivots or hinges at that point.

In the bearings at *i* there is also supported a weighted lever, *s*, upon the pivot or shaft of which there is a crank-pin, *t*, to which one end of a link, *u*, is attached, the other end thereof being attached to the end of a pivoted lever, *F*, the other end of which pivoted lever is connected, by a slot and pin at *v*, to a second pivoted lever, *G*, which, at its other end, is attached to the guard-rail E by a short link, *w*, so that the pressure of the flange of the wheel bearing against the guard-rail E and moving it on its pivoted connection to the sill at *x* will raise up the weighted lever *s* into a vertical or nearly vertical position, and hold it there so long as the pressure of the flange continues on said rail; but when the flange of the wheel ceases to bear upon the guard-rail E, then the weighted lever *s* drops back into its former position.

To the tie-rods *q* of the switch or movable rails D D there is permanently and centrally attached a bar, *H*, to the end of which is pivoted, by a slot and pin, as at *y*, the arm 7 of a three-armed lever, *I*, which is pivoted at *z*, so that, as the switch or movable rails D are moved, it will move the three-armed lever *I* on its pivot. The arms 8 and 9 of the three-armed lever project across the track—one in one direction, the other in an opposite direction—their line being at right angles to that of the arm 7; and to the ends of these arms are connected, by pivot and slot, respectively, the bridge-pieces 10, which move parallel to the line of rails with which they act, being guided in such parallelism by ways 11 attached to said rails. When the switch or movable rails are shifted the three-armed lever is moved on its pivot, and one or the other of its arms, 8 or 9, as the case may be, slides up its bridge-piece 10 so as to bridge or break the joint, as seen to the left of Fig. 1 and on the right-hand side of Fig. 2, while the other arm has slid its bridge-piece out of the way, but ready to be brought up when the switch is moved the other way. These bridge-pieces make an oblique joint or union at the ends of the rails, and thus prevent so much jar or concussion. The ends of the rails, as seen at 12, may be made oblique, and permanently so; but the ends of the rails at 13 cannot be so made, as those of D must pass by them. The bridge-pieces, when moved up into position, accomplish a similar end for such rails as cannot be permanently so bridged.

When the pressure of the flange of the passing wheel against the guard-rail E throws up the weighted lever, *s*, as hereinabove mentioned, it lowers the lever *j* upon which the cam 1 rests, so that said lever is inactive and has no tendency to operate against the devices that have moved and are holding the switch in its proper position; and when the lever *j* is in this dropped or lowered position the cam 6 on the

rock-shaft *g* is not within its range, if even it should be moved, so that it could not act to shift the switch; but when the pressure of the flange of the passing wheel ceases upon the guard-rail E, which it does by passing beyond it, then the weighted lever *s* drops, and in doing so raises up and sets the lever *j*, so that when the tread of the wheel strikes upon the cam 1 it throws up the outer end of the lever *j*, which takes against the cam 6 on the rock-shaft *g*, turns said shaft, and, through the crank *n* and link or connecting-rod *o*, restores said movable rails D to the straight track A.

When a locomotive or car is run upon the track B B in the direction of the arrow thereon shown, as soon as the first wheel strikes the cam 3 it (the cam) drops and operates the lever *e*, which, in turn, through the cam 5, rocks the shaft *g*, and, by means of the crank *n* and the rod *o* connected thereto and to the movable rails D, moves said rails into the line of the rails or track B B, and, at the same instant, the bridge-pieces are moved, one into and one out of action, as and for the purpose explained.

Immediately after the operation of the cam 3 by the tread of the passing wheel the flange of the wheel takes against the guard-rail E, and, moving it on its pivotal connection at *x*, raises up and holds up the weighted lever *s*, which throws out the lever *j*, as above described, and renders the cam 1 inoperative, which might otherwise, by untimed action, do injury. When the flange of the wheel passes beyond the guard-rail, then the weighted up-raised lever *s* drops and sets the lever *j* and cam 1 for active operation, so that, when the tread of the wheel passes over said cam 1, it, through said lever and its co-operative parts, moves the rails back again to the straight track.

If a train coming up on the straight track A in a direction opposite to that just above mentioned, and is to be run off onto the crossing or siding, the attendant shifts the rails D by means of the lever *m* or *l*; and if left in this position and a train should come in an opposite direction on the straight track, the moment the first wheel struck the cam 2 it, through its lever and cam and the rock-shaft *g*, would move said rails into the straight track again.

Having thus fully described my invention, what I claim therein as new, and desire to secure by Letters Patent, is—

1. In combination with the movable rails D D and a rock-shaft, *g*, connected therewith by a crank, *n*, and rod *o*, the independent cams 1 2 3, and levers *j d e*, and cams 4 5 6 for operating said rails, substantially as described.

2. I also claim, in combination with the rock-shaft *g*, operated by the independent cams and levers, as and for the purpose herein described, the overpoise-lever *l* for aiding in the movement of said rock-shaft and completing its movement, substantially as described.

3. I also claim, in combination with the movable rails D D, the reciprocating bridge-pieces 10 10 for bridging the joints between

said rails and the permanent tracks, said bridge-pieces being moved into and out of action by the shifting of said rails D through mechanism substantially such as described.

4. I also claim, in combination with the guard-rail E and cam 1, the weighted lever s and pivoted lever j, said lever s being connected to the guard-rail and said lever j operating

upon the rock-shaft for the purpose of automatically putting said lever j out of action and again into action, as and for the purposes described and represented.

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Witnesses:

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