R. DICKSON.

RAILROAD-SWITCH.

No. 174,666. Patented March 14, 1876.

Fig. 1.

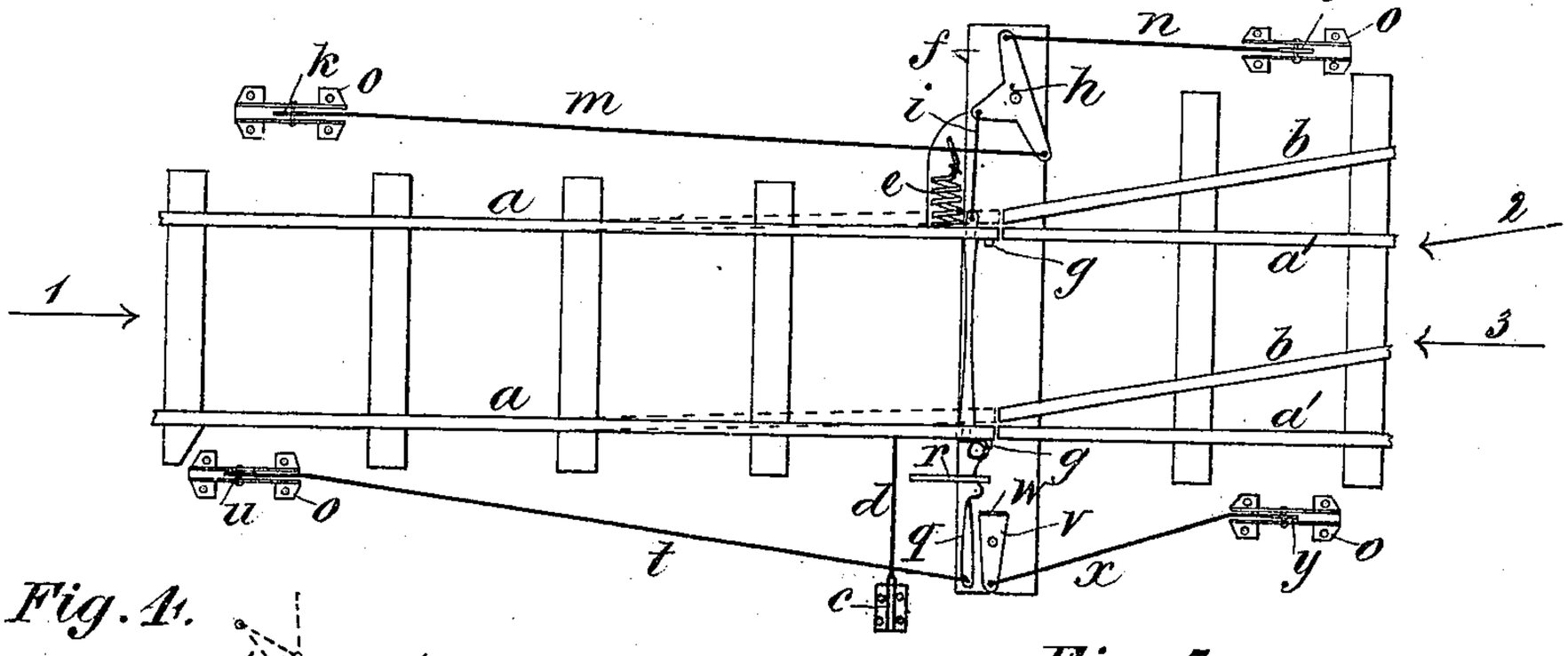


Fig. 4.

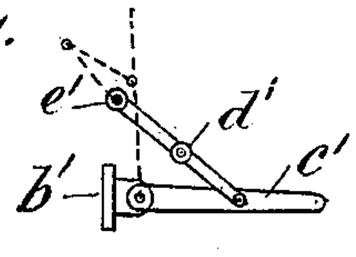


Fig. 5.

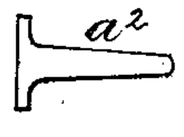


Fig. 2.

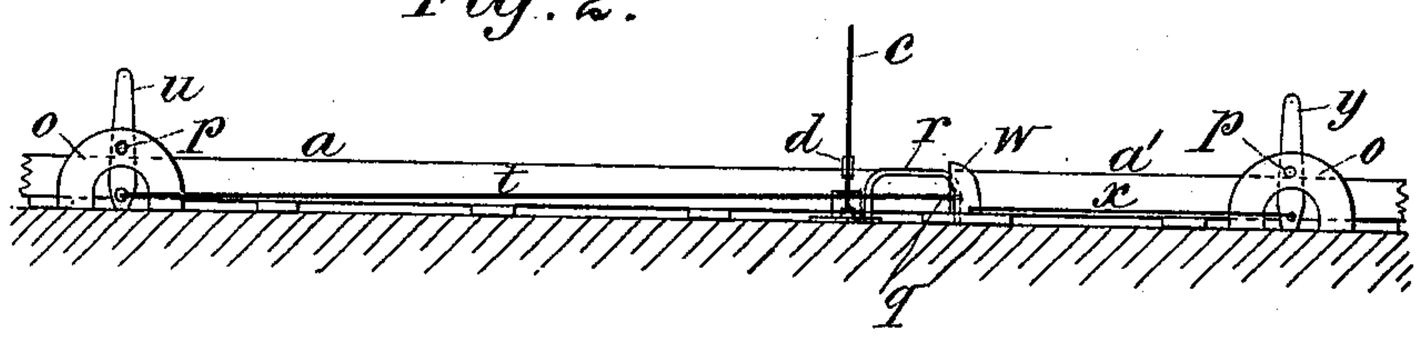
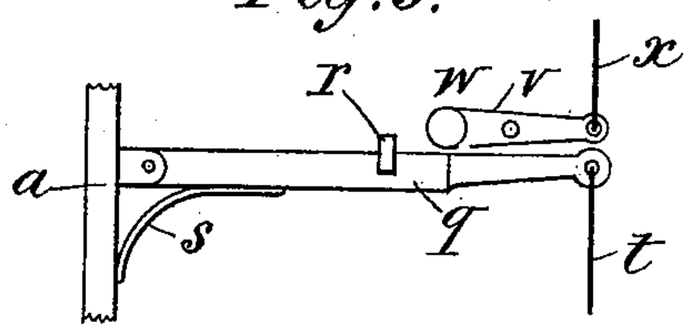


Fig. 3.



Witnesses

C. G. L. Simpson

M. A. Nelson

Inventor

R. Dickson

UNITED STATES PATENT OFFICE.

RICHARD DICKSON, OF MONTREAL, CANADA, ASSIGNOR OF ONE-HALF HIS RIGHT TO JAMES WORTHINGTON, OF SAME PLACE.

IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **174,666**, dated March 14, 1876; application filed December 29, 1875.

To all whom it may concern:

Be it known that I, RICHARD DICKSON, of the city of Montreal, in the district of Montreal, in the Province of Quebec, Canada, bridge-builder, have invented certain new and useful Improvements in Railway-Switches; and I do hereby declare the following is a full, clear, and exact description of the same.

This invention has for its object the construction of a switch for railways, which may be operated by a lever in the ordinary manner—that is to say, by a person standing by on the ground and operating the lever working the switch; or it may be worked by a person standing on the trains passing over the rail while said trains are moving at speed, so that, in case of the switch being left open—that is to say, set the wrong way for any train passing—the engine-driver or other person on the engine will be able to remedy the mistake and avoid probable loss of life and destruction of property, often arising from negligence in improperly setting switches; and also provides a convenient means of acting the switch without having a man to operate the same, or else stopping the train and having a person get off and set the switch as desired before the train passes onto a siding or other "turn-out track."

In the drawings hereunto annexed similar letters of reference indicate like parts.

Figure 1 is a plan of my invention. Fig. 2 is a side elevation of Fig. 1. Fig. 3 is a modification of catch. Fig. 4 is a side elevation of projection on engine for working the switch from the train.

Letters *a* a^1 are the rails of the main track, while *b* are those of the siding. The portion of the main rails *a* nearest to the siding-rail *b* are made movable in any of the ordinary manners at present in use in the class of switch delineated in the drawing, so that they can be set either to form a continuous rail with the main rails a^1 or with the siding-rails *b*. *c* is a hand-lever, between and to which and to the rails a connecting-bar, *d*, is attached for moving the rails by hand by a person standing on the ground beside the lever, and operating it.

Thus far what has been described is as now ordinarily in use, with the exception that I should prefer to make the lever not longer or heavier than what safety would require for giving it the proper amount of leverage and strength to perform its work, and the ordinary means provided for securing this lever in various positions will be omitted. *e* is a spiral or other suitable spring, one end of which is attached to the rail *a* and the other end to the sleeper *f* or projection thereof. This spring will have sufficient force to move the ends of the rails *a* from the position shown in dotted line as engaging with the rails *b* to that shown in full lines as engaging with rails a^1. *g* are stop-bolts attached on or driven into the sleeper *f*, to prevent the spring from moving the ends of the rails *a* farther than to come fair with the ends of the rails a^1. On the sleeper *f* is pivoted a three-armed bell-crank, *h*, one arm of which is attached, as shown, by a connection, *i*, to the rails *a*. The other two arms are attached to levers *k* and *l*, respectively, by connections *m* and *n*, which may consist of wire cables, or bars and chains. If made of bars, they should have a few chain-links at their extremities, for the purpose of giving the flexibility required for the movement of the levers and bell-crank. The levers *k* and *l* are carried in brackets *o*, being pivoted at *p* thereto, the connections *m* and *n* being attached to the lower ends of the levers, while the upper ends of the levers extend up a sufficient height to engage with projections, hereinafter more particularly described, which will be formed on the engine or train for operating them by. To the opposite rail *a* to that on which the spiral spring *e* is situated is attached a spring-catch, *q*, provided with a projection to engage with a stop, *r*, when the ends of the rails *a* are moved over to engage with the rails *b*.

The catch *q* may be modified to the form shown in Fig. 3, having a spring, *s*, on its back, to keep it pressed against the stop *r*, and also to cause the notch in it to engage with the stop *r* when the ends of the rails *a* are moved to the position shown by dotted lines in Fig. 1. To the end of the catch is attached a connection, *t*, similar to *m* or *n*, attached to a bracketed lever, *u*, similar to the

levers *k l*. On the sleeper *f* is pivoted a lever, *v*, having an upturned end, *w*, to engage with the catch *q*. To the other end of this lever is attached a connection, *x*, similar in every respect to those described, *m n t*, and terminating at a lever, *y*, similar to the levers *k l u*. The levers *k*, *l*, *u*, and *y*, will be situated at a suitable distance from the points of the switch—that is to say, from where the points or ends of the rails *a* meet the ends of the rails a^1 and *b*, so that the movable ends of the rails will be moved over by the spring or by the bell-crank before the front pair of wheels of the train comes upon the movable portion of the rails. With regard to the securing in position of the brackets *o*, they may be attached to heavy bed-stones, piles, or posts, secured in the ground. The projections on the train for operating the levers *k*, *l*, *u*, and *y*, may be constructed in a great variety of forms, and they may either be attached to the locomotive, tender, or cars; but, in my opinion, the most suitable place for attaching them is the side guards extending down from the bunter-beam in front of the locomotive, and to which the cow-catcher is usually attached.

The best that I am at present acquainted with are constructed as follows: Having determined the proper height to attach the projections, to give the levers *k*, *l*, *u*, and *y* the required amount of motion, this will depend upon the amount of leverage, and the height that the levers project above the level of the rails. I attach a fixed arm or projection, a^2, (see Fig. 5,) one on each side of the engine, &c., as the case may be, so that the said projection will stand or project out horizontally, and about at right angles to the rails, a sufficient distance to engage with the levers *u* and *y*, which will be placed at equal distances from the rails *a* and a^1, but not to engage with the levers *k* and *l*. These levers are situated at equal distances from the rails *a* and *b*, but at a greater distance from those rails than the levers *u* and *y* are from the rails, so that the projections a^2 being placed on both sides of the engine, and the engine passing first in one direction and then in the other, there will always be a fixed projection to trip or operate the levers *u* and *y*. I also attach beside the projection a^2, and on the same level with it, a bracket, b', shown in Fig. 4, to which is pivoted an arm, c', of sufficient length to extend out and come in contact with the upper extremities of the lever *k* when the engine is on the rails *a*, and to come in contact with the lever *l* when the engine is on the rails *b*. The arm c' is operated by a toggle-joint, d', so that by bringing it into the position shown in firm lines, Fig. 4, the arm c' is moved down and prevented from returning by the toggle-joint. By attaching the extremity of the toggle-joint d' on a rotating rod at e', and carrying the other extremity or a suitable connection of that rod into the cab, and providing a handle for the purpose of rotating the rod at e', the arm c' on either side of the engine, according to which direction the engine is running, and which side of it is toward the levers *k* and *l*, may be placed in the position shown by firm lines in Fig. 4 when it is desired to operate the levers *k* or *l*, as the case may be.

I would observe that the lever *u* will be placed at a greater distance from the rails a^1, or the points of the switch, than the lever *k*.

The operation of my invention is as follows: In case of an engine coming from the rails extending at the end of Fig. 1, where the arrow 1 is situated, and traveling in the direction of that arrow, the fixed projection on the one side, engaging with the lever *u*, will operate the catch *q*, thereby allowing the spring *e* to put the rails right, should they be wrong, for the main track, and should they be right, the engagement with the lever *u* will be unimportant. Should it be desired to move the rails over to the siding, it is only necessary to turn down the movable projection c' on that side of the engine toward the lever *k*, to engage with it, and thus set the ends of the rails *a* to the position shown in dotted lines in Fig. 1. Supposing an engine to be coming off the siding or extension of the rails *b*, and moving in the direction of the arrow 2, the lever *l* being set at too great a distance to be operated by the projection a^2 toward it, it will not interfere with the lever. If, however, it is desired to set the switch from the position shown in firm lines to that shown in dotted lines, the movable arm c' on that side of the engine will be turned down, as hereinbefore described, to operate the lever *l*, and move the switch over.

When an engine is coming along the main line from the rails, in the direction where the arrow 3 is placed, and moving in the direction of that arrow, the fixed projection on the side of the engine toward the lever *y* will always operate that lever, causing the lever *v* to act upon the catch *q*, and allow the spring to move the switch over to the position shown in firm lines, should it not be so situated; otherwise, the operating of the lever *y* is unimportant. I would also remark, that, if desired, the fixed projections a^2 are not absolutely necessary, although I should prefer to use them for greater safety, but the invention may be operated by the movable arm c', used at the discretion of the engine-driver or other person. The lever *c*, attached for moving the switch in the ordinary manner, will be situated sufficiently distant from the rail to be clear of the projections and not interfere with the other arrangements for working the switch. This lever is provided for operating the switch, should an engine or cars pass not having their projections a^2 and c', or in case of anything getting out of order to require the switch to be operated by hand.

For the purpose of protecting the parts from snow, a suitable boxing may be provided for any portion or the whole, excepting the levers

k, *l*, *u* and *y*, which must project above the boxing or other covering, and sufficient openings must be provided for them to work freely in.

What I claim is as follows:

1. The combination of the movable portions of the rails *a*, spring *e*, bell-crank *h*, connections *i*, *m*, and *n*, levers *k* and *l*, with movable arms *c'*, substantially as and for the purposes set forth.

2. The combination of the movable portions of the rails *a*, catch *q*, stop *r*, levers *u* and *y*, substantially as and for the purposes set forth.

3. The combination of the movable portions of the rails *a*, spring *e*, catch *q*, stops *r*, and *g*, substantially as and for the purposes set forth.

R. DICKSON.

Witnesses:

C. G. C. SIMPSON,

M. A. NELSON.