H. GREENWAY.

Device for Operating Railroad-Switches.

No. 216,395. Patented June 10, 1879.

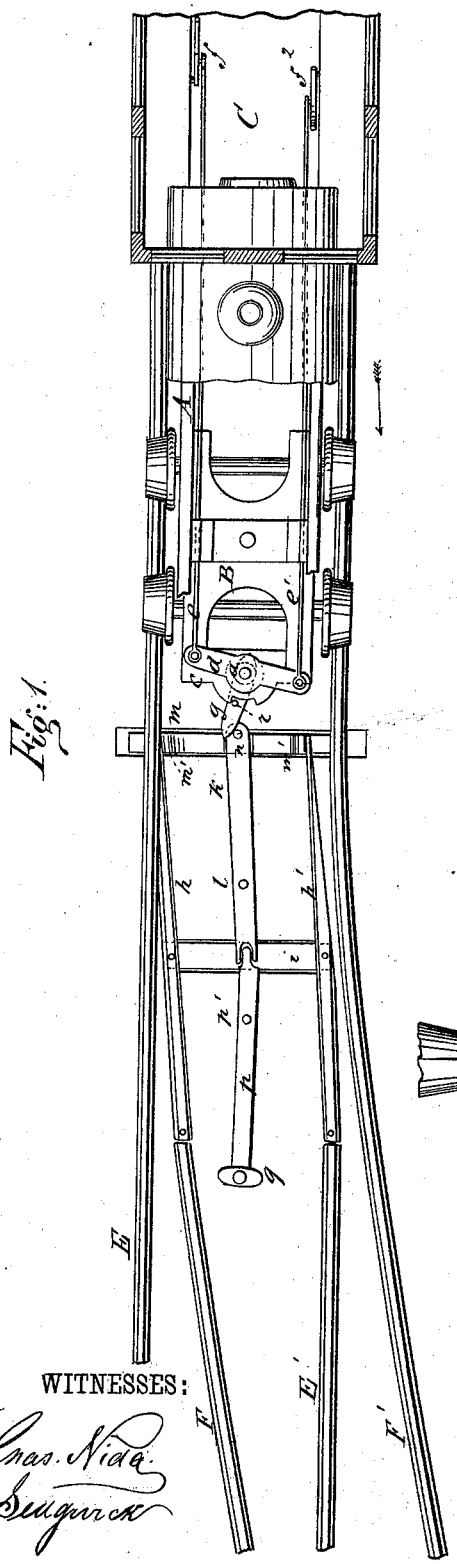

Fig: 1.

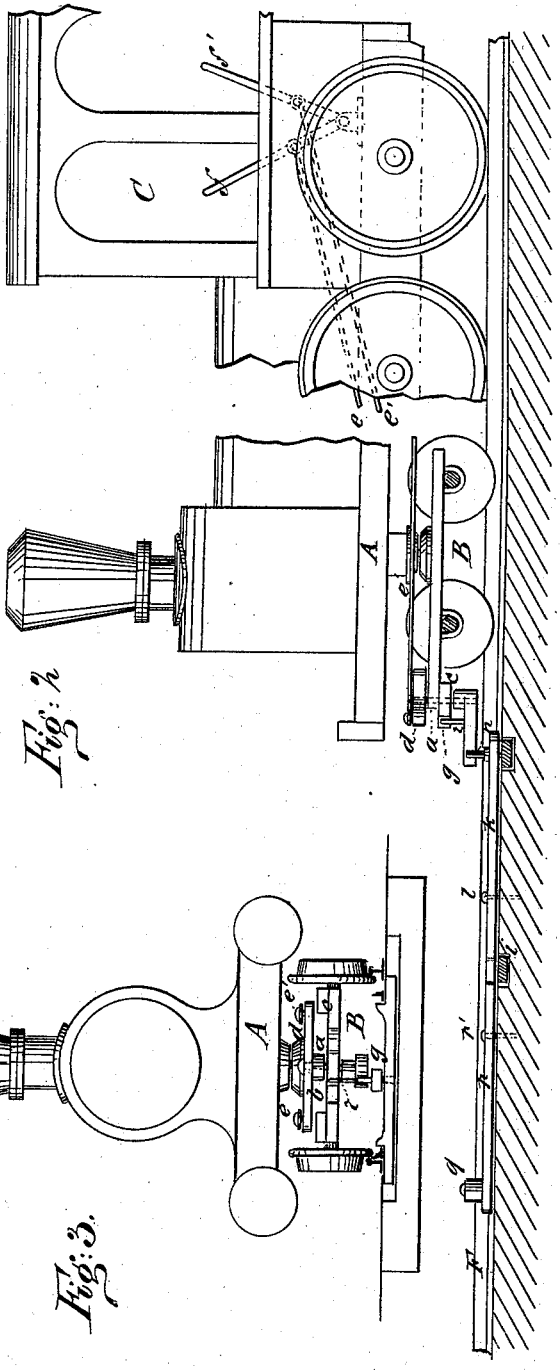

Fig: 2.

Fig: 3.

WITNESSES:

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UNITED STATES PATENT OFFICE.

HENRY GREENWAY, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN DEVICES FOR OPERATING RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **216,395**, dated June 10, 1879; application filed April 16, 1879.

To all whom it may concern:

Be it known that I, HENRY GREENWAY, of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Operating Railroad-Switches, of which the following is a specification.

The object of my invention is to place the switches of a railroad-track under full control of the engine-driver, and also to permit shifting of the switches by the engineer when the train is in motion, and, if necessary, without checking the speed.

The invention is adapted for either surface or elevated railroads, but is especially intended for elevated roads in cities, where frequent trains and heavy traffic increase the liability of accidents from misplaced switches, and time is of great importance in the management of the trains.

The invention consists in a movable rudder having stopper and a cross-bar having stops, in combination with an arbor provided with a double crank, connected by rods with hand-levers.

The details will be described in connection with the accompanying drawings, wherein Figure 1 is a plan view of a railroad-track and switch and a locomotive fitted with my invention. Fig. 2 is a side elevation of the same, partially in section. Fig. 3 is a front view in section transversely of the track.

Similar letters of reference indicate corresponding parts.

I have shown my invention applied only to the forward or pilot truck of a locomotive, so as to operate by the forward movement of a train; but it may be applied equally as well to a tender or a car to operate when the train is backing.

A is the frame of the locomotive; B, the forward or pilot truck; and C, the cab, which parts are of usual character.

At the forward end of truck B, and in advance of the wheels, a short vertical shaft or arbor, *a*, is fitted in the center sidewise of the truck. The arbor *a* is supported by an annular flange or collar, *b*, that rests on the cross-bar *c* of the truck.

Upon the upper end of arbor *a* is fixed a cross-bar, lever, or double crank, *d*, to the opposite ends of which rods *e e'* are connected, and pass backward between the side frames of the locomotive to the cab C, where the said rods *e e'* are attached to the hand-levers *f f'*, respectively. The levers *f f'* are to be provided with pawls or catches, operating to retain the levers in the desired position.

Attached to the lower end of arbor *a* is a forwardly-projecting arm, *g*, which I term the "rudder." This rudder is tapered to a point or wedge shape at its forward end, and at rear end is also tapered, but more abruptly.

The rudder *g* is swung horizontally to the right and left by manipulation of levers *f f'*, acting through the connections described. The movement of rudder *g* in either direction is limited by a pin, *r*, that takes against projections on cross-bar *c*.

I will next describe the switch. Let E E' represent the rails of the main line, and F F' the rails of a siding or branch intersecting the main line. The inner rails, F and E', terminate in the pivoted points *h h'*, that are connected together by a cross-bar, *i*. *k* is a lever fulcrumed at *l* to a cross-tie or other fixed support, midway between the tracks, and having its longer arm pivoted to a cross-bar, *m*, that is fitted to slide crosswise beneath the rails and outer ends of the points *h h'*. Lugs or projections *m' m'* on the upper side of bar *m* cause the movement of the points *h h'* with bar *m*.

Upon the end of lever *k* is a pin, lug, or projection, *n*, that is acted upon by the rudder *g* to move the switch when the train is moving in one direction. A second lever, *p*, fulcrumed at *p'*, and provided with a projection, *q*, on its longer arm, engages by a toggle-joint to the short arm of lever *k*, so that the train, when moving in the other direction, will move this second lever and operate lever *k* properly.

The operation is as follows: Supposing the locomotive moving on the main track in the direction of the arrow, and the switch set for the branch, as shown, the engineer will draw back the right-hand lever *f*, which will throw the rudder *g* to the right. As soon as the rudder *g* reaches the end of lever *k* its inclined side will act upon the projection *n*, move lever *k*, and set the switch for the main track; or, if the switch be set correctly, the rudder will simply pass the lug without effect.

It is not necessary for the engine-driver to

know the position of the switch, for the reason that, if he desires to take the right or left hand track, he simply moves the right or left hand lever, as the case may be.

When backing over a switch the rear point of the rudder passes the projections of the switch-levers without effect.

The same operation as described takes place in connection with the projection *q* of lever *p* when the train is moving backward by a rudder at the rear of the tender or rear car of the train.

By the above-described construction the operation of the switch is rendered positive and placed under the control of the engineer. At the same time the switch will be fitted with switch bars and levers in any usual or desired manner, for operation, when desired, by a switch-tender, and the movement of the switches will be used to operate and display the usual signals.

To render the parts less rigid and compensate for wear, springs may be used, in connection with the rudder and switch. For instance, a block of rubber can be inserted between the points *h h'* and the projections *m'* to permit perfect adjustment under all circumstances.

I do not limit myself to the details of construction exactly as shown and described, as they may be varied without departing from my invention.

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

The movable rudder *g*, having pin *r*, and the cross-bar *c*, having projections or stops for said pin, in combination with arbor *a*, having a double crank, *d*, connected by rods with hand-levers *f f'*, as shown and described.

HENRY GREENWAY.

Witnesses:

GEO. D. WALKER,

C. SEDGWICK.