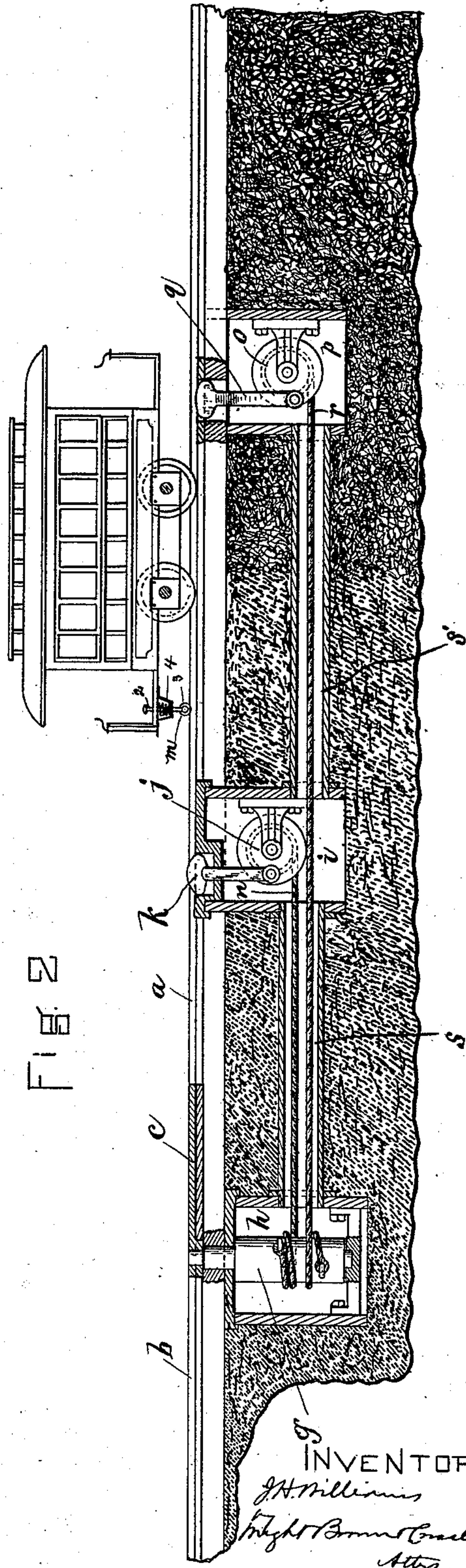


2 Sheets—Sheet 1.

No. 413,592.

Patented Oct. 22, 1889.



WITNESSES
A. D. Harrison
W. B. Ramsay.

INVENTOR:

J. H. Williams
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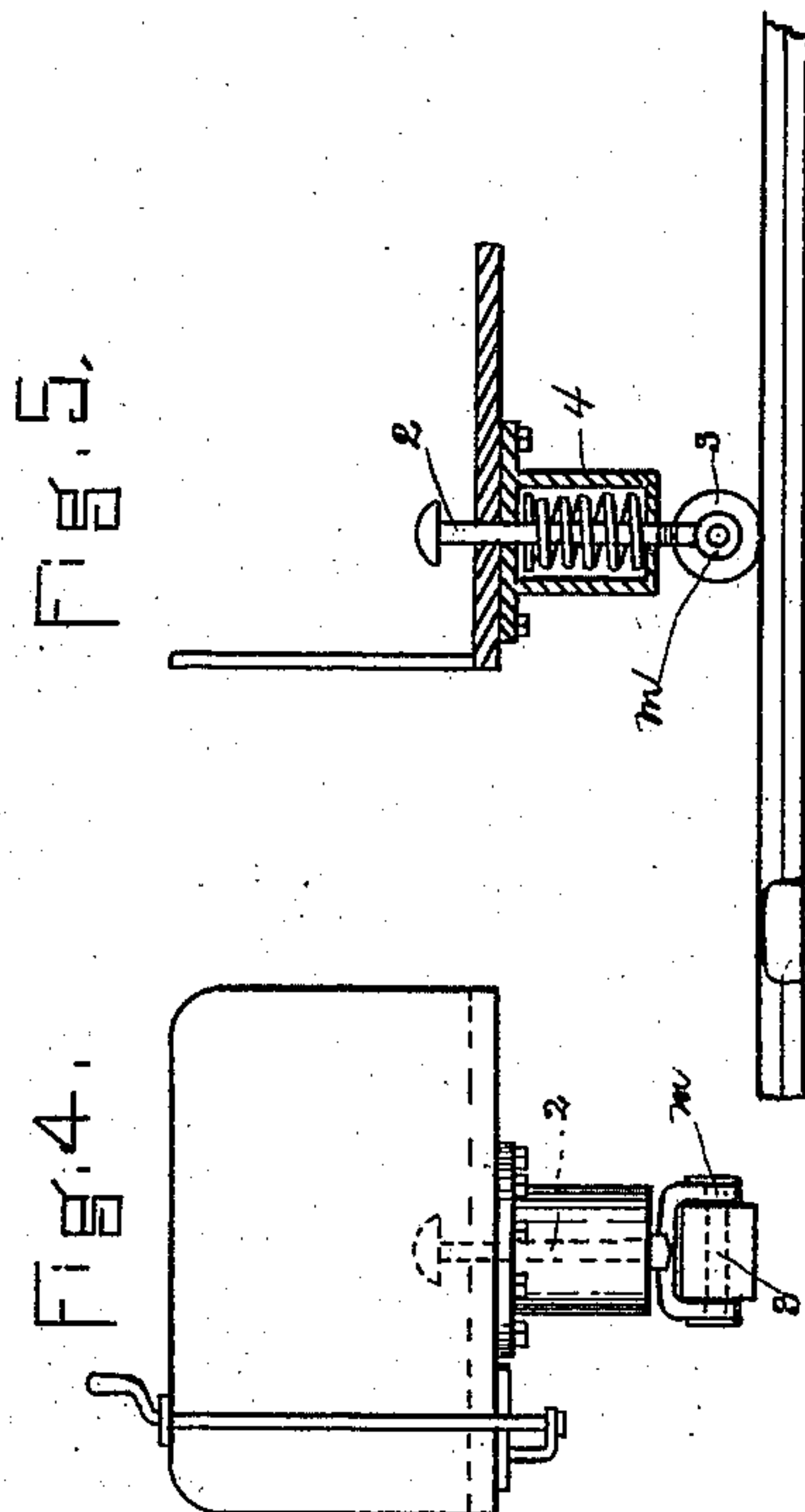
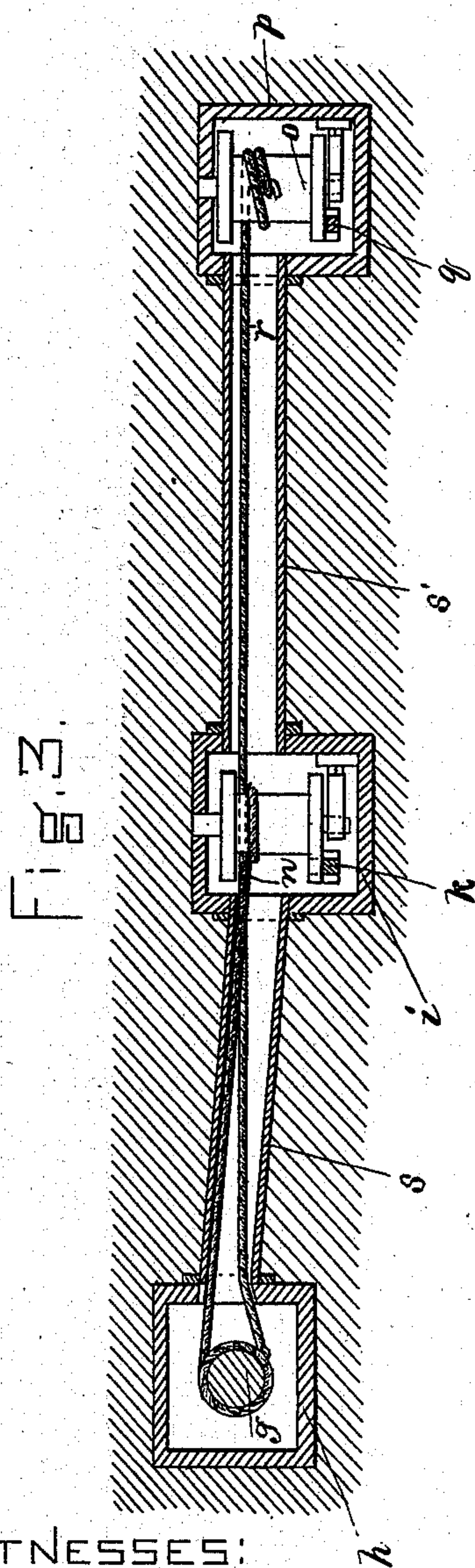
(No Model.)

2 Sheets—Sheet 2.

J. H. WILLIAMS.
STREET RAILWAY SWITCH.

No. 413,592.

Patented Oct. 22, 1889.



WITNESSES:
A. D. Hanson
W. B. Ramsay.

INVENTOR:
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UNITED STATES PATENT OFFICE.

JOHN H. WILLIAMS, OF BOSTON, ASSIGNOR OF TWO-THIRDS TO BENJAMIN F. BARNARD, OF WAKEFIELD, MASSACHUSETTS.

STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 413,592, dated October 22, 1889.

Application filed December 22, 1888. Serial No. 294,410. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. WILLIAMS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Street-Railway Switches, of which the following is a specification.

This invention has for its object to provide improved means whereby a movable switch-point on a street-railway track may be shifted by the driver of an approaching car to connect a branch or side track with the portion of the main track on which the car is running, and also to enable a wheel of the approaching car to throw the switch so as to make the main track continuous in case the approaching car finds the switch set to connect the side track with the main track.

To these ends my invention consists in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a portion of a street-railroad track having my improvement. Fig. 2 is a vertical section of the same. Fig. 3 is a horizontal section. Fig. 4 is a perspective view of the operating attachment on the car, and Fig. 5 is a longitudinal section of said attachment. The same letters of reference indicate the same parts in all the figures.

In the drawings, a a' represent the rails of the main track of a street-railway, and b b' represent the branch or side track rails.

c represents the movable switch-point, which is pivoted at d , and is formed, as usual, to make the main-track rail a continuous when set in one position and to connect the branch rail b with the main rail a when set in the other position, the other main track and branch being connected by a frog f of the usual construction. The inner end of the switch-point is attached to a vertical shaft or drum g , which is journaled in suitable bearings in a vault or chamber h below the track. At a suitable distance from the switch-rail is another vault or chamber i below the track, and in said vault is journaled a horizontal drum j , to which is eccentrically connected a rod k , extending upwardly through the cover of the vault and projecting above

the same, its upper end being between the main rails a a' and sufficiently above the pavement to enable it to be acted on by an attachment on a car approaching the switch m . Said attachment is here shown as a standard 2, fitted to slide in a guide in the front platform of a street-car and adapted to be depressed by the driver's foot. The lower end of the standard 2 is provided with a roller 3, which, when the standard is depressed, is in position to strike the rod k and depress the latter, thereby partially rotating the drum j . Said drum is connected by a wire rope n , or, if preferred, by a chain, with the vertical drum g , to which the switch is affixed, and said rope is so wound upon the drums g j that when the drum j is rotated by the depression of the rod k the switch-supporting drum will be turned in the direction required to open the switch, or, in other words, to throw the switch-point inwardly and connect the main-track rail a with the branch rail b , so that when the car reaches the switch it will pass onto the branch or side track. The standard 2 is normally raised by a spring 4, so that its roller will not strike the rod k unless depressed by the driver.

To restore the switch to its closed position (shown in Fig. 1) after it has been opened, as above described, I provide a second horizontal drum o , journaled in a vault p , located farther from the switch than the vault i . The drum o has a rod q , which extends upwardly through a slot in the flange of the main-track rail a , and is arranged to be depressed by one of the wheels of a car approaching the switch. The drum o is connected by a rope r with the switch-operating drum g , said rope being so wound as to communicate to the switch-drum, by the partial rotation of the drum o , a motion opposite to that produced by the rotation of the other drum j , said motion throwing the switch-point outwardly and making the main rail a continuous. It will be seen, therefore, that after the switch has been opened by the action of the car attachment m on the switch-opening drum j it remains open until the approach of another car, one of the wheels of which operates the switch-closing drum o and restores the switch to its closed position, so that there is no possibility of the switching

off of the second car unless the driver, after the wheel of his car has operated the switch-closing drum, depresses the standard 2 and again operates the switch-opening drum. It is therefore impossible for two cars in succession to pass onto the side track unless by the connivance of the drivers. In case the switch-opening drum should be accidentally operated by contact of a vehicle-wheel or a horse's hoof with its rod *k* the switch is restored by the action of the next car on the switch-closing drum.

It is obvious that various modifications may be made in the details of construction without departing from the spirit of my invention. For example, the operating-rods *k q* may be connected to arms attached to the shafts of the drums *j o*, instead of being directly attached to the drums.

It will be seen that the described connection of the switch opening and closing drums with the switch-connected drum causes the motion of one drum to set the operating-rod of the other drum. For example, when the switch-opening drum is turned by the depression of the rod *k*, the rotation of the drum *g* thereby caused is communicated to the drum *o* through the rope *r*, and the rod *q* is thereby raised into position to be acted on by a car-wheel, the rod *k* remaining depressed, so that it will not be in position to be operated on until it is raised by the depression of the rod *q*, the rods *k* and *q* being arranged so that only one at a time can project upwardly far enough to be acted on in the manner described.

The described switch-operating mechanism is of very simple construction and can be arranged in very compact form. The vaults used need not exceed a square foot in size, and the pipes *ss'* connecting them may be much smaller, said pipes being provided to contain the ropes *n r* between the vaults. The pipes *ss'* may be screwed or otherwise securely connected to the vaults, and the pipes and vaults may be hermetically closed, so that no water can enter them, thus preventing the interference of ice with the operation of the devices in the vaults.

This invention may be used for electric and cable roads as well as for roads on which the cars are drawn by horses.

For the sake of convenience, in the following claims I term the drum whose action makes the switch continuous with the side track the "switch-opening drum," while the other drum, whose action makes the switch continuous with the main track, is termed the "switch-closing drum."

I claim—

1. The combination, with a track and a movable switch, of a drum or shaft connected with said switch, a switch-opening drum having an operating-rod arranged between the main-track rails for operation by an attachment on a car, a switch-closing drum located farther from the switch than the said opening-drum and having an operating-rod arranged to be acted on by a car-wheel on the main track, and flexible connections between said switch opening and closing drums and the switch drum or shaft, as set forth.

2. The combination, with a track and a movable switch, of a series of vaults *h i p* below the track, pipes or conduits connecting said vaults, a vertical drum *g*, journaled in the vault *h* and secured to the switch, horizontal drums *j o*, journaled, respectively, in the vaults *i p*, an operating device for the drum *j*, arranged between the tracks, an operating device for the drum *o*, arranged with its upper end in one of the track-rails, and cables or chains *n r*, connecting the drum *g* with the drums *j o*, respectively, all arranged and operating substantially as set forth.

3. The combination, with the switch rail and track, of a drum *g*, located below and attached to the switch-rail, drums *j o*, located at different distances from the switch and provided, respectively, with operating-rods *k q*, which are arranged to project alternately above the track, one being arranged to be operated by an attachment on the car and the other by a car-wheel, and cables *n r*, connecting the drum *g* with the drums *j o*, respectively, said cables being tightly drawn between said drums, whereby when one operating-rod is depressed the other is raised, and vice versa.

4. The combination, with the switch rail and track, of a drum *g*, located below and attached to the switch-rail, drums *j o*, located at different distances from the switch and provided, respectively, with operating-rods *k q*, which are arranged to project alternately above the track, one being arranged to be operated by an attachment on the car and the other by a car-wheel, and cables *n r*, connecting the drum *g* with the drums *j o*, respectively, and vaults *h i p* and pipes *ss'*, constituting a water-excluding casing for said drums and cables, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of December, A. D. 1888.

JOHN H. WILLIAMS.

Witnesses:

C. F. BROWN,

A. D. HARRISON.