

No. 709,865.

Patented Sept. 30, 1902.

J. C. BOOTH.

RAILWAY SWITCH OPERATING DEVICE.

(Application filed May 14, 1902.)

(No Model.)

2 Sheets—Sheet 1.

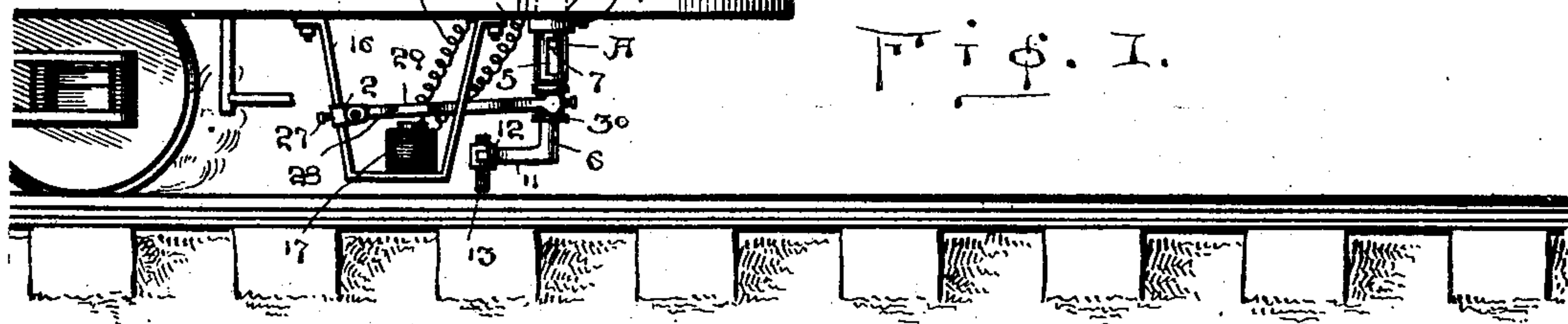
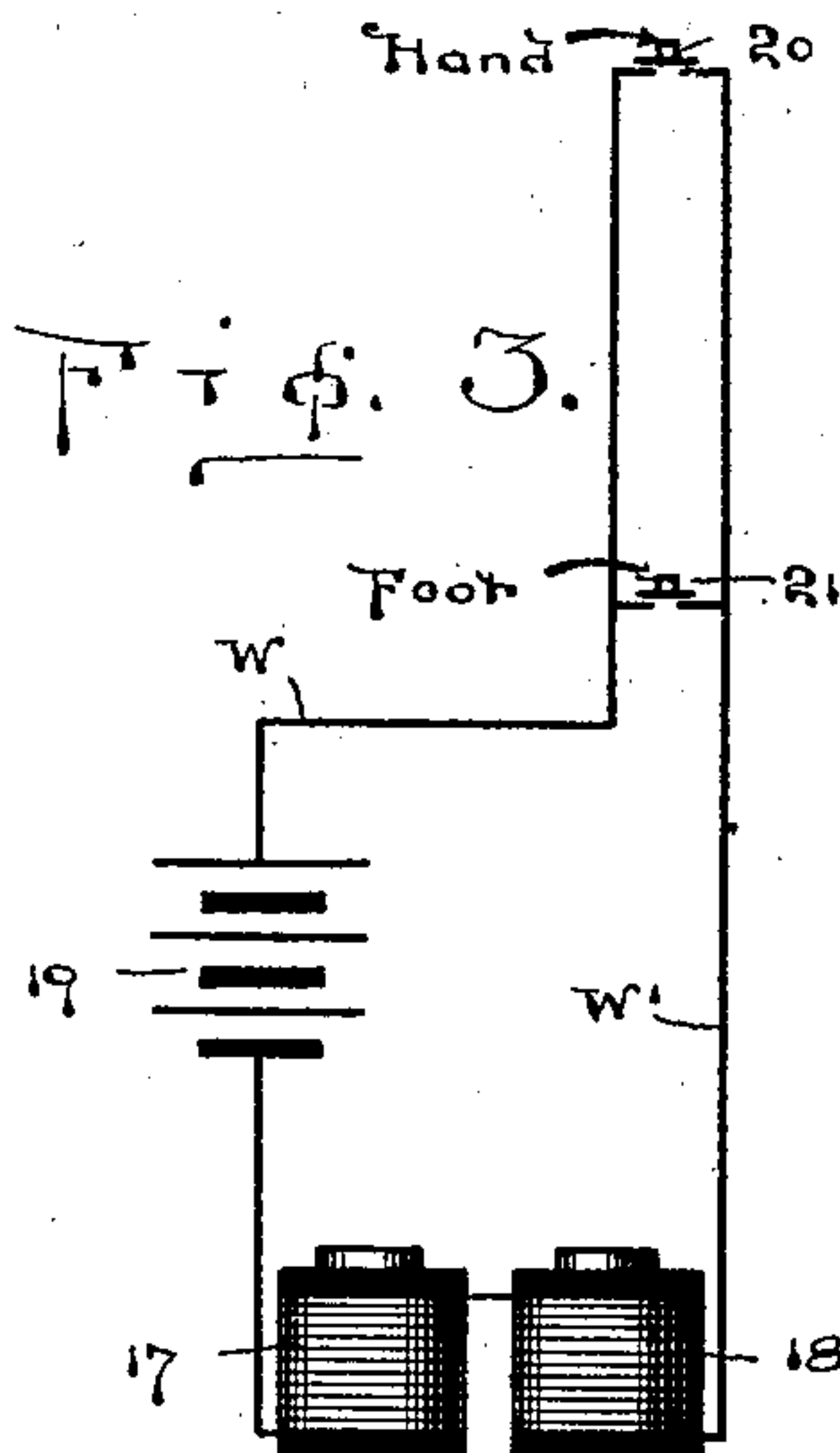
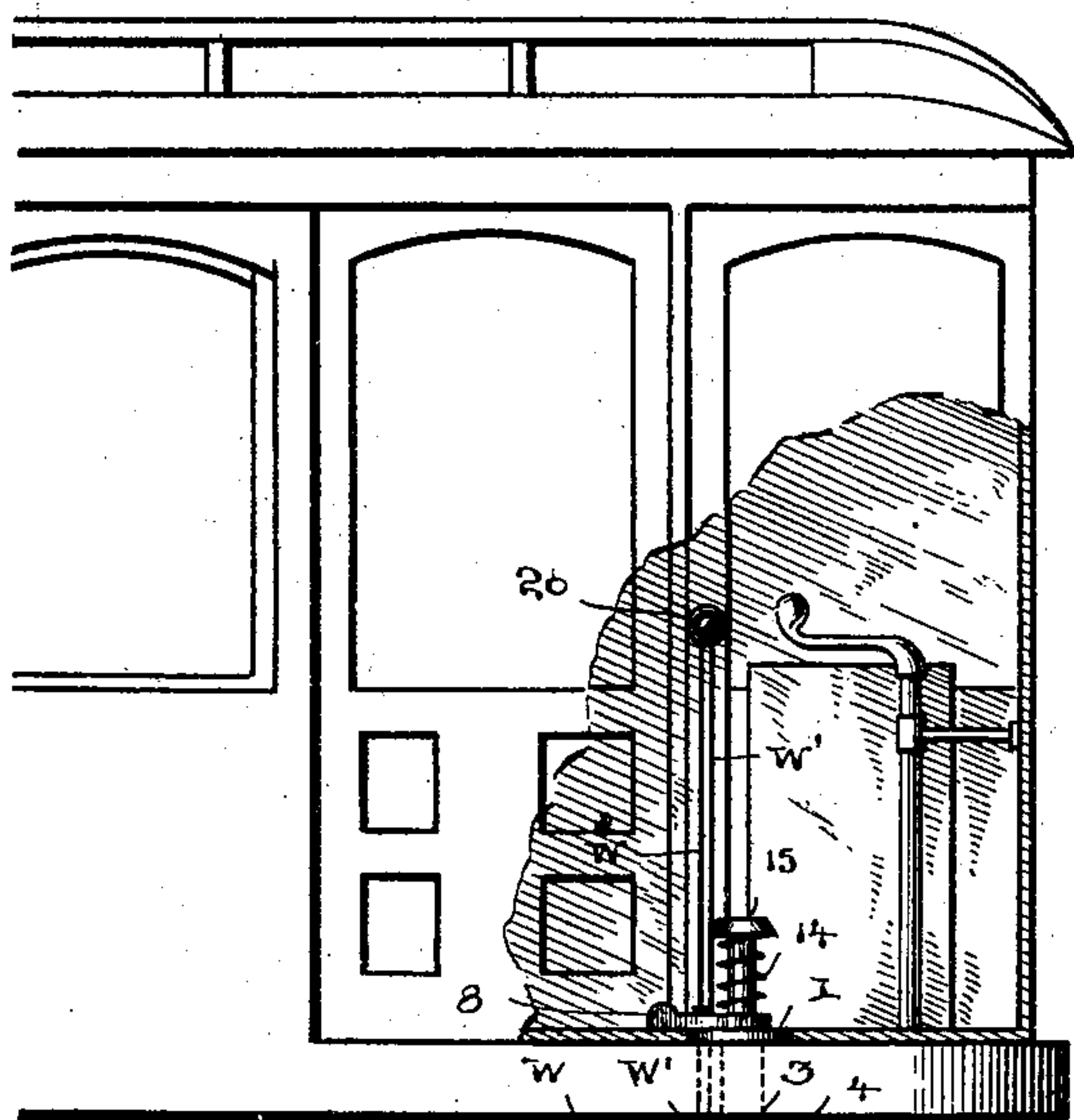


Fig. 1.

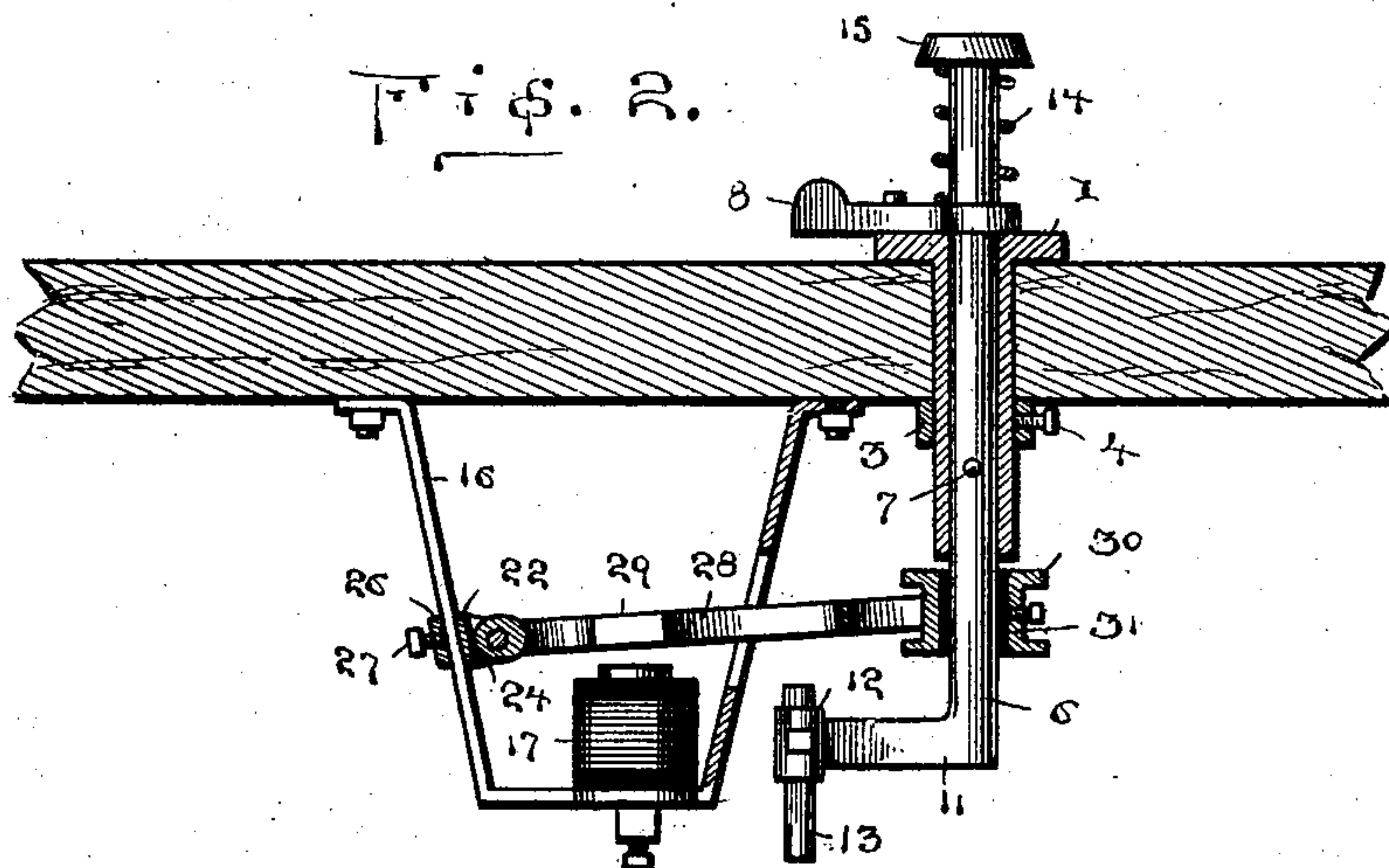


Fig. 2.

Inventor

James C. Booth.

By

Victor J. Evans

Attorney

Witnesses

J. W. Riley,
A. G. Heyman.

No. 709,865.

Patented Sept. 30, 1902.

J. C. BOOTH.

RAILWAY SWITCH OPERATING DEVICE.

(Application filed May 14, 1902.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 4.

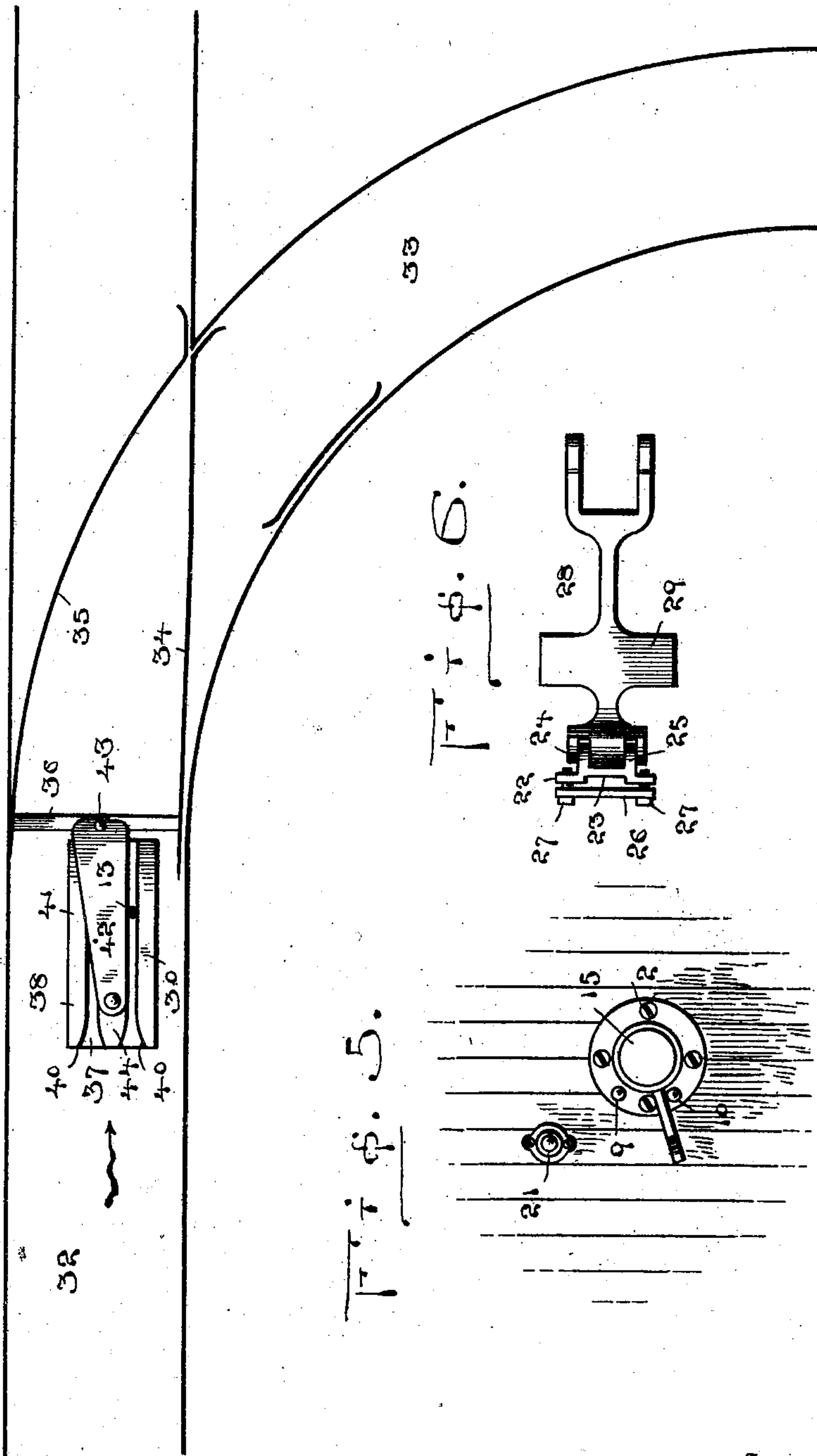


Fig. 5.

Witnesses

J. W. Riley,
A. G. Heylman,

James C. Booth

Inventor

By

Victor J. Evans

Attorney

UNITED STATES PATENT OFFICE.

JAMES C. BOOTH, OF MONESSEN, PENNSYLVANIA.

RAILWAY-SWITCH-OPERATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 709,865, dated September 30, 1902.

Application filed May 14, 1902. Serial No. 107,315. (No model.)

To all whom it may concern:

Be it known that I, JAMES C. BOOTH, a citizen of the United States, residing at Monessen, in the county of Westmoreland and State of Pennsylvania, have invented new and useful Improvements in Railway-Switch-Operating Devices, of which the following is a specification.

My invention relates to improvements in means for throwing railway-switch points; and the object is to provide, first, a device or mechanism for the purpose indicated which is simple in construction, certain in operation, and durable in use; second, to provide such a device operated from the car; third, to provide such a device alternately operative either by manipulation or by the action or force of electricity.

With these objects in view my invention consists in the novel construction of parts and their arrangement and aggroupment in operative combinations, as will be hereinafter fully described and the novelty thereof particularly pointed out and distinctly claimed.

I have fully and clearly illustrated the improvements in the accompanying drawings, to be made a part of this specification, and wherein—

Figure 1 is a side elevation of a portion of a car having the side wall partly broken away and showing it as equipped with my improvement. Fig. 2 is a fragmentary longitudinal section through the timbers of the car and platform, showing the device partly in section and in side elevation. Fig. 3 is a diagrammatic view of the circuit, showing a battery as the source of electric energy and the magnets interposed therein. Fig. 4 is a conventional view of diverging tracks and switch-rails and plan view of the switch-point and bed-plate. Fig. 5 is a plan view of the floor-plate or flange of the shaft-sleeve and the footpiece for directing and holding the shoe in proper direction to engage the switch-point. Fig. 6 is a detail plan view of the armature-lever.

Referring to the drawings, A designates a strong metal sleeve projected vertically through the platform of the car and provided with an annular flange 1 at its upper end, which rests on the surface of the platform and secured thereto by bolts 2, projected

through the flange into the timber of the platform. The sleeve A is further strengthened and secured by a collar 3, arranged on the sleeve and held in position against the under face of the platform by a set-screw 4, let through the collar and bearing against the sleeve. In the lower portion of the sleeve are made aligning vertical slots 5, in which a pin in the foot-rod or shaft engages.

In the sleeve A is slidably arranged a shaft 6, having a pin 7 transversely projected through the shaft and the projecting ends of which loosely engage in the slots 5, and thus limit the vertical stroke of the shaft. On the shaft is fixedly mounted a footpiece 8, having a movement limited by two studs or pins 9 10 in the flange 1, whereby the shaft may be given a limited turn on its axis to throw the switch-engaging shoe or plow in the desired direction to engage the switch-throwing point. The lower end of the shaft 6 is provided with an arm 11, standing at right angles to the shaft and formed with a vertical sleeve 12, wherein is adjustably secured a pin, shoe, or plow 13, which is the element that engages the end of the switch-lever and turns it to throw the switch. On the shaft 6 is mounted an expansive spring 14, the force of which maintains the shaft in upper position and lifts it after it has been moved down.

It will be perceived that the device in an exigency is an operative one, as above described, by the application of the foot to the footpiece or head 15 of the shaft 6. To effect the operation by the application of electrical energy, I have devised the following described means: To the bottom of the car is secured a hanger 16, on the bottom or cross-piece of which are seated and suitably secured two electromagnets 17 18, placed in an electric circuit generated from a source, as a battery 19, and composed of wires *w* and *w'*, standing normally open and arranged to be closed and completed by push-buttons 20 21, the former being placed convenient for manipulation by the hand and the latter to be operated by the foot of the motorman. To the rear arm of the hanger 16 is secured a bracket, consisting of a plate 22, formed with a recess 23 to fit over the arm of the hanger and having forwardly-extending lugs 24 25,

with alining apertures through them. This bracket is adjustably held to the hanger by a clamping-keeper 26 and clamping-screws 27, let through the ends of the keeper and the bracket. To the lugs 24 25 of the bracket is pivotally connected the armature-lever 28, provided with an armature-plate 29 to contact with the cores of the electromagnets. The armature is loosely passed through a slot in the hanger, and at the outer end the armature-lever is forked, as shown, to straddle or embrace a sleeve 30, to which the arms of the fork are pivotally connected. Within the bore of the sleeve 30 is fixed an insulating-sleeve 31 to prevent the current from invading the shaft 6. The insulating-sleeve 31 is arranged and fixed to the shaft 6 with such rigidity as to warrant the downward movement of the shaft when the armature-lever is drawn down into contact with the magnets. When the circuit is broken at the points of the push-buttons, the armature is freed from the force of the magnets and is lifted by the spring 14 on the shaft.

In Fig. 4 is illustrated a straight track 32 and a curved diverging track 33, controlled by switch-rail 34 for the straight track and switch-rail 35 for the curved track, the rails 34 35 having their points connected by a cross-bar 36. In the bed of the road and adjacent to the free ends of the switch-rails is arranged and secured a bed-plate 37, formed with side flanges 38 39, each having flared or rounded entrance ends, as at 40, and the flange 38 being inclined outwardly for a portion of its length, as at 41, to provide room for the throw of the switch-point in that direction. The other flange 39 is straight from the base of the part 40 throughout its length. In the way between the flanges of the bed-plate is placed the switch-point 42, having a straight and an inclined side, as shown, to aline with the inner walls of the flanges and is pivotally connected to the cross-bars 36 by pivot-bolts 43. To the front end of the switch-point is pivotally connected a point 44, tapering from its pivotal connection to its point, so that the plow or point 13 may enter at either side of the switch-point and turn the switch in the desired direction.

Reference being had to Fig. 4 of the drawings, it will be seen that the switch-rails have been moved to direct a car around the curved track and so the switch-point will remain set after the car has passed over the bed-plate. Now should a car come in the direction of the arrow and is required to continue on the straight track the motorman turns the shaft to bring the plow between the left-hand flange and the switch-point, which eventuates in moving the switch-rails so as to carry the curved rail away from the straight rail and

move the straight switch-rail against and into alinement with the straight line of track.

The invention has the advantage of doing away with all manual labor in turning the switch, such as the pushing of the switch by a bar.

When the device is to be operated, the plow is turned in the position required by the foot-piece 8. The circuit is then closed by either of the push-buttons, which action energizes the magnets, which in turn pull down the armature-lever, and the lever moves down the shaft and carries the plow into engagement with the bed-plate and switch-point. As soon as the plow has passed through the bed-plate the pressure on the push-button is removed, thus breaking the circuit, deenergizing the magnets, and releasing the armature-lever, and then the force of the spring lifts the shaft and the plow with it.

Having thus fully described the invention, what is claimed as new is—

1. In a switch-operating device, the combination with a laterally-movable switch-point, a vertically-movable shaft on the car, a plow carried by the shaft to engage the switch-point on either side, an electric circuit, magnets interposed in the circuit, an armature-lever actuated by the magnets and connected to the said shaft, and means on the car to make and break the circuit.

2. In a switch-operating device, the combination with the switch-rails, of a cross-bar uniting their free ends, a flanged bed-plate arranged and secured in the road-bed, a tapering switch-point movably arranged on said bed-plate and pivotally secured to said cross-bar, a hanger secured to the car, an electric circuit, electromagnets in the circuit and supported on the hanger, a vertically-movable shaft, a plow carried by the shaft and adapted to engage between the switch-point and the flanges of the bed-plate, an armature-lever pivotally supported by the hanger and connected to the vertically-movable shaft, and means to make and break the circuit.

3. A device for throwing a switch from a car, comprising a vertically-movable shaft, a plow carried by the shaft, means to lift the shaft after its downward movement, a hanger fastened to the car, an electric circuit, magnets in the circuit, an armature-lever pivotally supported by the hanger, an insulated sleeve on said shaft and connected to the armature, and means on the car to make and break the circuit.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES C. BOOTH.

Witnesses:

JOHN H. BOOTH,

JOHN COURTWRIGHT.