

No. 786,688.

PATENTED APR. 4, 1905.

W. S. SNYDER & W. H. BARKER.  
AUTOMATIC STREET RAILWAY SWITCH.

APPLICATION FILED APR. 26, 1904.

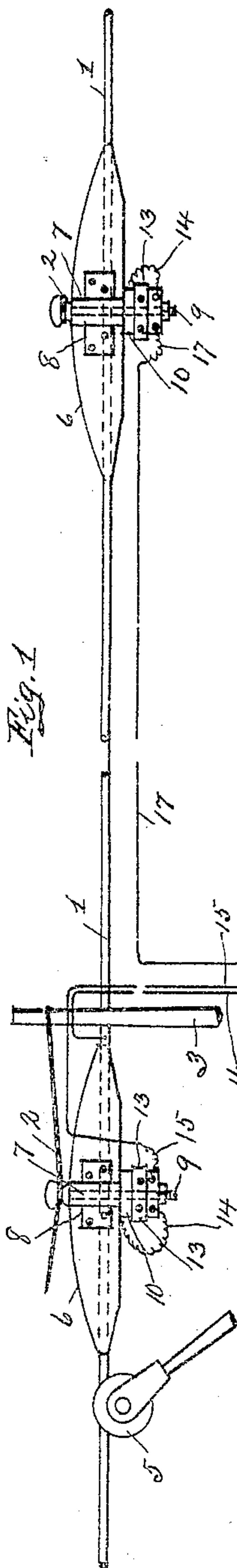


Fig. 1

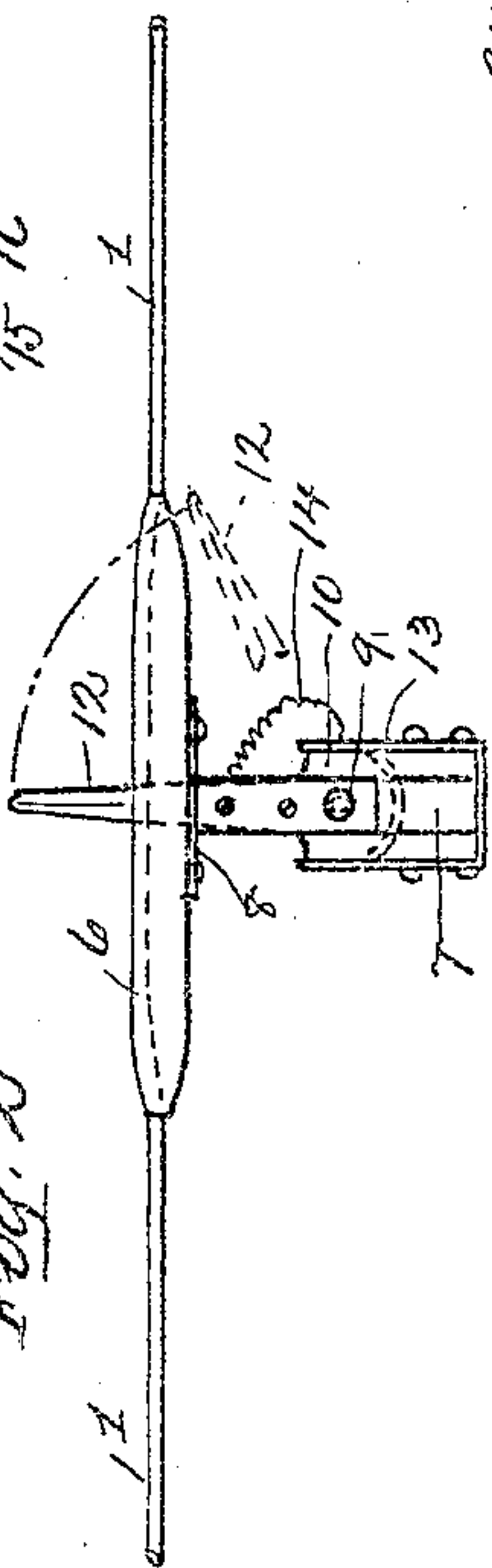


Fig. 2

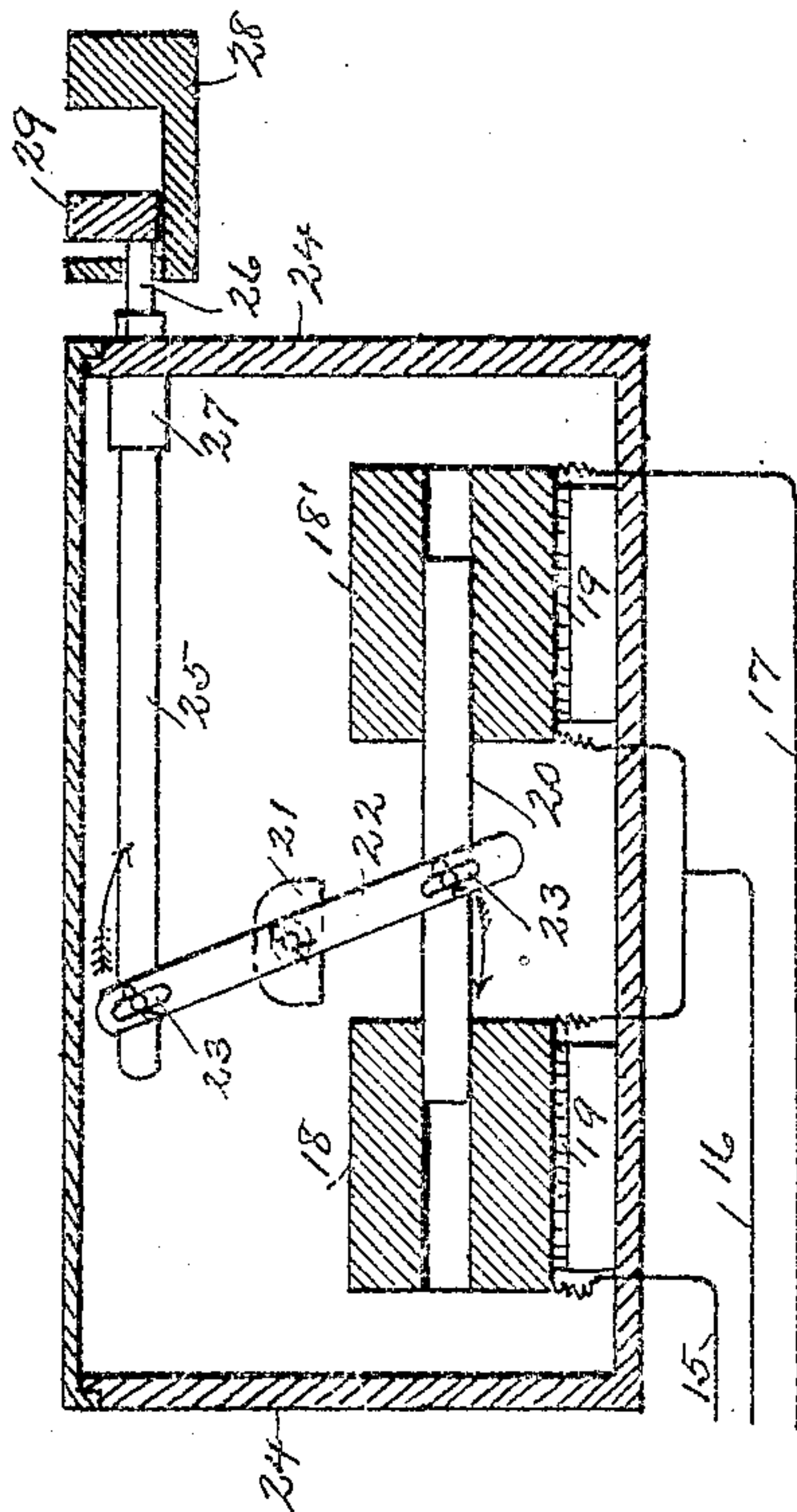


Fig. 5

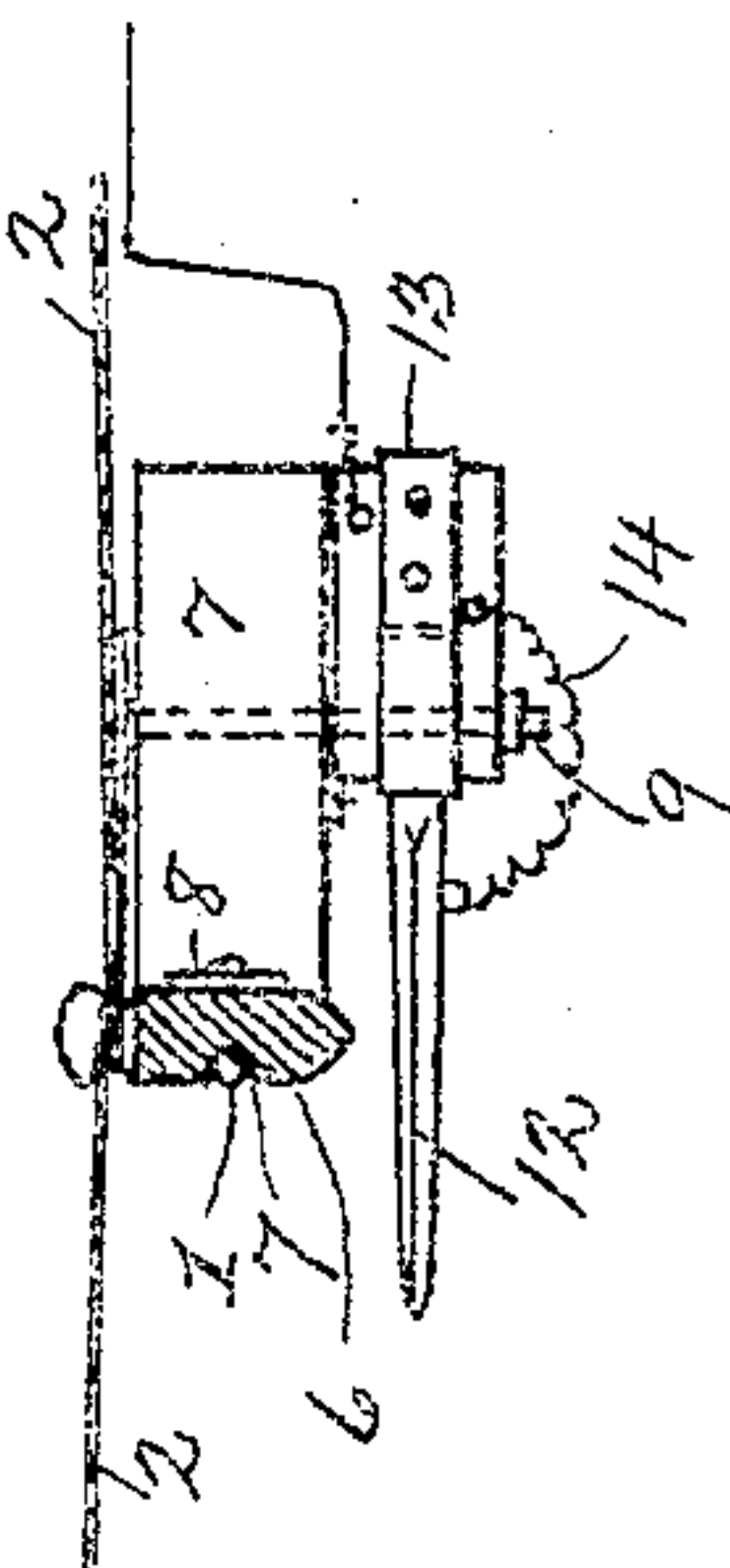


Fig. 3



Fig. 4

WITNESSES:

M. Hunter  
S. P. Lewis

INVENTOR:

William S. Snyder  
William H. Barker  
C. D. Lewis

Att'y.



# UNITED STATES PATENT OFFICE.

WILLIAM S. SNYDER AND WILLIAM H. BARKER, OF PITTSBURG,  
PENNSYLVANIA.

## AUTOMATIC STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 786,688, dated April 4, 1905.

Application filed April 25, 1904. Serial No. 204,736.

*To all whom it may concern:*

Be it known that we, WILLIAM S. SNYDER and WILLIAM H. BARKER, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Automatic Street-Railway Switches, of which improvement the following is a specification.

This invention relates to an improved automatic street-railway switch; and it consists in a pair of magnets connected to the switch-bar by suitable levers and operated by electric contact between the trolley-pole of the moving car and a swinging contact-arm in circuit with the said magnets, together with the certain details of construction and combination of parts, as will be fully described and claimed hereinafter.

In the accompanying drawings, Figure 1 is a side elevation of our device, showing the manner of connecting the contact-arms thereto, together with the several conductors arranged to energize the magnets operating the switch-bar, the same being constructed in accordance with our invention. Fig. 2 is a plan view of one of the contact-arms, showing the manner of attaching the same to the hanger. Fig. 3 is an end elevation of the same, a part of the hanger being shown in section. Fig. 4 is a side elevation and end view of the clevis in which the contact-arm is mounted. Fig. 5 is an enlarged sectional elevation of the magnets and their casing together with a portion of the switch-rail and bar.

To construct an apparatus for automatically operating street-railway switch-bars, we attach to the trolley-wire 1 suitable hangers 6, formed from non-conducting material protected at each end by metallic strips and supported by span-wires 2, attached to vertically-arranged poles 3, arranged at either side of the track 4 in the well-known manner common in the art. Attached to one of the hangers 6 a short distance to the front of the switch-bar 29 by means of a suitable bracket 8 and at a right angle to said hanger is a rectangular support 7, made of non-conducting material and also further supported by the

span-wire 2 in any suitable manner. Attached beneath this support 7 is a clevis 10, held rigid by a bolt 9, the slot of which is formed at an angle and in which is pivoted an arm 12, the said arm being held normally at right angles beneath the trolley-wire 1 by means of a spring 13, attached to each side of the clevis. This contact-arm is formed with knife-edges and pivoted in the aforesaid clevis by the bolt 9 in a manner that when brought in contact with the moving trolley-pole 5 the said arm will move about its pivotal point in a plane at right angles to the trolley-pole. Another of these swinging contact-arms 12 is arranged in position at a point some distance beyond the switch, the said arm and its connected parts being identical with that above described and is used to operate the switch-bar 29 in an opposite direction. The contact-arm of each is connected by conductors 14 to the clevises 10 and the said clevises by means of wires 15 and 17 to two magnets 18 and 18', suitably insulated at 19, arranged the one in line with the other and provided with a moving core common to both magnets. Another conductor 16 is connected to the trolley-wire 1 and to the two inner ends of the magnets 18 and 18'. These magnets 18 and 18' are arranged in a casing 24, located at one side of the switch-bar 29 and at right angles thereto, and the core 20, connected to a vertically-arranged lever 22, pivoted to a suitable bearing 21, the connection being made by means of a pin operating in a slot 23. The upper end of the lever 22 is connected to a horizontal bar 25, which extends through a stuffing-box 27 and is attached to a suitable point on the switch-bar 29.

In operation the trolley 5 moving along the trolley-wire 1 will bring the pole in contact with the arm 12 and the current passing through the conductor 16 to the magnet 18, through the same to the wire 15 to the clevis 10, thence by means of the short conductor 14 to the arm 12, and return to the ground through the trolley-pole 5, the controller, and mechanism of the car. This magnet 18 when thus energized will draw the core 20 within the



same, thereby by means of its connection with the switch-bar 29 move the said bar to open the switch. The trolley-pole by this time has moved the arm 12 about its pivotal point to the position shown in dotted lines at Fig. 2, thereby releasing the said arm to return to its normal position by the action of the spring 13. The trolley moving on is brought in contact with the second contact-arm 12, the car having passed the switch-bar and entered the turnout. This second contact energizes the other magnet 18', drawing the core 20 within, thereby moving the switch-bar 29 in an opposite direction to close the same. The current to this second contact-arm is from the trolley-wire 1, through the conductor 16 to the magnet 18, through the same and wire 17 to the clevis 10, and by means of the conductor 14 to the arm 12, and returning through the trolley-pole 5, the controller, and mechanism of the car to the rails.

The mechanism as above described will when operated by a car throw the switch in one direction and restore it to its normal position after the car has passed the switch. Under this operation of course each car when the switch is operated will be sent in the same direction; but if it is desired to have the car take a different direction from that which it will take when the switch is operated it is only necessary to pull down the trolley-pole, so that the trolley will pass the switch-operating mechanism on the wire without coming in contact with the same.

Various slight modifications and changes may be made in the details of construction without departing from the spirit of the invention. Therefore we do not wish to confine ourselves to that shown and described.

Having thus described our invention, what

we claim, and desire to secure by Letters Patent, is—

1. The herein-described apparatus for operating street-railway switches, consisting of the magnets 18 and 18', having a moving core common to each, lever connections joining said core to switch-bar 29, a contact-bar 12, pivoted on a vertical axis and arranged to swing in a horizontal plane and contact with the trolley-pole of a moving car, and suitable conductors connecting the said arms with the magnets, and with the trolley-wire, as and for the purpose described.

2. In an apparatus for the purpose described, the combination consisting of the contact-bars 12 each pivoted on a vertical axis and adapted to swing in a horizontal plane and arranged at either side of the switch-bar 29, and in line with the travel of the trolley-pole, means for holding said arms in their normal position at right angles to the trolley-wire, the two magnets 18 and 18', having a common core 20, loosely arranged therein, a system of electrical conductors in circuit with the said contact-bars and with the trolley-wire, a pivoted lever 22 connected to the core 20, and to the switch-bar 29, whereby the said bar may be moved in either direction, by energizing one or the other of the magnets, when a contact is made between the trolley-pole and one of the contacts 12, as described.

In testimony whereof we have hereunto signed our names in the presence of two subscribing witnesses.

WILLIAM S. SNYDER.  
WILLIAM H. BARKER.

In presence of—

JOHN GROETZINGER,  
H. J. LEVIS.