

(No Model.)

2 Sheets—Sheet 1.

W. S. GAVEY.

ELECTRICALLY OPERATED RAILWAY SWITCH.

No. 517,743.

Patented Apr. 3, 1894.

Fig. 4

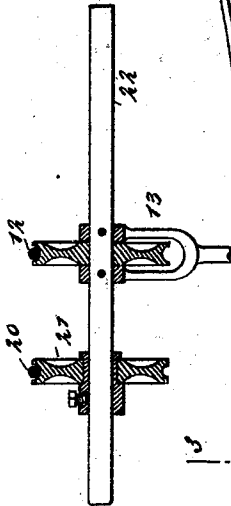


Fig. 1

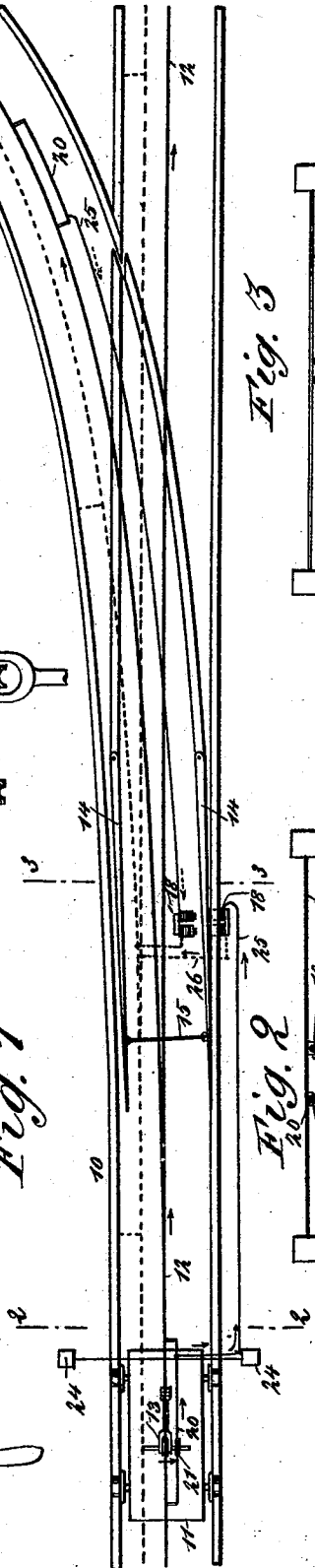


Fig. 2

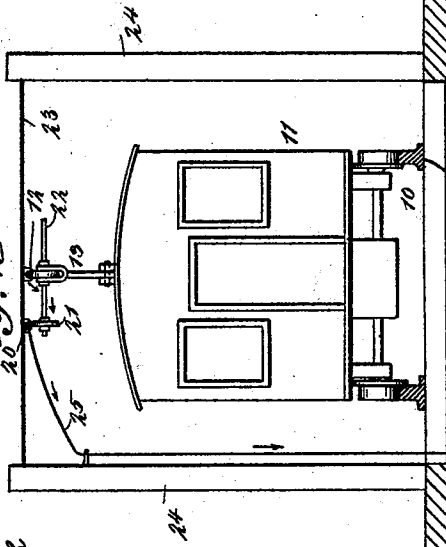
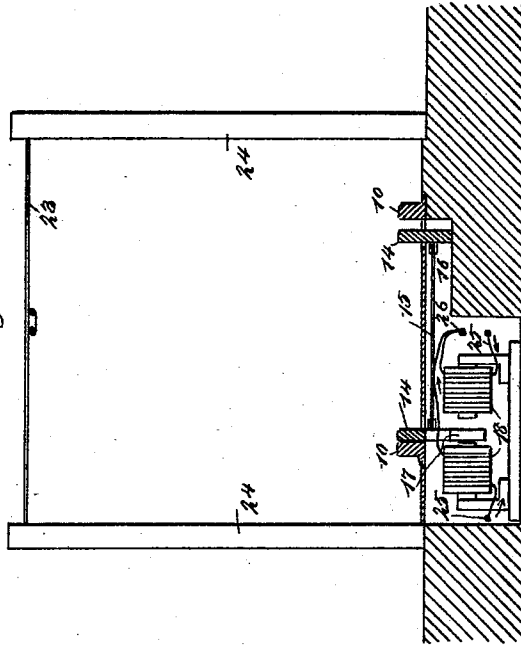


Fig. 3



WITNESSES:

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ATTORNEYS.

(No Model.)

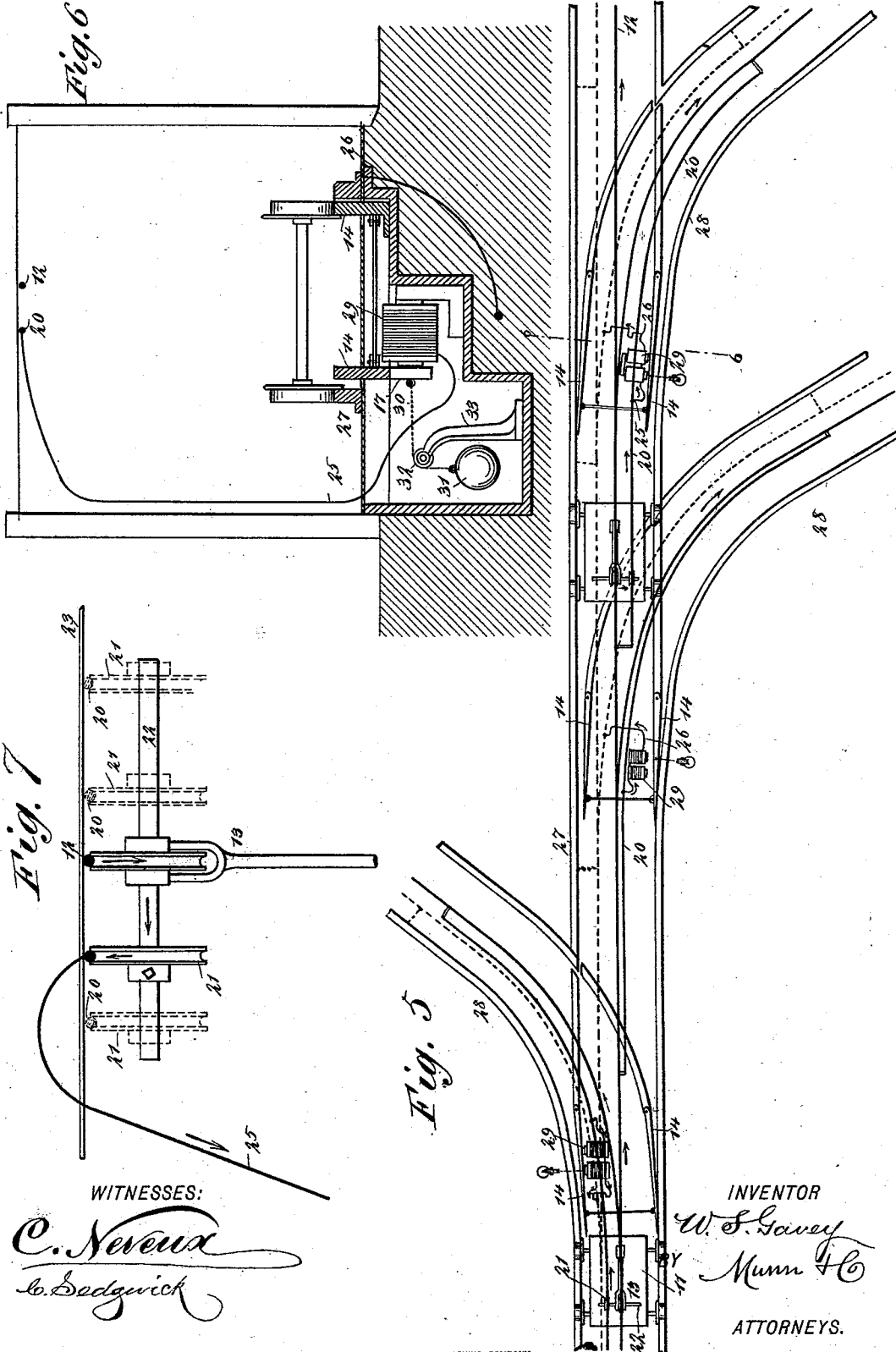
2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

WILLIAM S. GAVEY, OF BROOKLYN, NEW YORK.

ELECTRICALLY-OPERATED RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 517,743, dated April 3, 1894.

Application filed April 1, 1893. Serial No. 468,697. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. GAVEY, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Switch System for Electric Railways, of which the following is a full, clear, and exact description.

My invention relates to improvements in switches for electric railways, although the switches may, under certain conditions, be used for any railway, and the object of my invention is to provide means whereby a switch may be automatically operated by a moving car, so as to be thrown before the car reaches it and to be thrown back after the car has passed, also to provide a switch system adapted for use in connection with railways having numerous sidings, and on which certain cars leave the main track at one street or siding, other cars at another street or siding, and so on, the system being arranged so that each car will, by means of electrically operating mechanism, turn its particular switch, but pass over the other switches without in any wise affecting them.

To these ends, my invention consists in a switch system, the construction and arrangement of which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a diagrammatic view of a railway provided with my improved switch system, and having the switch arranged to be thrown both ways by electro-magnets. Fig. 2 is an enlarged cross section on the line 2—2 in Fig. 1. Fig. 3 is a similar section on the line 3—3 in Fig. 1, and shows in detail the switch and its operating mechanism. Fig. 4 is a detail of the trolley and the supplemental trolley or pulley used in connection therewith for shunting the current to the switch magnets. Fig. 5 is a diagrammatic plan view of a railway having numerous sidings, and with magnets and weights to throw the switches at the sidings. Fig. 6 is an enlarged cross section on the line 6—6 in Fig. 5, illustrating in detail the switch mechanism; and Fig. 7 is a diagrammatic view showing the manner in which the shunt wheels may be arranged to

send the current through the appropriate switch magnets.

As shown in Fig. 1, the railway 10 is of the usual kind, and is adapted to support a car 11, which also is of the customary kind, and which is provided with a motor driven by electricity taken from an overhead wire 12, the connection being made by the trolley 13 of any usual kind. The railway is also provided with the usual swinging switch rails 14, and my invention consists in the means for moving these rails.

The switch rails are arranged in the following manner: The opposite switch rails are connected by a tie bar 15, as usual, and they project downward beneath the road-bed and move in a recess 16. One of the switch rails is projected downward and formed into an armature 17, which swings between two magnets 18, which are adapted to be alternately energized, and it will be seen that when one magnet is energized, the armature will be drawn toward it and the switch closed, and when the opposite magnet is energized, the reverse action will take place and the switch be thrown open.

At a point in front of the switch on the main line, and also at a point on the siding beyond the switch, are wires 20, which run for a short distance parallel with the line wire 12, and which are insulated therefrom, and adapted as hereinafter described to receive the current from the line wire. These wires 20 are adapted to contact with the supplemental trolley or pulley 21, see Fig. 4, which is arranged on the prolonged shaft 22 of the trolley 13, and which may be adjusted so as to strike the wires 20 when it comes opposite them. The wires 20 are preferably arranged opposite the posts 24, as shown at the left in Fig. 1 and illustrated in Figs. 2 and 3, and the wire 20 may be supported by a cross wire 23, connecting the posts. From each wire 20 leads a wire 25, which is suitably insulated and which connects with one of the magnets 18, and the current passes from the magnet through a wire 26 to the underground wire in the usual way. The wire 25 from the wire 20 on the main line extends to one magnet 18, and the wire 25 from the wire 20 on the siding extends to the opposite magnet 18. It will be seen then that if a car which is to take

the siding comes along the main line, its pulley 21 will strike the wire 20, and the current will be shunted from the main wire 12, and will pass through the trolley pulley 21, the wire 20, the wire 25, and one of the magnets 18 to the ground, thus energizing the magnet and opening the switch. When, however, the car has passed to the siding, the trolley pulley strikes the second wire 20, and closes the circuit through the opposite magnet, thus closing the switch.

It will be readily understood then that the mechanism described enables the switch to be shifted automatically by the movement of the car, and it will also be understood that, if desired, the car when not run by electricity, could be provided with a source of electricity which would send a current through the trolley and through the wires 20 and their connections, to the magnets so as to operate the switch as specified.

As shown in Fig. 5, the main track 27 is provided with several sidings 28, which turn from opposite sides of the main track, this arrangement being common to street railways. At each siding is a switch 14, like that already described, and the switch has the armature 17 like the one previously described, but has only one magnet 29, which is adapted to pull upon the armature and upon the switch, the magnet being strong enough to overcome the tension of the weight 31, which is secured to a chain 30, and the latter is connected to the armature and runs over a pulley 32 on a support 33, so that when the current is shunted off from the magnet the weight will close the switch. The current is supplied to the magnet in exactly the manner already described, except that the wire 20 is prolonged so as to extend around from the main line over the siding, and the switch will be kept

open while the trolley pulley 21 is in contact with the wire 20, and the magnet 29 is energized.

The cars 11, which are to take a certain siding, are arranged so that their pulleys 21 will contact with the wire 20 opposite said siding, and the other wires 20 are placed at different distances from the main wire 12, so that they will not touch this particular shunt wire 20. This arrangement will be understood by reference to Fig. 7, and it will be clearly seen that the wires 20 and 12 may be placed at different distances apart at every siding, and the pulleys 21 of the cars which are to take a certain siding made to register with the wire 20 at such siding. In this way the cars will always automatically operate the correct switch. The pulleys 21, are made adjustable on their shaft, being clamped at any point desired by means of a screw which passes through the flange of the hub.

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

In an automatic electric switch the combination, with a railroad having a plurality of sidings, of a swinging switch rail at each siding, electro-magnets arranged to swing the rails, shunt wires for each switch, the wires being in connection with the switch magnets and in different vertical planes, an overhead wire carrying electricity, trolleys carried by the cars to engage the overhead wires, and contact pulleys which are adjustable along the trolley shafts and thus adapted to contact with different shunt wires, substantially as specified.

WILLIAM S. GAVEY.

Witnesses:

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EDGAR TATE.