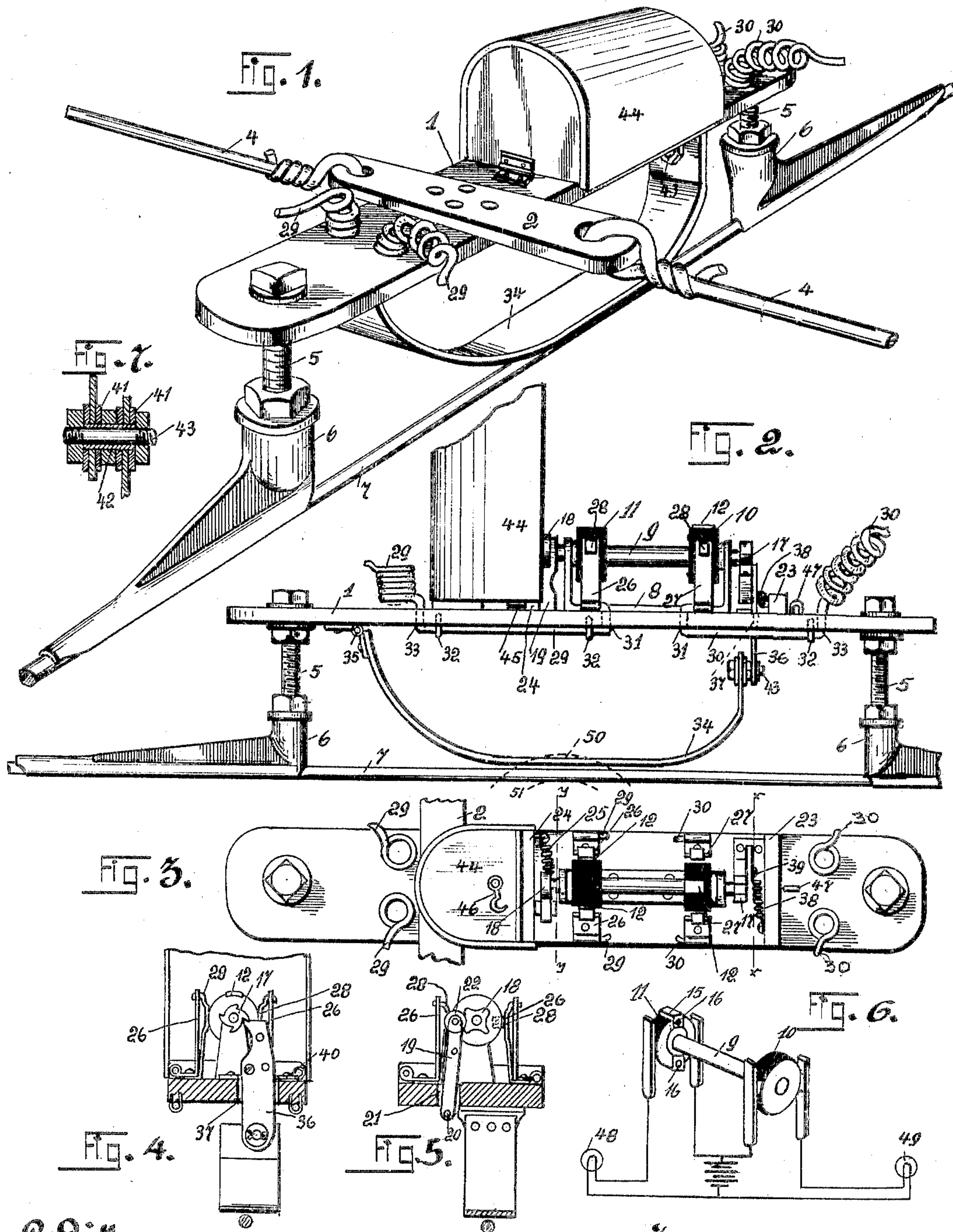


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F. VOLK.
SWITCH.

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UNITED STATES PATENT OFFICE.

FERDINAND VOLK, OF PITTSBURG, PENNSYLVANIA.

SWITCH.

SPECIFICATION forming part of Letters Patent No. 793,969, dated July 4, 1905.

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To all whom it may concern:

Be it known that I, FERDINAND VOLK, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in switches, and more particularly to that type of switch which is employed for operating signals.

The objects of the invention are to automatically control signals, to alternately actuate signals, and to provide a mechanism which is particularly adapted for railway systems, the mechanism being so constructed that it will be actuated by the trolley-car passing said mechanism.

It has been the common practice upon electric-railway systems where a single track is employed to use a plurality of signals to designate when the track is clear and when the track is being used. These signals heretofore have been manually operated, and the primary object of my invention is to dispense with this troublesome feature and employ novel means for automatically operating the signals.

With the above and other objects in view reference will be had to the drawings accompanying this application, wherein like numerals of reference designate corresponding parts throughout the several views, in which—

Figure 1 is a perspective view of my improved switch. Fig. 2 is a side elevation view. Fig. 3 is a top plan view. Fig. 4 is a vertical sectional view taken on the line *xx* of Fig. 3. Fig. 5 is a similar view taken on the line *yy* of Fig. 3. Fig. 6 is a diagrammatic view of the rotary contact movement of my improved switch. Fig. 7 is a detail sectional view of one form of insulation that is used in connection with my improved switch. Fig. 8 is a detail perspective view of one of the contact-plates employed in connection with my improved switch.

The switch as constructed by me is supported above the trolley-wire of the railway sys-

tem upon which it is used, the switch being supported in close proximity to the wire, whereby it may be actuated by the trolley-wheel of the car which passes along the wire. The manner of supporting the switch above the wire is illustrated in Fig. 1 of the drawings, and the reference-numeral 1 designates a switchboard to which is secured a cross-bar 2, the ends of this cross-bar being perforated, whereby the ends of the guy-wires 4 4 may be secured to the cross-bar 2. The ends of the switchboard 1 are provided with the depending screw-threaded bolts 5 5, and upon the ends of these bolts are secured the substantially L-shaped hangers 6 6, which support a trolley-wire 7. The guy-wires 4 are ordinarily secured to poles erected along the railway-line, and the hangers 6 6 are of the ordinary type commonly employed.

The switch mechanism is mounted upon the top of the switchboard 1, and it consists of a substantially U-shaped bracket 8, in which is rotatably mounted a shaft 9. Upon the shaft are mounted wheels 10 and 11, which are provided with contact-plates 12. One of these plates is illustrated in Fig. 8 of the drawings, and consists of a piece of metal which is provided with a central opening 14, whereby the same may be placed upon the shaft 9, and the ends of the plate are bent outwardly, as indicated at 15. The plates are secured adjacent to the wheels by screws 16, which pass through said plates, and the ends 15 of the plates are adapted to overlies the periphery of the wheels 10 and 11. When securing these plates to the wheels 10 and 11, I arrange the plate carried by the wheel 10 at right angles to the plate carried by the wheel 11, as clearly illustrated in Fig. 6 of the drawings, and the object of this construction will be hereinafter more fully described.

The ends of the shaft 9 protrude through the bracket 8, and upon the one end of the shaft I secure a toothed wheel 17, while upon the opposite end is secured a locking-wheel 18. A lever 19 is employed for locking the wheel 18, this lever being pivoted, as indicated at 20, to the bottom of the switchboard 1, and it protrudes upwardly through an opening 21 formed in the switchboard and has a

roller or wheel 22 journaled in its upper end, this roller being adapted to engage in the concave faces of the locking-wheel 18. Upon the top of the switchboard 1 are secured the
 5 cleats 23 and 24, and to the cleat 24 is secured a spring 25, the opposite end of which is connected to the lever 19, whereby it will be normally held in engagement with the locking-wheel 18.

10 Upon the top of the switchboard 1, at each side of the wheels 10 and 11, are mounted the contact-posts 26 and 27, these posts being provided with spring contact-arms 28. To the base of the contact-posts 26 and 27 are
 15 secured the wires 29 and 30, respectively, which pass through the switchboard 1, as indicated at 31, and are then secured by staples 32 to the bottom of the switchboard and are adapted to pass through the switchboard again
 20 to the top surface thereof, as indicated at 33. The function of these wires will be presently described.

The actuating mechanism of my improved switch consists of a curved plate 34, which is
 25 hinged, as indicated at 35, to the bottom of the switchboard 1, preferably near one end thereof, and the opposite end of the curved plate 34 is connected to a dog 36, which extends upwardly through an opening 37 formed
 30 in the switchboard, and this dog is adapted to engage the toothed wheel 17 of the shaft 9. To normally hold the dog in engagement with the toothed wheel, I employ a spring 38, which is secured, as indicated at 39, to the
 35 dog, the opposite end of the spring being secured to a cleat 33, carried by the switchboard 1. An escutcheon-plate 40 is secured upon the switchboard 1 adjacent to the opening 37. The connection of the curved plate 34 with
 40 the dog 36 is clearly illustrated in Fig. 7 of the drawings, and I preferably insulate this connection by employing a plurality of insulating-washers 41 and an insulated sleeve 42, which surrounds the pin 43, which secures
 45 the dog to the curved plate 34.

In order to protect the switchboard mechanism from dampness or from being injured and from any inclement weather, I provide a
 50 hood 44, which is hinged, as indicated at 45, to the top of the switchboard adjacent to the switch mechanism, and this hood may be provided with a suitable hook 46, whereby the hood can be locked in position over the switch
 55 mechanism by the hook 46 taking into the staple 47, carried by the switchboard.

Operation: We will assume that my improved switch is employed upon a street-railway system, a part of the system consisting of
 60 single track, and at each end of the single track the signal-lamps 48 and 49 are employed for designating when the track is clear. My improved switch is mounted above the trolley-wire in the vicinity of the single track, and as
 65 a car passes beneath said switch the flanges 50 of the trolley-wheel 51 will engage the

curved plate 34 and elevate the same, this movement raising the dog 36 and rotating the shaft 9 a quarter of a revolution. We will assume that the signal-lamp 49 has been illuminated and upon the shaft 9 being rotated
 70 the contact-plate 12 of the wheel 10 is carried out of engagement with the spring contact-arms 28 of the posts 27, at which time the circuit of the signal-lamp 49 is broken and the contact-plate 12 of the wheel 11 will be
 75 rotated into engagement with the spring contact-arms 28 of the post 26, and a circuit will be completed to illuminate the signal-lamp 48. The wires 30 of the post 27 are connected to one lamp, while the wires 29 of the post 26
 80 are connected to the other lamp, and these lamps will be alternately illuminated by trolley-wheels 51 actuating the switch mechanism previously described. The position to which the wheels 10 and 11 have been moved will be
 85 retained by the locking-wheel and the lever 19, and upon the trolley-wheel 51 passing the curved plate 34 the dog 36 and said plate will return to their normal position. It will of course be understood that the ordinary cir-
 90 cuits are employed for illuminating the lamps 48 and 49, a source of electric energy being included in circuit with said lamps in the usual or any desired manner, and that my improved switch is cut in upon these circuits to control
 95 the same. The wires 29 and 30 may be, if it be so desired, carried along the guy-wires 4 to the poles which support the same, and from there to the lamps 48 and 49, located, respectively, at each end of the single track.
 100

From the foregoing description, taken in connection with the drawings, it will be observed that the signals are automatically and alternately actuated and that the responsibility heretofore assumed by the operator of
 105 the cars is entirely removed, and it will be impossible for any accident to occur on account of the negligence of the operator in actuating the signals.

It will be noted that various changes may
 110 be made in the details of construction without departing from the general spirit and scope of the invention.

Having fully described my invention, what I claim, and desire to secure by Letters Pat-
 115 ent, is—

1. In a switch the combination with a switchboard adapted to be supported above a trolley-wire, revoluble contact-blocks mounted upon said switchboard, means carried by said
 120 switchboard and actuated by a trolley-wheel to rotate said contact-blocks, means to retain said contact-blocks in their moved position, until again rotated, a hinged hood to incase said contact-blocks, substantially as described.
 125

2. In a switch of the type set forth, the combination with a plurality of signals, of a switchboard adapted to be supported above a trolley-wire, rotary contact-blocks mounted upon said switchboard, means carried by said switch-
 130

board and actuated by a trolley-wheel to revolve said contact-blocks, and means for alternately actuating said signals, substantially as described.

5 3. A switch of the type described comprising a switchboard adapted to be supported above a trolley-wire, a plurality of revoluble contact-blocks mounted upon said switchboard, means carried by said switchboard and adapted to be actuated by a trolley-wheel to rotate said contact-blocks, and means mounted on the switchboard for retaining said contact-blocks positively in the position to which they are moved by the contact of the trolley-wheel with their actuating means until again moved, substantially as described.

4. A switch of the type described comprising a switchboard adapted to be supported above a trolley-wire, a revoluble shaft mounted on said switchboard, a plurality of contact-blocks mounted on said shaft, means, carried by said switchboard and adapted to be actuated by a trolley-wheel, for imparting rotary motion to said shaft and said contact-blocks, 5 a contact-plate carried by each contact-block and having contacting surfaces on opposite points of the periphery of the block, the contact-plate on one contact-block being at right angles to the contact-plate on the other contact-block, two contact-arms secured to the

switchboard adjacent each contact-block, means carried by the switchboard and adapted to be actuated by a trolley-wheel for imparting rotary motion to said shaft, and means mounted on the switchboard for retaining the contact-plates of each contact-block alternately in contact with its contact-arms. 35

5. The combination with a trolley system and a plurality of signals, of a switch supported above a trolley-wire, rotary contact-blocks mounted upon said switch, means carried by said switch and actuated by a trolley-wheel to rotate said contact-blocks, means to alternately operate said signals, and a hood adapted to incase said contact-blocks. 45

6. A switch of the type set forth, comprising a switchboard, means for supporting said switchboard above the trolley-wire, rotary contact-blocks mounted upon said switchboard, means operable by a trolley-wheel for rotating said blocks, means for locking said blocks in the position to which they are rotated, a hood incasing said contact-blocks, substantially as described. 50

In testimony whereof I affix my signature in the presence of two witnesses. 55

FERDINAND VOLK.

Witnesses:

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E. E. POTTER.