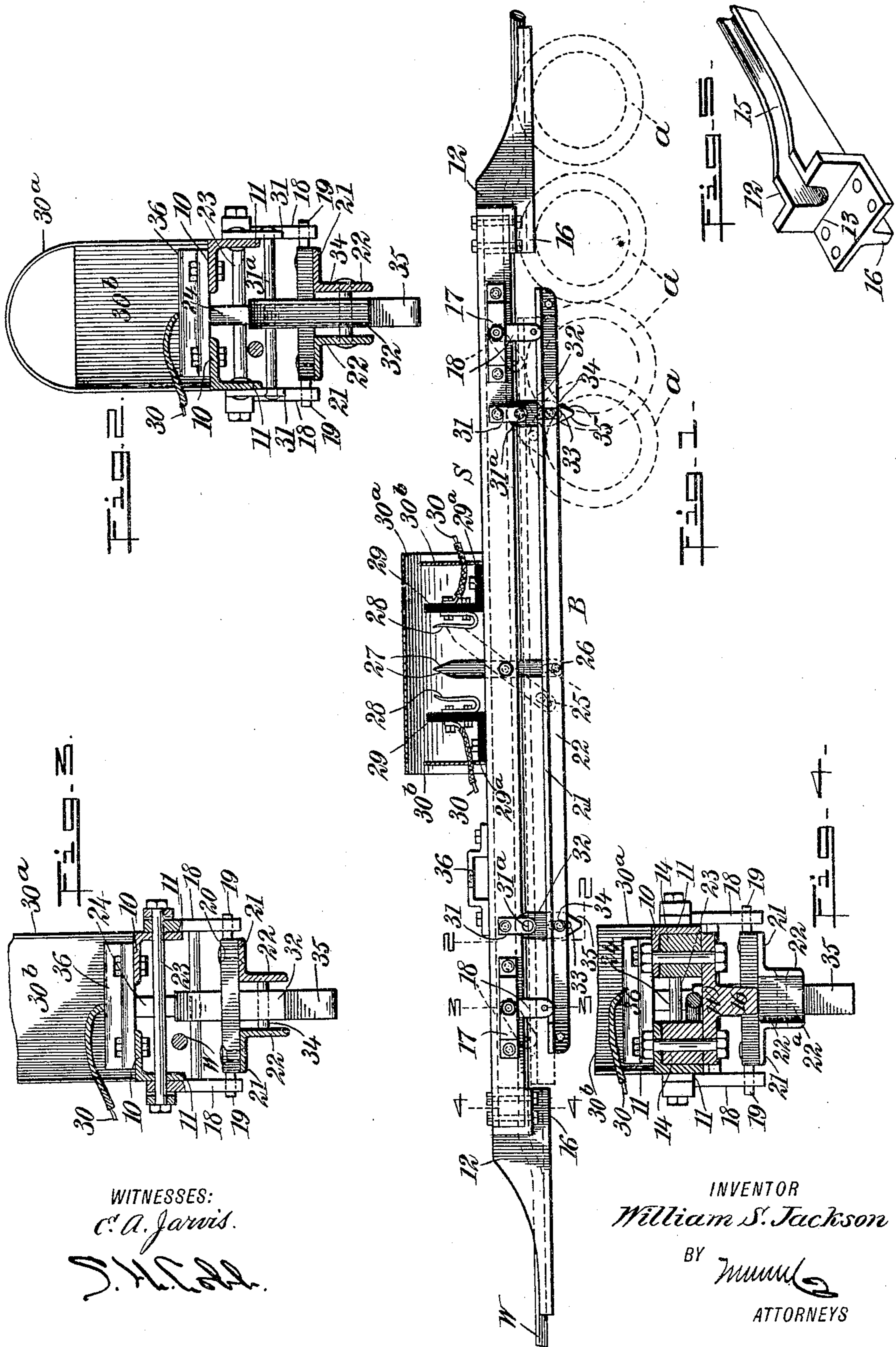


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W. S. JACKSON.
SWITCH.

APPLICATION FILED AUG. 27, 1904.



WITNESSES:

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WILLIAM S. JACKSON, OF HOBOKEN, NEW JERSEY.

SWITCH.

No. 795,285.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM S. JACKSON, a citizen of the United States, and a resident of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Switch, of which the following is a full, clear, and exact description.

My invention relates to switches for electrical work, it being particularly applicable to those employed in connection with the trolley-wire of electric-car systems. Its principal objects are to provide a simple and convenient device of this character.

It consists in the various features and combinations hereinafter described and claimed.

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

Figure 1 is a side elevation of one embodiment of my invention, the casing being in section. Figs. 2, 3, and 4 are vertical transverse sections on the lines 2 2, 3 3, and 4 4, respectively, of Fig. 1; and Fig. 5 is a perspective view of one of the end pieces.

S designates a support, which preferably consists of two angle-irons or conducting-bars, the upper or horizontal flanges 10 of which extend toward one another, leaving a considerable space between the vertical side flanges 11. These bars are held in fixed relation to one another by end pieces 12, which are preferably provided with suitable recesses 13 at one extremity, in which the ends of the bars are bolted, with interposed spacing-blocks 14. Each of these end pieces extends outwardly from the support and is provided at its upper side with a groove 15, through which the trolley-wire may pass, while at 16 each end piece projects below the support to form therewith an extended recess. To the outer side of each of the supporting angle-bars near its ends are secured brackets 17, in which are pivoted depending links 18. These links are arranged in pairs and have openings near their lower extremities to receive cylindrical end portions 19 of cross members 20, to which is fixed an actuating member or bar B. This actuating member is shown as made up of opposite angle-bars of suitable conducting material, the inner horizontal flanges 21 of which are turned from one another, while the depending vertical flanges 22 are separated by such a space as to enable the groove of the ordinary trolley-wheel to properly contact with them. The angle-bars are secured by their flanges 21 to

the members 20, and they may be further stayed or fixed in relation to one another by blocks 22^a connecting the flanges 22 near their ends. This bar is normally located with the lower edges of the flanges 22 outside the recess between the end pieces or below the plane of the lower edge of the portions 16.

Extending between the flanges 11 of the bar S is a rod 23, upon which is fulcrumed a lever 24, extending above and below the angle-bars and having at its lower end an elongated opening or slot 25, with which coacts a pin 26, connecting the flanges 22 of the bar B. At the upper end of the lever are shown opposite inclined contact-faces 27 27, which may coact with contact members 28 28, here illustrated as in the form of leaf-springs bent to substantial U shape and fastened by one arm to insulating members 29, which may extend across the upper flanges of the support, they being secured thereto through angular portions or feet 29^a. From the contact members 28 lead conductors 30 to such points as it is desired that the current shall be conveyed. The contact members may be protected by a shield or casing conveniently having continuous side and curved top walls 30^a and end walls or partitions 30^b, which may contact with the outer ends of the feet of the insulating members to position the casing.

At opposite sides of the support are secured pairs of brackets 31 31, connected by transverse rods 31^a, upon which are pivoted arms 32. These arms extend between the sides of the bars B and are there provided with elongated openings or slots 33, through which pass pins 34, extending between the flanges 22. The lower extremities of these arms depend below the edges of the flanges 22 and are there preferably provided with oppositely-inclined faces 35.

In use the trolley-wire W is carried through the support, it lying in the grooves of the end pieces and being soldered or otherwise secured therein, while between these it is situated intermediate the flanges 11 at one side of the moving elements carried by the support. The support may be hung from the overhead work by means of a suitable socket 36, bolted to the flanges 10 of its side bars. This socket will also have the effect of stiffening and strengthening the support. When in position, the bar B will lie with its lower edge below the plane of the end pieces, while the lever will occupy a substantially vertical position and the ends of the arms will project some-

what below the bar. With the elements in this relation the entire structure is serving as a conductor of current, except that there is no flow through the contact-pieces 28, this being prevented by the insulating members which support them. Now upon the approach of a trolley-wheel, as is indicated in dotted lines in four successive positions at *a*, this will first ride over one of the end pieces and upon leaving the inner extremity thereof will contact with the bar B and by virtue of the spring, which forces its pole upwardly, will tend to press the bar from it, thus swinging it about the links toward the support. If for any reason, such as lack of proper tension of the spring or sticking in the pivotal points of the device, this movement is resisted, the trolley-wheel contacts with the end of the arm 32, which furnishes a shifting abutment against which it may act, insuring the raising of the bar. As said bar swings upwardly upon its links, the point-and-slot connection between the lever and arms permitting this, the end of the arm takes an inclined position between the bar-flanges out of coaction with the trolley-wheel, so that the latter may pass smoothly along beneath the other raised arm and leave the bar at the opposite end piece. While the trolley-wheel is in contact with the bar and holding it in its raised position, the end of the lever will be moved into coaction with one of the contact-springs, whereupon current will flow from the trolley-wire through the attached conductor to the desired point. When the wheel leaves the bar, it falls by gravity to its normal position, breaking the circuit and returning the lever to its intermediate point. If the trolley-wheel approaches from the opposite end piece to that just described, the action will be precisely the same, except that the lever will be brought into coaction with the opposite contact-spring, which through its conductor may deliver the current to the same point as its companion or to any other.

It should be noted that the extension of the actuating-bar in the direction of movement of the elements acting upon it maintains the contact between the members 27 and 28 for a time dependent upon the length of the actuating member and the rate of travel past it. Therefore by altering the degree of extension the time of action may be widely varied. The advantage of this will be obvious in connection, for example, with electromagnetic devices, in which some time is necessary for the iron to attain a proper degree of saturation and for the coils to overcome their self-induction.

Though I have referred in the claims to operation of my improved switch by a trolley, it is to be understood that this does not necessarily apply to a contact-wheel only, but is intended to designate any portion of the supporting and conducting system which more directly coöperates with the source of current.

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

1. A trolley-switch comprising a support, a contact member carried thereby, an actuating member mounted upon the support and operable by the trolley, said actuating member being extended in the direction of travel of the trolley and oppositely movable thereby, and a second contact member movable by the actuating member.

2. A trolley-switch comprising a support, a contact member carried thereby, links pivoted upon the support, an actuating member pivoted upon the links near its opposite extremities, and a second contact member movable by the actuating member.

3. A trolley-switch comprising a support, a contact member carried thereby, links pivoted upon the support, an actuating member pivoted upon the links near its opposite extremities, and a second contact member movable by the actuating member in one direction and by gravity in the opposite direction.

4. The combination with a support having conducting end pieces, of a movable bar carried by the support and lying between but extending normally outside the plane of the end pieces, and coacting contact members, one of which is movable with the bar.

5. A trolley-switch comprising a support, a contact member carried thereby, an actuating member mounted upon the support and operable by the trolley, said actuating member being extended in the direction of travel of the trolley, a projection from the actuating member extending into the path of the trolley, and a second contact member movable by the actuating member.

6. The combination with a support having end pieces, of a movable bar carried by the support and lying normally outside the plane of the end pieces, a projection from the bar movable therewith, and coacting contact members, one of which is movable with the bar.

7. The combination with a support, of links pivoted thereto, a bar carried by the links, a lever fulcrumed upon the support and connected with the bar, and a contact member with which the lever may coact.

8. The combination with a support, of links pivoted thereto, a bar carried by the links and movable in opposite directions, a lever fulcrumed to the support and connected with the bar, and opposite contact members with which the lever may coact.

9. The combination with a support, of links pivoted thereto, a bar carried by the links, a lever fulcrumed upon the support and connected with the bar, a contact member with which the lever may coact, and an arm pivoted to the support and projecting outside the bar, it being connected to said bar.

10. The combination with a support, of links pivoted thereto, a bar carried by the links, a lever fulcrumed upon the support and connect-

ed with the bar, a contact member with which the lever may coact, and an arm pivoted to the support and projecting outside the bar, said arm and the lever being connected to the bar by a coöperating pin and slot.

11. The combination with separated supporting angle-bars, of end pieces connected therewith, links pivoted upon the angle-bars, a bar supported upon the links, a lever fulcrumed between the angle-bars and connected with the last-named bar, an insulating member mounted upon the angle-bar, and a contact member carried by the insulating member for coaction with the lever.

12. A trolley-switch comprising a support,

a contact member carried thereby, an actuating member mounted upon the support and operable by the trolley, said actuating member being extended in the direction of travel of the trolley, and a second contact member pivotally connected with the support and actuating member.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM S. JACKSON.

Witnesses:

SYLVANUS H. COBB,
EVERARD BOLTON MARSHALL.