No. 854,039. PATENTED MAY 21, 1907.

E. B. JACOBSON.

COMMUTATOR SWITCH.

APPLICATION FILED SEPT. 12, 1906.

Fig. 1.

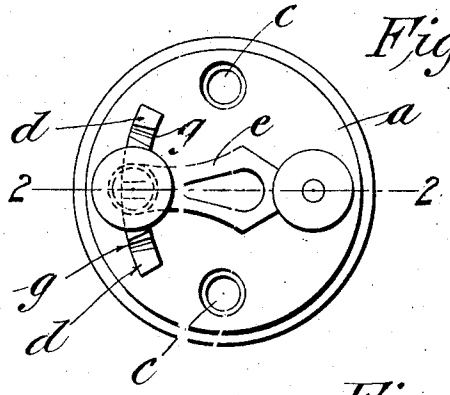


Fig. 2.

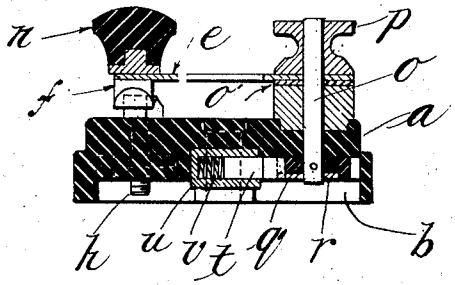
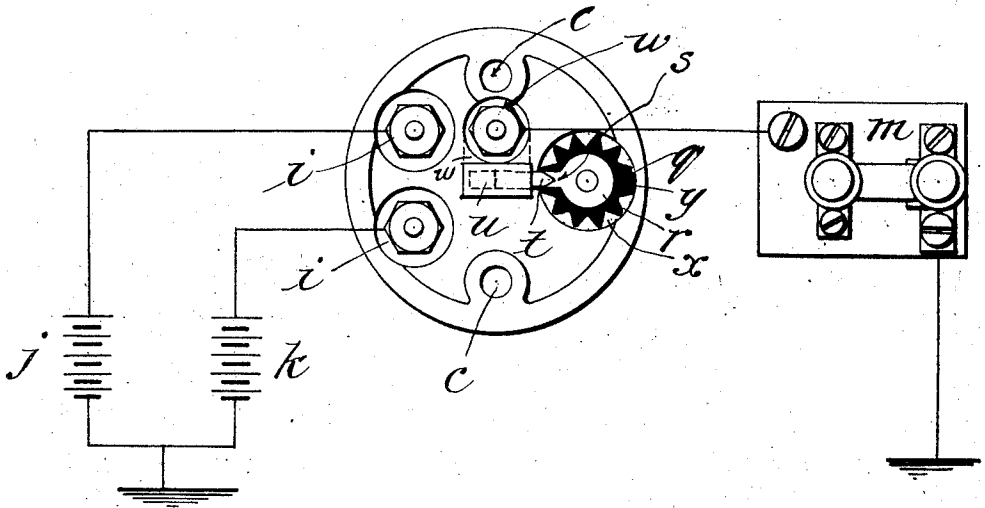


Fig. 3.



Witnesses.

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COMMUTATOR-SWITCH.

No. 854,039. Specification of Letters Patent. Patented May 21, 1907.

Application filed September 12, 1906. Serial No. 334,306.

To all whom it may concern.

Be it known that I, EDWARD B. JACOBSON, a citizen of the United States of America, residing at Pittsfield, in the county of Berkshire and State of Massachusetts, have invented new and useful Improvements in Commutator-Switches, of which the following is a specification.

This invention relates to improvements in electric switches and particularly as an improvement in the switch shown in my prior United States Letters Patent dated July 10, 1906, #825,838.

The switch shown and described in this application is what I term a "commutator-switch," the object of which is to permit the circuit to be closed after the commutator element has been rotated a certain predetermined number of steps or notches from the circuit closing position or a certain number of steps or notches from the "zero" position of the commutator element; the toothed wheel being so constructed that when rotated into a certain position the circuit will be closed as for example through the primary of an induction coil when the same is used on automobiles or for other uses as occasion may require.

In employing a commutator or toothed wheel element in a switch for automobiles, the operator can safely leave his machine without any danger of the same being started by an unauthorized person during his absence. The switch described in my aforesaid prior patent makes it necessary to remove the movable switch element to prevent unauthorized persons starting the engine. To overcome this objection I provide a rotatable commutator element or toothed wheel that can be moved a certain number of steps or notches either forward or backward, from the circuit closing position, and when he wishes to start the machine again, it is only necessary to turn the commutator element or toothed wheel back to its circuit closing position. By the use of a commutator or toothed wheel element, practically all danger of the machine being started by any unauthorized person is avoided, as only the operator can know the exact position he left the commutator element of the switch when the circuit is broken.

In the drawings forming part of this application,—Figure 1 is a top plan view of the switch similar to that shown in Fig. 1 of my prior patent. Fig. 2 is a vertical sectional view on the line 2—2 of Fig. 1. Fig. 3 is a bottom plan view similar to that shown in Fig. 5 of my said patent, also showing the diagram of wiring connections illustrating how the switch is used in practice.

For the sake of clearance Figs. 1 and 3 are not shown solid black to represent insulation, as the sectional view shown in Fig. 2 sufficiently explains the use of insulating material for the base.

Referring to these drawings in detail, *a* designates a base-piece of the switch and made of suitable insulating material, preferably hard rubber, the under side of the same having a recessed portion *b* in which are carried the various terminals and the commutator element.

c designates openings through the base-piece *a* for securing the same to a suitable support.

d, *d*, designates short arc-shaped contact pieces that are secured to the upper side of the base-piece *a*, and over which the contact lever *e* moves, the lower side of the same having a wedge-shaped piece *f* that is adapted to engage the V-shaped notches *g* in the arc-shaped pieces *d*, for the purpose of closing the electric circuit to either set of batteries. These arc-shaped pieces are secured to the base-piece *a* by means of the threaded extensions *h* to receive the nuts *i*; one of the nuts being used to secure the terminals to the threaded extensions *h*, as readily understood. The arc-shaped pieces are spaced a short distance from each other as clearly shown in Fig. 1, and in my prior patent at Fig. 4. The lever *e* connects either one of the batteries *j* or *k* to the coil *m* according to its position, with one or the other of the arc-shaped pieces *d*, and when the wedge-shaped piece *f* is placed so as to engage both of the arc-shaped pieces, both batteries are connected in multiple to the spark coil shown at *m*.

n designates a piece of insulating material secured to the lever *e* for operating the same.

o designates a rotatable shaft or spindle to which the contact lever *e* is pivoted.

o' is a washer loose on the spindle *o*.

p designates a milled head that is secured

to the spindle *o* for rotating the same. On the lower end of the spindle is secured a toothed wheel *q* in any suitable manner. To the lower side of the wheel *q* is secured a piece of conducting metal *r* having an extension portion *s* which forms part of one notch of the wheel *q*. The toothed wheel *q* is made of some insulating material, as fiber, and is adapted to be locked in various positions by means of a spring-pressed pawl *t* that is mounted in a rectangular casing *u;* the spring *v* being clearly shown in Fig. 2 between the inner end of the rectangular casing *u* and the end of the pawl *t* so as to normally hold the pawl extended.

w designates a piece of conducting material that is electrically connected with the rectangular casing *u;* the piece *w* serving as a common terminal between the coil *m* and the two terminals *i*, *i* that are connected with the batteries *j* and *k*. In practice the piece *w* is made flat, and the rectangular casing *u* is soldered thereto.

The extension strip *s* of the metal piece *r* is cut out so as to register with one of the V-shaped notches *x* of the toothed wheel *q* so that when the spring-pressed pawl *t* engages the extension strip *s* an electrical contact is made from the spindle *o* to the spring-pressed pawl *t* and common terminal *w*. This is the position the wheel *q* is placed when the engine is running.

When the operator leaves his machine, in order to stop the engine of the same he simply rotates the milled head *p* transmitting a rotary motion to the spindle *o* which carries the toothed wheel *q*, moving the same several notches from the circuit closing position shown in Fig. 3. When he wishes to restart the engine he simply rotates the toothed wheel *q*, as many notches back again as he turned it away from the circuit closing position shown. In order to determine exactly the position of the toothed wheel *q*, one notch of the same, as shown at *y*, is omitted or made full, then by turning the wheel *q* either forward or backward until the spring-pressed pawl *t* ceases to click and engages the part *y*, which I call the "zero" position of the wheel *q*, by counting the notches in either direction from this position and the extension strip *s*, I can bring the wheel back into its closed circuit position. The number of notches from the part *y* to the strip *s* in either direction is the same.

It will therefore be seen that I have provided a switch that will prevent the machine being started by any unauthorized person, as the toothed wheel *q* can be placed in a comparatively large number of different positions without closing the circuit through the coil *m*.

What I claim is:—

1. In a switch of the class described, a base-piece, terminals secured to the same, one being a common terminal and the others battery terminals, and step-by-step mechanism between said terminals for connecting and disconnecting the battery terminals to the common terminal.

2. In a switch of the class described, a base-piece, battery terminals, and a common terminal secured to the same, commutator mechanism between said terminals for placing the terminals in circuit with each other, as described, said commutator mechanism including a toothed element.

3. In a switch of the class described, a base-piece, terminals secured to the same and in spaced relation, a contact lever, a rotatable shaft passing loosely through the contact-lever for engaging said terminals, a milled head secured to the rotatable shaft at one end and commutator mechanism secured to the opposite end of said shaft, locking means for holding said commutator mechanism in a plurality of positions, whereby an electrical circuit may be closed between said terminals.

4. In a switch of the class described, a base-piece, a plurality of termnals secured thereto, one of said terminals being a common terminal, a spring-pressed pawl electrically connected to the common terminal, a toothed wheel of insulating material having one of its notches provided with a metallic margin, a rotatable shaft for operating said toothed wheel, the contact-lever pivotally supported on said shaft and adapted to engage said terminals, whereby when the shaft is rotated the toothed wheel may be placed in a plurality of positions for breaking the electrical connection between said terminals, as described.

5. In a switch of the class described, a base-piece of insulating material, and provided with a recessed portion, a plurality of terminals secured thereto, one of the terminals being a common terminal and the other battery terminals, contact pieces spaced from each other and connected to the battery terminals, a spring-pressed detent in electrical connection with the common terminal, and commutator mechanism, engaging said pawl for breaking the electrical connection between the terminals, the terminals, pawl and commutator mechanism being located within the recess, and means for operating the commutator mechanism.

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