E. H. RIEKEN.

ELECTRIC SWITCH.

APPLICATION FILED JAN. 2, 1913.

1,065,550.

Patented June 24, 1913.

2 SHEETS—SHEET 1.

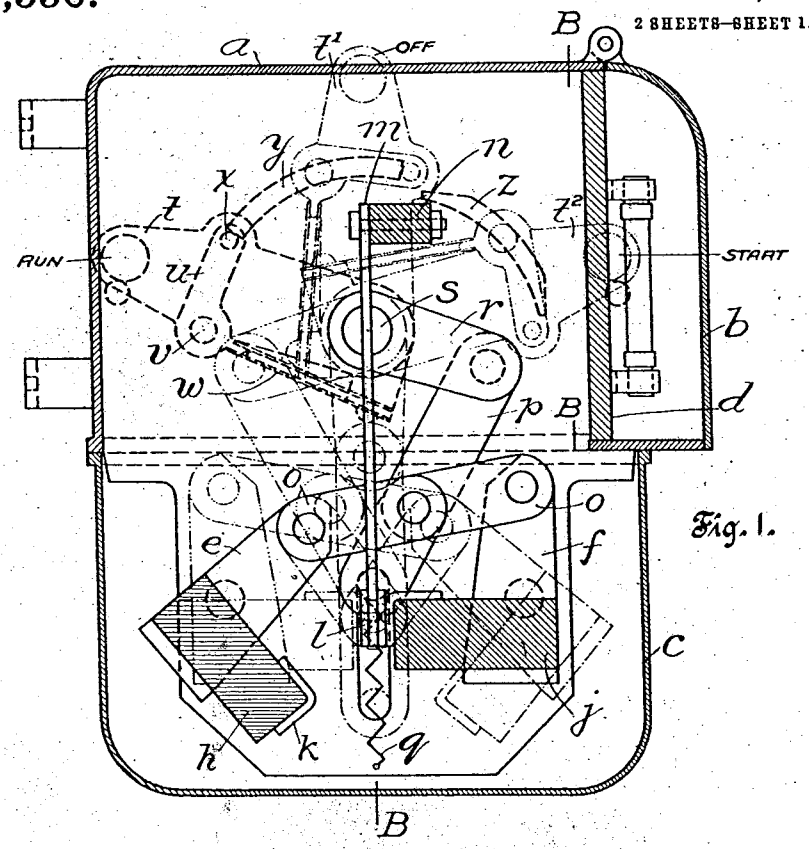

Fig. 1.

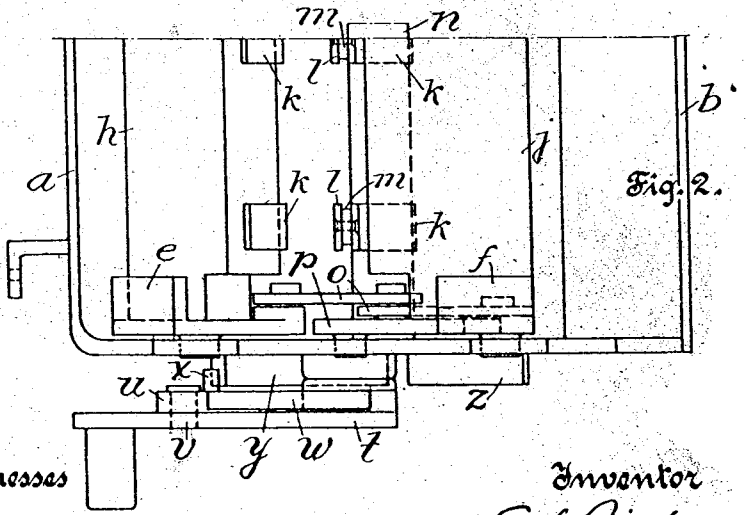

Fig. 2.

Witnesses

Arthur J. Gracie

E. C. Peters

Inventor

E. H. Rieken

E. H. RIEKEN.

ELECTRIC SWITCH.

APPLICATION FILED JAN. 2, 1913.

1,065,550.

Patented June 24, 1913.

2 SHEETS-SHEET 2.

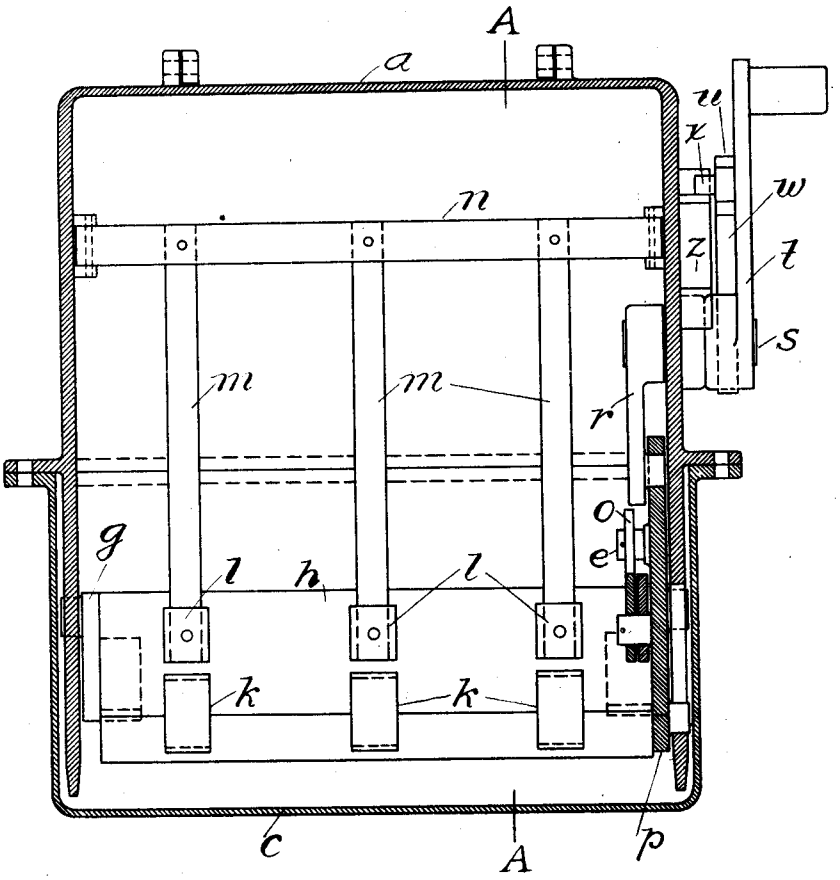

Fig. 3.

Witnesses

Arthur J. Grafe

E. C. Peters

Inventor

E. H. Rieken

UNITED STATES PATENT OFFICE.

ERNEST H. RIEKEN, OF CHICAGO, ILLINOIS.

ELECTRIC SWITCH.

1,065,550. Specification of Letters Patent. Patented June 24, 1913.

Application filed January 2, 1913. Serial No. 739,859.

To all whom it may concern:

Be it known that I, ERNEST H. RIEKEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Electric Switches, of which the following is a specification.

My invention relates to switches used for opening, closing and maintaining electric circuits, wherever such devices are necessary; as in connection with electric generators, motors or other electrical apparatus.

The object of my invention is to construct an electric switch, the current carrying parts of which operate either in air or in oil and which belongs to that class of switches known as double throw and is to be used principally in connection with induction motors, where it is necessary to use one section or throw of the switch for starting the motor and the other section or throw of the switch for the continued running of the motor. My switch is so designed that it can not be thrown from the open position directly into the running position without first having been brought to the starting position, nor can it be left on the starting position without being held by the operator. It is also so designed so that all springs which are employed to keep current carrying parts in contact can not be permanently bent out of place; thus assuring an unvarying pressure on these contact parts. I attain these objects by the construction shown in the accompanying drawings in which:

Figure 1 is a vertical cross section through the switch on the line A A of Fig. 3. Fig. 2, is a half plan looking upward at the bottom of the switch, with the tank removed. Fig. 3, is a vertical longitudinal section through the switch on the line B B of Fig. 1.

The switch consists essentially of a metal casing *a*, this casing having two sides, a back and a top, the casing supporting and inclosing most of the working elements of the switch. A front cover *b* and an oil tank *c* are attached to the casing *a*. A fuse base *d* is also contained within the casing *a*.

In Fig. 1 is shown a composite view of the switch in the off position as well as in the starting and in the running position.

The cranks *e* and *f* are pivoted in one side of the casing *a*, these two cranks together with two other cranks *g* shown in Fig. 3 supporting the movable wooden blocks *h* and *j*. The movable contacts *k* are attached to the wooden blocks *h* and *j*. The stationary contacts *l* are attached to the springs *m* which are rigidly attached to the wooden block *n*, which in turn is rigidly supported by the casing *a*. To simplify the illustration the springs *m* are shown relaxed whereas in practice the movable contacts *k* will project out sufficiently far so that when the contacts *k* and *l* are touching, there will be enough tension to keep the electric circuits tightly closed. The two toggle links *o* are movably pivoted, each link at one end on studs projecting from the upper ends of the cranks *e* and *f*, the other ends being jointly pivoted movably on a stud projecting from the connecting rod *p*. The rod *p* has a stud projecting from its lower end engaging a vertical slot in the casing *a* and at its upper end engages a projecting stud on the crank *r*. A spiral spring *q* attached at one end to the connecting rod *p* and at its other end to the lower edge of the casing *a* serves to open the switch when the operating lever *t* is released.

The crank *r* is fixed to one end of a shaft *s* which is rotatable in a bearing in the casing *a*. To the other end of the shaft *s* is fixed the operating lever *t*, by means of which the mechanism of the switch is operated. A latch *u* having a projecting stud *x* at its free end, swings on a pin *v*, projecting from the operating lever *t*. Two flat springs *w*, each fixed at one of its ends to the hub of the operating lever *t*, engage at their free ends with a tongue projecting from the latch *u* and maintain the latch in the normal positions shown in Fig. 1, and when the switch is being thrown from the off position to the starting position and thence to the running position, these springs serve to bring the latch back to the normal positions shown. The two ledges *y* and *z* project from the outer side of the casing *a*, the ledge *y* being so situated that it engages the stud *x*, so that the switch can not be immediately thrown from the off position to the running position. The ledge *z* is so situated that the pin *x* will slide over the upper side of the ledge, allowing the switch to be thrown into the starting position and then allowing the stud *x* to slide along the under

side of the ledge so that by a quick movement of the operating lever the stud x will be carried across the gap between the two ledges and will slide along the under side of the ledge y, until the running position is reached, when the stud x will assume the normal position shown, in this manner locking the switch in the running position. By releasing the latch, either by hand or by an automatic device, the switch may be thrown to the off position.

In Fig. 1, the letters t, t^1, and t^2, indicate respectively the running, off, and starting positions of the operating lever, the corresponding positions of the other elements being readily traceable from the different positions of the operating lever.

The electric circuits are arranged as follows: The upper fuse clips on the base d are connected to the lines from the generating source and by flexible leads to the movable contacts attached to the wooden block k. The lower fuse clips on the base d are connected by flexible leads to the movable contacts attached to the wooden block j. The stationary contacts l attached to the springs m are connected by suitable leads to the motor or other apparatus which is to be controlled.

What I claim and desire to secure by Letters Patent is as follows:—

1. In an electric switch, a supporting casing, common to moving and stationary parts, a set of centrally situated spring supported stationary contacts mounted on an insulating support, two sets of movable contacts attached to movably pivoted insulating blocks, situated one on either side of said stationary contacts; means to cause said movable contacts to travel radially around their supporting pivots, so as to engage said movable contacts one at a time with the stationary contacts.

2. In an electric switch, a supporting casing common to moving and stationary parts, a set of centrally situated spring supported stationary contacts, two sets of radially movable contacts situated one on either side of said stationary contacts, the pivoted cranks supporting said radially movable contacts, a connecting rod with two projecting studs, a slot in casing engaging with one of said projecting studs, two toggle links both movably connected at one of their ends to said pivoted cranks and at their other ends to the other projecting stud on said connecting rod, a spiral tension spring attached at one of its ends to said supporting casing and at its other end to said connecting rod, a radially movable shaft supported crank to actuate said connecting rod, means to cause said crank to turn in either direction.

3. In an electric switch a supporting casing, a radially movable operating lever shaft supported on outside of said supporting casing, a radially movable latch pivoted to said operating lever, two curved ledges projecting from outside of said supporting casing, a stud projecting from said movable latch to engage said curved ledges, two flat springs fixed rigidly each at one end to hub of said controlling lever and at their free ends engaging with a tongue on said movable latch, the curved ledges and movable latch to control travel of said controlling lever.

ERNEST H. RIEKEN.

Witnesses:
E. C. PETERO,
LESTER TROUP.