(No Model.) 2 Sheets—Sheet 1.

J. H. McEVOY.

ELECTRIC SWITCH.

No. 502,983. Patented Aug. 8, 1893.

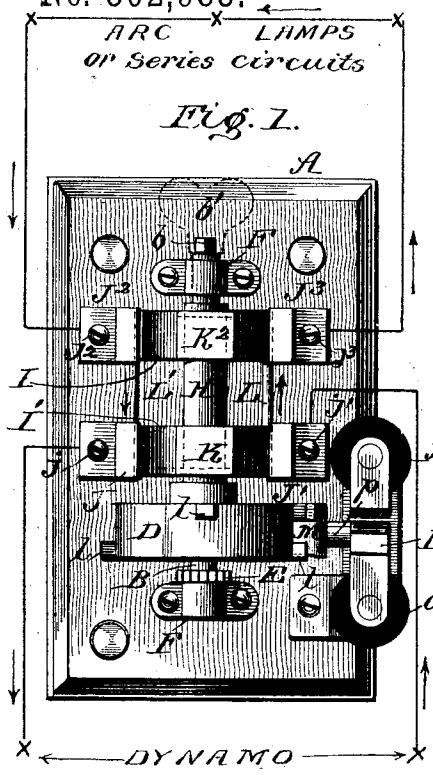


Fig. 1.

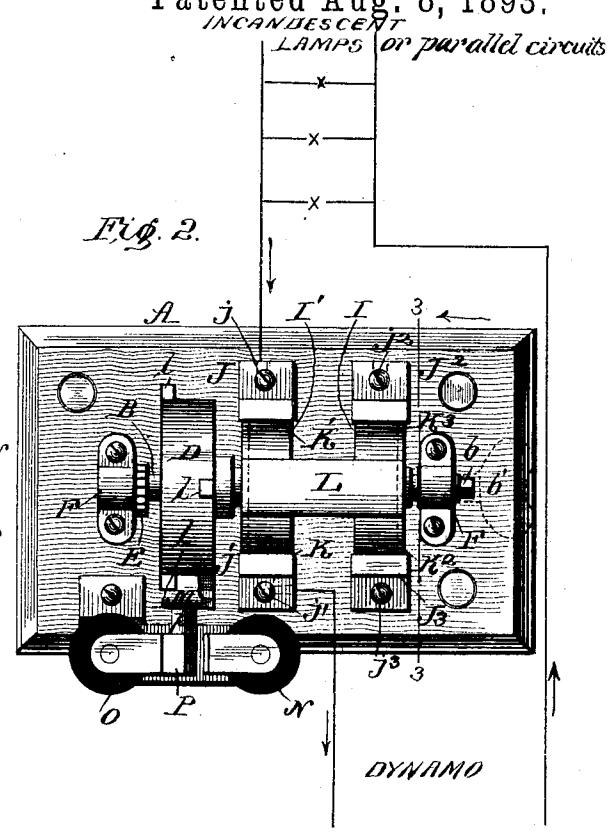


Fig. 2.

Fig. 5.

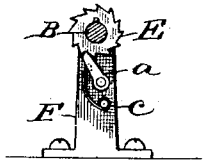
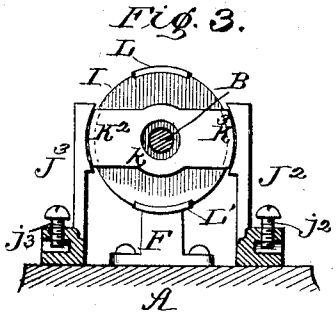


Fig. 3.



WITNESSES:

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Edw. W. Byrn.

INVENTOR

Joseph H. McEvoy

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ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4.

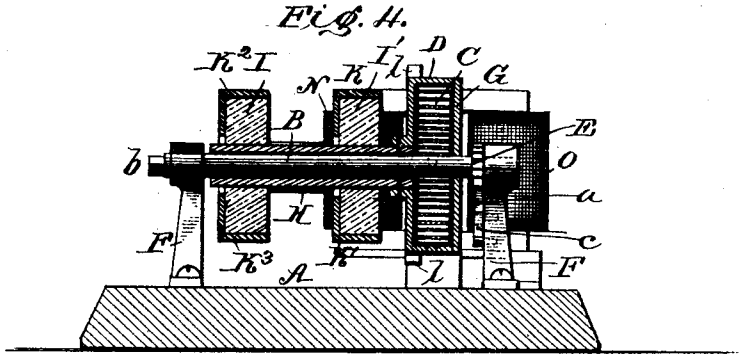
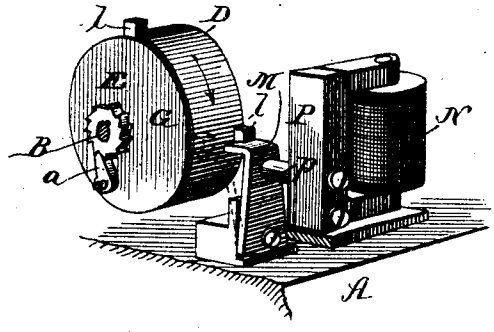


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH H. McEVOY, OF WATERBURY, CONNECTICUT.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 502,983, dated August 8, 1893.

Application filed December 31, 1892. Serial No. 456,925. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. McEVOY, of Waterbury, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Electric Switches, of which the following is a specification.

The object of my invention is to provide an electric switch for conveniently and quickly turning on or cutting off any number of electric lamps, motors, heating apparatus, telephone, telegraphic instruments, or other points of utilization; and it consists in the peculiar construction and arrangement of rotary contacts, with positive actuating mechanism, and an escapement or intermittent stop mechanism as will be hereinafter fully described.

Figure 1 shows in plan view my switch applied to an arrangement of circuit for arc lamps. Fig. 2 is a similar view with an arrangement of circuit for incandescent lamps. Fig. 3 is a cross section on line 3—3 of Fig. 2. Fig. 4 is a vertical longitudinal central section. Fig. 5 is a detail of the ratchet mechanism and Fig. 6 is a perspective view of the escapement mechanism with one half of the actuating magnet removed to show the stop lever.

In the drawings A represents a suitable base upon which are mounted two or more supporting standards F carrying in bearings in their upper ends a horizontal shaft B having at one end a squared portion *b* to receive a winding key *b'* shown in dotted lines. At the other end of the shaft is fastened the inner end of an actuating coil spring C Fig. 4 whose outer end is attached to an inclosing drum or cap D. On this shaft is also rigidly keyed or fastened a ratchet wheel E whose teeth point in the opposite direction to the direction of winding the shaft. The teeth of this ratchet wheel are caught and held by a pawl *a* mounted upon a stationary axis on one of the standards F and held up to engagement with the ratchet wheel by a spring *c* Fig. 5. The coil spring is housed within the drum D whose side is closed by a separate disk or plate G.

To the drum is attached a sleeve H Fig. 4 arranged concentrically about the winding shaft B, and upon this sleeve is rigidly mounted one or more disks I I' bearing contact plates. These disks are made of porcelain or other non-conducting material. Said disks lie in the plane of upright contact bars J J' J^2 J^3 whose shank portions are made thin enough to give them a certain amount of elasticity or spring action which causes them to press closely against the contact plates on the disk for a good electrical connection, and also to render them yielding and avoid catching against the edges of the plates. These contact bars are arranged in pairs diametrically upon opposite sides of the disks, and at the base of these bars are binding posts *j j' j^2 j^3* which connect with the feeding and distributing wires. To form these binding posts the contact bars have enlarged feet or bases made in one piece therewith which are drilled to form wire inlets, and provided with binding post screws. On the peripheries of the two disks are arranged two kinds of contact plates, each kind consisting of a pair of plates arranged diametrically opposite to each other, thus K K' K^2 K^3 are four plates of which K and K^2 are arranged upon one side respectively of the two disks and are electrically connected across the disks by metal cross pieces *k* to the corresponding plates K' K^3 on the opposite side see Fig. 3. Of these contact plates K and K', connect the two contact bars J and J', and K^2 K^3 connect the bars J^2 J^3. The other set of contacts L and L' are placed on the periphery of the disks midway between the first named but diametrically opposite to each other.

Instead of connecting the binding posts across the disks, they connect the binding posts on the same side of the disks, *i. e.* they connect J' to J^3 and J to J^2, and for this purpose the plates L and L' have one end fixed upon one disk and the other upon the other disk, and extend across them both. These plates L and L' are arranged midway between the others and are designed for use for circuits containing arc lamps as in Fig. 1 in which the current flows as indicated by the arrows. The spaces on each disk between the plates L L' and the others are less than the width of the contact faces *i. e.* in switching, the contact bars do not pass off one set of plates L L' until they touch the other set of plates, thus avoiding sparking.

On the periphery of the drum D is formed

a series of stop lugs *l* arranged alternately upon opposite edges of the drum and ninety degrees apart to correspond with the location of the contact plates on the disks. At one side of the drum there is pivoted an upright stop lever M fulcrumed at its bottom, and having its upper end beneath the lugs of the drum. After the coil spring has been wound up and the drum and attached disks are put under tension this stop lever holds it from unwinding by resting against one of the stop lugs. To permit the shifting of the contact plate, a quarter turn is permitted to the drum by shifting the stop lever laterally, so that it passes away from its hold on one lug and goes into range of engagement with the next, allowing the quarter turn to take place with an intermittent stop action, forming a sort of engagement that always stops the contact plates on the contact bars J J′ J^2 J^3. This stop lever may be shifted by a knob handle, by pull cords, or any other suitable mechanical contrivance, but I have arranged it to be operated electrically through a pair of electro magnets N O. These have an armature P in common which is shifted from the pole of one magnet to that of the other by directing a current through the two electro magnets alternately, and this armature is connected to the shifting lever by a pin *p* and is thus made to adjust the switch.

In making use of my invention I may dispense with plates L L′ and use the switch with only the contact plates K K′ K^2 K^3 and as many disks as may be required as in connecting circuits of the incandescent lamps as shown in Fig. 2.

In Fig. 1 the current from the dynamo is through contact plates L L′ closed on both sides of the switch through the arc lamp circuit at once, and is also broken on both sides of the switch at the next adjustment, cutting out the lamps, and the broken ends of the dynamo circuit are closed by cross connections of plates K K′, and of the lamp circuit by cross connection of the plates K^2 K^3. In Fig. 2 only one disk and one pair of plates K K′ are used, and it is obvious that the switch may control as many different series of incandescent lamps as there are disks on the switch. Here the circuit is made through the cross connection of plates K K′, and broken at the quarter turn no matter whether any plates L L′ are used or not.

My switch is also adapted to the use of cutting off all circuits leading into a building in case of fire, and it can be connected through the electro magnets which operate the shifting lever by wires running to thermostats at different points so as to be automatically operated in case of fire or of a great rise in the temperature.

Instead of using a coil spring to actuate the switch a weight and cord might be substituted therefor.

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

1. The combination of a central winding shaft with ratchet wheel thereon, a fixed pawl, a coil spring attached at one end to the shaft, a drum or cap inclosing the spring and connected to its other end and provided with stop lugs on its periphery, a sleeve connected to the drum and encircling the winding shaft, rotary contacts mounted upon the sleeve, spring contact bars arranged upon opposite sides of the disk, and a shifting stop device for the drum substantially as shown and described.

2. The combination of the winding shaft B, spring C, ratchet E and pawl *a*, drum D with lugs *l*, sleeve H with contact disks I I′, contact bars J J′ J^2 J^3, stop lever M, attached armature P, and oppositely acting electro-magnets N O substantially as shown and described.

3. The combination with the rotary disks having peripheral contacts; of the contact bars J^2 J^3 having binding posts j^2 j^3 formed of enlarged bases or feet made in one piece with the contact bars and provided with wire inlets and binding post screws substantially as shown and described.

4. The combination of an actuating drum for electrical contacts having lugs *l l* on its periphery placed alternately at opposite edges, a stop lever M pivoted at its lower end and arranged to catch endwise against the lugs *l*, an armature bar P also pivoted at its lower end and connected by pin *p* with the stop lever, and the two electro magnets N and O arranged upon opposite sides of the armature bar P to positively operate the same in opposite directions substantially as shown and described.

JOSEPH H. McEVOY.

Witnesses:
EDWD. W. BYRN,
SOLON C. KEMON.