

No. 857,186.

PATENTED JUNE 18, 1907.

W. S. MAYER.
ELECTRIC SWITCH.
APPLICATION FILED DEC. 12, 1906.

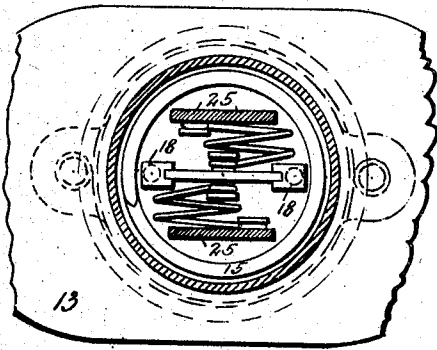


Fig. 4.

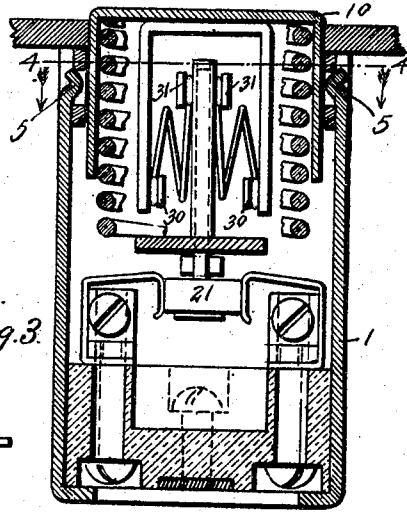


Fig. 3.

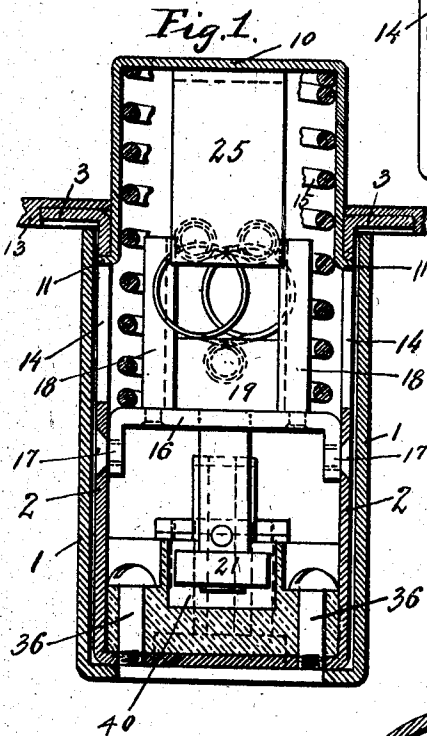


Fig. 1.

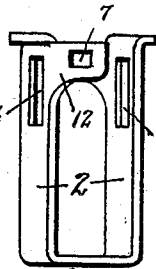


Fig. 6.

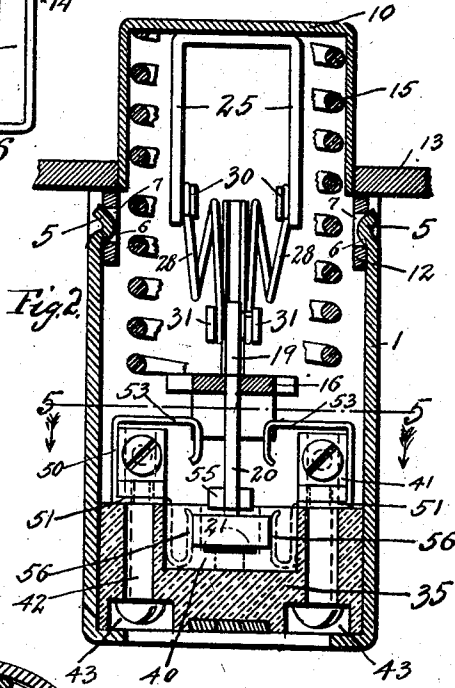


Fig. 2.

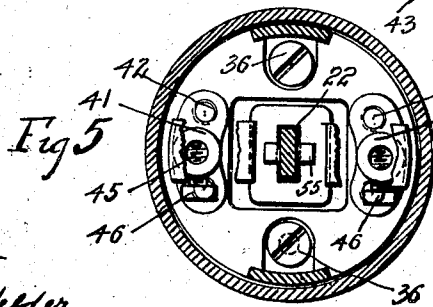


Fig. 5.

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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

No. 857,186.

Specification of Letters Patent.

Patented June 18, 1907.

Application filed December 12, 1906. Serial No. 347,517.

To all whom it may concern:

Be it known that I, WALTER S. MAYER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to a new and useful improvement in electric switches, and it has for its object to provide a simple and effective switch of this character which will make and break a circuit when a door is opened and closed, or when any other object is moved from one position to another.

My invention is especially adapted for use in connection with closet or vault doors, in which it is desirable to have an electric circuit completed upon the opening of the door, and to have it interrupted when the door is closed, or vice versa.

In my device, the receptacle or well to receive the several operating parts is circular in cross-section, and in this respect is distinguished from previous constructions, which, so far as I am aware, have been either rectangular or oval in cross-section, necessitating a chiseling operation in the preparation of a seat in the wall or other object in which the switch is to be located.

In the use of my invention, a seat can be quickly prepared merely by boring a hole in a wall or other object, by means of an auger or similar tool.

A convenient embodiment of my invention is illustrated in the accompanying drawings which form a part of this specification, and in which

Figure 1 is a section of a switch made in accordance with my invention, the plunger being in its most extended position; Fig. 2 is a section at right angles to Fig. 1; Fig. 3 is a section similar to Fig. 2, showing the position of the plunger after it has been forced inwardly by a door or by other means; Fig. 4 is a section on the line 4—4 of Fig. 3; Fig. 5 is a section taken on the line 5—5 of Fig. 2, portions of the contact members being broken away; Fig. 6 is a perspective view of the yoke member of my device.

In the drawings,—1 designates a circular casing or receptacle which is adapted to be seated in a hole or recess in a wall or other object, and 2 designates a yoke located in-

teriorly of the said casing or receptacle 1, and the upper ends of which are extended outwardly and over the upper edge of the said receptacle or casing 1, as indicated at 3, to form means for connecting the yoke to the face plate 13.

The casing 1 and the yoke member 2 are detachably connected together by means of springs in the form of strips or fingers formed by slitting the material of the casing 1 at two points near to each other. The said slits are located in couples and one slit of each couple is shown in Figs. 2 and 3 of the drawings. These fingers are pressed to form shoulders 6, which are adapted to engage slots 7 formed in projections 12, extending outwardly from the upper ends of the legs of the yoke 2. These projections and slots are shown most clearly in Fig. 6 of the drawings.

10 designates a cup-shaped plunger, the open end of which projects between the legs of the yoke member 2, and it is provided with outwardly turned projections 11 upon opposite sides which enter elongated slots 14 in the upper end portions of said yoke-shaped member 2. The plunger 10 is held normally in an outward position, such as is indicated in Figs. 1 and 2 of the drawings, by means of a coiled spring 15 shown in section in the drawings. The upper end of the said spring bears against the inner surface of the bottom of the plunger while the lower end bears against a cross bar 16 connected to the opposite legs of the yoke-shaped member 2, by means of screws 17.

18 designates guides secured to the cross bar 16 and extending upwardly therefrom and 19 designates a slide block, the opposite edges of which engage the inner edges of the guides 18. The slide block 19 is rigidly connected to a bar 20, to the lower end of which a contact block 21 is secured, which block is insulated from the said bar 20 by insulating material 22. The cross bar 16 acts as a further means of guiding the movement of the slide block 19 and the bar 20.

25 designates an inverted U-shaped member, the upper end of which is connected in any suitable manner to the bottom of the cup-shaped plunger 10.

28 designates coiled wire springs, one end of each of which is connected to a leg of the

U-shaped member 25, as indicated at 30, and the other end of each of which is connected to the slide block 19, as indicated at 31.

35 designates a block of porcelain or other suitable insulating material, located in the bottom of the casing or receptacle 1, and secured to the yoke member 2 by means of screws 36. The said insulating block 35 is provided with a central depression or recess, as indicated at 40 in the drawings. 41 designates binding posts which are secured to the insulating block 35, by means of screws 42, the heads of which are located in counter-sinks 43 in the lower side of the said insulating block. The lower end of the casing 1 is open, as shown in the drawings, and the line wires extend upwardly through the bottom of the said casing and through openings in the insulating block 35 into perforations or holes 45 in the binding posts 41, and such wires are secured in the said binding posts by means of binding screws 46.

50 designates a contact member, one end of which, as indicated at 51, is located underneath the binding posts and is secured to the latter, the other ends of which extend inwardly toward the center of the casing or receptacle 1 to form contact springs, as is indicated at 53 in the drawings. The inner surfaces of these contact springs are located opposite each other and slightly nearer together than the transverse width of the contact block 21, so that when the latter is moved into position between the said contact springs 53, a close contact is made between the inner surfaces of the said springs and the outer opposite surfaces of the said block 21, as is most clearly shown in Fig. 3 of the drawings.

In the construction as thus far described, the device or switch is adapted to complete a circuit when a door or other object is closed so as to push the plunger 10 inwardly, as indicated in Fig. 3.

The operation of my invention is as follows:—Assuming that the plunger 10 and the parts connected thereto are in the position shown in Figs. 1 and 2 of the drawings, if the plunger is moved inwardly by pressure or otherwise, the pivotal points of connection 30 between the wires 28 and the U-shaped member 25 are also moved inwardly so as to bring the said points of connection into alignment with the pivotal points of connection 31 between the other ends of the coiled wire springs 28 and the slide block 19. In moving to this position, the springs are wound up and consequently are placed under tension. As soon as the pivotal points of connection 30 pass beyond or below the pivotal points of connection 31, the wire coils are permitted to unwind or expand and the said pivotal points of connection 31 are as a result carried upwardly to the position indicated in Fig. 3 of the drawings. In moving the plunger 10

inwardly to the position indicated in Fig. 3, the spring 15 is compressed. When the pressure upon the plunger 10 is removed, the spring 10, being larger and stronger than the coiled springs 28, occasions outward movement of the plunger 10, which movement carries the pivotal points of connection 30 outward so that they pass beyond the pivotal points of connection 31. In the movement of the pivotal points of connection 30 into alignment with the points of connection 31, the coiled springs 28 are wound up and placed under tension, but as soon as the said points of connection 30 pass beyond the points of connection 31, the said wire springs are permitted to unwind, in consequence of which the points of connection 31 and the slide and contact blocks 19 and 21 are moved suddenly downwardly into the position shown in Fig. 2 of the drawings. When the points of connection 31 are moved upwardly into the position shown in Fig. 3 of the drawings, the contact block 21 is carried into position between the contact springs 53, and by reason of the fact that the said springs are slightly closer together than the transverse width of the said contact block, the said springs are slightly elevated, as shown in Fig. 3, and in consequence, exert a spring action upon the opposite edges or sides of the said contact block.

In order to limit the upward movement of the contact block 21, and its connected parts, I have provided a stop 55. If it is desired that the switch shall operate to complete the circuit, so as to light a closet or darkroom when the door leading thereinto is opened, it is only necessary to transfer the contact springs 53 from their full line positions shown in Figs. 2 and 3 to the dotted line positions indicated at 56 in said figures. When the contact springs are located in the position indicated in dotted lines, it will be seen that the contact block 21 is located between the same and is in contact therewith when it is in its lowermost position, as indicated in Fig. 2, and in which position the plunger 10 occupies its outermost or most extended position.

Having thus described my invention, I claim:—

1. In a device of the character described, the combination of a receptacle having movable fingers, a yoke-shaped member located within the said receptacle and having openings therein adapted to be engaged by the said fingers and the said yoke-shaped member also having slots extending longitudinally of its opposite legs, a movable plunger projecting into the said receptacle and being located between the opposite legs of the said yoke-shaped member and being provided with means which are adapted to engage the said longitudinal slots, and a tension member located between the said

plunger and the said yoke-shaped member for the purpose of holding the said plunger in an extended or projected position, contact members supported in the said receptacle and means operatively connected to the said plunger for contacting with the said contact members, for the purpose set forth.

2. In a device of the character described, the combination of a member having oppositely arranged slots extending longitudinally of the said member, a bar extending between the opposite sides of the said member and connected to the same, the said bar being provided with guides extending therefrom, a plunger projecting inwardly between the opposite sides of the said member, a tension device located between the said plunger and the said member for holding the parts in extended or projected position, a member located interiorly of the said plunger and connected to the same, a contact block, a sliding member engaging the said guides and connected to the said contact block, and coiled springs connected to the said sliding member and to the said member located interiorly of the said plunger, and contact members with which the said block is adapted to contact.

3. In a device of the character described, the combination of a member having oppositely arranged slots extending longitudinally of the said member, a bar extending between the opposite sides of the said member and connected to the same, the said bar being provided with guides extending therefrom, a plunger projecting inwardly between the opposite sides of the said member, a tension device located between the said plunger and the said member for holding the parts in extended or projected position, a member located interiorly of the said plunger and connected to the same, a movable contact block, a sliding member engaging the said guides, and connected to the said contact block, coiled springs connected to the said sliding member and to the said member located interiorly of the said plunger, an insulating block, binding posts se-

cured to the said insulating block, and contact springs connected to the said binding posts and adapted to be engaged by the said movable contact block.

4. An electric switch consisting of a casing, a block of insulating material located therein, a U-shaped strip for holding said block in place, contact springs secured to said block, a slide, means for guiding said slide, a contact block carried by the slide, a plunger adapted to slide in the casing, means for normally forcing said plunger outward, a yoke carried by the plunger, two springs connecting said yoke and slide, the said springs being adapted to occasion outward movement of the slide when the yoke is moved inward, and inward movement thereof when the yoke is moved outward, thereby making and breaking contact between the contact block and contact springs, as and for the purpose set forth.

5. In a device of the character described, the combination of a tubular casing, a U-shaped strip secured within said casing, an insulating block secured to said strip, a bridge bar also secured to said strip, guide posts carried by the bridge bar, a slide guided by said posts, an extension formed with the slide, a contact block carried by said extension, contact springs carried by the insulating block, said springs being connected with the circuit wires, a plunger fitted to slide within the casing, a spring for normally forcing said plunger outward, a yoke carried by the plunger, and a spring pivoted at one end to the yoke and at its other end to the slide, the said spring being adapted to occasion movement of the said slide in directions opposite to that in which the plunger is moved.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 11th day of December, A. D. 1906.

WALTER S. MAYER,

In the presence of—

S. SALOME BROOKE,
CYRUS N. ANDERSON.