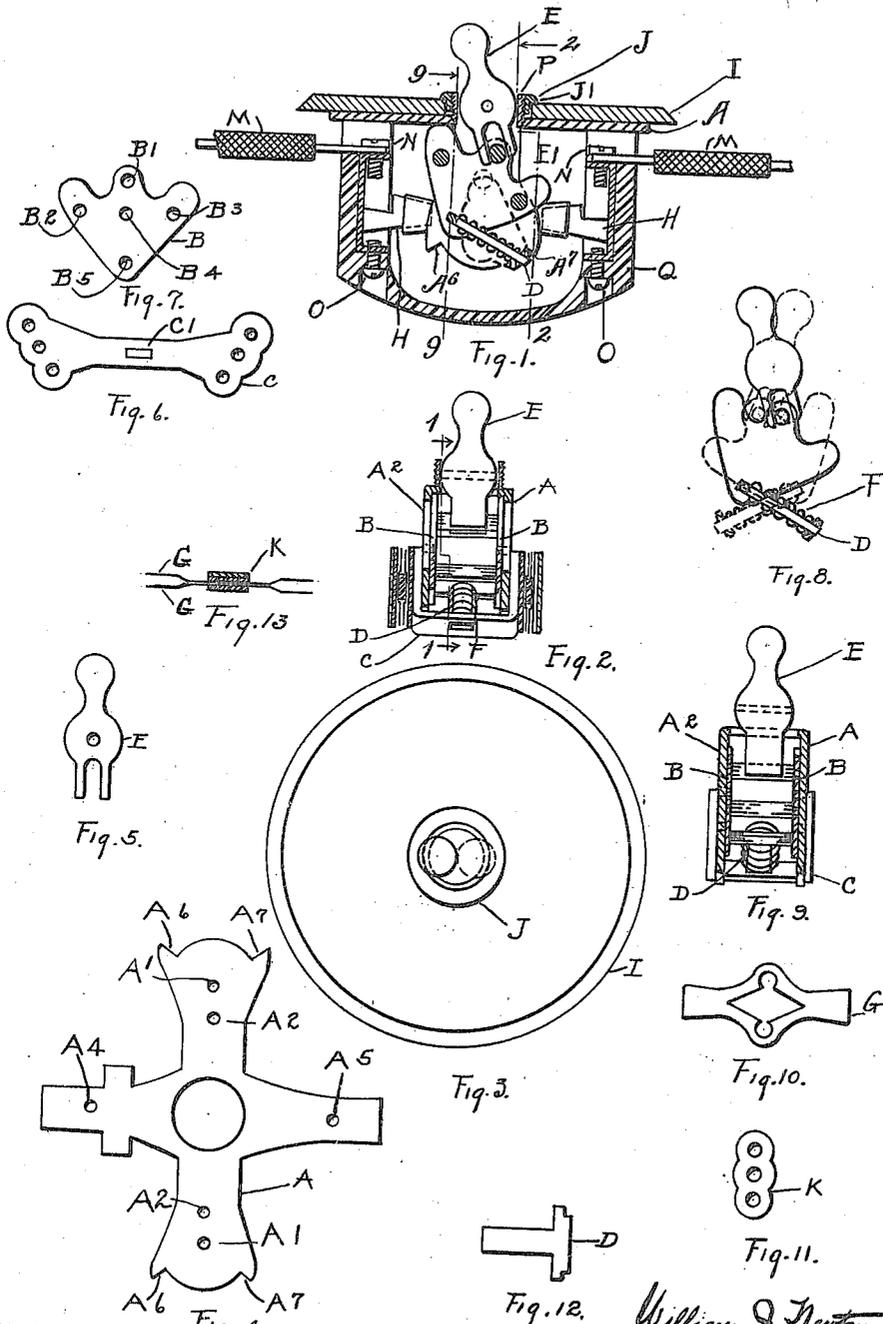


W. J. NEWTON.
 FLUSH SWITCH.
 APPLICATION FILED MAY 6, 1915.

1,233,597.

Patented July 17, 1917.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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FLUSH SWITCH.

1,233,597.

Specification of Letters Patent. Patented July 17, 1917.

Application filed May 6, 1915. Serial No. 26,277.

To all whom it may concern:

Be it known that I, WILLIAM J. NEWTON, a citizen of the United States, and a resident of the town of Lynbrook, in the county of Nassau and State of New York, have invented certain new and useful Improvements in Flush Switches, of which the following is a description.

My invention relates to electric switches particularly adapted to control local circuits in buildings, and is more particularly directed to that type of switch, the mechanism of which is countersunk in the wall of a building and covered by a face plate flush with the wall through which plate the operating means project. Heretofore it has been customary to operate switch mechanisms by means of two buttons projecting through the face plate as shown in my Letters Patent Nos. 582,303, 702,989 and 917,348. I have, however, recently been granted a Patent, No. 1,186,930, for a flush switch operating with but a single button projecting through the face plate.

The object of this invention is to provide a small, simple and efficient switch which shall have a quick make and a quick break as required by the National Board of Fire Underwriters and which may be operated by means of a pivoted lever, toggle or tumbler projecting through the face plate and by this peculiar construction forming a positive and easy operating means for the switch parts.

Another object of my invention is to reduce the size of the face plate required to a much smaller size than that necessary for use with the two button switch described above. My invention, therefore, contemplates the arrangement of the face plate and the operating lever so that they together will form a pleasing and artistic arrangement and so that the attaching means for the face plate will be entirely inconspicuous. Other objects of my invention will be referred to in the specification and more particularly pointed out in the claims.

In the drawings which form a part hereof and in which like reference characters designate like parts throughout the several views:

Figure 1 is a sectional side view of the

switch, the section being taken on the line 1—1 of Fig. 2;

Fig. 2 is a sectional end view on the line 2—2 of Fig. 1;

Fig. 3 illustrates the face of the switch, showing a small circular face plate, it being understood that any other suitably shaped plate may be used. This view also shows the position of the operating lever in the "off" and "on" positions and the attaching means for the face plate;

Fig. 4 shows the bridge piece or yoke of the switch;

Fig. 5 shows the toggle or handle;

Fig. 6 shows the shaft arm;

Fig. 7 is a side view of the operating lever;

Fig. 8 is a side view of a portion of the operating mechanism, showing the operation of the switch movement;

Fig. 9 is an end elevation of the switch movement, partly in section on the line 9—9 of Fig. 1;

Fig. 10 is a side view of the contact blade;

Fig. 11 is a side view of the insulation plate;

Fig. 12 is the operating spring holder; and

Fig. 13 shows the movable switch blades.

Referring to Fig. 1, I have shown at Q the switch box, which may be made of porcelain or any other suitable insulating material, and is preferably so shaped as to have a concave bottom, thus permitting the entrance through an iron outlet box of the shallow type, of an additional through circuit as well as the wires M M of the circuit it is desired to control, which wires lead to the binding posts N N of the switch. The box switch contacts H H which are carried by the binding posts N N are held in recesses provided for them in the switch box Q by the countersunk screws O O, this arrangement providing a substantial structure, while at the same time permitting easy assembling and removal of the switch blades and binding posts. The face plate I is provided with a round hole in the center large enough to accommodate the bushing J, which bushing is provided with a shoulder J' which serves to hold the plate I against the switch box. By simply unscrewing the

bushing J the face plate I may be easily removed. I am thus enabled to dispense with unsightly screws or similar attaching means, and to make the means for attaching the face plate as inconspicuous as possible.

The bridge A of the switch is provided with the upstanding threaded collar P, which is attached to the bridge by screwing it into the central hole thereof, or in any other suitable way. Pivoted in the collar P is the operating toggle or handle E which thus projects through the face plate and is provided at its outer end with a button. The inner end of switch toggle E is provided with a slot which embraces a cross rod extending between the two sides of the operating lever B and fastened in the holes therein at B'. The two sides of the operating lever are further held together by means of cross rods fixed in the holes B² and B³, the operating lever being pivoted upon pivots passing through the holes B⁴, it being understood that the operating lever comprises two sides such as illustrated in Fig. 7. The pivots upon which the operating lever is supported pass through holes A² of the bridge A.

The shaft arm shown in Fig. 6 has its two ends bent at right angles to the center portion thereof, and is pivoted upon the bridge A by pivots passing through the holes A' thereof. The two sides of the bridge, it being understood, are bent as shown in Figs. 2 and 9 to receive the shaft arm or U-shaped yoke C and operating lever B. Supported upon the shaft arm C and insulated therefrom by means of insulating washers K (Fig. 11) are the switch blades G G, which are adapted to cooperate with the stationary switch blades H.

Pivoted in the operating lever B, in holes B⁵ thereof, is the spring holder D which carries a spring F. The spring holder D passes through the slot C in the shaft arm and the spring F is confined between the shaft arm and the pivoted end of the spring holder D.

Formed upon the ends of the depending portions of the bridge A are stops A⁶ and A⁷ adapted to cooperate with the shaft arm to limit its throw.

The operation of my improved switch is as follows:

The outlet box being secured in the wall or other location, the switch is fastened within it by suitable means, the bridge A being attached to the switch box Q in any desired manner, as for example, by means of screws passing through holes A⁴ and A⁵ and into the material of the switch box. The wires M M are connected to the binding posts N N. The face plate is applied over the collar P and fastened in place by the bushing or collar J by screw-

ing the same to the collar P. When the handle or toggle E is pushed over to the position shown in the dotted lines in Fig. 8, the cross rod embraced by the slotted end of the toggle E moves upward in the slot, thus rotating the operating lever upon the pivot passing through the holes B⁴ and forces the compression spring held by the spring holder D against the shaft arm C, thus pushing the free end of the spring holder through the slot C', which is preferably provided with beveled edges to permit of the oscillation of the spring holder D. When the upper end of the spring F under compression reaches a point beyond the lower end, the shaft arm C is forcibly projected into the reverse position under the impulse of the spring F to the position shown in the dotted lines in Fig. 8, thus moving the contact blades G carried by the shaft arm C to a position 90° from their original position, thus breaking the circuit. A reversal of the operation as described above will throw the contact blades G back into contact with the contact blades H H, thus completing the circuit. The stops A⁶ and A⁷ limit the throw of the shaft arm C to the necessary movement.

While I have only shown one form of my invention, I do not desire to be limited thereto, since it is obvious that many modifications may be made without departing from the scope of my invention as defined by the claims which follow.

What I claim is:

1. In a flush wall switch, the combination of an apertured face plate, a supporting bridge having an upstanding collar adapted to project through the aperture in the face plate, a contact blade, a pivoted member for supporting and oscillating said blade, a second member pivoted eccentrically of said first member and operatively connected thereto, and a manually operable lever pivoted within the collar and passing therethrough, and having a lost motion connection with said second member.

2. In a flush wall switch, the combination of an apertured face plate, a supporting bridge having a pair of depending arms and an upstanding collar adapted to project through the aperture in the face plate, a contact blade, a member pivoted to said depending arms for supporting and oscillating said blade, a second member pivoted to said depending arms eccentrically of said first member and operatively connected thereto, and a manually operable lever pivoted within the collar and passing therethrough, and having a lost motion connection with said second member.

3. In a wall switch, the combination of

an apertured face plate, a supporting bridge having a pair of depending arms and an upstanding collar adapted to project through the aperture in the face plate, a contact blade, a U-shaped yoke for supporting and oscillating said blade, said yoke being pivoted at its ends to said depending arms, an operating lever also pivoted to said depending arms, a spring interposed between said operating lever and the intermediate portion of said yoke, and a manually operable lever pivoted within the collar and passing therethrough, and having a lost motion connection with said operating lever.

4. In a flush wall switch, the combination of an apertured face plate, a supporting bridge, a contact blade, a pivoted member for supporting and oscillating said blade, a second member pivoted eccentrically of said first member, and operatively connected thereto, and a manually operable lever pivotally supported by said bridge and passing through the aperture in said face plate, and having a lost motion connection with said second member.

5. In a flush wall switch, the combination of an apertured face plate, a supporting bridge having a pair of depending arms, a contact blade, a member pivoted to said depending arms for supporting and oscillating said blades, a second member pivoted to said depending arms eccentrically of said first member, and operatively connected thereto, and a manually operable lever pivotally supported by said bridge, and passing through the aperture in said face plate, and having a lost motion connection with said second member.

6. In a wall switch, the combination of an apertured face plate, a supporting bridge having a pair of depending arms, a contact blade, a U-shaped yoke for supporting said blade, said yoke being pivoted at its ends to said depending arms, an operating lever also pivoted to said depending arms, a spring interposed between said operating lever and the intermediate portion of said yoke, and a manually operable lever pivotally supported by said bridge and passing through the aperture in said face plate, and having a lost motion connection with said operating lever.

7. In a switch, in combination, a supporting bridge, a face plate adapted to be connected thereto, a contact blade, a blade-carrier pivotally connected to said bridge for

supporting and oscillating said blade, a single operating lever extending through said face plate, and an oscillating member flexibly connected with said blade-carrier and connected with said lever to transmit motion from said lever to said blade.

8. In a switch, in combination, a face plate, an operating lever extending there- through, a blade carrier, a contact blade mounted thereon, an intermediate member in connection with said lever, mounted eccentrically with respect to the blade carrier and having a flexible connection with said blade carrier, said connections allowing a movement of said lever in one direction thereby causing said blade carrier to move in the opposite direction.

9. In a wall switch, the combination of an apertured face plate, an apertured supporting bridge having depending arms, a contact blade, a pivoted member for supporting and oscillating said blade mounted upon the depending arms, a second pivoted member also mounted upon the depending arms and operatively connected to the first pivoted member and a pivotally mounted lever mounted upon the bridge and passing through the apertures in the bridge and face plate and having an operative connection with said second pivoted member.

10. In a wall switch, a contact blade, a pivotally mounted blade-carrier, a member pivotally mounted eccentrically of and connected to said blade-carrier, a supporting device upon which said blade-carrier and said member are carried and a lever pivotally mounted eccentrically of and engaging said member and adapted to be manually operated to throw the switch.

11. In a switch, in combination, a face plate, a single operating lever extending through said face plate, a contact blade, a pivoted member for supporting and oscillating said blade, a second pivoted member having a lost-motion connection with said operating lever and having a flexible connection with said first pivoted member whereby the full movement of the switch blade is made by said flexible connection.

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

WILLIAM J. NEWTON.

Witnesses:

ANNA MARIE WALL,
A. C. PARHAM.