Dec. 8, 1925. **1,564,551**

F. P. GATES

ELECTRIC SWITCH

Filed Jan. 2, 1925

Fig. 1.

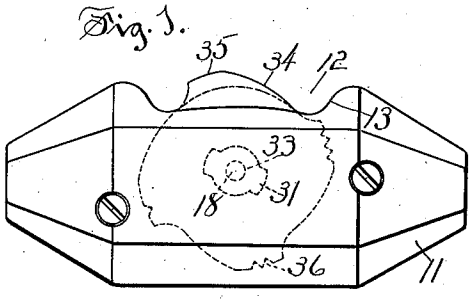


Fig. 2.

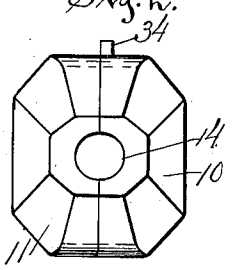


Fig. 3.

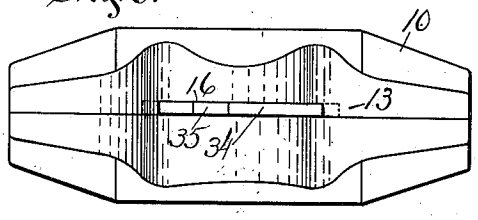


Fig. 7.

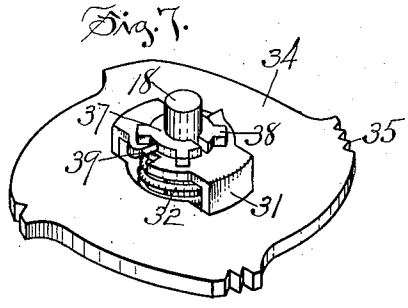


Fig. 4.

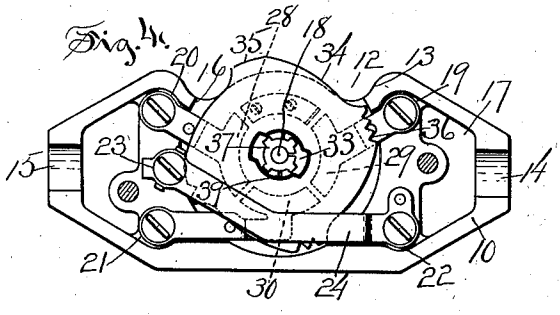


Fig. 5.

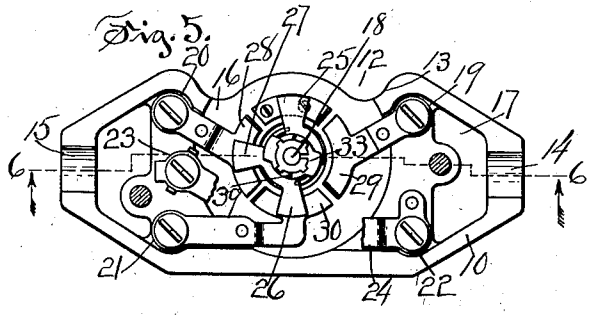
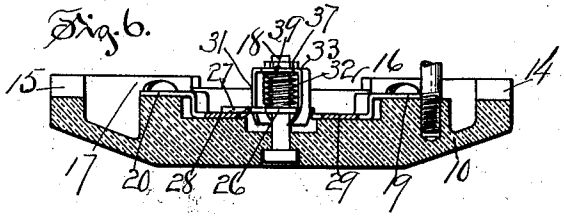


Fig. 6.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

Application filed January 2, 1925. Serial No. 90.

To all whom it may concern:

Be it known that I, FREDERIC P. GATES, a citizen of the United States, and a resident of West Hartford, in the county of Hartford and State of Connecticut, have invented new and Improved Electric Switches, of which the following is a specification.

My invention relates more especially to that class of electric switches for varying the amounts of current flowing through a conductor, the device herein illustrated being especially equipped with means for attachment intermediate the ends of a length of a flexible conductor, and an object of my invention, among others, is to provide a switch of this class that shall be extremely simple in construction and particularly efficient in its method of operation.

One form of device embodying my invention and in the construction and use of which the objects herein set out, as well as others, may be attained, is illustrated in the accompanying drawings, in which—

Figure 1 is a side view of a switch embodying my invention.

Figure 2 is an end view of the same.

Figure 3 is a view similar to Figure 1, but looking at the structure from a point at right angles to the point of view of Figure 1.

Figure 4 is a detail view of one of the sections of the switch illustrating operative parts therein.

Figure 5 is a view similar to Figure 4, but with the thumb plate removed.

Figure 6 is a view in section on a plane denoted by the dotted line 6—6 of Figure 5.

Figure 7 is a perspective view, scale enlarged, of the switch mechanism illustrating its method of operation.

My improved switch, in the special form of its construction shown herein, comprises part of a connection with the device to be supplied with the electric current, and it is made in the shape of a handle so that it may be readily grasped by the hand and held therein for the purpose of varying the amount of current supplied to the device. The switch is of particular advantage when used in connection with a heating pad, and when so used the heat of the pad may be controlled as desired. When thus adapted for use said handle comprises a shell or case, preferably formed in two sections 10—11 that may be secured together in any suitable manner, as by means of screws, the front edge of the case having a depression 12, one edge 13 of which forms a stop for a purpose to be hereinafter described. These sections are each provided at opposite ends with grooves 14—15 forming complemental parts of openings that, when the sections are secured together, constitute holes through the ends of the case to the interior thereof through which conducting wires extend. The front edge of the case is also provided with a slot 16 preferably formed, as to one side and opposite ends, in the case section 10, the opposite side of said slot being formed by the edge of the case section 11 as shown in Figure 3 of the drawings.

A recess 17 is formed in one case section, as 10, for the reception of the operative parts of the switch comprising movable elements and stationary parts, the movable elements being mounted on a post 18 secured to the section 10 and rising through the recess therein, and as shown in Figure 6 of the drawings. The opposite section of the case may also be recessed to such extent as may be desired for the reception of switch parts.

Positive terminals 19—20—21 provided with any suitable means, as screws, for the attachment of conducting wires thereto, are located in the recess 17 and negative terminals 22—23 having similar attachments for conducting wires, are also secured within said recess and are joined by a connection 24 bridging across the other parts of the structure within the recess. The parts thus far described are of well known construction and their purpose and function will be readily understood by those skilled in the art.

A switch blade is mounted on the post 18 and has three fingers 25—26—27 adapted to successively engage contacts 28—29—30 comprising segments secured to or extending from the terminals 19—20—21, and as shown in Figure 5 of the drawings. Each of these contacts is curved upwardly at that end from which the fingers of the switch blade pass in the rotation of such blade. This blade is mounted for free rotation on the post 18 and also for vertical movement

thereon. An actuator is rotatably mounted on the post and is provided with actuating arms 31 projecting downwardly into engagement with the fingers of the switch blade whereby said blade is rotated. A spring 32 is located between a cross bar 33 of the actuator and the upper surface of the switch blade so that the latter is pressed downwardly against the contacts and must rise against the force of said spring. The advancing edges of the arms 31 are sloped to cause the switch blade to travel forward as it is moved downwardly by the spring 32.

A thumb disc 34 is rotatably mounted, being supported by the post 18, said disc having a recess within which the cross bar 33 of the actuator is located. This thumb disc is provided with projections 35 (four in the structure herein shown) adapted to be engaged by the thumb for the purpose of rotating the disc and consequently the switch blade. These projections may be provided with suitable significations to indicate the position of the switch blade as Off, Low, Medium, and High and for the purpose of indicating position, as by "feeling," notches 36 may be formed on the edges of the projections, each projection having a different number of notches from those on another.

It may be understood that one end of the spring 32 is secured to the post 18 and the other end is secured to the switch blade in a manner common to devices of this class. The shoulders 13 are located in the path of movement of a thumb engaging the projections 35 and at such distance therefrom that when the projection has been moved by the thumb a proper distance to effect a one step movement of the switch blade, the thumb will come in contact with the shoulder that thereby determine the proper degree of movement of the thumb disc to insure proper operation of the switch blade. The disc projects to a very accessible position for operation by the thumb while the switch is held in the hand and it will be apparent that the disc may be well operated without the use of the stop, although the latter is of much advantage.

As hereinbefore noted an important feature of my invention resides in the thumb or actuating disc that is rotated always in the same direction, and in order to insure such operation I provide means for preventing backward rotation of the disc. This comprises a stop collar 37 secured to the post 18 and having a number of stop lugs 38 (four in the structure shown herein) that are engaged by detents 39 located on the cross bar 33 and preferably bent up from the metal thereof in position to engage said lugs in any material movement of the actuator disc backwardly. The actuator of which the cross bar 33 forms a part being supported on the spring 32, said actuator may move downwardly against the tension of the spring to permit the detents to pass under the lugs 38, said spring moving the actuator upwardly after the detents have passed the lugs, thus locating the detents in position to engage the lugs and prevent backward movement of the actuator disc.

In accordance with the provisions of the patent statutes I have described the principles of operation of my invention, together with the device which I now consider to represent the best embodiment thereof; but I desire to have it understood that the device shown is only illustrative, and that the invention may be carried out by other means and applied to uses other than those above set out.

I claim—

1. An electric switch including a switch blade, a thumb disc operatively connected with said blade to rotate it, and a shoulder located in the path of movement of a thumb engaged with said disc to rotate it and to limit rotation of said disc.

2. An electric switch including a switch blade, a thumb disc operatively connected with said blade and having a number of projections thereon, and a shoulder located in the path of movement of a thumb engaged with said projections to rotate the disc and to limit its rotation.

3. An electric switch including a switch blade, a thumb disc operatively connected with said blade to rotate it, a plurality of projections evenly spaced on the periphery of said disc, and a stop shoulder spaced from the projections when the disc is in a normal position a distance substantially that between said projections.

4. An electric switch including an inclosing case, a switch blade rotatably mounted in the case, a thumb disc operatively connected with the blade to rotate it, said disc projecting through a slot in the case, and a shoulder formed on said case in the path of movement of a thumb engaged with said disc and to limit rotation of the latter.

5. An electric switch including a switch blade with contacts therefor, an actuator disc operatively connected with the switch blade, a stop having lugs projecting therefrom, and a detent on said switch blade to engage said lugs and thereby prevent backward rotation of said actuator.

6. An electric switch comprising a switch blade with contacts therefor, an actuator operatively connected with the switch blade, an actuator disc attached to said actuator to rotate therewith, detents on said actuator, and means to engage said detents to prevent backward movement of the actuator.

7. An electric switch comprising a switch blade with contacts therefor, an actuator disc, an actuator loosely attached to said disc for movement independently thereof in one

direction and connected to operate said switch blade, detents on said actuator to prevent backward movement thereof, and means to engage said detent for such operation.

8. An electric switch comprising a switch blade with contacts therefor, a supporting post, an actuator disc mounted on said post and operatively connected with the switch blades, a stop collar secured against rotating movement, and means on said stop collar to prevent backward movement of said actuator disc.

9. An electric switch comprising a switch blade with contacts therefor, a supporting post, an actuator mounted on said post and yieldingly supported, an actuator disc supported by said post and attached to said actuator, detents on said actuator, a stop collar secured to said post, and stop lugs on said collar to engage said detents to prevent backward movement of the actuator and actuator disc.

10. An electric switch comprising a switch blade with contacts therefor, a supporting post, an actuator disc mounted on said post and operatively connected with said blade, a stop collar secured to said post, and means on said stop collar to prevent backward movement of said actuator disc.

11. An electric switch including a switch blade, a thumb disc operatively connected with said blade and comprising means for rotating it, and means located on said disc at the points of contact of the thumb and fingers and perceptible to the touch for indicating different positions thereof.

12. An electric switch including a switch blade, a thumb disc operatively connected with said blade and having a number of projections thereon, means on the ends of said projections and perceptible to the touch for indicating the position of said thumb disc, and a shoulder located in the path of movement of a thumb engaged with said projections to rotate the disc and to limit its rotation.

13. An electric switch including a post, a switch blade rotatably mounted on said post, an actuator rotatably mounted on said post, a stop member supported by said post, said actuator and stop member having relative movement longitudinally of said post, interengaging members on said stop member and actuator to prevent backward movement of the latter, and an actuator disc mounted to rotate with said actuator.

14. An electric switch comprising a switch blade with contacts therefor, an actuator operatively connected with the switch blade, an actuator disc connected with said actuator to rotate therewith, stop elements on said actuator, and means to engage said stop elements to prevent backward movement of the actuator.

FREDERIC P. GATES.