Sept. 1, 1931. M. J. CAWLEY 1,820,937

BURGLAR ALARM SWITCH DEVICE

Filed Jan. 9, 1928

Fig. 1

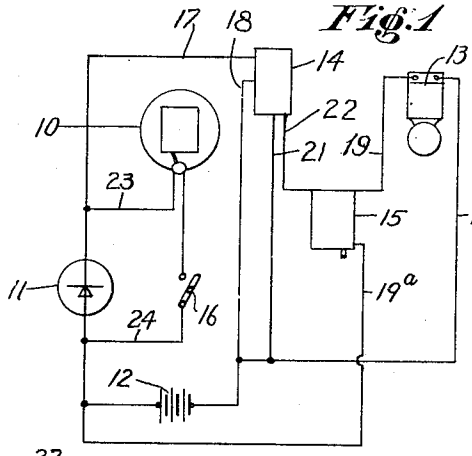


Fig. 4

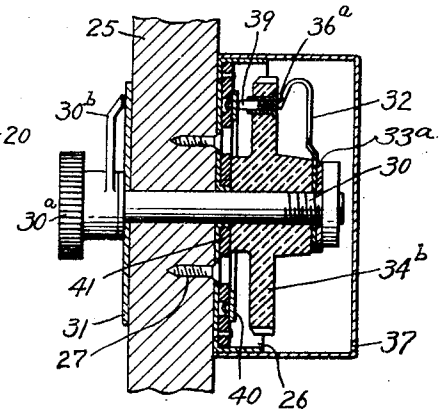


Fig. 2

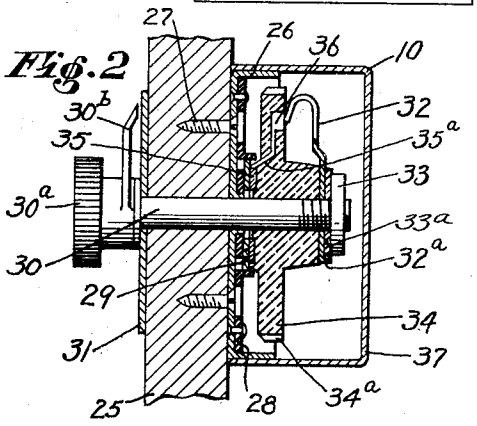


Fig. 5

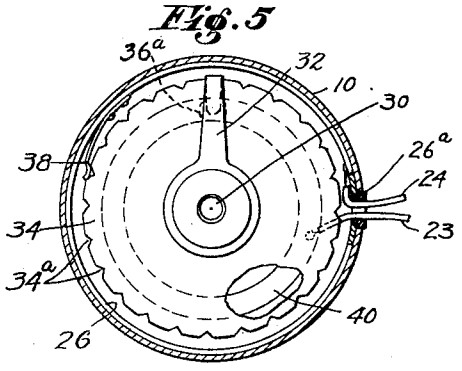


Fig. 3

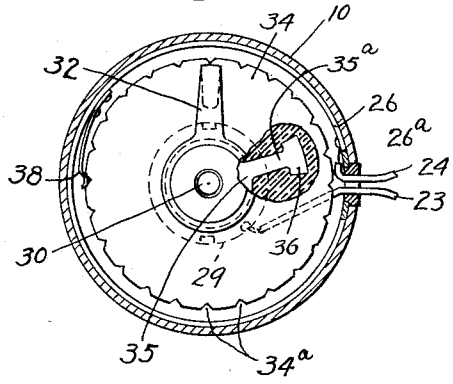
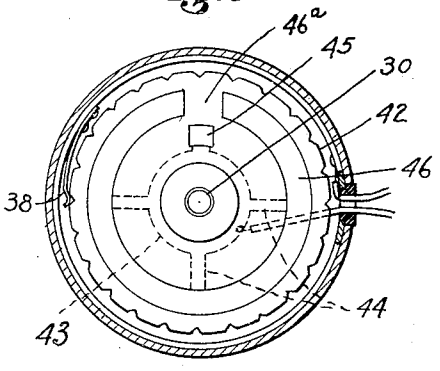


Fig. 6



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UNITED STATES PATENT OFFICE

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BURGLAR ALARM SWITCH DEVICE

Application filed January 9, 1928. Serial No. 245,355.

This invention relates to switch devices used particularly in burglar alarm circuits for the protection of doors of residences, banks, bank vaults, business establishments, as well as for controlling any member governing the admission to a room or compartment of any kind or class as well as a switch device in a circuit which will control a member, device, mechanism or apparatus of any kind or class such for example as the devices or mechanisms controlling the operation of a vehicle; and the object of the invention is to provide a switch device primarily adapted for use in what is known as a closed circuit or a closed circuit alarm wherein the breaking of said circuit through the switch device will sound an alarm or cause members or devices to actuate; a further object being to provide a switch device which, by virtue of its construction, may be adapted for use in both closed and open alarm circuits; and with these and other objects in view, the invention consists in a device of the class and for the purpose specified, which is simple in construction, efficient in use, and which is constructed as hereinafter described and claimed.

The invention described and claimed herein is an improvement on that shown and described in a prior application filed by me August 19, 1927, Serial No. 213,987, and is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:

Fig. 1 is a diagrammatic view of a closed circuit indicating the location of one of my improved switch devices therein.

Fig. 2 is a cross sectional view of one form of switch device which I employ.

Fig. 3 is a transverse sectional view of the structure shown in Fig. 2 with parts in a different position.

Fig. 4 is a view similar to Fig. 2 but showing a modification.

Fig. 5 is a cross sectional view of the structure shown in Fig. 4; and,

Fig. 6 is a face view of a controlling member which I employ, and showing another modification.

In Fig. 1 of the drawings, I have diagrammatically illustrated a closed alarm circuit or a part of such circuit. In said figure, 10 represents diagrammatically one of my improved switch devices, 11 the switch or make and break actuated by the door or other member to be controlled, 12 the source of electric supply, 13 the bell or other signal device, 14 a relay and 15 a constantly ringing drop switch. A manually operated switch 16 is also employed in the circuit to the device 10 to render said device inoperative whenever desired.

In consideration of the wiring diagram, it will be seen that the circuit from the source 12 through wires 17 and 18 which lead to the relay 14 when maintained closed through the switches 10 and 11, will prevent operation of the signal 13 in maintaining the drop of the drop switch 15 in inoperative position. But, in the event of the breaking of the circuit through the wires 17 and 18 through the switch 11 and the switch 10 improperly set as later described, the constantly ringing drop switch 15 will be actuated to close the circuit through the alarm 13 through the wires 19, 19*a* and 20 to continually actuate said alarm. In this operation, the circuit has been completed through the wires 21 and 22 of the relay and the switch 15. The wires 23 and 24 leading to the switch 10 bridge the switch 11 so that if the circuit is broken through the switch 11, for example, in the opening of a door, the circuit through the wires 17 and 18 will be maintained in closed position, provided the mechanisms of the switch 10 have been properly set to keep the circuit closed through the wires 23 and 24.

One form of the switch device 10 is shown in detail in Figs. 2 and 3 of the drawings, and is shown mounted on a suitable support 25 which may constitute the door or other device or member to be protected by the switch 11. In practice, I provide a cup-shaped casing 26 secured to one side face of the door 25 by screws 27, and on the inner face of the casing is supported a pad 28 of insulating material. Supported on the central face of

said pad is a flat contact ring 29 with which a wire 23 is employed, said wire passing through an insulated bushing 26*a* on the casing 26, and the other wire 24 is coupled with the casing 26 as seen in Fig. 3 and also passes through the bushing 26*a*.

The center of the casing 26 is apertured and a shaft 30 snugly fits in the aperture of said casing to form an electric contact therewith. Said shaft passes through the door 25 and is provided on its outer end with an operating knob 30*a* having a pointer or indicator 30*b* cooperating with a dial 31 mounted on the outer face of the door 25. Coupled with the inner end of the shaft 30 is a spring contact arm 32 held in position by a nut 33 in threaded engagement with the chart, the contact arm being keyed to a disk 33*a* as seen at 32*a*, the disk 33*a* being in threaded engagement with the shaft 30. Arranged on the shaft 30 is an adjustment wheel or disk 34.

The disk 34 in the construction shown is composed of insulating material and molded therein but exposed through one side face thereof is a contact ring 35 adapted to engage or contact with the ring 29 and extending through the disk 34 is a web member 35*a* integral with the ring 35 and which is exposed through the opposite side face of said disk in a comparatively small contact piece, the outer face of which lies flushly with the face of the disk 34 and is arranged in such position that the free end of the spring contact arm 32 may be moved into engagement therewith to complete the circuit through the wires 23 and 24. The contact piece 36 occupies a comparatively small circumferential area of the disk 34 and unless the contact arm 32 is placed on said contact piece, the circuit will be broken through the wires 23 and 24.

A cup-shaped cap 37 is mounted upon the extending flange of the casing 26 to form an enclosure or protection for the mechanisms contained therewithin on the inner face of the door 25, but upon removing the cap 37, the disk 34 may be adjusted to locate the contact piece 36 at different points with relation to the dial 31 to vary the setting of the switch to control the circuit through the wires 23 and 24. Said adjustment of the disk 34 is facilitated by providing a plurality of peripheral notches 34*a* adapted to be engaged by a spring pawl 38 on the casing 26 which resiliently holds the disk in different positions of adjustment.

The construction shown in Figs. 4 and 5 differs from the structure shown in Figs. 2 and 3 in that the disk 34*b* substituted for the disk 34, instead of having the ring 35 and contact piece 36 imbedded therein, is provided with a contact piece 36*a* exposed through the face of the disk the same as the contact piece 36 to be engaged by a spring contact arm 32. This contact piece is tubular in form at one side and projects through the opposite face of the disk 34. Mounted therein is a spring pressed contact pin 39 adapted to engage a contact ring 40 mounted on a pad of insulating material 41 supported on the inner face of the casing 26. The ring 40 is in all respects equivalent to the ring 29, the pin 39 being always in engagement therewith, whereas the contact arm 32 cooperates with the contact piece 36*a*, the same as the engagement of the arm 32 with the contact piece 36 in Figs. 2 and 3. The remainder of the construction is exactly the same as that shown in said other figures, and the use of the device will accomplish the same results in the circuit shown in Fig. 1 or in any other circuit of a similar type.

In Fig. 6 of the drawings, I have shown at 42 an adjustment wheel or disk which may be used or substituted for the disks 34 and 34*b*. In this construction, a contact ring 43 similar to the ring 29 is exposed on one side face of the disk as in Fig. 2 of the drawing, and coupled therewith and extending through and imbedded in the material of the disk 42, which is molded, are webs 44 which support a contact member 45 exposed through the opposite side face of the disk, and a supplemental contact ring 46 is also exposed through said side face of the disk. The ends of the ring 46 are separated by a non-conducting or insulating section 46*a* adjacent which the contact 45 is arranged, but located in a circumferential path of a radius less than that of the ring 46.

With this construction, the contact 45 will be the equivalent of either of the contacts 36 and 36*a*. The spring arm of the switch device cooperates therewith to maintain a closed circuit through the wires 23 and 24 at the single point of adjustment of the contact arm with relation to said disk, whereas the ring 46 may be used by employing a contact arm similar to the arms 32 but operating upon the area of the disk in which the ring is positioned for the open circuit use of the switch device without in any way altering the remainder of the structure of said device, and simply by substituting one switch arm for another as will be apparent. In other words, the control or adjustment disk or wheel 42 may be adapted for the use as disclosed in my prior application above referred to in the open alarm circuit and also in the closed alarm circuit herein specifically described which is universally adapting one control and adjustment member for both open and closed circuits of any kind or class wherein the switch device may be adapted and used for protection or other purposes.

It will be understood that while I have diagrammatically illustrated one type of closed circuit in connection with which one of my improved switch devices may be installed, that I am not limited to this specific use nor to the type of circuit illustrated, as the invention may be readily applied to con-

trolling closed circuits of any kind or class, it being understood that the operation of the device is controlled by the setting of the finger 30*b* upon the dial which regulates the positioning of the contact arm 32 with reference to the contact employed.

It will also be understood that I am not necessarily limited to the specific structure of the device herein shown and described, and various changes therein and modifications thereof may be made within the scope of the appended claims without departing from the spirit of my invention or sacrificing its advantages.

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

1. A switch device of the class described comprising a rotatable member, a dial, a pointer on said member, an electric contact on said member, a disk mounted on and insulated from said member and having an insulated surface over which said contact passes, a contact point on said disk in the path of movement of said contact and said disk being adjustable to vary the position of said contact point with relation to said dial.

2. A switch device of the class described comprising a rotatable member, a dial, a pointer on said member, an electric contact on said member, a disk mounted on and insulated from said member and having an insulated surface over which said contact passes, a contact point on said disk in the path of movement of said contact and said disk being adjustable to vary the position of said contact point with relation to said dial, and means for retaining said disk in different positions of adjustment.

3. A switch device of the class described comprising a rotatable member, a dial, a pointer on said member, an electric contact on said member, a disk mounted on and insulated from said member and having an insulated surface over which said contact passes, a contact point on said disk in the path of movement of said contact and said disk being adjustable to vary the position of said contact point with relation to said dial, means for retaining said disk in different positions of adjustment, and means associated with said disk for completing the electric circuit to said contact point in the several positions of adjustment of said disk.

4. In a switch of the class described, a disk of insulating material, a contact member movable over one surface of said disk, and a contact point supported in the path of movement of said contact over said disk, means for exposing said contact point through the opposite face of the disk to complete the electric circuit thereto, the outer face of said contact point lying flushly with the surface of the disk over which said contact passes, and a contact ring exposed through the first named face of said disk and arranged in a circumferential path different from that of said contact point and having an insulated surface therein in radial alinement with said contact point.

5. In a switch of the class described, a disk of insulating material, a contact member movable over one surface of said disk, and a contact point supported in the path of movement of said contact over said disk, means for exposing said contact point through the opposite face of the disk to complete the electric circuit thereto, the outer face of said contact point lying flushly with the surface of the disk over which said contact passes, and a contact ring exposed through the first named face of said disk and arranged in a circumferential path different from that of said contact point and having an insulated surface therein in radial alinement with said contact point, said contact ring being in circuit with said first named means.

6. In a switch of the class described, a disk of insulating material, a contact member movable over one surface of said disk, and a contact point supported in the path of movement of said contact over said disk, means for exposing said contact point through the opposite face of the disk to complete the electric circuit thereto, the outer face of said contact point lying flushly with the surface of the disk over which said contact passes, a contact ring exposed through the first named face of said disk and arranged in a circumferential path different from that of said contact point and having an insulated surface therein in radial alinement with said contact point, said contact ring being in circuit with said first named means, and the periphery of said disk having spaced notches adapted to be engaged by a spring pawl for retaining said disk in different positions of adjustment.

7. A switch of the class described comprising a casing, a shaft arranged centrally of the casing, a knob at one end of the shaft for rotating the same, a spring contact carried by the other end of the shaft, a contact ring mounted in and insulated from the casing, the axis of said ring being common with that of said shaft, a disk of insulating material rotatably adjustable on said shaft adjacent the second named end thereof, and a contact exposed through one surface of said disk and adapted to be engaged by the spring contact on said shaft, and means extending through said disk and exposed through the opposite face thereof for placing said contact in circuit with said ring in the several adjusted positions of said disk.

8. A switch of the class described comprising a casing, a shaft arranged centrally of the casing, a knob at one end of the shaft for rotating the same, a spring contact carried by the other end of the shaft, a contact ring mounted in and insulated from the casing,

the axis of said ring being common with that of said shaft, a disk of insulating material rotatably adjustable on said shaft adjacent the second named end thereof, and a contact exposed through one surface of said disk and adapted to be engaged by the spring contact on said shaft, means extending through said disk and exposed through the opposite face thereof for placing said contact in circuit with said ring in the several adjusted positions of said disk, and the periphery of said disk having circumferentially spaced notches and means on the casing engaging one of said notches for retaining said disk in different positions of adjustment.

In testimony that I claim the foregoing as my invention I have signed my name this 31st day of December, 1927.

MICHAEL J. CAWLEY.