Aug. 4, 1931. F. C. DE REAMER 1,817,807

ELECTRIC SWITCH

Filed Aug. 16, 1929

Fig. 1.

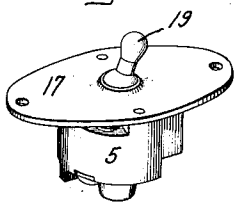


Fig. 4.

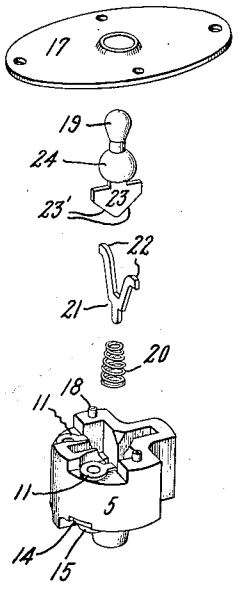


Fig. 2.

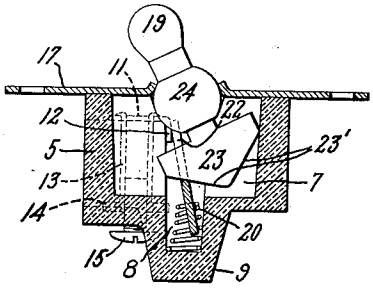
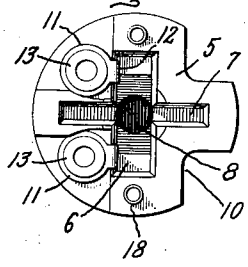


Fig. 3.



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UNITED STATES PATENT OFFICE

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ELECTRIC SWITCH

Application filed August 16, 1929. Serial No. 386,471.

The present invention relates to snap switches and the object thereof is to improve the construction of such switches to the end that a minimum number of simple parts are necessary.

One purpose for which my improved switch is especially adapted is for controlling the circuits of lamps in automobiles, for radio circuits and the like, especially where the amount of current to be handled and the voltage thereof is low, and the invention will be described in that connection but without necessarily being limited thereto.

For a consideration of what I believe to be novel and my invention, attention is directed to the accompanying description and the claims appended thereto.

In the drawings, which are illustrative of my invention, Fig. 1 is a perspective view of the switch; Figs. 2 and 3 are enlarged views, the former being a vertical section, and the latter a plane with the actuating parts removed, and Fig. 4 is an exploded view.

5 indicates a one-piece base made of any suitable insulating material or compound which is tough and not easily broken. It is provided with relatively deep cavities 6 and 7 which are arranged in the form of a cross, said cavities being at right angles to each other. In the center and below the point of intersection of the cavities is a well 8 for the reception of a spring to be referred to later. The walls of the well form a conical extension 9 below the base. The base is cut away at the regions 10 to save material. It is also cut away at the top to provide spaces to receive the fixed contacts 11, each of which has a down turned end 12 which engages a side wall of the cross cavity 6 to prevent it from turning and to afford a suitable contact surface, as best shown in Fig. 2. Each contact is retained by a tubular rivet 13, the latter having an enlargement 14 embedded in the base to hold it in place. In the lower end is a screw 15 to receive and hold a circuit wire. The base is provided with an enlarged flat metal cover 17 having suitable openings to receive screws to fasten the switch in place. In other words, this cover not only performs its function as such, but provides a support for the switch as a whole. The cover is secured to the base by tubular rivets 18, and while in this case the cover is intended to be permanently secured in place, it may be detachably secured by screws in place of the rivets. The cover has a central opening through which the switch actuator 19 extends, said actuator having a rocking movement. The opening is made to form a portion of a sphere, the wall of which engages the spherical portion of the actuator below the outside handle portion. As will be seen later, it is the cover alone which holds the parts of the switch in operative relation. This is important because it eliminates certain parts commonly used in small switches and reduces the cost both of material and in the assembly operation.

In the well 9 is a coiled compression spring 20 and supported wholly thereby is a contact member 21 made in the form of a Y, the arms 22 of which are adapted to engage and bridge the contacts 12. This is an advantageous arrangement, since in assembling it is only necessary to drop the lower end of the member into the spring. The contact member 21 is located in the cross cavity or channel 6 and moves back and forth therein, the contacts acting as stops on the left-hand side and the walls of the cavity the back stops. In the cavity or channel 7 is located the actuator member 23 which is at right angles to the contact member and has two opposition beveled or inclined edges 23′ meeting at an apex on its under side, one or the other of said edges always being in engagement with the contact member 21 between the arms 22. Above the actuator and forming a part thereof is a spherical surfaced part 24 which engages the wall of the opening in the cover plate. With the handle 19 in the position shown, the switch is closed because the member 21 bridges the contacts 12. Having the handle to the right causes the member 21 to be moved downwardly with a wiping action on the stationary contacts until its apex crosses the center of the contact member when the upper end of the latter moves with a snap action to the right and opens the circuit. It will be seen that the spring 20 tends at all times to

move both the contact member and actuator upward and that this is resisted solely by the cover. By this simple but effective arrangement a cross pivot for the actuator is eliminated, as is also a pivot or other fastening means for the contact member. The spring 20 is only placed under compression when the cover is applied, and this, of course, involves no difficulty. Furthermore, this arrangement avoids the necessity of providing a stop or limiting device for limiting the upward movement of the contact member.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. In a switch, the combination of a base containing cross cavities, contacts adjacent a side wall of one of the cavities, a contact member in said cavity, an actuating spring therefor, a rocking actuator located in the other cavity which as it moves back and forth over the member permits the spring to snap the member to its respective positions, and a cover for the base which also forms a pivotal support for the actuator and holds the spring under compression.

2. In a switch, the combination of an insulating base, fixed contacts, a vibrating contact member, a compression spring which moves the member and tends at all times to raise it, an actuator which rests on the member and passes back and forth over it, has a spherical surfaced portion and terminates in a handle, and a cover which has an opening, the wall of which engages said spherical surfaced portion and holds the actuator in place, forms a pivotal support therefor, and holds the spring under compression.

3. In a switch, the combination of a one-piece insulating base having cross cavities, fixed contacts, a movable contact member located in one of the cavities and an actuator in the other, a spring which forms the sole support for the member and which moves the member as the actuator moves across it from one of its positions to the other, and an enlarged cover for the base through which a part of the actuator extends and which holds the member, spring and actuator in their operative positions and which affords a supporting means for the switch as a whole.

4. In a switch, the combination of a one-piece insulating base having cross cavities and a well, fixed contacts having down turned ends located in one of the cavities, a compression spring mounted in the well, a movable contact member which is wholly supported by the spring, an actuator which has opposed beveled edges on its under side and rests on the member, and a separate cover for the base which also holds the actuator in engagement with the member and the spring under compression.

5. In a switch, the combination of an insulating base having cross cavities and a well at the intersection of the cavities and below them, a coiled spring loosely mounted in the well, fixed contacts carried by the base, a Y-shaped movable contact member located in one cavity, the bottom end of which enters the spring and is wholly supported thereby, an actuator located in the other cavity which rests on the member between its arms and has a spherical surfaced portion, and a cover for the base which also forms a seat for said spherical surfaced portion and holds the spring under compression.

In witness whereof, I have hereunto set my hand this 14th day of August, 1929.

FRANK C. DE REAMER.