

J. G. PETERSON.  
ELECTRIC SNAP SWITCH.  
APPLICATION FILED FEB. 1, 1911.

1,009,172.

Patented Nov. 21, 1911.

Fig. 1

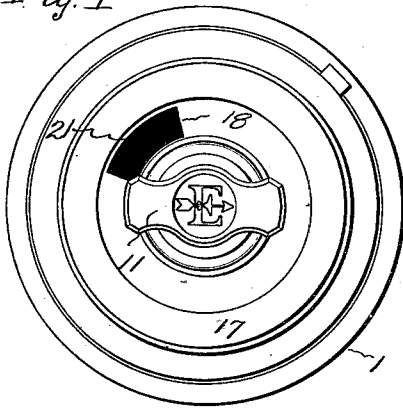


Fig. 2

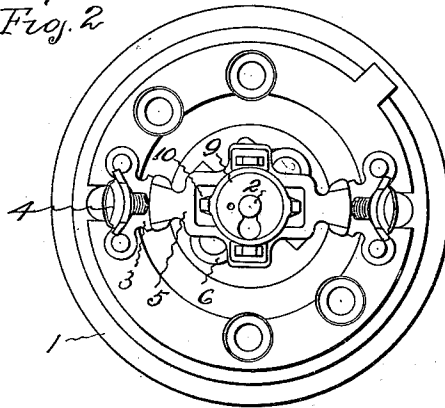


Fig. 3

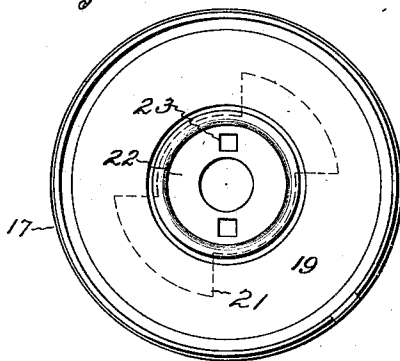


Fig. 4

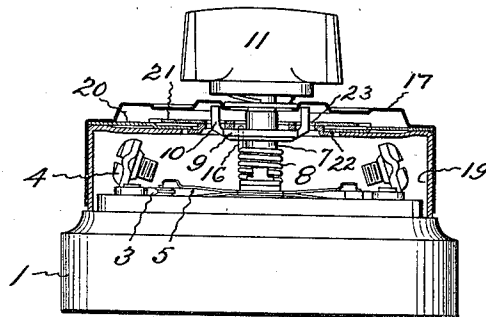


Fig. 5

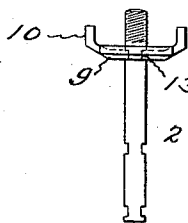


Fig. 6

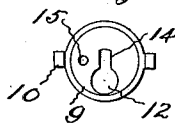
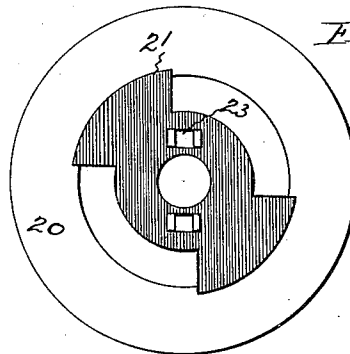


Fig. 7



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# UNITED STATES PATENT OFFICE.

JOHANN G. PETERSON, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE ARROW ELECTRIC COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## ELECTRIC SNAP-SWITCH.

1,009,172.

Specification of Letters Patent.

Patented Nov. 21, 1911.

Application filed February 1, 1911. Serial No. 605,976.

*To all whom it may concern:*

Be it known that I, JOHANN G. PETERSON, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented a new and useful Improvement in Electric Snap-Switches, of which the following is a specification.

This invention relates to those rotary snap electric switches that are provided with means for indicating the condition of the circuit, that is, whether it is open or closed.

It has been customary to mount an indicating disk or dial bearing the words "On" and "Off", or words or marks of similar import, on a sleeve which is connected to and moves only in conjunction with the movable poles or commutator of the switch. A stationary disk of one shade or color and a movable disk or shutter of contrasting color or shade have been arranged in the cover of a switch, with the shutter adapted to be connected to and be moved with the poles or commutator beneath an opening in the cover for indicating the state of the circuit. Such dials and shutters have not only been attached to sleeves that move with the poles or commutator, but have also been arranged to be connected with and moved directly by parts bearing the poles or commutator. In all these cases the dial or shutter remains stationary, while the spring for throwing the poles is being made tense, and only moves when the poles or commutator are thrown by the spring. As a result of this it has been found in practice, that the inertia and momentum of the dial or shutter added to that of the commutator or poles causes considerable wear of the parts, and oftentimes when the switch is subjected to frequent and long use, the insulation between the poles and the other parts of the mechanism, which necessarily is small, is fractured, exposing the switch to destruction if not rendering it dangerous.

The object of the invention is to provide a switch of this character with a dial or shutter that is mounted in the cover above the usual lining and beneath a window in the shell, which dial or shutter, when the cover is placed in position over the mechanism on the base, is engaged with a part attached to the spindle which is turned by the handle for making the actuating spring tense. As a result of this construction, there is no

opening through the cover for the entrance of dust and dirt, and the dial or shutter is moved by the operator of the switch when the handle is turned, and not with the poles or commutator, thus reducing the weight of the parts which are thrown violently by the spring when the switch is operated.

Figure 1 of the accompanying drawings shows a plan of a rotary snap indicating switch embodying this invention. Fig. 2 shows a plan with the handle and cover bearing the shutter removed. Fig. 3 shows a view of the inside of the cover. Fig. 4 shows a side elevation of the switch with the cover and the parts which it carries cut in central section. Fig. 5 shows a detail of the actuating spindle and the shutter engaging and moving disk which the spindle carries. Fig. 6 shows a plan of the shutter actuator removed from the spindle. Fig. 7 shows a plan of the contrasting disk and shutter used in the form of switch illustrated for indicating the condition of the circuit.

The switch shown has the common porcelain base 1, supporting the operating spindle 2 in the usual manner. Attached to the upper surface of the base are the stationary contacts 3 provided with binding screws 4, and movable into and out of engagement with these stationary contacts are the movable pole plates 5. The pole plates are mounted upon the commutator 6, which is attached to the sleeve 7 that is fitted upon the spindle. The commutator with the pole plates are thrown at the proper time by the tension of the spring 8.

Near the upper end the spindle bears a disk 9 provided with upwardly extending lugs 10. This disk is attached to the spindle so as to rotate therewith when the latter is turned by the handle 11 which is screwed upon the upper end of the spindle. This disk is conveniently attached to the spindle by passing the upper end of the spindle through the circular opening 12, and then sliding the disk transversely and passing the reduced portion 13 of the spindle into the restricted section 14 of the opening through the disk. The disk has a perforation 15 for receiving the upper end 16 of the actuating spring 8. When the disk is placed on the spindle in this manner, it holds the commutator sleeve down in position and also provides a convenient means for con-

necting the upper end of the actuating spring with the spindle, so that when the spindle is turned and the disk rotated with it, the actuating spring will be placed under tension for throwing the commutator and movable pole pieces.

The cover of the switch shown has a metallic shell 17 through which is a window 18. Inside of the cover is the usual insulating lining 19. With the form of indicator shown, inside of the cover and above the lining there is a disk 20. This disk desirably has a white upper surface. Above the disk is a shutter 21 that desirably has a black upper surface. The disk has a central circular opening and its outer edge is confined between the lining and the cover in such manner that it is held from moving. The shutter is free to move between the fixed disk and the cover. Below the disk is a ring 22 which is slightly larger in diameter than the diameter of the central opening in the disk. Openings 23 are punched in the ring and shutter and the metal punched from the former is folded up through the openings in the latter and bent over to hold the parts together. This fixes the ring and shutter together and loosely attaches them to the stationary disk.

When the cover is placed in position on the switch, the lugs 10 that project upwardly from the disk 9 that is attached to the spindle, extend through the perforations 23, consequently when the spindle is turned the shutter is also moved a corresponding amount. When the shutter is in position below the window in the cover it shows black, indicating that the circuit is open. When the shutter is moved away from the window, the disk shows white, indicating that the circuit is closed. With this construction, light and dark are indicated without any opening that extends all the way through the cover, and thereby dust and dirt are excluded. This shutter or dial being engaged by a part that is carried by the spindle, is moved by force applied by the operator of the switch, and thus the poles and parts which are violently thrown by the spring when the switch is operated, are relieved of the weight and consequent momentum of the shutter dial. This in-

sure a longer life for the switch, as it reduces the wear, and also the liability of breaking the small insulating pieces which are usually employed to separate the conducting members of the poles from the parts which support and carry them. Furthermore, not only is the cover tight, and the poles relieved of the necessity of carrying the shutter, but the shutter moving part which is conveniently attached to the spindle forms a convenient means for the connection of the actuating spring with the spindle, and also a simple means for holding the commutator or movable pole carrying parts in position on the spindle.

The invention claimed is:

1. The combination in an electric switch, of a rotatory spindle, means for rotating the spindle, a cover with a window opening through its top wall, a lining fixed in said cover, a disk, with a central opening, held at its outer edge between the cover and the lining, a shutter movably retained between the cover and the disk, a ring movably retained below said disk, means passing through the central opening in the fixed disk and connecting said ring and said shutter, and means attached to the spindle and projecting through said ring in such manner that the shutter moves when the spindle is turned.

2. The combination in an electric switch, of a rotatory spindle, means for rotating the spindle, a cover with a window opening through its top wall, a lining fixed in said cover, a disk with a central opening held at its edge between the cover and the lining, a shutter movably retained between the cover and disk, a ring movably retained below said disk, prongs punched out of said ring and extending upwardly through the central opening in the fixed disk and perforations in the shutter for holding the parts together, and lugs mounted on the spindle and projecting through the openings punched in the ring and shutter in such manner that the ring and shutter move when the spindle is turned.

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