

Oct. 12, 1926.

1,602,871

C. AALBORG

SNAP SWITCH

Filed Oct. 9, 1920

Fig. 1.

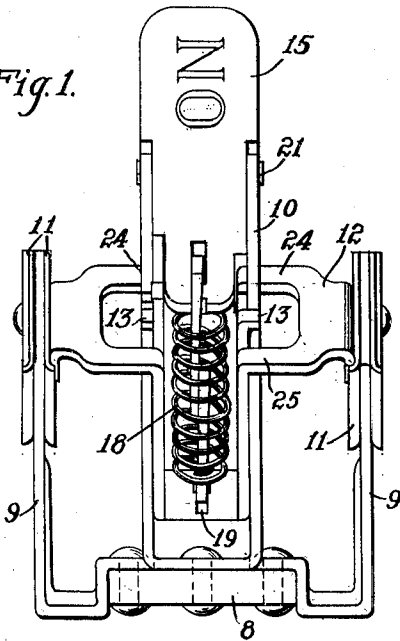


Fig. 2.

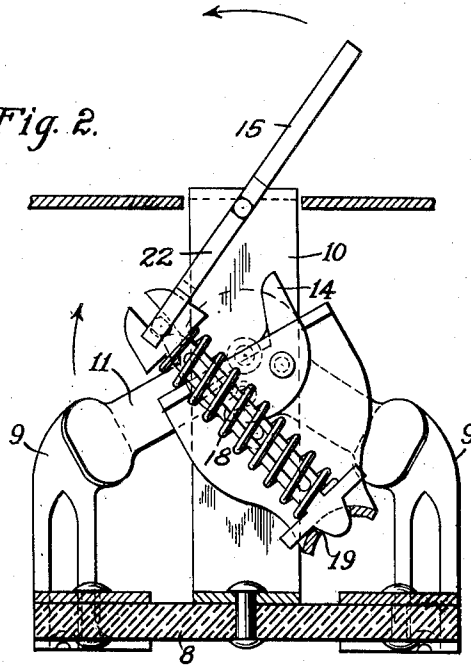


Fig. 3.

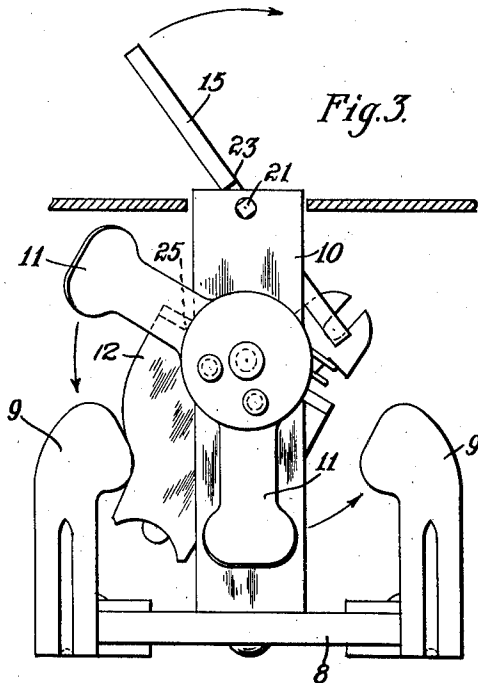


Fig. 4.

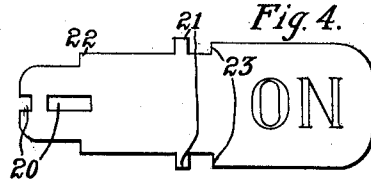


Fig. 6.

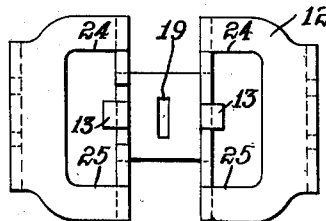


Fig. 7.

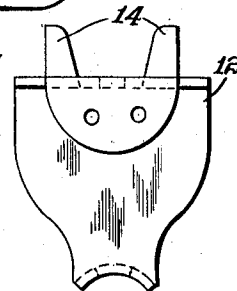
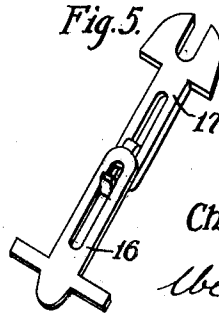


Fig. 5.



WITNESSES:
H. T. Shelhamer
A. Martin

INVENTOR
Christian Aalborg
BY
Wesley E. Carr
ATTORNEY

UNITED STATES PATENT OFFICE.

CHRISTIAN AALBORG, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

SNAP SWITCH.

Application filed October 9, 1920. Serial No. 415,772.

My invention relates to electric switches, and particularly to those of the snap type.

The object of the invention is to provide a switch having the advantages of simplicity and cheapness and which will occupy a minimum amount of space but yet be efficient in operation.

Referring to the accompanying drawing:—

Figure 1 is an end elevation of the switch in closed position;

Fig. 2 is a side view thereof, partially in section;

Fig. 3 is a side elevational view of the switch in open position;

Fig. 4 is a detail view of the handle;

Fig. 5 is a detail view of the guide for the spring, and

Figs. 6 and 7 are plan and side elevational views, respectively, of the carrier for the switch blades.

In the particular form illustrated, my device comprises a base 8 which supports two pairs of contact members 9 and a frame 10.

A pair of blades 11 are secured to a carrier 12 which is pivoted in the frame 10 in such manner as to permit oscillations of the blades into and out of engagement with the contact members 9.

The carrier 12 has lugs 13 by which it is pivotally supported in the frame 10, and has its ends turned over to present a flat face to which the blades may be riveted, as shown in Figs. 1 and 6. The carrier also has a pair of lugs 14, as shown in Figs. 2 and 7, struck up thereon, in position to be engaged by a switch handle or lever 15, in the manner to be hereinafter described. A pair of slidably connected members 16 and 17, shown in Fig. 5, serve as a guide for a spring 18 and are supported between the carrier 12 and the handle 15. At its lower end, the guide 16—17 is held in position by reason of its engagement with a slot 19 in the carrier, and its forked upper portion extends into the slots 20 of the handle, as shown in Fig. 4. The guide members 16 and 17 are normally held in expanded position by the spring 18 and are thereby retained in engagement with the slots 19 and 20, respectively.

The handle 15 is provided with lugs 21 by which it is pivotally supported in the frame 10, and has shoulders 22 and 23, as shown in Fig. 4, the shoulders 22 being po-

sitioned to alternately engage the lugs 14 of the blade carrier, as the handle is swung on its pivot, and the shoulders 23 engage the upper edges of frame 10 to limit the movement of the handle, in either direction, as shown in Fig. 3.

The movement of the blade carrier 12 is limited by the engagement of its portions 24 and 25 with the edges of the frame 10. In Fig. 1, the portions 24 are shown in abutting engagement with the frame 10 to limit the travel of the carrier in one direction, while Fig. 3 shows, in dotted lines, the portion 25 in engagement with the frame 10, to limit the travel of the carrier in the opposite direction.

It is to be observed that the design and arrangement of the aforementioned component parts of my switch is such as to permit a ready assemblage of the completed switch. The frame 10 is struck up from a suitably perforated strip of sheet metal which is readily riveted to the base 8. The carrier 12 is likewise struck up from a blank of sheet metal to which the contact blades 11 are riveted in the disassembled position. The carrier 12 is then slipped between the legs of the frame 10 so that the lugs 13 are sprung into their co-operating slots in the frame 10 by reason of the inherent resiliency of the material in the carrier 12 and the frame 10. The handle is assembled in a similar manner.

With the switch parts in the position shown in Fig. 2, if the handle 15 be moved to the left it will compress the spring 18 between the guide members 16 and 17 and, at the same time, bring them into parallelism with the handle. The shoulder 22 of the handle then comes into engagement with one of the lugs 14 and imparts positive movement to the blade carrier 12.

The foregoing operation changes the direction of the force exerted by the spring 18 against the blade carrier, and, as the tension on the spring has been greatly increased by the movement of the handle, the blades are snapped to their open position, as shown in Fig. 3. To close the switch, the operation above described is reversed.

The positive engagement between the handle and the blade carrier insures against the blades sticking in either the open or the closed position and thereby materially assists the spring, besides projecting the car-

rier into a position which increases the reverse action of the spring thereagainst. Furthermore, by connecting the handle directly to the spring guide, and making the guide of a telescopic form, a smaller space is required for the switch than where connections or guide members of a different form are used.

Various modifications might be made without departing from the scope of the invention as defined in the claims.

I claim as my invention:—

1. In an electric switch, a switch frame, a handle pivoted on the frame, a movable contact member, a carrier for the movable contact member pivoted on the frame eccentrically of the handle, a spring guide having its ends supported by the handle and the carrier, respectively, and a spring supported on the guide in position to move with the guide as the handle moves one end thereof and normally exerting tension to maintain the carrier in one of its extreme positions, and a shoulder on the handle for making positive engagement with the carrier to start movement thereof to its opposite extreme position at the instant the spring has been carried to neutral position with respect thereto.

2. In an electric switch, a switch frame, a handle pivoted on the frame, a movable contact member, a carrier for the movable contact member, a spring guide having its ends supported by the handle and the carrier, respectively, and a spring supported on the guide in position to move with the guide as the handle moves one end thereof and normally exerting tension to maintain the carrier in one of its extreme positions, and a shoulder on the handle for making positive engagement with the carrier to start movement thereof to its opposite extreme position at the instant the spring has been carried to neutral position with respect thereto.

3. In an electric switch, a handle having one end slotted to receive a spring guide member, a blade carrier having a slot for the reception of another guide member, a spring supported by said guide members and normally under tension to maintain said guide members in forcible engagement with said handle and carrier, respectively, and means for imparting positive movement to the said carrier.

4. In an electric switch, an operating lever, a movable contact member, a spring interposed between the lever and the movable contact member, an expansible guide for the spring also interposed between the said

lever and the said contact member, and means for imparting positive movement to the movable contact member, upon movement of the lever.

5. In an electric switch, a switch frame, a handle pivoted on the frame, a movable contact member, a carrier for the movable contact member, a spring guide having its ends supported by the handle and the carrier, respectively, a spring supported on the guide in position to move with the guide as the handle moves one end thereof and normally exerting tension to maintain the carrier in one of its extreme positions, and a connection between the handle and the carrier for imparting positive starting movement to the movable contact member.

6. In an electric switch, a switch frame, a handle pivoted on the frame, a movable contact member, a carrier for the movable contact member, a spring guide having its ends supported by the handle and the carrier, respectively, a spring supported on the guide in position to move with the guide as the handle moves one end thereof and normally exerting tension to maintain the carrier in one of its extreme positions, and a shoulder on the handle for making positive engagement with the carrier to start movement thereof to its opposite extreme position during movement of the handle when shifting the guide.

7. In an electric switch, an operating lever, a movable contact member, a pivotally mounted carrier for the said contact member, a spring guide interposed between the operating lever and the carrier, a spring supported by the guide and normally biasing the carrier to an extreme position of movement, a connection between the said lever and the spring whereby the position thereof is shifted during movement of the handle, and means whereby positive movement is imparted to the contact member during movement of the operating lever.

8. In a switch structure, a base, a contact-carrying member having apertures therein, a handle, a frame extending through the apertures in the contact-carrying member in pivotal engagement therewith and along the edges of and supporting the handle, and a lost-motion connection between the handle and current-carrying member mounted within the frame, whereby the frame constitutes the only fastening means between the several parts of the switch structure.

In testimony whereof, I have hereunto subscribed my name this first day of October, 1920.

CHRISTIAN AALBORG.