Nov. 13, 1923. 1,473,805

H. G. BAXTER

TUMBLER SWITCH

Filed Sept. 24, 1920

Fig. 1.

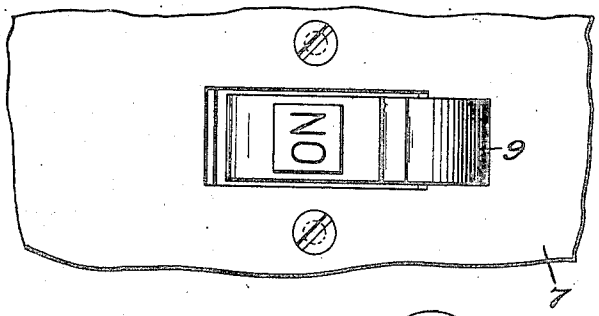


Fig. 2.

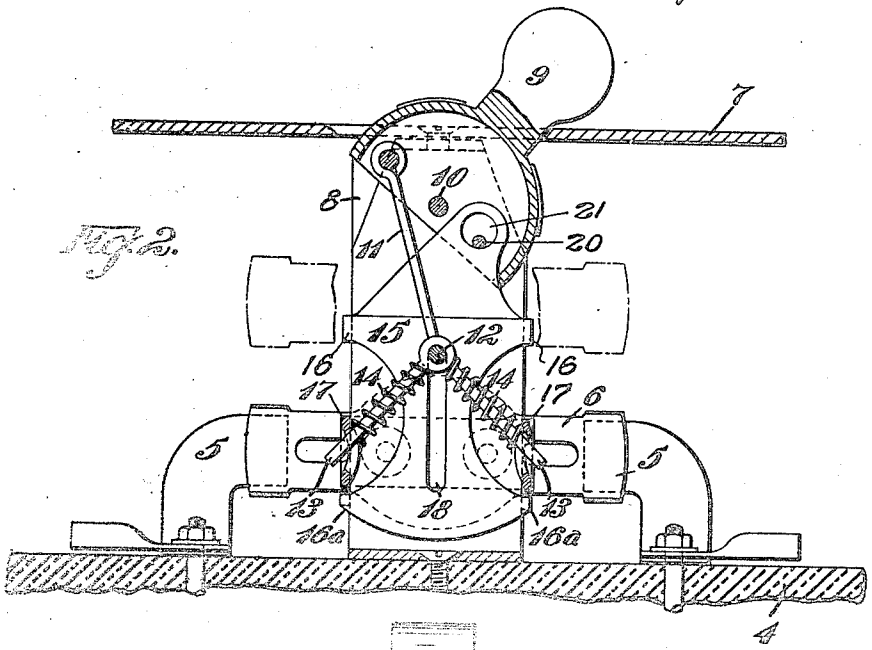
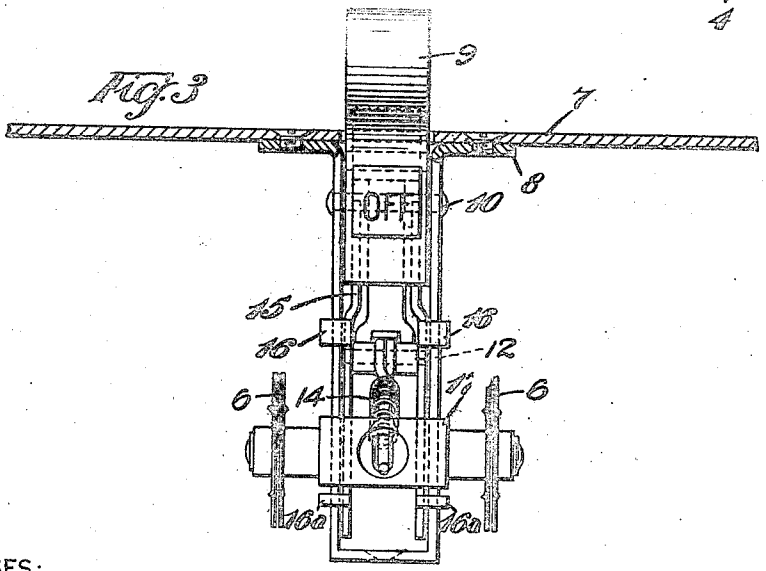


Fig. 3



WITNESSES:

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UNITED STATES PATENT OFFICE.

HAROLD G. BAXTER, OF BALDWIN, NEW YORK, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

TUMBLER SWITCH.

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To all whom it may concern:

Be it known that I, HAROLD G. BAXTER, a subject of the King of Great Britain, and a resident of Baldwin, in the county of Nassau and State of New York, have invented a new and useful Improvement in Tumbler Switches, of which the following is a specification.

My invention relates to electric snap switches of the tumbler type, and it has for its object the provision of a switch construction which occupies minimum space and also embodies features of simplicity and durability.

Ordinarily, in switches of this general type, the blades are pivoted and are moved on their pivots to open and close the circuit. The base and the cover plate must be so spaced apart as to permit the oscillation of the blades in a plane vertical thereto. To provide this space, and the space required to accommodate the operating mechanism necessary to impart oscillatory movement, a larger construction must be employed than is necessary in the embodiment of my invention wherein the blades, instead of moving about a pivot, are carried bodily into and out of engagement with their contacts, and at each stage of movement are in parallelism with their position at any other stage of movement.

Furthermore, I provide a construction whereby a positive starting movement is imparted to the blades to insure a proper snap movement thereof by the springs.

The preferred manner of applying my invention is shown in the accompanying drawing, wherein—

Figure 1 is a front elevation of the switch mounted in a wall.

Fig. 2 is a side elevation, with a portion of the frame removed to more clearly show the mechanism, and

Fig. 3 is a view taken at right angles to Fig. 2.

Fig. 2 is drawn on an enlarged scale and shows, in full lines, the position occupied by the blades when in closed position, and, in dotted lines, the positions occupied by the blades when in open position.

I provide a base 4 to which is fastened two pairs of contact members 5 that are frictionally engaged by a pair of blades 6. A cover plate 7 has secured thereto a frame 8 which may also be secured to the base 4.

A handle 9 extends through the cover plate and is pivoted, at 10, in the frame 8. The handle carries on its domed portion the necessary legends to indicate the positions of the switch. Eccentrically pivoted at one of its ends in the handle 9 is a link member 11 carrying at its other end a pivot pin 12 on which are pivoted two arms 13, 13, carrying springs 14, 14.

A bracket 15, having outturned lips 16, and 16ª loosely embracing the edges of the frame 8, is slidably mounted on the frame and has lost motion connection with the handle 9. To effect this connection, a pin 20 that is carried by the handle extends into a hole 21 in the upper end of the bracket 15.

Connecting the blades 6, and insulated therefrom, are a pair of cross heads 17 having slots therethrough for the passage of the outer ends of the arms 13. The pivot pin 12 extends through, and is guided by, slots 18 in the bracket 15, and has sliding engagement with the bracket.

To change the switch from "on" to "off," the handle is moved to the left of the position shown in Fig. 2. This movement forces the pivot 12 downwardly and compresses the springs 14 against the crossheads 17. Just before the arms 13 come into a position parallel with respect to the blades 6, the lost motion between the handle 9 and the bracket 15 has been taken up and the bracket is raised, bringing the lips 16ª into engagement with the crossheads 17, and further movement of the handle imparts positive motion to the blades. When the pivot pin 12 is opposite the slots in the crossheads, the springs are at their greatest tension. Further travel carries the pivot pin below the center line of the crossheads and causes the springs to exert an upward push against the crossheads to snap the blades to their completely open position, their action being rendered more certain and effective by reason of the blades having been already started on their upward movement.

By the action just described, the pivot pin 12 is brought to rest in the lower ends of the slots 18, and the position of the springs 14 and the arms 13 is the reverse of that shown in Fig. 2. Movement, now, of the handle to the right will reverse the action just described. The lips 16 on the bracket will engage the crosshead to start downward movement thereof, and the pivot

pin 12 will be drawn upwardly to compress the springs 14 and cause them to snap the blades into engagement with the contact members, when the pivot pin ascends past the center line of the crossheads 17.

I claim:

1. In combination, in an electric switch, a base, a movable contact member, a pair of stationary contact members coacting with the movable contact member, a frame, a movable handle mounted in the frame, a bracket slidably mounted in the frame and connected to the handle, and means on the bracket for positively engaging the movable contact member to move it out of engagement with the stationary contact members.

2. In combination, in an electric switch, a base, a movable contact member, a pair of stationary contact members coacting with the movable contact member, a frame, a movable handle mounted in the frame, a bracket slidably mounted in the frame and connected to the handle, means on the bracket for positively engaging the movable contact member to move it out of engagement with the contact members, and means for yieldingly maintaining the movable contact member in either its open or closed position.

3. In combination, in an electric switch, a movable contact member, a pair of stationary contact members coacting with the movable contact member, a frame, a movable handle mounted in the frame, a bracket slidably mounted on the frame and connected to the handle, lugs on the bracket for imparting positive starting movement to the movable contact member, a spring connection between the handle and movable contact member whereby movement of the handle places the movable contact member under increased tension to cause completion of the movement thereof.

4. In combination, in an electric switch, a movable contact member, a pair of stationary contact members coacting with the movable contact member, a frame, a bracket slidably engaging said frame, a movable handle connected to said bracket, and a pair of spaced lugs on the bracket lying in a plane parallel to the movable contact member, whereby the movable contact member is moved bodily out of engagement with the contact members.

5. In combination, in an electric switch, a movable contact member, a pair of stationary contact members coacting therewith, a frame, a bracket slidable in that frame, a handle, a lost-motion connection between the handle and the bracket, lugs on the bracket so arranged as to impart positive starting movement to the movable contact member when the lost motion between the handle and bracket is taken up, a plurality of springs interposed between the handle and the movable contact member in such manner that movement of the handle places the springs under tension to complete the movement of the movable contact member, and a sliding connection between the frame and the movable contact member whereby an unvarying degree of angularity is maintained therebetween.

6. In combination, in an electric switch, a base, a movable contact member, a pair of stationary contact members coacting with the movable contact member, a frame, a movable handle mounted in the frame, a bracket slidably mounted in the frame, a lost-motion connection between the handle and the bracket, and means on the bracket for positively engaging the movable contact member to move it out of engagement with the stationary contact members.

7. In combination, in an electric switch, a base, a movable contact member, a pair of stationary contact members coacting with the movable contact member, a frame, a movable handle mounted in the frame, a bracket slidably mounted in the frame, a lost-motion connection between the handle and the bracket, means on the bracket for positively engaging the movable contact member to move it out of engagement with the contact members, and means for yieldingly maintaining the movable contact member in either its open or closed position.

In testimony whereof, I have hereunto subscribed my name this third day of September, 1920.

HAROLD G. BAXTER.