Nov. 18, 1924. 1,515,650

H. G. BAXTER

TUMBLER SWITCH

Filed Jan. 8 1921

Fig.1.

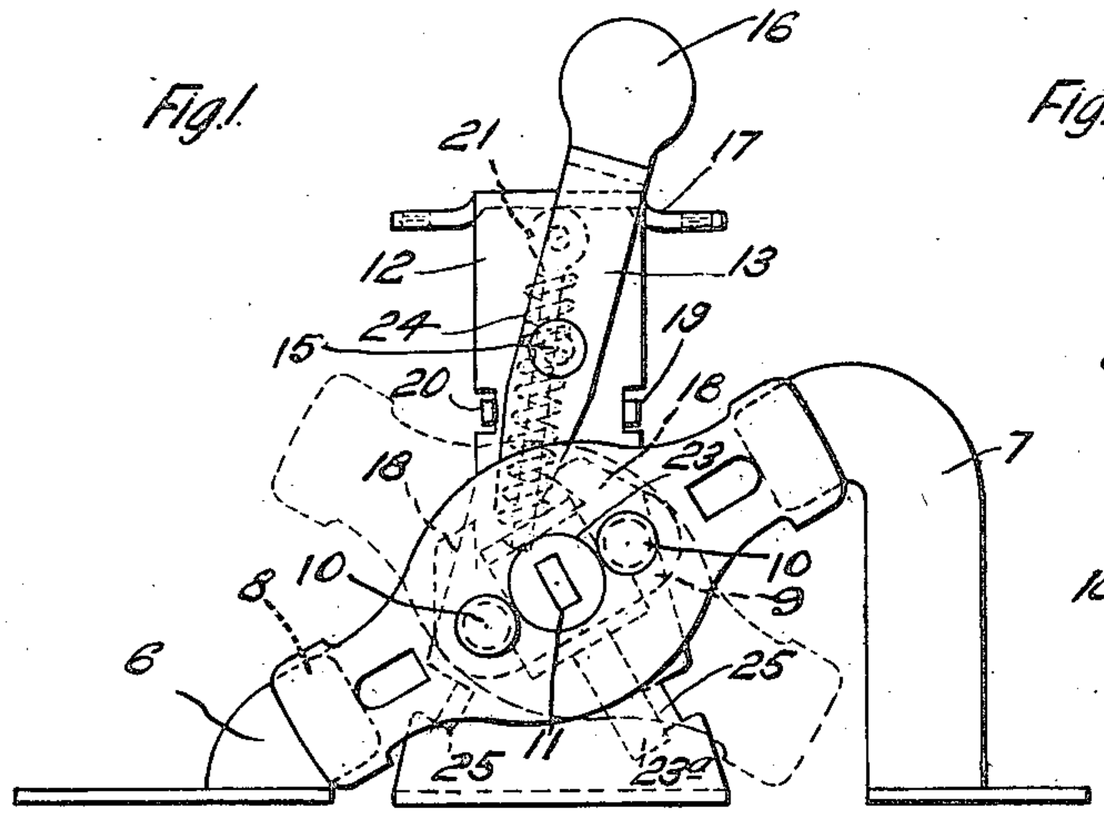


Fig. 3.

Fig.2.

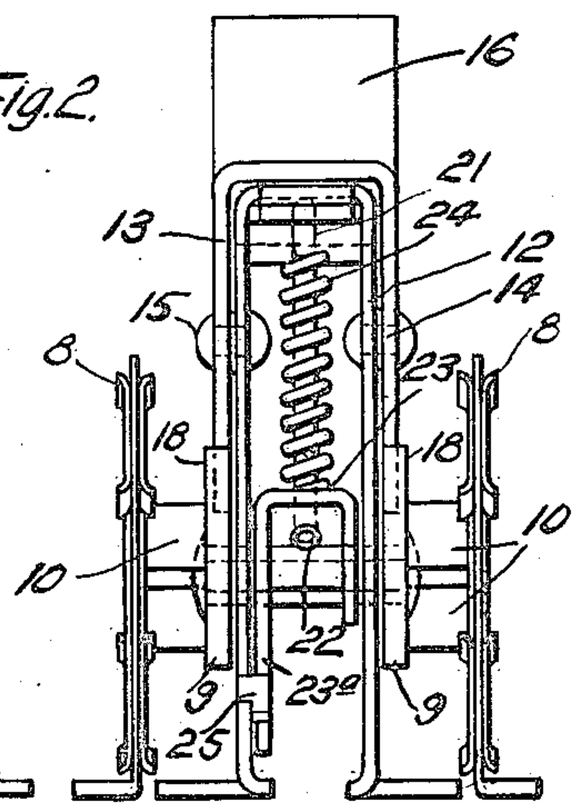
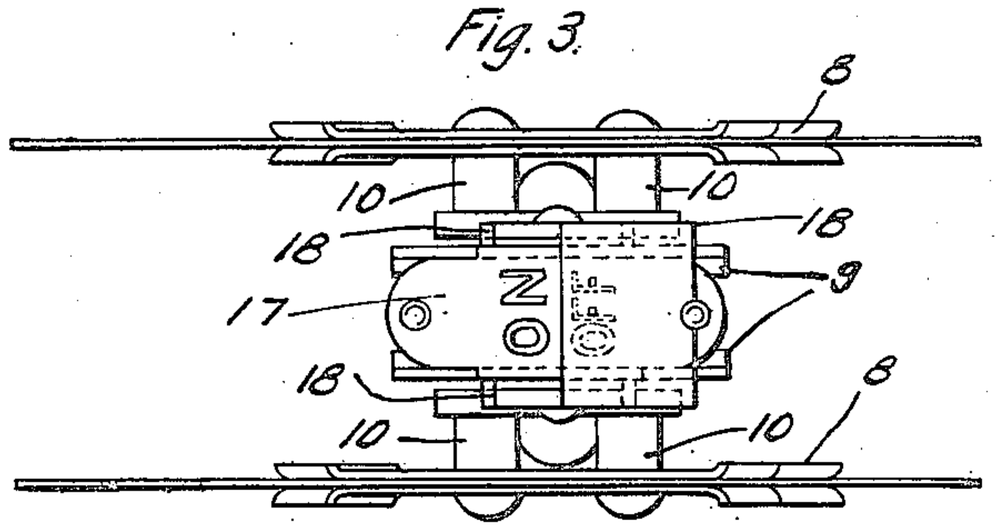


Fig. 4



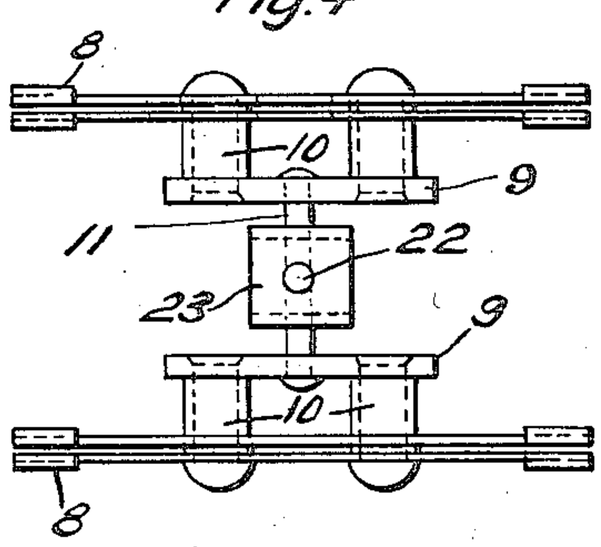
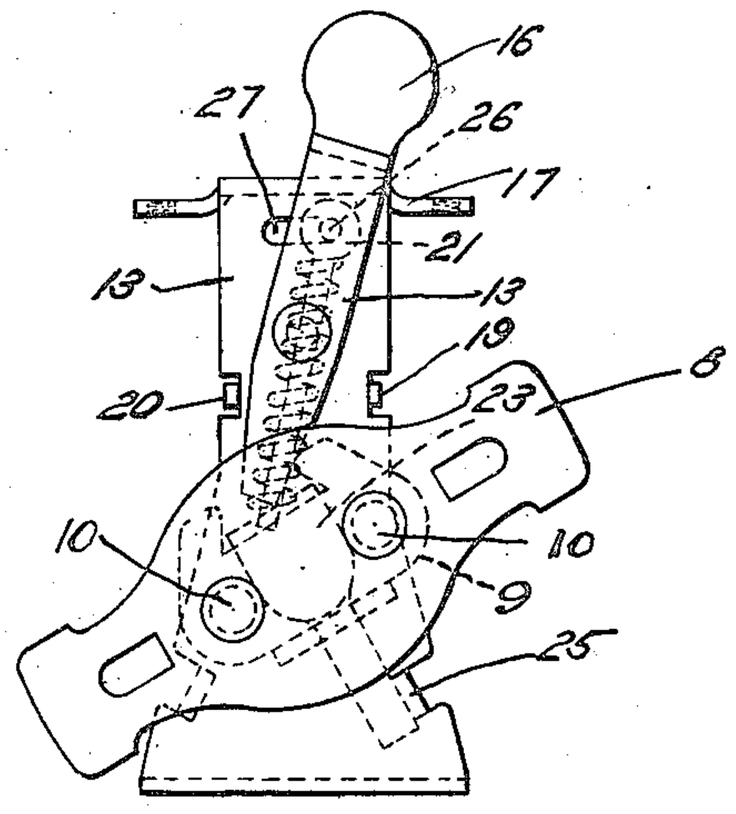


Fig.5



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UNITED STATES PATENT OFFICE.

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

TUMBLER SWITCH.

Application filed January 8, 1921. Serial No. 435,829.

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, Long Island, 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 switches and particularly to those of the snap type.

The object of my invention is to provide a switch of the character described which shall embody the features of simplicity, durability and efficiency.

In the accompanying drawings:

Figure 1 is a side view, partially in elevation and partially in section, of a switch embodying my invention;

Fig. 2 is a view, taken at right angles to that of Fig. 1;

Fig. 3 is a plan view;

Fig. 4 is a partial plan view, showing some of the movable parts more in detail, and

Fig. 5 is a view showing a modification of the construction of Figs. 1 to 4, inclusive.

The switch is adapted to make and break connection between stationary contact members 6 and 7, and consists of a pair of blades 8. The blades 8 are secured to a pair of blade carriers 9 by means of insulating members 10.

The carriers 9 are secured to a shaft 11 which is rectangular in cross-section. The shaft extends through a pair of holes in the sides of a frame member 12 and is rotatable therein.

An operating lever 13 is pivoted on the frame at points 14 and 15 and carries a grip member 16 at its upper end.

A cover plate 17 is provided with legends indicating whether the switch is in open position or in closed position and these legends are alternately covered and uncovered as the grip member is oscillated from the one position to the other, as indicated in Fig. 3.

Each of the blade carriers 9 is provided, on its upper side, with a pair of projections or lugs 18, and the lower end of the operating lever 13 is adapted to engage the lugs, as the lever is oscillated about the pivots 14 and 15, to impart positive movement to the blade carriers 9. The frame 12 is provided with a pair of outturned lugs 19 and 20 that engage the edges of the operating lever 13 to limit the movement thereof in either direction.

An eye bolt or spring-guide member 21 has one end pivoted in the frame 12 and its other end extended through a hole 22 of a bracket member 23, and a compression spring 24 is supported by the bolt and has its opposite ends in engagement with the bolt head and the bracket 23, respectively, in order to maintain a constant pressure on said bracket.

The bracket 23 is secured to the shaft 11 and has a projection 23ª adapted to engage a pair of inturned lugs 25 on the frame 12 which serve to limit the movement of the bracket 23.

With the parts in the position shown in Fig. 1, the spring is exerting tension in a direction to hold the switch blade in closed relation with the contact members 6 and 7. If the handles 16 be moved to the left, the lower end of the operating lever 13 will engage the pair of lugs 18 and impart rotative movement to the blade carriers 9. These blade members, being non-rotatable with respect to the shaft, and the bracket 23 also being non-rotatable with respect to the shaft, the rotative movement is transmitted to the bracket 23, thereby carrying it from the position at the left of a vertical line through the shaft 11 to a position at the right thereof. This changes the direction of force exerted by the spring 24 and causes such spring to snap the blades to completely open position.

To return the blades to closed position, the action just described is reversed, the spring serving, in each instance, to complete the movement of the blades by a snap action, thus effecting a quick make and break and minimizing the tendency of the blades and the stationary contacts to form arcs.

The construction shown in Fig. 5 operates in substantially the same manner as does the one just described, with the exception, however, that, instead of pivoting the eye bolt 21 in the sides of the frame, such eye bolt is pivotally supported between the depending sides of the operating lever 13. A pivot pin 26 extends through slots 27 in the walls of the frame 12 in order that the pivot pin and the eye bolt supported thereon may be free to move back and forth as the lever 13 is oscillated. By means of this construction, the angularity of the spring pressure on the

bracket 23 is shifted at an earlier stage of movement of the handle 16 than in the construction of Figs. 1 to 4, and the snap action is, therefore, imparted to the blades at an earlier stage of the operation than in the form of construction first described.

Various modifications may be made in the construction without departing from the spirit of the invention, as described in the accompanying claims.

I claim as my invention:—

1. In an electric switch, the combination with a frame, of a pair of movable contact members, carriers for the contact members, a shaft pivoted in the frame and secured to the carriers, a bracket secured to the shaft, an operating lever pivoted in the frame, a compression spring having one of its ends secured to the frame and its other end abutting against the bracket, and means whereby movement of the operating lever shifts the position of the lower end of the spring to change the direction of pressure exerted on the bracket.

2. In an electric switch, the combination with a frame. of a pair of movable contact members, carriers for the contact members, a shaft pivoted in the frame and secured to the carriers, a bracket secured to the shaft, a compression spring having one of its ends secured to the frame and its other end abutting against the bracket, and means for imparting movement to the bracket to change the relative angular position thereof with respect to the spring.

3. In an electric switch, the combination with a frame, a movable contact member, a carrier therefor, a shaft pivoted in the frame and secured to the carrier, a bracket secured to the shaft, a spring guide having one end thereof pivoted in the frame and its other end in lost motion engagement with the bracket, and a spring carried by the guide and normally exerting a yielding force on the bracket to maintain it in one of its extreme positions, of means for shifting the point of engagement between the spring guide and the bracket.

4. In combination, in an electric switch, a frame of substantially U-shape, an operating lever also of U-shape and pivotally supported by the frame, a movable contact member pivotally supported by the frame, means for yieldingly maintaining the said contact member under tension, and a lost-motion connection between the operating lever and the movable contact member.

5. An electric switch comprising, in combination, a frame of substantially inverted U-shape, an operating lever also of inverted U-shape and having its depending arms pivoted in the walls of the frame exteriorly thereof, a shaft pivotally supported on the frame, a carrier mounted on the shaft in position to be engaged by the operating lever, a bracket mounted on the shaft and lying between the side walls of the frame, and a spring mounted in the frame in position to normally exert tension on the bracket to yieldingly maintain it in one of its extreme positions of movement.

6. In combination, in an electric switch, a frame of substantially U-shape, an operating lever also of U-shape and pivotally supported by the frame, a movable contact member pivotally supported by the frame, means for yieldingly maintaining the said contact member under tension, and means whereby movement of the operating lever changes the direction of tension exerted upon the movable contact member.

In testimony whereof, I have hereunto subscribed my name this eighth day of December, 1920.

HAROLD G. BAXTER.