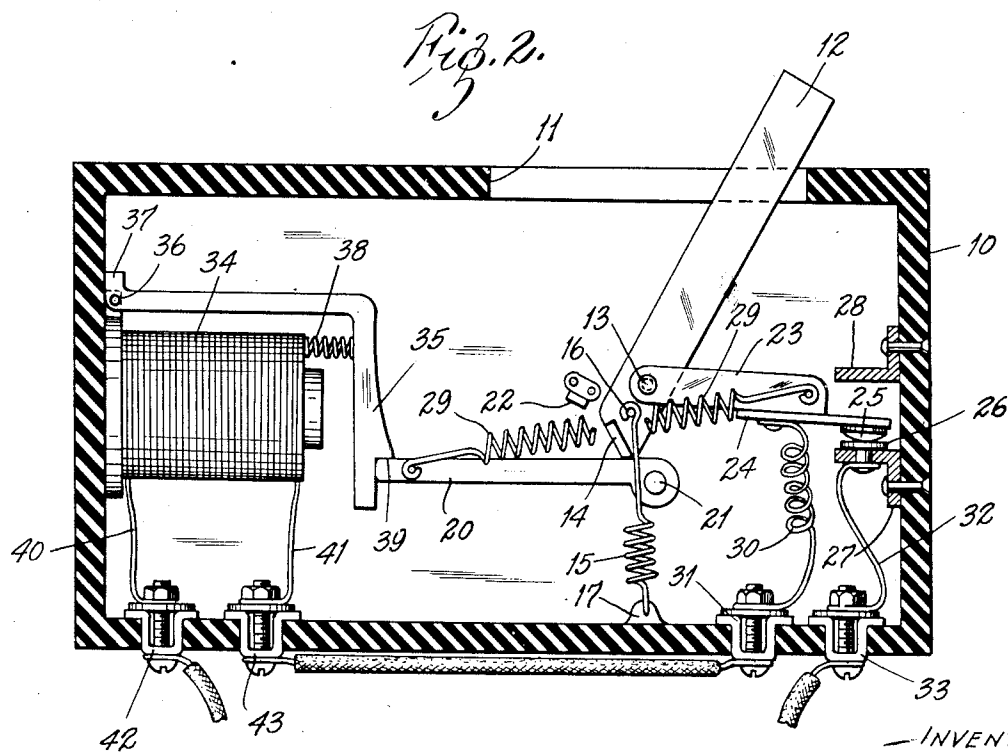


2,168,580

Filed July 21, 1937



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UNITED STATES PATENT OFFICE

2,168,580

SNAP SWITCH FOR COFFEE ROASTERS

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Application July 21, 1937, Serial No. 154,765

5 Claims. (Cl. 200—67)

The present invention relates to a switch. The switch is of the latch type with the contacts snapped in either direction of their travel. In particular, the switch is to be operated by a swinging lever that causes the contacts to be latched in one position, after which latching, further movement of the lever has no effect upon the switch mechanism.

It is an object of the invention to provide a latch type switch which has an actuating member causing the switch to be latched, after which latching, movement of the operating member has no effect.

A further object of the invention is to provide a pivoted latching lever connected by a spring to a pivoted switch blade, which spring constantly urges the latching lever in one direction, but which passes over-center with respect to the switch blade during the travel of the latching lever so as to actuate the blade with a snap action.

A particular use of this switch is shown in co-pending application Serial No. 154,764, filed July 21, 1937, by the present inventor.

In the drawing:

Fig. 1 is a sectional view of the switch in open position; and

Fig. 2 is a similar view with the switch closed.

The switch includes a casing 10 having a slot 11 through one wall. An actuating lever 12 projects through this slot and is pivoted at 13 within the casing. The slot permits the actuating lever to oscillate in either direction from its center position. At its inner end the actuating lever is provided with an upstanding lug 14 for a purpose to be described. A centering spring 15 is attached to the lever at 16 and to an eye 17 on a wall of the casing 10. This spring 15 constantly urges the lever 12 to its central position.

A latching lever 20 is pivoted at 21 to the housing, and is located slightly to one side of the actuating lever 12, so as to overlie the same. The lug 14 on the actuating lever lies adjacent the latching lever, as is shown. A stop 22 may be provided if desired upon the wall of the housing 10 to limit the upward movement of the lever 20.

A switch blade 23 is pivoted on the pivot 13. This blade includes an outer conducting portion 24 supporting a contact 25. The inner portion of this blade is preferably non-conducting. A fixed contact 26 is supported by means such as the bracket 27 to the wall of the housing 10 and limits the downward movement of the switch blade. The upward movement is limited by a bracket 28 also secured to the wall of the housing 10.

A spring 29 joins the latching lever 20 with the switch blade 23. The arrangement of the levers is such that the spring 29 is above the axis 13 when the latching lever 20 is upward, but is below the axis 13 when the latching lever is down, as will be described.

A flexible lead 30 extends from the conducting portion 24 of the switch blade 23 to a suitable terminal 31 extending through the wall of the housing. A lead 32 extends from the fixed contact 26 to a terminal 33 extending through the wall of the housing.

To an opposite wall of the housing 10 is secured a release magnet 34 in the manner shown. A latch 35 is pivoted at 36 to an extension on the magnet 34. This latch contains a lug 37 overlapping the extension on the magnet to limit outward pivoting of the said latch. A spring 38 normally urges the latch 35 outwardly.

The shoulder 39 on the latch 35 is adapted to receive and hold the end of the latching lever 20 when the same is brought downwardly.

The leads to the magnet are shown at 40 and 41 extending to terminals 42 and 43, respectively, which terminals pass through the wall of the housing.

The operation of the device is as follows:

If the switch is open, as in Fig. 1, the lever 12 may be moved in a clockwise direction. In such motion, the lug 14 acts upon the latching lever 20 to pivot the same counterclockwise to the position of Fig. 2. In this movement, the latch 35 is moved toward the magnet against the spring 38 and, of course, snaps outwardly again as soon as the lever 20 is past the shoulder 39. The shoulder then retains the lever 20 in its downward position.

In this moving downward, the lever 20 carries the left end of the spring 29 over-center with respect to the switch blade 23. In other words, the ends of the spring 29 are then such as to cause the spring to extend in a line below the pivot 13. This produces a force acting to pivot the switch blade 23 clockwise, which pivoting occurs with a snap action to close the contacts 24 and 26 together.

Upon release of the lever 12 the centering spring 15 will return it to the position of Fig. 1, but the switch will remain closed because of the latch 35. Any further movement of the lever 12 has no effect on the switch.

When the magnet 34 is energized from any suitable source, the latch 35, acting as an armature, will be pivoted clockwise to release the latching lever 20 from the shoulder 39. In Fig. 2

2, it is shown that the spring 29, even with the switch blade closed, produces an upward or clockwise pull on the lever 20 at all times. Consequently, release of the latch 35 permits the spring 29 to draw the lever 20 clockwise against its stop 22. In this position, the spring 29 is again shifted so as to be back above the pivot 13 and to exert an upward pull on the switch blade 23, which thereupon opens with a snap action.

10 If desired, the magnet 34 may be connected in series with the switch to insure its deenergization immediately upon opening of the switch. This may be done by connecting the terminals 43 and 31, as shown in Fig. 2.

15 What is claimed is:

1. In a device of the kind described, a base, a first lever pivoted to said base, releasable latch means to hold said lever in one position, a second lever pivoted to the base at a point spaced from the first lever, a spring connecting the levers, said spring shifting across the pivot of the second lever when the first is moved from unlatched to latched position but never to shift across the pivot of the first lever, an actuating member contacting the first lever to move it into latched position, and means to release the latch means.

2. In a device of the kind described, a base, a first lever pivoted to said base, releasable latch means to hold the first lever in one position, a second lever pivoted to the base at a point spaced from the first lever, a spring connecting the levers, said spring shifting across the pivot of the second lever when the first lever is moved from latched to unlatched position and vice versa, but said spring never being shifted across the pivot of the first lever, whereupon such movement of the first lever causes the second lever to shift with a snap action, an actuating lever pivoted to the base and adapted to contact the first lever when the same is in unlatched position and to move it to latched position, any movement of the actuating lever after latching not shifting the first lever sufficiently to move the spring across the pivot of the second lever, and means to release the latch, so that the spring may return the first lever to unlatched position, and the second lever to its first position.

3. In a device of the kind described, a base, a first lever pivoted to said base, releasable latch

means to hold said lever in one position, a second lever pivoted to the base at a point spaced from said first lever, a switch contact on said second lever, a second contact fixed to the base to be contacted by the switch contact, a spring between the two levers, the spring being outside the pivot of the second lever when the first lever is in unlatched position, and being between the two pivots when the first lever is in latched position, an actuating means contacting the first lever to move it to latched position and thereafter not moving the same, and electromagnetic means to release the latch means, said electromagnetic means being connected in series with said switch.

4. In a device of the kind described, a base, a pair of spaced pivots on the base, a first lever on the first pivot movable to two positions, means to retain it in its second position, the second lever on the second pivot movable to two positions, a spring connected between the two levers, said spring being outside the two pivots when the first lever is in first position, but shifted between the pivots when the first lever moves to second position, an actuating lever pivoted on the second pivot and extending to adjacent the first lever, means on the actuating lever to contact the first lever and shift it to its second position, and means to urge the actuating lever to its original position.

5. In a device of the kind described, a base, a pair of spaced pivots on the base, a first lever on the first pivot movable to two positions, means to retain it in its second position, the second lever on the second pivot movable to two positions, a spring connected between the two levers, said spring being outside the two pivots when the first lever is in first position, but shifted between the pivots when the first lever moves to second position, an actuating lever pivoted on the second pivot to move in both directions from a middle position, means on the actuating lever to contact the first lever in one direction of movement of the actuating lever, and to shift the same to its retained position, and means yieldably urging the actuating lever to its middle position but permitting it to move in either direction therefrom.

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