

No. 729,744.

PATENTED JUNE 2, 1903.

F. L. FENN.
SNAP SWITCH.

APPLICATION FILED MAR. 1, 1902.

NO MODEL.

Fig. 1.

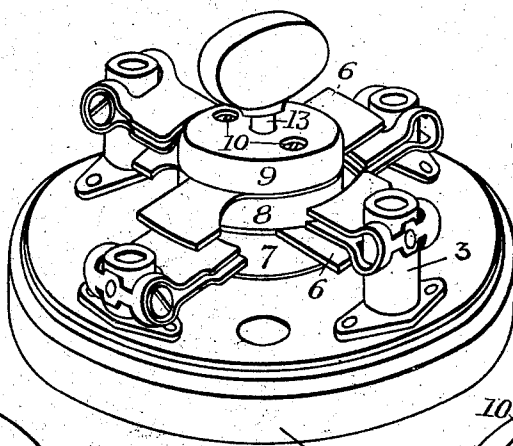


Fig. 8.

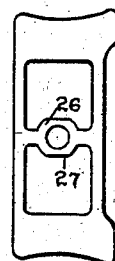


Fig. 4.

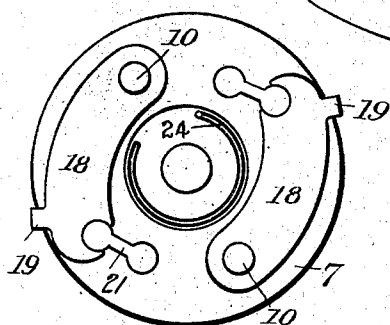


Fig. 3.

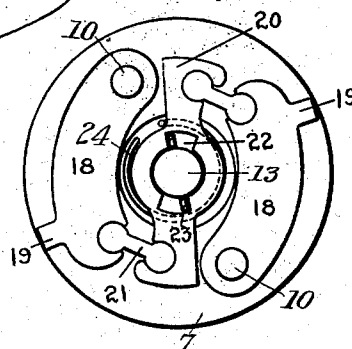


Fig. 2.

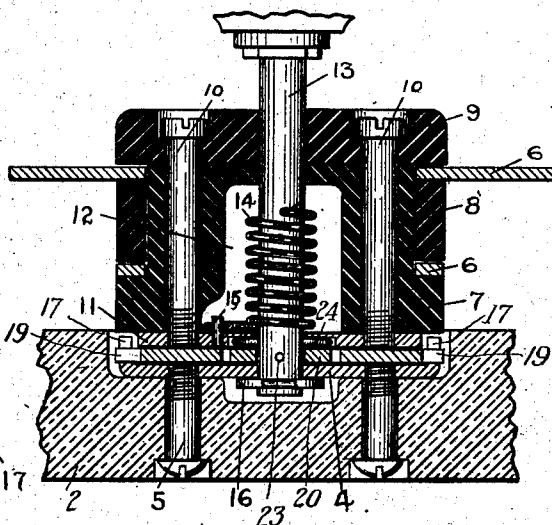


Fig. 7.

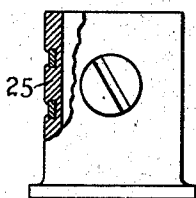


Fig. 6.

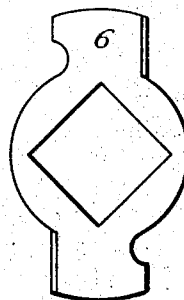
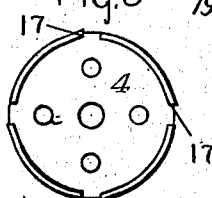


Fig. 5.



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UNITED STATES PATENT OFFICE.

FRANK L. FENN, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SNAP-SWITCH.

SPECIFICATION forming part of Letters Patent No. 729,744, dated June 2, 1903.

Application filed March 1, 1902. Serial No. 96,232. (No model.)

To all whom it may concern:

Be it known that I, FRANK L. FENN, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Snap-Switches, of which the following is a specification.

My invention relates to snap-switches, and has for its object to provide an improved construction of such switches which shall act quickly and surely and which will withstand the effect of the shocks to which such devices are continually subjected.

The invention consists of a base provided with contact-posts, contact-blades, and improved means for producing quick intermittent movement of the blades.

It also consists in improved means for connecting the contact-strips to their respective posts.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a perspective of my improved snap-switch with the cover removed. Fig. 2 is an enlarged vertical section of the blade-support and the operative mechanism. Fig. 3 is an enlarged bottom plan view of the operative parts removed from the cup-shaped rack. Fig. 4 is a view similar to the preceding with the actuating-lever removed to more clearly show the lever-controlling spring. Fig. 5 is a top plan of the cup-shaped rack. Fig. 6 is a plan of a switch-blade. Fig. 7 is an enlarged side elevation of a contact-post with a part broken away to show the method by which the contact-strip is secured thereto, and Fig. 8 is a developed plan of a contact-strip.

The embodiment of my invention shown in the drawings comprises the base 2, of any suitable insulating material, circular in form, to the upper side of which and at desired intervals about the same are secured the contact-posts 3, and in a recess in the center of said base the cup-shaped rack 4 is held by screws 5, passing through the base from the under side thereof and engaging tapped holes in the body part of rack 4. The switch-blades 6 are each provided with a large polygonal aperture, as shown in Fig. 6, and are loosely

held in operative position upon the supporting-barrel 7, of insulating material, and provided with a corresponding polygonal upper section to receive the blades 6 and their spacing 8. A disk 9, of insulating material, rests upon the upper surface of the barrel 7 and overlaps a portion of the uppermost blade 6, and this disk 9 is held in place by screws 10, extending vertically through said disk and barrel and engaging tapped holes in the bearing-disk 11 at the lower end of the barrel. I make the space on the barrel 7 between the disk 9 and the shoulder of said barrel of greater width than the combined thicknesses of the two blades 6 and the space-ring 8 in order that the blades 6 may have a slight vertical movement to adjust themselves in case the contact-strips should get out of adjustment. The center of the barrel is hollowed out at 12, and extending axially through the barrel 7 and disk 9 is the actuating-spindle 13, and located within said hollowed-out part of the barrel is a spring 14, connected at one end to said spindle and at the other to a pin 15, carried by the blade-support. The bearing-disk of the blade-support has a central aperture which serves as a bearing for the spindle 13. The cup-shaped rack 4 has a central aperture for the passage of the end of the spindle 13, said spindle 13 being provided beneath said rack with retaining means, as a spring-washer 16 or a nut. The cup-shaped rack 4 is provided with as many rack-teeth 17 as there are contact-posts, the teeth being made by cutting recesses in the flange. The bearing-plate 11, which is fixed to the lower end of the blade-carrying barrel 7, has pivoted upon its under surface two latch-levers 18, provided with projecting shouldered portions 19, adapted to engage the teeth 17 of the cup-shaped rack and hold the blade-support and its attached parts from rotary movement when the actuating-spindle 13 is turned to put tension upon the spring 14, connecting the spindle and barrel.

The means for withdrawing the projections 19 from engagement with the teeth 17 when the spindle 13 has been turned to put sufficient tension on the spring consist of the lever 20, connected at each end to one of the respective latch-levers 18 by a link 21. Said

lever 20 is loosely journaled at its center upon the actuating-spindle and has two opposite radial recesses 22 extending out from its central aperture for the reception and free play
 5 therein of the transverse pin 23, carried by the spindle. The circumferential length of recesses 22 determines the amount of movement of the spindle before causing the release of the latch-levers 18 and accordingly the
 10 amount of tension of the spring 14. Upon the release of the latch-levers 18 from teeth 17 the barrel 7 and the parts carried thereby are given, by means of the recoil of the spring 14, a part rotation until arrested by the said
 15 latch-levers engaging succeeding teeth upon the rack 4. The movement of the levers 18 outward to engage with the rack is effected by centrifugal force as they move through the part rotation. The centrifugal action of the
 20 latch-levers may be assisted and rendered more certain by employing the bent spring 24, secured in a recess in the under side of the bearing-plate 11, having one end bent up into the path of lever 20 and acting to force
 25 said lever around in a direction to move the latch-levers outwardly. The links 21, which connect lever 20 with the latch-levers 18, have circular ends which enter corresponding notches in the edges of the respective levers
 30 and are held in place, as are also the latch-levers 18, between the parallel surfaces of the bearing-disk 11 and the body part of rack 4, no rivets or screws being necessary to hold the operative parts together. The posts 3, to
 35 which the line-wires are connected, have a circular groove cut in one side, whereby a central integral rivet or projection 25 is formed. The contact-clips are cut in substantially the shape shown in Fig. 8, having an apertured
 40 bridge 26, with the top and bottom sides slightly flattened at 27 and adapted to enter the circular groove in the side of the post 3 after the clip is bent, as shown in Fig. 1. By
 45 swaging the metal of the integral rivet or projection 25 and that at the outer edges of said recess, as shown in Fig. 7, the clip is securely fixed upon the post. As is evident from Fig. 1, the contact ends of the clips are held in parallel planes and are capable of yielding
 50 slightly away from each other without restraint by the connecting means.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a snap-switch, the combination of a
 55 stationary rack, a switch-blade and supporting means for said blade, a latch lever or levers connected to said supporting means and adapted to engage said rack, an actuating-spindle, a spring connecting said spindle and
 60 said supporting means, and a lever connected

to said latch lever or levers and adapted to be actuated by said spindle.

2. In a snap-switch, the combination of a stationary rack, a switch-blade and its support, a latch lever or levers pivoted upon said
 65 support and adapted to engage said rack, an actuating-spindle journaled at the center of the rack, a spring connecting said spindle and said support, a lever pivoted on said spindle and connected to said latch lever or levers, and means for transmitting motion to
 70 said lever from said spindle.

3. In a snap-switch, the combination of a rack, a switch-blade and its support, an actuating-spindle passing axially through said
 75 support and journaled in said rack, a spring coiled about said spindle and connected at its respective ends to said spindle and said support, a latch lever or levers pivoted upon said support and adapted to engage said rack, an
 80 actuating-lever pivoted upon said spindle and adapted to be operated thereby, and links connecting said actuating-lever and said latch lever or levers.

4. In a snap-switch, the combination of a
 85 cup-shaped rack, a switch-blade, a support for said blade having a bearing-plate, latch-levers and an actuating-lever loosely connected and held in operative position between the upper face of the cup-shaped rack and the
 90 lower face of the bearing-plate.

5. In a snap-switch, the combination of a rack, a switch-blade, a support for said blade, a latch lever or levers pivoted upon said support, an actuating-spindle, a spring yieldingly
 95 connecting said spindle and said support, an actuating-lever connected to said latch lever or levers and adapted to be moved in one direction by said spindle, and an auxiliary spring connected to said support and adapted to
 100 move said actuating-lever in the opposite direction.

6. The combination of a binder-post provided with a channel or recess in one side, and a contact-clip provided with an apertured
 105 bridge adapted to enter said channel or recess, and to be secured therein by upsetting of the metal of the said post.

7. The combination of a binder-post provided with a circular channel or recess in one
 110 side, and a contact-clip provided with an apertured bridge adapted to enter said channel or recess, and to be secured therein by upsetting of the metal of the said post.

In witness whereof I have hereunto set my
 115 hand this 28th day of February, 1902.

FRANK L. FENN.

Witnesses:

BENJAMIN B. HULL,
 HELEN ORFORD.