

C. D. PLATT.
SNAP SWITCH.
APPLICATION FILED AUG. 5, 1912.

1,054,939.

Patented Mar. 4, 1913.

Fig. 2.

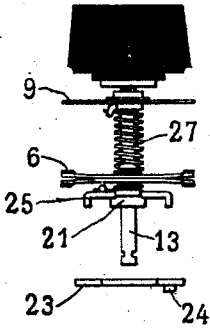


Fig. 1.

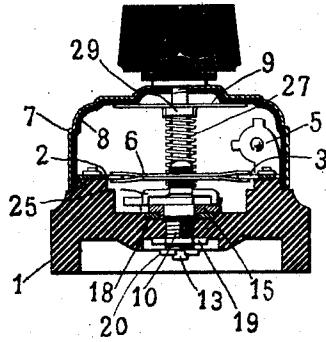


Fig. 3.

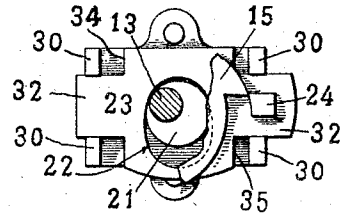


Fig. 8.

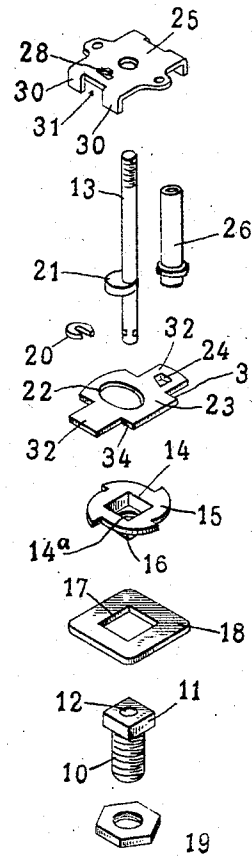


Fig. 5.

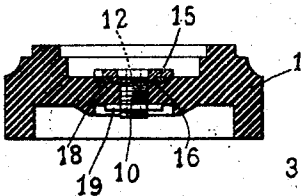


Fig. 4.

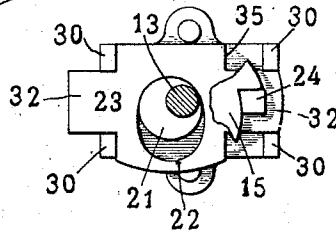


Fig. 6.

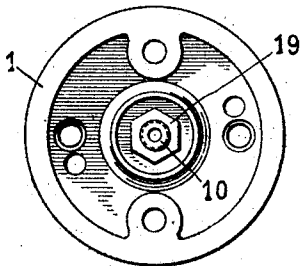
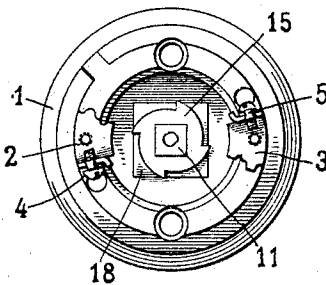


Fig. 7.



WITNESSES

John A. H. Platt
Karl Brenner

INVENTOR

Clarence D. Platt.

BY *W. H. Parker*
ATTORNEY

UNITED STATES PATENT OFFICE.

CLARENCE D. PLATT, OF BRIDGEPORT, CONNECTICUT.

SNAP-SWITCH.

1,054,939.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed August 5, 1912. Serial No. 713,252.

To all whom it may concern:

Be it known that I, CLARENCE D. PLATT, a citizen of the United States, and a resident of Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Snap-Switches, of which the following is a full, clear, and exact description, whereby any one skilled in the art may make and use the same.

The invention relates to electric switches of the type well known in the art as "snap switches" embodying stationary contact members, a movable contact member cooperating therewith, a spindle for rotating the movable contact member and moving it into and out of contact with the stationary contacts and appurtenant mechanism for intermittently tensioning and releasing the movable contact member for quick make and break contacts with reference to the stationary contacts.

The invention relates more particularly to the mechanism for securing positive action; normally locking the parts against retrograde movement and giving a definite step by step movement to the rotating or movable contact member.

The object of the invention is to provide a mechanism for actuating a switch, simple in its construction, positive in its action, having a minimum number of parts of simple construction, low cost of manufacture and great ease and facility of assembly.

The mechanism of the ordinary snap switch, while ordinarily of simple construction, is composed of a number of parts which must be assembled with accuracy, thus necessitating the handling of a number of parts by different operatives.

It is one of the objects of the invention hereinafter described to so arrange the parts of the mechanism that they may be assembled with a minimum of labor and even with unskilled labor, the somewhat intricate parts of the mechanism being so formed and arranged that they may be readily assembled directly upon the spindle and placed under tension of the operating spring and then applied in the simplest way to the base or support.

Referring to the drawings: Figure 1 is a vertical cross-sectional view through the snap switch. Fig. 2 is a view in side elevation of the spindle, movable contact bar and appurtenant parts with the detent plate

dropped below its guide. Fig. 3 is a detail bottom plan view in enlarged scale of the detent plate, guide spindle and appurtenant parts, showing one tooth of the ratchet member about to be disengaged. Fig. 4 is a similar view showing the ratchet member in full engagement with the lug of the detent plate. Fig. 5 is a vertical cross section through the insulating base illustrating the arrangement of the ratchet member and spindle bearing. Fig. 6 is a bottom plan view of the base illustrated in Fig. 5. Fig. 7 is a top plan view of the base with the stationary contacts and ratchet member, which comprise all of the fixed members of the structure. Fig. 8 is a view of the several parts of the mechanism shown in perspective and arranged substantially in the position in which they are to be assembled.

Referring to the drawings the numeral 1 denotes a base of insulating material which may be of any desired character and form and has mounted upon it stationary contact members 2, 3, provided with suitable terminal connections 4, 5, and cooperating with a movable contact bar 6, to make and break the electric circuit between the stationary contacts.

The base is surmounted by an inclosing cover 7, of usual form, having an insulating lining 8, and a dial plate 9, arranged therein to show the position of the contact bar. These parts are all well known in switch constructions of this type.

Centrally arranged upon and projecting through the base is a threaded sleeve 10, having an angularly formed head 11 and a central opening 12, to receive the lower end of the spindle 13. The angularly formed head 11, of the sleeve fits within a similarly formed opening 14, of a ratchet member 15. The opening 14 is formed by pressing down the metal of the ratchet providing a squared hub 16, which, in turn, fits within a similarly formed opening 17, in a washer 18. This washer rests within a socket formed in the base of insulating material and provides an extended connection between the stationary ratchet and base to reduce shearing strains which might have a tendency to crack or abrade the porcelain. Furthermore, it provides a large area by which the parts may be clamped to the porcelain without liability of fracturing the same. The clamping of the parts is secured through a nut 19, arranged to be screwed down upon

the sleeve 10, from the under side of the base. The spindle 13 passes through the sleeve 10, and is held against axial movement by a washer 20, in the usual manner of securing spindles. The spindle 13, has arranged upon it an eccentric member 21, which rests within an eccentric opening 22 shown herein as extending transversely with reference to the detent plate 23. This detent plate has forced down from its metal a lug 24, adapted to engage with and be disengaged from the teeth of the ratchet 15, as the detent plate is moved by the eccentric 21. To confine the detent plate 23 in its movements and carry the movable switch bar 6, there is arranged a guide plate 25, of somewhat unique construction. The plate 25, has a central perforation through which the spindle passes and within which is riveted a spring barrel 26, about which is coiled the tension spring 27. Forced up from the metal of the plate is a spring lug 28, with which the lower end of the spring 27 may engage, the upper end of said spring being engaged by a collar 29, secured to the spindle 13. Pressed down from opposite ends of the plate 25 are lugs 30, which provide slide openings 31, in which slide the ends 32 of the detent plate 23. The ends 32 are narrower than the body of the plate 23 and thus, shoulders 34, 35, are formed which limit the longitudinal movement of the detent plate 23, as they come in contact with the lugs 30. The parts are so designed and formed that the lug 24 of the detent plate 23, always rests in full engagement with a tooth of the ratchet when the plate is at the rearward limit of its play, where it is held by the shoulders 34, and lug 30 by the action of the eccentric which is under spring tension. The eccentric is designed to throw the plate and its lug 24 sufficiently to disengage said lug from the tooth of the ratchet after the spring 27, has been placed under tension by rotation of the spindle 13. The movable contact bar 6, is secured to the guide plate 25 through insulating members as illustrated in Figs. 1 and 2.

The operation of the device is obvious as particularly shown in Figs. 3 and 4. With the parts in the position illustrated in Fig. 4 and the spring 27 under partial tension, the eccentric throws the plate 23 into position to cause the locking lug 24 to fully engage a tooth of the ratchet 15. As the spindle is rotated, the spring 27 is tensioned and thus the plate 25 with the movable contact bar is placed under considerable tension with the appurtenant parts, namely, the sliding detent plate 23. At the same time, the eccentric 21 moves said detent plate until a lug 24 is disengaged from the ratchet tooth whereupon the parts are rapidly rotated, giving a quick make and break action to the movable contact, member 6 until, through

the exact action of the eccentric and detent plate, the lug 24 is brought back to engage the next succeeding tooth of the ratchet.

There is a particular advantage in the arrangement of parts as described. The detent plates, guide plates and appurtenant parts may be pressed up from sheet metal by simple operations, providing the detent lug 24, spring lug 28, perforations and retaining lugs 30 and great accuracy in the formation of the parts may be thus secured, that is, a sufficient accuracy to secure perfect operation of the parts when assembled. In like manner, the ratchet member is stamped up with its angularly formed central opening 14 and a central perforation 14^a, arranged to receive the angular head 11 and tubular shank 10, of the retaining sleeve.

With the parts formed as illustrated, there are special advantages attained, not only from the accuracy and positiveness of the operation but in the assembly of the switch as a whole. The insulating base, with its ratchet plates, tubular member 10 and nut 19, together with the stationary contact members may be completely assembled and left as a unit. The spindle may then be assembled with its full complement of operating mechanism. This is effected by passing the spindle 13, through the opening 22 of the plate 23 and through the central perforation of the plate 25, bringing the eccentric 21 into the opening 22 and placing the ends 32 between the lugs 30. The spring barrel 26, is, of course, secured to the plate 25 and the tension spring 27, may then have one end placed in position to engage the lug 28, and the opposite end in position to engage the lug 29, the latter being fast to the spindle at the upper end of the tube 26. By turning the spindle 13, the spring 27, may be placed under tension and as the plate 23 is dropped over the eccentric 21 and into engagement with its guide plate 25, said plate will be locked in position by the lugs 30, and shoulders 34, and forms a complete unit, ready to be placed in position in the base. The lower end of the spindle is then inserted through the tubular bearing 10, and by holding the switch bar and slightly rotating the spindle, the lug 24 will find its true engagement with one tooth of the ratchet. By then applying the washer at the lower end of the spindle, the structure is completely assembled.

It will be seen from the above that in place of assembling each individual unit upon the base, that the entire actuating mechanism of the switch, that is, its movable parts, may be assembled separately and readily placed and slipped into position upon the base. The advantages are apparent.

Obviously the exact details as to form illustrated herein might be varied to a very

considerable extent without departing from the spirit of the invention, the main object of which is to provide a simple, efficient, economic structure which will embody all of the attributes necessary to provide a switch meeting the essential requirements of such a structure. The requirements are necessarily simple, though perfectly formed parts, easy of assembly, low cost of production and certainty of action, with a minimum number of parts.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a device of the character described, a base or support, a ratchet member secured thereto, said ratchet having an angularly formed opening, a tubular bearing sleeve having an angularly formed part fitting said opening, means for securing said sleeve and ratchet member in the base and a spindle member bearing a sliding detent with a lug to engage the teeth of the ratchet and a guide plate for said sliding detent, said guide plate and sliding detent having an eccentric connection with reference to the spindle and having a movement independent

thereof and a tension device intermediate the spindle and said movable parts.

2. In a device of the character described, a spindle bearing an eccentric, a sliding detent plate having an eccentric opening, a guide plate overlying said detent plate and having lugs limiting the movement thereof, a ratchet underlying said detent plate and adapted to be engaged thereby, and a tension device intermediate the spindle and guide plate.

3. In a device of the character described a spindle bearing an eccentric, a sliding detent plate having an opening cooperating with said eccentric and provided with abrupt shoulders, a guide plate, downturned lugs upon said plate embracing the slide plate and forming a guide and stop for limiting the movements of said plate and a tension device intermediate the spindle and guide plate.

CLARENCE D. PLATT.

Witnesses:

MABEL G. GUNN,
GEORGE N. SEARS.