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ELECTRICAL SWITCH DEVICE

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This invention relates to electrical switches, and more particularly to a switch mechanism adapted for use in connection with electrical sockets or receptacles.

5 To that end the invention contemplates a construction especially adapted for providing a momentary contact, that is, a temporary closing of the circuit, thereby particularly adapting the switch for use in connection
10 with electrical sockets intended to receive a resistance unit of the type used in lighting cigars and cigarettes. That is to say, a primary object of the invention is to provide a snap switch mechanism of extreme simplicity which is susceptible of embodiment in
15 various electrical devices, particularly those where a momentary contact is desired, as for instance in a socket for electrical cigar lighters where the circuit is temporarily closed by
20 finger pressure and released upon its removal.

The present invention also contemplates a simple and practical socket for electrical cigar lighters in which a novel and useful form of socket body is used, the same being
25 particularly adapted for a cigar lighter in which the switch mechanism is completely housed and insulated.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

35 A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:—

Figure 1 is a vertical sectional view of the improved socket and switch construction with the switch in its open position.

40 Fig. 2 is a view similar to Fig. 1 with the switch closed.

Fig. 3 is a top plan view.

Fig. 4 is a bottom plan view with the insulating filling plug removed.

45 Fig. 5 is a detail perspective view of the contact spring.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

50 According to the embodiment of the inven-

tion shown in the accompanying drawings, the novel switch mechanism designated generally as A is adapted to be concealed and housed within a special type of insulating body B constituting a socket or receptacle for
55 receiving and supporting the plug element, such as a resistance unit, which becomes sufficiently hot upon the closing of the circuit to enable a cigar or cigarette to be lighted. The said body B, however, may of course assume
60 other forms according to other adaptations of use of the switch mechanism, but in every instance it will provide a housing or casing for the switch mechanism as well as the switch terminals and the socket terminals.
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Referring to the drawings, it will be observed that the body B is preferably of elongated formation and includes an enlarged base portion 1 having therein a recess 2 which communicates with an interior switch cham-
70 ber 2^a whose upper end is formed by the transverse wall 3 of the body. This wall 3 also forms one end of a chamber 4 for receiving the plug-receiving screw-shell 5 which is secured to the wall 3 by the screw or equivalent fastening 6. In that connection it will
75 be observed that the metallic screw-shell 5 is insulated from the fastening 6 by the insulating washer 7 so that the head of the screw 6 constitutes a center plug contact for the
80 socket while the nut 8 on the screw constitutes one of the switch terminals as will presently appear.

The screw-shell 5 is adapted to be included in the electrical circuit through the medium
85 of the end 9 of the conductor strap 10 being soldered or otherwise secured thereto. The said strap 10 passes through a slot in the wall 3 and is provided with a laterally offset portion 11 which is adapted to have the wire
90 12 of the line wire W soldered thereto as shown in Fig. 4. The other wire 13 of the line wire W is preferably soldered or otherwise secured to the novel switch element or spring S as indicated at 14 in Fig. 4. It will
95 therefore be apparent that when the switch element or spring S is manipulated to bring its upper end into contact with the nut 8 (see Fig. 2) the circuit will be closed to the device held within the screw-shell 5, and on
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the other hand when the switch spring is in the position shown in Fig. 1 the circuit will be opened.

As previously indicated, the switch mechanism A which includes the spring S and its actuator or manipulator M is one of the novel and distinctive features of the present invention, and as will be observed from the drawings the said spring includes a body portion contact blade 15 having one end formed to provide a contact end 16 for engaging with the nut 8, or its equivalent, while the lower end 17 thereof forms an attaching base which permits the spring to be anchored or held at the bottom so that the body 15 will be free to flex. The said end 17 is preferably reversely bowed as clearly shown in Figs. 1, 2 and 5 so that it may have a tight friction fit at the three points of contact, *a*, *b*, and *c*, in the slots 18 formed in the opposite walls of the chamber 2. The intermediate portion of the body 15 of the spring is cut to form an actuating or tensioning leaf acting as a spring arm 19 which is pressed or bent out of the plane of the body to provide a normally offset free end portion 20 which may be notched as indicated at 21 to receive the recessed end 22 of the shank of the actuator M which, as shown, may be provided with the usual insulated finger button or handle 23. The recessed end of the shank 22 of the actuator is pressed into locking engagement with the notched end of the leaf 19 by a coil spring 24 which is held between the abutment 25 on the body 15 of the spring S and the abutment 26 on the shank of the actuator.

From the foregoing it will be apparent that the present invention provides a spring switch member S having special features and characteristics which cause it to snap from one position to another by the application of pressure to a portion thereof resulting in the tensioning of the part to which pressure is applied to shift or flex the other part of the spring in the direction opposite from which the actuating force or pressure is applied. In other words, by applying pressure to the leaf 19 the body 15 will be flexed first to one side and then the other of the leaf 19 as soon as the leaf 19 passes over the common center line of the two members. Therefore, an essential feature of the invention resides in the provision of a suitably mounted spring arm normally deflected to one side of the contact blade so that when pressure is applied to the same it will result in a tension which will manifest itself in movement of the blade. As shown in Fig. 1, the circuit is open due to the fact that the contact end 16 rests against the insulation of the body. However, when finger pressure is applied to the actuator M, as shown in Fig. 2, the said actuator being moved at right angles to the longitudinal axis of the spring S, the leaf

19 will be placed under stress, and as soon as it passes the center line of the body 15 the compressed spring 24 will act to throw the free upper end of the body in the direction opposite to the application of finger pressure. When finger pressure is released the coil spring 24, and the spring of the parts 15 and 19 act jointly to automatically snap the switch parts to the initial position they occupy, as in Fig. 1. It will of course be understood that when the leaf 19 returns the actuator M to its normal position, the outward movement of the actuator will be arrested by the abutment 27 on the shank of the actuator.

Also for the purpose of completely housing and sealing the switch chamber 2, the lower end thereof may be provided with a fibre disk 28 which in turn is provided with a layer of sealing wax 29.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. An electrical device of a momentary-contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a contact blade, a spring arm having one end portion thereof free and laterally deflected with respect to said contact blade, and means between the free end portion of said spring arm and said blade for moving the latter with a snap action to and from engagement with said fixed contact.

2. An electrical device of a momentary-contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a contact blade having integral therewith, a spring arm having an end portion thereof free and laterally deflected with respect to said contact blade, and means between the free end portion of said spring arm and said blade for moving the latter with a snap action into and from engagement with said fixed contact.

3. An electrical device of a momentary-contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a body portion forming a spring contact blade slotted to provide a spring arm having a free end portion laterally displaced with respect to the blade, and means supported by said spring arm and connected with said blade for moving the latter with a snap action into and from engagement with said fixed contact.

4. An electrical device of a momentary-contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a contact blade held rigidly at one end and free to move into and from engagement with said fixed contact at the other end, said blade being provided with a laterally deflected spring arm, an actuator supported by said spring arm, and means between said actuator and said blade for moving the latter with a snap action into and from engagement with said fixed contact. 70

5. An electrical device of the momentary-contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a contact blade having rigid therewith a laterally deflected spring arm adapted to be flexed under tension to one side of the plane of the contact blade, an actuating device engaging the end of the spring arm, and a spring between said actuating device and the free end portion of the contact blade. 80

6. An electrical device of the momentary contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a contact blade having rigid therewith a laterally deflected spring arm adapted to be flexed under tension to one side of the plane of the contact blade, a push button actuator for engaging the free end of the spring arm, and a coil spring interposed between the free end portion of the blade and the end of the push button that engages with the free end of the spring arm. 85

7. An electrical device of a momentary-contact type including a fixed contact and a movable switch member included in the electrical circuit, said switch member consisting of a contact blade having rigid therewith a spring arm normally laterally deflected to one side of the blade and adapted to be flexed under tension to the opposite side of the blade, means for flexing the spring arm to the opposite side of said blade, and means between said last named means and the blade for moving the latter into and from engagement with said fixed contact. 100

8. A snap switch comprising a fixed contact, a blade constituting a contact movable into and from engagement with said fixed contact, an actuator movable with respect to said blade, spring means between said actuator and said blade operable in one position of said actuator to move said blade into engagement with said contact and in another position of said actuator to move said blade away from said contact, and spring means separate from said first mentioned spring means holding said actuator normally in one of the aforesaid positions. 105

9. A snap switch comprising a fixed contact, a blade constituting a contact movable 110

into and from engagement with said fixed contact, a flexible arm rigidly connected with said blade, a blade actuator supported by said arm, and means between said actuator and said blade operable by movement of said actuator to move said blade into engagement with said contact. 75

10. A snap switch comprising a fixed contact, a blade constituting a contact movable into and from engagement with said fixed contact, a flexible arm rigidly connected with said blade, a blade actuator supported by said arm for movement between two positions, and means between said actuator and said blade operable by movement of said actuator to one of its positions to move said blade into engagement with said contact, and by movement of said actuator to the other of its positions to move said blade away from said contact, said arm having a normal flexure maintaining said actuator normally in one of its aforesaid two positions. 85

11. A snap switch comprising a fixed contact, a contact member movable into and from engagement with said contact, a spring arm, an actuator for said contact member supported by said spring arm, and means between said actuator and said contact member whereby movement of the latter is effective to move the former with a snap action into and from engagement with said contact. 90

12. A snap switch comprising a fixed contact, a blade constituting a contact movable into and from engagement with said fixed contact, a flexible arm rigidly connected with said blade, a blade actuator supported by said arm for movement between two positions, and spring means between said actuator and said blade operable by movement of said actuator to one of its positions to move said blade into engagement with said contact, and by movement of said actuator to the other of its positions to move said blade away from said contact, said arm having a normal flexure maintaining said actuator normally in one of its aforesaid two positions. 110

13. A snap switch comprising a fixed contact, a blade constituting a contact movable into and from engagement with said fixed contact, a spring arm rigidly connected at one end with said blade and free at its other end to move with respect to said blade, and means between the last mentioned end of said spring arm and said blade for moving the latter with a snap action into and from engagement with said fixed contact. 115

In testimony whereof I hereunto affix my signature. 120

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