

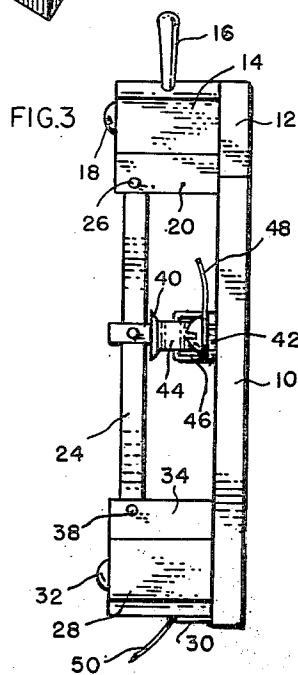
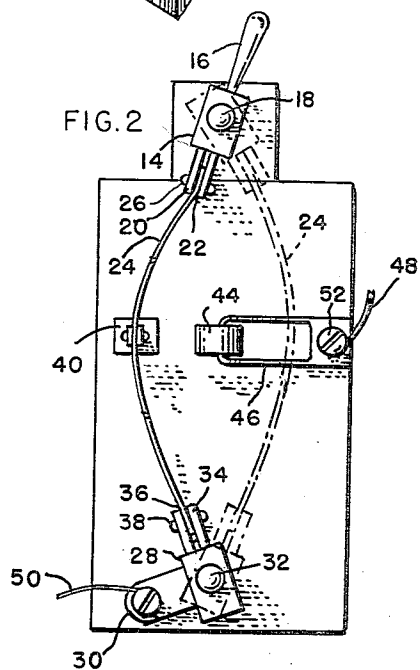
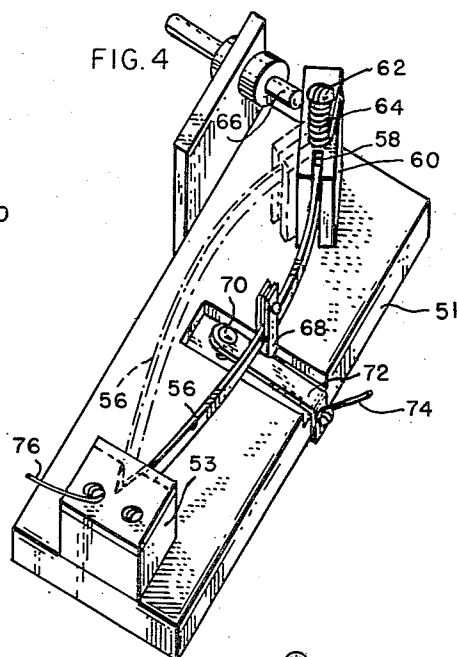
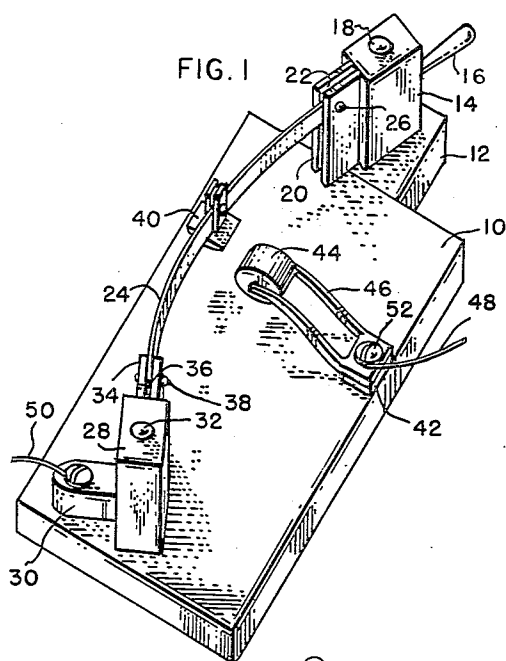
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MOMENTARY CONTACT SWITCH

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MOMENTARY CONTACT SWITCH

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4 Claims. (Cl. 200—160)

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The invention described herein may be manufactured and used by or for the Government for governmental purposes, without the payment of any royalty thereon.

This invention relates to electric switches and more particularly to electric switches of the momentary make and break type.

In certain applications in electrical circuits it is sometimes desired to close a circuit for a very short predetermined period of time, which time period is out of the control of the operator.

One example where such a switch is useful is in an electrical circuit including an inductance and a low voltage dry battery where it is desired to close the circuit for a very short period of time and then open the circuit in order to obtain a pulse of voltage having a higher amplitude than the battery voltage. In this type of arrangement there is danger in either impairing or completely discharging the dry battery if the circuit is held closed for too long a period of time. There are numerous other circuit requirements where a make and break switch of the type contemplated is useful.

It is an object of this invention to provide a momentary make and break switch wherein the length of time that the switch is closed is out of the control of the switch operator.

It is another object of this invention to provide a momentary make and break switch in which the circuit is closed momentarily by a spring-borne contact as the switch changes from one inoperative position to another inoperative position.

The above as well as other objectives and advantages will be understood readily when the following specification is read in conjunction with the attached drawings to which—

Figure 1 is a perspective view of a switch embodying this invention.

Figure 2 is a front view of the switch illustrated in Figure 1.

Figure 3 is an end view of the switch illustrated in Figure 1.

Figure 4 is a front perspective view of another modification of the invention.

The reference numeral 10 designates a base of insulating material on which the switch proper is mounted. A mounting block 12 also of insulating material is provided at the upper central portion of the base 10 for pivotally carrying an electrically conductive swivel block 14 having a handle 16. The swivel block 14 is pivoted to the mounting block 12 by means of a stud 13. Extending from the lower part of the swivel block 14 is a gripping post 20 of electrically conductive material and having a longitudinal slot 22 for the positioning therein of one end of an elongated metal leaf spring 24. One end of the spring 24 is securely held in the slot 22 of the gripping post 20 by means of a set screw 26.

At the opposite end of the base 10 there is positioned a second swivel block 28 carried on an arm 30 and

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pivotally mounted by means of a stud 32. The swivel block 28 is provided with a gripping post 34 similar to the gripping post 20 mounted on the upper swivel block 14. The gripping post 34 is provided with a longitudinal slot 36 to receive the lower end of the leaf spring 24. The lower end of the leaf spring 24 is held securely in the slot 36 by means of a set screw 38. As in the case of the upper swivel block and gripping post assembly, the lower swivel assembly is also formed of electrically conductive material.

At the center of the leaf spring 24 a metal contact button 40 is securely fastened thereto for the purpose explained below. At a point midway of the length of the base 10 there is mounted by suitable means a sub-base block 42. A contact roller 44 rotatably mounted on a spring 46, and securely connected to the sub-mounting block 42 cooperates with the contact 40 in a manner to be explained. Electrical connections are made to the switch by means of conductors 48 and 50. The conductor 48 is connected to the contact wheel 44 via a mounting screw 52 and spring 46 to the roller 44. Connection is made to the movable contact 40 from the conductor 50 via the stud 32, mounting arm 30, swivel block 28, gripping sleeve 34 and the spring 24.

The length, width, thickness and stiffness of the spring 24 is so chosen that upon movement of the operating handle 16 beyond a certain position the spring 24 will snap into the position shown by the dotted lines in Figure 2. The spring 24 is so chosen so that it will be maintained in either one of these two positions and cannot assume any other intermediate position. Thus it is seen that when the handle 16 of the swivel block 14 is swung back and forth the spring 24 will snap back and forth into the positions just described. In so doing, any movement from one inoperative position to the other inoperative position causes the contact 40 to move over the roller contact 44 and closes the circuit for the interval of time that the contact 40 touches the roller 44. This interval of time is not within the control of the switch operator but is determined by the parameters of the spring 24.

In order to relieve possible fatigue of the spring 24, the gripping elements 20 and 34 may have incorporated therein some electrically conductive means so that the ends of the spring 24 may travel slightly in and out of the slot 22 and 36 as the spring 24 is moved from one position to the other.

A modification of the device illustrated in Figures 1, 2 and 3 is shown in Figure 4. In this modification the entire switch mechanism is mounted upon an insulating base 51, the lower portion of which supports a metallic gripping block 53 provided with a V-shaped groove into which is fitted the lower end of an elongated leaf spring 56 of the type disclosed in the modification illustrated in Figures 1, 2 and 3. The upper end of the spring 56 is firmly held in a slot 58 of the pivotally mounted metallic swivel block 60. The swivel block 60 is mounted on the base 51 by means of a stud 62 around which is positioned a coil spring 64 to bias the swivel block 60 into its normal position as shown in Figure 4. A push button 66 is mounted upon the base 51 for contact with the upper end of the swivel block 60 so that when the button 66 is pushed to the right it will rotate the swivel block 60 about its pivot 62 causing the leaf spring 56 to snap into the position shown by the dotted lines in Figure 4 and then back to its original position when the button 66 is released. In so doing a contact member 68 secured to the spring 56 is swept across and makes momentary contact with a secondary contact 70 carried by a short transverse spring support 72 secured to the base member 51.

The circuit connections to the switch are made via con-

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ductors 74 and 76. The conductor 74 being connected to the secondary contact member 70 via the spring mounting 72. The other connection is made from conductor 76 to the metallic spring gripping block 52, leaf spring 56 to the contact 68.

The operation of the switch just described is different from the modification disclosed in Figures 1, 2 and 3 in that for each complete cycle of operation the circuit is closed and opened twice, whereas in the first modification disclosed the circuit is closed only once. This is because the modification shown in Figure 4 has been designed so that the leaf spring carrying the movable contact is so held that it has only one normal inoperative position whereas in the first modification shown in Figures 1, 2 and 3 the leaf spring may remain in one of two inoperative positions.

Having thus described the invention what is claimed is:

1. A snap switch for closing a normally open circuit for a predetermined time interval independent of the rate of operation of the switch, comprising a mounting base, a spring gripping means on each end of said base, at least one of said gripping means being pivotally mounted on said base, a narrow elongated spring the ends of which are held in said gripping means, said spring being longer than the distance between said gripping means whereby said spring is normally bowed, a contact member securely mounted approximately centrally on said spring, a second contact member mounted in the transverse path of said spring-borne contact; and means to rotate said pivotally mounted gripping means, whereby said spring is snapped from one bowed position to another bowed position during which time said contact members are in physical contact for a predetermined time interval.

2. A snap switch for closing a normally open circuit for a predetermined time interval independent of the rate of operation of the switch, comprising a mounting base, a spring gripping means at each end of said base, at least one of said gripping means being pivotally mounted on said base, a narrow elongated spring the

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ends of which are held in said gripping means, said spring being longer than the distance of said gripping means so that said spring is normally in a bowed position, a contact member securely mounted on said spring, a second contact member mounted in the transverse path of said spring-borne contact, and means for rotating said pivotally mounted spring gripping means.

3. A snap switch for closing a normally open circuit for a predetermined time interval independent of the rate of operation of the switch, comprising a mounting base, a pivotally mounted gripping means at each end of said base, a narrow elongated spring the ends of which are held in said gripping means, said spring being longer than the distance between said gripping means so that said spring is normally in a bowed condition, a contact member securely mounted on said spring, a second contact member mounted in the transverse path of said spring-borne contact, and means to rotate one of said spring gripping means.

4. A snap switch for closing a normally open circuit for a predetermined time interval independent of the rate of operation of the switch, comprising a mounting base, a spring holding means at each end of said base, one of said holding means being pivotally mounted on said base, a narrow elongated spring the ends of which are retained in said holding means, said spring being longer than the distance between said holding means, means to bias said pivotally mounted holding means in one position, a contact member securely mounted on said elongated spring, a second contact member mounted in the transverse path of said spring-borne contact, and means for rotating said spring biased holding means.

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