

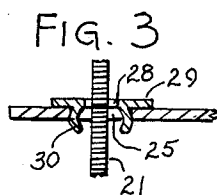
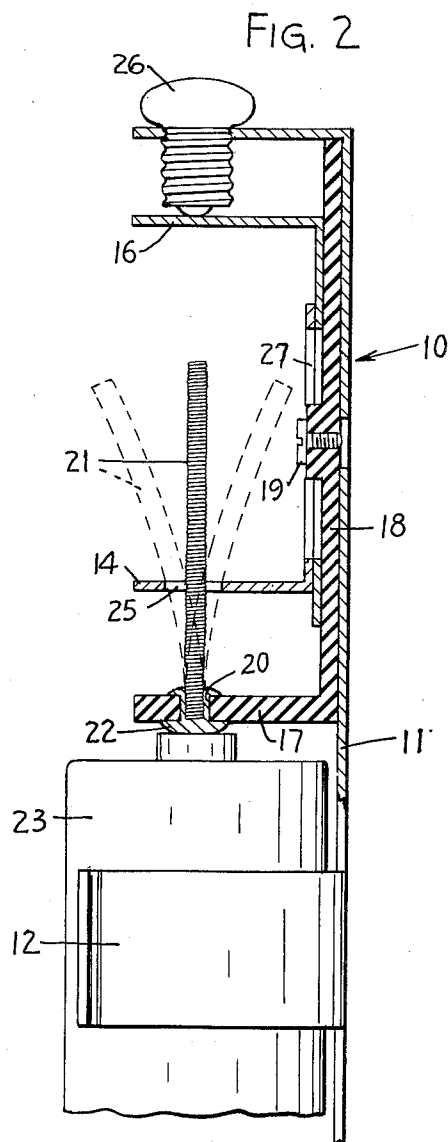
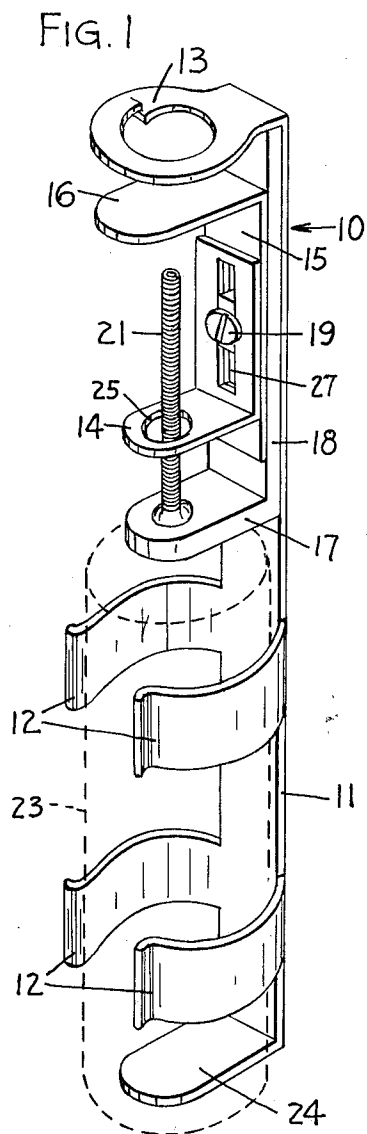
Sept. 11, 1962

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3,053,949

INTERMITTENT ELECTRICAL SWITCH

Filed Nov. 18, 1959



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3,053,949

INTERMITTENT ELECTRICAL SWITCH

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Filed Nov. 18, 1959, Ser. No. 853,769

11 Claims. (Cl. 200—61.49)

This invention relates to an electric switch and more particularly to an intermittent electrical switch having a coil spring contact for making intermittent electrical contact upon impact, jarring movement or the like.

Prior switches which make contact on impact or tilting are known in the art, but such prior art switches rely upon weighted contacting means and do not complete an electrical circuit with universal movement of the contacting means. Flat spring contactors, for example, are by their nature, directional with no contact being made in the plane of the flat spring.

I have found that a simple coil spring mounted in a base provides a simple switch contact that is capable of making contact in all directions upon movement of the switch against a terminal means concentric or substantially so of the coil spring contact and spaced superadjacent the mounting base of said spring contact.

It is therefore an object of my invention to provide a compact electrical switch having a coil spring contact therefor.

It is a further object of my invention to provide an electrical switch having a coil spring contact therefor operable universally of a ring terminal substantially concentric therewith.

It is another object of my invention to locate a ring terminal concentrically of a coil spring contact and positionable longitudinally therealong.

It is still another object of my invention to provide an electrical switch having a coil spring contact supported in an insulated base means wherein said spring contact is connected with a source of electrical energy and having a terminal means concentric of said coil spring contact superadjacent said support and movable in relation thereto to vary the vibratory or oscillatory contact of said spring contact with said concentric terminal.

It is a further object of my invention to provide a concentric terminal having a variable diameter wherein a change of diameter of said electrical terminal varies the switching characteristics of said switch.

It is another object of my invention to provide a compact intermittent electrical switch having a coil spring contact wherein the mounting base for said spring contact also insulates the terminals of the switch one from the other.

These and other objects and advantages of my invention will more fully appear from the following description, made in connection with the accompanying drawings, wherein like reference characters refer to the same or similar parts throughout the several views and in which:

FIGURE 1 is a perspective view of my electrical switch with a coil spring contact;

FIGURE 2 is an enlarged partial elevational view of FIG. 1 with the uppermost portion shown in central section; and

FIGURE 3 is a fragmentary sectional view of a grommet or the like inserted in the structure of FIGS. 1 and 2.

With continued reference to the drawings, FIG. 1 discloses an intermittent electric switch 10 having a support body terminal 11 provided with spring clips 12 and a bulb base 13 integral therewith. The other terminal, concentric terminal 14 is integral with a slideable support portion 15 and a bulb terminal contact 16. Separating the support body terminal 11 and concentric terminal 14 is an insulated mounting base 17 having an upper portion

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18 extending substantially normal to the base 17. Concentric terminal 14 is longitudinally positionable along portion 18 by means of screw 19 to be further described hereinafter.

Mounting base 17 is provided with a bore 20 there-through in which an electrically conductive coil spring 21 is mounted. Integral with electrically conductive coil spring 21 is an electrically conductive base 22 in contact with a source of electrical energy. A battery 23 is held by spring clips 12 in support body terminal 11 wherein a base plate 24 integral with terminal 11 contacts the bottom of battery 23.

Electrically conductive coil spring 21 extends from base 17 through opening 25 and spaced therefrom. The spring 21 is constructed of suitable spring material and the coils of spring 21 are substantially equal in diameter throughout the length of spring 21. Further, the construction of spring 21 allows the spring to maintain a substantially normal position to base 17 without touching terminal 14 at opening 25 when the switch 10 is in a static position.

An electric bulb 26 is mounted in support 13 and the lower portion of the bulb rests on contact 16, with the battery 23 in position as hereinabove described. Further, the bulb will not be energized until an electrical circuit is completed by spring 21 contacting concentric terminal 14.

In operation, as by a sudden movement or jarring, the switch 10 will cause the spring 21 to vibrate or oscillate against terminal 14 to energize the bulb 26. Thus, intermittent or periodical lighting of bulb 26 is accomplished by the movement or jarring of switch 10 imparted to spring 21.

As hereinabove mentioned, concentric terminal 14 may be positioned longitudinally along spring 21 by sliding terminal 14 along slot 27 by the loosening of screw 19 and the retightening of screw 19 when the desired position of terminal 14 is selected. When, for example, the concentric terminal is near the upper portion of spring 21 (as viewed in the drawings) the electrical contact made by spring 21 against terminal 14 will be related to the spring characteristics at the upper portion of said spring. When concentric terminal 14 is moved toward base 17, the electrical contact of the spring 21 with concentric terminal 14 will be characterized by the characteristics of the spring at or near its securement in base 17.

To further utilize the characteristics of spring 21, the opening 25 of terminal 14 may be varied to provide an opening 28 (see FIG. 3) that is reduced in diameter by an electrically conductive grommet 29 which is secured within opening 25 by resilient ears or tabs 30. Thus, the terminal 14 is positionable both longitudinally of the spring and concentric thereto. With a smaller opening 28 in terminal 14, lesser movement or vibration will result in electrical contact between the spring 21 and concentric terminal 14 to energize the bulb 26.

Thus I have described a compact intermittent electrical switch, operable by sideways movement in any direction, imparted to an electrically conductive coil spring contact.

It will, of course, be understood that various changes may be made in the form, details, arrangements and proportions of the parts without departing from the scope of my invention as set forth in the appended claims.

What I claim is:

1. In an intermittent electrical switch including in combination, a support body terminal having spring clips and a bulb support integral therewith, an insulated mounting means secured to said body terminal, a metallic coil spring having an exposed electrical contact portion, said spring being secured to said mounting means, a concentric terminal secured to said insulated mount-

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ing means and provided with an opening therethrough, said spring extending through said opening and normally being spaced therefrom, a source of electrical energy connected to said coil spring and said support body terminal, and a user of electrical current connected to said support body terminal and said concentric terminal, whereby current flows to said user when said spring moves from its normal position in any direction and touches said concentric terminal as by vibration or the like.

2. In an intermittent electrical switch including in combination, a support body terminal, an insulated mounting means secured to said body terminal, an upstanding electrically conductive coil spring having an exposed electrical contact portion, said spring being mounted for movement on said mounting means, a terminal concentric of said electrical contact portion of said spring and being mounted on said mounting means, a source of electrical energy connected to said spring and said support body terminal, and a user of electrical energy connected to said body terminal and to said concentric terminal, whereby said user is energized when said spring is moved into contact with said concentric terminal.

3. In an electrical switch the combination including, a support body terminal, an insulated mounting means secured to said body terminal, an upstanding and flexible electrically conductive coil spring mounted for oscillatory movement on said mounting means and terminating upwardly in a free end, and a terminal substantially concentric of said spring mounted on said mounting means, said concentric terminal spaced intermediate the base of said spring and said free end, whereby oscillation of said spring causes said spring to contact said concentric terminal.

4. An article of manufacture comprising, a support body terminal having spring clips integral therewith and an opening therethrough, an L-shaped mounting means secured to said body terminal superadjacent said clips and subjacent said opening, an intermittent contact terminal adjustably secured to said mounting means, and an electrically conductive coil spring secured to said mounting means subjacent said contact terminal for contacting said contact terminal, said opening adapted to receive a user of electrical energy.

5. An intermittent electrical switch including in combination, a support body terminal, a mounting means having an upper portion secured to said body terminal and a

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lower portion substantially normal to said upper portion, an upstanding and flexible resilient electrically conductive means secured to said lower portion, said conductive means terminating upwardly in a free end, an intermittent contact terminal substantially concentric said resilient means and secured to said upper portion of said mounting means wherein said contact terminal is positioned intermediate the ends of said conductive means and is electrically insulated from said body terminal by the mounting means, and a source of electrical energy electrically connected to said resilient means and said body terminal, whereby flexing movement of said resilient means causes intermittent contact with said contact terminal to make electrical energy intermittently available between said contact terminal and said body terminal.

6. The combination of claim 5 wherein said intermittent contact terminal is slidably secured to said mounting means and positionable longitudinally of said resilient means.

7. The combination of claim 5 wherein said contact terminal is concentrically adjustable relative to said resilient means to vary the intermittent contact therebetween.

8. The combination of claim 5 wherein said mounting means is slidably secured to said body terminal.

9. The combination of claim 5 wherein said resilient means is a coil spring having substantially equal coil diameters for substantially the entire length thereof.

10. The combination of claim 5 wherein said source of electrical energy is a battery and said body terminal is provided with clips for mounting said battery.

11. The combination of claim 5 including a user of electrical energy supported by and in electrical contact with said body terminal, and said user is also in electrical contact with said contact terminal, whereby intermittent contacting of said contact terminal by said resilient means supplies electrical energy intermittently to said user.

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