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SWITCH FOR ALARM SYSTEMS

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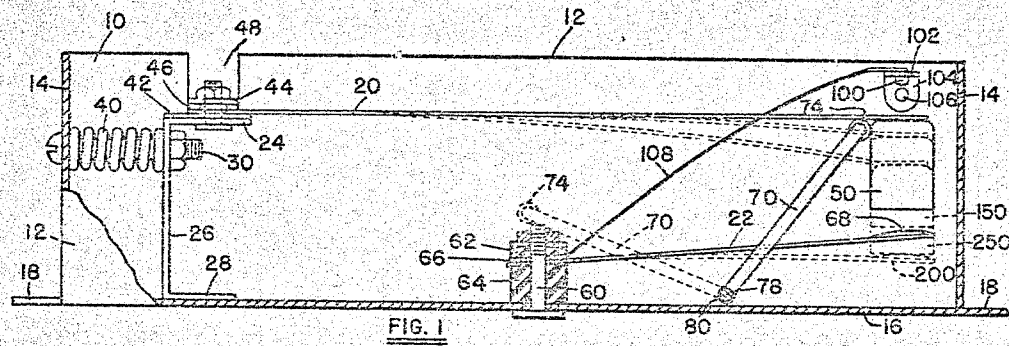


FIG. 1

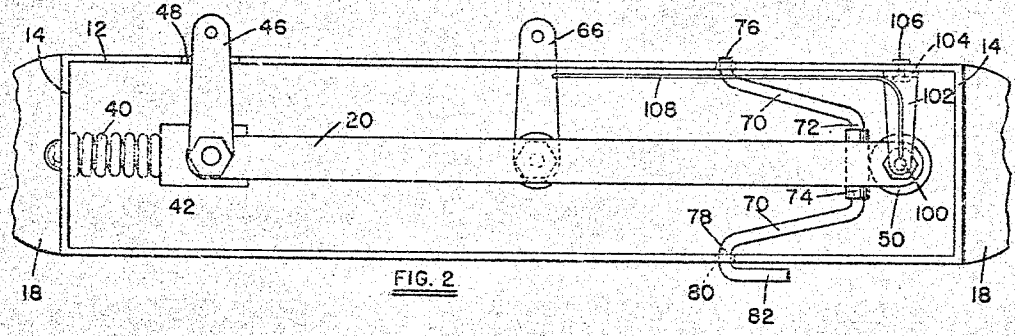


FIG. 2

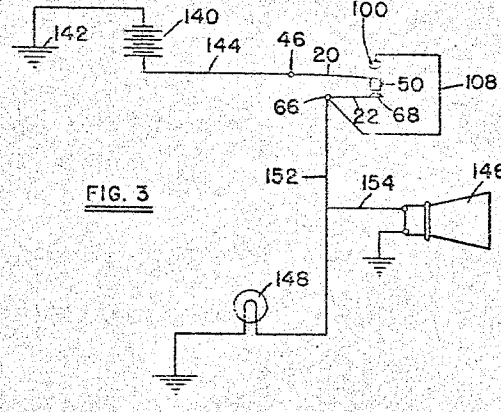


FIG. 3

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SWITCH FOR ALARM SYSTEMS

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1 Claim. (Cl. 200—52)

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This invention relates to switches and more particularly to a vibration actuated or responsive switch for controlling the electrical circuit of an alarm system.

An object of the inention is to provide a simple, positive acting switch for controlling the electric circuit of an alarm system, and particularly for alarm systems of the type associated with automotive vehicles and the like.

Another object of the invention is to provide a switch responsive to vibrations imparted to its housing for intermittently and periodically completing an electrical circuit to the horn and/or lights of a vehicle.

Still another object of the invention is to provide such a switch wherein each of the contact elements are secured to resilient members, thereby increasing the sensitivity and overall efficiency of the device.

A further object of the invention is to provide a switch having means associated therewith to preclude the accidental or unintentional operation of the switch during those periods of time when the motor vehicle to which it is attached is under the control of an authorized operator.

Still a further object of the invention is to provide a switch having the hereinabove described characteristics which also includes means for completing an electric circuit to an alarm device incident to an overturning of the switch such as, by way of example, would occur when a motor vehicle provided with such a switch should overturn.

Another object of the invention is to provide a switch device adapted to be manufactured using modern mass production methods.

These and other objects are attained by the means described herein and as shown in the accompanying drawings, in which:

Fig. 1 is a side view of a switch embodying the teachings of the present invention with the top removed and with the side wall partly broken away for clarity of detail and understanding.

Fig. 2 is a vertical elevation of the device of Fig. 1.

Fig. 3 is a diagrammatical view of an electric alarm system provided with a switch embodying the teachings of the present invention for closing an electric circuit to a horn and light.

With reference now to Fig. 1, the numeral 10 indicates a housing which may be fabricated from any suitable material to include side walls 12, end walls 14, a bottom wall 16 and mounting lips or flanges 18.

A pair of resilient members 20 and 22, of spring-like material, are mounted within the housing

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in aligned, vertically spaced relationship, one end of each member being fixed relative to lower wall or base 16.

With particular reference now to resilient member 20, it will be observed that it is secured or anchored at its left end to leg 24 of a U-shaped member which also includes legs 26 and 28, and wherein leg 26 is disposed at substantial right angles with base member 16. A bolt 30 may extend thru suitable apertures provided in end wall 14 and leg 26 for the purpose of enabling an operator to vary the angular relationship which leg 26 makes with base 16. In the preferred embodiment of the invention a compression spring 40 is interposed between adjacent faces of end wall 14 and leg 26 for normally urging upper end of leg 26 to the right. It will be understood that the force of spring 40 will be opposed by bolt 30 whereby the angular relationship of legs 24 and 26 may be varied, within limits, with reference to base 16. Lower leg 28 may be fixed relative to base 16 by any suitable means.

Resilient member 20 may be insulated from leg 24 by means of insulating members 42 and 44. A contact strip 46 which projects outwardly thru an aperture 48 in side wall 12 is disposed in circuit-completing relationship with the inner or fixed end of resilient member 20.

The outer or free end of resilient member 20 is provided with a weighted contact element 50 which is adapted to oscillate in response to a jarring or to vibration imparted to housing 10.

The inner end of resilient member 22 may be secured relative to base 16 by means of a bolt 60 which is adapted to exert a compressive force on a pair of laterally spaced insulating elements 62 and 64 between which the inner end of member 22 may be received. A contact strip 66, the outer end of which projects outwardly thru side wall 12 of the housing is disposed in circuit-completing relationship with member 22. The outer or free end of member 22 may be provided with a contact element 68.

From the foregoing, it is apparent that when upper resilient member 20 is caused to oscillate the lower face of weighted contact element 50 will be disposed in periodic contact with contact element 68 carried by the free outer end of lower member 22, thereby intermittently completing an electrical circuit series connected with contact strips 46 and 66.

In order to preclude operation of the switch during those periods of time when it is desired to render ineffective the alarm system which it controls, I have provided means for engaging and lifting the outer free end of upper member

20 to a supported, non oscillatable position for precluding accidental or unintentional completing of an electrical circuit through contact elements 50 and 68.

As disclosed in Figs. 1 and 2, this means may comprise a substantially U-shaped member having side legs 70 and a central leg 72. A length of rubber or other suitable insulating material 74 may be disposed on central leg 72, as illustrated. The opposite ends of side legs 70 may be outturned as at 76 and 78 for providing a pivotal connection with apertures 80 provided thru side walls 12. The end 78 may be extended to provide a handle portion 82 disposed on the outside of the housing for enabling an operator to shift the member from its interfering relationship with upper member 20, as disclosed in the solid lines of Figs. 1 and 2 to the inoperative position indicated by the broken lines of Fig. 1.

In the preferred embodiment of the invention, the relationship of apertures 80 with reference to the inner edge of weighted contact element 50 is such that the interfering member will be moved past or beyond dead center (see Fig. 1) when it engages and lifts the outer end of resilient member 20 to the non-operative position illustrated. In this manner likelihood of an unintentional or accidental disengagement of the interfering member from its interfering and supporting relationship with member 20 is effectively precluded.

With reference again to Fig. 1, it will be observed that when the end of member 20 has been positioned in its raised, inoperative position, there is a considerable or substantial spacing between the adjacent faces of contact elements 50 and 68. When the interfering member has been swung to the inoperative position disclosed in the dotted lines of Fig. 1, element 50 will be lowered to the vibration responsive position indicated by the numeral 150, wherein the lateral spacing between the adjacent faces of contact elements 50 and 68 is quite narrow. When thus positioned, any slight jar or vibration of the housing will cause upper resilient member 20 to oscillate whereby contact element 50 will periodically engage contact element 68. Since lower member 22 is resilient, it will be deflected downwardly to the position indicated by the numeral 200 as weighted contact element 50 moves downward to the lower limit of its downward travel, that is, to the position indicated by the numeral 250. Deflection of lower member 22 will result in the application of an upward counter force to the end of upper member 20 whereby the upper limit of its travel will exceed what it would otherwise have been were contact element 68 not yieldably and resiliently mounted. In this manner the period or duration of oscillation of member 20 is considerably greater than it would be if member 22 were non-resilient.

It will be noted that adjustment of bolt 30 will change the effective vibration-responsive spacing between contact elements 50 and 68 thereby enabling the operator to quickly and easily increase or decrease the overall sensitivity of the device. The closer the spacing between contact elements 50 and 68, the more sensitive the device will be.

A third contact element 100 may be provided in vertical spaced relationship with and above the highest position which upper member 20 will assume incident to its oscillations for closing a circuit thru contact element 68, and above its fully raised or inoperative position illustrated in Fig. 1. Contact member 100 may be secured to and carried by horizontal leg 102 of an L-shaped bracket member having a depending leg 104 which may be fastened or secured by means of a rivet, or the like, 106 to a side wall. A conductor 108 interconnects contact element 100 with contact strip 66.

From the foregoing, it will be noted that contact 100 will be engaged by the upper face of the outer end of upper resilient member 20 during those periods of time when housing 10 is inverted, and during which periods of time an electric circuit to the alarm system will be continuously closed until the housing is again righted. This feature has particular utility as an automatic, foolproof alarm which will effectively call the attention to the presence of an overturned vehicle.

The relationship of my device with an alarm system is diagrammatically disclosed in Fig. 3 wherein the numeral 140 indicates a battery, one side of which is grounded as at 142, the other side of which is connected by conductor 144 to contact strip 46 of my device. Contact strip 66 may be connected to one side of a horn 146 and lamp 148 by means of conductors 152 and 154, as illustrated. It will be observed that an electrical circuit will be completed to the horn and lamp whenever contact is completed between contact element 50 and contact 68 or 100; it being understood that the circuit will be intermittently closed when contact elements 50 and 68 are engaged, whereas the circuit will be continuously closed when contact elements 50 and 100 are in engagement.

Various changes in the structural details of the device may be made within the scope of the appended claim such as, by way of example, varying the relative lengths of resilient strips 20 and 22, and the like, without departing from the spirit of the invention.

What is claimed is:

A device for controlling the electrical circuit of an alarm system comprising a housing, a pair of aligned horizontally extending vertically spaced resilient members each having an end fixed relative to said housing, a weighted contact element secured to and carried by the free outer end of the upper member constructed and arranged for intermittent contact with the end adjacent portion of said lower member incident to vibration of said housing, and a contact element disposed above and in vertically spaced relationship with the outer end of said upper member, said contact element engageable by said upper member when said housing is turned upside down, for completing an electrical circuit series connected with said last mentioned contact element and said upper member.

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