# United States Patent

**Panettieri**

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## [54] SAFETY SWITCH TO INTERRUPT AN ELECTRICAL CIRCUIT IN CASE OF COLLISION


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[51] **Int. Cl.** ..... **H01h 35/14**

[58] **Field of Search** ..... 200/61.45–61.53, 200/153 LB, 6 C, 47; 340/262, 61.45, 61.53



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*Attorney*—Harold E. Cole



[57] **ABSTRACT**

Safety switch apparatus connected to motor vehicle ignition which is automatically disconnected by force of an impact resulting from a vehicle collision, the disconnection being effected by movement of a weight connected to one contact member. Mounts support two contact members and permit movements of the latter to and from each other. Reset apparatus restores contact of said two members by a simple movement.


**8 Claims, 3 Drawing Figures**

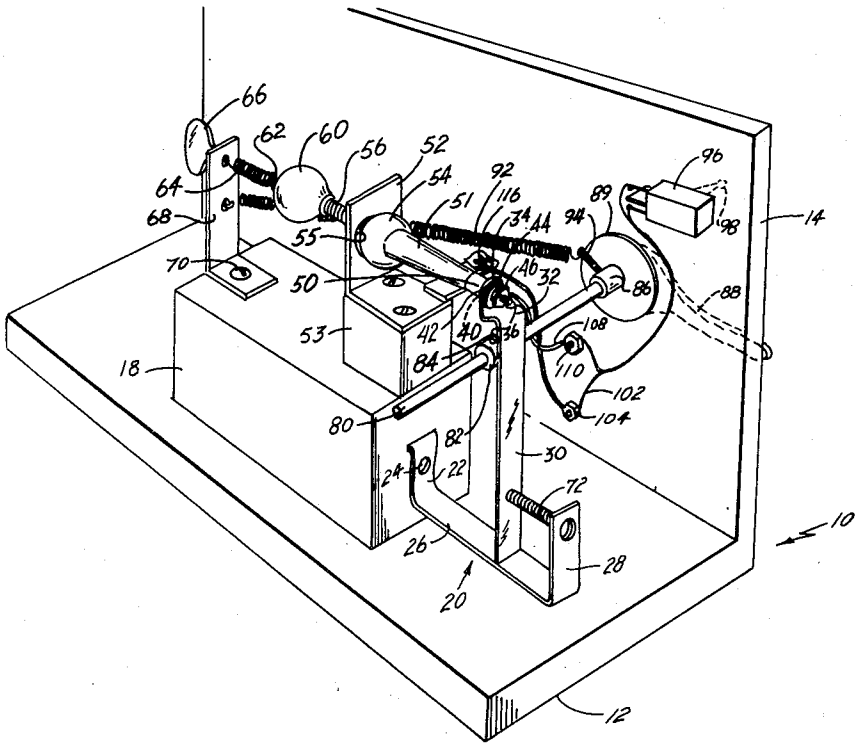
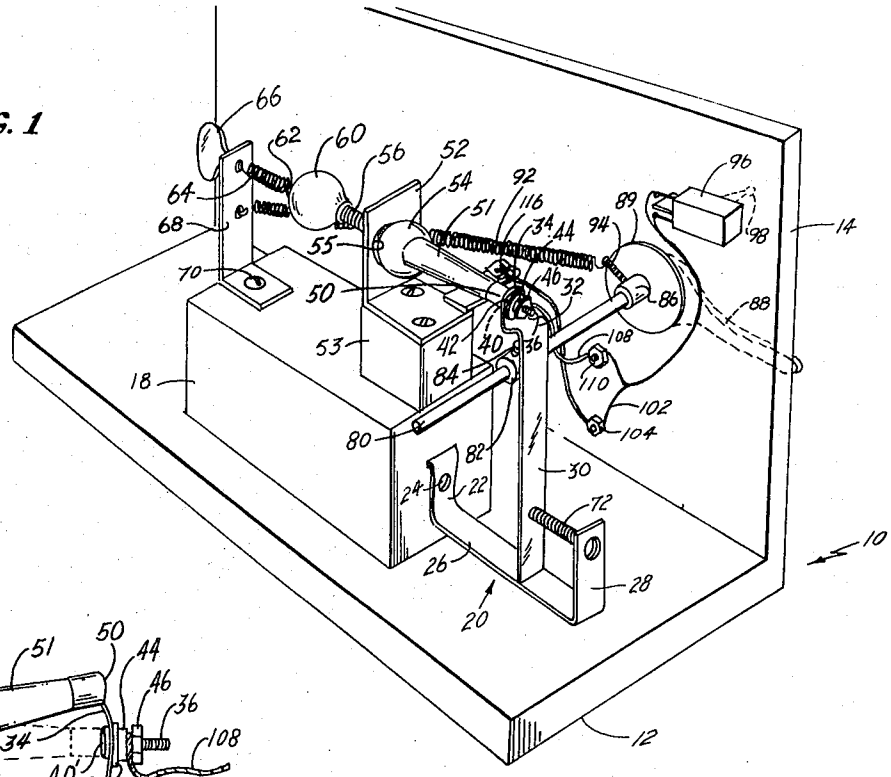


FIG. 1



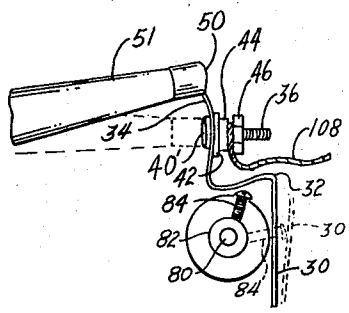




FIG. 2

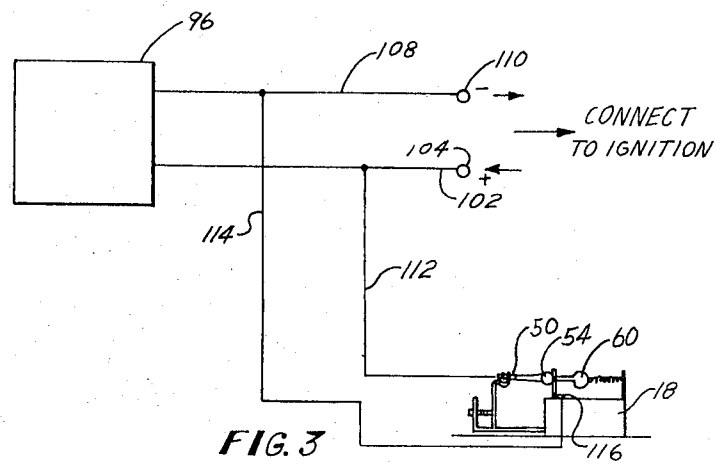



FIG. 3

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# SAFETY SWITCH TO INTERRUPT AN ELECTRICAL CIRCUIT IN CASE OF COLLISION

The principal object of my invention is to provide safety switch apparatus of improved construction, and that enables, by a simple movement, the automatic restoration of contact members connected to the ignition, after they have been separated due to a collision or other cause.

The foregoing and other objects which will appear as the nature of the invention is better understood, may be accomplished by a construction, combination and operative arrangement of parts as is disclosed by the drawing. The nature of the invention is such as to render it susceptible to various changes and modifications, and therefore, I am not to be limited to the construction disclosed by the drawing, nor to the particular parts described in the specification; but am entitled to all such changes therefrom as fall within the scope of my claims.

In the drawing:

FIG. 1 is a perspective view of my switch apparatus showing the switch contact members engaged, the dash lines showing a handle outside of the housing that is used in resetting the contact members to operative position.

FIG. 2 is a fragmentary perspective view showing the contact members separated caused, as from the impact of a collision, part of the reset apparatus being shown in resetting position by dash lines.

FIG. 3 is a wiring diagram of the electrical circuit of my apparatus.

As illustrated, my apparatus has a housing (partially shown) or supporting means **10** having a base wall **12**, and a sidewall **14** attached thereto extending angularly therefrom. Said base includes a supporting block **18** extending angularly therefrom parallel with side **14**.

A bracket or mount **20** has an attaching member **22** fixed to said block **18** by a screw **24**. A base member **26** extends angularly from attaching member **22**, terminating in a supplementary mount **28** extending angularly from an extremity of said base member **26** and parallel with said member **22**. A first contact means has a resilient contact carrying member **30** fixed to said base member **26** and extends parallel with said mount **28**, and has an angular portion **32** and a contact member **34** extending angularly therefrom. A copper screw **36** extends through the latter and its head **40** serves as the actual contact point by means of a recess **40'** formed therein, later referred to. A spacer **42** around said screw **36** bears on said contact holder **34**, and next to it is a copper nut **44**, and spaced from the latter is another copper nut **46**. In said space an electric wire or other conductor **108** is held by said nuts **44** and **46** which screw threadedly connect with said screw **36**.

Second contact means has another contact member **50** the end of which normally contacts with said contact member **34** by entering said recess **40'** whereby an electrical circuit through the ignition switch of an automobile is normally established. Said other contact member **50** has an elongate member **51** that is supported by an angular metal bracket **52** screwed to a wooden extension **53** supported by said block **18**. Said elongate member **51** has a ball-like, bearing member **54** that movably extends into a hole **55** in the upper leg of the member **52** where it bears against said angular bracket **52** and it receives a screw-threaded rod **56**. A weight **60** screw threadedly connects with said rod **56** and it receives an open eye **62** at one end that receives a coil spring **64**. The latter connects with an adjusting thumbscrew **66** whereby the tension of said spring **64** may be controlled.

An angular bracket or second mount **68** is fixed by a screw **70** to said block **18** and said adjusting screw **66** connects and extends through said mount **68** to said spring **64**. Thus an adjusting movement is made possible to change the tension of spring **64** whereby to help predetermine the shock force necessary to move said weight **60** to thereby break the contact of contact member **50** with said contact member **34**.

To keep said contact carrying member **30** under sufficient tension to cause said contact member head **40** to normally bear against said contact member **50**, I provide a stop member **72** that screw threadedly extends through said mounting member **28** and touches said contact carrying member **30**. Thus said stop member while it limits the movement of said member **30** rearwardly; it also normally keeps the two contacts together, as later explained.



Reset apparatus has a rotatable shaft **80** on which a collar **82** is fixed that receives a pusher member or screw **84** that normally is directly under said angular portion **32**, leaving said contact member **50** unaffected when in normal position. Said reset shaft **80** has another collar **86** fixed thereon, later referred to, and this shaft extends through said side **14**, and there is fixed thereto a manual reset handle **88** that is outside said housing **10**. Said shaft **80** extends through a bearing **89** fixed to said side **14** and it rotatably moves with said handle.

When said contact member **50** is out of contact with said contact recessed portion **40'** it normally overlaps the contact member **34** slightly. Rotation of said handle **88** and shaft **80** will move said collar **82** and pusher member **84** against said contact carrying member **30** thus forcing it rearwardly to permit said contact member **50** to drop into normal or closed position as shown in dashlines in said FIG. **2**, thereby bringing said contact member **50** into engagement with recessed portion **40'** of said contact member **34**.

A coil spring **92** is attached to said angular mount **68** and extends to a screw **94** fixed in said reset shaft collar **86** thus keeping said shaft **80** in such position that said control screw **84** is normally away from said contact carrying member **30**. Said spring **92** assures automatic return of said shaft **80** and screw **84** when said handle **88** is released after being actuated, since the actuating movement has put the spring under tension.

A well-known switch **95** is attached to said housing side **14**, being controlled by a switch button **98** outside of the latter.

Normally electrical current flows from a source of supply, not shown, through a conductor wire **102** held by a retainer **104** set in said side **14**, which wire **102** also extends to one side of said switch **96**. A return wire **108** held by a retainer **110** set in said side **14** extends to another side of said switch **96**, the latter normally being in "off" position. Another wire **112** extends from said wire **102** to said contact member **34**. Also a wire **114** extends from said wire **108** to a metal clip **116** attached to said angular bracket **52** to complete a circuit. In the event the contact between contact members **50** and **34** is broken, as in an automobile crash, current will not reach said wire **108** because the circuit is broken.

To restore the circuit the handle **88** is reset to bring the contact members **50** and **34** together, and my device is ready to function again.

In case of damage to my device that prevents automatically resetting it, the switch **96** will complete the usual circuit through the ignition by turning it to "on" position, and my device remains disconnected.

What I claim is:

**1.** Safety switch apparatus for use on motor vehicles, comprising a housing, a first mount attached to said housing, first contact means having a portion movably extending from said first mount and having a first contact member capable of lateral movement with respect to said first mount, second contact means having another contact member normally contacting said first contact member and having a pivoting member supporting said other contact member, means supported by said housing and supporting said pivoting member for pivotal movement with respect to said housing, a weight connected to said pivoting member that is susceptible to predetermined shock and is adapted to react therefrom by actuating said pivoting member and said another contact member to carry the latter away from contact with said first contact member, and conducting means connected to said contact members to normally establish an electrical circuit through said contact members.

**2.** Safety switch apparatus as of claim **1**, said extending portion is resilient and connected to said first contact member, and a second mount supported by said housing, said second

contact means having resilient means connected to said second mount.

3. Safety switch apparatus as of claim 1, and switch means supported by said housing and connected to said conducting means and being normally in off position.

4. Safety switch apparatus as of claim 1, and reset apparatus operably connected to said housing comprising a reset shaft rotatably mounted on said housing, a pusher member fixed to said shaft and normally inoperative and being so positioned as to push against said first contact means when said shaft is rotated to reset position to thereby force said first contact member when said contact members are disengaged, away and spaced from said another contact member to permit the latter to move to position to thereby make contact with said first contact member, when the latter returns to normal position.

5. Safety switch apparatus as of claim 2, said first mount having means to adjustably hold said first extending portion in predetermined position.

6. Safety switch apparatus as of claim 2, said means for supporting said pivoting member has an angular support with a hole therethrough, said second contact means extending through said hole and being pivotally movable therein.

7. Safety switch apparatus as of claim 2 and a support block supported by said housing, said mounts being attached to said block and extending above it.

8. Safety switch apparatus as of claim 4, and a second mount supported by said housing, said second contact means connected to said second mount, and a resilient member connected to said shaft and to said second mount and being adapted to be put under tension, when said shaft is actuated from normal to reset position.

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