

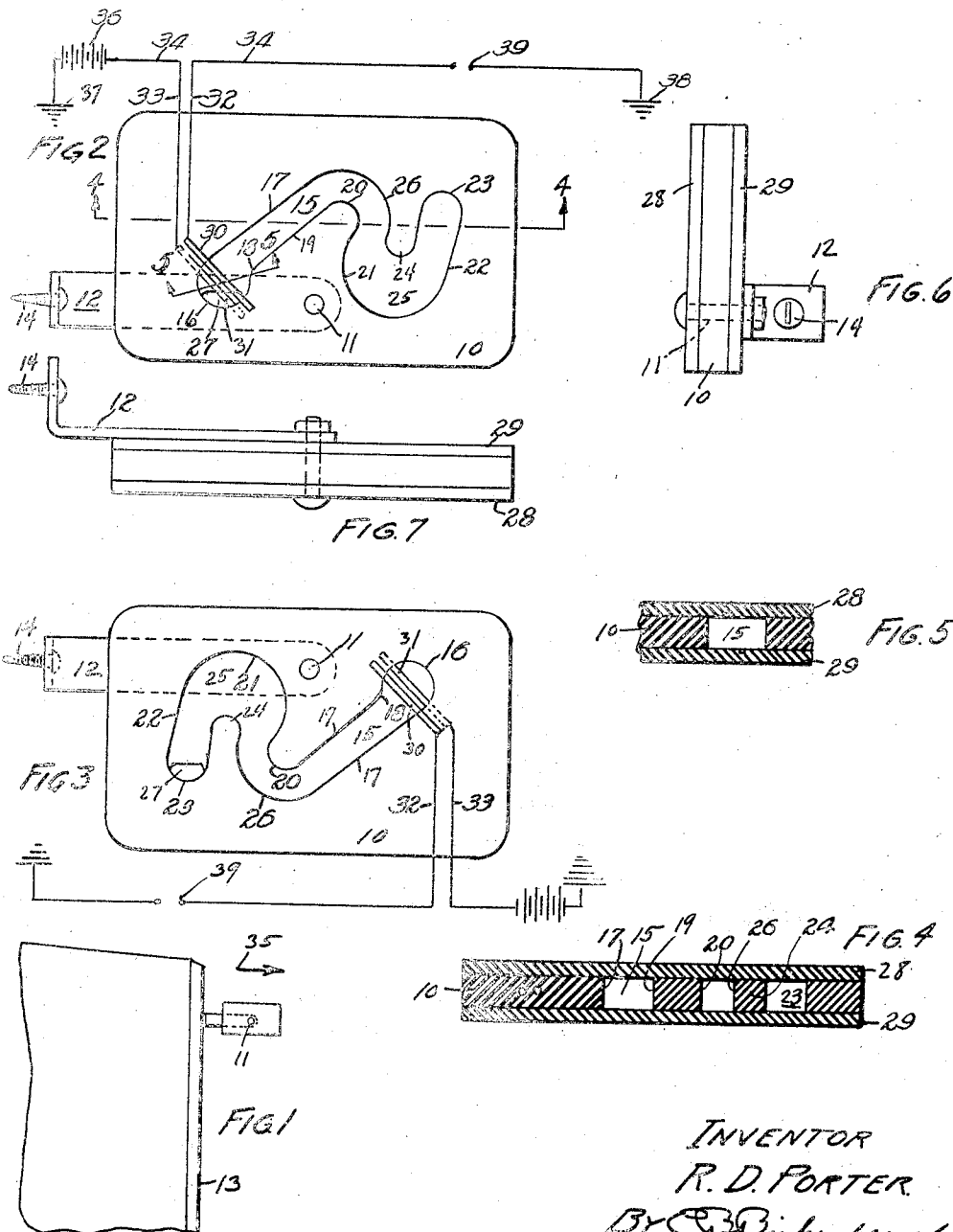
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IMPACT SWITCH

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IMPACT SWITCH

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This invention relates generally to vehicles employing internal combustion engines as prime movers and particularly to an impact switch.

The main object of this invention is to construct an automatic switch whereby the electric circuit of an airplane or land traveling vehicle or boat will be automatically interrupted by an impact, thereby protecting the object on which it is mounted against fire.

The second object is to provide a switch of the class described which will interrupt the circuit automatically by impact or by turning over on the side.

The third object is to so construct a switch as to make the same adaptable to any type of vehicle and to permit its use as an emergency automobile lock.

These and other objects will become apparent from the specification following as illustrated in the accompanying drawing in which:

Fig. 1 is a fragmentary side elevation showing a rear wall of the engine compartment of an automobile and showing the switch mounted thereon.

Fig. 2 is a side elevation of the switch with the cover removed to disclose the interior thereof and showing the switch in an upright or normal operating position.

Fig. 3 is a view similar to Fig. 2 but showing the switch in an inverted position.

Fig. 4 is a section taken along the line 4—4 in Fig. 2.

Fig. 5 is the section taken along the line 5—5 in Fig. 2.

Fig. 6 is the front elevation of the switch.

Fig. 7 is an edge elevation of the switch.

Similar numbers of references refer to the same or similar parts throughout the several views.

Referring in detail to the drawing, there is shown a rectangular body 10 mounted on a horizontal pivot 11 which is supported by an angle bracket 12, which in turn may be secured to the front side of the panel 13 by the metal screws 14.

On the interior of the body 10 is an inclined channel 15 whose lower-most end 16 is circular in form and preferably is tangent to the side 17 and forms a reverse curve 18 with relation to the side 19. The upper end 20 of the sloping side 19 is semi-circular in form and substantially tangent to the downwardly curving bend 21, which in turn is tangential to the upwardly turned side 22. The side 22 is also inclined but more steeply than the side 19. The upper end 23 of the side 22 is somewhat circular in form and terminates in the

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rounded tip 24 which projects downwardly into the enlarged recess 25. The tip 24 merges with the curved side 26 which is tangent with the side 17.

The various curves and sides unite to form one continuous tortuous passage within which is confined a quantity of mercury 27 by the side members 28 and 29. The members 28 and 29 are preferably integral with the body 10 although are not necessarily so. Extending across the enlarged portion of the channel 15 formed by its curved end 16 are the two electrodes 30 and 31 which are preferably on opposite sides of the body 10, and normally contact the mercury 27. To the electrodes 30 and 31 are connected the leads 32 and 33 of the vehicle on which this device is mounted. The leads 32 and 33 form a part of the ignition circuit 34 which includes the battery 36 and grounds 37 and 38 and spark plug 39.

The operation of the device is as follows:

Assuming that the vehicle strikes an object while moving in a forward direction, as indicated by the arrow 35, it follows that the mercury 27 which formerly bridged the gap between the electrodes 30 and 31, is now carried by inertia up the sloping side 19 over the end 20 into the enlarged recess 25 thereby breaking the circuit of which the leads 32 and 33 form a part. Even though the vehicle continued to roll over and over the mercury will simply travel around the recess 25 and will not return to the channel 15 until the body 10 is revolved in an opposite direction.

It must be understood that the reason mercury returns to the pocket 16 instead of remaining in the pockets 25 or 23 is that, if the vehicle rolls over sideways, the mercury will naturally attempt to flow toward both the pockets 16 and 25, but the mercury which flows toward the pocket 16, is deflected against the side 26, due to the overhanging position, 20.

If the vehicle were set on end in a vertical position, all of the mercury would settle in the pocket 21.

If, for example, the device is mounted on a tractor, or a car, which for any reason is turned over on its side, the circuit is broken between the electrodes 30 and 31. Owing to the fact that the body 10 is mounted on the pivot 11, the leveling of the device is a simple matter. In some cases it will be found desirable to calibrate the device in order to make it easy to reset it after it has been actuated.

It can be seen from the foregoing that by the use of the simple angle bracket 12, together with the pivot 11, that the switch is readily adaptable

to any position or degree of slope of the supporting member 13.

The material from which the parts 10, 28 and 29 are constructed is not important except that it be an insulating material, preferably one of the well known plastics which may be easily moulded and which is not easily broken.

It must be understood that while I have thus illustrated and described my invention, I do not intend to be limited to the precise form of the device shown in the accompanying drawing, but I do intend to cover all such forms and modifications of the device as fall fairly within the appended claims.

I claim:

1. An impact switch consisting of a tiltable body of insulating material having a pivotal support for frictionally holding said body in a normally horizontal circuit closing position, said body having a sealed tortuous channel formed therein including two downwardly extending pockets, said channel having an inclined channel extending upwardly from the first pocket toward the second pocket, said inclined channel extending from its upper end downwardly into the second pocket, said second pocket having a tip projecting downwardly thereinto below the top of said inclined channel, a pair of electrodes mounted in the first pocket, and a quantity of mercury normally connecting said electrodes.

2. An impact switch of the class described consisting of a rectangular body of insulating material, an angle bracket for tiltably supporting same from the vehicle in a manner that the body may be tilted in a vertical plane along the line of travel, a tortuous channel formed in said body

within said vertical plane, said channel including two upwardly turned pockets and two downwardly turned pockets, the first of said downwardly turned pockets having a pair of electrodes therein and containing a quantity of mercury adapted to close the circuit between the electrodes when the vehicle is in normal operation, the first of said down turned pockets being joined by an inclined channel to the first of said up turned pockets, the first of said up turned pockets being joined by the downwardly turned channel to the second down turned pocket and said second down turned pocket being joined by an up turned channel to the second up turned pocket whereby an impact from the side remote from said electrodes will cause the mercury to rise up the inclined channel and be deposited in the second down turned pocket for the purpose of interrupting the electrical circuit automatically at the instant of the impact.

3. A device as described in claim 2 characterized by having a reverse curve formed in said tortuous channel at the lower end of said inclined channel.

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