Feb. 26, 1957 R. A. RICHARDSON 2,783,321

ELECTRIC SWITCHES OF THE SHOCK OPERATED TYPE

Filed Nov. 2, 1955

Fig. 1.

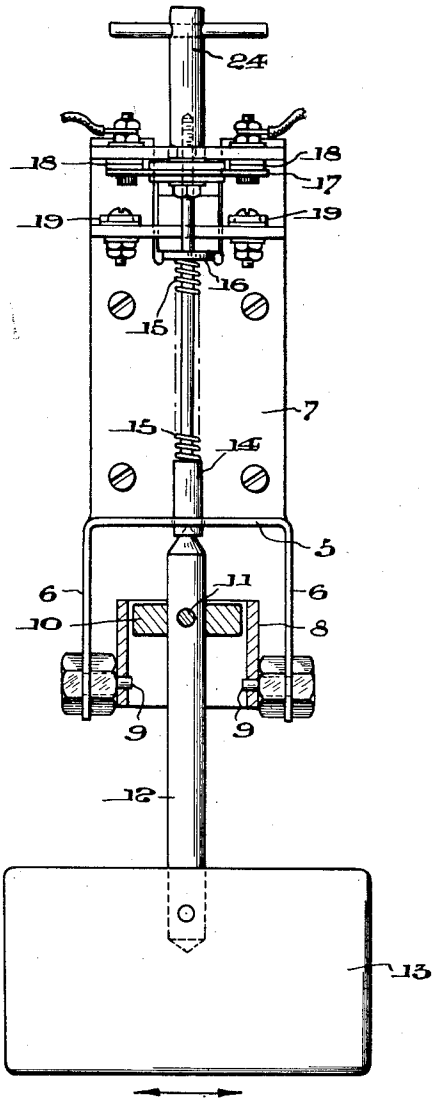
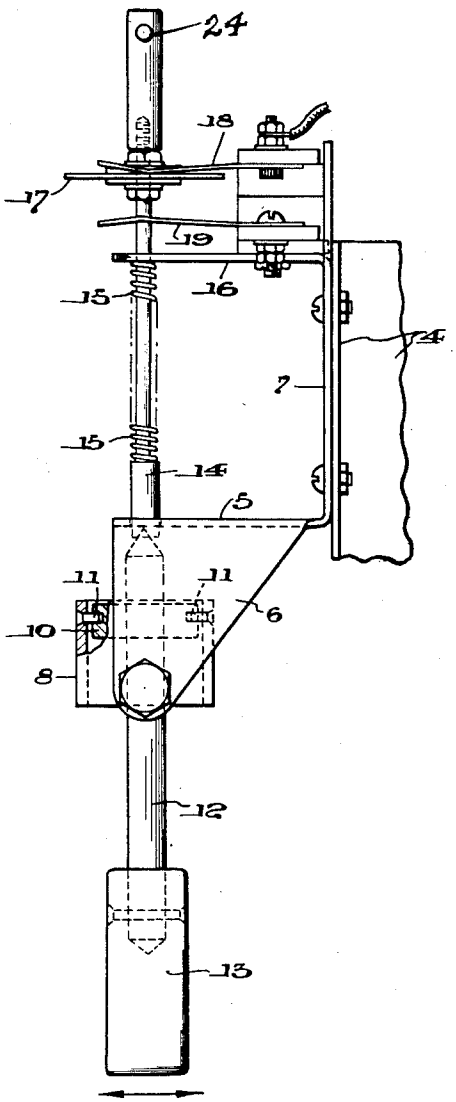


Fig. 2.



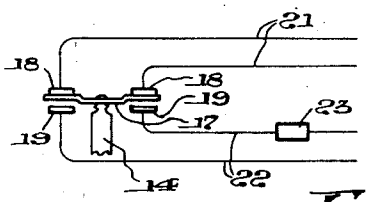


Fig. 3.

INVENTOR.
ROLAND A. RICHARDSON.
BY Holcombe Martin
his ATTORNEY

United States Patent Office

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ELECTRIC SWITCHES OF THE SHOCK OPERATED TYPE

Roland A. Richardson, Rochester, Pa.

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1 Claim. (Cl. 200—61.45)

My invention relates to electric switches of the inertial or shock-operated type and will be particularly useful on motor vehicles, so that when a vehicle is in a collision or wreck, either in a fore-and-aft direction or sidewise, the ignition circuit will be broken and an alarm circuit closed, to call attention to the victim's plight and to bring assistance. The invention is a modification of that described and claimed in my application Serial No. 481,109, filed January 11, 1955, now Patent No. 2,740,010.

One object of my invention is to provide a safety device of the character referred to that is of simple form and which is more sensitive to shocks in one direction than in the other. For example, it will be operated more readily when a vehicle tilts sidewise than as a result of shocks in a fore-and-aft direction, thereby preventing undesired operation through sudden stops and starts of the vehicle or minor collisions.

Another object of my invention is to provide a control device of the character referred to that is operated by a pendulum-like weight which will swing on either of two relatively transverse axes when a shock is imparted to the vehicle in horizontal directions.

As shown in the accompanying drawing,

Figure 1 is a vertical sectional view through the device;

Fig. 2 is a view taken on the line II—II of Fig. 1, and

Fig. 3 is a wiring diagram showing the manner in which a control switch is actuated for breaking an ignition circuit and closing a signal circuit.

The apparatus will be mounted on a fixed portion 4 of the motor vehicle, and comprises yoke 5 that has depending wings 6 and an upright plate-like bracket member 7 rigidly secured to the member 5. A cylindrical member 8 is pivotally supported by pins 9 in the wings 6.

A block 10 is pivotally supported in the cylinder 8 by pins 11 for free swinging movement. The block 10 has a shaft or stem 12 of a pendulum 13 rigidly mounted therein. When an inertial force is exerted against the pendulum 13 in one direction, it and the block 10 will oscillate about the pivots 11. When shocks are imparted in a direction transverse to the axis at 11—11, the pendulum together with the cylinder 8 will swing about the axis at 9—9.

The upper end of the stem 12 engages in a pocket at

the lower end of a swinging stem 14 that is yieldably held downwardly in seating engagement with the stem 12 by a spring 15 that is interposed between a shoulder on the member 14 and the upper leg 16 of the angle member 7.

The switch stem 14 carries a movable switch-contact member 17 that is vertically movable into engagement with a pair of stationary contact members 18 or a pair of stationary contact members 19, depending upon whether the parts are in the position shown in Figs. 1 and 2 or whether the pendulum has been swung through a shock in excess of a predetermined force.

As shown in Fig. 3, the switch member 17 closes the stationary contacts 18 which controls an ignition circuit 21 of the vehicle.

If now a shock is imposed either forwardly or sidewise with respect to the path of vehicle travel of sufficient force to swing the upper end of the stem of weight 13 out of engagement with the pocket in the valve stem 14, the spring 15 will snap the switch stem downwardly to close the circuit through the contacts 19 which is included in the alarm circuit 22, which may include either a bell or a lamp. A vibrator 23 is included in the signal circuit 22, to cause fluctuations in a signalling lamp and thereby more readily attract attention. The device can conveniently be re-set by raising the handle 24.

An important feature of my invention resides in the fact that the pivot at 9—9 is disposed transversely of the normal line of travel of the vehicle while the pivotal mounting at 11—11 is located at a higher level and therefore at a greater distance from the pendulum weight. Greater forces will therefore be required to operate the signal in forward and rearward directions than upon sidewise tilting. This reduces danger of accidental operation of the signal device through sudden stops and starts.

I claim as my invention:

Safety switch apparatus for use on motor vehicles, comprising a pendulum having a stem, means pivotally supporting the stem for swinging movement in a direction transverse to the path of travel, a second means pivotally supporting the stem and located a farther distance from the pendulum weight than the first-named means, on an axis disposed parallel to said path of travel, means yieldably resisting swinging of the stem on its pivots, and a signal device actuated through swinging movements of said stem in opposition to the said yieldable means.

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