March 29, 1955 E. W. LA ROZA 2,705,267

TURNOVER AND CRASH SWITCH

Filed July 18, 1952

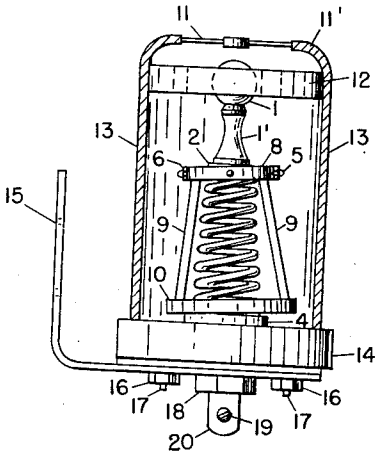


Fig. 1

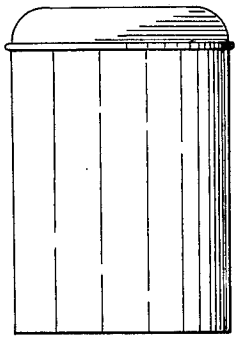


Fig. 2

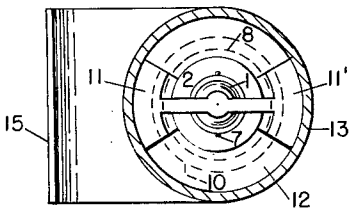


Fig. 3

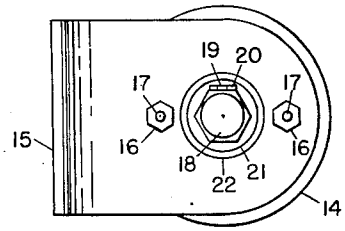


Fig. 4

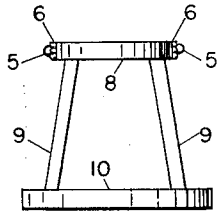


Fig. 5

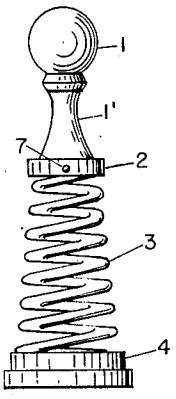


Fig. 6

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2,705,267

TURNOVER AND CRASH SWITCH

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1 Claim. (Cl. 200—61.49)

The present invention relates to an automatic safety device and more particularly to an improvement in an inertia actuated switch for the protection of vehicles' electrical systems in which storage batteries and generators are used, against fire after turnover or crash.

It is among the objects of the invention to provide an improved turnover and crash switch which can be mounted in any convenient location near the center of the fire wall under the hood. After the installation it needs very little attention as it is automatic. The only adjustment is the changing of the ball for different types of vehicles, a heavy vehicle needs a heavy ball, a lighter vehicle needs a lighter ball. The switch has only one wire connected to it and the safety switch. The system is so arranged that on turnover or crash all electrical energy from both batteries and generators are instantly and automatically disconnected so that fire can not start.

Said switch is very simple in construction, effective in operation, and can be manufactured very economically.

Another object of the invention is the rhythm damper to provide for a means for dampering the swing of the ball in rhythm.

Other objects and advantages will become apparent from a consideration of the following description and appended claim in conjunction with the accompanying drawings:

Figure 1 is a complete side elevational view of the invention, showing the mechanical construction, cover removed:

Figure 2 is a side elevational view of the cover of the invention:

Figure 3 is a top plan view of the invention:

Figure 4 is a bottom plan view of the invention:

Figure 5 is a side elevational view of the parts called a rhythm damper:

Figure 6 is a side elevational view of the main part showing the cone shaped spring with the ball at the top.

In reference to the drawings and particularly to the Figures 1 and 6, the action of the switch is based on the inertia effect of the weighted swingable brass silver plated ball **1**. Said ball **1** is screwed on the neck of the collar **1'**, said collar **1'** having two pins, one on each side that hold the ring **2**. Attached to said collar **1'** is the cone shaped spring **3**, which spring **3** is made larger in diameter and heavier at the bottom.

This spring **3** can be made of any resilient material such as rubber or plastic with a flexible wire through the center. The said cone shaped spring **3** normally holds the ball **1** in a vertical position. The spring **3** is supported at the bottom by the round base **4**.

Figure 5, the rhythm damper is supported by the two screws **5** and the two locknuts **6**, to the two holes in the ring **2**, opposite the two holes **7**. Figure 6 shows a part of the rhythm damper. Returning to Figure 5 said collar **1'** supports the rhythm damper by a universal connection so it will swing in all direction; it will swing faster and at times opposite to that of the ball **1**. Rhythm damper explanation: on concrete roads there is an expansion joint every 30 feet, which joints set up a rhythm swing to the weighted swingable ball **1**. A short circuited spark plug will do the same so I use the rhythm damper to damper the swing of the weighted swingable ball **1** in rhythm.

The two screws **5** are tapped into the ring **8** and riveted in four equal spaces are the four flat upright members **9**. Riveted to the members **9** is the ring **10**. Said ring **10** has a soft rubber ring cemented to the inside to stop noise. Figure 1 shows a brace **11**; said brace **11** has a hole in the center to gage the ball **1** to the center of the contact ring **12**. The said brace **11** and the contact ring **12** are attached to the two upright members **13**. Said members **13** have a right angle at the bottom of each and a hole in the angle of each for the two 5/32 bolts **17** to attach to the round base **14**. Said base **14** has two holes for the two 5/32 bolts **17** and a 5/8 hole for the center bolt **18** as shown in the Figures 1 and 4.

The mounting member **15** as shown in Figures 1 and 4 is a piece of sheet iron with holes to fasten to the vehicle.

Said member **15** is bent in a right angle and is cut to conform with the base **14**, and with two holes for the 5/32 bolts **17** and between these two holes for the 5/32 bolts **17** there is a one inch center hole. The members **13**, the base **14** and the mounting member **15** are bolted together by the two 5/32 nuts **16** and the two 5/32 bolts **17**, as shown in the Figures 1 and 4. Said mounting member **15** is fastened to the body of the vehicle. A center bolt **18** is shown in the Figures 1 and 4. A terminal screw **19** is shown on the terminal **20** with a hole in the center for the center bolt **18**. Said members **20**, **21**, **22** and **14** are bolted together by the bolt **18** with a fiber washer on top and screwed into the threaded round base **4**.

Figures 5 and 6 and terminal **20** are electrically insulated from ground. The contact ring **12**, the upright members **13**, the base **14** and the mounting member **15** thus are grounded to the body of the vehicle. When shock occurs the weighted swingable ball **1**, being energized, strikes the grounded contact ring **12**, this contact disconnects the safety switch.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is, therefore, to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claim rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claim are, therefore, intended to be embraced therein.

What is claimed is:

Safety switch apparatus for electrical system of moving vehicles, said apparatus comprising a support base adapted to be rigidly attached to said vehicle, a resilient helical cone-shaped spring extending upwardly from and having the larger end thereof securely and rigidly attached to said base, an electrically conductive ball-like member, a collar member securing said ball member to the smaller end of said spring, an electrically conductive annular ring supported above said base, electrically insulated therefrom, and positioned around said ball member so as to be contacted by said ball when said ball swings laterally on said spring, said ball member being positioned centrally of said ring member when at normal rest, and a damper, said damper comprising an upper ring-like member and a lower ring-like member rigidly attached thereto, said upper ring member being pivotally connected to said collar, said damper being positioned so as to be coaxial with said spring with the lower end of said damper being positioned near the base of said spring, and free to move with respect thereto, the natural period of vibration of said spring and ball being greater than the natural period of vibration of said damper whereby the movement of said damper reduces the tendency of said ball to swing in rhythm, said ball thereby being adapted to contact said first-named ring when said vehicle is subjected to a sudden shock.

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