June 6, 1933. J. J. SPRAGUE ET AL 1,913,219

AUTOMATIC SAFETY SWITCH

Filed Dec. 13, 1930

Fig. 1.

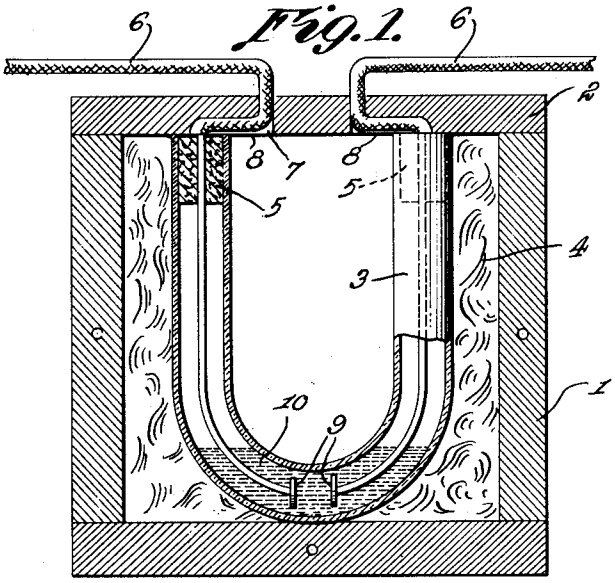


Fig. 2.

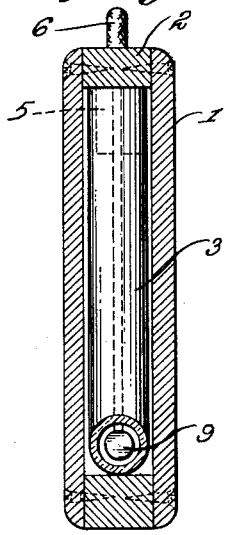


Fig. 3.

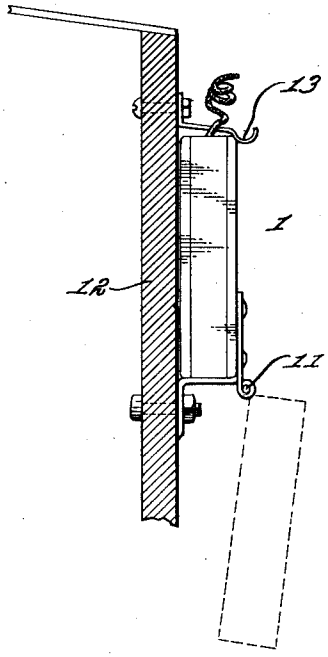
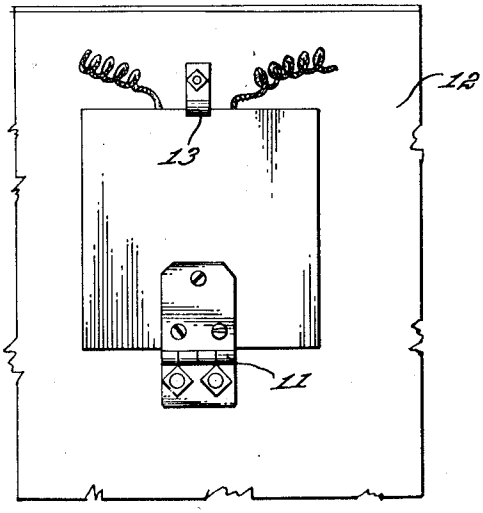


Fig. 4.



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WITNESS:

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Patented June 6, 1933 1,913,219

UNITED STATES PATENT OFFICE

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AUTOMATIC SAFETY SWITCH

Application filed December 13, 1930. Serial No. 502,193.

This invention relates to a safety switch mainly designed for motor vehicles and aeroplanes, the general object of the invention being to provide means for automatically breaking a circuit if the vehicle on which the switch is used is turned over sidewise or endwise, whereby the motor will be stopped and danger of fire eliminated.

Another object of the invention is to provide means for yieldingly holding the device in upright position so that a shock or jar will cause the device to drop into a position where the circuit will be broken.

This invention also consists in certain other features of construction and in the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawing and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawing wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is a sectional view through the improved switch.

Figure 2 is a sectional view through Figure 1.

Figure 3 is a view partly in section, showing the supporting means for the device.

Figure 4 is a front view of Figure 3.

Referring to Figures 1 and 2, the numeral 1 indicates a casing which is formed with a cover 2. A U-shaped tube 3 is placed in the casing and packing material 4 is placed in the casing to prevent breakage of the tube, as well as to prevent movement thereof. The ends of the tube are closed by the corks or stoppers 5 and the conductors 6 enter the casing through the vertical holes 7 and the horizontal grooves 8 so that the conductors are firmly held against movement and no clips or the like are necessary to hold the conductors in position. From the outer ends of the grooves, the insulating material is stripped from the conductors and the stripped portions of the conductors extend downwardly through the limbs of the tube to a point at the bottom of the tube. Plate-like portions 9 are connected with the ends of the conductors and these plate-like portions are spaced apart, as shown. Mercury or other conducting fluid 10 is placed in the lower part of the tube so that current can pass from one conductor through the fluid to the other conductor. Thus it will be seen that if a vehicle on which the invention is used should turn over, the mercury would flow into one limb or the other of the tube and thus break the passage of current between the conductors so that the motor of the vehicle would stop and there would be no danger of the vehicle catching fire.

Figures 3 and 4 show the preferred means for supporting the device and as shown in these figures, the casing is connected by a hinge 11 at its lower end to a part of an instrument board 12 or other support, with a spring finger 13 fastened to said board and engaging the top of the casing for holding the same in upright position. Thus a shock or jar, such as that resulting from a collision or the vehicle turning over, will cause the casing to free itself of the spring finger and drop into an inverted position, as shown in dotted lines in Figure 3, so that the circuit will be broken.

The members 9 are preferably of circular shape and increase the conducting capacity between the conductors and fluid and at the same time prevent any possibility of a break in the circuit on rough roads.

It is thought from the foregoing description that the advantages and novel features of the invention will be readily apparent.

It is to be understood that changes may be made in the construction and in the combination and arrangement of the several parts, provided that such changes fall within the scope of the appended claims.

What we claim is:—

1. A switch of the class described comprising a casing, a bent tube located therein and having conducting fluid in its bight portion, stoppers closing the ends of the tube, the top of the casing having vertical openings therein and the under face of the top portion having horizontal grooves communicating with the openings, insulated con-

ductors having vertical portions passing through the openings and having laterally extending portions lying within the grooves, said conductors having stripped vertical portions passing through the stoppers and extending into the fluid with their ends spaced apart, and plate-like members on the extremities of the stripped portions.

2. A safety switch device of the character described comprising a casing, a U-shaped tube located within the casing and having its bight portion resting upon the bottom thereof and having the upper ends of its arms disposed against the underside of the top, plugs fitting within and closing the ends of the tube, a mass of packing located within the casing and surrounding the tube to protect the same against jarring and to avoid looseness, a mass of mercury within the tube, and a pair of conductors entering the top of the casing between the arms of the tube, accommodated within horizontally extending grooves in the underside of the top, and extending along within the tube and terminating in spaced relation to each other.

3. A safety switch device of the character described comprising a support, an angularly shaped tube carried by the support, closure elements for the ends of the tube, conductors extending through said closure elements and terminating in spaced relation, a fluent conducting medium within the tube normally immersing the end portions of the conductors, and contact plates on the ends of the conductors spaced apart, said plates serving to dampen movement of the fluent conducting material.

In testimony whereof we affix our signatures.

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