Dec. 27, 1932. B. LARSON 1,891,993

CIRCUIT CLOSING DEVICE

Filed Dec. 9, 1931 2 Sheets-Sheet 1

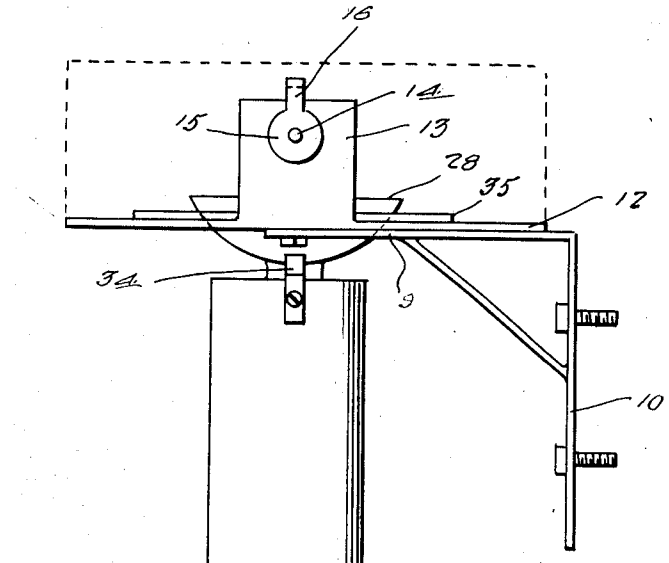


Fig. 1.

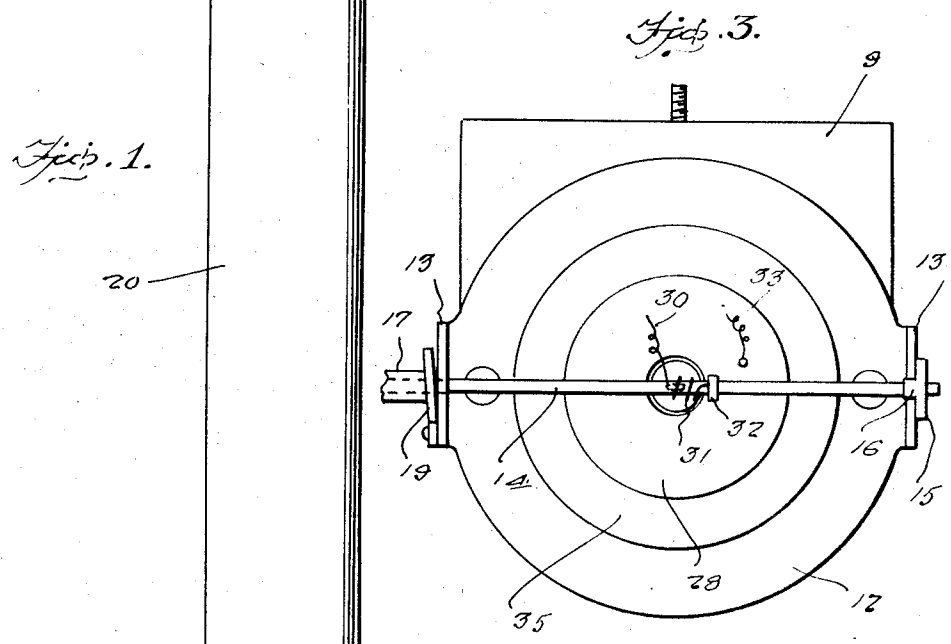


Fig. 3.

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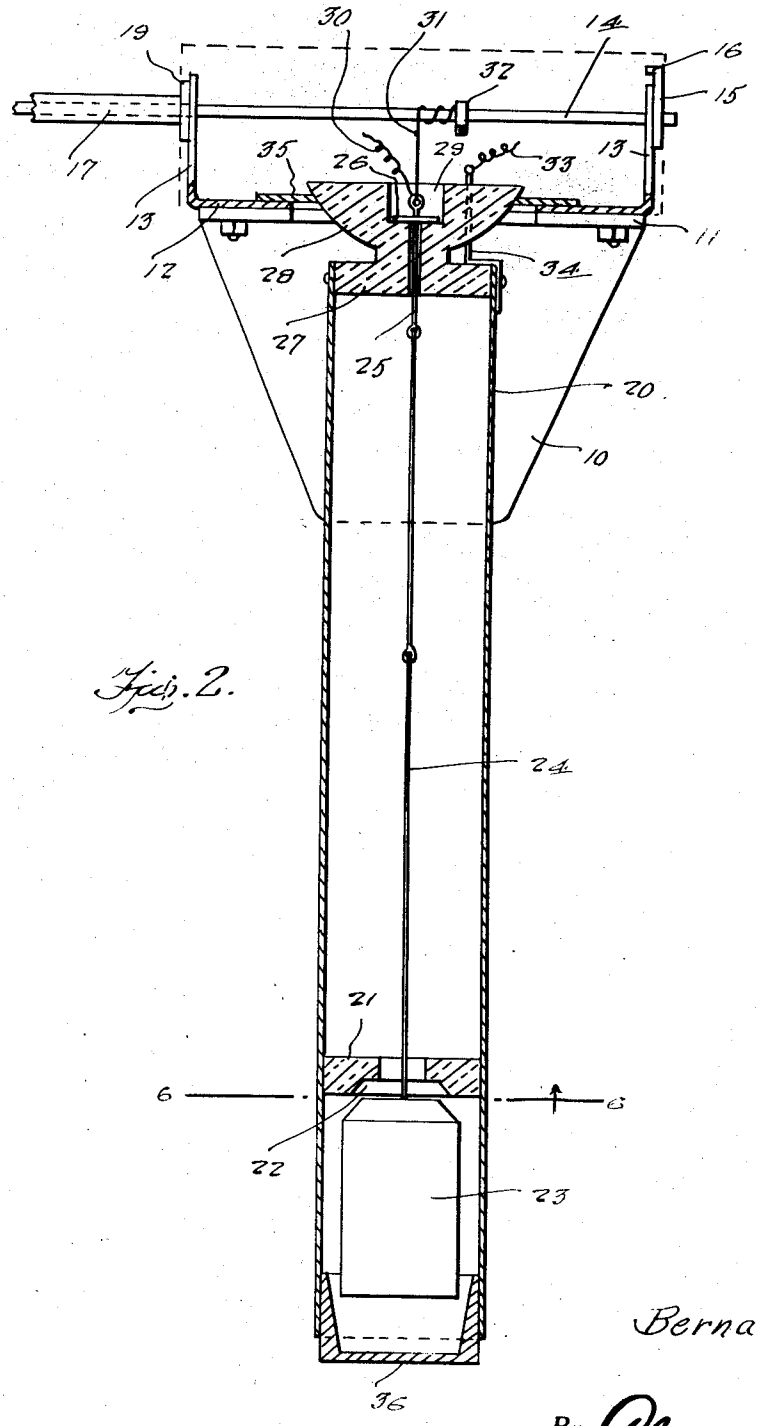


Fig. 2.

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UNITED STATES PATENT OFFICE

BERNARD LARSON, OF HAMMOND, INDIANA

CIRCUIT CLOSING DEVICE

Application filed December 9, 1931. Serial No. 579,958.

This invention relates to a novel theft alarm for use on automobiles wherein the principal novelty is predicated upon the particular construction of a feasible alarm circuit make and break device.

Broadly stated, the improved circuit make and break device is in the form of an automatically operable switch which is rendered operable by inclination of the automobile produced by stepping on either of the running boards to enter the car or jacking up the car or any other tampering with mechanism of the car such as would cause the body of the car to lean either one way or the other to a predetermined degree.

My principal aim is to provide a unique inclination alarm switch of the aforesaid type which is simple, economical, and characterized by a dependable assembly of parts calculated to promote sensitive and efficient operation.

Other features and advantages of the invention will become more readily apparent from the following description and drawings.

In the drawings:

Figure 1 is an elevational view of the details of the switch visible from the exterior.

Figure 2 is a view in section and elevation showing the internal mechanism.

Figure 3 is a top plan view of the structure seen in Figure 1.

A suitable accessible place for installation of the device is in front of the instrument board and underneath the cowl, suspended from suitable attaching means secured to the dashboard.

The attaching means comprising an angle bracket including a table portion 9 and a suitably braced attaching plate 10. The rear edge portion of the part 9 is bifurcated or notched and the furcations are denoted by the numerals 11 in Figure 2.

Bolted or otherwise secured to the furcations is a base plate 12 which is shown as of circular form, this having a centrally apertured portion in registration with the notch in the plate 9. The base 12 is provided with diametrically opposite upstanding apertured uprights 13 and 14 forming bearings for a drum shaft 14.

On one end of the shaft is a disc 15 provided with an L-shaped stop finger 16 to limit the rotation of the shaft in a winding direction whereby to provide an indicator. The shaft is extended through a protective tube 17 to the exterior of the car where it is formed with a square end portion 18 to accommodate a turning key (not shown). The key is used for setting the alarm switch.

Incidently the tube 17 is formed at its inner end with an integral retention member 19 which functions somewhat as a resilient brake. This part 19 as seen in Figure 3 is canted with respect to the longitudinal axis of the shaft 14 so that it provides a grip for frictionally engaging the shaft and holding it in a predetermined set position when the switch is not in use, that is, during normal running conditions.

The switch may be broadly referred to as a pendulous circuit make and break device. One of the principal parts thereof is a metallic open-ended cylinder 20 which as seen in Figure 3 is provided near its lower end with a partition 21 of insulation material. The partition is centrally apertured and formed with a keeper socket 22 to receive the conical upper end portion of the pendulum weight 23. This part 23 is of electricity conducting material and is suspended by a composite conductor wire 24 attached at its upper end to a stem 25 carried by a stop disc 26.

At the upper end of the cylinder is a closing plate 27, of insulation material, carrying a part spherical joint element 28. The part 28 is formed at its top with a socket 29 into which the disc 26 drops when the alarm is set for operation. The numeral 30 designates one of the circuit wires which is electrically connected with the stem 25. The numeral 31 designates a winding cord which is connected with the same stem and anchored as at 32 on the intermediate part of the shaft 24 so as to permit winding of the cord and lifting of the suspension element 24 so as to bring the upper reduced end of the pendulum into the keeper socket 22 to hold said pendulum 23 in a temporary immovable state.

This is the position of the pendulum when the switch is open during normal running conditions of the car.

The companion circuit wires denoted by the numeral 33 and this is connected to a terminal bracket 34 electrically fastened to the upper end of the cylinder 20 as seen in Figure 3. The numeral 35 designates a washer which is shiftable on the base 12 to permit the position of the switch, as a unit, to be shifted for accurate adjustment.

I have yet to mention the metallic cup 36 which is fitted telescopically into the lower end of the cylinder and which is capable of being moved in or out to regulate the degree of contact of the pendulum 23 with the wall of the cylinder 20. Incidently, it is obvious that when the pendulum 23 comes into contact with the tapered wall of the cup this momentarily closes the electric circuit. Thus the cup permits the sensitivity of the circuit closing action to be accurately adjusted.

In practice, the circuit includes a horn or other audible signal device which is sounded when the alarm switch is closed. The switch is set for operation as seen in Figure 2 at which time the disc 26 is seated in the socket 29 and the pendulum 23 disengaged from its keeper seat 22. The weight or pendulum 23 hangs in a perpendicular state unless swung from side to side by movement of the body of the car when the latter is tilted.

Any movement of the parts 20 and 23 with respect to each other to permit them to come into electrical contact obviously closes the circuit and sounds the alarm signal. As before stated, the signal may be a horn or installed as a part of the system, or the usual horn on the machine can be wired into the circuit to serve this purpose. The wires 30 and 33 may be connected with the customary battery on the car.

In order to throw the device out of use, it is necessary to attach a key to the end 18 of the shaft 14 and to turn the shaft in a direction to wind the cord 31 on the shaft 14. This lifts the suspension connection 24 and moves the tapered or conical end of the pendulum into the keeper seat 22 so as to prevent swinging of the pendulum at this time. Thus the switch can be rendered operative or inoperative at the will of the operator of the machine.

It is also evident that when the switch is set for operation and anyone steps on the running board this will close the circuit and sound the alarm. In fact, any tilting of the car caused by jacking the wheels or tampering with the engine or otherwise will bring about this result so long as the circuit switch is set for operation.

Another valuable feature of the invention to be mentioned is that when the switch is set for operation, should a tire go flat regardless of leak, puncture, or the like, the alarm will be sounded. At this time it will be observed that the function of the part-spherical joint 28 is involved, this resting on the washer 35 and shifting sufficiently to move the cylinder 20 into circuit-closing contact with the pendulum 23.

The washer 35 being free to slide due to the movement of the part-spherical joint 28 and to have said joint centrally in the hole in the washer 35 at all times. If the car were parked on a hill the switch as a unit suspended by the cord 31 would occupy a different position or location with regard to the rigidly attached table 12 which is rigidly attached to the angle bracket 10. As I specified above, the weight of the switch which is supported by cord 31 in the inoperative condition of the switch, that is, when the pendulum is up in the keeper seat, and when the switch as a unit is lowered by turning the shaft 13, it is desired not to have anything interfere with the perpendicular downward motion of the switch as a unit, and when the pendulum is down and free to swing all the weight of the switch as a unit is on the part-spherical joint 28 resting in the hole of washer 35. This makes everything rigidly attached, except pendulum 23.

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.

I claim:

1. A circuit make and break device for incorporation in an electrical theft alarm circuit of the class described comprising an elongated cylinder of electricity conducting material, a hanger therefor, a circuit wire electrically connected thereto, a pendulum in said cylinder, a flexible suspension member for said pendulum, the pendulum and suspension member being of electricity conducting material, a companion circuit wire electrically connected with said suspension member, a shaft mounted for rotation on said hanger, said shaft being constructed to accommodate a key, and a winding cord connected with the suspension member and wound on said shaft.

2. In a structure of the class described, a relatively fixed hanger, a key controlled shaft mounted for rotation in bearings in said hanger, an elongated cylinder, insulation means suspending said cylinder from the hanger, an alarm circuit wire electrically connected with the cylinder, a partition fixedly mounted in the lower portion of said cylinder having its underside recessed to form a keeper seat, a pendulum of electricity conducting material, the upper end of said pendulum being constructed to fit in said seat to render the pendulum inactive, a flexible

suspension member for the pendulum encased in said cylinder, a winding connection between said flexible connection and shaft for lifting the pendulum into its seat and retaining means for holding the shaft in a set position to maintain the pendulum in said seat, and a second circuit wire electrically connected with said pendulum suspension means.

3. In a structure of the class described, a hanger device comprising a bracket adapted to be secured to a relatively stationary part of the automobile, said bracket including a horizontal table, a base plate attached to said table and centrally apertured and having diametrically opposite uprights, said uprights being formed with bearing apertures, a horizontal shaft mounted for rotation in said bearing apertures, a disc on one end of the shaft including a stop finger co-operable with the adjacent upright, a shaft protective tube, an apertured disc carried by the inner end of the tube and attached to the remaining upright, the disc portion of the shaft extending through said tube and terminating in a key receiving end, and a pendulous circuit make and break device suspended from said base, together with an operating connection between the device and said shaft.

4. In a structure of the class described, a hanger adapted to be fixedly connected with the stationary part of an automobile, a drum shaft mounted for rotation on said hanger, retaining and stop means for said shaft, said hanger being formed with an aperture, a washer resting on the apertured portion of the hanger, a part-spherical insulation member suspended from the apertured portion of the washer and including a closing plate, said insulator being formed with a bore and a socket, a metallic cylinder connected to and depending from the insulator, an insulated partition in the lower end portion of said cylinder having a keeper seat, a disc movable in said socket, a cord connection between the disc and central portion of the shaft, said disc being constructed of electricity conducting material, a circuit wire connected to said disc, a flexible suspension member connected to and depending from said disc and constructed of electricity conducting material, a pendulum on the lower end of said suspension member, said pendulum being disposed below said partition and having its upper end constructed for reception in said keeper seat, and a second circuit wire electrically connected with the upper end portion of said cylinder.

In testimony whereof I affix my signature.

BERNARD LARSON.