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SAFETY DEVICE FOR USE BY DRIVERS OF MOTOR CARS AND THE LIKE

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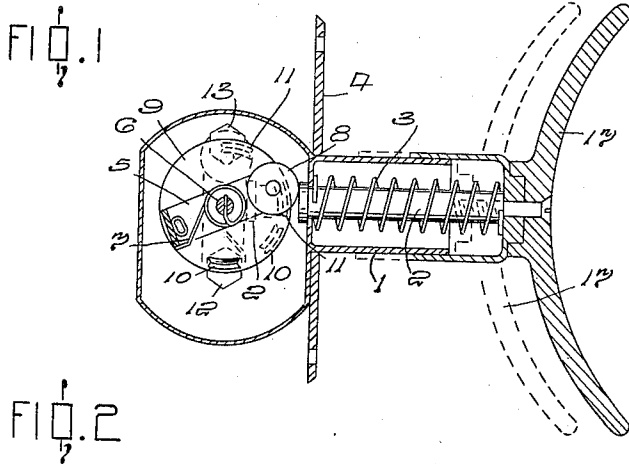


FIG. 1

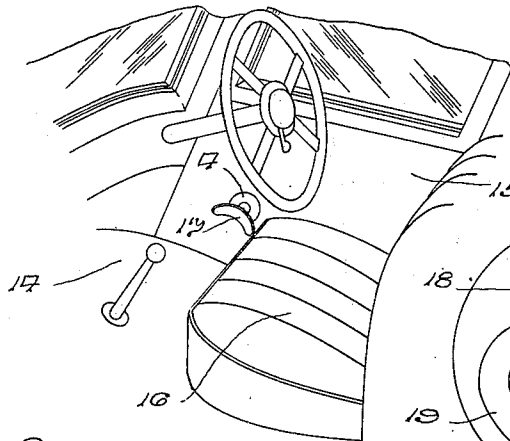
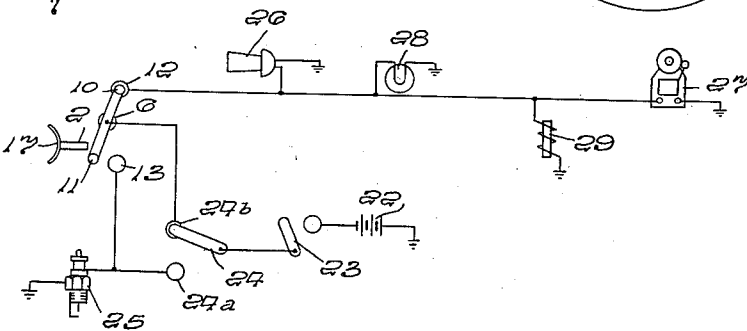
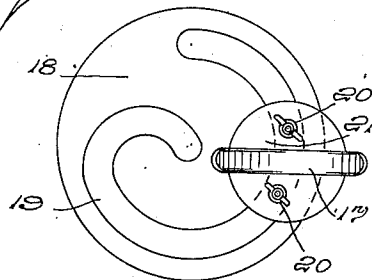


FIG. 2

FIG. 4



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SAFETY DEVICE FOR USE BY DRIVERS OF MOTOR CARS AND THE LIKE

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Continuation of application Serial No. 753,998,
November 20, 1934. This application November
4, 1936, Serial No. 109,159. In New Zealand
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3 Claims. (Cl. 180—82)

The present application is a continuation of my application Serial No. 753,998, filed November 20, 1934.

This invention relates to a safety device for motor cars and other vehicles including aeroplanes.

At the present time there is a serious danger of accident should the driver go to sleep or otherwise become unconscious while the vehicle is in motion. A tendency to fall asleep in this way being commonly experienced by those obliged to drive for long periods without rest and those suffering from high blood-pressure or certain other physical disabilities.

It is the object of the present invention however to provide a novel and simple attachment to a vehicle whereby, in the event of the muscles of the driver becoming relaxed, such vehicle will be automatically brought to a stand still, the said device under such circumstances acting also to bring into operation alarm means designed to wake the driver if asleep, means designed to restore him to consciousness if overcome by faintness or gas-poisoning, and means for warning other traffic that the vehicle is for the time being not under control.

The said device is such that it may serve as a thief-alarm in the event of an attempt being made by unauthorized persons to use the vehicle when the same is left unattended.

In carrying this object into effect the present invention consists essentially of an attachment designed for mounting upon the vehicle at a point adjacent to one side of the driver's position, such attachment including a movable member urged in one direction by a suitable spring and against the tendency of which such member is adapted to be held by a lateral pressure of the leg of the driver.

Controlled by the movements of the said member are electrical contacts certain of which, governing the ignition of the engine, cause such ignition to cease when the movable member assumes its position under action of the spring, the said movable member controlling also further contacts whereby, in this position of the member, there will be brought into operation electrical apparatus designed to arouse and restore the driver, give a warning to other traffic and apply the brakes of the vehicle.

In order that the nature of the invention and its construction may be clearly understood, it will now be fully described and explained with reference to the accompanying drawings, in which:—

Fig. 1 shows, in sectional plan-view, a device suitable for use in connection with the present invention,

Fig. 2 is a perspective sketch of a portion of the interior of a car-body, illustrating an appropriate arrangement of the said device therein,

Fig. 3 is a wiring diagram showing, by way of example, a practical arrangement of the electrical connections for carrying out the invention in conjunction with the said device, and,

Fig. 4 illustrates a method of mounting the said device in such a manner as to allow of its position being adjusted to suit the comfort or convenience of various drivers.

In the form of the device here shown there is employed a switch of a known existing type consisting of a housing 1 in which is mounted a plunger 2 normally maintained in its outward position by means of a compression-spring 3, such housing being formed or provided with a plate or disc 4 by means of which it may be mounted in position.

Withing the housing 1 is a lever 5 fulcrumed upon a stationary axis 6 and provided with a torsion-spring 7 which normally maintains such lever in the position here shown and in which a roller 8 upon one end thereof lies in contact with the inner end of the plunger 2.

Connected with the lever 5 to turn therewith about the said axis 6 is a metal disc 9 having a pair of contacts 10 and 11 each consisting of an indentation producing a corresponding projection upon the under or reverse side of such disc, while mounted at fixed positions within the housing and suitably insulated from each other and from the said axis 6 are a pair of contacts 12 and 13 which co-operate respectively with the contacts 10 and 11 of the disc.

The arrangement is such that when the plunger occupies its outward position, here shown, the contact 10 will be in electrical connection with the contact 12, while the contact 11 will be clear of its corresponding contact 13. When however the plunger is forced into its inward position, as here indicated in dotted lines, it will turn the lever, and with it the disc, into the position wherein connection between the contacts 10 and 12 is broken and connection between the contacts 11 and 13 established.

When employed for the purpose of the present invention the said device is mounted at a suitable fixed point in the vehicle, at one side of the driver's position. Thus for example as here shown, such device may be mounted in a car 14 upon the door 15 at the side of the driver's seat

16, or again, in a case such as that of an omnibus in which the driver is at a distance from the side of the vehicle, the device may be mounted by means of a suitable fitting or bracket secured in place at the required position.

In all cases however the said device will be so arranged as to allow of the plunger being maintained in its said inward position, against the tendency of its spring, by means of a lateral pressure of the driver's leg at the portion of the latter either at, above or below the knee-joint.

For this purpose the said plunger is preferably provided at its end towards the driver with a crotch 17 in which the desired portion of the leg may be comfortably and securely received.

If desired for the purpose of enabling its position to be adjusted to suit the comfort or convenience of various drivers, the device may be mounted, as shown in Fig. 4, by means of a plate 18 designed for attachment to the door 15 or other desired object, such plate having a slot 19 of any appropriate shape and capable of freely admitting the plunger 2 and the portion of the housing through which the latter extends, while the aforementioned plate 4 is arranged to bear against the rear side of the plate 18 and is clamped in position by means of thumb-screws or the like 20 also extending through the slot 19 and connecting with a further plate 21 adapted to bear against the front or forward side of the plate 18. The arrangement is such therefore that by slackening the screws 20 the device may be slid to any desired position within the length of the slot 19.

Referring now to Fig. 3. Current from a suitable source 22, which may be the battery for the electrical system of the car and supplied through the ordinary key-switch 23, is connected with a two-way switch 24 which in one position, as 24a, completes the ordinary connection of the engine ignition system 25, while in its other position, as 24b, such switch connects the source with the aforementioned axis 6 and through the latter with the disc 9 and its contacts 10 and 11.

The stationary contact 13 is connected with the ignition system 25, while the other stationary contact 12 is connected with suitable alarm and warning means, such for instance as a horn 26, a bell or buzzer 27 arranged within the vehicle and lamps 28 arranged some within and others at the exterior of the vehicle such externally arranged lamps being preferably adapted to show a red light.

Also connected with the stationary contact 12 is a solenoid 29, or an electric motor, adapted when energized to apply the brakes of the vehicle.

In operation, the switch 24 may be placed in the position 24a and in which the ignition system 25 will be in normal condition so that on closing the key-switch 23 the engine may be started and the vehicle driven in the ordinary manner without the use of the present invention which in this position of the switch 24 will be inoperative.

When the device is to be brought into use, the switch 24 will be placed in the position 24b and the plunger will be moved against the tendency of its spring 3 to its inward position and held in such position by a lateral pressure of the driver's leg.

In this condition the contacts 11 and 13 will be in electrical connection thereby completing the circuit between the source of supply 22 and the ignition system 25, as required to maintain the running of the engine since, in this position of

the switch 24 the normal connection of such circuit is broken.

In this condition also the contacts 10 and 12 lie apart and consequently the aforementioned alarm, warning and other means connected to the contact 12 are disconnected with the source 22 and therefore inoperative.

In the event of the lateral pressure of the leg against the plunger being relaxed however, as would occur should the driver fall asleep or become unconscious, the plunger will immediately return, under action of its spring 3, to its outward position, thereby breaking the connection between the contacts 11 and 13 and so causing the ignition to cease, while at the same time connection will be established between the contacts 10 and 12 thereby bringing into operation the various means connected with such contact 12 for arousing and restoring the driver to consciousness and for applying the brakes and so bringing the vehicle to a standstill.

In cases where the invention is applied to an aeroplane the arrangement will be modified to the extent that the contacts 11 and 13 and the brake-applying means 29 will be omitted, the device being arranged simply to control the alarm, warning and restoring means, without interference with the running of the engine or other functions necessary to maintain flight.

In practice, in order to ensure releasing of the plunger when the muscles of the leg become relaxed, the springs of the seat 16 at the side thereof adjacent to the device, are preferably made slightly higher and stronger than the remainder.

It will be seen that if the vehicle is left unattended with the switch 24 in the position 24b, the closing of the key-switch 23 in an attempt to start the engine will bring into operation the various said alarm and warning means and thus attracting the attention of those who may be within hearing of such means and so leading to the detection in the event of such attempt being made by a thief or other person unauthorized to use the vehicle. It will be appreciated also that under the conditions thus provided starting of the engine will be impossible since the ignition circuit will be incomplete.

The foregoing description of the construction of the device is given merely to illustrate a practical embodiment of the invention, but, obviously, the said purpose may be achieved by various other forms or modifications of the construction. For instance the form of the contacts and the means whereby the movements of a plunger serves to connect and disconnect such contacts may be varied and similarly, in lieu of a plunger there may be employed a lever or other member designed to be moved in one direction by a spring and in the other direction by the lateral pressure of the driver's leg and in response to such movements to open and close contacts as explained.

Again, in lieu of the said contacts arranged to open the ignition circuit in response to the movement of the movable member under action of its spring, this movement may be arranged to close contacts whereby the spark-plugs, or other suitable portion of the ignition system is short-circuited, thereby causing the engine to cease functioning.

It must be clearly understood therefore that any and all of such forms or modifications of construction come within the scope of the present invention.

I claim:

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1. In a motor vehicle driven by an internal combustion engine and provided with electrically operated ignition means and a battery, a steering wheel for the vehicle, an operator's seat arranged adjacent to the steering wheel, an electric circuit in which the battery and ignition means are interposed, a leg-operated switch interposed in the circuit for maintaining the circuit in closed condition when the motor vehicle is in operation, said switch being arranged in the vehicle to one side of the steering wheel and adjacent to the seat so that it may be actuated by the leg of an operator of the vehicle, an auxiliary circuit connected to the battery and switch, electrically operated means interposed in the auxiliary circuit and adapted to be energized when the switch is in position to open the ignition circuit, a spring for normally maintaining said switch in the position in which the ignition circuit is open, and a master switch for controlling both circuits.

2. In a motor vehicle driven by an internal combustion engine and provided with electrically operated ignition means and a battery, a steering wheel for the vehicle, an operator's seat arranged adjacent to the steering wheel, an electric circuit in which the battery and ignition means are interposed, a leg-operated switch interposed in the circuit for maintaining the circuit in closed condition when the motor vehicle is in operation, said switch being arranged in the vehicle to one side of the steering wheel and adjacent to the seat so that it may be actuated by the leg of an

operator of the vehicle, an auxiliary circuit connected to the battery and switch, electrically operated means interposed in the auxiliary circuit and adapted to be energized when the switch is in position to open the ignition circuit, a spring for normally maintaining said switch in the position in which the ignition circuit is open, a master switch for controlling both circuits, and an auxiliary switch positioned in the first-mentioned circuit for connecting or disconnecting the auxiliary circuit from the battery.

3. In a motor vehicle having an internal combustion engine provided with electrically operated ignition means and a battery, a main circuit in which the battery and ignition means are interposed, a master switch interposed in said circuit, an auxiliary circuit electrically connected to the battery, an auxiliary switch for interchangeably connecting the battery to the ignition means or the auxiliary circuit, a steering wheel for the vehicle, an operator's seat arranged adjacent to the steering wheel, a switch arranged in the vehicle to one side of the steering wheel and adjacent to the seat whereby the last-mentioned switch may be controlled by the leg of the operator, said last-mentioned switch being operatively connected to both circuits for opening the auxiliary circuit when the main circuit is closed, and closing the auxiliary circuit when the main circuit is open, and electrically operated elements interposed in said auxiliary circuit.

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