

Aug. 5, 1941.

H. R. A. GOLEBY

2,251,735

THEFT PREVENTION APPARATUS

Filed Aug. 12, 1939

2 Sheets-Sheet 1

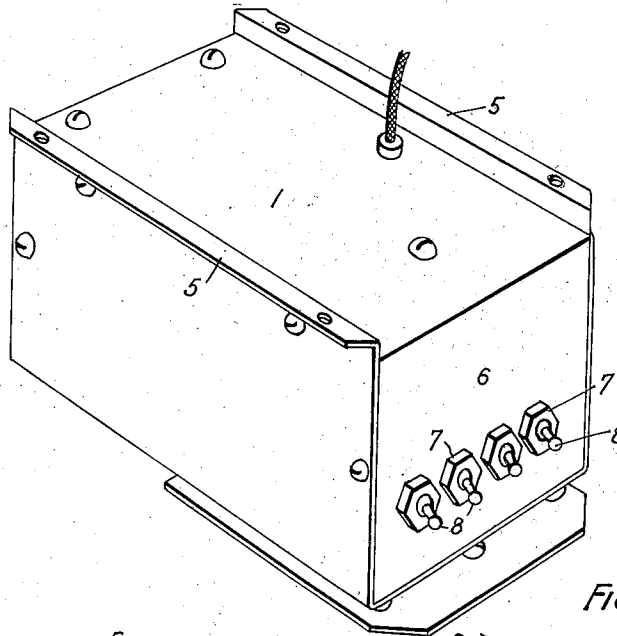


Fig. 1.

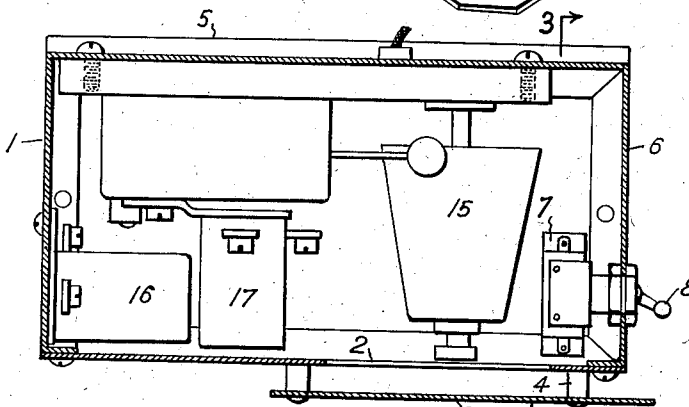


Fig. 2.

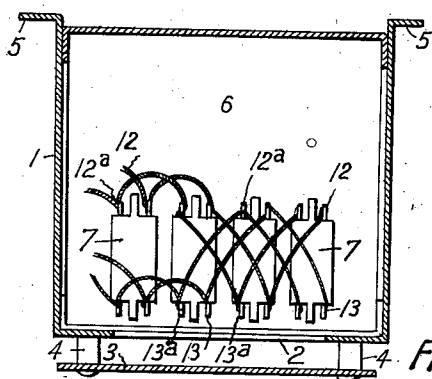


Fig. 3.

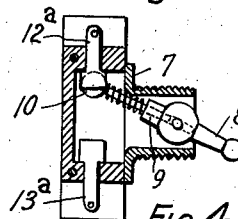


Fig. 4.

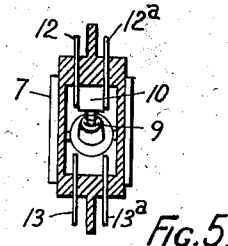


Fig. 5.

Hance Robert Arthur Goleby  
INVENTOR  
By *O. H. Hume*  
his Att'y.

Aug. 5, 1941.

H. R. A. GOLEBY

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2 Sheets-Sheet 2

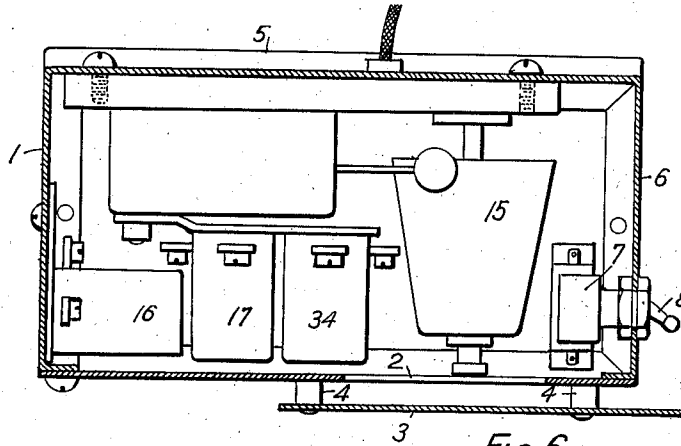


FIG. 6.

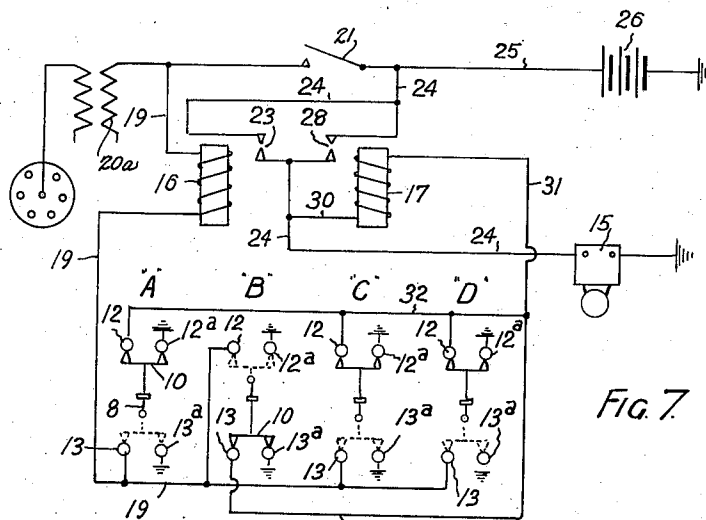


FIG. 7.

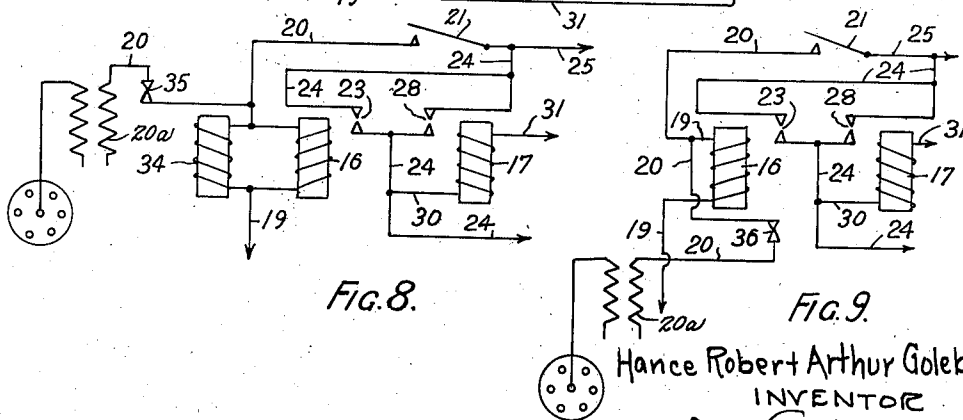


FIG. 8.

FIG. 9.

Hance Robert Arthur Goleby  
INVENTOR

By *Otto Munk*  
his ATTORNEY.

## UNITED STATES PATENT OFFICE

2,251,735

## THEFT PREVENTION APPARATUS

Hance Robert Arthur Goleby, Ashfield, near  
Sydney, New South Wales, Australia

Application August 12, 1939, Serial No. 289,834  
In Australia March 17, 1939

3 Claims. (Cl. 177—314)

This invention relates to improved means which when used on motor-road vehicles are adapted to ensure against surreptitious interference therewith.

One of the objects of the invention is to provide audible means which are electrically operated to give indication when such interference has been made.

Another object of the invention is to provide electrically operated means which are associated with the said audible means which are adapted to prevent unauthorised persons setting the vehicles in motion for the purpose of stealing same.

A further object of the invention is to provide simple and cheap means which are readily manufactured and installed in vehicles, and when in use are very effective for the purposes for which they are intended, without any likelihood of their getting out of order while in use.

A still further object of the invention is to provide special combinations of switches which are known to the lawful drivers or owners of the vehicles and which may be manipulated by them for the purpose of properly setting the means for effective operation when the vehicles are standing or when they are in motion. The said combinations are distinguishable to said lawful drivers or owners by the setting of the bearing means for the movable contacts of the said switches in relation to fixed contacts.

The said means comprise a carrier which may consist of a switch-box having associated therewith a plurality of two-way switches which have movable contact bearing means adapted to be positioned in a manner to give visual indication of the setting thereof in relation to two spaced sets or series of fixed spaced pair contacts. Also associated with the carrier are a bell which is grounded and at least a pair of relays and a pair of spring controlled contacts which are associated with each of said relays. Electric current circuit wiring connections are provided between a source of current carried on the vehicle, the engine ignition switch and engine ignition coil, the said relays and associated spring controlled contacts, the said bell, and one series of the said fixed contacts of the separate pairs thereof for all said switches, the other series of fixed contacts of which are grounded.

Said circuit wiring is such that when one or more of the said movable contact means of one of said switches is set in one position in relation to one or more pairs of its fixed contacts and the movable contact means of the other of said switches are respectively set in position in rela-

tion to the opposite pair or pairs of their said contacts and the ignition switch is closed current will not be passed to operate the bell to give an audible signal; but when all said movable contacts are moved to contact with all their respective aligned fixed contacts of all said switches and the said ignition switch is opened and subsequently closed, or if it is then subsequently opened, current will be passed to operate the said bell to give an audible signal.

When the said circuit is to have associated therewith means to prevent unauthorized persons setting the vehicles in motion, the portion of the said circuit leading to the ignition coil of the engine is provided with a pair of spring controlled contacts which are opened upon energisation of the relays, the current circuit of the means being thus broken to prevent current from being transmitted from the source of current to the ignition coil of the engine for operation of the vehicle upon which the means are used.

Stoppage of the alarm bell of the means can be readily effected by the lawful driver or owner of the vehicle when required by manipulating the bearing means for the movable contacts of the switches, and re-establishment of the said means for driving purposes can also be readily effected by him when required by manipulating said bearing means.

In order that the invention may be better understood and carried into effect the same by way of certain examples will now be more particularly described with reference to the accompanying drawings, in which: Fig. 1 is a perspective view of a switch box which may be used in connection with the invention and certain of the appurtenances associated therewith; Fig. 2 is a longitudinal sectional elevation of the switch box; Fig. 3 is a sectional elevation on line 3—3 of Fig. 2; Figs. 4 and 5 respectively are sectional detail views of a known two-way switch; Fig. 6 is a similar view to that of Fig. 2 but in which three relays are shown instead of two; Fig. 7 is a diagrammatic view of a wiring system for the means shown in Figs. 1 to 5; Fig. 8 is a part diagrammatic view of a wiring system when three relays are used as in the means shown in Fig. 6; and Fig. 9 is a part diagrammatic view of a modified system of wiring but in which only two relays are employed.

Referring to the means shown in Figs. 1 to 5, the switch box may consist of a rectangular casing 1 of metal or other suitable material which has an opening 2 in its bottom (Figs. 2 and 3) and a baffle plate 3 of metal or other appropriate

material below such opening but spaced therefrom by distance pieces 4 of metal or other suitable material. The opening 2 permits the emission of sound from the casing 1. Casing 1 may have flanges 5 to enable it to be appropriately secured to the instrument panel of a motor-road vehicle or in any other convenient position thereof within easy reach of the driver. In one of the end walls 6 of the casing 1 are openings to receive a plurality of spaced manually operable "two-way" switches 7 of any suitable design; these for instance may be of the tumbler type as shown in Figs. 4 and 5, or they may be of the snap or press button type. It is necessary in all cases, however, whichever type of switch is used that it be of the "two-way" type.

In Figs. 4 and 5 by way of example the switches 7 are shown with a tumbler lever 8 which has a telescopic spring controlled arm 9 having on its inner end a contact 10. Switches 7 are of well known type. Contact 10 is adapted to bridge two sets of oppositely disposed fixed contacts 12, 12a and 13, 13a respectively. For convenience, the plurality of switches 7 may be arranged horizontally in the end wall 6 of the casing 1; they may, however, be otherwise arranged thereon. The switches 7 are wired together in such manner to provide special combinations thereof, such combinations being distinguished for view say by the positioning of the levers 8, whereby one or more of them may point upwardly or downwardly. In the case of press buttons, their view distinguishing, may be by any one or more of them projecting from their base; or in the case of snap switches, by the arrangement either horizontally or vertically of their turning knobs or handles. Within the casing 1 is an electrically operated alarm bell 15 and a pair of relays 16 and 17.

As an example of one of said combinations in which four tumbler switches 7 are used, reference by way of explanation and illustration will now be made to Fig. 7 of the drawings. In such figure, the said four switches have been designated respectively A, B, C and D, and said figure shows the wiring thereof with the relays 16 and 17, bell 15, and the energy circuit of the ignition coil of the engine of the motor-road vehicle. It will be seen that one of the levers 8 of one of said switches B points upwardly, while the respective levers 8 of the other switches A, C and D point downwardly, and that the contacts 13a of the switches A, B, C and D are connected to ground, while the contacts 13 of the switches A, C and D are connected to a lead 19 one end of which is connected to the engine ignition lead 20 at a point between the ignition switch 21 and the engine ignition coil 20a. Lead 19 is also shunt connected to contact 12 of switch B. Also in the lead 19 is the relay 16. There is also a pair of spring controlled contacts 23 in a shunt lead 24 which at one end is connected to the lead 25 which connects source of energy, say an accumulator 26, to the ignition switch 21.

In parallel with the contacts 23 is another pair of spring controlled contacts 28 which are associated with another relay 17 which is connected to the shunt lead 24 by lead 30 and also to a lead 31, one end of which is connected to the contact 13 of the switch B. Across from the lead 31 is a lead 32 to which are connected the respective contacts 12 of the respective switches A, C and D. The electrically operated alarm bell 15 is in the shunt lead 24 and it is connected to ground also.

In operation, while the driver of the motor-

road vehicle to which said means are attached is driving said vehicle, assuming that the above described switch wiring combination is used, the levers 8 of the switches A, C and D will be positioned to point downwardly to have the contacts 12 and 12a of such switches bridged by the respective contacts 10 of said levers; the lever 8 of the switch B on the other hand is positioned to point upwardly to have the contacts 13, 13a thereof bridged by the contact 10 of the lever 8 of the switch B. The driver on stopping his vehicle and wishing to alight therefrom can then open the ignition switch 21, and on leaving the vehicle he can move the lever 8 of switch B into the downwardly pointing position thereof, thereby breaking the ground connection of lead 31 through the contact 10 of the switch B, and simultaneously bridging the contacts 12 and 12a of the switch B.

Should any unauthorized person then enter the vehicle and close the ignition switch 21, the alarm bell 15 will be operated, as current will pass from the accumulator 26, to lead 25, switch 21, lead 19, relay 16, contacts 12 and 12a of switch B to ground. Relay 16 being energised, the spring controlled contacts 23 are thus closed, and current will pass through the shunt lead 24 to the alarm bell 15 and thence to ground of said bell. Simultaneously, the spring controlled contacts 28 are closed through relay 17 becoming energised by current passing from the shunt lead 24 to lead 30; the current from relay 17 passes to leads 31 and 32 to the contacts 12 and 12a of switches A, C and D to ground of contacts 12a of said switches. If the unauthorized person after closing the ignition switch 21 opens same, the relay 16 will become de-energised; but the alarm bell 15 will continue to ring, as current will continue to pass from the shunt lead 24 through the closed spring controlled contacts 28, lead 30, and relay 17, to the bell 15 and its ground connection.

To stop the alarm bell 15, the driver of the vehicle need only pull the levers 8 of switches A, C and D upwardly, whereby the contacts 12 and 12a of such switches are opened through the respective contacts 10 being made to contact with the respective contacts 13 and 13a of said switches; the ground circuit of relay 17 is thus broken and through contacts 28 becoming open through the de-energisation of relay 17, the circuit of the bell 15 is broken and it ceases to operate to give an audible signal.

To re-establish the circuit for running conditions of the vehicle, the driver thereof, knowing the combination of the means above described, can place the levers 8 of switches A, C and D into their downwardly pointing position thereby bridging the contacts 12 and 12a of such switches. Then the driver pulls the lever 8 of switch B into the upwardly pointing position thereof whereby the contacts 13 and 13a thereof are bridged. On closing the ignition switch 21 the relays 16 and 17 cannot become energised, as the lead 19 in which is the relay 16 is on open circuit through the contacts 12 and 12a of switch B being open, and the alarm bell 15 will not be operated.

Referring to the modified means shown in Figs. 6 and 8 in which a third relay 34 is employed within the casing 1, the circuit arrangement for such means has therein the relay 34 in parallel with relay 16, the relay 34 being adapted to control spring controlled contacts 35 which are in-

serted in the circuit 20 leading to the ignition coil 20a of the engine of the vehicle.

The operation of the said modified means is identical with that above described for the operation of the means shown in Figs. 1 to 5, with the exception, however, that when the relay 16 is energised, the relay 34 is simultaneously energised with the result that the circuit 20 to the ignition coil of the engine is broken at the contact points 35. Therefore, if an unauthorised person enters the vehicle with a view to starting and driving same and closes the ignition switch 21, the spring controlled contacts 35 are opened, and consequently current cannot be passed to the ignition coil of the engine of the vehicle and the latter cannot be set in motion.

Instead of utilizing the third relay 34, the two relays 16 and 17 may be used, but arranged in a circuit as shown in Fig. 9. In such figure the relay 16 is adapted to operate additional contacts 36 which are located in the circuit 20 of the ignition coil 20a of the engine. On the relay 16 being energised, the contacts 23 are closed as above described in reference to Figs. 1 to 5; but the contacts 36 are simultaneously opened, with the result that the circuit 20 is broken, and no current can be transferred to the ignition coil of the engine from the accumulator 26, and consequently the vehicle cannot be set in motion.

It will be understood that the examples given above for providing one combination of switches 7 according to the invention may be varied to provide other combinations of switches 7, which other combinations will be readily perceived by persons acquainted with the art from the description given above with the aid of the accompanying drawings and that the invention is not to be considered as being limited to such examples.

What I claim as my invention and desire to secure by Letters Patent is:

1. A theft prevention apparatus for automobiles including a battery, an ignition circuit connecting said battery with an ignition coil, and an ignition switch in said ignition circuit, said apparatus comprising a first electric circuit having one terminal connected in said ignition circuit between said ignition switch and ignition coil, said first circuit comprising a first relay and a first series of contact pairs, said contact pairs being arranged in shunt with each other, a second circuit through an electrically operated alarm device, said second circuit having one terminal connected to said ignition circuit between said ignition switch and battery and including a first normally open contact controlled by said

first relay, a third circuit having one terminal connected in said second circuit between said first normally open contact and said alarm device, said third circuit including a second relay and a second series of contact pairs, the latter being arranged in shunt with each other, a lead to short-circuit said first normally open contact, said lead containing a second normally open contact controlled by said second relay, and a number of two-way switches each adapted to bridge in one end position thereof a contact pair of said first series and to close in its opposite end position a contact pair of said second series.

2. A theft prevention apparatus, as claimed in claim 4, including a normally closed contact in said ignition circuit between the point where said first circuit is connected into the ignition circuit and the ignition coil, said contact being adapted to open upon flow of current in said first circuit.

3. A theft prevention apparatus for automobiles including a battery, an ignition circuit connecting said battery with an ignition coil, and an ignition switch in said ignition circuit, said apparatus comprising two parallel rows of fixed contact pairs each pair having a grounded contact and a free contact, each contact pair of one row being disposed opposite one contact pair of the other row and forming a contact group therewith, a series of two way switches, each thereof being associated with one of said contact groups and adapted to bridge alternatively one or the other of the two contact pairs of said group, means on each of said two way switches to visibly indicate its position relative to its associated contact pairs, a grounded alarm device, a pair of relays, and two normally open contacts controlled by said relays, respectively, one of said relays being electrically connected in series with the battery, the ignition switch and one free contact in each of said groups, some of said free contacts connected with said first relay being disposed in one of said rows of contact pairs, and at least one of said free contacts connected with said first relay being disposed in the other row of contact pairs, both said normally open contacts being connected with said battery in parallel with said ignition switch and with one another, said second relay being electrically connected in series with both said normally open contacts and with the remaining active contact of each contact group, and said alarm device being electrically connected in series with both said normally open contacts and in shunt with said second relay.

HANCE ROBERT ARTHUR GOLEBY.