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11 Publication number: **0 598 345 A1**

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EUROPEAN PATENT APPLICATION

21 Application number: **93118302.4**

51 Int. Cl.⁵: **G08C 23/00, B60R 25/00**

22 Date of filing: **11.11.93**

30 Priority: **16.11.92 IT MI922611**

43 Date of publication of application:
25.05.94 Bulletin 94/21

84 Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL PT SE

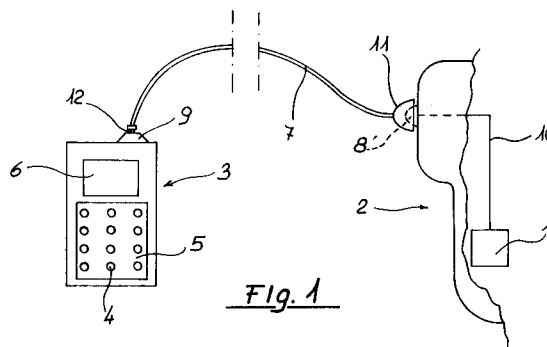
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54 **A system to communicate with an electronic vehicle anti-theft device.**

57 A controller (3) of the functioning of an electronic antitheft device bears an external LED (9) connected to its micro-processor (μ PT_x) and the central unit (1) of said device, installed on board the vehicle, bears an LED (8) also connected to its micro-processor (μ PR_x), that is accessible from the vehicle's cabin; the two LEDs (8, 9) are interfaced by means of an optical fibre cable (7) that bears at each end a connecting and interfacing means (11, 12) with one of the said LEDs (8, 9).



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The present invention concerns a system to communicate with an electronic vehicle antitheft device. More particularly, the system serves the purpose of performing a diagnosis of the functioning or to modify the original functioning parameters of an electronic antitheft device in which both the central unit installed on board the vehicle and the remote control are fitted with at least one LED, the central unit one LED that shows that the device is activated and/or shows that the device is under diagnosis, and the remote control at least one LED that confirms to the user that the finger pressure applied is followed by the emittance of a signal or that the remote control is receiving signals from the central unit. Communication with said central unit and/or remote control is performed by means of a conventional control apparatus.

For linguistic simplicity purposes the electronic antitheft device and the central unit of the electronic device will henceforth respectively be termed -antitheft- and -central unit- and the control apparatus will be termed -controller-.

Currently when an installer of said antitheft device must perform one or both the above mentioned operations (control the functioning and modify parameters) it is necessary to materially access the electronics of the central unit installed on board and sometimes to that of the remote control, connect the controller terminals to the central unit and/or remote control, activate necessary controls and, in some cases, close the central unit box.

The disadvantage of the above described procedure lies in its involving a lot of time.

The present invention avoids the above disadvantage.

The invention is based on LEDs well known feature of converting a light emission striking it into an electric signal and viceversa. Hence, an LED connected to a micro-processor of an antitheft central unit may be interfaced by means of optical fibres with an LED connected to the micro-processor of a controller, in order that conveniently encoded electric signals that an operator has made the controller emit are received by the micro-processor of the central unit so as to communicate with it, in general, but especially to carry out a diagnosis of the functioning of the same central unit or to modify its functioning conditions.

A preferred embodiment of the invention is supplied below with reference to attached drawings in which

FIG. 1 is a diagrammatic view of the connections, and

FIG. 2 is a functional diagram.

FIG. 1 illustrates a central unit 1 installed under dash-board 2 of a vehicle, a conventional controller 3 suited to checking said central unit 1 when an operator acts on keys 4 of keyboard 5 of said

controller (6 indicates the controller's display) and an optical fibre cable 7. Both the central unit 1 and the controller 3 have an LED, respectively 8 and 9, connected to respective micro-processors, not shown; LED 8 appears on dash-board 2, and is connected to central unit 1 by means of conductor 10 and appears as a conventional LED signalling antitheft activated, that is as a body with a convex surface, while LED 9 bears a cavity on its external top suited to receiving a connection plug. The optical fibre cable 7 at one end bears a rubber vent 11 that can be applied to LED 8 of the central unit and at the other end a plug 12 that can be fitted into the said cavity in LED 9 of controller 3.

The advantage of this system is that, by means of this optical fibre 7 connection, it is possible to quickly and easily operate a communication between central unit 1 and controller 3 by means of a data transmission protocol included in the micro-processors of central unit 1 and controller 3.

FIG. 2 is self-explanatory. The assembly "central unit 1 - controller 3" interfaced by means of an optical fibre conductor 7 is shown in the transmission conditions indicated by arrow F, that is "controller → central unit" (this is a HALF-DUPLEX transmission): the microprocessor μPR_x of central unit 1 acts as a receiver of signals emitted by the controller, it is associated to LED 8 and to an EEPROM memory containing functioning data and parameters; the microprocessor μPT_x of controller 3 acts as a transmitter of the signals input by the operator by means of keyboard 5, and associated to LED 9 and to an EEPROM memory containing functioning data and parameters; the two LEDs are interfaced by means of the optical fibre cable 7 as explained with reference to FIG. 1.

The diagram of the central unit 1 and LED 8 can be reviewed as a diagram and LED of the antitheft's remote control that leads to how the system described also allows to communicate with the remote control of an electronic antitheft device for vehicles.

Claims

1. A system to communicate with an electronic antitheft device for vehicles comprising a central unit (1) installed on board the vehicle and holding at least one LED (8) connected to its micro-processor (μPR_x) and accessible from the vehicles cabin, a remote control held by the user holding at least one external LED connected to its microprocessor, and one controller (3) suited to checking said central unit and remote control and holding at least one external LED (9) connected to its micro-processor (μPT_x), characterized in that said controller (3) is interfaced to said central unit (1)

and with said remote control by means of an optical fibre cable (7) that bears at its ends suitable means to be applied, respectively, to LED (9) of the controller and to LED (8) of the central unit or remote control.

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2. System according to claim 1 characterized in that each end of said optical fibre cable (7) bears a vent (11) that can be forced onto and remain applied to one of said LEDs (8,9).
3. System according to claim 1 characterized in that one of the ends of said optical fibre cable (7) bears a plug (12) suited to being forced into a cavity in one of said LEDs (9) and the other end bears said vent (11).
4. System according to claim 1 characterized in that both ends of said optical fibre cable (7) bear a plug (12) suited to being forced into the corresponding cavity in one of the said corresponding LEDs (8,9).

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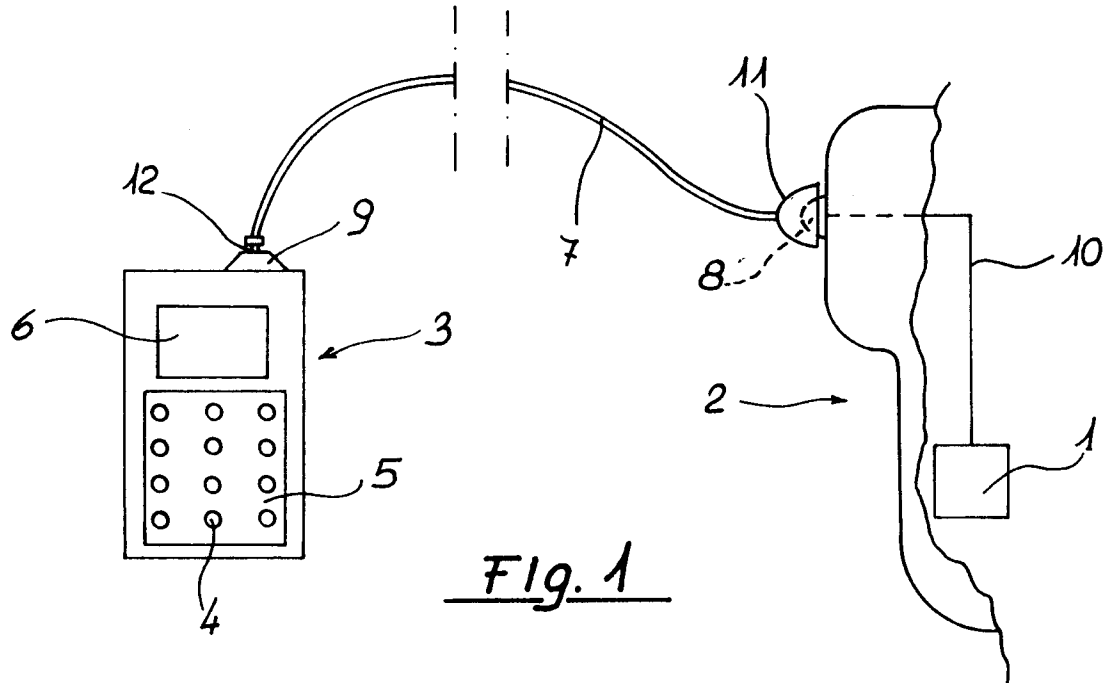


Fig. 1

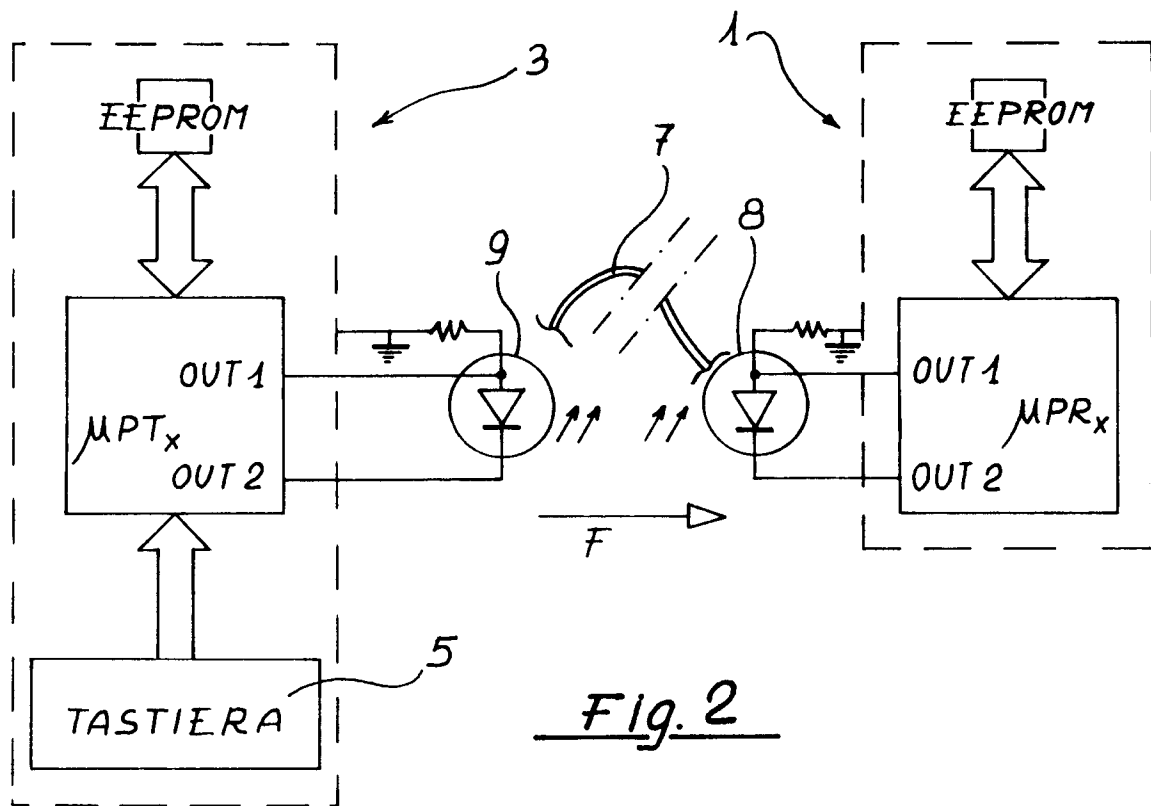


Fig. 2



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Y	IBM TECHNICAL DISCLOSURE BULLETIN. vol. 29, no. 2 , 2 July 1986 , NEW YORK US pages 809 - 810 'USING FIBER OPTICS TO ATTACH DIAGNOSTIC EQUIPMENT TO AUTOMOBILE ELECTRONICS' * the whole document * ---	1-4	G08C23/00 B60R25/00
Y	EP-A-0 113 383 (FRIEDRICH WILH. SCHWING GMBH) * page 8, line 1 - line 5; figure 1 * ---	1-4	TECHNICAL FIELDS SEARCHED (Int.Cl.5) G08C B60R
A	CA-A-1 170 723 (UNITED-CARR DIVISION OF TWR CANADA LTD.) * page 2, line 5 - line 12 * * page 3, line 1 - line 27 * -----	1-4	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 1 March 1994	Examiner Reekmans, M
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	