(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
29 December 2005 (29.12.2005)

PCT

(10) International Publication Number
WO 2005/123481 A1

(51) International Patent Classification[7]: B62D 1/04, 1/10, B60K 35/00, 31/18

(21) International Application Number: PCT/NO2005/000206

(22) International Filing Date: 13 June 2005 (13.06.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
20042560 18 June 2004 (18.06.2004) NO

(71) Applicant *(for all designated States except US)*: **MODUL-PRODUKTER AS** [NO/NO]; Jonas Liesvei 62, N-5053 Bergen (NO).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **MAGNUSSEN, Per** [NO/NO]; Modulprodukter AS, Jonas Liesvei 62, N-5053 Bergen (NO).

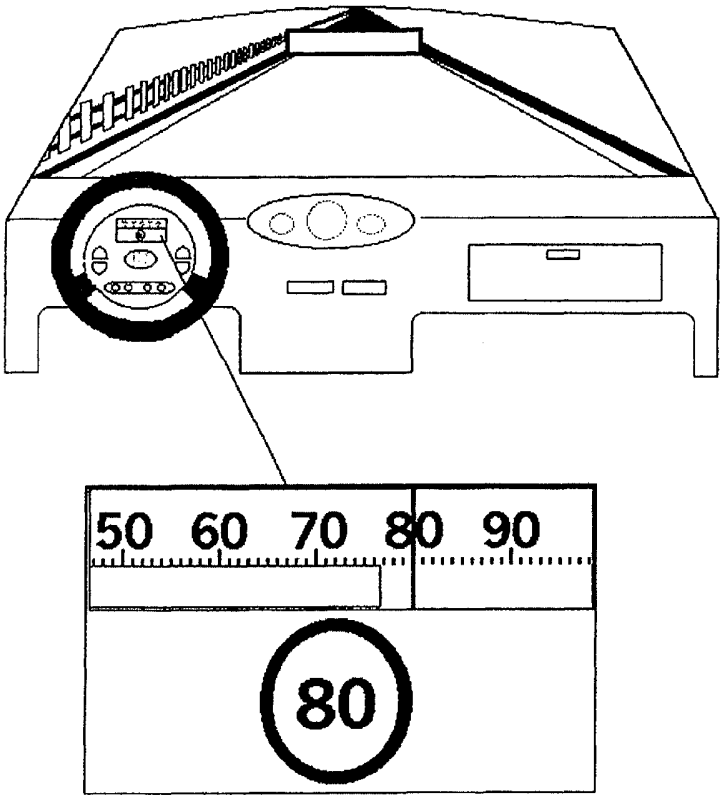
(74) Agent: **ACTIO LASSEN AS**; P.O. Box 1880 Nordnes, N-5817 Bergen (NO).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: DEVICE FOR CONTROL OF ONE OR MORE SYSTEMS IN A VEHICLE



(57) Abstract: The invention concerns a device for control of one or more systems in a vehicle, where a control panel is arranged in the steering wheel and in a stationary position in respect to the dashboard.

WO 2005/123481 A1

European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

— *with international search report*

DEVICE FOR CONTROL OF ONE OR MORE SYSTEMS IN A VEHICLE

The present invention concerns a device for control of one or more systems in a vehicle, comprising a control panel for control and programming of the systems.

A considerable amount of accidents which happen on the road are caused by drivers being distracted and that the speed limit is exceeded. Those causes combined often make that the speed limit is exceeded unconsciously, that is, without the driver noticing it. When an emergency situation suddenly arises, it is often too late to react adequately, amongst others because of the high speed.

It can be distracting for a driver having to look at the speed indicator all the time, e.g. when the traffic situations do not comply with the maximum speed that feels natural. With that, the speed limit which feels right for the driver on a stretch of road is meant. One of the causes that the speed limit does not feel right, and is therefore exceeded unconsciously, can be speed blindness.

Another reason that accidents can have more serious consequences than necessary is for example that the driver forgets to put on his seatbelt, or that the mirrors are adjusted while driving, with which the concentration is decreased.

Further, it also happens that accidents which have a technical background happen, with cars involved. It is important with a periodical safety check, where e.g. the profile depth in the tyres, the pressure in the tyres, the lights, and the like, are checked. Not everyone remembers those periodic safety controls, and thus one can end up in a situation where one loses road holding, where others do not see that you are braking, and similar kind of situations.

In respect to the speed limits, solutions are known which enable the driver to set a maximum speed for the car, e.g. by means of cruise control in a car. One disadvantage with most known solutions is that there is no easy communication between such devices and the driver.

There are also known numerous solutions to make the car driver aware of the speed limit, where the speed limit can be set in a system, either manually or via impulses and signals from outside the car, and where the car driver is notified when the speed limit is exceeded.

Known solutions are amongst others described in US 4,839,749, FI 110551B, US 6,037,862, US 6,603,393B2. Problems with these solutions are that they are often impractical in operation, by that the operation buttons/panels should be mounted in poorly accessible places.

Solutions are known where buttons or controls are arranged on the steering wheel, so that one can e.g. use them by using one's thumb, both on the right side and on the left side. However, it is a disadvantage that one loses contact with the buttons when the steering wheel is rotated, because the buttons will move with the rotation of the wheel. Because of this the car driver will perhaps lower his view in a turn, or is distracted when the buttons should be operated quickly.

With the present invention this problem is intended to be solved.

The present invention is characterised by the characterizing part of the independent claim, that is, by the fact that the panel is arranged in a fixed position in respect to the dashboard, so that the panel is not rotating with the steering wheel. Alternative preferred embodiments are characterised by the dependent claims.

The advantage with having a fixed panel inside the steering wheel is that one always knows where the controls are positioned, and which position or orientation they have. In that way, one can, when one is in a curve and a system should be controlled, use one hand to hold the steering wheel, and operate the buttons on the panel with the other hand. The panel can e.g. be mounted on a fixed and therefore stationary core inside the steering column.

In one preferred embodiment the buttons in the panel are replaced with a touch-sensitive screen, which can also show a variation of information regarding the car's condition, notifications for periodical checks, speed limit, how much one exceeds the speed limit, and so on.

The invention will now be described by means of the figures, where
Fig. 1 shows a preferred embodiment of the invention with a panel comprising buttons.
Fig. 2 shows another preferred embodiment of the invention with a display arranged in the panel in the middle of the steering wheel.
Fig. 3 shows another preferred embodiment of the invention, where the stationary panel in the middle of the steering wheel is larger than in other embodiments. To still have a good overview and visual access to all information on the dashboard the speedometer, for example, or other indicators in the dashboard, are moved to the middle of the dash board, as known in the art.

In Fig. 1, the panel is integrated in the cover for an airbag. In many cars the air bag does not rotate with the steering wheel. Panel 10 comprises a standard horn button 20, and additionally control buttons to control a system which is warning the car driver when the speed limit is exceeded. The buttons can for example have a function up/down 30, OK 40, cancel 50, +/- 60, menu 70, or a number of other known functions.

Further, the system can give a warning about other characteristics of the car via a display which is mounted on the dash board, e.g. when the next oil change should be done, or that one should put on a seat belt, air pressure in the tyres and the like.

Other systems which can be controlled are e.g. stereo sets, cruise control, navigation systems, etc.

A system the device according to the invention can be used for can e.g. be a system to improve the alertness of the driver, which system can comprise the following devices: a sensor for measuring the speed of the car; a central unit for registering of speed, for registering of information regarding the topical traffic regulations, and to give a signal when a set value is exceeded; A display to show information; a unit to produce noticeable signals to the driver.

Another system the device according to the invention can be used for can e.g. be a safety check, where the car driver periodically is reminded to perform the different actions under a safety check. The system can be programmed manually, or by interactive contact between the system and traffic signs, traffic lights and the like. The system can give one or more signals when the set speed limit is exceeded, where the time interval between the signals can vary, dependent on how much the speed limit is exceeded. The system can further mute the radio, telephone and the like, when a signal should be given, so that the car driver does not miss the signal. Further, the illumination/contrast of the display can be adapted automatically to the light strength around the display to cause optimal readability of the display at any time.

The device in accordance to the invention can further comprise a display which can be of the type touch screen display, where the buttons, switches, turning knobs, levers or other known types of electronic controls can be replaced by virtual buttons with an assigned function on the display.

CLAIMS

1. Device for control of one or more systems in a vehicle, comprising acontrol panel for control and programming of said systems, which panel is arranged inside the steering wheel, characterised in that the panel is arranged in a stationary position in respect to the dash board, in such a way that the panel does not rotate with the steering wheel.

2. Device in accordance to claim 1, characterised in that the system to be controlled comprises a system to improve the alertness of a car driver, which system preferably comprises one or more of the following device:
   - a sensor for measuring the speed of the car;
   - a central unit for registration of speed, for registration of the information regarding the traffic regulations, and to give a signal when a set value is exceeded;
   - a display to show information;
   - a unit to produce noticeable signals to the driver.

3. Device in accordance with one or more of the preceding claims, characterised in that the panel comprises pressure buttons, switches, turning knobs, levers, or other known types of electronic controls.

4. Device in accordance with one or more of the preceding claims, characterised in that the panel further comprises a display.

5. Device in accordance with one or more of the preceding claims, characterised in that the display can be of the type touch-screen, where pressure buttons, switches, turning knobs, levers, or other known electronic controls are replaced by virtual buttons with an assigned function on the display.

6. Device in accordance with one or more of the preceding claims, characterised in that the panel is arranged on, or instead of, the lock of an air bag.

7. Device in accordance with one or more of the preceding claims, characterised in that it is programmed to comprise a control routine where one is reminded of, and/or that one should confirm that one has performed, the actions one should carry out before one drives, such as fasten seatbelts, check that the mirrors are set right, and the like.

8. System in accordance with one or more of the preceding claims, characterised in that it is programmed to comprise a security check, where the driver is periodically reminded of performing the different actions under a security check.

9. System in accordance with one or more of the preceding claims, characterised in that it can be programmed manually, or by interactive contact between the system and traffic signs, traffic lights and the like.

10. System in accordance with one or more of the preceding claims, characterised in that it is programmed to give one or more signals if the set speed limit is exceeded, where the time interval between the signals can vary dependent on how much the speed limit is exceeded.

11. System in accordance with one or more of the preceding claims, characterised in that it mutes the radio, telephone, and the like, when a signal is to be given.

12. System in accordance with one or more of the preceding claims, characterised in that the illumination/contrast of the display is adapted automatically to the light strength around the display to provide optimal readability of the display at any time.

13. System in accordance with one or more of the preceding claims, characterised in that it comprises automatic speed reduction when the set speed limit is exceeded.

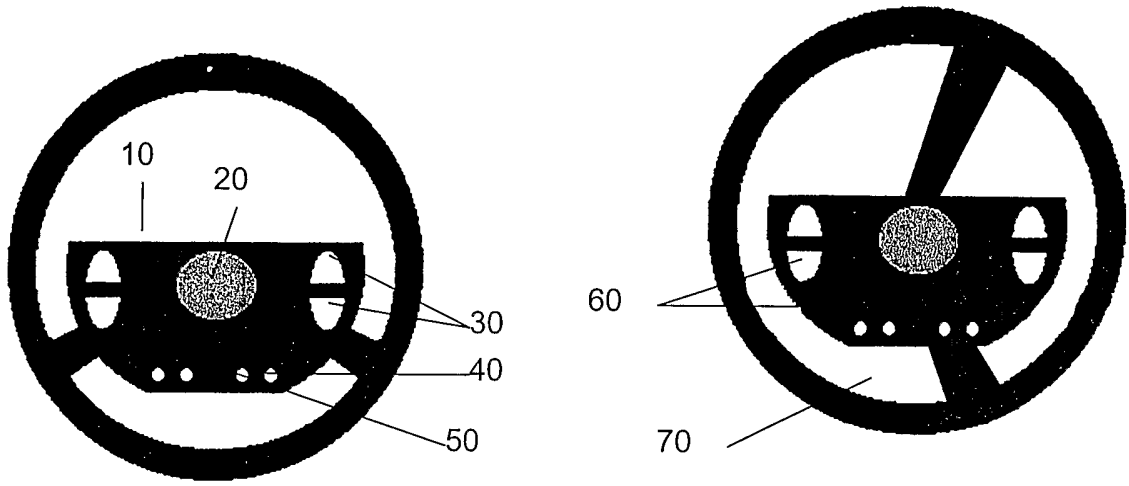


Fig. 1

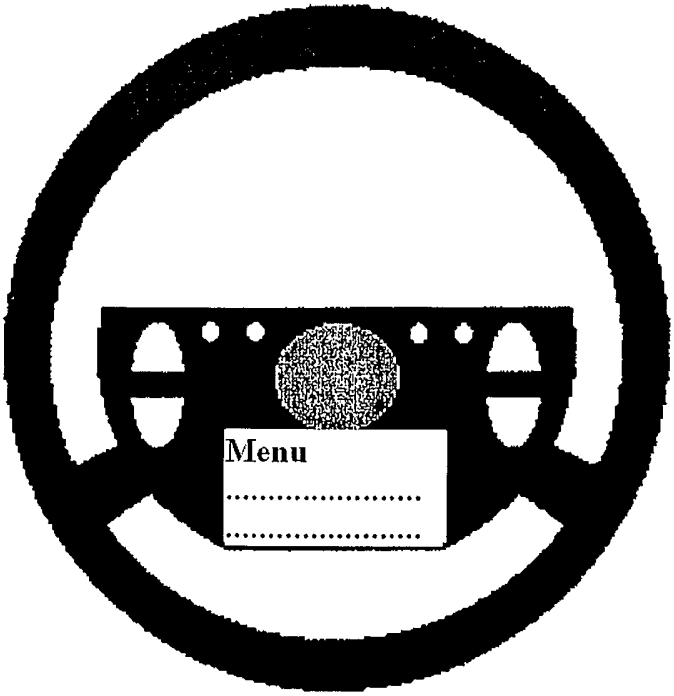


Fig. 2

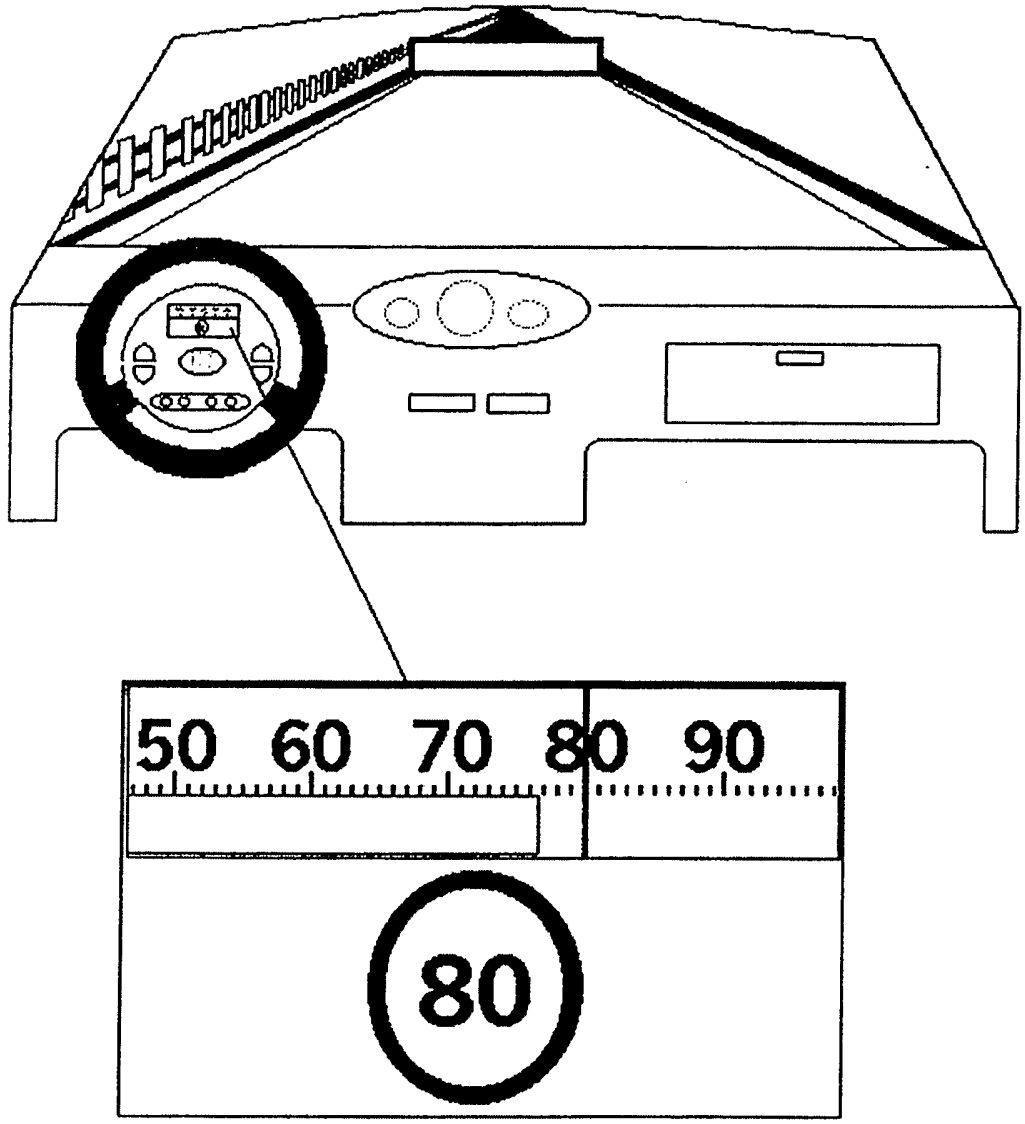


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NO 2005/000206

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B62D 1/04, B62D 1/10, B60K 35/00, B60K 31/18
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: B62D, B60K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 10241837 A1 (SIEMENS AG), 18 March 2004 (18.03.2004), figures 1-3, abstract, paragraph (0012)-(0015) --	1-13
X	DE 19858835 A1 (WASSAF, ELIE), 21 June 2000 (21.06.2000), figures 1-2, abstract --	1-13
X	US 5465632 A (T. JACK OKI ET AL), 14 November 1995 (14.11.1995), column 4, line 16 - line 30, figures 1-2, abstract --	1-13

[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
6 October 2005	10 -10- 2005
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Daniel Åberg/MP Telephone No. +46 8 782 25 00

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/NO 2005/000206

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6474688 B1 (HELEN BOGREN ET AL), 5 November 2002 (05.11.2002), figures 1-5, abstract ---	1-13
A	US 4401181 A (ALFRED V. SCHWARZ), 30 August 1983 (30.08.1983), column 1, line 55 - column 2, line 9, figures 1-2, abstract ---	2,9,10,13
A	FR 2270117 A (CLERICI JEAN-PIERRE ET AL), 5 December 1975 (05.12.1975), whole document --- --------	2,9,10,13

INTERNATIONAL SEARCH REPORT

Information on patent family members

31/08/2005

International application No.
PCT/NO 2005/000206

DE	10241837	A1	18/03/2004	NONE		
DE	19858835	A1	21/06/2000	NONE		
US	5465632	A	14/11/1995	CA	2148313 A	06/11/1995
				JP	8169261 A	02/07/1996
US	6474688	B1	05/11/2002	DE	10050578 A,C	26/04/2001
				JP	2001106089 A	17/04/2001
US	4401181	A	30/08/1983	NONE		
FR	2270117	A	05/12/1975	NONE		