PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 :
B60R 21/20, B60Q 5/00

A1

(11) International Publication Number: WO 98/02337

(43) International Publication Date: 22 January 1998 (22.01.98)

(21) International Application Number: PCT/SE97/01264

(22) International Filing Date: 11 July 1997 (11.07.97)

(30) Priority Data:
9602747-9 11 July 1996 (11.07.96) SE

(71) Applicant *(for all designated States except US)*: AB VOLVO [SE/SE]; S-405 08 Göteborg (SE).

(72) Inventors; and
(75) Inventors/Applicants *(for US only)*: BERGSTRÖM, Pär [SE/SE]; Älvsborgsgatan 18, S-414 52 Göteborg (SE). BERNDTSSON, Ove [SE/SE]; Tångedal 30, S-417 43 Göteborg (SE).

(74) Agents: GRAUDUMS, Valdis et al.; Albihn West AB, P.O. Box 142, S-401 22 Göteborg (SE).

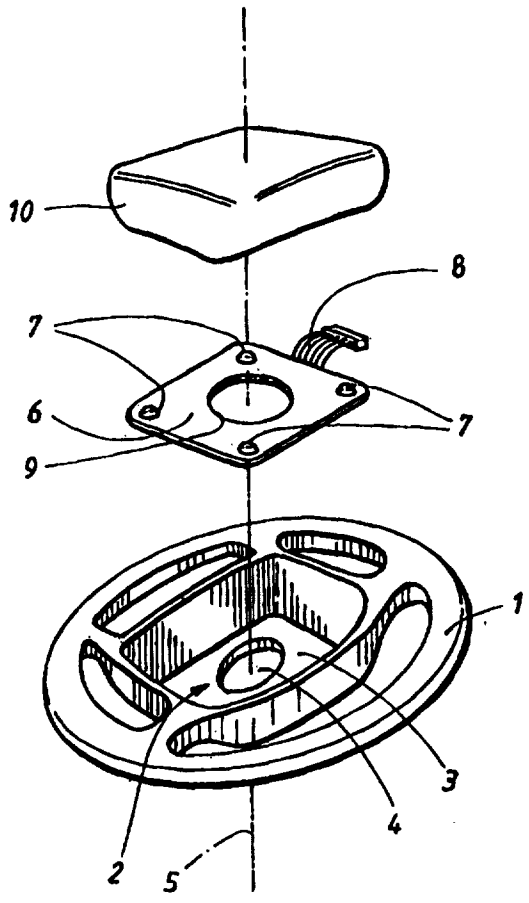
(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

Published
With international search report.
With amended claims.
In English translation (filed in Swedish).

(54) Title: ARRANGEMENT FOR A VEHICLE STEERING WHEEL

(57) Abstract

The invention relates to an arrangement for the activation of a signal device (19) in a vehicle, comprising a steering wheel (1), at least one switch (7) arranged in connection to the steering wheel (1) and arranged for the activation of the signal device (19), and at least one additional function unit of the vehicle arranged in the vicinity of said switch (7) movable from an idle position in the direction of said switch (7) for the activation of the switch (7). The invention is characterized in that said switch (7) is shaped integrated with a spring element (11) in order to affect said function unit (10) in the direction of said idle position. By means of the invention, an improved arrangement for the activation of a signal horn in a motor vehicle is obtained.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	**ES**	Spain	**LS**	Lesotho	**SI**	Slovenia
AM	Armenia	**FI**	Finland	**LT**	Lithuania	**SK**	Slovakia
AT	Austria	**FR**	France	**LU**	Luxembourg	**SN**	Senegal
AU	Australia	**GA**	Gabon	**LV**	Latvia	**SZ**	Swaziland
AZ	Azerbaijan	**GB**	United Kingdom	**MC**	Monaco	**TD**	Chad
BA	Bosnia and Herzegovina	**GE**	Georgia	**MD**	Republic of Moldova	**TG**	Togo
BB	Barbados	**GH**	Ghana	**MG**	Madagascar	**TJ**	Tajikistan
BE	Belgium	**GN**	Guinea	**MK**	The former Yugoslav Republic of Macedonia	**TM**	Turkmenistan
BF	Burkina Faso	**GR**	Greece			**TR**	Turkey
BG	Bulgaria	**HU**	Hungary	**ML**	Mali	**TT**	Trinidad and Tobago
BJ	Benin	**IE**	Ireland	**MN**	Mongolia	**UA**	Ukraine
BR	Brazil	**IL**	Israel	**MR**	Mauritania	**UG**	Uganda
BY	Belarus	**IS**	Iceland	**MW**	Malawi	**US**	United States of America
CA	Canada	**IT**	Italy	**MX**	Mexico	**UZ**	Uzbekistan
CF	Central African Republic	**JP**	Japan	**NE**	Niger	**VN**	Viet Nam
CG	Congo	**KE**	Kenya	**NL**	Netherlands	**YU**	Yugoslavia
CH	Switzerland	**KG**	Kyrgyzstan	**NO**	Norway	**ZW**	Zimbabwe
CI	Côte d'Ivoire	**KP**	Democratic People's Republic of Korea	**NZ**	New Zealand		
CM	Cameroon			**PL**	Poland		
CN	China	**KR**	Republic of Korea	**PT**	Portugal		
CU	Cuba	**KZ**	Kazakstan	**RO**	Romania		
CZ	Czech Republic	**LC**	Saint Lucia	**RU**	Russian Federation		
DE	Germany	**LI**	Liechtenstein	**SD**	Sudan		
DK	Denmark	**LK**	Sri Lanka	**SE**	Sweden		
EE	Estonia	**LR**	Liberia	**SG**	Singapore		

Arrangement for a vehicle steering wheel.

TECHNICAL FIELD:

The invention relates to an arrangement for the activation of a signalling device in a vehicle, according to the preamble of appended claim 1.

BACKGROUND OF THE INVENTION:

Motor vehicles are normally equipped with signal horns. The signal horn in a vehicle can usually be activated by the driver manually using a switch which is placed on, or in the vicinity of, the steering wheel of the vehicle. Due to this location of the switch, the driver can activate the signal horn in a simple manner in case of, for example, an emergency.

Furthermore, modern motor vehicles are often equipped with at least one air-bag for the protection of those travelling in the vehicle. In a previously known manner, such an air-bag is arranged to be activated in the event of a collision with the vehicle. The activation of the air-bag is carried out by means of an acceleration sensor located in the vehicle, which in turn is arranged to be able to activate a gas generator for inflation of the air-bag. In so doing, gas is caused to flow into the air-bag, which is then shaped to a smooth energy-absorbing cushion which attenuates a person's motion forward in case of sharp braking of the vehicle.

As regards the driver of the vehicle, he can be protected by means of an air-bag which preferably is arranged in connection to the hub of the steering wheel of the vehicle, and which can be inflated in the direction of the driver's torso. For this purpose, a special air-bag module, which comprises the air-bag itself and the above-mentioned gas generator which is used to inflate the air-bag, can be

placed in the hub of the steering wheel. This air-bag module can furthermore be arranged in connection to the switch of the signal horn in such a way that the driver, by exerting pressure on the air-bag module, causes the switch to close. This, in turn, causes the activation of the signal horn as well.

From patent document US-A-5283404, a system for motor vehicles which comprises an air-bag module arranged in the hub of a steering wheel is previously known. The system also comprises a plurality of switches for the activation of a signal horn. The switches are arranged in connection to the air-bag module. Furthermore, the switches are of the membrane-switch kind, and can be activated when the user exerts pressure on the air-bag module, which then in turn is pressed against the switches, so that the signal horn is activated.

A drawback of this previously known arrangement is that there is a need for special spring elements, against which the air-bag module rests. These spring elements cause increased manufacturing costs, since more steps and more components are needed during manufacturing. Furthermore, the spring elements use up room, at the same time as they increase the total weight of the previously known arrangement.

SUMMARY OF THE INVENTION:

The object of the present invention is thus to achieve an improved arrangement in the steering wheel of a vehicle, which arrangement primarily is intended for the activation of a signal horn, in which the drawbacks of previously known arrangements of this kind are eliminated. This object is achieved by means of an arrangement of the initially mentioned kind, the characteristics of which will become evident from appended claim 1.

The invention is intended for the activation of a signal device in a vehicle. According to the invention, there is at least one switch arranged in connection to the steering wheel of the vehicle, which switch is arranged to activate the signal device. The invention furthermore comprises at least one function unit of the vehicle, which is arranged in the vicinity of said switch, and which can be moved in a predetermined direction from an idle position and towards said switch for activation of the switch. The invention is based on the switch being shaped integrated with a spring element to affect said function unit in the direction of said idle position. In this way, an arrangement is obtained with a built-in spring function of the switch.

The switch is preferably of the membrane-switch kind, and is shaped with a springing organ, against which said function unit rests. In a preferred embodiment, this function unit consists of an air-bag module, which in turn comprises an air-bag and means for inflation of the air-bag.

Using an arrangement according to the invention, a reliable function for activation of the signal horn is obtained. Furthermore, there is an advantage in that the switch which is of the membrane-switch kind has a very long operational life. There is furthermore a reduced consumption of material and components, which in turn causes lower manufacturing costs than in previously known systems of a similar kind. Furthermore, the invention needs less room than previous arrangements, which results in a more compact packing of the steering wheel and its components. Also, the weight is lower than that of previously known arrangements.

Since the invention comprises switches of the membrane-switch kind with an integrated spring element, there is a distinct and exact perception for the user when he

depresses the air-bag module in order to activate the signal horn.

Advantageous embodiments will become evident from the appended dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS:

The invention will in the following be described in more detail with reference to an example of embodiment which is shown in the appended drawings, in which:

Fig. 1 schematically in a perspective view shows a disassembled steering wheel equipped with an arrangement according to the invention,

Fig. 2 shows a cross-sectional view of the invention in an assembled state,

Fig. 3 shows a perspective view of a switch according to the invention, and

Fig. 4 schematically shows an electrical circuit diagram of the arrangement according to the invention.

PREFERRED EMBODIMENT:

Fig. 1 shows an arrangement according to the present invention in a disassembled state. According to the preferred embodiment, the invention is arranged in connection to a steering wheel in a motor vehicle. The figure shows a steering wheel frame or a steering wheel module 1, which preferably is made of steel, and which constitutes a supporting frame which is intended to be equipped with (not shown) upholstery and padding similar to the design of conventional steering wheels. The steering wheel module 1 is, in a known manner, intended to be assembled on a (not shown) steering wheel tube.

Furthermore, the steering wheel module 1 is shaped with a recessed portion 2 with a bottom plate 3. In the bottom plate 3 there is an aperture 4 which is arranged essentially symmetrically around the axis of rotation 5 of the steering wheel module 1. The aperture 4 is utilized for running cables (not shown).

Furthermore, the invention comprises a switching unit 6 which is arranged on, or in the immediate vicinity of, the bottom plate 3. The switching unit 6 is shaped as a plate, with the function of a supporting element for at least one, but preferably four, switches 7. The switches 7 are electrically connected to a connector 8, which in turn is connected to a control unit (not shown in Fig. 1), which is arranged to activate a signal horn in the vehicle, as will be described below. Each of the switches 7 can thus be used to activate a signal horn. Furthermore, each of the switches 7 is preferably of the membrane-switch kind, and is, as will be described in detail below, formed with a spring element in the shape of a dome-shaped element. Furthermore, the switching unit 6 is preferably shaped with a through-opening 9.

On top of the switching unit 6, there is arranged a further function unit in the form of an air-bag module 10 which, as such, is of a previously known kind and which comprises an air-bag and means for inflation of the air-bag. These means are preferably a gas generator. The air-bag module 10 is enclosed in a cover, for example a cast aluminum cover, and is arranged at the bottom plate 3 by means of a (not shown) screw union. As will be explained below, the air-bag module 10 is arranged to be moved between an idle position and an additional position in which at least one of the switches 7 is closed. When the air-bag module 10 is in the latter position, the signal horn of the vehicle is activated.

The switching unit 6 can be fixedly arranged on top of the bottom plate 3 in the steering wheel module 1, or can alternatively be arranged on the underside of the air-bag module 10. The switching unit 6 is preferably attached to the bottom plate 3, or alternatively the air-bag module 10, by means of a suitable glue or by means of double-sided adhesive tape. In a manufacturing process, the switching unit 6 can thus be arranged in advance on either the steering wheel module 1 or the air-bag module 10, thus causing a simplified assembling process in connection with the arrangement according to the invention.

Fig. 2 is a cross-sectional view which shows the invention in an assembled state. From the figure, it can be seen that the switching unit 6 rests on the bottom plate 3 of the steering wheel module 1, and that the air-bag module 9 in an idle state, i.e. in an unaffected state, is adjacent to the switching unit 6. As has been mentioned above, each of the switches 7 is formed with a spring element 11 in the shape of an essentially dome-formed element. For this purpose, each of the spring elements 11 is raised a certain distance relative to the bottom plate 3, i.e. it has an extension in a direction which is opposite to the direction in which the driver exerts a force against the air-bag module 10 when activating the signal horn.

Fig. 3 shows in detail the design of the switch 7, which comprises a plurality of layers, preferably three layers, of which a lower layer 12 in predetermined positions supports two electrically conducting contact elements 13, 14. Furthermore, the switching unit 6 comprises an upper layer 15 which supports an additional electrically conducting contact element 16 which faces the two contact elements 13, 14 of the lower layer 12. Furthermore, the lower level 12 is separated from the upper layer 15 in certain areas by means of an intermediate layer 17. The

various contact elements 13, 14, 16 are preferably areas of thin coatings of graphite, silver, gold, copper or some other suitable electrically conducting material. The switch 7 can be closed by the spring element 11 being compressed by a force in the direction indicated with an arrow 18, thus closing an electrical connection between the contact elements 13 and 14 by means of the contact element 16. The different layers 12, 15, 17, are preferably thin films of polyester plastic or a corresponding synthetic material.

The spring element 11 is shaped as a dome-formed element in the upper layer 15. With renewed reference to Fig. 2, it can be seen that the air-bag module 10 normally rests against the switches 7. When the signal horn is to be activated, the air-bag module 10 is depressed in the direction of the bottom plate 3, which causes the air-bag module 10 to be moved out of its idle position, and the spring elements 11 are compressed. When the air-bag module 10 is no longer affected by a force, it is returned to its idle position by means of the spring force of the spring elements 11, which strive to resume their dome-shaped form.

The properties of the spring elements 11 as regards elasticity and springing are adjusted to the weight of the air-bag module 10. These properties must also be adjusted to the force which is deemed to be suitable to be exerted on the air-bag module 10 by the driver in order for at least one switch 7 to be closed. For these purposes, the height, diameter and shape of the dome 11 can also be adapted to a certain given application of the invention. The spring properties of each spring element 11 are also determined by, among other things, the thickness of the upper layer 15 and the stiffness and the elastic properties of the material used in the upper layer 15. The dimensions of the switches 7 can be varied according to the

application in question. The diameter of the spring elements is preferably about 10-20 mm.

Fig. 4, in a simplified form, shows a circuit diagram which shows how each switch 7 can be connected in order to enable the activation of a signal horn 19 in a vehicle. Although the drawing only shows one switch 7, the invention can as stated above, comprise a plurality of such switches. The switch 7 is connected between ground and a central control unit 20 via the connector 8 (see Fig. 1). The control unit 20 is arranged to detect whether the switch 7 is closed. If this is the case, the control unit 20 emits a signal to a relay 21 which receives a voltage U. The relay is in turn connected to the signal horn 19, which is activated and emits a sound-signal when the relay 21 has been activated by the control unit 20.

The invention is not limited to the embodiments described above, but can be varied within the scope of the appended claims. The switching unit 6 can, for example, comprise various arrangements of switches 7, for example with varying locations along the upper side of the switching unit 6. The number of switches 7 can also vary. The number of switches 7 and their location is preferably chosen depending on typical pressure points on the air-bag module 10 which are utilized by a user when activating the signal horn.

Furthermore, the control unit 20 can be so arranged that the signal horn 19 is activated if, for example, two (or more) switches 7 are closed.

Furthermore, the arrangement according to the invention can also be utilized when the function unit is not an air-bag module 10. There are vehicles which are not equipped with air-bags, which means that instead of the air-bag module

10, some other kind of function unit or module can be placed so that it rests on top of the switching unit 6.

A possible variant of the invention is that the switching unit 6 (see Fig. 1) is arranged with the switches 7 facing downwards, i.e. towards the bottom plate 3. For this purpose, the switching unit 6 is preferably arranged in advance on the underside of the air-bag module 10.

Finally, the spring element 11 can be formed in various manners, for example regarding size, geometrical shape and spring properties.

CLAIMS:

1. An arrangement for the activation of a signal device (19) in a vehicle, comprising a steering wheel (1), at least one switch (7) arranged in connection to the steering wheel (1) and arranged for the activation of the signal device (19), and additionally at least one function unit (10) of the vehicle which is arranged in the vicinity of said switch (7) and which is movable from an idle position in the direction of said switch (7) for the activation of the switch (7), c h a r a c t e r i z e d i n that said switch (7) is formed integrated with a spring element (11) in order to affect said function unit (10) in the direction of said idle position.

2. Arrangement according to claim 1, c h a r a c t e r i z e d i n that said spring element (11) is essentially dome-shaped.

3. Arrangement according to claim 1 or 2, c h a r a c t e r i z e d i n that said switch (7) consists of at least two layers (12, 15, 17), with a lower level (12) comprising first electrical connectors (13, 14), and in that said spring element (11) is shaped integrated in an upper layer (15) which comprises a further electrical connector (16) which faces said first connectors (13, 14), and in which the switch (7) is closed in case of contact between said connectors (13, 14, 16).

4. Arrangement according to claim 3, c h a r a c t e r i z e d i n that said layers (12, 15, 17) consist of films of synthetic material.

5. Arrangement according to any of the previous claims, c h a r a c t e r i z e d i n that said at least one switch (7) is arranged on a supporting element (6), which in turn is arranged in connection to said steering wheel

(1), in which the function unit (10) in its idle position rests against the spring element (11).

6. Arrangement according to any of claims 1-4, characterized in that said at least one switch (7) is arranged on a supporting element (6) which in turn is arranged on said steering wheel (1) with the function unit (10) in its idle position resting against said supporting element (6), and in that said spring elements (11) rest against said steering wheel (1).

7. Arrangement according to claim 5 or 6, characterized in that said supporting element (6) is arranged on the underside of said function unit (10).

8. Arrangement according to claim 5 or 6, characterized in that said supporting element (6) is assembled on a surface (3) which faces the function unit (10) in connection to the steering wheel (1).

9. Arrangement according to any of the previous claims, characterized in that said function unit (10) is an air-bag module (10) which comprises an air-bag and means for inflation of the air-bag, in the event of a collision with the vehicle.

10. Vehicle comprising an arrangement for the activation of a signal device (19), according to any of the previous claims.

AMENDED CLAIMS

[received by the International Bureau on 11 December 1997 (11.12.97); original claims 1-10 replaced by amended claims 1-9 (2 pages)]

1. An arrangement for the activation of a signal device (19) in a vehicle, comprising a steering wheel (1), at least one switch (7) arranged in connection to the steering wheel (1) and arranged for the activation of the signal device (19), and additionally at least one function unit (10) of the vehicle which is arranged in the vicinity of said switch (7) and which is movable from an idle position in the direction of said switch (7) for the activation of the switch (7), c h a r a c t e r i z e d i n that said switch (7) is formed integrated with an essentially dome-shaped spring element (11) in order to affect said function unit (10) in the direction of said idle position.

2. Arrangement according to claim 1, c h a r a c t e r i z e d i n that said switch (7) consists of at least two layers (12, 15, 17), with a lower level (12) comprising first electrical connectors (13, 14), and in that said spring element (11) is shaped integrated in an upper layer (15) which comprises a further electrical connector (16) which faces said first connectors (13, 14), and in which the switch (7) is closed in case of contact between said connectors (13, 14, 16).

3. Arrangement according to claim 2, c h a r a c t e r i z e d i n that said layers (12, 15, 17) consist of films of synthetic material.

4. Arrangement according to any of the previous claims, c h a r a c t e r i z e d i n that said at least one switch (7) is arranged on a supporting element (6), which in turn is arranged in connection to said steering wheel (1), in which the function unit (10) in its idle position rests against the spring element (11).

5. Arrangement according to any of claims 1-3, c h a r a c t e r i z e d i n that said at least one switch (7) is arranged on a supporting element (6) which in turn is arranged on said steering wheel (1) with the function unit (10) in its idle position resting against said supporting element (6), and in that said spring elements (11) rest against said steering wheel (1).

6. Arrangement according to claim 4 or 5, c h a r a c t e r i z e d i n that said supporting element (6) is arranged on the underside of said function unit (10).

7. Arrangement according to claim 4 or 5, c h a r a c t e r i z e d i n that said supporting element (6) is assembled on a surface (3) which faces the function unit (10) in connection to the steering wheel (1).

8. Arrangement according to any of the previous claims, c h a r a c t e r i z e d i n that said function unit (10) is an air-bag module (10) which comprises an air-bag and means for inflation of the air-bag, in the event of a collision with the vehicle.

9. Vehicle comprising an arrangement for the activation of a signal device (19) according to any of the previous claims.

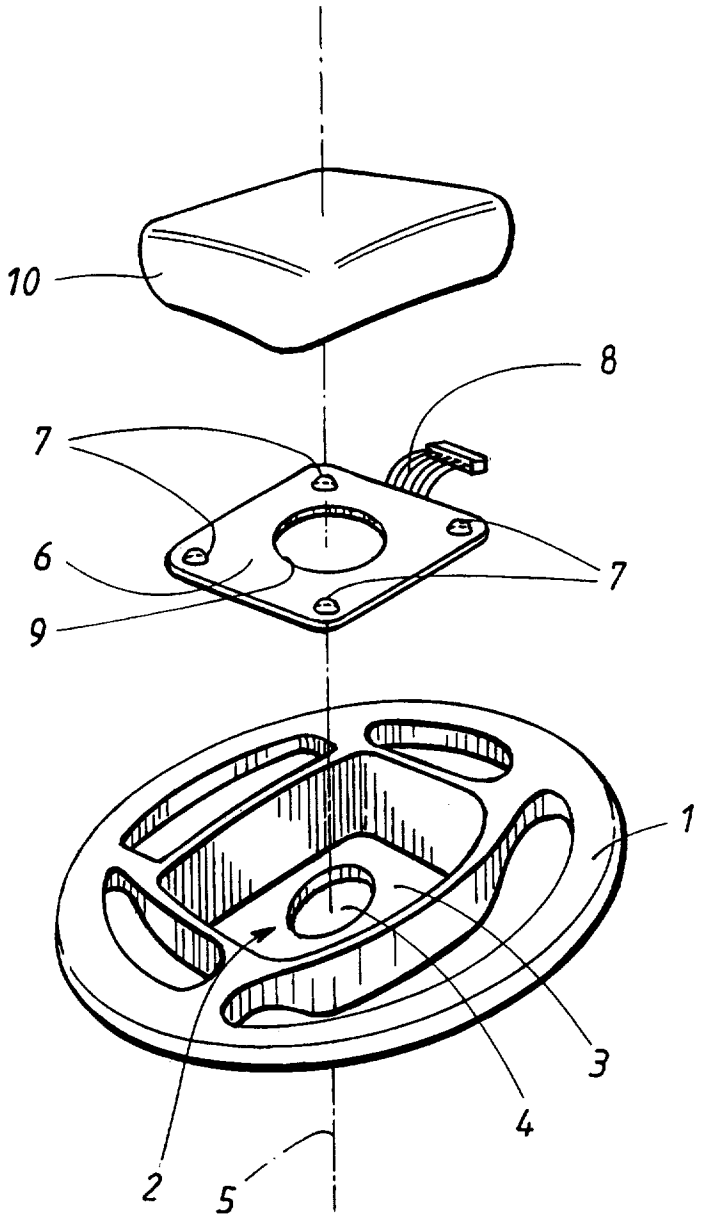


FIG.1

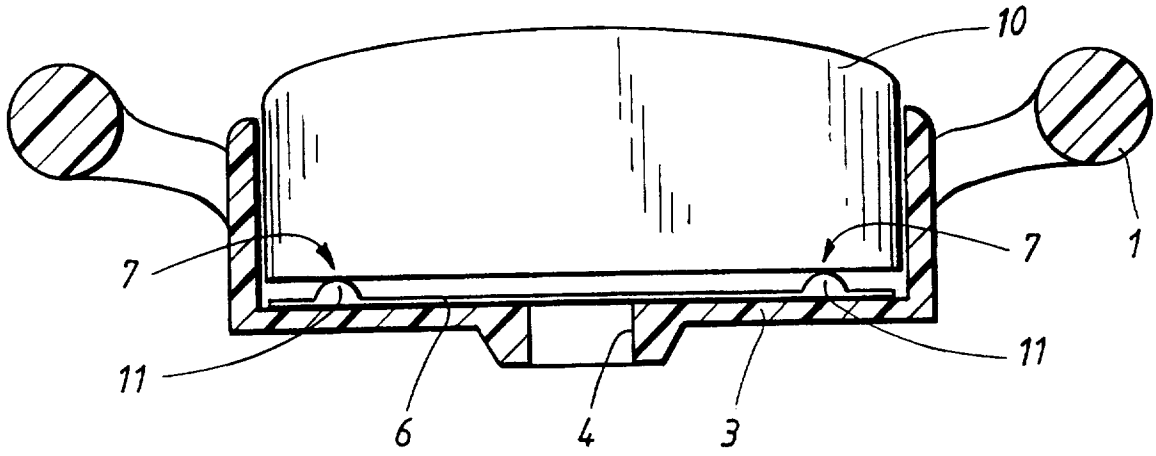


FIG. 2

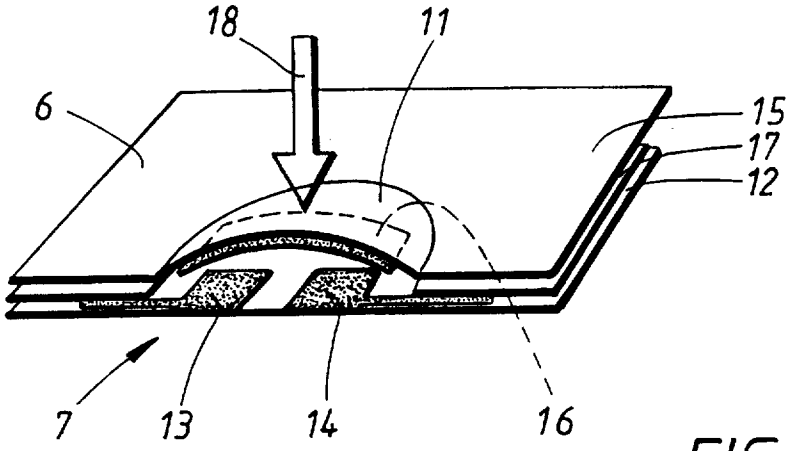


FIG. 3

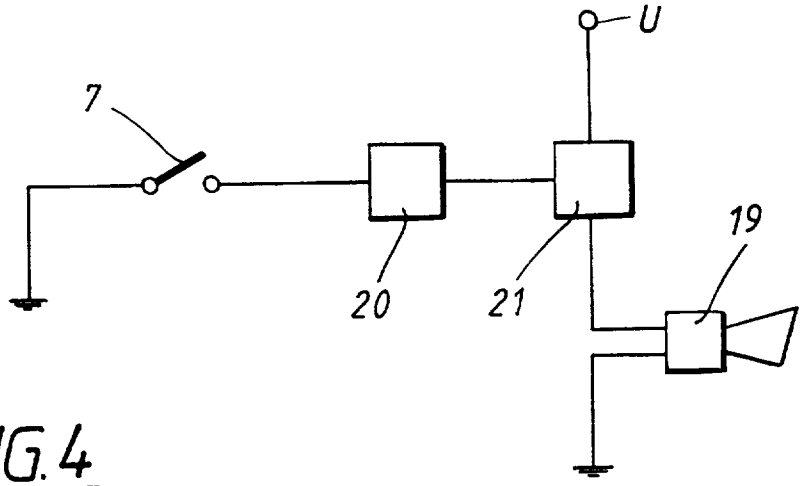


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 97/01264

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: B60R 21/20, B60Q 5/00
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)

IPC6: B60R, B60Q, B62D

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0330306 A1 (GENERAL MOTORS CORPORATION), 30 August 1989 (30.08.89), figure 2, abstract	1,5-9
Y		2-4
	--	
X	EP 0586055 A1 (MORTON INTERNATIONAL, INC.), 9 March 1994 (09.03.94), figure 4, abstract	1,5-9
Y		2-4
	--	

[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" erlier document 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
13 October 1997	21 -10- 1997
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 Hans Nordström Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 97/01264

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 5303952 A (SHERMETARO ET AL), 19 April 1994 (19.04.94), column 5, line 36 - line 60, figure 3	1,5-9
Y		2-4
	--	
X	US 5350190 A (SZIGETHY), 27 Sept 1994 (27.09.94), column 6, line 16 - line 41, figures 3,4	1,5-9
Y		2-4
	--	
Y	US 5062661 A (WINGET), 5 November 1991 (05.11.91), figure 2, abstract	2-4
	--	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/SE 97/01264

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0330306 A1	30/08/89	CA 1290788 A	15/10/91
		JP 1262255 A	19/10/89
		JP 6041263 B	01/06/94
		US 4785144 A	15/11/88
EP 0586055 A1	09/03/94	AU 642834 A	28/10/93
		CA 2094663 A	04/02/94
		DE 69306338 D,T	30/04/97
		JP 2515958 B	10/07/96
		JP 6107184 A	19/04/94
		US 5239147 A	24/08/93
US 5303952 A	19/04/94	NONE	
US 5350190 A	27/09/94	CA 2127049 A	07/01/95
US 5062661 A	05/11/91	US RE35031 E	05/09/95