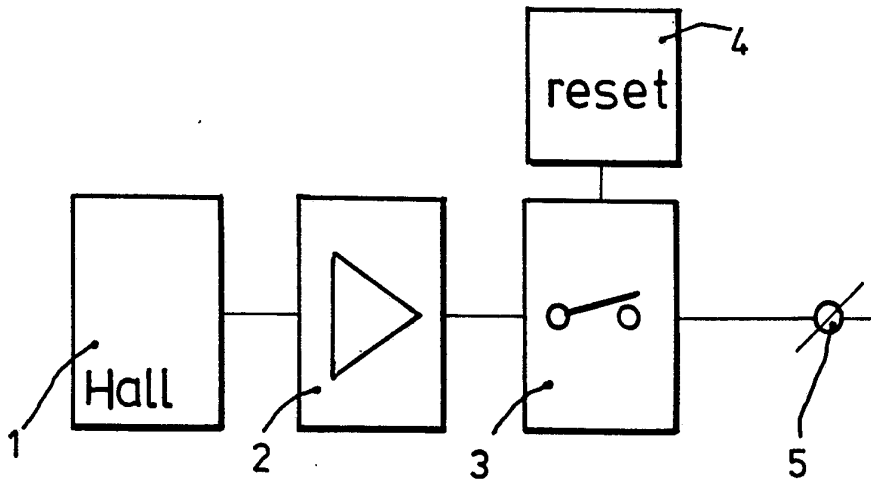




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<p>(21) International Application Number: PCT/NL93/00085 (22) International Filing Date: 21 April 1993 (21.04.93) (30) Priority data: 9200726 22 April 1992 (22.04.92) NL (71) Applicant (for all designated States except US): PETERS, Johannes, Petrus [NL/NL]; Hogewalstraat 8A, NL-6641 KE Beuningen (NL). (71)(72) Applicant and Inventor: JANSSEN, Aloysius, Wilhelmus, Hendrikus [NL/NL]; Lankforst 10-02, NL-6538 GC Nijmegen (NL). (74) Agent: LOBATTO, Jacob, Louis; P.O. Box 1017, NL-2240 BA Wassenaar (NL).</p>		<p>(81) Designated States: AU, BR, CA, JP, KR, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>

(54) Title: AUTOMATIC CRASH ALARM FOR AUTOMOTIVE VEHICLES



(57) Abstract

The invention has as an object to detect a deceleration or acceleration of an automotive vehicle, occurring as a consequence of a collision in motorised traffic, said automotive vehicle being provided with an installation according to the invention, said detection being made by means of this installation and thus causing automatic activation of the alarm light installation, present on the automotive vehicle, and thus without any action in that respect by the driver, this with the intention of drawing the attention of the other participants in the traffic as soon as possible to the dangerous traffic condition caused.

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- 1 -

Automatic crash alarm for automotive vehicles.

The invention relates to an electronic mechanical device for automotive vehicles in order to actuate automatically the alarm light installation as presently installed in substantially all automotive vehicles without any action of the driver. This is the more important since on many occasions the driver will not be in a condition to take any action after a crash, either for a short time, being in a temporary shock condition, for considerable time, being seriously injured but after considerable time still able to act, or permanently being unconscious or dead.

The so-called delay-switches are known, such as a switch, presented in Dutch patent application 66.16240, which signals the standstill of an automotive vehicle, as well as the switch described in German patent specification 900.658, which also signals exclusively the standstill of an automotive vehicle.

Apart from the above, various types of signalling systems are known from the process industry, but there is nowhere any reason of a signalling system as presented by the device according to the present invention.

There is a need for a device, that warns the other traffic participants immediately for the dangerous situation arising from a crash involving one or more automotive vehicles, without any action by the driver being required.

It is thus an object of the invention to provide a solution to restrict drastically the number of people concerned in the follow-up of a crash.

An embodiment of a device according to the invention as installed in an automotive vehicle, is shown in Figs. 1 and 2 in a block diagram, presenting a so-called Hall-effect-sensor 1, an amplifier 2, a switch 3, a reset unit 4 (Fig.1) or a timer 4' (Fig. 2) and an outlet to the existing alarm light installation 5.

In the embodiment as shown in Fig. 3 a closed helical spring 6 was selected, the consideration being, that an open helical spring will allow a magnet 7 to move

as a consequence of a bad road surface or on sudden braking, whereas the magnet 7 should move only as a consequence of a deceleration or acceleration in the order of magnitude as occurs in case of a collision of an automotive 5 vehicle either with another automotive vehicle, fixed objects, such as for example houses, trees and similar, or other objects in its path, moving or at rest, such as other vehicles or even animals, including human beings.

In Fig. 3 spring 6 is fixed at one end on the 10 housing 9, whereas at the other end a permanent magnet 7 is mounted; a so-called Hall effect sensor 8 is positioned underneath magnet 7. As soon as the magnet 7 moves away from the Hall-sensor 8, as shown in Fig. 4, as a deceleration or acceleration has taken place such as in collisions, as shown in Fig. 4 the spring 6 will allow magnet 7 15 to move away from the Hall-sensor 8, which has the specific property of detecting a change in magnetic field, which detection will be received by the amplifier 1 in Figs. 1 and 2 and is passed on after amplification to the switch 3, 20 which in turn will activate the alarm lights installation 5, without requiring any activity by the driver of the vehicle.

The connection thus caused automatically may be reset again manually by means of a reset switch 4 (Fig. 25 1).

Instead of the reset switch 4 use can also be made of a timer 4' (Fig. 2), which will cause an automatic reset of the installation into the original position, as existed prior to the collision, after a predetermined period of 30 time.

It will be obvious that the above device may be subject to variations or modifications without departing from the gist of the invention. Thus for example the closed helical spring could be replaced by a resilient rod, 35 plastic, metal or a combination thereof, as long as it meets the condition that it is not activated by vibrations such as caused by an uneven road surface or the decelerations and accelerations as customary in normal traffic.

SUBSTITUTE SHEET

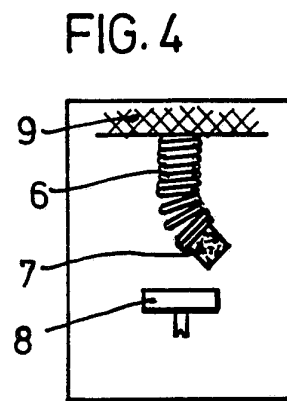
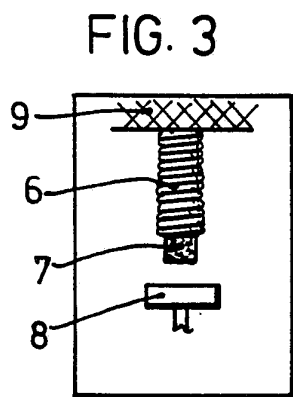
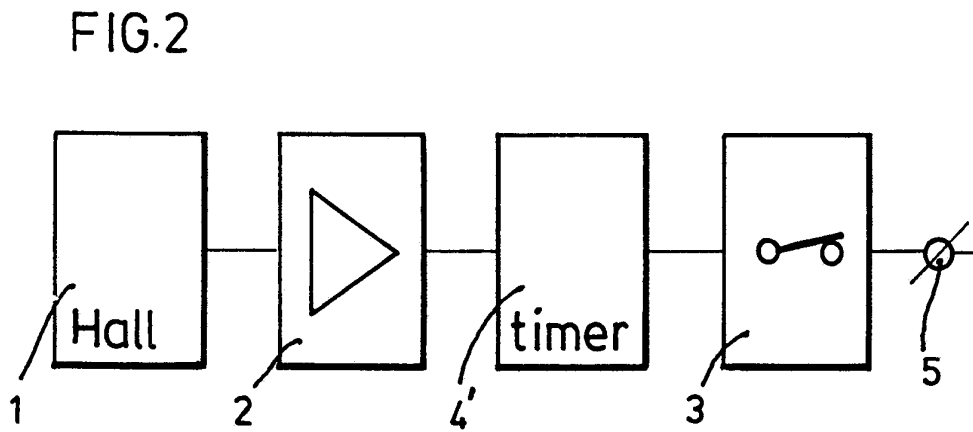
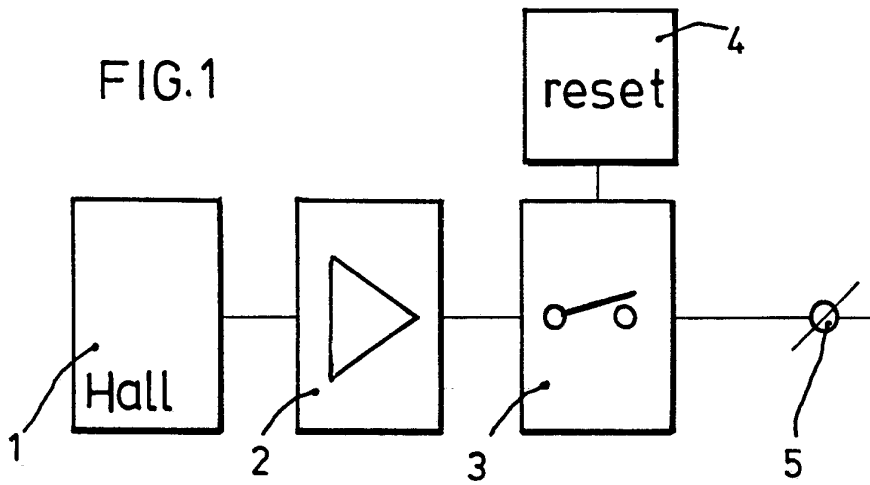
Claims:

1. A device for registering a collision of an automotive vehicle, characterised in that if the automotive vehicle is involved in a collision a detection will occur of this extraordinary deceleration or acceleration by means of a sensor system, causing automatic activation of the alarm lights installation as present on the automotive vehicle.
10
2. A device according to claim 1, characterised in that it comprises a Hall-effect-sensor (1), an amplifier (2), a switch (3), a reset unit (4,) or a timer (4') and an outlet to the existing alarm light installation (5).
15
3. A device according to claim 1 or 2, characterised in that the device comprises a sensor unit provided by a deflectable closed helical spring (5) fixed at one end to a housing (8), whereas at the other end a permanent magnet (6) is mounted; a so-called Hall effect sensor (7) being positioned underneath magnet (6).
20
4. A device according to claim 1, 2 or 3, characterised in that the connection as realised automatically is maintained for a predetermined period of time, and will be switched back automatically by timer (4') after said period of time into the original position as prior to the collision.
25
5. A device according to any one of claims 1 to 4, characterised in that the connection resulting therefrom can be reset into the original position as prior tot the collision by means of a manual switch (4).
30
6. A device according to any one of claims 1 to 5, characterised in that the device causes another connection than the connection to the existing alarm light installation.
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- 4 -

7. An automotive vehicle comprising a device according to any one of claims 1 to 6.

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INTERNATIONAL SEARCH REPORT

PCT/NL 93/00085

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁶		
According to International Patent Classification (IPC) or to both National Classification and IPC Int.Cl. 5 B60Q1/44; G01P15/08		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
Int.Cl. 5	B60Q ; G01P	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹		
Category ^o	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	FR,A,2 160 252 (GUILLEMAIN) 29 June 1973 see claim 1	1,7
A	US,A,4 849 655 (BENNETT) 18 July 1989 see figures 1,3	2-4,7
A	DE,A,2 709 156 (VDO ADOLF SCHINDLING AG) 7 September 1978 see figure 6	2,3,7
A	DE,A,3 021 317 (ROBERT BOSCH GMBH) 24 December 1981 see figures 4,5,8,9	2,3,7
A	DE,C,942 663 (SIEMENS SCHUCHERTWERKE AG) 3 May 1956 see figures 1,2	2,3,7
	-/--	
<p>^o Special categories of cited documents :¹⁰</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"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)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> <p>"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</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"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.</p> <p>"&" document member of the same patent family</p>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
16 AUGUST 1993	20. 08. 93	
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III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

Category ^o	Citation of Document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
A	DE,A,3 010 452 (HONEYWELL GMBH) 1 October 1981 see page 5, line 24 - line 32; figure 3 -----	2,3,6,7

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

NL 9300085
SA 73073

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR-A-2160252	29-06-73	None	
US-A-4849655	18-07-89	None	
DE-A-2709156	07-09-78	None	
DE-A-3021317	24-12-81	None	
DE-C-942663		None	
DE-A-3010452	01-10-81	None"	