



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**29.05.2013 Bulletin 2013/22**

(51) Int Cl.:  
**G10K 9/18 (2006.01)**

(43) Date of publication A2:  
**03.06.2009 Bulletin 2009/23**

(21) Application number: **08253853.9**

(22) Date of filing: **01.12.2008**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL BA MK RS**

(30) Priority: **30.11.2007 JP 2007311220**

(71) Applicants:  
• **Maruko Keihouki Co., Ltd.**  
**Ueda-shi, Nagano 386-0404 (JP)**  
• **TOYOTA JIDOSHA KABUSHIKI KAISHA**  
**Toyota-shi,**  
**Aichi-ken, 471-8571 (JP)**

(72) Inventors:  
• **Shimizu, Kenichi**  
**Ueda-shi**  
**Nagano 386-0404 (JP)**  
• **Hirai, Kazuo**  
**Ueda-shi**  
**Nagano 386-0404 (JP)**  
• **Kashiwai, Tadahiro**  
**Toyota-shi,**  
**Aichi 471-8571 (JP)**

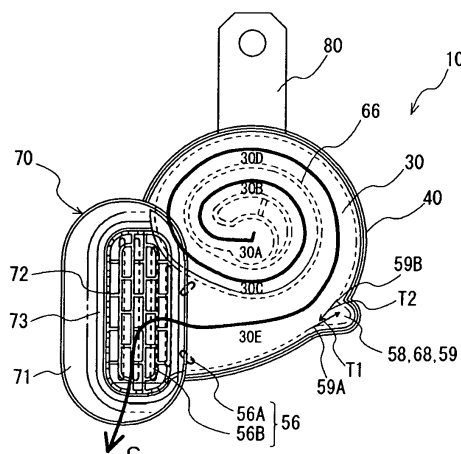
(74) Representative: **Stuart, Ian Alexander et al**  
**Mewburn Ellis LLP**  
**33 Gutter Lane**  
**London**  
**EC2V 8AS (GB)**

(54) **Horn for vehicle**

(57) The horn is capable of preventing invasion of foreign matters and highly preventing attenuation of a warning sound. The horn (10) comprises: an oscillation member (20); a sound path (30) formed into a spiral path, which is spirally formed around a center axis (22) of the oscillation plate (20) and in which a distance from the center axis (22) is gradually increased toward an outer

end; and a sound output section (70) provided to the outer end of the sound path (30), the sound output section (70) outputting sound waves, which have passed through the sound path (30), in the axial direction of the center axis. The horn is characterized in that an opening part of the sound output section (70) has an elongate configuration, whose long axis is arranged in the vertical direction.

FIG.4





## EUROPEAN SEARCH REPORT

Application Number  
EP 08 25 3853

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 37 23 693 A1 (HELLA KG HUECK & CO [DE]) 26 January 1989 (1989-01-26)	1	INV. G10K9/18
Y	* abstract * * column 1, line 57 - line 66; figure 1 * * column 2, line 45 - line 62 * * figure 1 *	2	
Y	----- GB 1 181 817 A (AUTOBRZDY JABLONEC NARODNI POD [CS]) 18 February 1970 (1970-02-18) * page 1, line 76 - line 79 * * figures 1,2 *	2	
A	----- FR 2 607 951 A1 (HELLA KG HUECK & CO [DE]) 10 June 1988 (1988-06-10) * abstract * * page 1, line 1 - line 5 * * page 1, line 20 - line 22 * * page 2, line 5 - line 16 * * figures 1-2 *	1,4-7,13	
A	----- EP 0 387 151 A1 (NEIMAN SA [FR]) 12 September 1990 (1990-09-12) * abstract * * column 1, line 49 - column 2, line 25 * * column 3, line 24 - column 4, line 43 * * figures 2-5 *	8,9	TECHNICAL FIELDS SEARCHED (IPC)  G10K
The present search report has been drawn up for all claims			
Place of search <b>The Hague</b>		Date of completion of the search <b>25 April 2013</b>	Examiner <b>Mirkovic, Olinka</b>
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			

 1  
EPO FORM 1503 03.82 (P04C01)

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

EP 08 25 3853

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

25-04-2013

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 3723693	A1	26-01-1989	DD 271883 A5	20-09-1989
			DE 3723693 A1	26-01-1989
			EP 0302258 A1	08-02-1989
			ES 2025739 T3	01-04-1992
			HK 36692 A	29-05-1992
			SG 21692 G	22-05-1992
-----				
GB 1181817	A	18-02-1970	DE 1566833 A1	30-04-1970
			GB 1181817 A	18-02-1970
-----				
FR 2607951	A1	10-06-1988	DE 3641620 C1	30-06-1988
			ES 2008351 A6	16-07-1989
			FR 2607951 A1	10-06-1988
			IT 1211538 B	03-11-1989
			NL 8702783 A	01-07-1988
-----				
EP 0387151	A1	12-09-1990	DE 69001924 D1	22-07-1993
			DE 69001924 T2	31-03-1994
			EP 0387151 A1	12-09-1990
			ES 2042229 T3	01-12-1993
			FR 2644277 A1	14-09-1990
-----				

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82