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10 **Device for motor vehicles designed to give timely warning of an overtaking  
vehicle and for orienting the external rear-view mirrors to avoid the moment  
of dead angle**

The invention concerns the rear-view mirrors placed externally on motor vehicles.  
These mirrors provide a safety means enabling the driver to gain a full view of  
15 what is happening behind and at the sides of his vehicle in traffic, the speeds and  
positions of which are continuously changing, and which therefore constitute a  
potential source of some considerable danger.

It is well known that, when an overtaking vehicle comes alongside the vehicle it is  
intending to pass, a dead angle occurs in the view provided to the driver of the  
20 slower vehicle by his externally mounted rear-view mirrors, just at the moment of  
greatest risk when the faster vehicle is accelerating to pass the slower one and the  
two vehicles are at the point when one arrives alongside the other.

The above invention solves this problem by simple and effective means as will be  
explained below.

25 Subject of the invention is a device for motor vehicles said device comprising an  
electronic unit and radio tachometer that, by means of a specially devised circuit  
and when the speed of the overtaking vehicle shows that its driver intends to pass  
the slower vehicle on the left or on the right, puts into operation one of a pair of  
acoustic warning means mounted inside the slower vehicle on the right and on the  
30 left, and also orientates the positions of the externally mounted left or right-hand  
rear-view mirrors so that, while being overtaken, the driver is able to see the

vehicle approaching from behind, in this way avoiding the dead angle moment that occurs with the external rear-view mirrors at present in use.

In one type of execution the radio tachometer is connected to an antenna mounted centrally on the rear of the motor vehicle.

- 5 In another type of execution the radio tachometer is connected to two antennas respectively mounted at the right and left on the rear of the motor vehicle.

The electronic unit and radio tachometer are housed inside the motor vehicle in a recess closed by a door inside a slot in the dashboard, and is electrically wired both to the acoustic warning means on the right and left and to the devices that  
10 respectively operate the right and left-hand rear-view mirrors, and also to the antennas mounted at right and left on the rear of the motor vehicle.

Four knobs are placed on the door closing the recess in the dashboard for the electronic unit and radio tachometer, the first knob being used to adjust the electronic circuit that estimates the speed of a vehicle approaching from behind,  
15 the second and third knobs being used to adjust rotation of one or other of the rear-view mirrors while the slower vehicle is being overtaken, and the fourth knob being used to regulate pulses sent to the generators of acoustic warnings.

When the overtaking vehicle has passed on, or when still behind but travelling at a speed showing that its driver does not intend to overtake, the electronic unit in the  
20 radio tachometer cuts out the acoustic warning means and returns the rear-view mirrors to their initial positions.

In one type of execution the rear-view mirrors comprise a first part joined to the presently-known devices for spatial orientation, and a second part, movable in relation to the first part and connected to the electronic unit and radio tachometer  
25 to produce the phenomena described above if another vehicle approaches from behind with intention to overtake the one in front of it.

The invention offers evident advantages.

The acoustic warning announcing a probable overtake and the automatic rotation of the left or right hand rear-view mirrors on the vehicle being overtaken, enable  
30 its driver to maintain a view of the vehicle approaching from behind and the relative positions of the two, and act accordingly to avoid any danger.

In view of the simplicity of the apparatus described, and of the enormous advantages consequent upon avoidance of one of the main causes of accidents that occur on the roads today, so often due to one vehicle overtaking another or attempting to do so, the invented device could be universally adopted with great  
5 advantage.

Characteristics and purposes of the invention will be made still clearer by the following example of its execution illustrated by diagrammatically drawn figures.

Plate I

Fig. 1 Motor vehicle with external rear-view mirrors in the normal position,  
10 perspective.

Plate II

Fig. 2 The vehicle with its left rear-view mirror automatically turned to avoid the dead angle, and another vehicle approaching from behind to overtake it, from above with enlarged detail of the rear-view mirror as seen by the driver.

15 Plate III

Fig. 3 Dashboard of the motor vehicle onto which the rear-view mirrors, subject of the invention, are mounted, front view.

The motor vehicle 8 presents the external rear-view mirrors 10 left and 12 right mounted on brackets 13, said mirrors being substantially the same as the types  
20 already known but connected to devices 14 and 15 that turn the mirror concerned to avoid the dead angle when said vehicle 8 is being overtaken by the faster vehicle 40, as will be explained below.

The slot 20 in the dashboard 18 of the vehicle 8 contains an electronic unit 16 comprising a radio tachometer connected by electrical wiring 28 and 29 to devices  
25 14 and 15 respectively, by wiring 30 and 31 to the radio tachometer's antennas 26 and 27 respectively mounted in positions on the left and right of the rear 36 of the vehicle 8, and by wiring 46 and 48 to the acoustic warning means 42 and 44 mounted on the left and on the right inside the vehicle 8.

The radio tachometer as usual comprises an electronic circuit that makes real time  
30 comparisons between the speed of the vehicle on which it is installed, and that of the vehicle arriving from behind, such as vehicle 40.

The speed of an overtaking vehicle must necessarily exceed that of the vehicle being overtaken so that when, by means of antennas 26 and 27, the radio tachometer notes this difference in speeds, the electronic unit 16 determines, by means of devices 14 and 15, rotation of the rear-view mirrors 10 and 12 on vehicle 8 so that the image 40' (Figure 2) of the overtaking vehicle 40 remains visible in the rear-view mirrors 10 and 12, as shown in Figure 2, the eyes 34 of the driver 32 being able to check in the left hand rear-view mirror 10, then turned as far as 10', the position of said vehicle 40 overtaking on the left, in relation to his own vehicle 8, any dead angle being therefore avoided.

10 The electronic unit 16 also operates one or other of the acoustic warnings 42 and 44 mounted on the left and on the right inside vehicle 8 (Figure 1) according to whether the faster vehicle 40 is overtaking vehicle 8 on the left or on the right.

When the faster vehicle has overtaken the slower one, or when the speed of vehicle 40 is such as to exclude the intention to overtake, the electronic unit 16  
15 turns off the acoustic warning means and automatically returns the rear-view mirrors 10 and 12 to their initial positions.

CLAIMS

1. Device for motor vehicles  
characterized in that it comprises an electronic unit with radio tachometer which  
puts into operation, when the speed of a vehicle approaching from behind in  
5 relation to that of a slower vehicle is such that said latter vehicle will presumably  
be overtaken on the left or on the right, one or other of two acoustic warning  
means mounted respectively on the left and on the right inside the slower vehicle  
and, by means of certain special devices, rotates one or other of the external rear-  
view mirrors mounted respectively on the right and left in such a way that the  
10 eyes of the driver in the slower vehicle can continue to see the overtaking vehicle,  
thus avoiding the dead angle that is created by the rear-view mirrors at present in  
use.
2. Device for motor vehicles as in claim 1,  
characterized in that the radio tachometer is wired to an antenna mounted in a  
15 central position on the rear of the motor vehicle.
3. Device for motor vehicles as in claim 1,  
characterized in that the radio tachometer is connected to two antennas mounted  
respectively at the left and at the right on the rear of the motor vehicle.
4. Device for motor vehicles as in claim 1,  
20 characterized in that the electronic unit with radio tachometer is placed inside a  
recess, closed by a door, in the dashboard and is connected by electrical wiring to  
the acoustic warning means mounted inside the vehicle respectively on the left  
and right, is also wired to the devices that cause the left or the right hand rear-  
view mirrors to rotate if a faster vehicle is approaching to overtake, and is also  
25 wired to the antennas mounted respectively at the left and at the right on the back  
of the motor vehicle.
5. Device for motor vehicles as in claims 1 and 4,  
characterized in that four knobs are mounted on the door of the recess in the  
dashboard holding the electronic unit and tachometer, the first knob being used to  
30 adjust the electronic circuit and estimate the difference in speed of a motor vehicle  
approaching from behind and that of a slower vehicle preceding it, the second  
and third knobs respectively being used to adjust rotation of one or other of the

rear-view mirrors while overtaking is in progress, and the fourth knob being used to regulate pulses to the generators for the acoustic warning means mounted on the left and on the right as described.

6. Device for motor vehicles as in claims 1 and 4,  
5 characterized in that, when overtaking by the faster vehicle has been completed, or if the speed of said vehicle shows that it no longer intends to overtake the vehicle in front of it, the electronic unit of the radio tachometer cuts off the acoustic warnings and, by means of the respective special devices referred to above, returns the rear-view mirrors to their initial positions.
- 10 7. Device for motor vehicles as in claim 1,  
characterized in that the externally mounted rear-view mirrors comprise a first part joined to the presently known devices for spatial orientation, and a second part, moveable in relation to said first part and connected to the electronic unit comprising the radio tachometer, to cause the rear-view mirrors to rotate, when  
15 another vehicle is approaching to overtake, thus avoiding the dead angle moment as described above.

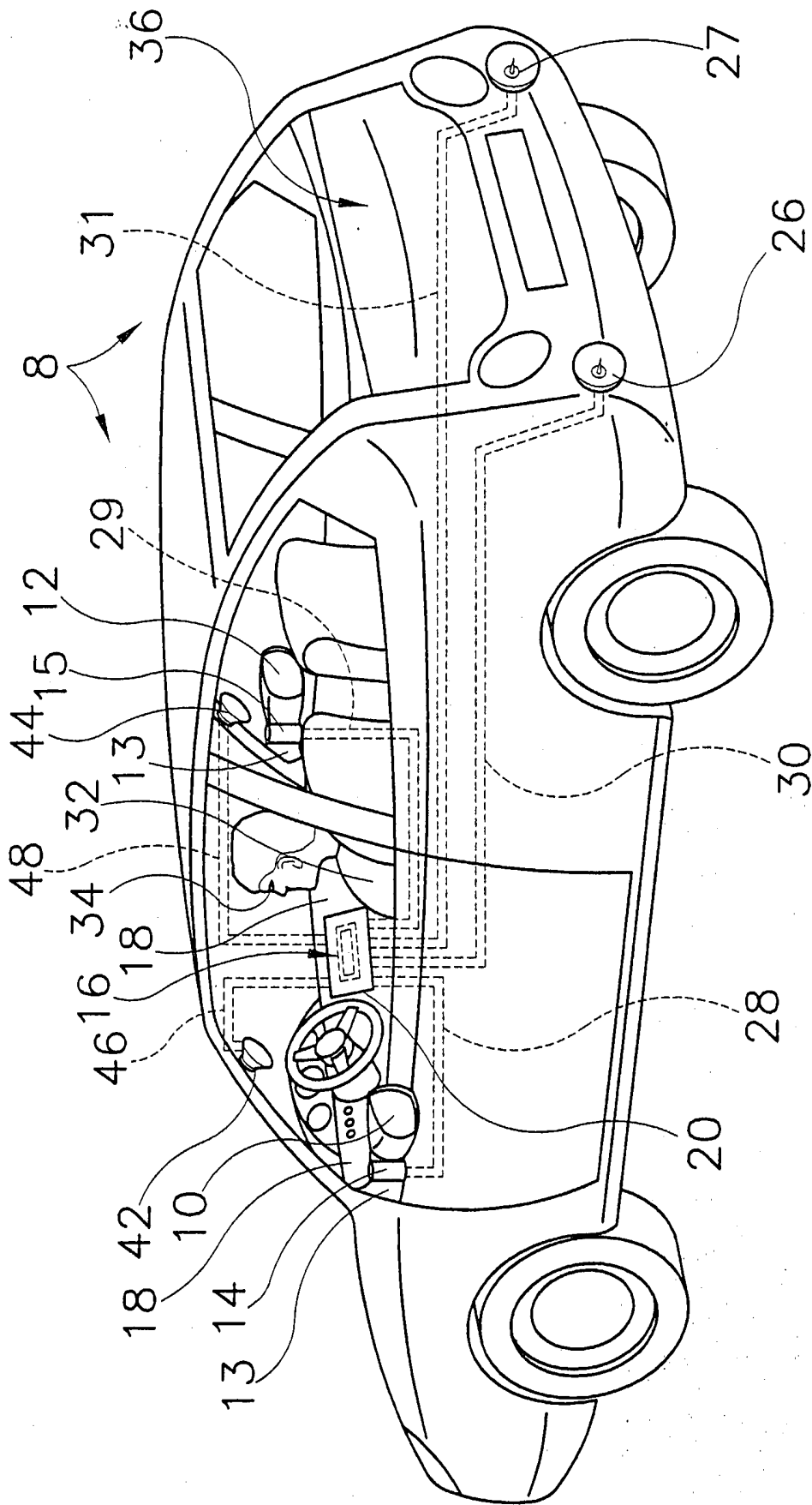


FIG.1



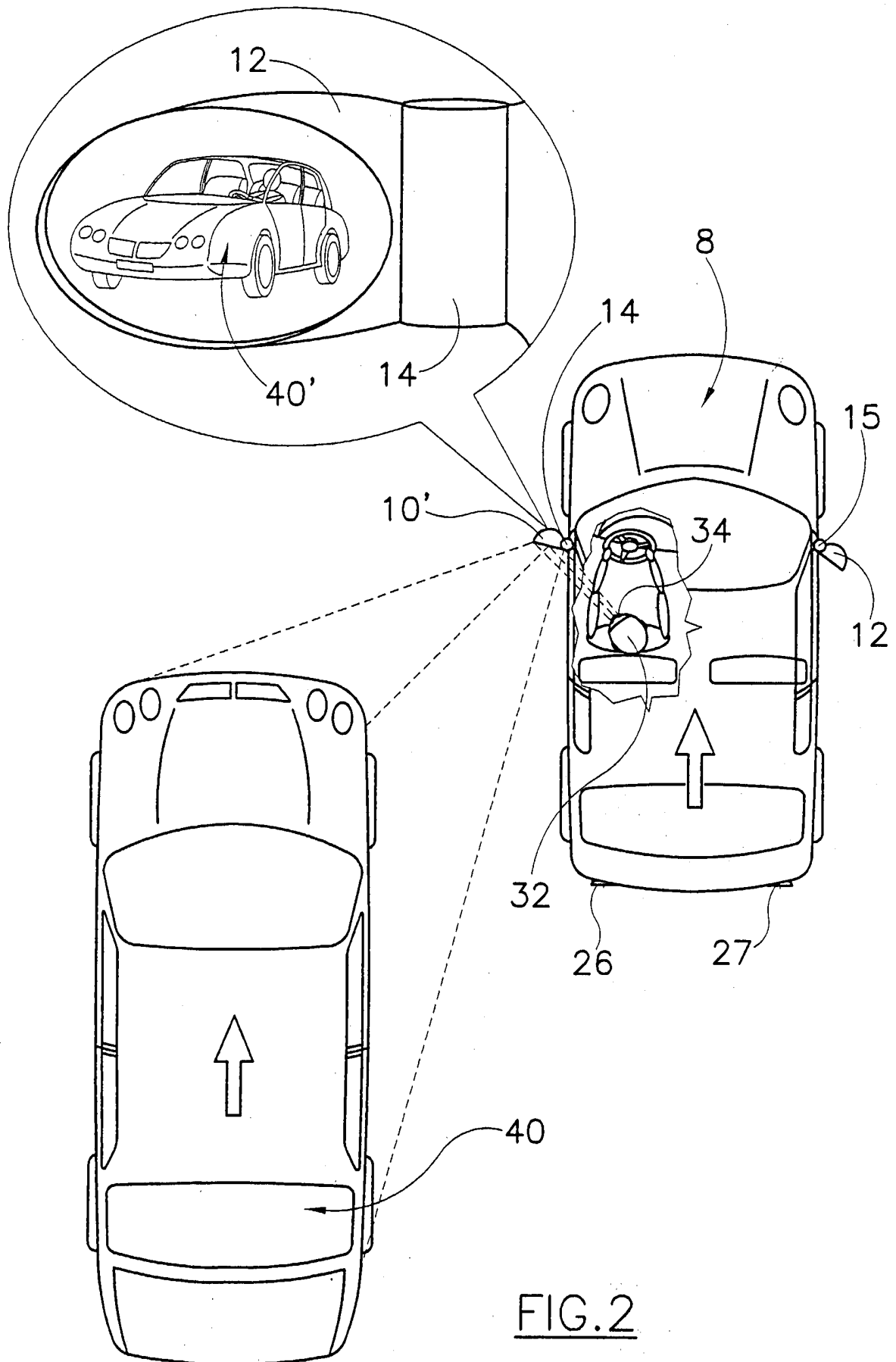


FIG.2



## INTERNATIONAL SEARCH REPORT

International Application No

PCT/IT2005/000169

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC 7 B60R1/02

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)

IPC 7 B60R

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

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

EPO-Internal, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6 116 742 A (AHN ET AL) 12 September 2000 (2000-09-12) abstract; figures column 2, line 5 - column 3, line 14 -----	1,6
A	US 6 193 380 B1 (JACOBS RAYMOND A) 27 February 2001 (2001-02-27) abstract; figures column 3, line 31 - column 6, line 7 -----	1,6
A	PATENT ABSTRACTS OF JAPAN vol. 010, no. 115 (M-474), 30 April 1986 (1986-04-30) & JP 60 244642 A (NIPPON DENSO KK), 4 December 1985 (1985-12-04) abstract ----- -/--	1,6

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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Date of the actual completion of the international search

14 October 2005

Date of mailing of the international search report

21/10/2005

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## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/IT2005/000169

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 339 075 A (ABST ET AL) 16 August 1994 (1994-08-16) abstract; figure 3 column 6, line 49 - column 7, line 68 -----	1
A	US 6 452 533 B1 (YAMABUCHI HIROSHI ET AL) 17 September 2002 (2002-09-17) abstract; figures column 3, line 30 - column 10, line 55 -----	1

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Information on patent family members

International Application No

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