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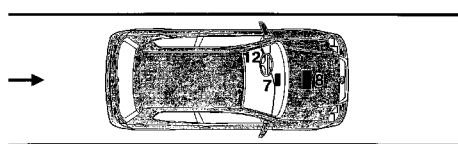
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(54) Title: AUTOMATIC CONTROL OF MAXIMUM SPEED AND AUTOMATIC CONTROL SYSTEM THEREOF

FIG. 6

A



(57) Abstract: This capital invention in the area of active safety (which is also a great ecological invention) refers to automatic maximum speed control and the automatic control system thereof for motor vehicles, and is comprised of one or more components, implying the navigational device (7) with adapted (supplemental) navigational maps from which the existing data (4) and new data (6) will be used, and with the new data (14) and (15), the automatic engine limiting device (8) and turn signal lever (12) for signalling left (L) or right (R) turns, thereby making this invention in question completely universal. It can be very easily built into new motor vehicles of all makes and models and into those motor vehicles already on the road. With its application, all serious traffic accidents caused daily due to excessive speeding on roads of varying category will be almost prevented (stopped) or fully prevented (completely stopped), thereby saving hundreds and thousands of people from serious injury or death, and avoiding immeasurable material damages and other costs.



## **AUTOMATIC CONTROL OF MAXIMUM SPEED AND AUTOMATIC CONTROL SYSTEM THEREOF**

### **DESCRIPTION OF THE INVENTION**

This capital invention in the area of active safety for all traffic participants (and other residents) pertains to an automatic control of maximum speed and the automatic control system thereof for the movement of motor vehicles of all makes and models for roads of varying category. The invention is fully aligned with all the available knowledge and technical capabilities of our day.

As long time drivers themselves, the inventors have come to the following conclusions:

- according to all indicators, exceeding the maximum speed limit while driving a motor vehicle is responsible for 70% of the most serious traffic accidents, with hundreds of thousands of traffic participants injured or killed each year;
- for that reason, the existing state of technology lags far behind the available knowledge and technical accomplishments of our day and,
- this should be changed as soon as possible.

Due to such a situation, which is grave without a doubt, and due to the capital safety significance for all participants in traffic, the inventors have set the goal to ultimately discover and define a modern, efficient and economical automatic system to control the maximum driving speed of motor vehicles of all makes and models for roads of different categories. This system, furthermore, will be completely universal and can be built very simply into all new motor vehicles and into those already on the road.

In order to ensure that the capital safety invention is accurate and easy to understand, the situation in existence today should be outlined:

- the maximum permitted driving speed for personal motor vehicles by different road category in several European countries are shown in the table below

	Highways	Outside of settlements	Within settlements
Austria	130	80	40
Switzerland	120	80	50
Slovenia	130	90	50
Hungary	130	90	50
Serbia	120	80	50
BiH	130	80	60
Italy	130	90	50
Spain	120	100	50
France	130	90	50
Germany	130+	100	50

- the auto industry is producing motor vehicles of all makes and models which are, without a doubt, more modern and better equipped and, as such, are faster than ever. For this reason, they are able to exceed the maximum permitted speed limit by road category in Europe and elsewhere at any given moment;
- due to these types of cars and drivers and incidence of serious traffic accidents occurring on a daily basis due to excessive speeding has developed guidelines for its Member States with the order to reduce their numbers by half in 2010 as compared to 2000, thereby adequately reduce the number of serious injuries and deaths;
- these guidelines were first implemented in Italy in the manner that a radar control system (called TUTOR) was installed on Italian motorways. This system measures the average speed of motor vehicles and introduced rigorous fines by the law and which must be paid by drivers driving faster than the set speed limit. In the course of the last year, the system registered and charged fines for 800,000 drivers, thereby filling the Italian budget by an additional EUR 125 million. The premise of the fine system is that drivers are most affected by monetary fines and where fines are rigorous, abiding by the speed limit becomes a normal part of society.

In order to define the technical problem for the invention in question, and to begin with its development and to achieve the set goal, the inventors were first required to conduct a detailed analysis and study of this complex issue. Where needed, the most eminent European experts from various fields were included in the analysis.

This analysis is based on the existing European regulations and personal motor vehicles, in brief, focusing on the following areas:

- A – the already introduced guidelines and TUTOR project (radar control system),
- B – damages and other costs associated with the most serious traffic accidents,
- C – mental and physical capacities of drivers, and
- D – other analysis and tests.

The results obtained showed the following:

For point A

- that the European Union passed such guidelines for good reason,
- that the radar control system (TUTOR project), with Italy in the lead and other European Union Member States introducing it to its highways in the same form is virtually the only project in this area today,
- that the system is only implemented on highways but not other road categories (which also have speed limits set and which are also affected by serious traffic accidents on a daily basis), and it is well known that it will never be implemented on these roads (for various reasons) and,
- that 2010 has passed and the fact is that the number of grave traffic accidents in European Union Member States has not been halved in comparison with the year 2000, as required by the guidelines.

For point B

- the damages and other costs associated with grave traffic accidents are massive and virtually immeasurable and, in the legal sense, have a broad reach, i.e. the state (police, fire fighters, health care, judicial system, etc.), insurance companies, and in those involved in the accidents (and their families), such that the majority of damages and other costs are borne by the state.

For point C

The average mental and physical capacity of a driver (in the sense of keeping constant control of the permitted speed limit and the rate of their reactions at any moment of driving a personal motor vehicle on roads of varying category that they drive on every day) are significantly lower than they were 10 years ago, for several reasons:

- the pace of life for drivers today is increasingly fast,
- drivers are faced with stress of all kind on virtually a daily basis, this refers primarily to work-related and family-related stresses, and
- their motor vehicles today are equipped with a large amount of electronic equipment (i.e. mobile phones, excessively loud music, etc.) and other distractions (discussions or arguments with

passengers, pets, inadequate footwear, applying makeup, etc) which significantly reduces their concentration and reactions. According to recent studies, reactions have been reduced by 0.30 seconds over earlier studies, indicating that their driving in cities at speeds of approx. 50 km/h can be fatal for pedestrians and other participants in traffic in serious traffic accidents.

For point D

Among the remaining analysis and tests, the following should be mentioned:

- competition between motor vehicle manufacturers today is relentless and fierce, meaning that their vehicles are becoming faster and faster to beat the competition and increase sales, i.e. there is absolutely no way to reduce their speed and to adapt to the maximum speed limits for different road categories in Europe (or elsewhere in the world),
- due to the rapid and drastic climatic changes (in which motor vehicles are running on gas and diesel fuel), the European Union has passed regulations to reduce CO<sub>2</sub> emissions and to increase the use of biofuels,
- for this reason car manufacturers have begun to develop new and more advanced engines (running on gas and diesel fuel), several models have been developed to run on biofuel, and several hybrid types have been developed and electric models are also under development, though today, very few of these alternative cars are on the road today, CO<sub>2</sub> emissions have not been reduced, biofuels are used in very small quantities and only the initial, pioneer steps have been taken in developing electric cars, and more than 10 years will be necessary for their inclusion on the road,
- petroleum (e.g. gas and diesel fuel) will continue to be available for the next 50 or more years, meaning that the production of motor vehicles will be able to continue as it is today.

It is necessary to further emphasize that:

- today at least two-thirds of drivers of personal motor vehicles (for the abovementioned reasons) cannot even with the best of intentions concentrate on driving under the set maximum speed limit on roads of various categories,
- only the remaining small percentage of conscientious and calm drivers of personal motor vehicles abides by the maximum speed limit on a daily basis,
- that a small percentage of drivers of sports cars, expensive and luxury vehicles pay little attention to the set maximum speed limit, meaning that they drive dangerously every day, i.e. fast or significantly faster than the maximum speed limit.

Due to the above results, the inventors came to the following conclusions:

- the TUTOR project is based exclusively on rigorously fining drivers, the great majority of which are not able to constantly control their maximum speed on roads of varying category that they drive on every day,
- it is very questionable just how fair, moral, humane and democratic it is, in our day, and particularly for other reasons, that in the course of their daily driving, they receive no timely signal that informs or warns them not to do so, which would be of exceptional assistance,
- the TUTOR project, for all these and other reasons, is certainly the wrong path to take, as it will never be able to fulfil the complete tasks from the guidelines set by the European Union for all its members, meaning that with its application (most extensive in Italy) on highways, serious traffic accidents continue to occur. In as much, there is no reference anywhere as to whether the damages and other costs caused each year are many times higher than the amount charged in fines for drivers and which is paid into the state budget,
- for that reason, it is necessary to urgently find and define a new path so as to save hundreds of thousands of persons from death and serious injury, and to avoid damages and other associated costs.

After completing the necessary analysis of this complex issue, the inventors were faced with the situation of creating the necessary elements to meet the tasks of this invention. The first element implies that the only true path is the one that can ultimately prevent (completely stop) all the most serious traffic accidents caused by everyday speeding of motor vehicles of all types on roads of varying category. This would result in preventing hundreds of thousands of injuries and deaths of passengers in road transport and preventing the damages and other costs associated with these accidents. Furthermore, this will also have maximally positive ecological and other effects.

Other important elements imply the following:

- drivers of motor vehicles of all makes and models be liberated from the constant control over the maximum driving speed for the entire duration of their driving,
- in addition to a signal giving timely information (warning) that they have reached the maximum permitted speed limit on the road they are driving on,
- such automatic speed control be aligned with all the valid regulations and permitted speed limits, and
- this system not in any way burden motor vehicle manufacturers, i.e. that they be able to continue manufacturing as they are today.

For the above reasons, the inventors came to the conclusion that it is necessary to define and create such an automatic speed control system for all types of motor vehicles for roads of varying categories that will

be harmonized with all the available knowledge and technical capacities of our day, that it will be completely universal and that can be simply built into new motor vehicles and those already on the road.

In order to ensure that the invention is accurate and easy to understand, the following must be stated:

- that it proves to be an aid for personal motor vehicles, and can be used for motor vehicles of all makes and models,
- that all analyses were conducted for Europe, but can apply to all other countries in the world, and
- that in the technical sense, the automatic speed control is a completely automatic speed control system that will consist of one or more parts and that it is modern, efficient, economic and completely universal, and that it can simply be installed into new motor vehicles and those which are already on the road.

For reasons well known to the auto industry, the inventors quickly came to the conclusion that the main and most important part of the automatic speed control system, i.e. the entire and completely automatic speed control system, is certainly an automatic device that must be built in such a way that it accurately registers the maximum permitted speed limit for any category of road at any time while driving a personal motor vehicle. For that reason, the first step in the development of this invention was to discover, model and define an automatic device that would be able to use signs on roads of varying category that motor vehicles drive on daily, to accurately and precisely read and register the permitted maximum speed limit.

Hereinafter, the invention will be described as shown in the figures, where:

- Figures 1A and 1B show the existing signs with the maximum speed limit on roads of varying category,
- Figures 2A and 2B show a standard navigational device (7) with standard navigational map and standard navigational device (7) with adapted (supplemental) navigational map according to this invention,
- Figures 3A and 3B show a standard navigational device (7) with adapted (supplemental) navigational map which uses data (6) and data (4) and the best position for the navigational device (7) in the personal motor vehicle according to this invention,
- Figures 4A and 4B show the position of the navigational device (7) and automatic engine limiting device (8) in the personal motor vehicle and their interrelationship (9) according to this invention,
- Figures 5A, 5B and 5C show two standard situations of lane-changing and a standard situation of passing a personal motor vehicle (11) on roads of varying category, and
- Figures 6A and 6B show the position of the navigational device (7), automatic engine limiting device (8) and turn signal lever (12) by which the left (L) or right (R) turn signal is turned on and off and their links (9) and (13) according to this invention.

FIGURE 1A shows:

- how the personal motor vehicle moves along a lower category road (one lane in each direction),
- how the speed limit sign is situated on the right hand side of the road, and
- how the vehicle reads and registers and maximum speed limit using the device.

FIGURE 1B shows:

- how the personal motor vehicle moves along a higher category road (two lanes in the same direction),
- how the speed limit sign is typically found above the car, and
- how the vehicle reads and registers and maximum speed limit using the automatic device (1).

After long analyses and testing several prototypes of the automatic device, it was concluded that it is simply not possible to develop such an automatic device with cameras and other accompanying electronics by which the device could constantly, accurately and precisely read and register the maximum speed limit using the speed limit signs on the roads of varying category the motor vehicles drive on, while also being maximally simple and efficient.

The most important reasons for this are:

- lighting of signs varies by day and by night,
- weather conditions – rain, snow or fog present significant problems,
- the lack of signs on some roads is a irresolvable problem, etc.

For that reason, other available technological options that form the foundation of this invention were analysed and tested in detail.

FIGURE 2A shows:

- a standard navigational device with a standard navigational map of the centre of the City of Zagreb, the capital city of the Republic of Croatia, with the current position of the personal motor vehicle and its destination, and
- how the numbers 1, 2, 3 and 4 indicate four essential data, and the number 5 indicates 2 symbols.

These four essential data are:

1. name of road (IVANA LUCIĆA) where the destination is situated,
2. that the driver is required to turn off the road upon which he is currently driving, in 200 m to the right, i.e. onto the road where the destination is situated,
3. the arrival time at the destination (11:16) if he continues to drive at the current speed, and
4. the current speed (45 km/h), while

the 2 symbols (+) and (-) marked with the number 5 refer to:



- that he will arrive later at the destination if he continues moving at a lower speed than the current speed, or earlier if he moves at a speed faster than the current speed.

An analysis of navigational devices indicated:

- that today, one-third of all new personal motor vehicles (in Europe) have a built-in navigational devices as part of the standard equipment,
- that navigational devices are a great aid to drivers,
- that for that reason, a large number of drivers purchase them and built them into their vehicles as additional equipment, and
- that it is certain that they will become part of the standard equipment of all motor vehicles in a very short period of time.

A detailed analysis of navigational maps indicated:

- that in addition to the existing data and symbols, one exceptionally important additional data – the permitted maximum speed limit of the road the motor vehicle is currently driving on – can be simply built into the device, which has not been done to date.

This discovery enabled the inventors to finally find this completely new technical means, which implies:

- that the exceptionally important new piece of data can be easily built into existing navigational maps for roads of varying category for each country in Europe (or in the world),
- that navigational devices with such adapted (supplemental) navigational maps directly becomes the long sought after automatic device, i.e. the first and main component of this invention, and
- that this discovery is its foundation.

FIGURE 2B shows:

The same navigational device with the same navigational map as in Figure 2A, though:

- the navigational map is now adapted (supplemented) with the new and exceptionally important information about the maximum permitted speed limit (50 km/h) on the road upon which the motor vehicle is currently driving on,
- that this data is marked with the number (6) and is located in the lower left-hand side of the display,
- that due to this, the existing data (3) on the arrival time at the destination (11:16) was relocated to the upper right-hand corner,
- that due to this, the positions of the 2 symbols (+) and (-) marked by the number 5 have been slightly moved, and
- that the existing data (4) is now more strongly emphasized as, together with the new data (6), this will be used for the functioning of this invention.

With regards to the above, the following must be said:

- that the new data (6) is indicated in km/h, but in those countries using the mile system, it will be automatically be displayed in mph as of the moment that the vehicle passes the border and begins to use that country's navigational maps.

With this, the new proper route to take was discovered in order to almost fully prevent (stop) or completely prevent (fully stop) all serious traffic accidents caused daily by excessive speeding of motor vehicles on roads of varying categories.

For that reason, the invention in question has been divided into two phases of development, as follows:

- the implementation of the first phase that will almost completely prevent (stop) all serious traffic accidents, and
- the implementation of the second phase of development that will completely prevent (fully stop) all serious traffic accidents.

#### PHASE ONE

The first phase of realising automatic speed control has only one part, and is perfectly simple and economic, and completely universal. In the technical sense, this is a completely automatic speed control system, as shown in Figures 3A and 3B.

FIGURE 3A shows:

- navigational device with adapted (supplemental) navigational map from FIGURE 2B to be used with the new data (6) on the maximum permitted speed of the road upon which the motor vehicle is moving at that moment, with the existing data (4) on its current speed.

FIGURE 3B shows:

- enlarged sketch of the personal motor vehicle and the best position for the navigational device (7).

The first phase of the invention in question will function in the following manner:

- when the speed of the motor vehicle becomes equal to the speed limit of the road upon which it is currently moving, light and sound signals from the navigational device (7) will begin to inform (warn) the driver of that fact, that he may not drive faster and to immediately reduce the driving speed; the said signals will continue until the driver has done so.

For that reason, the navigational device (7) will have to be minimally adapted in the following ways:

- it is turned on from the beginning to end of each driving session of the motor vehicle and cannot and may not be turned off,
- it is proposed that for the purpose of the driver's improved visibility of these data (6) and (4), the display be constantly lit up, and with that lighting the necessary light signals shall be such that it begins to turn on and off from the said moment, and

- that the necessary sound signal be adequate.

The analysis of the first phase of development showed:

- that it functions perfectly,
- that virtually all drivers will take this notification (warning) seriously and reduce the speed of their motor vehicles,
- that its application will almost completely prevent (stop) all serious traffic accidents, and
- that it can and should be implemented as soon as possible.

However, despite this, due to the goal set for this invention, to finally completely prevent (full stop) all serious traffic accidents, the inventors have continued to work on the second phase of development of the invention.

#### PHASE TWO

The second phase of development of the automatic maximum speed control builds onto the first step of its development. The invention is comprised of two or three parts and will also be perfectly simple and economic, and completely universal. For that reason, it will be developed in two variations: the basic variation and its final variation.

#### BASIC VARIATION

This will consist of two parts. In the technical sense, this will also be a fully automatic maximum speed control system, and is shown in Figures 4A and 4B.

FIGURE 4A shows:

- sketch of the personal motor vehicle on the road, and
- best position for installation of its two parts as shown with numbers 7 and 8.

FIGURE 4B shows:

- enlarged sketch of the same personal motor vehicle,
- its first part or navigational device (7),
- its second part or automatic engine limiting device (8), and
- their interrelationship (link) (9).

The automatic maximum speed control system will now function in the following way:

- when the speed of the motor vehicle reaches the permitted maximum speed limit of the road upon which the vehicle is driving on, the use of short light and/or sound signals from the navigational device (7) will inform (warn) the driver of that fact, and the automatic engine limiting device (8) will instantaneous and automatically limit the engine of the personal motor vehicle and it will no longer be able to exceed the permitted speed limit for the duration of driving along that road.

For that reason, the navigational device (7) must be minimally adapted in such a way that:

- the new data (6) and existing data (4) are constantly transmitted to the automatic engine limiting device (8), and
- that short light and/or sound signals will inform (warn) the driver of the fact that the speed of the motor vehicle has reached the maximum permitted speed limit of the road upon which it is driving at that time, and that the engine has been automatically limited.

With regard to the automatic engine limiting device (8) of the motor vehicle, it is necessary to state that the inventors did not have any intention of specially developing this for the reason:

- this was conditionally resolved in the technical sense long ago,
- that its installation as an integral component of the automatic maximum speed control system must be done in such a way to ensure it is simply, economical and completely universal.

The analysis of the basic variations of the second phase of development of the automatic maximum speed control system showed:

- that it consistently functions perfectly,
- that with its application it will ultimately completely prevent (fully stop) all these serious traffic accidents, and
- that its application, due to the increasing number of motor vehicles of all types and the daily congestion caused should be analysed and tested in further detail.

Due to the reason that this congestion is most common in cities (in inhabited areas), the inventors decided that they should be implemented in cities.

For this reason, they used:

- a maximum speed limit of 50 km/h, and sought an answer to the question of whether it also consistently functions perfectly in the case when the motor vehicle in front of the motor vehicle in question is moving at a speed that is approx. 20% lower than the maximum permitted speed limit of 50 km/h, as this directly increases the amount of congestion (which is the most important issue for the remaining roads).

The results obtained are visible in Figure 5A, 5B and 5C. They clearly show the three basic situations in which personal motor vehicles move in every day.

FIGURE 5A shows:

- a road with two lanes in the same direction,
- how the last personal motor vehicle (11) moves from behind the first personal motor vehicle (10) along the left lane,

- how the driver of the last motor vehicle (11) informs other traffic participants using the right turn signal (R) that he intends to change into the right lane,
- how he does so, and,
- how he continues driving along to the maximum permitted speed limit.

FIGURE 5B shows:

- the same road as in 5A,
- how the last personal motor vehicle (11) moves out from behind the first personal motor vehicle (10) along the right lane,
- how the driver of the last motor vehicle (11) informs other traffic participants using the left turn signal (L) that he intends to change into the left lane,
- how he does so, and,
- how he continues driving along to the maximum permitted speed limit.

FIGURE 5C shows:

- a road with two lanes, with one in each direction,
- how the last personal motor vehicle (11) moves out from behind the first personal motor vehicle (10), whose speed is 40 km/h or 20% lower than the maximum permitted speed limit of 50 km/h,
- how the driver of the last motor vehicle (11) informs other traffic participants using the left turn signal (L) that he intends to pass,
- how after passing, the driver uses the right turn signal (R) to inform other traffic participants that he intends to return to the driving lane,
- how he does so, and,
- how he continues driving along to the maximum permitted speed limit.

The results they obtained showed:

- that the basic variation of the second phase of development of the automatic maximum speed control system consistently functions perfectly during lane changing (under Figures 5A and 5B), but
- problems could arise during passing (under Figure 5C).

This implies:

- if the first personal motor vehicle (10) is driving along that road at a speed of 40 km/h, i.e. 20% less than the maximum permitted speed of 50 km/h, and
- if the driver of the last personal motor vehicle (11) decides to pass, he will not be able to do so quickly and safely as he would not be able to drive greater than the maximum speed limit of 50 km/h at any given moment, as it could happen that the engine of his personal motor vehicle lacks the sufficient power.

For that reason, the inventors have decided to devise a final variation of the second phase of development of the automatic maximum speed control.

#### FINAL VARIATION

This is a further adaptation of the basic variation and will have three parts. In the technical sense, it will also be a fully automatic maximum speed control system, and is depicted in Figures 6A and 6B.

FIGURE 6A shows:

- sketch of the personal motor vehicle on the road, and
- the best position for installation of its three components, marked with the numbers 7, 8 and 12.

FIGURE 6B shows:

- enlarged part of the sketch of the same personal motor vehicle,
- its first component, the navigational device (7),
- its second component, the automatic engine limiting device (8),
- its third component, the turn signal lever (12) which turns the left (L) or right (R) turn signal on and off, and
- their interrelationships (links) (9) and (13).

With regard to its third component, the turn signal lever (12) which turns the left (L) or right (R) turn signal on and off, it must be briefly said that the inventors wanted to use this component to resolve another issue when passing, i.e. that only during that time period will the engine of the motor vehicle be automatically without the limitation so as to ensure that the vehicle will always have sufficient power to pass quickly and safely and, when completed, the engine will again be limited to continue driving along that road only to its maximum permitted speed limit.

In other words, this means that the turn signal lever (12) will define the beginning and end of each passing session, i.e. the beginning when the turn signal is turned on (in one direction) and ending when the turn signal is turned off (in the other direction) and when the motor vehicle returns to its lane. Therefore, using the turn signal lever (12) these two data via the link (13) will be constantly transmitted to the automatic engine limiting device (8) so that it can automatically remove the limitation and again limit the engine.

An analysis of this solution using the third component or turn signal lever (12) indicated:

- that in the majority of world countries, motor vehicles drive along the right hand side and, when passing, their drivers use the left (L) turn signal to pass and then the right (R) turn signal to return to their own lane,
- that in the remaining world countries, motor vehicles drive in the left line and, when passing, their drivers use the right (R) turn signal to pass and then the left (L) turn signal to return to their own lane,

- that for this reason, the solution for the third component or turn signal lever (12) requires minimal adaptations.

Analyses of this issue indicated that there is a very simple and effective solution. This implies that the functioning of the final variation of the second phase of development of this invention of the navigational map supplementation with the new data (14) for this, in which the turn indicator of left (L) or right (R) in passing will be included for each country begin to be used by drivers such that the navigational device (7) and this new data (14) would be constantly transmitted to the automatic engine limiting device (8). This means that as soon as a motor vehicle would pass the border of any state and begin to use its navigational maps, the automatic engine limiting device (8) would know exactly which turn signal is used by drivers first in passing, in order to remove the limitations on the engine of their motor vehicle in that time period, and after the completion of passing, to again limit the engine.

A detailed analysis of this solution in daily traffic showed:

- that drivers in every country use this turn signal, in addition to passing, for other intended purposes, e.g. turning onto side roads, or while changing lanes, during which time the motor vehicle does not require a faster speed or removal of the limitations of the engine,
- that the use of this function could be abused, and
- that for safety reasons, it requires further adjustments.

In seeking a way so as to do so simply and efficiently, they came to the following conclusion:

- that fast and safe passing can only be carried out on a permitted and straight section of road,
- that for safety reasons, the section of road ahead of the passing area must also be straight and sufficiently long, and
- that this could also be resolved using navigational maps, as they constantly display the exact position of the motor vehicle on the road upon which it is currently driving.

In other words, this means:

- that the navigational maps and navigational device (7) must be further adapted in such a way that, at any given moment while the motor vehicle is moving along the road of any category, they know precisely whether or not the driver can carry out fast and safe passing, with the turning on of the adequate turn signal,
- that the navigational map will be adapted (supplemented) for that reason with this exceptionally important new safety information (15) which the navigational device (7) will also constantly transmit in the form of data to the automatic engine limiting device (8) so as to automatically remove the engine limitations and, after the completion of passion, to again limit the engine, and

- that the limitations on the engine of the motor vehicle can only be removed under that condition and in that situation (which could form the foundation of another separate and exceptionally important safety invention).

With this, the two abovementioned possible issues are simultaneously resolved in the best possible way, while also achieving that it all functions completely automatically, or rather, that the driver of the motor vehicle cannot (and may not) be involved in its functioning in any way.

The final variation of the second phase of development of this invention will function in the following way:

- that it is the same as its basic variation such that with this variation, it will be made possible for drivers of motor vehicles, in any country of the world, that while passing, the limitations on the engine of their motor vehicle are removed so as to ensure that passing can be carried out in a fast and safe way, and once passing is complete, the engine is again limited so as to continue driving along that road at a speed up to but not exceeding the maximum permitted speed limit such that, they will be informed about the possibility of the start of such passing (or of the removal of limitations on the engine of their motor vehicle) and its completion by a short light and/or sound signal, and
- that this will all function completely the same in the case that, when the driver begins to pass and then retracts from passing for any reason and again returns to the lane from which he began.

For that reason, minimum adaptations will be required to all three of its components, implying:

- that the navigational maps for each country will be amended (supplemented) with the new data (14) and (15),
- that the navigational device (7) and the new data (14) and (15) via the link (9) will constantly transmit this information to the automatic engine limiting device (8), such that the same short light and/or sound signal will inform the driver of the start and end of passing, i.e. that the engine of the motor vehicle is again automatically limited, and
- that the turn signal lever (12) constantly transmits that information via the link (13) to the automatic engine limiting device (8), referring to the first information or to the start of passing and the second information, or the completion of passing.

Related to the new data (14) and (15), it is necessary to state that we recommend that these data not be emphasized, i.e. not found on the navigational maps for the reason that the display already shows a great deal of different kinds of information.



Furthermore, it is still necessary to emphasize that:

- the basic and final variations of the second phase of development of this invention shall function in the same way as the first phase of development, i.e. from the beginning to the end of driving the motor vehicle, it will not be possible (and may not) be turn the system off, and
- with its implementation into motor vehicles of all types, all the most serious traffic accidents caused on a daily basis due to exceeding the maximum speed will finally be fully prevented (completely stopped).

From the above, it is clearly visible that this automatic control of maximum speed system is divided into two phases of development (which further consists of a basic and final variation) and therefore is a complex invention which, in the technical sense, represents a system of automatic control (of the permitted maximum speed of driving a motor vehicle of all types on roads of varying categories). Therefore, it should be said briefly that the automatic control system consists of three basic components, referring to:

- the first component or navigational device (7) which will have adapted (supplemented) navigational maps which will be used with the new data (6) on the permitted maximum speed of the road upon which the motor vehicle is driving at that time, with the new data (14) about which turn signal, left (L) or right (R) is used to commence passing in any country of the world, with the new data (15) about whether their passing will be fast and safe and with the existing data (4) about the current speed of the motor vehicle,
- the second component or automatic engine limiting device (8) to the permitted maximum speed of the road upon which the motor vehicle is currently driving, and
- the third component or turn signal lever (12) used to turn the left (L) or right (R) turn signal on and off, by which the navigational device (7) and automatic engine limiting device (8) will be connected via the link (9), while the turn signal lever (12) will be connected with the automatic engine limiting device (8) via the link (13) in such a way that the constant exchange of information (4, 6, 14 and 15) is enabled between the said components, such that the existing data (4) and new data (6) will be constantly displayed on the navigational map, i.e. on the display of the navigational device (7), such that the navigational device (7) will further contain light and/or sound signalisation to inform the driver of the fact that the existing data (4) has become equal to the new data (6), with the assistance of the new data (14) and (15) on the start and finish of each fast and safe passing.

With regard to the light and/or sound signal from the navigational device (7) used to inform the driver of the motor vehicle, it is necessary to say that it will be made according to the development phases of the automatic control of maximum speed in such a way that:

- in the first phase of its development, it will use the existing data (4) and new data (6) to inform the driver that the speed of the motor vehicle has become equal to the maximum permitted speed limit on the road upon which the vehicle is moving at that moment, meaning, that the vehicle cannot (and may not) move faster, i.e. to immediately reduce the driving speed, such that this signal will continue until the driver does so,
- that in the basic variation of the second phase of development, also using the existing data (4) and new data (6) with short light and/or sound signal, will inform the driver that the speed of the motor vehicle has become equal to the maximum permitted speed limit on the road upon which the vehicle is moving at that moment and that the automatic engine limiting device (8) has simultaneously limited the engine of the motor vehicle so as to allow the vehicle to continue along that road only to the permitted maximum speed limit, and
- that in the final variation of the second phase of development of the automatic control of maximum speed, the light and/or sound signal will function in the same manner as in the basic phase, such that, using the new data (14) and (15) and adequate information from the turn signal lever (12), the same short light and/or sound signal will inform the driver of the motor vehicle of the start and completion of each fast and safe passing session, i.e. of the time in which the automatic engine limiting device (8) first removes the limitations and then again limits the engine of the motor vehicle.

This completes the description of the technical part of this capital invention.

Furthermore, it can rightfully be said that the invention is:

- simple, economical and fully universal and can without any problem be simply installed in new motor vehicles of all makes and models and in those already on the road, implying personal motor vehicles, cargo vehicles, buses, etc. and on motorcycles (with the exception of mopeds that can only reach speeds of 50 km/h), such that it is recommended that the automatic control of maximum speed not be installed in police vehicles, ambulances, fire trucks, etc. and those other vehicles as determined by each state (due to its sovereignty on its own territory), which implies to the vehicles of high ranking state officials and their accompaniments, certain military vehicles, etc.,
- that in the first phase of development, it may and must be urgently begin to be installed in motor vehicles of all types as this control will almost completed prevent (stop) all serious traffic accidents,

- and that its second phase of development may and must be created and installed in motor vehicles as soon as possible, as it will finally and completely prevent (fully stop) all serious traffic accidents,
- that this invention is the only possible right path to take, as it will inform (warn) the driver or completely disable the driver from driving his motor vehicle at speeds higher or much higher than the permitted maximum speed limit on roads of varying category, instead of the unfortunate situation today in which this is only rigorously fined,
  - that for these and all other reasons, this capital invention is one of the most important active safety inventions in the motor vehicles industry,
  - that in addition to the above, this also represents an important ecological invention as the driver will no longer be able to drive his motor vehicle along roads of varying category at speeds higher or much higher than the maximum speed limit, and as a result, motor vehicles will consume an average of 20% less fuel and will emit fewer toxic fumes to the atmosphere, thereby contributing to conservation of our already disturbed ecosystem, and
  - that the application of this capital invention will have immeasurable benefits all the people living in our time.

## PATENT CLAIMS

1. Automatic control of maximum speed and automatic control system thereof for motor vehicles of all makes and models, **characterised** by one or more basic components which refers to:

- the first component or navigational device (7) which will have adapted (supplemented) navigational maps which will be used with the new data (6) on the permitted maximum speed of the road upon which the motor vehicle is driving at that time, with the new data (14) about which turn signal, left (L) or right (R), is used to commence passing in any country of the world, with the new data (15) about whether their passing will be fast and safe and with the existing data (4) about the current speed of the motor vehicle,
- the second component or automatic engine limiting device (8) for limiting driving speed to the permitted maximum speed of the road upon which the motor vehicle is currently driving, and
- the third component or turn signal lever (12) used to turn the left (L) or right (R) turn signal on and off,

by which the navigational device (7) and automatic engine limiting device (8) will be connected via the link (9), while the turn signal lever (12) will be connected with the automatic engine limiting device (8) via the link (13) in such a way that the constant exchange of information (4, 6, 14 and 15) is enabled between the said components, such that the existing data (4) and new data (6) will be constantly displayed on the navigational map, i.e. on the display of the navigational device (7), such that the navigational device (7) will further contain light and/or sound signals to inform the driver of the fact that the existing data (4) has become equal to the new data (6), with the assistance of the new data (14) and (15) on the start and finish of each fast and safe passing event.

2. Automatic control of maximum speed and automatic control system thereof according to claim 1, **characterised** in that the first phase of its development will have one component or a navigational device (7) with amended (supplemented) navigational maps from which the existing data (4) and new data (6) will be used, and will function in such a manner that when the speed of the motor vehicle becomes equal with the permitted maximum speed limit of the road upon which the vehicle is driving, light and/or sound signals will be emitted from the navigational device (7) to inform the driver of the fact that he cannot (and may not) drive faster, i.e. to immediately reduce the driving speed, and such signal shall continue until he does so.

3. Automatic control of maximum speed and automatic control system thereof according to claims 1 and 2, **characterised** in that the basic variation of its second phase of development shall be an add-on to its first phase of development and shall have two components, which refers to the first component or navigational device (7) with amended (supplemented) navigational maps from which the existing data (4) and new data (6) will be used, and which will be transmitted by the navigational device (7) via the link (9) constantly to the second component, or the automatic engine limiting device (8) and shall function in such a way that when the speed of the motor vehicle becomes equal to the permitted maximum speed limit of the road upon which the vehicle is currently driving, the use of short light and/or sound signals from the navigational device (7) shall be used to inform the driver of this fact and that the automatic engine limiting device (8) will simultaneously automatically limit the engine of his motor vehicle and that the continued driving along that road shall be permitted only up to the permitted maximum speed limit.
  
4. Automatic control of maximum speed and automatic control system thereof according to claims 1, 2 and 3 **characterised** in that the final variation of the second phase of its development shall be an add-on to its basic variation and shall have three components, referring to the first component or navigational device (7) with amended (supplemented) navigational maps from which the existing data (4) and new data (6) will be used and constantly transmitted by the navigational device (7) via the link (9) to the second component, or the automatic engine limiting device (8), and its third component or turn signal lever (12) which is used to turn the left (L) or right (R) turn signal on and off, which will constantly transmit these two data via the link (13) to the automatic engine limiting device (8), which will all function in the same manner as in the basic variation, except that during passing, where it is possible to do so quickly and safely according to the data (14) and (15) and information from the turn signal lever (12), the automatic engine limiting device (8) will receive the order that upon the start of passing to automatically remove the limitation on the engine of the motor vehicle and with the completion of passing to automatically again limit the engine in order to allow the driver to quickly and safely conduct the passing and then to continue driving along the road at a speed only up to the permitted maximum speed limit, and shall also be informed of the start and finish by a short light and/or sound signal from the navigational device (7).

5. Automatic control of maximum speed and automatic control system thereof according to claims 1 to 4, **characterised** in that it will function from the beginning to the end of each driving session of the motor vehicle and cannot (and may not) be turned off.
6. Automatic control of maximum speed and automatic control system thereof according to claims 1 to 5, **characterised** in that it will be completely universal and can be very simply built into new motor vehicles of all makes and models without any problem, and into those vehicles already on the road.
7. Automatic control of maximum speed and automatic control system thereof according to claims 1 to 6, **characterised** in that every country in the world may prescribe that it need not be built into certain motor vehicles, here referring to police vehicles, ambulances, fire trucks, etc., or to motor vehicles of high ranking state officials and their accompaniments, certain military vehicles, etc.
8. Automatic control of maximum speed and automatic control system thereof **characterised** in that the application of its first phase will virtually completely prevent (stop) and the application of its second phase will completely prevent (fully stop) all serious accidents caused daily by exceeding the maximum permitted speed limit for motor vehicles on roads of varying category, thereby saving hundreds and thousands of people each year from serious injury or death, and preventing the virtually immeasurable material damages and other associated costs.
9. Automatic control of maximum speed and automatic control system thereof **characterised** in that it is simultaneously an important ecological invention, as the drivers of motor vehicles of varying makes and models will no longer be able to drive along roads of varying category at speeds higher or much higher than the permitted maximum speed limit, thereby consuming at least 20% less fuel and emitting fewer harmful gases to the atmosphere, thereby conserving our already disturbed ecosystem, and therefore this capital active safety invention for motor vehicles of all makes and models is of immeasurable benefit for all the residents of our planet today.

**FIG. 1**

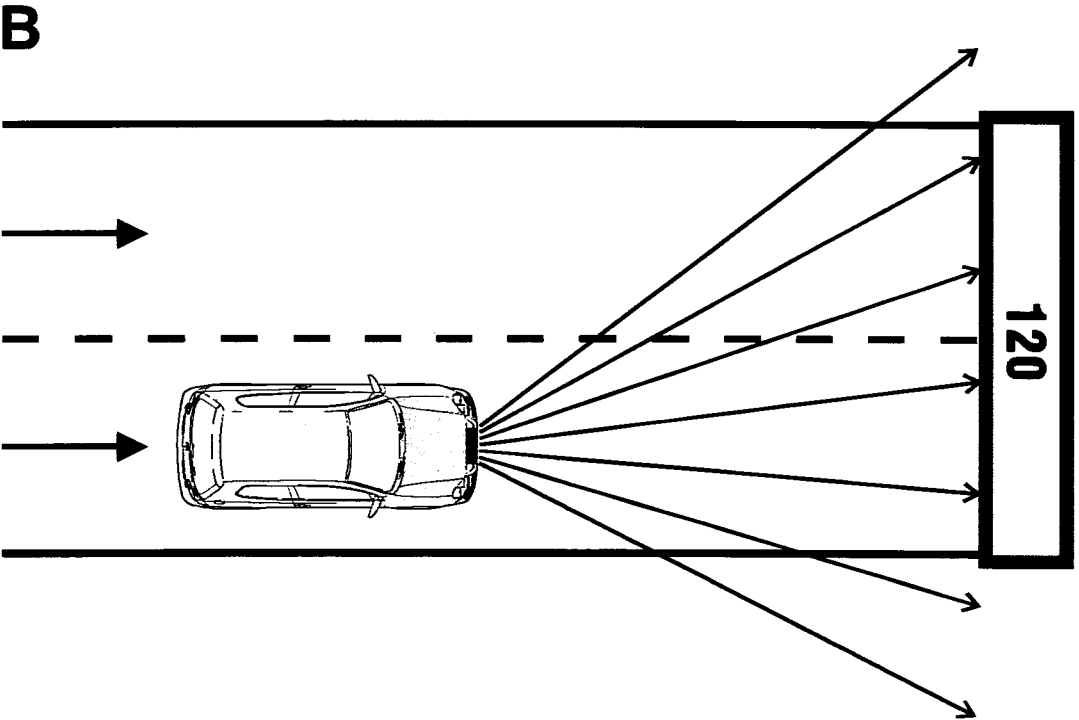
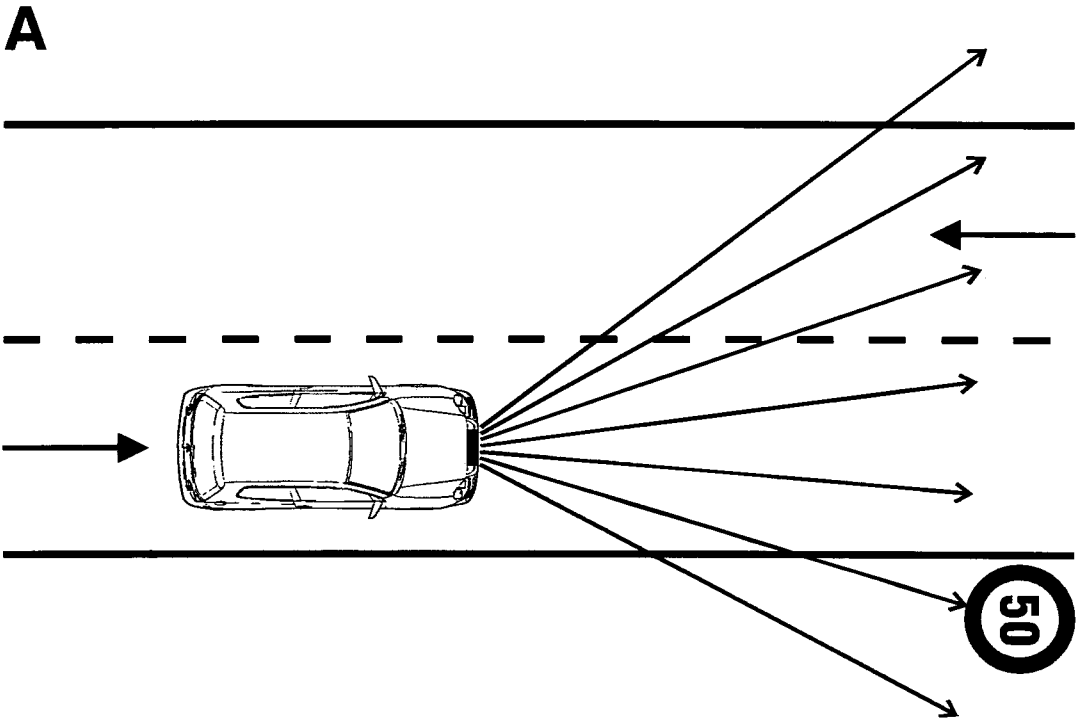
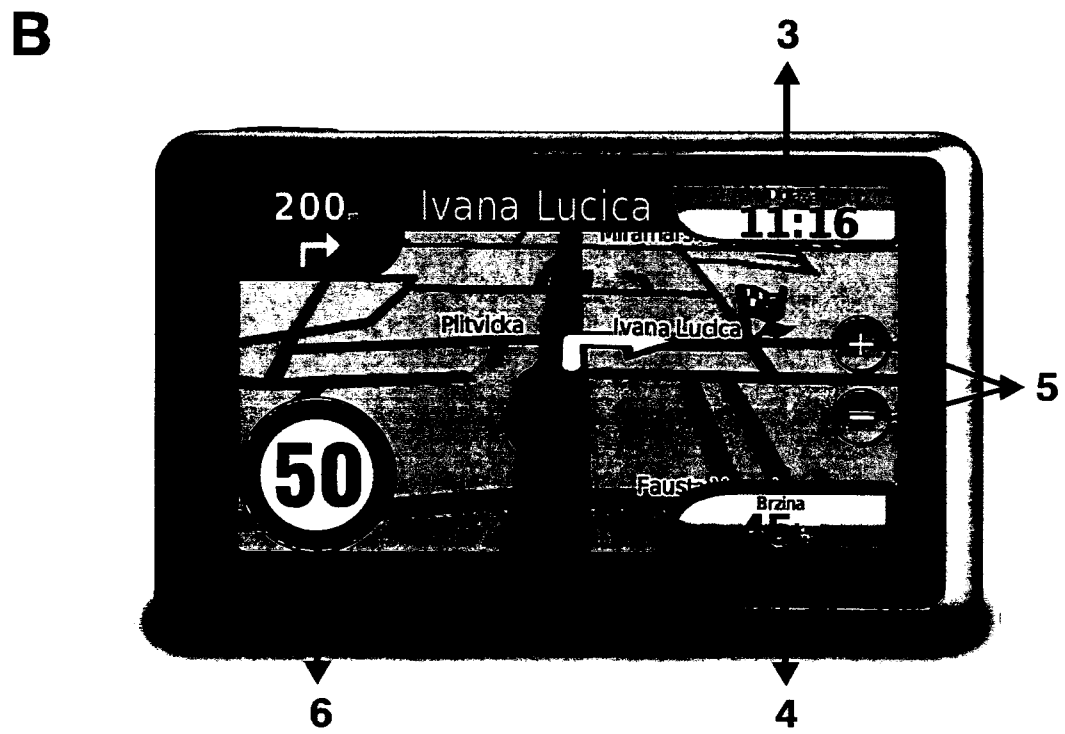
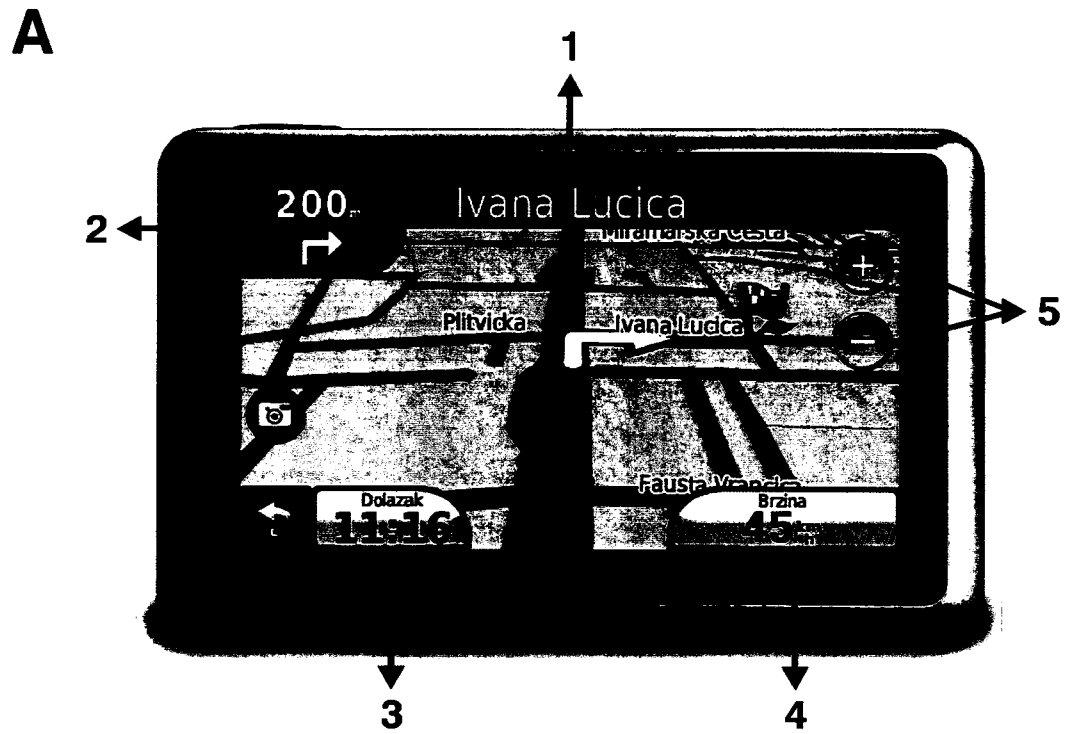


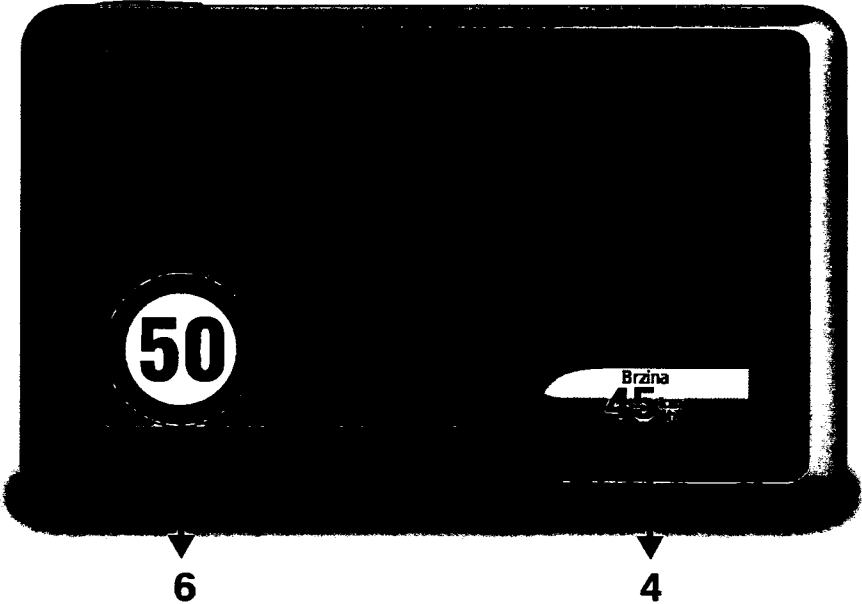
FIG. 2



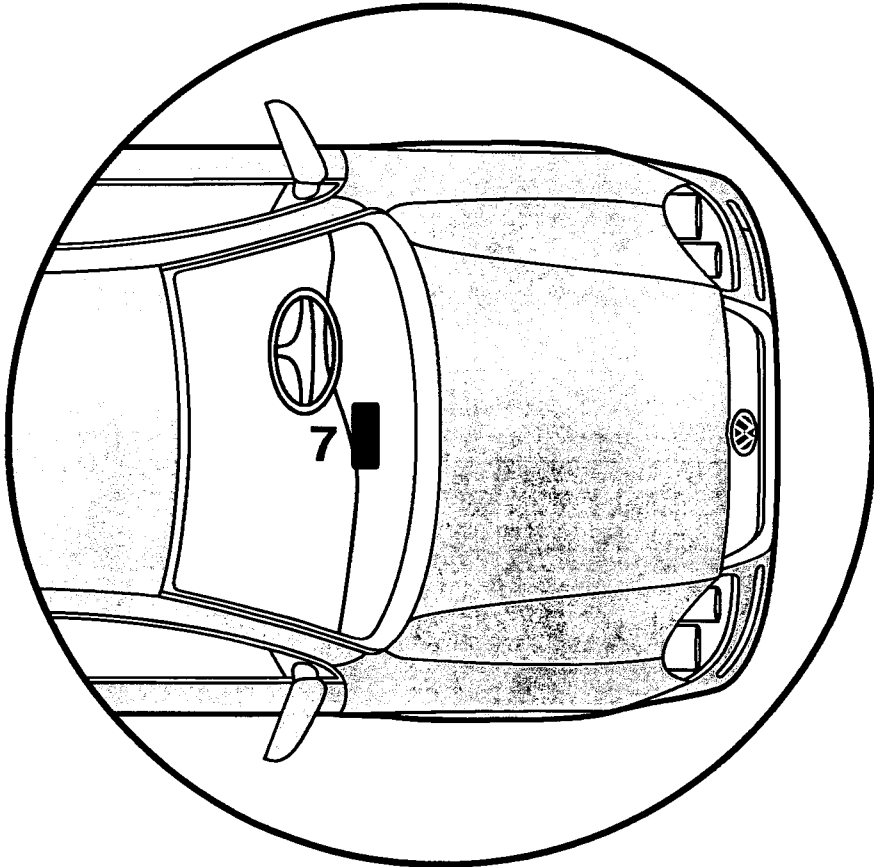


# FIG. 3

A

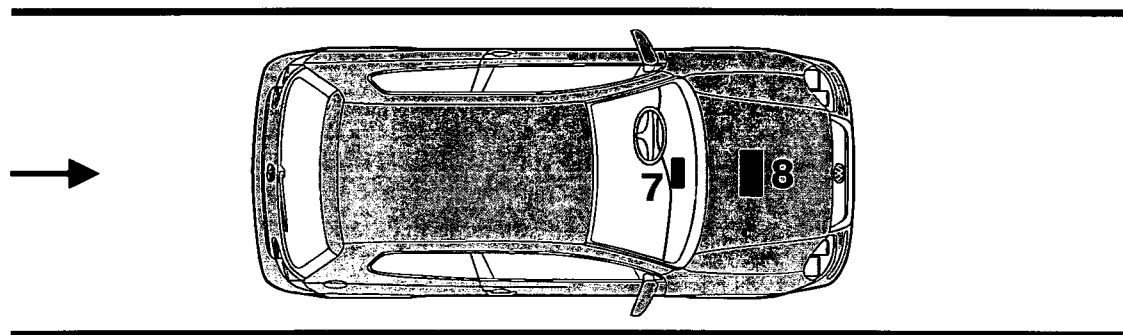


B

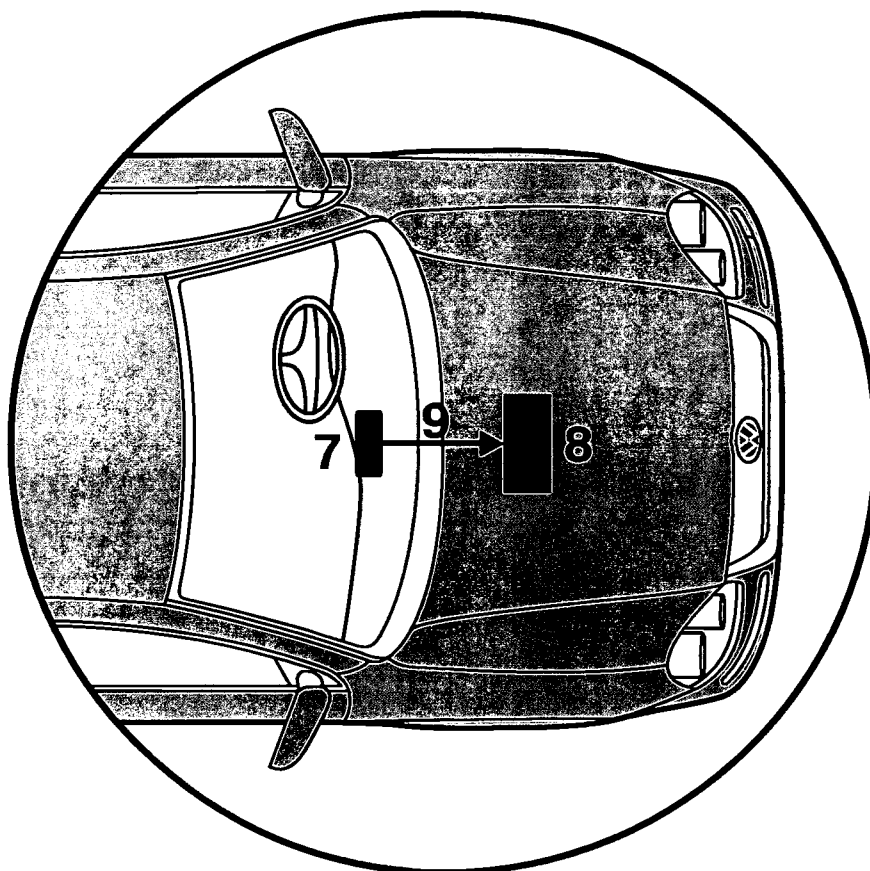


# FIG. 4

## A

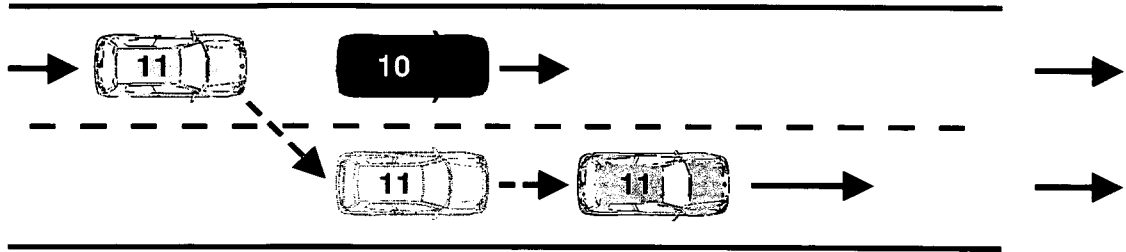


## B

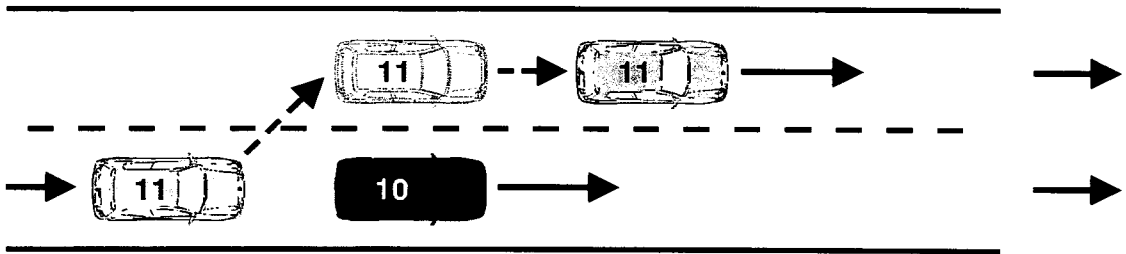


# FIG. 5

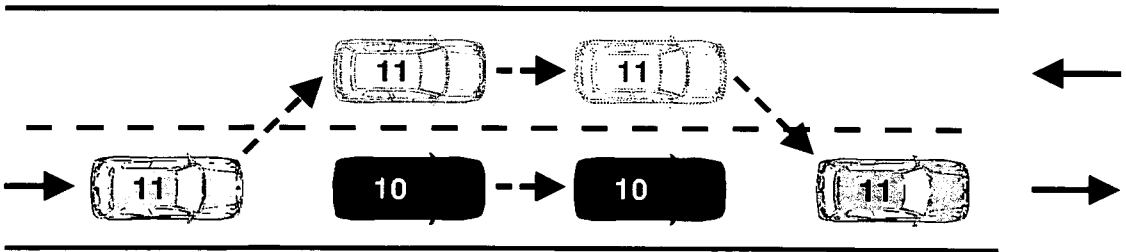
## A



## B

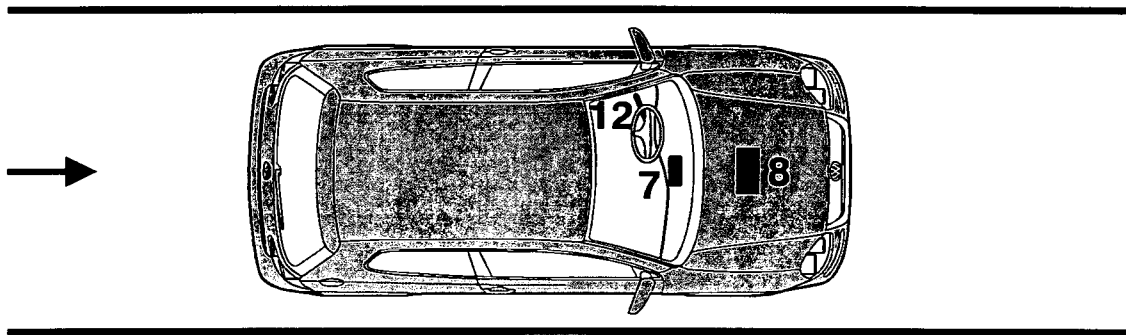


## C

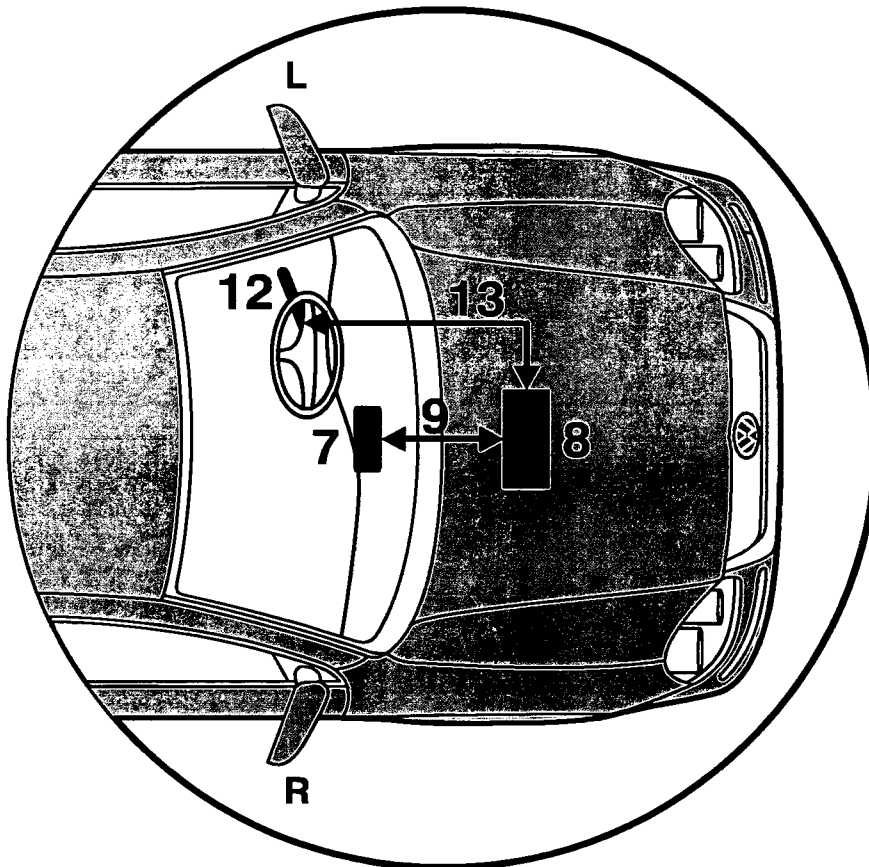


# FIG. 6

## A



## B



## INTERNATIONAL SEARCH REPORT

International application No  
PCT/HR2011/000013

A. CLASSIFICATION OF SUBJECT MATTER INV. B60K31/18 G01C21/26 G08G1/052 G08G1/0967 ADD.		
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) B60K G01C G08G		
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		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2007/067086 A1 (ROTHSCHILD LEIGH M [US]) 22 March 2007 (2007-03-22) Paragraphs [0035]-[0041] -----	1-9
A	GB 2 458 513 A (FADAHUNSI ARC STEVE A [GB]) 23 September 2009 (2009-09-23) page 3, line 12 - page 4, line 6 page 5, line 8 - page 6, line 2 -----	1-9
A	US 6 246 948 B1 (THAKKER KAUSHAL [US]) 12 June 2001 (2001-06-12) column 2, line 53 - line 60 column 3, line 66 - column 4, line 59 -----	1-9
A	AU 2004 202 419 A1 (ADAMOPOULOS GREGORY) 23 December 2004 (2004-12-23) page 5, line 3 - page 6, line 13 claims 1-5 -----	1-9
	-/--	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents :		
<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 when the document is taken alone</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>"&amp;" document member of the same patent family</p>
Date of the actual completion of the international search  1 December 2011		Date of mailing of the international search report  12/12/2011
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016		Authorized officer  Bourdier, Renaud

## INTERNATIONAL SEARCH REPORT

International application No  
PCT/HR2011/000013

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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Information on patent family members

International application No

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