

A system for controlling the ignition of a motor vehicle

5 FIELD OF THE INVENTION AND PRIOR ART

The present invention relates to a system according to the preamble of claim 1 and a method according to the preamble of claim 10 for controlling the ignition of a motor vehicle. The invention also relates to a computer program comprising computer
10 program code for implementing such a method, a computer program product comprising a data storage medium readable by an electronic control unit and having such a computer program stored thereon, and an electronic control unit.

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Motor vehicles, such as cars, busses, lorries and towing vehicles, are provided with a manually manoeuvrable operating member, for instance in the form of a so-called ignition switch, which has to be manoeuvred to an ON position by the vehicle
20 driver in order to activate the ignition system of the vehicle. The operating member controls a control member, a so-called ignition relay, which is manoeuvrable by means of the operating member to and fro between a switched-off position, in which the control member keeps the ignition of the vehicle switched-off,
25 and a switched-on position, in which the control member keeps the ignition of the vehicle switched-on. In certain situations, it may be desirable, for instance for reasons of security, to prevent the ignition from being switched-off so as to thereby prevent the loss of a vehicle function that is dependent upon switched-on
30 ignition.

OBJECT OF THE INVENTION

The object of the present invention is to achieve a solution that makes it possible to prevent the ignition of the vehicle from being manually switched-off under certain conditions.
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SUMMARY OF THE INVENTION

5 According to the invention, said object is achieved by means of a system having the features defined in claim 1 and a method having the features defined in claim 10.

10 According to the invention, an electronic control unit that is adapted to activate a retention function under predetermined conditions is used, the control unit being adapted, when the retention function is activated, to retain the control member in switched-on position and thereby prevent the control member from being manoeuvred from switched-on position to switched-off position under the effect of the operating member. By making
15 an electronic control unit take care of the desired retention of the control member in switched-on position, very good possibilities to adapt the retention function in question to the specific security requirements of the motor vehicle in question are obtained. Furthermore, the inventive solution is implementable in
20 an easy manner by relatively simple modifications of existing vehicle systems.

The invention also relates to a computer program having the features defined in claim 19, a computer program product having
25 the features defined in claim 27 and an electronic control unit having the features defined in claim 28.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will in the following be more closely described by means of embodiment examples, with reference to the appended
5 drawings, where:

Fig 1 is an outline diagram of a system according to a first embodiment of the present invention,

10 Fig 2 is an outline diagram of a system according to a second embodiment of the invention, and

Fig 3 is an outline diagram of an electronic control unit for implementing a method according to the invention.

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DETAILED DESCRIPTION OF EMBODIMENTS

Two different embodiments of a system 1 according to the invention for controlling the ignition of a motor vehicle are schematically illustrated in Figs 1 and 2. The inventive system 1
20 comprises a control member 2 that is manoeuvrable between a switched-off position, in which the control member is arranged to keep the ignition of the vehicle switched off, and a switched-on position, in which the control member is arranged to keep the
25 ignition of the vehicle switched on. The control member 2 is preferably a relay, a so-called ignition relay, which in a conventional manner comprises a breaker 2a and an electromagnet 2b, where the breaker 2a under the effect of the electromagnet 2b is closed when electric current is supplied through the electromag-
30 net and returns to open position when the supply of current through the electromagnet ceases.

The system 1 further comprises a manually manoeuvrable operating member 3, for instance in the form of a so-called ignition
35 switch, by means of which the control member 2 is manoeuvrable between switched-off position and switched-on position. The

operating member 3 is manoeuvrable to an ON position for switching on the ignition and an OFF position for switching off the ignition.

- 5 The system 1 further comprises an electronic control unit 4, which is adapted to activate a retention function under predetermined conditions, the control unit 4 being adapted, as long as the retention function is activated, to retain the control member 2 in switched-on position and thereby prevent the control member from being manoeuvred from switched-on position to switched-off position under the effect of the operating member 3. In the illustrated examples, the control unit 4 is adapted, when the retention function is activated, to supply electric current via one of its outlets 4a to the control member 2, to its electromagnet 2b to be precise, so as to thereby retain the control member in switched-on position.

The different conditions for activation and deactivation of the above-mentioned retention function can easily be adapted to the vehicle type and the specific requirements of the vehicle type in question by reprogramming the control unit 4.

In this description and the subsequent claims, deactivation of the retention function implies that the retention function activated by the control unit is interrupted, i.e. that the retention function is brought from active state to inactive state.

A description of conceivable functions of a system according to the embodiment illustrated in Fig 1 follows below.

In the embodiment illustrated in Fig 1, the operating member 3 is arranged to control the control member 2 via the control unit 4. The operating member 3 is in this case adapted to send to the control unit a control signal for switching on the ignition when it is manoeuvred to the ON position and a control signal for switching off the ignition when it is manoeuvred to the OFF po-

sition. The control unit 4 is then adapted to control the control member 2 in dependence on these control signals.

- When the control unit 4 from the operating member 3 receives a control signal for switching on the ignition, the control unit is adapted to manoeuvre the control member 2 to switched-on position and activate the retention function, on condition that the control member 2 is not already in switched-on position and the retention function is not already activated. The control unit 4 is adapted to deactivate the retention function and manoeuvre the control member 2 from switched-on position to switched-off position when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
- the control unit 4 receives information indicating that the parking brake of the vehicle is set, and
 - the control unit 4 receives from the operating member 3 a control signal for switching off the ignition.
- In the above-indicated case, the control unit 4 is adapted to establish whether the parking brake of the vehicle is set or receive information about that. The control unit 4 may be arranged to receive information regarding the setting state of the parking brake directly from a sensor 5 arranged to sense setting and release of the parking brake or from a control unit 6 of the vehicle connected to such a sensor, such as a brake control unit. Setting and release of the parking brake are suitably sensed by means of a pressure sensor 5 arranged to sense the pressure in the air conduit to the parking brake cylinder. If the sensed pressure is below a predetermined threshold value, for instance in the magnitude of 0.8 bar, this will indicate that the parking brake is set. As an alternative, setting and release of the parking brake could be sensed by means of a sensor arranged to sense the position of the operating member by means of which the driver of the vehicle controls the parking brake.

If the system according to the embodiment illustrated in Fig 1 is used in a vehicle provided with an automatic braking function that is dependent upon switched-on ignition for its operation, such as a conventional bus stop brake and/or hill holding brake of a bus, the control unit 4 is adapted to maintain the retention function active and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- 10 - the control unit 4 receives information indicating that the parking brake of the vehicle is not set,
- the control unit 4 receives information indicating that an automatic braking function of the vehicle is active, and
- 15 - the control unit 4 receives from the operating member 3 a control signal for switching off the ignition.

If the system according to the embodiment illustrated in Fig 1 is used in a vehicle provided with an automatic braking function of the above-mentioned type, the control unit 4 should further be adapted to deactivate the retention function, manoeuvre the control member 2 from switched-on position to switched-off position and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- 20 - the control unit 4 receives information indicating that the parking brake of the vehicle is not set,
- the control unit 4 receives information indicating that no automatic braking function of the vehicle is active, and
- 30 - the control unit 4 receives from the operating member 3 a control signal for switching off the ignition.

In the above-indicated cases, the control unit 4 is consequently adapted to establish whether an automatic braking function of the vehicle is activated or receive information about that. The control unit 4 may be arranged to receive information regarding

the activation state of an automatic braking function directly from an operating member 7 that is manually manoeuvrable for activation of such a braking function or from a control unit 6 of the vehicle connected to such an operating member, such as a
5 brake control unit.

If the system according to the embodiment illustrated in Fig 1 is used in a vehicle that is not provided with any automatic braking function of the above-mentioned type, the control unit 4 is
10 adapted to deactivate the retention function, manoeuvre the control member from switched-on position to switched-off position and initiate the generation of the warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions,
15 are simultaneously fulfilled:

- the control unit 4 receives information indicating that the parking brake of the vehicle is set, and
- the control unit 4 receives from the operating member 3 a control signal for switching off the ignition.

20 A description of conceivable functions of a system according to the embodiment illustrated in Fig 2 follows below.

In the embodiment illustrated in Fig 2, the operating member 3
25 is arranged to control the control member 2 directly. In this case, the operating member 3 is preferably a breaker. In the ON position, the operating member 3 is arranged to conduct electric current to the control member 2, to its electromagnet 2b to be precise. When the operating member 3 is in the OFF position,
30 no electric current is conducted to the control member 2 via the operating member 3. In this case, the operating member 3 is arranged to send to the control unit 4 information indicating switching on of the ignition when it is manoeuvred to the ON position and information indicating switching off of the ignition
35 when it is manoeuvred to the OFF position. The control unit 4 is

then adapted to control said retention function in dependence on this information.

5 In the example illustrated in Fig 2, the control member 2 is retained in switched-on position as long as at least either of the control unit 4 and the operating member 3 allows electric current to be conducted to the control member 2. As long as the control unit 4 keeps the control member 2 energized, the control member will remain in switched-on position no matter whether the
10 operating member 3 is in the ON position or the OFF position.

The control unit 4 is adapted to activate the retention function when it from the operating member 3 receives information indicating switching on of the ignition in connection with the control
15 member 2 being manoeuvred from switched-off position to switched-on position under the effect of the operating member 3. The control unit 4 will hereby secure that the ignition remains switched-on as long as this retention function is activated. When the retention function thereafter, under predetermined conditions, is deactivated, the supply of current to the control member
20 2 via the outlet 4a of the control unit ceases, whereupon the control member 2 in conventional manner can be manoeuvred from switched-on position to switched-off position under the effect of the operating member 3. The control unit 4 is adapted to deactivate the retention function, and thereby allow the control
25 member 2 to be manoeuvred from switched-on position to switched-off position under the effect of the operating member 3, when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- 30 - the control unit 4 receives information indicating that the parking brake of the vehicle is set, and
- the control unit 4 receives information indicating that the operating member 3 has been manoeuvred to the OFF position, i.e. information indicating switching off of the
35 ignition.

If the system according to the embodiment illustrated in Fig 2 is used in a vehicle provided with an automatic braking function of the above-indicated type, the control unit 4 is adapted to maintain the retention function active and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- the control unit 4 receives information indicating that the parking brake of the vehicle is not set, and
- the control unit 4 receives information indicating that an automatic braking function of the vehicle is active, and
- the control unit 4 receives from the operating member 3 information indicating switching off of the ignition.

If the system according to the embodiment illustrated in Fig 2 is used in a vehicle provided with an automatic braking function of the above-indicated type, the control unit 4 should further be adapted to deactivate the retention function and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- the control unit 4 receives information indicating that the parking brake of the vehicle is not set, and
- the control unit 4 receives information indicating that no automatic braking function of the vehicle is active, and
- the control unit 4 receives from the operating member 3 information indicating switching off of the ignition.

If the system according to the embodiment illustrated in Fig 2 is used in a vehicle that is not provided with any automatic braking function of the above-mentioned type, the control unit 4 is adapted to deactivate the retention function and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- the control unit 4 receives information indicating that the parking brake of the vehicle is not set, and
- the control unit 4 receives from the operating member 3 information indicating switching off of the ignition.

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The above-indicated warning is generated by means of a warning indicator 8 controlled by the control unit 4, which warning indicator is intended to alert the driver of the vehicle that the parking brake is not set when the ignition is switched off or
10 when a switching off of the ignition is ordered by the driver. The warning should be perceivable by the driver in the driving-cabin and is suitably a light signal and/or an acoustic signal, for instance in the form of a flashing parking brake symbol on the dashboard and/or a buzzer.

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Computer program code for implementing a method according to the invention is suitably included in a computer program, which is loadable directly into the internal memory of a computer, such as the internal memory of the above-mentioned control unit 4.
20 Such a computer program is suitably provided via a computer program product comprising a data storage medium readable by an electronic control unit, which data storage medium has the computer program stored thereon. Said data storage medium is for instance an optical data storage medium in the form of a CD-ROM disk, a DVD disk etc, a magnetic data storage medium in
25 the form of a hard disk, a diskette, a cassette tape etc, or a memory of the type ROM, PROM, EPROM or EEPROM or a Flash memory.

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The inventive computer program comprises computer program code for causing the computer to activate, under predetermined conditions, for instance the above-indicated conditions, a retention function that makes the above-mentioned control member 2 of a vehicle retain in switched-on position and thereby prevents
35 the control member from being manoeuvred from switched-on position to switched-off position under the effect of a manually

manoeuvrable operating member 3, and computer program code for moreover causing the computer to operate in any of the manners described above with respect to the control unit 4.

- 5 Fig 3 very schematically illustrates an electronic control unit 4 comprising an execution means 11, such as a central processing unit (CPU), for executing computer software. The execution means 11 communicates with a memory 13, for instance of the type RAM, via a data bus 12. The control unit 4 also comprises
10 data storage medium 14, for instance in the form of a memory of the type ROM, PROM, EPROM or EEPROM or a Flash memory. The execution means 11 communicates with the data storage medium 14 via the data bus 12. A computer program comprising computer program code for implementing a method according to
15 the invention is stored on the data storage medium 14.

This invention is intended to be used in a motor vehicle, such as for instance a bus, a towing vehicle or a lorry.

- 20 The invention is of course not in any way restricted to the embodiments described above. On the contrary, many possibilities to modifications thereof should be apparent to a person with ordinary skill in the art without departing from the basic idea of the invention as defined in the appended claims.

Claims

1. A system for controlling the ignition of a motor vehicle, which system comprises:

- 5 - a control member (2) that is manoeuvrable between a switched-off position, in which the control member (2) is arranged to keep the ignition of the vehicle switched off, and a switched-on position, in which the control member (2) is arranged to keep the ignition of the vehicle switched on, and
- 10 - a manually manoeuvrable operating member (3), by means of which the control member (2) is manoeuvrable between switched-off position and switched-on position, the operating member (3) being manoeuvrable to an ON position for switching on the ignition and to an OFF position for switching
- 15 off the ignition,

characterized in that the system comprises an electronic control unit (4) that is adapted to activate a retention function under predetermined conditions, the control unit (4) being adapted, when the retention function is activated, to retain the control

20 member (2) in switched-on position and thereby prevent the control member (2) from being manoeuvred from switched-on position to switched-off position under the effect of the operating member (3).

25 2. A system according to claim 1, characterized in that the control member (2) is a relay, and that the control unit (4) is adapted, when the retention function is activated, to retain the control member (2) in switched-on position by supplying electric current to the control member.

30 3. A system according to claim 1 or 2, characterized in that the control unit (4) is adapted to activate the retention function when the control member (2) is manoeuvred from switched-off position to switched-on position under the effect of the operating

35 member (3).

4. A system according to claim 3, characterized in that the control unit (4) is adapted to deactivate the retention function, and thereby allow the control member (2) to be manoeuvred from switched-on position to switched-off position under the effect of the operating member 3, when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
- the control unit (4) receives information indicating that the parking brake of the vehicle is set, and
 - the control unit (4) receives information indicating that the operating member (3) has been manoeuvred to the OFF position.
5. A system according to any of claims 1-4, characterized in that the operating member (3), when it is manoeuvred to the ON position, is adapted to send to the control unit (4) a control signal for switching on the ignition, and, when it is manoeuvred to the OFF position, is adapted to send to the control unit (4) a control signal for switching off the ignition, and that the control unit (4) is adapted to control the control member (2) in dependence on these control signals.
6. A system according to claim 5, characterized in that the control unit (4), when it from the operating member (3) receives a control signal for switching on the ignition, is adapted to manoeuvre the control member (2) to switched-on position and activate the retention function, on condition that the control member (2) is not already in switched-on position and the retention function is not already activated.
7. A system according to claim 6, characterized in that the control unit (4) is adapted to deactivate the retention function, manoeuvre the control member (2) from switched-on position to switched-off position and initiate the generation of a warning in order to alert the driver of the vehicle when the following

conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- the control unit (4) receives information indicating that the parking brake of the vehicle is not set, and
- 5 - the control unit (4) receives from the operating member (3) a control signal for switching off the ignition.

8. A system according to claim 6 for controlling the ignition of a motor vehicle that is provided with an automatic braking function, such as a bus stop brake and/or a hill holding brake, characterized in that the control unit (4) is adapted to maintain the retention function active and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- the control unit (4) receives information indicating that the parking brake of the vehicle is not set,
- the control unit (4) receives information indicating that an automatic braking function of the vehicle is active, and
- 20 - the control unit (4) receives from the operating member (3) a control signal for switching off the ignition.

9. A system according to claim 8, characterized in that the control unit (4) is adapted to deactivate the retention function, manoeuvre the control member (2) from switched-on position to switched-off position and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- 30 - the control unit (4) receives information indicating that the parking brake of the vehicle is not set,
- the control unit (4) receives information indicating that no automatic braking function of the vehicle is active, and
- the control unit (4) receives from the operating member (3) a control signal for switching off the ignition.
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10. A method for controlling the ignition of a motor vehicle that is provided with:

- a control member (2) that is manoeuvrable between a switched-off position, in which the control member (2) is arranged to keep the ignition of the vehicle switched-off, and a switched-on position, in which the control member (2) is arranged to keep the ignition of the vehicle switched-on, and
- a manually manoeuvrable operating member (3), by means of which the control member (2) is manoeuvrable between switched-off position and switched-on position, the operating member (3) being manoeuvrable to an ON position for switching on the ignition and an OFF position for switching off the ignition,

characterized in that a retention function of a control unit (4) connected to the control member (2) is activated under predetermined conditions in order to retain the control member (2) in switched-on position and thereby prevent the control member (2) from being manoeuvred from switched-on position to switched-off position under the effect of the operating member (3).

11. A method according to claim 10, characterized in that the control unit (4), when the retention function is activated, retains the control member (2) in switched-on position by supplying an electric current to the control member.

12. A method according to claim 10 or 11, characterized in that the retention function is activated when the control member (2) is manoeuvred from switched-off position to switched-on position under the effect of the operating member (3).

13. A method according to claim 12, characterized in that the retention function is deactivated, so that the control member (2) thereby is allowed to be manoeuvred from switched-on position to switched-off position under the effect of the operating member (3), when the following conditions, optionally in combination

with one or several further conditions, are simultaneously fulfilled:

- it is established that the parking brake of the vehicle is set, and
- 5 - it is established that the operating member (3) has been manoeuvred to the OFF position.

14. A method according to any of claims 10-13, characterized in that the operating member (3), when it is manoeuvred to the
10 ON position, sends to the control unit (4) a control signal for switching on the ignition, and, when it is manoeuvred to the OFF position, sends to the control unit (4) a control signal for switching off the ignition, and that the control unit (4) controls the control member (2) in dependence on these control signals.

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15. A method according to claim 14, characterized in that the control member (2) is manoeuvred to switched-on position and the retention function is activated when the control unit (4) from the operating member (3) receives a control signal for switching
20 on the ignition, on condition that the control member (2) is not already in switched-on position and the retention function is not already activated.

16. A method according to claim 15, characterized in that the retention function is deactivated, the control member (2) is manoeuvred from switched-on position to switched-off position and the generation of a warning in order to alert the driver of the vehicle is initiated when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
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- it is established that the parking brake of the vehicle is not set, and
- the control unit (4) receives from the operating member (3) a control signal for switching off the ignition.

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17. A method according to claim 15 for controlling the ignition of a motor vehicle that is provided with an automatic braking function, such as a bus stop brake and/or a hill holding brake, characterized in that the retention function is maintained active and the generation of a warning in order to alert the driver of the vehicle is initiated when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
- it is established that the parking brake of the vehicle is not set,
 - it is established that an automatic braking function of the vehicle is active, and
 - the control unit (4) receives from the operating member (3) a control signal for switching off the ignition.
18. A method according to claim 17, characterized in that the retention function is deactivated, the control member (2) is manoeuvred from switched-on position to switched-off position and the generation of a warning in order to alert the driver of the vehicle is initiated when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
- it is established that the parking brake of the vehicle is not set,
 - it is established that no automatic braking function of the vehicle is active, and
 - the control unit (4) receives from the operating member (3) a control signal for switching off the ignition.
19. A computer program loadable directly into the internal memory of a computer, characterized in that the computer program comprises computer program code for causing the computer, under predetermined conditions, to activate a retention function that causes a control member of a motor vehicle, which control member is manoeuvrable between a switched-off position, in which the control member is arranged to keep the ignition of the

vehicle switched-off, and a switched-on position, in which the control member is arranged to keep the ignition of the vehicle switched-on, to be retained in switched-on position and thereby prevents the control member from being manoeuvred from
5 switched-on position to switched-off position under the effect of a manually manoeuvrable operating member.

20. A computer program according to claim 19, characterized in that the computer program comprises computer program code
10 for causing the computer:

- to establish whether the control member has been manoeuvred from switched-off position to switched-on position under the effect of the operating member, and
- to activate the retention function when it is established that
15 the control member has been manoeuvred from switched-off position to switched-on position under the effect of the operating member.

21. A computer program according to claim 20, characterized in that the computer program comprises computer program code
20 for causing the computer:

- to establish whether the parking brake of the vehicle is set,
- to establish whether the operating member has been manoeuvred to an OFF position for switching off the ignition,
25 and
- to deactivate the retention function, so that the control member thereby is allowed to be manoeuvred from switched-on position to switched-off position under the effect of the operating member, when the following conditions, optionally in
30 combination with one or several further conditions, are simultaneously fulfilled:
 - the parking brake of the vehicle is set,
 - the operating member has been manoeuvred to the
35 OFF position.

22. A computer program according to any of claims 19-21, characterized in that the computer program comprises computer program code for causing the computer:

- to establish whether the operating member has been manoeuvred to an ON position and has sent a control signal for switching on the ignition, or to an OFF position and has sent a control signal for switching off the ignition, and
- to control the control member in dependence on these control signals.

23. A computer program according to claim 22, characterized in that the computer program comprises computer program code for causing the computer to manoeuvre the control member to switched-on position and activate the retention function when the operating member has sent a control signal for switching on the ignition, on condition that the control member is not already in switched-on position and the retention function is not already activated.

24. A computer program according to claim 23, characterized in that the computer program comprises computer program code for causing the computer:

- to establish whether the parking brake of the vehicle is set, and
- to deactivate the retention function, manoeuvre the control member from switched-on position to switched-off position and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
 - the parking brake of the vehicle is not set, and
 - the operating member has sent a control signal for switching off the ignition.

25. A computer program according to claim 23, characterized in that the computer program comprises computer program code for causing the computer:

- to establish whether the parking brake of the vehicle is set,
- 5 - to establish whether an automatic braking function, such as a bus stop brake and/or a hill holding brake, of the vehicle is active, and
- to maintain the retention function active and initiate the generation of a warning in order to alert the driver of the vehicle
- 10 when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:
 - the parking brake of the vehicle is not set,
 - an automatic braking function of the vehicle is active, and
 - the operating member has sent a control signal for
 - 15 switching off the ignition.

26. A computer program according to claim 25, characterized in that the computer program comprises computer program code for causing the computer to deactivate the retention function,

20 manoeuvre the control member from switched-on position to switched-off position and initiate the generation of a warning in order to alert the driver of the vehicle when the following conditions, optionally in combination with one or several further conditions, are simultaneously fulfilled:

- 25 - the parking brake of the vehicle is not set,
- no automatic braking function of the vehicle is active, and
- the operating member has sent a control signal for switching off the ignition.

30 27. A computer program product comprising a data storage medium readable by an electronic control unit (4), a computer program according to any of claims 19-26 being stored on said data storage medium.

35 28. An electronic control unit (4) comprising an execution means (11), a memory (13) connected to the execution means and a

data storage medium (14) connected to the execution means, a computer program according to any of claims 19-26 being stored on said data storage medium (14).