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Description

Technical Field of the Invention

[0001] The present invention relates to a method for starting an engine and stopping the engine after the engine has started. The invention also relates to a computer program and a control unit for starting and stopping the engine.

Background of the invention

[0002] Remote engine starting systems are well known and incorporated in many road vehicles today. By e.g. pushing a button on a handheld radio signal transmitter, a person is able to remotely start an engine of a vehicle. US-5673017-A is one example of a number of documents that disclose such a starting system.

[0003] However, soon after the engine has been remotely started, the person who initiated the starting might discover various signs of a critical problem, which directly or indirectly is associated with the running engine. Such signs may be e.g. leakage from a hose for hydraulic oil and a jarring sound from e.g. the engine or a power take off. None of the remote engine starting systems provides any means for stopping the engine. A person has to get into the cab of the vehicle and turn off the engine with a key or the like. Damage caused on the vehicle or the environment (e.g. due to oil leakage) due to the time it takes to get into the cab and turn off the engine, can sometimes be substantial and cost a considerable amount of time and money to repair. Valuable time and money for using the vehicle are also lost, for example if the vehicle is a hauling vehicle owned by a hauling contractor.

[0004] Some vehicles have a stop button/switch for the engine on the outside of the vehicle, but substantially the same problem with the time it takes to stop the engine remains for these vehicles. The person has to locate the stop button and touch the stop button before the engine is stopped.

Summary of the invention

[0005] An object of the present invention is to provide a faster and easier way of avoiding damages directly or indirectly caused by a running engine after a sign of a problem that causes the damages has been detected by a person.

[0006] The invention relates to a method for starting an engine, e.g. in a vehicle, and stopping the engine after the engine has started. The method comprises the steps of:

starting the engine by affecting, e.g. depressing or touching, an activation means of a remote control unit;
staying in physical contact with the activation means

during the starting of the engine and a time after the engine has started; and
stopping the engine by releasing the physical contact with the activation means before a predetermined time has passed after the engine has started.

Hereby is achieved that the engine is stopped, merely by releasing the physical contact with the activation means, after the engine has started to run. Thus considerable time is saved, since an operator of the remote control unit does not have to locate and get to a position, such as the cab of the vehicle, where the engine can be deactivated.

Throughout the description and claims, the starting of the engine is defined as an attempt to start the engine, which at the initiation moment of the attempt is at rest. The definition of when the engine has started is throughout the description and claims when any predetermined condition known in the art for defining that the engine is capable of running on its own is fulfilled, such as the condition that the engine is defined as started when the engine speed has reached a certain predetermined level.

[0007] The method may also comprise the step of stopping the starting of the engine if the engine has not been started before a time limit after the starting of the engine has begun. Hereby is achieved that an attempt to start the engine with an electric starter motor is stopped if the time limit is reached. Hence an undesired discharge of a vehicle battery connected to a starter motor is avoided. The time limit may be within a time interval of 2-20 seconds.

[0008] The method may comprise the step of allowing the starting of the engine only if all of at least one start criterion is fulfilled, one of the at least one start criterion is that a remote control switch means allows the starting of the engine through the remote control unit. Hereby is achieved that an undesired starting of the engine from the remote control unit is avoided if it is not permitted through a position of a remote control switch means. Hence safety is enhanced.

[0009] In one aspect of the method, the method comprises the step of sending a start confirmation signal from the remote control unit to a control unit for the engine when the physical contact with the activation means is released. Hereby is achieved that a continuous signal for indicating that the activation means still is affected can be avoided, thus saving power requirements for the remote control unit.

[0010] In another aspect of the method, the method comprises the step of substantially continuously send a signal from the remote control unit as long as the activation means is affected. Hereby is achieved that the control unit may sense that the operator of the remote control unit has released the physical contact with the activation means when the signal from the remote control unit ends.

[0011] The predetermined time may be between 0.1-6.0 seconds, for example 1 second.

[0012] The method may also comprise the step of ac-

tivating at least one light emitting means immediately after the predetermined time has passed if there still is physical contact with the activation means at the predetermined time. Hereby is achieved that the operator is able to see that the engine has been started successfully and that the physical contact with the activation means can be released without stopping the engine. The visual indication from the light emitting means makes it easier for the operator to feel safe when starting the engine in a noisy environment and/or at a longer distance from the vehicle.

[0013] The invention also relates to a computer program for starting an engine and stopping the engine after the engine has started, comprising computer readable program code means for adapting a control unit to receive a signal generated by affecting an activation means of a remote control unit, the signal indicating a desire to start the engine; computer readable program code means for causing the control unit to initiate starting of the engine after the signal has been received; computer readable program code means for causing the control unit to determine when the engine is started or receive information that the engine is started; and computer readable program code means for causing the control unit to initiate stopping of the engine, if the activation means has been released before a predetermined time has passed after the engine has started. The initiation shall throughout the description and claims be defined as direct or indirect through another control device ordering a start of the engine.

[0014] The computer program may comprise computer readable program code means for stopping the starting of the engine if the engine has not been started before a time limit after the starting of the engine has begun.

[0015] The computer program may comprise computer readable program code means for causing the control unit to check if all of at least one start criterion is fulfilled for the starting of the engine, and computer readable program code means for causing the control unit to only allow the starting of the engine if all of the at least one start criterion is fulfilled, one of the at least one start criterion being that a remote control switch means is in a position where the starting of the engine through the remote control unit is allowed.

[0016] In one aspect of the computer program, it comprises computer readable program code means for adapting the control unit to receive a start confirmation signal from the remote control unit for confirming that the engine, if running, should continue to run.

[0017] The computer program may also comprise computer readable program code means for causing the control unit (8) to transmit an indication signal immediately after the predetermined time has passed if there still is physical contact with the activation means, the indication signal initiating an activation of at least one light emitting means immediately after the predetermined time has passed.

[0018] Furthermore, the invention relates to a computer program product comprising a computer usable medium and the computer program, wherein the computer program is comprised in the computer usable medium.

[0019] Moreover, the invention relates to a control unit adapted to initiate starting of an engine and stopping the engine after the engine has started, comprising a processing means, a storing means, the computer program comprised in the storing means and means for direct or indirect communication with a starter motor for the engine, the engine and a remote control unit.

Brief Description of the Drawings

[0020] The objects, advantages and effects as well as features of the present invention will be more readily understood from the following detailed description of embodiments of the invention, when read together with the accompanying drawings, in which:

Fig. 1 illustrates transmission of a start signal from a remote control unit to a vehicle,
Fig. 2 schematically shows a system according to the invention,
Fig. 3 schematically shows a control unit,
Fig. 4 is a flow diagram of a first aspect of a method according to the invention, and
Fig. 5 is a flow diagram of a second aspect of the method according to the invention.

Detailed Description of Embodiments

[0021] While the invention covers various modifications and alternative constructions, some embodiments of the invention are shown in the drawings and will hereinafter be described in detail. It is to be understood that the specific description and drawings are not intended to limit the invention to the specific forms disclosed. On the contrary, it is intended that the claimed invention includes all modifications and alternative constructions thereof falling within the scope of the invention as expressed in the appended claims.

[0022] Fig. 1 schematically shows a vehicle 1 in the form of a truck and a remote control unit 2 associated with the vehicle 1. The remote control unit 2 comprises an activation means 3 in the form of a spring loaded push button. When depressing the push button, a signal is generated and inputted into a transmitter circuit 4 for generating a signal, here in the form of a radio signal, radiated from an antenna 5 in the remote control unit 2. In an embodiment adapted for a first aspect of a method described below, the signal is transmitted as long as the activation means 3 is depressed, against the force of a spring element (not shown). The signal ends as soon as the push button is returned to its position of rest. The signal may be a continuous or pulsated radio wave. Although radio signals are used in this embodiment, signals emitted from the remote control unit 2 may of course be

transmitted to the vehicle 1 in the form of another kind of wirelessly transmitted signals, such as infra-red signals, or as electrical signals through a wire connected to the vehicle 1. In a second embodiment adapted for a second aspect of the method described below, the signal is shorter and substantially only sent at the moment when the push button first is depressed. When the push button is released, the remote control unit 2 according to the second embodiment transmits a start confirmation signal. In a third embodiment adapted for a third aspect of the method described below, the remote control unit comprises a first timing circuit 6. Through the first timing circuit 6, the remote control unit 2 is able to first send a signal in the moment when the push button is depressed and also a confirmation signal after a certain predetermined time provided that the push button still is depressed at the predetermined time. In a fourth embodiment, where the remote control unit 2 is connected to the vehicle through a signal wire, the remote control unit 2 lacks the antenna 5 since the antenna 5 is not needed.

[0023] The embodiment shown in the Fig. 1 also comprises a light emitting means 30, e.g. in the form of a diode or a bulb. The light emitting means 30 is adapted to emit visible light after the predetermined time provided that the push button still is depressed at the predetermined time.

[0024] Fig. 2 shows a system installed in the vehicle 1 for achieving the effects of the invention. The shown system is applicable to the first, second and third embodiment described above. A receiver unit 7 comprising an antenna and a decoder is connected to a control unit 8, which also is connected to an electronic engine control unit 9 and a light control unit 32 via a CAN (Control Area Network) Bus 10. The engine control unit 9 controls an internal combustion engine 11 and an associated electric starter motor 12. The starting of an engine with the help of a starter motor and an electronic engine control unit is as such known in the art and will therefore not be described in more detail. Any conventional engine starting method for combustion engines in vehicles may be used in combination with the invention. The light control unit 32 controls at least some vehicle exterior light emitting means, such as flashers, warning lights and the main lights of the vehicle 1. The vehicle exterior light emitting means are here only illustrated with reference sign 34. The control unit 8 is also connected to an engine revolution sensor 13 (engine speed counter), a neutral gear sensor 14, a parking brake sensor 15, a stop switch means 16 preferably on the outside of the vehicle 1 and a remote control switch means 17 in the cab (not shown) of the vehicle 1. The stop switch means 16 may be e.g. a button or lever switch with two positions; a first position that stops a running engine or prevents the engine 11 to be started and a second position for allowing the engine 11 to start and run. The remote control switch means 17 may also be a button, a toggle switch or a lever switch with two positions, where a first position allows the engine 11 to be started and stopped through the remote control

unit 2 and a second position which prevents attempts to start and stop the engine 11 through the remote control unit 2.

[0025] In the fourth embodiment, where the remote control unit 2 is connected to the vehicle 1 through a signal wire (not shown), the receiver unit 7 is not needed. Instead the remote control unit 2 may be connected directly to the control unit 8.

[0026] Fig. 3 schematically illustrates the control unit 8, which comprises a processing means 18 in the form of a CPU (Central Processing Unit) connected to a first port 191 via a first bus 201 for communication with the engine control unit 9 and the light control unit 32, a second port 192 via a second bus 202 for communication with the receiver unit 7, and a third port 193 via a third bus 203 for receiving signals from the sensors 13-15 and switch means 16-17. The CPU is also connected to a storing means 21, such as a hard disk, a flash memory, a ROM (Read-only memory) or any other computer readable computer program product, via a fourth bus 204. A computer program comprises a criteria checking program module 22, an engine speed monitoring program module 23, a time checking module 24, a module 25 for detecting incoming decoded signals from the receiver unit 7 and communication interface program modules 26 for causing the control unit 8 to communicate with the engine control unit 9 and the light control unit 32 and receiving information from the receiver unit 7, the sensors 13-15, the stop switch means 16 and the remote control switch means 17. For the purpose of the second and third aspect of the method (see below) according to the invention, the computer program comprises a module 27 for detecting incoming decoded start confirmation signals from the receiver unit. The modules, i.e. parts, of the computer program, may in an alternative embodiment be separate computer programs interacting with each other and stored in different storing means in or outside the control unit 8 and/or the engine control unit 9. In the fourth embodiment the second port 192 and the second bus 202 are used for receiving signals directly from the remote control unit 2 through a signal wire.

[0027] Having described a system according to the invention, a first aspect of the method according to the invention will now be described in conjunction with Fig. 4.

[0028] The push button is pushed in order to start the engine 11 through the remote control unit 2. A signal is thereby sent from the remote control unit 2. This is done in a first step S1.

[0029] In a second step S2, the signal is received by the receiver unit 7, which decodes the signal and sends the decoded signal to the control unit 8. The module for detecting the incoming decoded signal comprises a program loop for frequent and regular determination of whether a decoded signal is sent from the receiver unit 7. This means that the control unit 8 detects when a received decoded signal ends.

[0030] Next, in a third step S3, the control unit 8 receives the decoded signal and checks whether or not

predetermined start criteria for starting the engine 11 are fulfilled. Start criteria for starting the engine 11 through the remote control unit 2 may be that the engine speed is zero, a gearbox (not shown) in the vehicle 1 is in its neutral position, a parking brake (not shown) of the vehicle 1 is applied, the stop switch means 16 allows the engine 11 to be started and/or that the remote control switch means 17 allows starting of the engine 11 through the remote control unit 2. The control unit 8 receives information from the engine revolution sensor 13 about the engine speed, i.e. a value of the instantaneous revolutions per minute performed by the engine 11. The neutral gear sensor 14 produces a signal to the control unit 8 according to the position of a gear lever (not shown) of the vehicle 1, the signal being indicative of whether or not the gear lever is in the neutral position. Similarly, the parking brake sensor 15 may produce a signal indicative of whether or not the parking brake is applied. As long as at least one of the criteria is not fulfilled, the decoded signal is ignored and the method continues to step S4, where warning signals are emitted from e.g. warning lights on the vehicle, a horn and/or loudspeakers in the vehicle 1. A person who tries to start the engine 11 through the remote control unit 2 is thereby easily informed that the engine 11 is not allowed to be started. The person would then probably release the push button on the remote control unit 2 and investigate the cause of why the engine 11 is not allowed to be started. After step S4, the method returns to step S2, where it is checked if the signal from the remote control unit 2 still is received or if the signal has ended. As long as the decoded signal is received and any one of the start criteria is not fulfilled, the steps S2, S3 and S4 will be repeated as a loop. If it is determined in step S2 that the decoded signal has ended, the method ends.

[0031] If all start criteria are fulfilled, the answer is 'yes' and the method continues with a fifth step S5, in which the control unit 8 initiates the start of the engine 11 by sending a start request signal to the engine control unit 9, which attempts to start the engine 11 with the help of the electrical starter motor 12.

[0032] As long as the decoded signal is sent to the control unit 8, the electric starter motor 12 will try to start the engine 11. This is done in a sixth step S6. The time when the engine 11 starts is defined as the moment when the engine 11 speed has reached a predetermined speed (e.g. revolutions/minute). The instantaneous speed is monitored through the engine revolution sensor 13 and the engine speed monitoring program module 23 in the control unit 8. If the decoded signal ends before the time when the engine 11 has reached the predetermined speed, the starting procedure is stopped; else the method continues with a seventh step S7.

[0033] A time limit, for example 20 seconds, is set for trying to start the engine 11. In step S7, it is determined if the time limit has been reached without achieving a successful starting of the engine 11. This is done with the help of the time checking program module 25. If the

answer is "Yes", i.e. the attempt to start the engine before the time limit has failed, the starting attempt is stopped. Hence discharge of a vehicle battery may be avoided automatically. If the engine 11 starts before the time limit, i.e. if the answer is "No", the method continues with an eighth step S8.

[0034] In step S8, it is checked if the engine has started. If not, the method returns to step S7. If the engine has started, i.e. reached the predetermined speed, the method continues with a ninth step S9 provided that the decoded signal is still received by the control unit 2.

[0035] In step S9, immediately after the engine has reached the predetermined speed, the control unit 8, through e.g. a timing circuit in the CPU, starts to count the time. During step S9, the module 25 for detecting incoming decoded signals from the receiver unit 7 also causes the control unit 8 to check whether the decoded signal is still being received during a predetermined time, for example 4 seconds, after the engine 11 has started. If the decoded signal is still received by the control unit 8 when the timing circuit has counted up to the predetermined time, the engine 11 is allowed to run although the push button is released after the predetermined time. Also, if the predetermined time has passed, the control unit 8 sends an indication signal to the light control unit 32, which upon receiving of the indication signal turn on at least some of the lights 34, such as the flashers, to show the operator that the engine has been started successfully and that the push button can be released without affecting the engine. If the decoded signal ends before the predetermined time, the control unit 8 sends a stop signal to the engine control unit 9, which upon reception of the stop signal stops the engine 11.

[0036] In a first step S 11 of a second aspect of the method according to the invention, see Fig. 5, the remote control unit 2 sends a signal to the receiver unit 7 when the push button is depressed. However, this signal is not a continuously transmitted or pulsed signal during a relatively long period as in the first aspect. This signal ends substantially as soon as e.g. identification data associated with the remote control unit 2 for authorisation and authentication and data requesting start of the engine 11 have been sent.

[0037] In a second step S12 of the second aspect, the signal is received by the control unit 8 through the receiver unit 7. The second aspect continues with a third step S 13, which corresponds to the third step S3 of the first aspect. If the start is not OK, i.e. at least one of the start criteria is not fulfilled, the method continues with a fourth step S14, which corresponds to the fourth step S4 of the first aspect. After step S 14, the method ends. On the other hand, if all start criteria are fulfilled, a fifth step S 15 follows, in which the control unit 8 sends a start request signal to the engine control unit 9, which attempts to start the engine 11 with the help of the electric starter motor 12. Also, the timing circuit in the CPU starts to count the time.

[0038] As soon as the push button is released, the re-

remote control unit 2 sends a start confirmation signal to the receiver unit 7, which decodes the start confirmation signal and forwards it to the control unit 8, where the module 27 for detecting incoming decoded start confirmation signals causes the control unit 8 to detect the incoming confirmation signal from the remote control unit 7. The time from the initiation of the starting in step S 15 to the reception of the start confirmation signal is registered with the help of the timing circuit in the CPU and time checking program module 24.

[0039] In a subsequent sixth step S16 after step S 15, the control unit 8 checks for a received decoded start confirmation signal. The method continues with a seventh step S17, if such a signal has not been received. If the start confirmation signal has been received, the method continues with an eighth step S 18.

[0040] In step S 17, the time that has passed since the initiation of the starting, is compared with a time limit, which corresponds to the time limit of the first aspect. If the time limit has been reached, the control unit 8 sends a stop signal to the engine control unit 9 for stopping the starting of the engine 11. If the time limit has not been reached, the method returns to step S16.

[0041] In step S18, it is checked whether the engine 11 has started or not. If the engine has not started, the control unit sends a stop signal to the engine control unit 9 for stopping the starting of the engine 11. If the engine has started, the method continues with a ninth step S19, in which the time from the initiation of the starting to the receiving of the start confirmation signal is compared with a predetermined time. This comparison is conducted with the help of the time checking program module 24. If the predetermined time is longer than the other time, the push button is considered as being released too early and the control unit 8 sends a stop signal to the engine control unit 9 for stopping the running engine 11. If the time from the initiation of the starting to the receiving of the start confirmation signal is longer than the predetermined time, the starting of the engine 11 is considered as confirmed and the engine 11 is allowed to continue to run.

[0042] In a third aspect of the method according to the invention, the remote control unit 2 is able to first send a signal for starting the engine 11 and after a certain predetermined time send a confirmation signal provided that the push button still is depressed at the predetermined time. This predetermined time corresponds to the predetermined time for the other two disclosed aspects above. When the start confirmation signal is received, it is checked if the engine 11 has started. If not, the timing circuit in the CPU starts to count up to a time limit corresponding to the time limit of the two other aspects disclosed above. When the time limit has passed and the engine 11 has still not started, the attempt to start the engine is stopped. If the engine 11 is running when the start confirmation signal is received by the vehicle 1, the start of the engine 11 is considered as being confirmed by the operator of the remote control unit 2. If the start confirmation signal is not received by the vehicle 1 within

a certain time interval, e.g. in the case where the operator of the remote control unit 2 has discovered that something is wrong and released the push button, the remote control unit 2 sends a stop signal to the engine control unit 9 for stopping the starting or running of the engine 11, depending on whether the engine 11 has been defined as started or not.

[0043] The predetermined time may be a user adjustable parameter in order to suit different work situations, vehicles and personal preferences. Typically the predetermined time may be set to any value between 0.0-6 seconds, e.g. 1 second.

[0044] In all the three aspects mentioned above, the first timing circuit 6 may count up the time until the predetermined time, provided that the push button is depressed the whole time. As the predetermined time is passed, the light emitting means 30 is turned on to show that the push button can be released.

[0045] The invention is not limited to starting and stopping of combustion engines, but may be utilised for e.g. electric motors and gas turbine engines for vehicles as well. The activation means may of course be any kind of means that could be affected by a person, e.g. a touch sensitive pad, a toggle switch or a lever switch. Also, the computer program may be installed in the engine control unit 9 and the receiver unit 7 may be connected directly to the engine control unit 9, thus avoiding the need for a separate control unit 8 for managing the method according to the invention. Furthermore, other criteria for defining the actual start of the engine 11 may be used instead of or in addition to the predetermined engine speed. An example of such a criterion is that a second predetermined time has passed after the initiation of a starting attempt. The second predetermined time may be dependent on the engine temperature at the moment of the initiation of the starting attempt.

Claims

1. A method for starting an engine (11) and stopping the engine (11) after the engine (11) has started, comprising the steps of:

starting the engine (11) by affecting, e.g. depressing or touching, an activation means (3) of a remote control unit (2);
staying in physical contact with the activation means (3) during the starting of the engine (11) and a time after the engine (11) has started; and
stopping the engine (11) by releasing the physical contact with the activation means (3) before a predetermined time has passed after the engine (11) has started.

2. A method according to claim 1, comprising the step of also stopping the starting of the engine (11) if the engine has not been started before a time limit after

the starting of the engine has begun.

3. A method according to claim 2, wherein the time limit is within a time interval of 2-20 seconds.
4. A method according to claim 1 or 2, comprising the step of allowing the starting of the engine (11) only if all of at least one start criterion is fulfilled, one of the at least one start criterion is that a remote control switch means (17) allows the starting of the engine (11) through the remote control unit (2).
5. A method according to any one of the preceding claims, comprising the step of sending a start confirmation signal from the remote control unit (2) to a control unit for the engine (11) when the physical contact with the activation means (3) is released.
6. A method according to any one of claims 1-4, comprising the step of substantially continuously send a signal from the remote control unit (2) as long as the activation means (3) is affected.
7. A method according to any one of the preceding claims, wherein the predetermined time lies between 0.1-6.0 seconds.
8. A method according to claim 7, wherein the predetermined time is 1 second.
9. A method according to any one of the preceding claims, comprising the step of activating at least one light emitting means (30, 34) immediately after the predetermined time has passed if there still is physical contact with the activation means at the predetermined time.
10. A computer program for starting an engine (11) and stopping the engine (11) after the engine (11) has started, comprising computer readable program code means for adapting a control unit (8) to receive a signal generated by affecting an activation means (3) of a remote control unit (2), the signal indicating a desire to start the engine (11); computer readable program code means for causing the control unit (8) to initiate starting of the engine (11) after the signal has been received; computer readable program code means for causing the control unit (8) to determine when the engine (11) is started or receive information that the engine (11) is started; and computer readable program code means for causing the control unit (8) to initiate stopping of the engine (11), if the activation means has been released before a predetermined time has passed after the engine (11) has started.
11. A computer program according to claim 10, compris-

ing computer readable program code means for stopping the starting of the engine (11) if the engine (11) has not been started before a time limit after the starting of the engine (11) has begun.

12. A computer program according to 10 or 11, comprising computer readable program code means for causing the control unit (8) to check if all of at least one start criterion is fulfilled for the starting of the engine (11), and computer readable program code means for causing the control unit (8) to only allow the starting of the engine (11) if all of the at least one start criterion is fulfilled, one of the at least one start criterion being that a remote control switch means (17) is in a position where the starting of the engine (11) through the remote control unit (2) is allowed.
13. A computer program according to any one of claims 10-12, comprising computer readable program code means for adapting the control unit (8) to receive a start confirmation signal from the remote control unit (2) for confirming that the engine, if running, should continue to run.
14. A computer program according to any one of claims 10-13, comprising computer readable program code means for causing the control unit (8) to transmit an indication signal immediately after the predetermined time has passed if there still is physical contact with the activation means, the indication signal initiating an activation of at least one light emitting means (30, 34) immediately after the predetermined time has passed.
15. A computer program product (21) comprising a computer usable medium and a computer program according to claim 10, wherein the computer program is comprised in the computer usable medium.
16. A control unit (8) adapted to initiate starting of an engine (11) and stopping the engine (11) after the engine has started, comprising a processing means (18), a storing means (21), a computer program according to claim 10 comprised in the storing means and means for direct or indirect communication with a starter motor (12) for the engine (11), the engine (11) and a remote control unit (2).

Patentansprüche

1. Verfahren zum Anlassen eines Motors (11) und zum Anhalten des Motors (11), nachdem der Motor (11) angelaufen ist, mit den folgenden Schritten:

Anlassen des Motors (11) durch Beeinflussen, beispielsweise Niederdrücken oder Berühren, eines Betätigungsmittels (3) einer Fernsteuer-

- einheit (2);
 Aufrechterhalten körperlichen Kontaktes mit dem Betätigungsmittel (3) während des Anlassens des Motors (11) und einer Zeit, nach dem der Motor (11) angelaufen ist; und
 Anhalten des Motors (11) durch Aufheben des körperlichen Kontakts mit dem Betätigungsmittel (3), ehe eine vorbestimmte Zeit nach dem Anlaufen des Motors (11) verstrichen ist.
2. Verfahren nach Anspruch 1, mit dem weiteren Schritt des Abbrechens des Anlassens des Motors (11), wenn der Motor nicht vor einer Zeitgrenze nach dem Beginn des Anlassens des Motors angelaufen ist.
 3. Verfahren nach Anspruch 2, bei dem die Zeitgrenze innerhalb einer Zeitspanne von 2 - 20 Sekunden liegt.
 4. Verfahren nach Anspruch 1 oder 2 mit dem Schritt, dass das Anlassen des Motors (11) nur dann zugelassen wird, wenn die Gesamtheit von einem oder mehreren Anlasskriterien erfüllt ist, wobei ein Anlasskriterium ist, dass ein Fernsteuerungsschalter (17) das Anlassen des Motors (11) durch die Fernsteuereinheit (2) zulässt.
 5. Verfahren nach einem der vorangehenden Ansprüche, mit dem Schritt, dass ein Anlassbestätigungssignal von der Fernsteuereinheit (2) an eine Steuereinheit für den Motor (11) ausgesandt wird, wenn der körperliche Kontakt mit dem Betätigungsmittel (3) aufgehoben wird.
 6. Verfahren nach einem der Ansprüche 1 bis 4, mit dem Schritt, dass im Wesentlichen fortlaufend ein Signal von der Fernsteuereinheit (2) ausgesandt wird, solange auf das Betätigungsmittel (3) eingewirkt wird.
 7. Verfahren nach einem der vorangehenden Ansprüche, bei dem die vorbestimmte Zeit zwischen 0,1 - 6,0 Sekunden liegt.
 8. Verfahren nach Anspruch 7, bei dem die vorbestimmte Zeit 1 Sekunde ist.
 9. Verfahren nach einem der vorangehenden Ansprüche, mit dem Schritt, dass mindestens eine Lichtquelle (30, 34) unmittelbar nach Ablauf der vorbestimmten Zeit aktiviert wird, wenn zu der vorbestimmten Zeit noch körperlicher Kontakt mit dem Betätigungsmittel besteht.
 10. Computerprogramm zum Anlassen eines Motors (11) und zum Anhalten des Motors (11), nachdem der Motor (11) angelaufen ist, mit einem computerlesbaren Programmcode, der eine Steuereinheit (8) in die Lage versetzt, ein Signal zu empfangen, das durch Einwirken auf ein Betätigungsmittel (3) einer Fernsteuereinheit (2) erzeugt worden ist, und das den Wunsch ausdrückt, den Motor (11) anzulassen;
 einem computerlesbaren Programmcode, mit dem sich bewirken lässt, dass die Steuereinheit (8) das Anlassen des Motors (11) initiiert, nachdem das Signal empfangen worden ist;
 einem computerlesbaren Programmcode, mit dem sich bewirken lässt, dass die Steuereinheit (8) feststellt, wenn, oder eine Information darüber empfängt, dass der Motor (11) angelaufen ist; und
 einem computerlesbaren Programmcode, mit dem sich bewirken lässt, dass die Steuereinheit (8) das Anhalten des Motors (11) einleitet, wenn das Betätigungsmittel freigegeben worden ist, ehe eine bestimmte Zeit nach dem Anlaufen des Motors (11) verstrichen ist.
 11. Computerprogramm nach Anspruch 10 mit einem computerlesbaren Programmcode zum Unterbrechen des Anlassens des Motors (11), wenn der Motor (11) nicht angelaufen ist, ehe eine Zeitgrenze nach dem Beginn des Anlassens des Motors (11) erreicht ist.
 12. Computerprogramm nach Anspruch 10 oder 11 mit einem computerlesbaren Programmcode, mit dem sich bewirken lässt, dass die Steuereinheit (8) prüft, ob die Gesamtheit von einem oder mehreren Anlasskriterien für das Anlassen des Motors (11) erfüllt ist, und
 einem computerlesbaren Programmcode, mit dem sich bewirken lässt, dass die Steuereinheit (8) das Anlassen des Motors (11) nur dann zulässt, wenn die Gesamtheit von einem oder mehreren Anlasskriterien erfüllt ist, wobei ein Anlasskriterium darin besteht, dass ein Fernsteuerungsschalter (17) in einer Stellung ist, in der das Anlassen des Motors (11) durch die Fernsteuereinheit (2) zugelassen wird.
 13. Computerprogramm nach einem der Ansprüche 10 bis 12, mit einem computerlesbaren Programmcode, mit dem sich die Steuereinheit (8) in die Lage versetzen lässt, von der Fernsteuereinheit (2) ein Anlassbestätigungssignal zu empfangen, welches bestätigt, dass der Motor, sofern er läuft, weiterhin laufen soll.
 14. Computerprogramm nach einem der Ansprüche 10 bis 13, mit einem computerlesbaren Programmcode, mit dem sich bewirken lässt, dass die Steuereinheit (8) unmittelbar nachdem die vorbestimmte Zeit abgelaufen ist, ein Hinweissignal abgibt, wenn noch körperlicher Kontakt mit dem Betätigungsmittel besteht, wobei das Hinweissignal eine Aktivierung von mindestens einer Lichtquelle (30, 34) auslöst, unmittel-

telbar nach dem die vorbestimmte Zeit verstrichen ist.

15. Computerprogrammprodukt (21) mit einem computergeeigneten Medium und einem Computerprogramm nach Anspruch 10, wobei das Computerprogramm im computergeeigneten Medium enthalten ist.
16. Steuereinheit (8) zum Initiieren des Anlassens eines Motors (11) und Anhalten des Motors (11) nach dem der Motor angelaufen ist, mit einem Rechner (18), einem Speicher (21), einem Computerprogramm nach Anspruch 10 im Speicher und Mitteln zur direkten oder indirekten Kommunikation mit einem Anlassermotor (12) für den Motor (11), mit dem Motor (11) und einer Fernsteuereinheit (2).

Revendications

1. Procédé pour faire démarrer un moteur (11) et pour arrêter le moteur (11) après que le moteur (11) a démarré, comprenant les étapes consistant à :

faire démarrer le moteur (11) en mettant en action, par exemple par enfoncement ou contact, un moyen d'activation (3) d'une unité de télécommande (2) ;
rester en contact physique avec le moyen d'activation (3) pendant le démarrage du moteur (11) et un certain temps après que le moteur (11) a démarré ; et
arrêter le moteur (11) en supprimant le contact physique avec le moyen d'activation (3) avant qu'un temps prédéterminé se soit écoulé après que le moteur (11) a démarré.

2. Procédé selon la revendication 1, comprenant l'étape consistant aussi à :

arrêter le démarrage du moteur (11) si celui-ci n'a pas démarré avant un temps limite suivant le commencement du démarrage du moteur.

3. Procédé selon la revendication 2, dans lequel le temps limite appartient à un intervalle de temps de 2 à 20 secondes.

4. Procédé selon la revendication 1 ou 2, comprenant l'étape consistant à :

permettre le démarrage du moteur (11) seulement si au moins un critère de démarrage est rempli complètement, au moins le seul critère de démarrage impliquant qu'un moyen de mise en marche de télécommande (17) permet le démarrage du moteur (11) par l'intermédiaire de

l'unité de télécommande (2).

5. Procédé selon l'une quelconque des revendications précédentes, comprenant l'étape consistant à envoyer un signal de confirmation de démarrage de l'unité de télécommande (2) à une unité de commande pour le moteur (11), lorsque le contact physique avec le moyen d'activation (3) est supprimé.

6. Procédé selon l'une quelconque des revendications 1 à 4, comprenant l'étape consistant à envoyer sensiblement de manière continue un signal depuis l'unité de télécommande (2), à condition que le moyen d'activation (3) soit mis en action.

7. Procédé selon l'une quelconque des revendications précédentes, dans lequel le temps prédéterminé est compris entre 0,1 et 6,0 seconde(s).

8. Procédé selon la revendication 7, dans lequel le temps prédéterminé est de 1 seconde.

9. Procédé selon l'une quelconque des revendications précédentes, comprenant l'étape consistant à :

activer au moins un moyen d'émission de lumière (30, 34) immédiatement après que le temps prédéterminé s'est écoulé s'il existe encore un contact physique avec le moyen d'activation au temps prédéterminé

10. Programme informatique pour faire démarrer un moteur (11) et pour arrêter le moteur (11) après que le moteur (11) a démarré, comprenant :

un moyen de codage de programme informatique lisible destiné à adapter une unité de commande (8) pour recevoir un signal généré en mettant en action un moyen d'activation (3) d'une unité de télécommande (2), le signal indiquant un souhait de faire démarrer le moteur (11) ;
un moyen de codage de programme informatique lisible destiné à amener l'unité de commande (8) à initier le démarrage du moteur (11) après que le signal a été reçu ;
un moyen de codage de programme informatique lisible destiné à amener l'unité de commande (8) à déterminer le moment auquel le moteur (11) démarre, ou à recevoir une information selon laquelle le moteur (11) a démarré ; et
un moyen de codage de programme informatique lisible destiné à amener l'unité de commande (8) à initier l'arrêt du moteur (11) si le moyen d'activation a été libéré avant qu'un temps prédéterminé se soit écoulé après que le moteur (11) a démarré.

11. Programme informatique selon la revendication 10, comprenant un moyen de codage de programme informatique lisible destiné à arrêter le démarrage du moteur (11) si le moteur (11) n'a pas démarré avant un temps limite suivant le commencement du démarrage du moteur (11). 5
12. Programme informatique selon la revendication 10 ou 11, comprenant un moyen de codage de programme informatique lisible destiné à amener l'unité de commande (8) à contrôler si au moins un critère de démarrage est rempli complètement pour le démarrage du moteur (11), et un moyen de codage de programme informatique lisible destiné à amener l'unité de commande (8) à autoriser le démarrage du moteur (11) seulement si au moins un critère de démarrage est rempli complètement, au moins le seul critère de démarrage impliquant qu'un moyen de mise en marche de télécommande (17) se trouve dans une position où le démarrage du moteur (11) est autorisé par l'intermédiaire de l'unité de télécommande (2). 10 15 20
13. Programme informatique selon l'une quelconque des revendications 10 à 12, comprenant un moyen de codage de programme informatique lisible destiné à adapter l'unité de commande (8) afin de recevoir un signal de confirmation de démarrage de l'unité de télécommande (2) pour confirmer que le moteur, s'il tourne, doit continuer à tourner. 25 30
14. Programme informatique selon l'une quelconque des revendications 10 à 13, comprenant un moyen de codage de programme informatique lisible destiné à amener l'unité de commande (8) à transmettre un signal d'indication immédiatement après que le temps prédéterminé s'est écoulé s'il existe encore un contact physique avec le moyen d'activation, le signal d'indication initiant une activation d'au moins un moyen d'émission de lumière (30, 34) immédiatement après que le temps prédéterminé s'est écoulé. 35 40
15. Produit de programme informatique (21) comprenant un milieu utilisable sur ordinateur et un programme informatique selon la revendication 10, dans lequel le programme informatique est compris dans le milieu utilisable sur ordinateur. 45
16. Unité de commande (8) apte à initialiser le démarrage d'un moteur (11) et à arrêter le moteur (11) après que le moteur a démarré, comprenant un moyen de traitement (18), un moyen de stockage (21), un programme informatique selon la revendication 10 compris dans le moyen de stockage, et un moyen assurant une communication directe ou indirecte avec un moteur de démarreur (12) pour le moteur (11), le moteur (11), et une unité de télécom- 50 55

Fig. 1

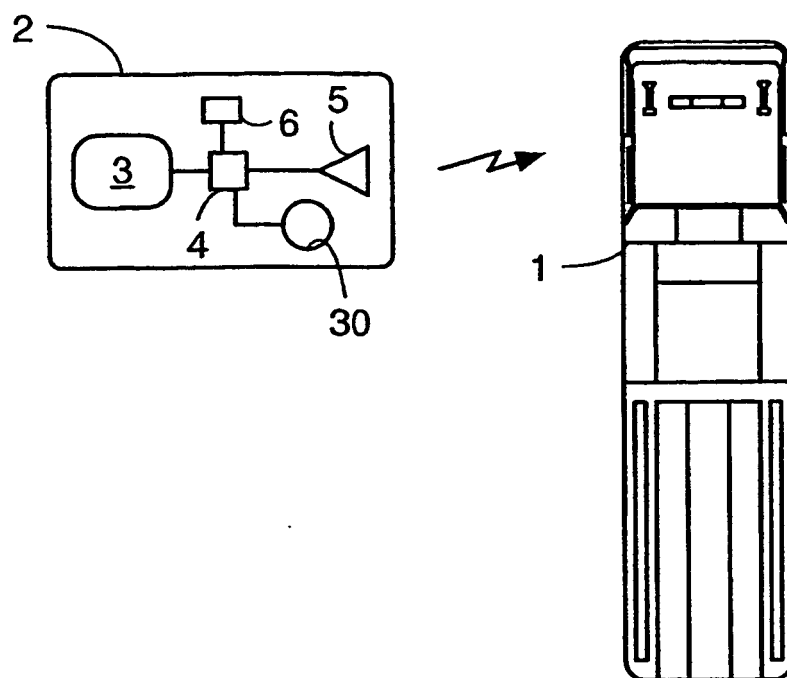


Fig. 2

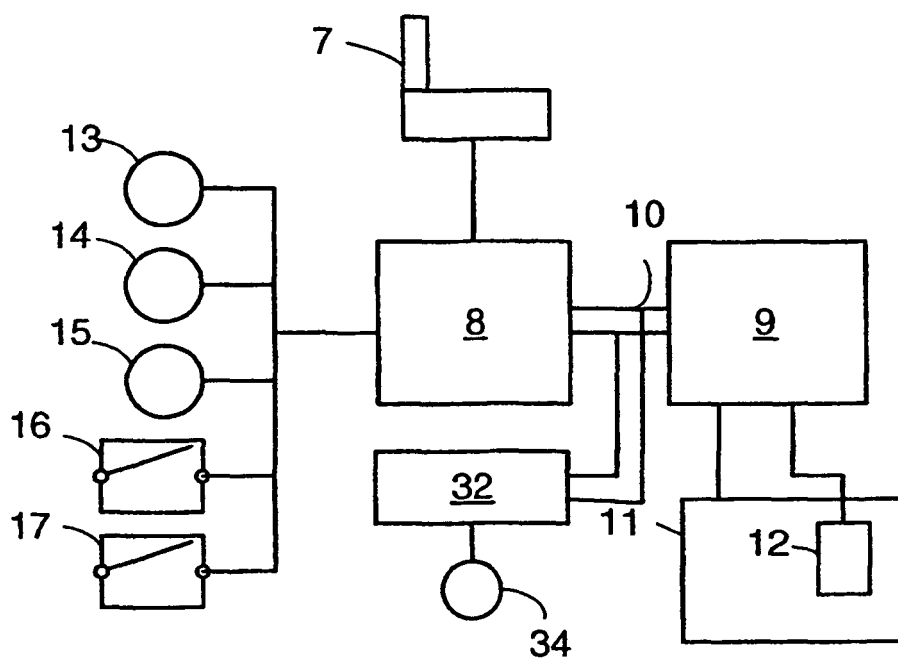


Fig.3

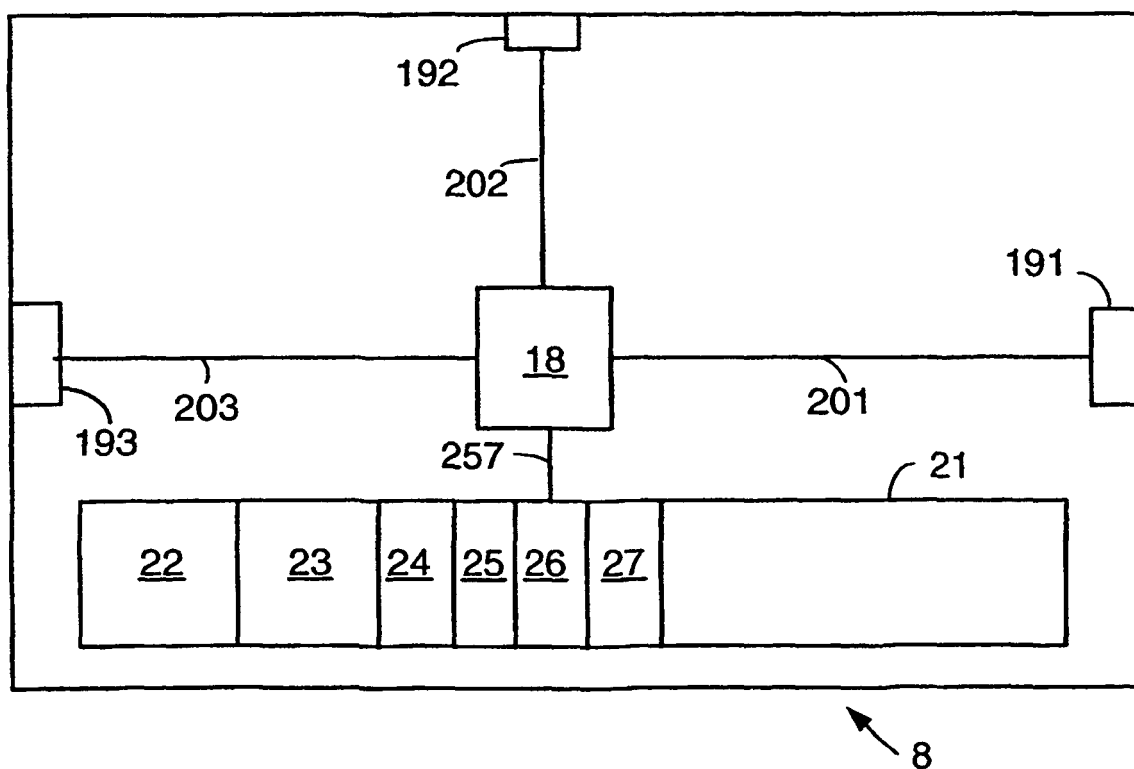


Fig. 4

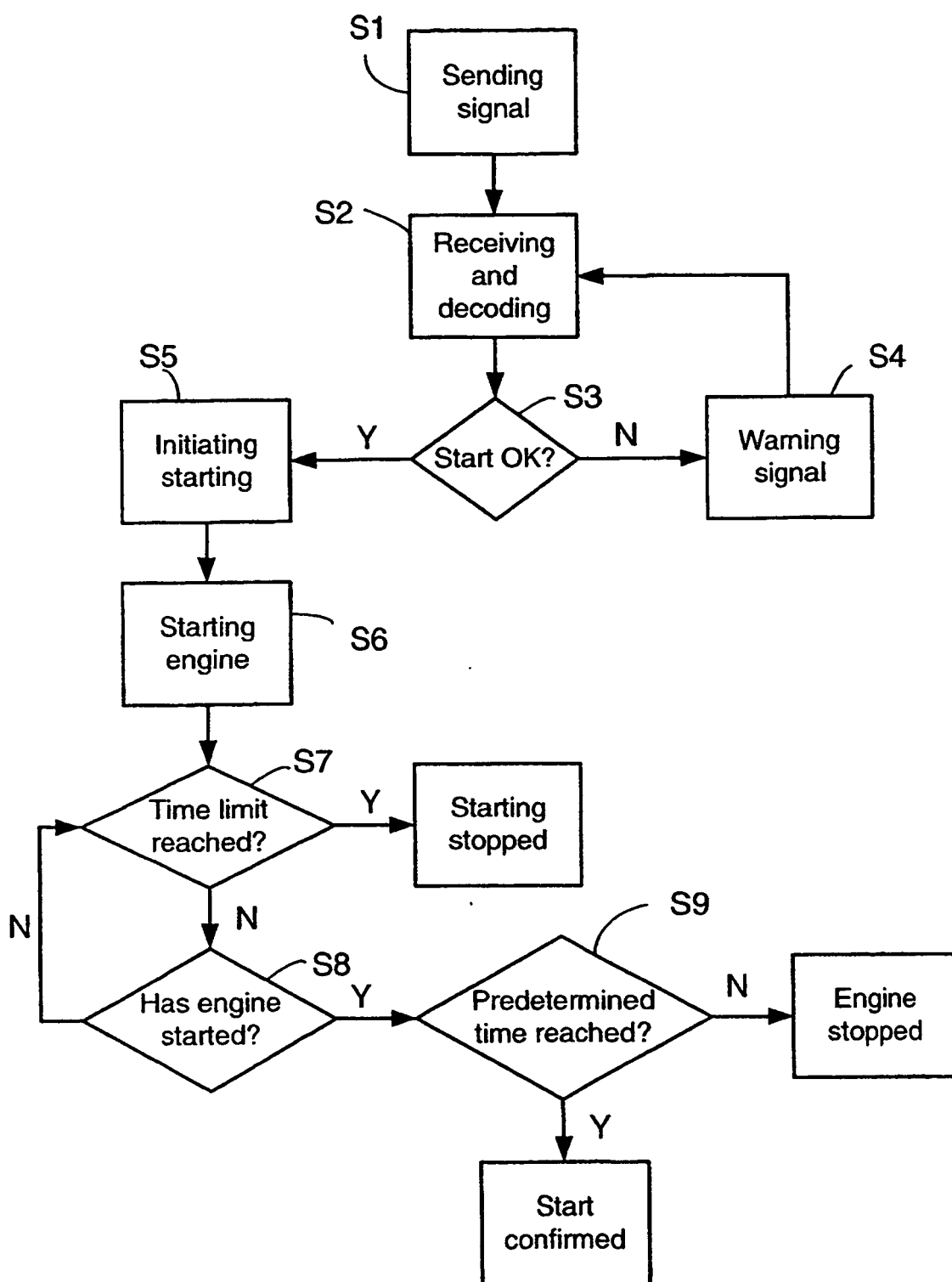


Fig. 5

