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DIGITAL VEHICLE LOGBOOK FOR A VEHICLE

- (57)

A system for providing a digital vehicle logbook for a vehicle is provided. The system (102) comprising: vehicle equipment (104) being integral to the vehicle (100); add-on equipment (106) associated with the vehicle (100); a control system (114) configured to determine a first set of add-on equipment parameters (116) pertaining to a first state (118) of the add-on equipment and to determine a second set of vehicle parameters (122) pertaining to a second state (124) of the vehicle equipment (104); the vehicle logbook (126) for logging data; and a data communication module (128) configured to transfer (130) the first (116) and second (122) set of parameters to the digital vehicle logbook (126) for storing the first (116) and second (122) set of parameters.

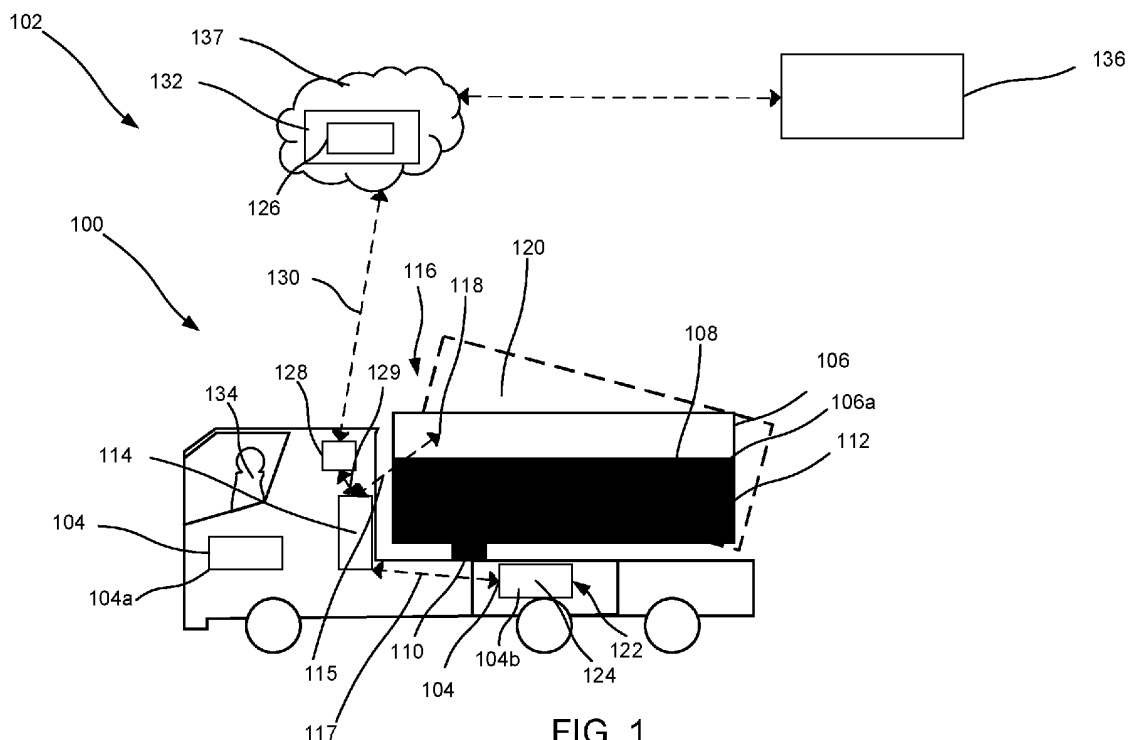


FIG. 1

Description

TECHNICAL FIELD

[0001] The disclosure relates generally to vehicles. In particular aspects, the disclosure relates to a system and a computer-implemented method for providing a digital vehicle logbook for a vehicle. A vehicle comprising such a digital vehicle logbook is also provided. The disclosure can be applied in heavy-duty vehicles, such as trucks, buses, and construction equipment. Although the disclosure may be described with respect to a particular vehicle, the disclosure is not restricted to any particular vehicle.

BACKGROUND

[0002] Today, a vehicle logbook is generally used as a register for storing data pertaining to the driving schedule for a driver of a vehicle. The traditional paper and pen format for the vehicle logbook is generally complemented or replaced by digital versions. Digital records and/or online tracking through software programs or smartphone apps may also be used to for instance simplify the monitoring of travel routes, maintenance schedules and driver time plans.

[0003] Digital fleet management tools further provide improved management capabilities and communication with vehicles in a fleet of vehicles. The digital fleet management tools may further allow for the integration of ordering and invoicing platforms to simplify the business operation. The digital fleet management may further provide scheduling assistance, route planning and work scheduling for the driver. There is, however, a need to improve the versatility of the digital vehicle logbooks associated with a vehicle. There is also a need to provide more reliable data pertaining to the use of the vehicle.

SUMMARY

[0004] According to a first aspect of the disclosure, a system for providing a digital vehicle logbook for a vehicle is provided. The system comprising: vehicle equipment being integral to the vehicle; add-on equipment associated with the vehicle; a control system configured to determine a first set of add-on equipment parameters pertaining to a first state of the add-on equipment and to determine a second set of vehicle parameters pertaining to a second state of the vehicle equipment; the digital vehicle logbook for logging data; and a data communication module configured to transfer the first and second set of parameters to the digital vehicle logbook for storing the first and second set of parameters. The first aspect of the disclosure may seek to improve the reliability of vehicle logbooks. A technical benefit may include to provide a more efficient usage of a vehicle. An improved utilization of the vehicle and/or the vehicle equipment may further be provided. A more energy efficient use of

the vehicle may further be obtained.

[0005] The system may allow for determining of a state of the vehicle and add-on equipment. A better tracking of the operation and/or performance of the vehicle and the add-on equipment may thereby be achieved. Information pertaining to the vehicle and add-on equipment may further be recorded in the digital vehicle logbook. The system may further allow for independent tracking of the add-on equipment for the vehicle.

[0006] The digital vehicle logbook may further function as a central store of information for monitoring the operation and/or operation history of the vehicle and the associated add-on equipment. The system may therefore provide time saving benefits as the transfer of information pertaining to the add-on equipment to the driver is not necessary. This may also provide safety and organizational benefits as the driver may easily be able to derive from the digital vehicle logbook that the vehicle is correctly equipped or that the add-on equipment is functional. Improved tracking of the vehicle is further provided. Complementary information pertaining to the vehicle equipment may further be obtained and logged together with the parameters pertaining to the add-on equipment. A better monitoring of the operation of the vehicle may thereby be obtained. A more energy efficient operation of the vehicle and the add-on equipment may further be obtained.

[0007] The wording vehicle equipment may be construed as means, system, sub-system, part, or component of a vehicle as originally manufactured or a similar part or component manufactured or sold for replacement or improvement of such means, system, subsystem part, or component of to the vehicle, and any device, article, or apparel not a system, part, or component of a vehicle which is manufactured, sold, delivered, offered, or intended for use exclusively to safeguard the operation of vehicles, drivers, passengers, and other pedestrians or other vehicles in traffic or workplaces. The vehicle may be understood as a motor vehicle.

[0008] The wording control system may be understood as a system configured to determine and/or monitor parameters pertaining to a state or a function of a device or a system of devices. The control system may further be configured to regulate and/or control a state and/or a function of a device or a system of devices. The device may, for example, be an equipment such as a vehicle equipment and/or an add-on equipment. The control system may comprise one or more control units. The wording control unit may be understood as a unit configured to handle control signals, such as processor control signals. The control unit may comprise circuitry for executing computer instructions. The control unit may further direct and/or determine input and output parameters, receive and/or send instructions to run computer code. The control unit may also be configured to monitor or direct other units and/or devices by control and timing signals.

[0009] The data communication module may be understood as a device configured to exchange data be-

tween two or more devices or system of devices. The data communication module may transmit the data by wireless communication. The data communication module may comprise a transceiver. The data communication module may transmit data via wired communication and/or via wireless communication. The data communication module may, for example, be configured to transfer the first and second set of parameters to the digital vehicle logbook via wireless communication. The data communication module may be configured to transfer and/or upload data to the digital vehicle logbook via wireless communication.

[0010] The wording digital vehicle logbook may be understood as a digital data storage. The digital data storage may be in the form of magnetic, optical and/or mechanical media. The digital vehicle logbook may keep record of digital information. The digital information may comprise parameters and information pertaining to previous, ongoing or future events and/or physical states. The data may be stored as computer code or numbers for a computer processor to read and/or control. The data storage may be stored on one or more hard drives. The storing of parameters in the digital vehicle logbook may be understood as storing data in a data storage.

[0011] In some examples, the data communication module may be configured to upload the first and second sets of parameters to a remote data storage holding the digital vehicle logbook. The remote data storage may also be referred to as a remote digital data storage. A technical benefit may include that a third party may access the parameters pertaining to the vehicle and/or add-on equipment. The third party may for example be a body builder, fleet manager or an operator operating the add-on equipment. An improved monitoring of the vehicle and the operation of the vehicle may thereby be obtained. The digital vehicle logbook may further be remotely accessible for the driver of the vehicle.

[0012] In some examples, the digital vehicle logbook may be cloud based such that the digital vehicle logbook is remotely accessible. A technical benefit may include that improved access to digital vehicle logbook may be obtained.

[0013] In some examples, the system may comprise a task management module, the task management module being configured to receive an add-on task request pertaining to an add-on task to be performed by the add-on equipment, and wherein the task management module is further configured to, via the data communication module, transfer the add-on task request to the digital vehicle logbook. A technical benefit may be that the system may allow for the improved determining of the state of the add-on equipment of the vehicle which is linked with a task. A better understanding of the operation and/or performance of the add-on equipment may be achieved when performing the task. A better tracking of the operation of the vehicle may further be obtained. A more accurate record of the operation of the vehicle is also provided. A greater efficiency when performing the task may also be

reached. The digital vehicle logbook is further provided which contain information pertaining to the task and the add-on equipment. The digital vehicle logbook will function as a central store of information for monitoring the add-on equipment and to record information pertaining to the operation of the add-on equipment of the vehicle associated with the task.

[0014] The task management module may be located remotely or in the vehicle. The tanks management module may be in communication with the data communication module. The task management module may be cloud based.

[0015] In some examples, the add-on task request may comprise a predetermined set of add-on equipment parameters and wherein the task manager module is further configured to, via the data communication module, transfer the predetermined add-on equipment parameters to the digital vehicle logbook allowing for a comparison between the predetermined set of add-on equipment parameters and the determined first set of add-on equipment parameters. A technical benefit may include that the system may provide input parameters and/or reference parameters associated with the task. An improved guidance for the operator of the vehicle may be provided. The system may further allow for a determining if the add-on equipment is suitable for performing the task.

[0016] In some examples, the system is may further be configured to, using the data communication module, generate an add-on equipment request if the predetermined set of add-on equipment parameters is differing from the determined first set of add-on equipment parameters. A technical benefit may include that a system is provided which may allow for a better equipping of the vehicle. A more suitable add-on equipment may thereby be provided for performing a task. An increased efficiency or safety relating to the performing the task may be achieved. This digital vehicle logbook will function as a central store of information for monitoring the add-on equipment as well as for equipping the vehicle correctly and to record driver activity/operations.

[0017] In some examples, the task management module may further be configured to receive an add-on task completion pertaining to a completion of the add-on task, and wherein the task management module is further configured to, via the data communication module, transfer the add-on task completion to the digital vehicle logbook. A technical benefit may include a better monitoring of the completion of the task. The efficiency at which the task was performed may therefor be evaluated in an improved manner. The utilization of the add-on equipment may be accurately measured.

[0018] The add-on task completion may comprise a confirmation message indicating completed task. The add-on task completion may comprise information pertaining to details of the performed task. The information may comprise data such as date, time, driver identification, location data associated with the completion of the task. The add-on task completion may require an author-

ization of the driver of the vehicle, an operator of the add-on equipment and/or a third party.

[0019] In some examples, the control system may be configured to determine an other set of equipment parameters pertaining to an other state of the add-on equipment or of the vehicle equipment; and wherein the data communication module is configured to transfer the other set of parameters to the digital vehicle logbook for storing the other set of parameters. A technical benefit may include a better tracking of the add-on or vehicle equipment. The different sets of parameters may pertain to different states of the add on equipment and/ or the vehicle equipment. A better monitoring of the add-on equipment, the operation of the add-on equipment and/or the vehicle equipment may thereby be obtained. Alternatively, the different states may be is the same state at different points in time allowing for a better monitoring of the add-on equipment and/or the vehicle equipment.

[0020] The add-on task completion may further comprise the other set of parameters for the add-on equipment and/or the vehicle equipment. A technical benefit may be an improved comparison between the predetermined set of parameters, the first set of parameters and the other set of parameters obtained at the completion of the task.

[0021] In some examples, the task management module may further be configured to receive a vehicle task request pertaining to a task to be performed by the vehicle equipment, and wherein the task management module is further configured to, via the data communication module, transfer the vehicle task request to the digital vehicle logbook.

[0022] In some examples, the task management module may further be configured to receive a vehicle task completion pertaining to the completion of the task, and wherein the task management module is further configured to, via the data communication module, transfer the add-on task completion to the digital vehicle logbook.

[0023] In some examples, wherein the task management module is further configured to receive a combined vehicle and add-on task request pertaining to a combined task to be performed by the vehicle equipment and the add-on equipment, and wherein the task management module is further configured to, via the data communication module, transfer the combined vehicle and add-on task request to the digital vehicle logbook. A technical benefit may include a better matching of the task and the vehicle and add-on equipment.

[0024] In some examples, the task management module may be configured to receive a combined task completion pertaining to the completion of the combined vehicle and add-on task performed by the vehicle equipment and the add-on equipment. A better monitoring of performed combine task my thereby be obtained. The combined task completion may, via the data communication module, be transferred to the digital vehicle logbook.

[0025] The system may further comprise an interface

configured to provide communication between the control system and the add-on equipment;

[0026] In some examples, a vehicle comprising the system may be provided.

[0027] According to a second aspect of the disclosure, a vehicle comprising the system may be provided. The second aspect of the disclosure may seek to provide a vehicle with an improved digital vehicle logbook. The above-mentioned features of the system, when applicable, apply to this second aspect as well. In order to avoid undue repetition, reference is made to the above.

[0028] In some examples, the vehicle may a heavy-duty vehicle or a medium-duty vehicle.

[0029] In some examples, the vehicle may be a light-duty vehicle.

[0030] According to a third aspect of the disclosure a computer-implemented method for providing a digital vehicle logbook for a vehicle is provided. The method comprising: determining, by using a control system, a first set of add-on equipment parameters pertaining to a first state of add-on equipment and a second set of vehicle equipment parameters pertaining to a second state of the vehicle equipment, and transferring, using a data communication module, the first set of add-on equipment parameters and the second set of vehicle equipment parameters to the digital vehicle logbook, and storing the first set and the second set of parameters in the digital vehicle logbook.

[0031] The third aspect of the disclosure may seek to provide an improved computer-implemented method for logging data in a digital vehicle logbook. The above-mentioned features pertaining to the first and second aspects, when applicable, apply also to this third aspect. In order to avoid undue repetition, reference is made to the above.

[0032] In some examples, the method may further comprise: receiving, by a task management module, an add-on task request pertaining to an add-on task to be performed by the add-on equipment; and transferring, via the data communication module, the add-on task request to the digital vehicle logbook, and storing the add-on task request in the digital vehicle logbook.

[0033] In some examples, the receiving of the add-on task request may further comprise a predetermined set of add-on equipment parameters, the method further comprising: transferring by the task manager module, via the digital communication module, the predetermined add-on equipment parameters to the digital vehicle logbook.

[0034] In some examples the method may further comprise: receiving, by a task management module, an add-on task completion pertaining to a task to be completed by the add-on equipment; and transferring, via the data communication module, the add-on task completion to the digital vehicle logbook.

[0035] In some examples, the method may further comprise: determining, by using the control system, an other set of equipment parameters pertaining to an other state of the add-on equipment or of the vehicle equip-

ment, transferring, using the data communication module, the other set of parameters to the digital vehicle logbook, and storing the other set of equipment parameters in the digital vehicle logbook.

[0036] In some examples the method may further comprise: receiving, by the task management module, a combined vehicle and add-on task request to be performed combinedly by the vehicle equipment and the add-on equipment; receiving a combined task completion pertaining to the completion of the combined vehicle and add-on task; and transferring, via the data communication module, the combined vehicle and add-on task request and the combined vehicle and add-on task request completion to the digital vehicle logbook.

[0037] In some examples the method may further comprise: uploading, using the data communication module, the first and/or the second sets of parameters to a remote data storage holding the digital vehicle logbook.

[0038] In some examples, the method may further comprise generating an add-on equipment request, using the data communication module, if the predetermined set of add-on equipment parameters is differing from the determined first set of add-on equipment parameters.

[0039] In some examples, the method may further comprise, displaying, using a user interface, the first and/or second sets of add-on equipment parameters to a driver of the vehicle and/or at least one remote third party.

[0040] In some examples, the method may further comprise, displaying, using a user interface, the predetermined and/or first sets of add-on equipment parameters to a driver of the vehicle and/or at least one remote third party.

[0041] In some examples, the method may further comprise, displaying, using a user interface, second set of add-on equipment parameters to a driver of the vehicle and/or at least one remote third party.

[0042] In some examples, the method may further comprise, displaying, using a user interface, the predetermined vehicle parameters and/or the vehicle parameters to a driver of the vehicle and/or at least one remote third party.

[0043] In some examples, a computer program is provided, the computer program comprising code for performing the computer-implemented method of any of the claims.

[0044] In some examples a non-transitory computer-readable storage medium comprising instructions, which when executed by a processor device, cause the processor device to perform the computer-implemented method of any of claims.

[0045] The above aspects, accompanying claims, and/or examples disclosed herein above and later below may be suitably combined with each other as would be apparent to anyone of ordinary skill in the art.

[0046] Additional features and advantages are disclosed in the following description, claims, and drawings, and in part will be readily apparent therefrom to those

skilled in the art or recognized by practicing the disclosure as described herein. There are also disclosed herein control units, computer readable media, and computer program products associated with the above discussed technical benefits.

BRIEF DESCRIPTION OF THE DRAWINGS

[0047] With reference to the appended drawings, below follows a more detailed description of aspects of the disclosure cited as examples.

FIG. 1 is an exemplary illustration of a system for providing a digital vehicle logbook for a vehicle according to one example.

FIG. 2 is an exemplary schematic view a system for providing a digital vehicle logbook for a vehicle according to one example.

FIG. 3a and 3b are a flow charts of an exemplary computer-implemented method for providing a digital vehicle logbook for a vehicle.

FIG. 4 is an exemplary illustration of a task performed by a vehicle.

FIG. 5 is another view of the system of **FIG. 1**, according to another example.

DETAILED DESCRIPTION

[0048] Aspects set forth below represent the necessary information to enable those skilled in the art to practice the disclosure.

[0049] **FIG. 1** is an exemplary illustration of a system for providing a digital vehicle logbook for a vehicle according to one example. The vehicle 100 is according this example a heavy-duty vehicle. The system 102 comprises vehicle equipment 104 being integral to the vehicle. The vehicle equipment 104 is exemplified as being a positioning device 104a such as a global positioning system, GPS. The location of the vehicle 100 may thereby be determined. The vehicle equipment 104 may according to another example be a pressure sensor 104b. The pressure sensor 104b may be configured to sense a suspension pressure. The pressure sensor 104b may be configured to sense a pressure pertaining to a load weight of the vehicle 100. The pressure sensor 104b may, for example, be configured to sense a break or tire pressure.

[0050] The system 104 may further comprise add-on equipment 106 associated with the vehicle 100. The add-on equipment 106 is here exemplified as a tipper equipment 106a. The tipper equipment 106 being configured to hold a load 108. The tipper equipment 106a may be comprise a rear platform that may be raised at its front end, thus enabling the load 108 to be discharged. In more detail, the tipper equipment 106a may further comprises a movable piston 110 which may cause the rear platform to tilt and the load to be unloaded through a tailgate 112.

[0051] The system 102 comprises a control system

114. The control system 114 is configured to determine a first set of add-on equipment parameters 116. The control system 114 may be configured to communicate 115 with the add-on equipment. The communication 115 may be a wireless or a wired communication. The add-on equipment parameters 116 may pertain to a first state 118 of the add-on equipment 106. The add-on equipment parameters may, for example, be position parameters associated with the movable piston 110. The movable piston may be a hydraulic piston and the position parameters may be related to a pressure associated with the hydraulic pressure of the hydraulic piston. The position parameters may alternatively be distance parameters pertaining to the extension of the movable piston 110. The add-on equipment parameters 116 may therefor pertain to a first state 118 of the add-on equipment 106 where the first state may be a tilting position of the rear platform. The rear platform may for instance be in a horizontal state 118 or a tipping state 120.

[0052] The wording set of parameters may further be construed as a single parameter or a plurality of parameters.

[0053] The control system 114 may further be configured to determine a second set of vehicle parameters 122 pertaining to a second state 124 of the vehicle equipment 104. The second state 124 may for example be a pressure state. The pressure state may be determined by the pressure sensor 104b. The pressure sensor 104b may, for example, be configured to sense a pressure pertaining to the load weight of the vehicle pertaining to the load 108. The second set of vehicle parameters 122 may comprise pressure values. The control system 114 may be configured to communicate 117 with the vehicle equipment 104. The communication 117 may be a wireless or a wired communication.

[0054] The system 102 further comprises a digital vehicle logbook 126 for logging data and a data communication module 128 configured to transfer 130 the first 116 and second 122 set of parameters to the digital vehicle logbook 126. The first 116 and second 122 set of parameters may be stored in the digital vehicle logbook 126. The data communication module 128 may be in communication 129 with the control system 114.

[0055] The data communication module 128 may be configured to upload the first 116 and second 122 sets of parameters to a remote data storage 132, the remote data storage 132 holding the digital vehicle logbook 126. An improved monitoring of the add-on equipment 106 may thereby be obtained. An operator 134 of the vehicle 100 may moreover from the digital vehicle log book 126 determine in which state the add-on equipment is. A technical benefit may include that also a third party 136 may access the parameters pertaining to the vehicle equipment 104 and/or the add-on equipment 106. The data communication module 128 may be configured to via wireless communication upload the first 116 and second 122 sets of parameters to the remote data storage 132, the remote data storage 132 holding the digital vehicle

logbook 126. The remote data storage 132 may be cloud based 137. The digital vehicle logbook 126 may be cloud based 137. The digital vehicle logbook 126 may thereby be remotely accessible directly or via the remote data storage 132.

[0056] FIG. 2 is an exemplary schematic view a system for providing a digital vehicle logbook for a vehicle according to one example. The system 102 comprising a vehicle equipment 104 and add-on equipment 106. A control system 114 is configured to determine a first set of add-on equipment parameters 116 pertaining to a first state of the add-on equipment 106 and to determine a second set of vehicle parameters 122 pertaining to a second state of the vehicle equipment 104. The system 102 further comprising a digital vehicle logbook 126 for logging data; and a data communication module 128 configured to transfer 130 the first 116 and second 122 set of parameters to the digital vehicle logbook 126. The data communication module 128 is configured to upload 131 the first 116 and second 122 sets of parameters to a remote data storage 132 holding the digital vehicle logbook 126. The digital vehicle logbook 126 may be cloud based 137 such that the digital vehicle logbook is remotely accessible 133 by a third party 136. The third party 136 may be an owner of the vehicle. The third party 134 may alternatively be a body builder provider for equipping the vehicle. The operator of the vehicle may further have access to the digital vehicle logbook 126.

[0057] The system 102 may further comprise a task management module 138. The task management module 138 may be configured to receive 140 an add-on task request 142 pertaining to an add-on task 143 to be performed by the add-on equipment 106. The task management module 138 may further be configured to, via the data communication module 128 transfer 130 the add-on task request 142 to the digital vehicle logbook 126.

[0058] The add-on task request 142 may comprise a predetermined set of add-on equipment parameters 144. The task manager module 138 may further be configured to, via the data communication module 128, transfer 130 the predetermined add-on equipment parameters 144 to the digital vehicle logbook 126. The task manager module 138 may be in communication 139 with the data communication module 128.

[0059] The digital vehicle logbook 126 may thereby provide for a comparison between the predetermined set of add-on equipment parameters 144 and the first set of add-on equipment parameters 116. An improved determination of if the vehicle is adequately equipped may thereby be obtained. A better matching of a vehicle with determined set of add-on parameters to the required parameters associated with the add-on task 143 may thereby be obtained.

[0060] The system 102 may further be configured to, using the data communication module 128, generate an add-on equipment request 146 if the predetermined set of add-on equipment parameters 144 is differing from the first set of add-on equipment parameters 116. The add-

on request 146 may be sent to the third party 134. The add-on request 146 may be sent to an operator or owner of the vehicle. The add-on request may be sent to a body builder provider.

[0061] The task management module 138 may further be configured to receive 148 an add-on task completion 150 pertaining to a completion of the add-on task 143, and the task management module 138 may further be configured to, via the data communication module 128, transfer 130 the add-on task completion 150 to the digital vehicle logbook 126.

[0062] The add-on task manager may comprise the data communication module.

[0063] The task management module 138 may further be configured to receive 152 a combined vehicle and add-on task request 154 to be performed by the vehicle equipment 104 and the add-on equipment 106, the combined vehicle and add-on task request 154 pertaining to a combined task 155 to be performed by the vehicle equipment 104 and the add-on equipment 106.

[0064] The task management module 138 may further be configured to, via the data communication module 128, transfer 130 the combined vehicle and add-on task request 154 to the digital vehicle logbook 126. The task management module 128 may further be configured to receive 156 a combined task completion 158 pertaining to the completion of the combined vehicle and add-on task 155 performed by the vehicle equipment and the add-on equipment.

[0065] The combined task completion 158 may, via the data communication module 128, be transferred to the digital vehicle logbook 126.

[0066] The system 102 may further comprise an interface 160 configured to provide communication 162 between the control system 114 and the add-on equipment 106. The system 102 may further comprise an additional interface 164 configured to provide communication 166 between the control system 114 and the vehicle equipment 104. The interface and the additional interface may form a single interface. The interface may form part of a user interface. The user interface may be accessible via a computer or hand-held digital device. The hand-held device may be a smart phone or a tablet.

[0067] FIG. 3a and 3b are flow charts of an exemplary method for providing a digital vehicle logbook for a vehicle. Reference may further be made to FIG. 2. The method 200 comprising determining 202, by using a control system 114, a first set of add-on equipment parameters 116 pertaining to a first state 118 of add-on equipment 106 and a second set of vehicle equipment parameters 122 pertaining to a second state 124 of the vehicle equipment 104, and transferring 130, 204, using a data communication module 128, the first set of add-on equipment parameters 116 and the second set of vehicle equipment parameters 122 to the digital vehicle logbook 126. The method 200 further comprising storing 206 the first set 116 and the second set 122 of parameters in the digital vehicle logbook 126. The storing 206 may be in a remote

data storage 132. The storing 206 may be performed in a cloud-based storage.

[0068] The method 200 may further comprise receiving 208, by a task management module 138, an add-on task request 142 pertaining to an add-on task 143 to be performed by the add-on equipment 106. The method further comprising transferring 130, 210, via the data communication module 128, the add-on task request 142 to the digital vehicle logbook 126, and storing 212 the add-on task request 142 in the digital vehicle logbook.

[0069] The receiving 140, 208 of the add-on task request 142 may further comprise a predetermined set of add-on equipment parameters 144. The method 200 may further comprise transferring 130, 210 by the task manager module 138, via the digital communication module 128, the predetermined add-on equipment parameters 144 to the digital vehicle logbook 126.

[0070] The method 200 may further comprise storing 212 the predetermined add-on equipment parameters 144 in the digital vehicle logbook 126

[0071] The method 200 may further comprise: receiving 148, 214, by a task management module 138, an add-on task completion 150 pertaining to an add-on task 143 to be completed by the add-on equipment 106; and transferring 130, 216, via the data communication module 128, the add-on task completion 150 to the digital vehicle logbook 126. The method 200 may further comprise storing 218 the add-on task completion 150 in the digital vehicle logbook 126.

[0072] The method 200, may further comprise determining 220, by using the control system 114, an other set of equipment parameters 168 pertaining to an other state of the add-on equipment or of the vehicle equipment. The method 200 may further comprise transferring 130, 222, using the data communication module, the other set of parameters to the digital vehicle logbook 126, and storing 224 the other set of equipment parameters 168 in the digital vehicle logbook 126. A technical benefit may include a better tracking of the add-on or the vehicle equipment. The different sets of parameters may pertain to different states of the add on equipment and/ or the vehicle equipment. A better monitoring of the add-on equipment, the operation of the add-on equipment and/or the vehicle equipment may thereby be obtained. Alternatively, the different states may be is the same state at different points in time allowing for a better monitoring of the add-on equipment and/or the vehicle equipment.

[0073] The method 200 may further comprise receiving 152, 226, by the task management module 138, a combined vehicle and add-on task request 154 to be performed combinedly by the vehicle equipment 104 and the add-on equipment 106. The method 200 may further comprise receiving 156, 228 a combined task completion pertaining to the completion 158 of the combined vehicle and add-on task 155; and transferring 130, 230, via the data communication module 128, the combined vehicle and add-on task request 154 and the combined vehicle and add-on task request completion 158 to the digital

vehicle logbook 126.

[0074] The wording performed combinedly may be construed as being performed jointly by the vehicle equipment and the add-on equipment. The performed combinedly may be an action made in sequence and/or in parallel by the vehicle equipment and the add-on equipment. The performed combined task should be taken as a whole or considered performed together by the vehicle equipment and the add-on equipment. The method 200 may further comprise storing 232 the add-on task request 154 and the combined vehicle and add-on task request completion 158 digital vehicle logbook 126.

[0075] FIG. 4 is an exemplary illustration of a task performed by a vehicle. The example illustrates a vehicle 300 having received a combined vehicle and add-on task request. The combined task request comprises instructions to drive the vehicle 300 from a starting location 302, as illustrated in the map 304, to a loading dock 306. At the loading dock 306 vehicle 300 should further load goods 307. The combined task request may therefore be understood to pertain to a task to be performed combined by the vehicle and add-on equipment. The combined task request further comprises instructions to unload the goods 307 at a warehouse 308 and return to the starting location 302. In more detail, the vehicle 300 may be a vehicle similar to the vehicle 100 as disclosed in relation to FIG. 1, but in this example having a different add-on equipment. The vehicle 300 is, in this example, a heavy-duty vehicle in the form of a container truck. The vehicle 300 comprises the system 102 for providing a digital vehicle logbook as described above. The system 102 may comprise vehicle equipment, here exemplified as a GPS system 310. The system 102 may further determine location coordinates as a second set of vehicle parameters. The vehicle equipment may therefor provide the location of the vehicle 300. The system 102 may further be configured to store the location coordinates in the digital vehicle logbook 126. The combined vehicle and add-on task request may further be stored in the digital vehicle logbook 126.

[0076] The combined vehicle and add-on task request may comprise information pertaining to a specific container 312 suitable for loading of goods 307. Put differently, the combined vehicle and add-on task request contains a specification of container 312 needed for the loading of the goods 307. The specification may be understood as the predetermined set of add-on equipment parameters. The specification may for example be the size of the container. In this example, the vehicle 300 comprises a smaller container 314 being too small for loading of the goods. The system 102, via a control system, may be configured to determine a first set of add-on equipment parameters. According to this example, the first set of add-on equipment parameters specify the determined type presence of container on the vehicle. The first and predetermined set of parameters may further be compared such that it may be determined that the vehicle 300 has a container 314 differing from the specified con-

tainer 312. Thus, the vehicle 300 at location 302 is not adequately equipped for the performing the task.

[0077] The system 102 may further configured to generate an add-on equipment request which may be sent to a third party. According to this example, the third party may be at a location 303. The third party may provide a container 314 having the right size to match that of the combined vehicle and add-on task request. The system 102 may further be configured to transfer data pertaining to the presence of the smaller container 312 to the digital vehicle logbook 126. Information pertaining to the location of the vehicle 300 and the type of container 312, 314 may be efficiently logged in the digital vehicle logbook 126. An improved recording of the vehicle route and add-on equipment may thereby be obtained.

[0078] The system 102, may further, via the task management module, not shown, receive a combined vehicle and add-on task completion pertaining to a combined task to be completed by the vehicle equipment 104 and the add-on equipment 106. The combined vehicle and add-on task completion may be provided as the goods 307 is unloaded at the warehouse 308.

[0079] The combined vehicle and add-on task completion may further comprise a confirmation message indicating completed task. The add-on task completion may further be transferred to the digital vehicle logbook. The combined vehicle and add-on task completion may comprise information pertaining to details of the performed task such as location, vehicle idle time at the warehouse, time of unloading, and weight of the load. The information may further comprise data pertaining to type of container and vehicle data associated with the completion of the task. An improved monitoring of the operation of the vehicle equipment and the add-on equipment may thereby be obtained. An improved recording of the operation of a vehicle performing a task may be obtained.

[0080] The system may further, by a control system, be configured to determine an other set of equipment parameters pertaining to an other state of the add-on equipment or of the vehicle equipment. In this example the vehicle equipment may comprise load sensor sensing the load on the vehicle. The load sensor may for example be an axle load sensor for measuring axle and cargo load on a vehicle. The system 102 may further be configured to transfer the other set of parameters to the digital vehicle logbook for storing the other set of parameters. A better tracking of the vehicle equipment may thereby be obtained. The load sensor may for instance determine a set of parameters pertaining to the load of the container and/or vehicle. A better tracking of the loading and/or unloading may further be obtained. A more efficient operation and/or utilization of a vehicle and the add-on equipment may further be obtained.

[0081] FIG. 5 is another view of the system of FIG. 1, according to another example. In more detail, a system for providing a digital vehicle logbook for a vehicle, the system 102 comprising: vehicle equipment 104 being integral to the vehicle 100; add-on equipment 106 associ-

ated with the vehicle 100; a control system 114 configured to determine a first set of add-on equipment parameters 116 pertaining to a first state 118 of the add-on equipment 106 and to determine a second set of vehicle parameters 122 pertaining to a second state 124 of the vehicle equipment 104; the vehicle logbook 126 for logging data; and a data communication module 128 configured to transfer 130 the first 116 and second 122 set of parameters to the digital vehicle logbook 126 for storing the first 116 and second 122 set of parameters.

[0082] The terminology used herein is for the purpose of describing particular aspects only and is not intended to be limiting of the disclosure. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items. It will be further understood that the terms "comprises," "comprising," "includes," and/or "including" when used herein specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

[0083] It will be understood that, although the terms first, second, etc., may be used herein to describe various elements, these elements should not be limited by these terms. These terms are only used to distinguish one element from another. For example, a first element could be termed a second element, and, similarly, a second element could be termed a first element without departing from the scope of the present disclosure.

[0084] Relative terms such as "below" or "above" or "upper" or "lower" or "horizontal" or "vertical" may be used herein to describe a relationship of one element to another element as illustrated in the Figures. It will be understood that these terms and those discussed above are intended to encompass different orientations of the device in addition to the orientation depicted in the Figures. It will be understood that when an element is referred to as being "connected" or "coupled" to another element, it can be directly connected or coupled to the other element, or intervening elements may be present. In contrast, when an element is referred to as being "directly connected" or "directly coupled" to another element, there are no intervening elements present.

[0085] Unless otherwise defined, all terms (including technical and scientific terms) used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this disclosure belongs. It will be further understood that terms used herein should be interpreted as having a meaning consistent with their meaning in the context of this specification and the relevant art and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

[0086] It is to be understood that the present disclosure is not limited to the aspects described above and illus-

trated in the drawings; rather, the skilled person will recognize that many changes and modifications may be made within the scope of the present disclosure and appended claims. In the drawings and specification, there have been disclosed aspects for purposes of illustration only and not for purposes of limitation, the scope of the inventive concepts being set forth in the following claims.

10 Claims

1. A system for providing a digital vehicle logbook for a vehicle, the system (102) comprising:

vehicle equipment (104) being integral to the vehicle (100);
add-on equipment (106) associated with the vehicle (100);
a control system (114) configured to determine a first set of add-on equipment parameters (116) pertaining to a first state (118) of the add-on equipment (106) and to determine a second set of vehicle parameters (122) pertaining to a second state (124) of the vehicle equipment (104);
the vehicle logbook (126) for logging data; and
a data communication module (128) configured to transfer (130) the first (116) and second (122) set of parameters to the digital vehicle logbook (126) for storing the first (116) and second (122) set of parameters.

2. The system according to claim 1, wherein the data communication module (128) is configured to upload (131) the first (116) and second (122) sets of parameters to a remote data storage (132) holding the digital vehicle logbook (126).
3. The system according to claim 1 or 2, wherein the digital vehicle logbook (126) may be cloud based (137) such that the digital vehicle logbook (126) is remotely accessible.
4. The system according to anyone of claim 1 to 3, further comprising a task management module (138), the task management module (138) being configured to receive an add-on task request (142) pertaining to an add-on task (143) to be performed by the add-on equipment (106), and wherein the task management module (138) is further configured to, via the data communication module (128), transfer (130) the add-on task request (143) to the digital vehicle logbook (126).
5. The system according to anyone of claims 1 to 4, wherein the add-on task request (142) comprises a predetermined set of add-on equipment parameters (144) and wherein the task manager module (138) is further configured to, via the data communication

module (128), transfer (130) the predetermined add-on equipment parameters (144) to the digital vehicle logbook (128) allowing for a comparison between the predetermined set of add-on equipment parameters (144) and the determined first set of add-on equipment parameters (116).

6. The system according to claim 5, wherein the system (102) is further configured to, using the data communication module (128), generate an add-on equipment request (146) if the predetermined set of add-on equipment parameters (144) is differing from the determined first set of add-on equipment parameters (116).

7. The system according to anyone of claim 4 to 6, wherein the task management module (138) is further configured to receive (148) an add-on task completion (150) pertaining to a completion of the add-on task (143), and wherein the task management module (138) is further configured to, via the data communication module (128), transfer (130) the add-on task completion (150) to the digital vehicle logbook (126).

8. The system according to claim 4, wherein the task management module (138) is further configured to receive (152) a combined vehicle and add-on task request (154) pertaining to a combined task (155) to be performed by the vehicle equipment (104) and the add-on equipment (106), and wherein the task management module (138) is further configured to, via the data communication module (128), transfer (130) the combined vehicle and add-on task request (154) to the digital vehicle logbook (126).

9. A vehicle (100) comprising the system (102) according to any one of claims 1 to 8.

10. A computer-implemented method for providing a digital vehicle logbook for a vehicle, the method (200) comprising:

determining (202), by using a control system (114), a first set of add-on equipment parameters (116) pertaining to a first state (118) of add-on equipment (106) and a second set of vehicle equipment parameters (122) pertaining to a second state (124) of the vehicle equipment (104), and transferring (204), using a data communication module (128), the first set of add-on equipment parameters (116) and the second set of vehicle equipment parameters (122) to the digital vehicle logbook (126), and storing (206) the first set (116) and the second set (122) of parameters in the digital vehicle logbook (126).

11. The computer-implemented method according to claim 10, further comprising:

receiving (208), by a task management module (138), an add-on task request (142) pertaining to an add-on task (143) to be performed by the add-on equipment (106); and transferring (210), via the data communication module (128), the add-on task request (142) to the digital vehicle logbook (126), and storing (212) the add-on task request (142) in the digital vehicle logbook (126).

12. The computer-implemented method according to claim 11, wherein the receiving (208) of the add-on task request (142) further comprising a predetermined set of add-on equipment parameters (144), the method (200) further comprising: transferring (210) by the task manager module (138), via the digital communication module (128), the predetermined add-on equipment parameters (144) to the digital vehicle logbook (126).

13. The computer-implemented method according to claim 11 or 12, further comprising:

receiving (214), by a task management module (138), an add-on task completion (150) pertaining to a task to be completed by the add-on equipment (106); and transferring (216), via the data communication module (128), the add-on task completion (150) to the digital vehicle logbook (126).

14. The computer-implemented method according to any one of claims 12 to 13, further comprising:

determining (220), by using the control system (114), an other set of equipment parameters (168) pertaining to an other state of the add-on equipment (106) or of the vehicle equipment (104), transferring (222), using the data communication module (128), the other set of parameters (168) to the digital vehicle logbook (126), and storing (224) the other set of equipment parameters (168) in the digital vehicle logbook (126).

15. The computer-implemented method according to any one of claims 12 to 14, the method (200) further comprising:

receiving (226), by the task management module (138), a combined vehicle and add-on task request (154) to be performed combinedly by the vehicle equipment (104) and the add-on equipment (106); receiving (228) a combined task completion

(158) pertaining to the completion of the combined vehicle and add-on task (155); and transferring (230), via the data communication module (128), the combined vehicle and add-on task request (154) and the combined vehicle and add-on task request completion (158) to the digital vehicle logbook (126). 5

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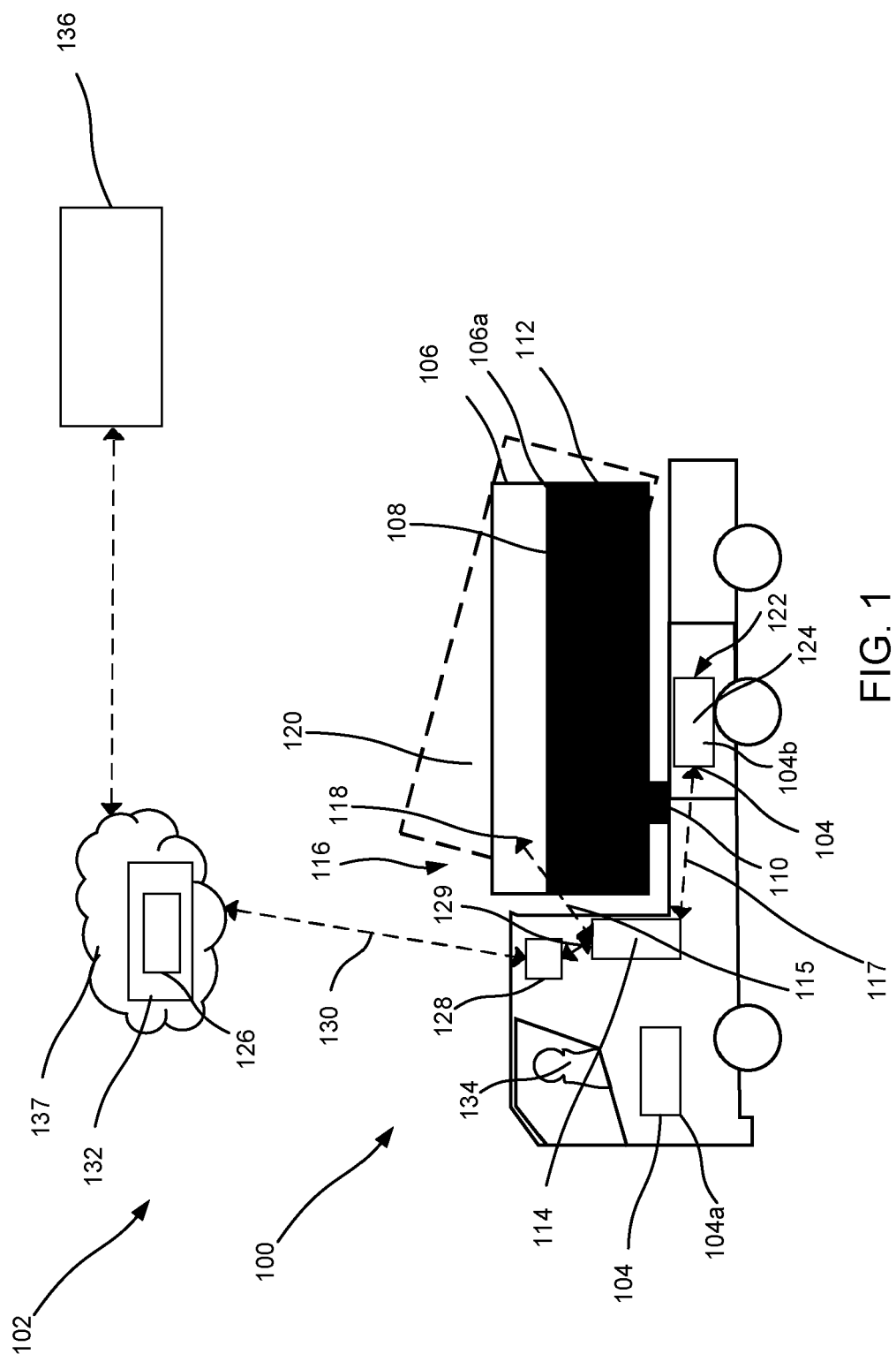
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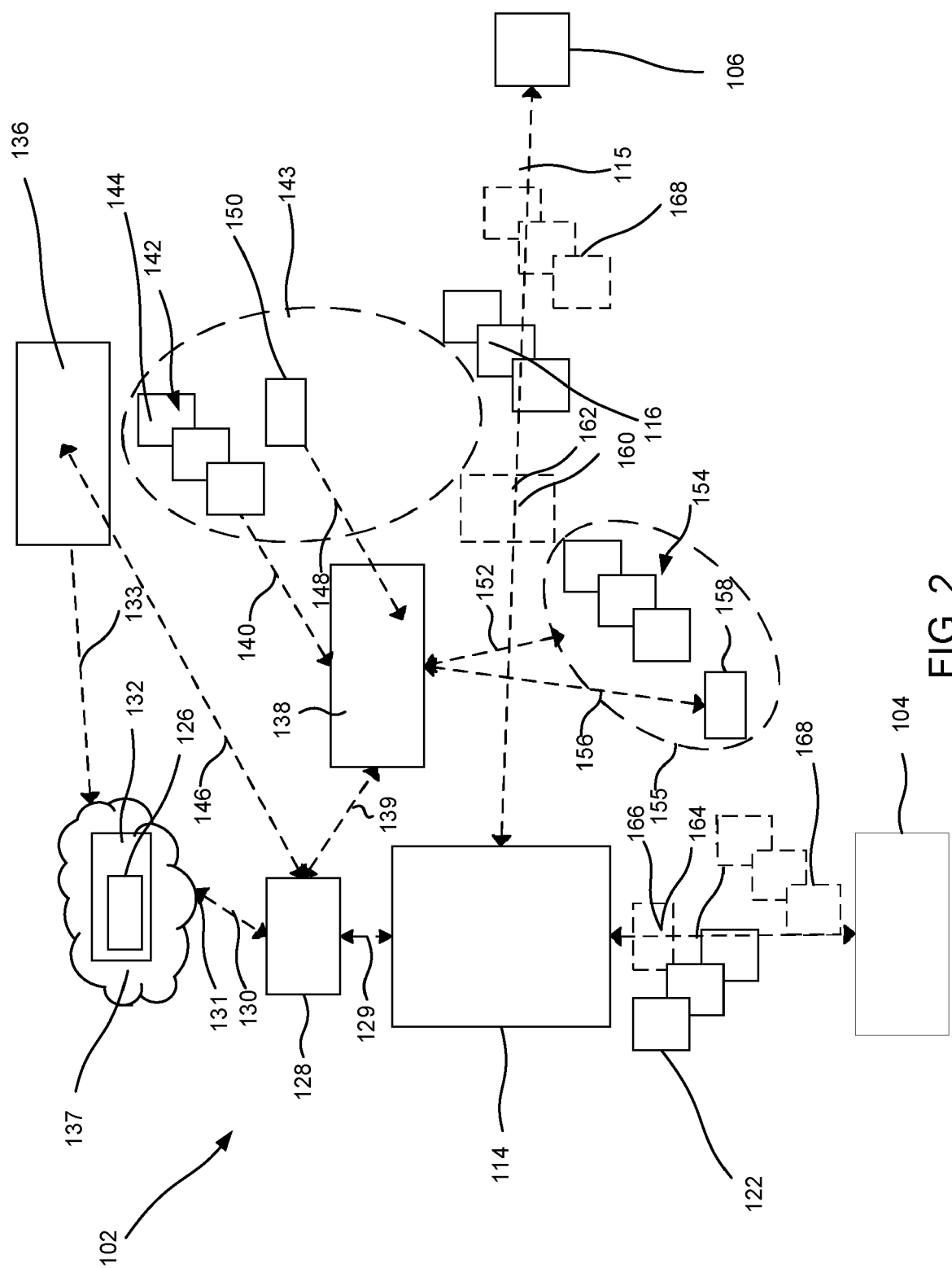
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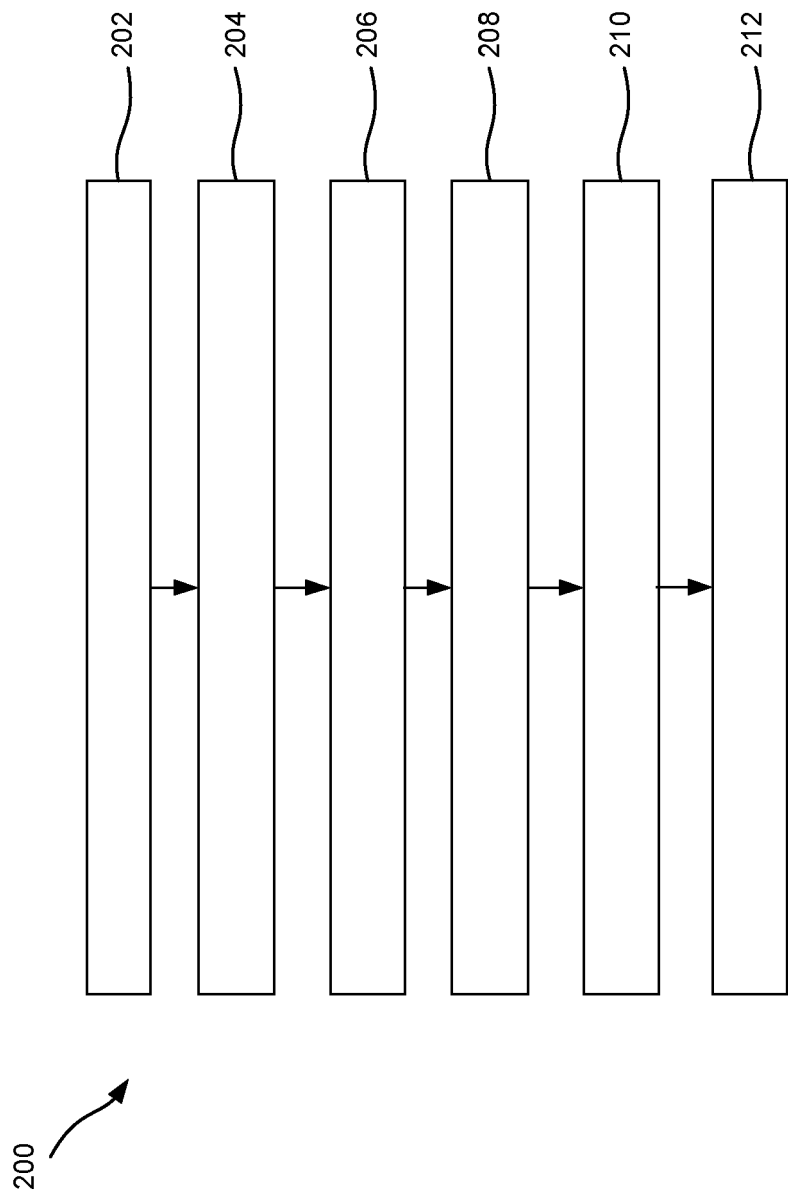


FIG. 3a

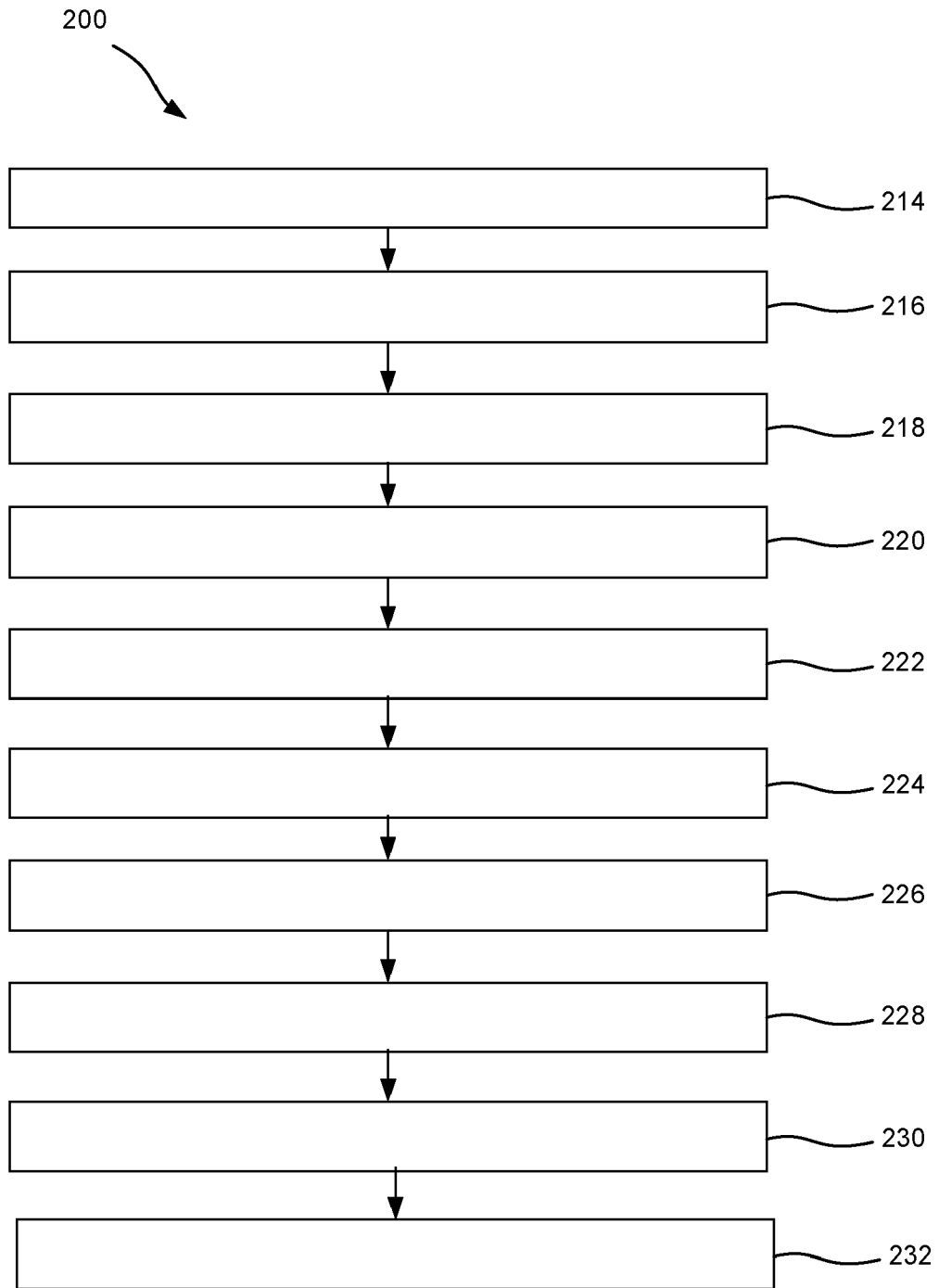


FIG. 3b

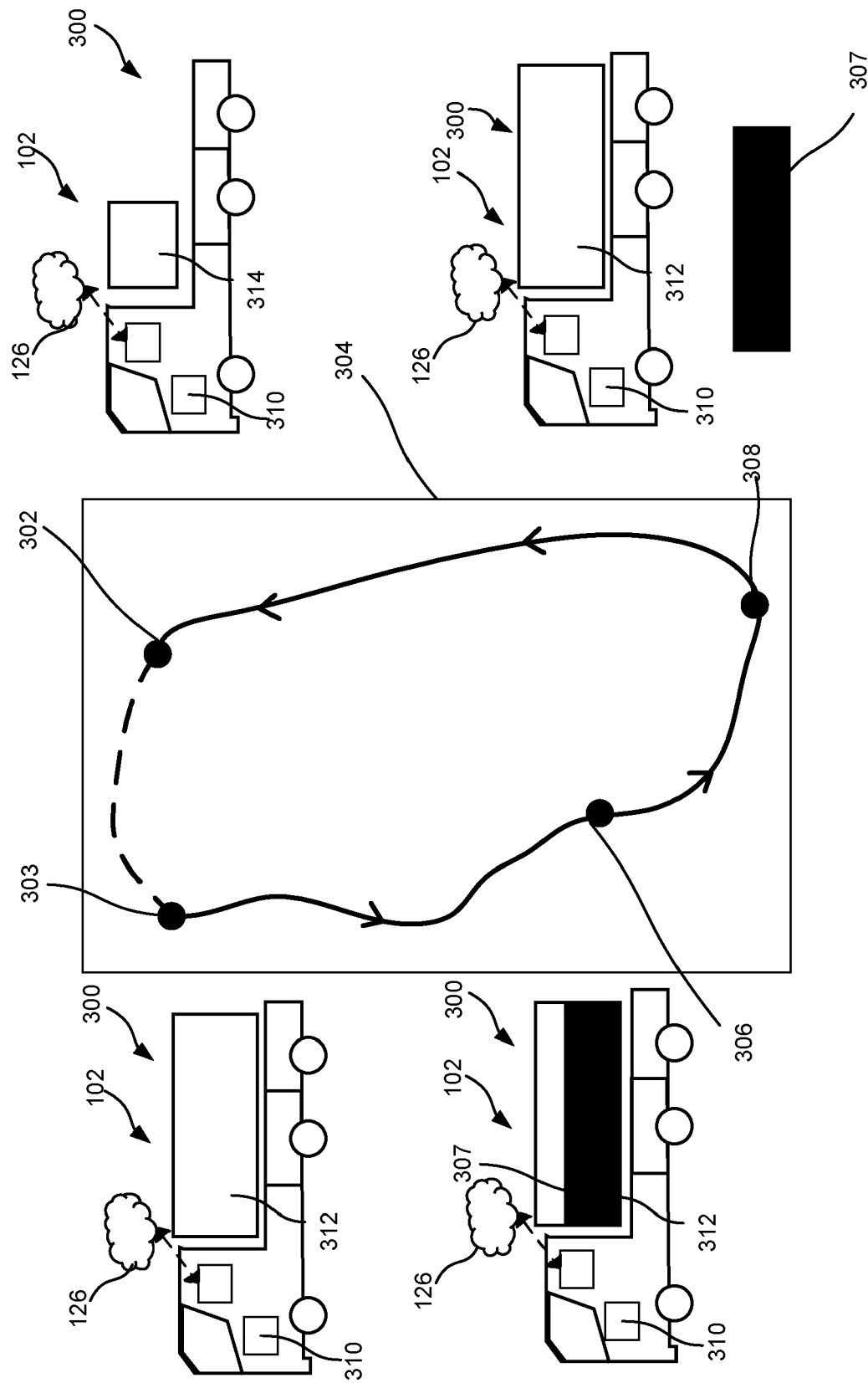


FIG. 4

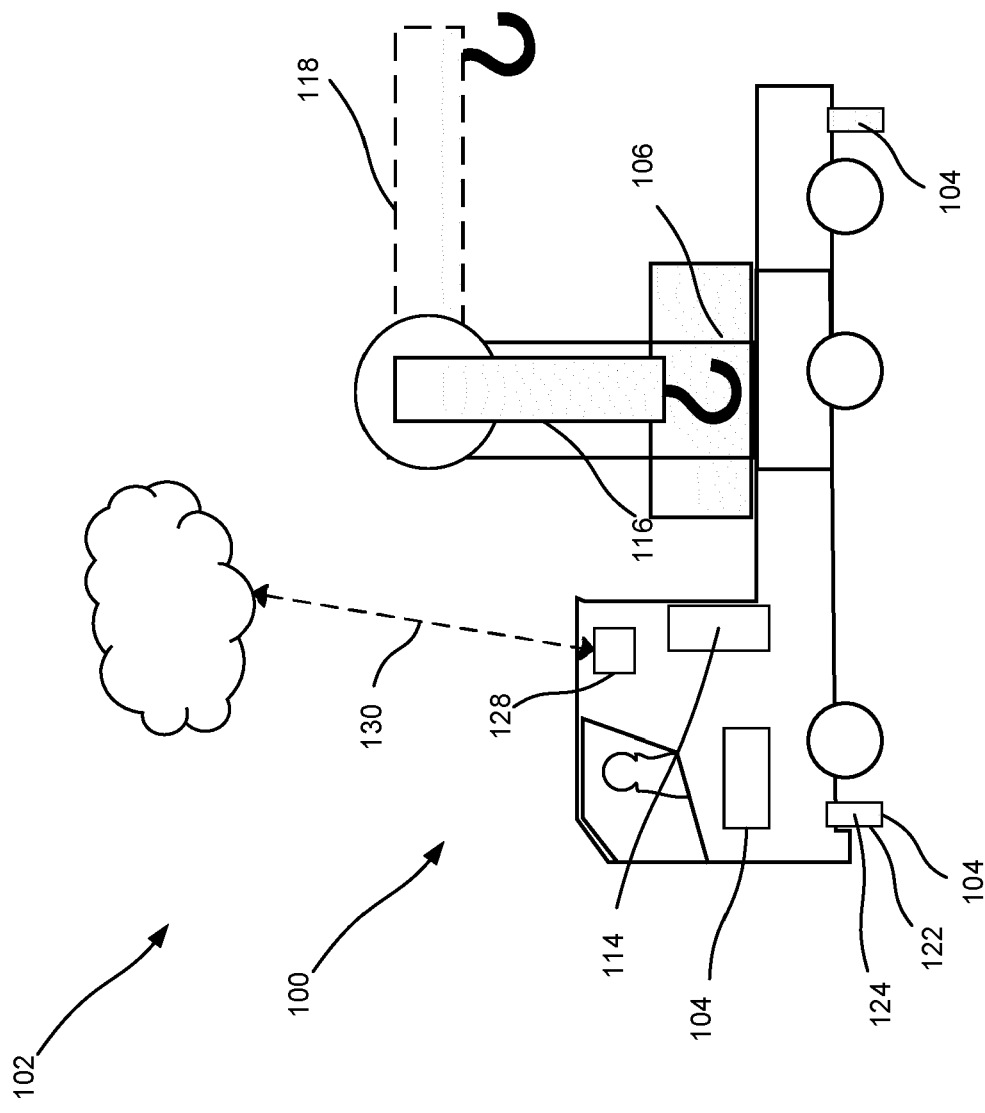


FIG. 5



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Application Number

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			G07C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 24 March 2023	Examiner Harder, Sebastian
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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