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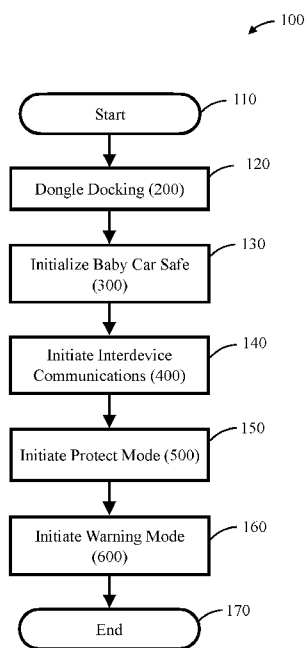
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(54) Title: **BABY CAR SAFE**

Figure 1



(57) Abstract: The Baby Car Safe apparatus is comprised of a combination of a software application, a dongle for connection and integration with a motor vehicle, and / or a remote device with connectively attached controllable sensors assembled for these purposes: detecting the presence of a baby and / or another person occupying any seat within said motor vehicle; and exercising control over the door locks and electronically accessible systems of the vehicle to provide alerts issued as emanating from the vehicles lights, horn, or graphic display panels, or to communicate alerts issued from a wirelessly connected portable computing device capable of issuing any combination of visual, audio, and / or vibratory emanations therefrom, or to communicate alerts issued as automated phone alerts made to public safety response authorities to safely remove an unattended baby from the vehicle ensuring that no baby is left unattended in a motor vehicle.

TITLE: Baby Car Safe

BACKGROUND OF THE INVENTION

[0001] This invention relates to software and hardware based alarm systems for detecting the presence of children in motor vehicle child protective car seats, specifically for the purpose of integrating with said motor vehicle's equipment, systems, and automation in order to prevent a detected child who is occupying said car seat from being locked in said motor vehicle wherein said car seat is located.

[0002] There are several technologies available that offer some elements of a complete system for preventing children in car seats from being locked in motor vehicles. The simple fact is that a system which purports to prevent a child from being left unattended and/or locked in a motor vehicle ought prevent a child from being left unattended and/or locked in a motor vehicle and ought not leave open means for the system to fail to operate when needed.

[0003] None of today's technologies or systems brings together a baby car safe system that is as comprehensive and effective as the present invention. To ensure operation of a baby protection system to prevent said baby from being locked unattended in a motor vehicle, the system must be integrated with that of the automobile's computers, sensors, and systems to determine occupancy and to determine when the baby is in danger in order to ensure that the motor vehicle's doors cannot be locked when necessary to prevent a child from being locked within.

[0004] There are several essential components to a safe system that can prevent a child from being left unattended and/or locked in a motor vehicle. It is important that the condition of a child being unattended is monitored and integrated into a such a system as it is essential to the

operation of such a system that can prevent a child from being left unattended and/or locked in a motor vehicle.

[0005] Further, for safe, efficient, and effective implementation of a system that can prevent a child from being left unattended and/or locked in a motor vehicle, it is important to provide an appropriate escalation within the warning and alarm levels issued to users so as to leave the loud panic type alarm (intended to get the attention of any persons within hearing distance) to the final warning stage (notice to a staffed response organization), thereby offering users ample, sufficient, and appropriate opportunity and notice to correct the error and attend to the child prior to the issue of a loud panic alarm.

[0006] Additionally, it is important to provide the use of sufficient redundancy and safety means and methods to ensure that all possible response is offered to a child left unattended and/or locked in a car seat installed within a motor vehicle so as to ensure that no child's life is lost.

SUMMARY OF THE INVENTION

[0007] The apparatus of the present invention is a combination of a computer interface software and / or hardware that is loaded into and enabled from either an integrated dongle and / or the software application of the present invention. The software application alone and / or the dongle once attached to a motor vehicle by interconnection with a computer data interface port can interface / integrate with a motor vehicle computer system(s) and / or data exchange interface port(s) of a motor vehicle, wherein it then can inventory and exchange electronic data control signals with the equipment and systems installed and operational within the motor vehicle. The software application collects, stores electronic communication interchange data for, and manages

the communication and connections necessary between hardware and software systems to enable it to prevent a child from being locked in the motor vehicle through a series of warnings, alerts, and alarms escalated as needed until the child is no longer left unattended in the motor vehicle.

[0008] The software and / or hardware of the present invention comprises, but is not limited to, the features and functions needed to determine whether all equipment, hardware, and computer systems needed to prevent a child from being left unattended and/or locked in a motor vehicle are present in the motor vehicle's complement of installed and operational gear. If not, the apparatus of the present invention may further comprise the sensors and devices needed to compliment the motor vehicle's installed gear with the requisite components needed for operation of the present invention. The minimum needed systems include, at least the following: a child car seat device equipped with hardware and software controllable sensors to detect the presence of a child in a child car seat installed within a motor vehicle, sensors to detect the presence of other persons within the motor vehicle, interface systems to unlock the motor vehicle doors, and light, and sound devices to generate alerts.

[0009] The companion software application that is operable on a mobile, handheld, or portable device is used for interfacing with said dongle providing warning and alarm states, notices, and condition updates to the user (operator) of the smartphone and / or motor vehicle, and allows for user controlled preferences and settings.

[0010] The apparatus of the present invention denies locking the doors of the motor vehicle if a child is left unattended in the motor vehicle. The motor vehicles' anti-theft / panic-alarm is used as the final warning stage in a series of increasing urgency and instancy notices and warnings that are issued / provided to the user of the apparatus of the present invention.

[0011] For the purpose of ensuring that no life is lost, the apparatus of the present invention uses any available global positioning systems and cellular network systems to provide redundancy, safety, and escalation to other persons for correction of a child left unattended and / or locked in a motor vehicle to ensure that no child's life is lost because they were left unattended and / or locked in a motor vehicle.

[0012] The Baby Car Safe is an apparatus for detecting the presence of a child and others in a motor vehicle comprising a dongle and a software application integratable with a motor vehicle for detecting the presence of the child occupying any seat within said motor vehicle; for detecting the presence of another person occupying any seat within said motor vehicle; for exercising control over the door locks, windows, and alarm systems of said motor vehicle, wherein when only said child is in said motor vehicle, apparatus unlocks the doors of the motor vehicle and provides warning alerts.

[0013] The Baby Car Safe apparatus may be further comprising alerts to be issued as emanating from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and alerts issued as automated phone alerts made to public safety response authorities capable of safely removing a child from said motor vehicle.

[0014] Alternatively, the Baby Car Safe apparatus may be further comprising a remote device comprising a plurality of connectively attached electronically controlled sensors and interconnected devices that enables the detection of the presence of a child and / or other persons within the motor vehicle, and unlocks the doors of said motor vehicle, and engages connectivity to issue alerts from a wirelessly connected computing device capable of issuing any combination of visual, audio, or vibratory emanations therefrom, and alerts issued as automated phone alerts

made to public safety response authorities capable of safely removing a child from said motor vehicle.

[0015] The Baby Car Safe is an apparatus for protecting an unattended child, person (unable to protect themselves), or a pet in a closed passenger vehicle from being locked inside said vehicle, comprising: a dongle and a software application integrate-able with a system of the vehicle enabled to detect in the vehicle a first person occupying a seat and a second person or a first pet simultaneously occupying a seat, and to exercise control over a door lock and window to open the vehicle and an alarm device to make an alert external of the vehicle; wherein the software application exercises the control to open the vehicle and make the external alert only when an unattended child, person, or pet is detected and another person is not detected.

[0016] The Baby Car Safe apparatus software application further comprises code to operate from a processor in a mobile computing device wirelessly connected to the system.

[0017] The Baby Car Safe apparatus software application further comprises code to operate the system of the vehicle from a processor in the dongle and in the vehicle.

[0018] The Baby Car Safe apparatus software application further comprises s code to do these: make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a child, person, or pet from said motor vehicle.

[0019] The Baby Car Safe apparatus software application comprises code to do these: poll a sensor to detect the first or second person in a seat in the vehicle, make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory

emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a child, person, or pet from said motor vehicle.

BREIF DESCRIPTION OF THE FIGURES

[0020] Figure 1 is a flowchart showing the processes of using the Baby Car Safe.

[0021] Figure 2 is a flowchart showing the processes of Docking the Dongle device.

[0022] Figure 3 is a flowchart showing the processes of Initializing the Baby Car Safe.

[0023] Figure 4 is a flowchart showing the processes of Initiating Interdevice Communications.

[0024] Figure 5 is a flowchart showing the processes of Initiating Protect Mode.

[0025] Figure 6 is a flowchart showing the processes of Initiating Warning Mode.

DETAILED DESCRIPTION

[0026] The detailed embodiments of the present invention are disclosed herein. The disclosed embodiments are merely exemplary of the invention, which may be embodied in various forms. The details disclosed herein are not to be interpreted as limiting, but merely as the basis for the claims and as a basis for teaching one skilled in the art how to make and use the invention.

[0027] References in the specification to "one embodiment," "an embodiment," "an example embodiment," etc., indicate that the embodiment described may include a particular feature, structure, or characteristic, but every embodiment may not necessarily include the particular feature, structure, or characteristic. Moreover, such phrases are not necessarily referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with an embodiment, it is submitted that it is within the knowledge of one skilled in

the art to effect such feature, structure, or characteristic in connection with other embodiments whether or not explicitly described.

[0028] Furthermore, it should be understood that spatial descriptions (e.g., “above,” “below,” “up,” “left,” “right,” “down,” “top,” “bottom,” “vertical,” “horizontal,” etc.) used herein are for purposes of illustration only, and that practical implementations of the structures described herein can be spatially arranged in any orientation or manner.

[0029] As shown in Figure 1, using the Baby Car Safe starts, Element 110. The first step, or process, in Figure 2 is Element 120, wherein the Dongle Docking (200) operation as shown in Figure 2, is called and processed. As in Figure 2, Dongle Docking (200) is the operation wherein the dongle of the present invention is connected to and provisioned power by a motor vehicle whereupon the dongle then initiates interdevice communications (Figure 4) and proceeds to initialize operations of the Baby Car Safe so as to enable the present invention to prevent a child from being locked inside.

[0030] The Baby Car Safe can be initialized at the end of the Dongle Docking (200) operation as shown in Figure 2, and / or as shown in Figure 1, Element 130, the Initialize Baby Car Safe (300) operation shown in Figure 3, wherein the occupancy monitor systems and control systems are initiated. The use of the Baby Car Safe then proceeds to Element 140, the Initiate Interdevice Communications (400) operation as shown in Figure 4 to initiate and thereby enable the use of the dongle and wireless connectivity needed for the Baby Car Safe to function.

[0031] After interdevice communications are established in Figure 1, Element 150, the Initiate Protect Mode (500) operation as shown in Figure 5, is called to function and the Baby Car Safe arms its systems and begins monitoring the motor vehicle and car seat(s) for the presence of a

child. If a child is left unattended in the motor vehicle, the Baby Car Safe then Initiates Warning Mode (600), Figure 6, wherein a set of timers and conditions are monitored and if breached an escalating series of warnings, alerts, and alarms are issued unless and until the child is no longer left unattended in the motor vehicle.

[0032] As shown in Figure 2, Dongle Docking (200), starts (Element 210) with the Connect to Car, Element 220, process. The Connect to Car (220) process is the actions needed to connectively attach the dongle of the present invention to a motor vehicle. This is done by physically connecting a docking port connector on the dongle to a docking port of a motor vehicle. Typically the docking port connectors used are the same as the vehicle industry's standard device interconnectivity port male-female connectors, but they can be any suitable connector which enables electronic communication between the dongle and all connected systems of the motor vehicle as well as transfer of electric power from the motor vehicle to the dongle. Where there is a power-on test / self-test, this process is conducted as part of the Connect to Car (220) process. Optionally, the docking dongle can interface with motor vehicle via wireless computer connectivity and load the software of the present invention into an available operational location with the motor vehicle's installed systems and functions.

[0033] The process of Element 230, as in Figure 2, is a call into operative functioning the Initiate Interdevice Communications (400) operation shown in Figure 4. The Initiate Interdevice Communications (400) operation is called to function upon completion of the connection between the dongle and the motor vehicle to initialize the operation of the dongle's electronic interface connection with the motor vehicle systems as well as the wireless connectivity to an external smartphone, tablet, or motor vehicle's smart control device.

[0034] After communications are initiated between all systems and devices used herein, the Dongle Docking (200) operation of Figure 2 calls into functional operation Element 240, the Initialize Interface with Vehicle Systems process. In the Initialize Interface with Vehicle Systems process (240) the software of the Baby Car Safe polls and conducts interactive communications with all of the electronically interface-able systems of the motor vehicle. Optionally where there are not enough sensors for all features and functions for the operation of the present invention, the apparatus of the present invention may include additional sensing components. This includes, but is not limited to initialization of interfaces with added sensors, such as the addition of a pressure device and infrared device in the car seat, and / or any other sensors to augment the car sensors to allow for detection and better determination of occupation of the motor vehicle by a baby, child, pet, adult, or other occupant.

[0035] The Dongle Docking (200) operation of Figure 2 then calls into functional operation the Inventory Vehicle Systems, Element 250, process. The Inventory Vehicle Systems (250) process conducts an electronic inventory of, to include but not be limited to, the door lock systems, the weight, position, thermal, and any other sensor systems, the lights, horn, warning, alarm, and external communications systems, and the navigation, global positioning system interface, and operator / user control / access screens and systems of the motor vehicle. After the motor vehicle systems are polled and inventoried, the Inventory Vehicle Systems (250) process conducts a comparison of the available systems to include the functional capacities of the systems with the list of systems and functions needed for operation of the Baby Car Safe.

[0036] Key systems, sensors, and devices are identified that can be used to build software rulesets to monitor occupancy, baby presence, and other occupancy conditions that then are

monitored to determine when the baby or child is left unattended. Furthermore, environmental conditions are monitored to identify if there are other health or life threatening conditions that may exist. These include, but are not limited to the following: interior temperature, airbag deployment, panic alarm manual activation, shock sensor / accelerometer activation, and motion sensing.

[0037] The list of systems and functions needed includes, but is not limited to, the capacity to do these: electronically unlock the doors of the motor vehicle, electronically sense the presence of a child in a car seat, electronically sense the absence of any other person within the motor vehicle, and electronically communicate with external smart devices and internet based interfaces. Where the motor vehicle does not have the requisite systems available, the Baby Car Safe can include a Baby Car Safe remote device including, but not limited to, an internal power source, a plurality of sensors and wireless interface connectivity devices that can augment the systems of the motor vehicle to ensure that all needed systems and functions are available for interface and use by the Baby Car Safe. The internal power source of said Baby Car Safe remote device may be optionally rechargeable with a wired or wireless interface.

[0038] Other motor vehicle systems and functions include, but are not limited to, rolling windows down, starting car, turning air conditioning/heat on, keeping power applied to the car's computer, honking the horn, flashing the external lights, turning on and off the internal lights, and any other capacity of the motor vehicle capable of making a warning, alarm, or notification.

[0039] Where the inventory process has recorded that the motor vehicle lacks certain needed systems and / or functions, the Dongle Docking operation (200) calls into functional operation the Augment Vehicle Systems process shown as Element 260 in Figure 2. The Augment Vehicle

Systems process (260) uses the recorded inventory of the motor vehicle to add to or compliment the available systems and functions of the motor vehicle with external systems and functions as needed. The Baby Car Safe remote device can provide the needed systems and functions to ensure the full and proper operation of the Baby Car Safe either alone, or in combination with the systems and functions of the motor vehicle. It is noted that the Baby Car Safe remote device may be configured with and connected to externally applied devices and connections to provide any and all needed systems and functions, as listed above, and may include wired connectivity to external physical or mechanical actuators as needed to provide any and / or up to all of the necessary systems and functions for the full operation of the Baby Car Safe.

[0040] After system and function inventory and augmentation as needed, the Dongle Docking operation (200) calls into functional operation the Initiate Interface Systems process, shown as Element 270 in Figure 2. The Initiate Interface Systems process (270) opens, and then maintains as needed, electronic interchange, messaging, and control signaling between the dongle and software of the Baby Car Safe and the systems and functions of the motor vehicle so as to enable the full and complete operation of the Baby Car Safe.

[0041] Once all systems and functions needed are available and interfaced for operation of the Baby Car Safe, the Dongle Docking operation (200) calls into functional operation the Initialize Baby Car Safe operation (300) as shown in Figure 3.

[0042] It is noted, that the Baby Car Safe dongle may be optionally configured so as to include, but not be limited to, any and / or all systems and functions needed for the full and complete operation of the Baby Car Safe invention presented herein without connectivity to or dependence upon any external device. For example, where the motor vehicle includes all systems and

functions needed for the full and complete operation of the Baby Car Safe, the dongle device component of the present invention alone may be configured so as to fully enable the prevention of a child left unattended in the motor vehicle.

[0043] As shown in Figure 2, Element 280, the last process brought into functional operation by the Dongle Docking operation (200) is the Initialize Baby Car Safe operation (300) as shown in Figure 3. Element 290 is the End of the Dongle Docking operation (200).

[0044] The Initialize Baby Car Safe operation (300) start, Element 310, shown in Figure 3, starts the Initialize Baby Car Safe operation (300) by calling into functional operation the software features and functions that comprise the Initiate Occupancy Monitoring Systems, Element 320 in Figure 3. The Initiate Occupancy Monitor Systems process (320) calls into functional operation the polling and data interchange needed between the Baby Car Safe and the systems and functions of the motor vehicle and any externally wirelessly connected smart device capable of running the Baby Car Safe software application to ensure the full and complete operability of the Baby Car Safe invention to monitor whether or not a child is present in any car seat of the motor vehicle and whether or not there is another person occupying the motor vehicle with a child when present in any car seat within the motor vehicle.

[0045] After initiation of the Occupancy Monitoring Systems (320), the Initialize Baby Car Safe operation (300) calls into functional operation the software features and functions that comprise the Initiate Controllable Systems process shown as Element 330 in Figure 3. The Initiate Controllable Systems process (330) is responsible for opening and maintaining the polling and data interchange needed between the Baby Car Safe and the systems and functions of the motor

vehicle so as to enable the Baby Car Safe to exercise control over the door lock, warning, alarm, alert, lights, and horn systems of the motor vehicle or augmenting systems and functions.

[0046] The Initialize Baby Car Safe operation (300) end, Element 340, shown in Figure 3, ends the Initialize Baby Car Safe operation (300) but leaves open the monitoring and control systems for use by the Baby Car Safe invention.

[0047] The Initialize Interdevice Communications operation (400) start, Element 410, shown in Figure 4, starts the Initialize Interdevice Communications operation (400) by calling into functional operation the software features and functions that comprise the Initiate Dongle Connections process, Element 420 in Figure 4. The Initiate Dongle Connections process (420) includes, but is not limited to, the software features and functions needed to open, poll, and begin electronic interchange of data and exercise of control over systems and functions by the Baby Car Safe as between the dongle of the Baby Car Safe and any and / or all systems and functions from the motor vehicle, and any external Baby Car Safe remote device.

[0048] The Initiate Dongle Connections process (420) exits into the Initiate Wireless Connections process shown as Element 430 in Figure 4. The Initialize Interdevice Communications operation (400) uses the Initiate Wireless Connections process (430) software features and functions so as to open, poll, and begin electronic interchange of data and exercise of control over systems and functions needed by the Baby Car Safe between the Baby Car Safe and any wirelessly connected smart devices available for use and capable of running the software application of the Baby Car Safe.

[0049] The Initialize Interdevice Communications operation (400) end, Element 440, shown in Figure 4, ends the Initialize Interdevice Communications operation (400) but leaves open the connections established for use by the Baby Car Safe for its full and complete operation.

[0050] The Initiate Protect Mode operation (500) shown in Figure 5 starts with Element 510 starting the functional operation of the Arm Baby Car Safe process, Element 520. The Arm Baby Car Safe process (520) powers on all devices associated with the Baby Car Safe to include, but not be limited to, any and / or all systems and functions from the motor vehicle, any external Baby Car Safe remote device, and any wirelessly connected smart device.

[0051] The Initiate Protect Mode operation (500) shown in Figure 5 then moves into determining whether or not a child is occupying any car seat within the motor vehicle wherein the Baby Car Safe invention has been implemented. This action is shown as the decision box Element 530 in Figure 5. When the Initiate Protect Mode operation (500) determines that there is a baby occupying any car seat of the motor vehicle, it calls into functional operation the software features and functions of the Initialize Monitor Mode process, Element 540 of Figure 5. The Initialize Monitor Mode process (540) calls into functional operation the software features and functions of the Baby Car Safe as needed to continuously poll, check, and update the controls of any and all connected systems and functions as so to provide continuously updated data element determination as to whether or not there is a baby in any car seat and whether or not there are any other persons occupying the motor vehicle.

[0052] Once Monitor Mode is initialized, the Baby Car Safe Initiate Protect Mode operation (500) is then continually monitoring the occupancy of the motor vehicle as shown in Element 550 of Figure 5. Once Monitor Mode is initialized, the Initiate Protect Mode operation (500)

calls into functional operation the software features and functions of the Monitor Vehicle Occupancy Status process (550). The Monitor Vehicle Occupancy Status process (550) continuously provides occupancy status as to baby and any other persons so that the Initiate Protect Mode operation (500) can determine whether there is a baby present alone in the motor vehicle as shown in Element 560 of Figure 5.

[0053] If there is a baby present in the motor vehicle and the vehicle has no other occupants, the Initiate Protect Mode operation (500) calls into functional operation the software features and functions of the Initialize Warning Mode operation (600) shown Figure 6, as shown in Element 570 of Figure 5. Element 580 of Figure 5 the End or Return to start of the Initiate Protect Mode operation (500) which remains in operation unless and until there is no unattended baby seated in a car seat within the motor vehicle.

[0054] The Initialize Warning Mode operation (600) as shown in Figure 6 starts with the Start, Element 610, calling into functional operation the software features and functions of the Start and Set Timers process, Element 620. The Start and Set Timers process (620) starts and sets a plurality of timers for use by the Baby Car Safe in providing and escalating alerts, warnings, alarms, and automated calls for assistance to public safety, police, and fire response agencies. The timers remain continuously updated by the Baby Car Safe operations and processes.

[0055] Once the timers are set, the Initialize Warning Mode operation (600) calls into functional operation the software features and functions of the Initialize Warning States processes shown as Element 630 in Figure 6. The Initialize Warning States processes (630) sets the initial warning and escalation data elements for comparative reference use by any and all parts of the Baby Car Safe invention.

[0056] The Initialize Warning Mode operation (600) then calls into functional operation the software features and functions of three processes to monitor the door locks, the presence of a baby, and timers. As shown in Figure 6, Element 640 is the Monitor Door Locks process, Element 650 is the Monitor Baby Presence process, and Element 660 is the Monitor Timers process. This combination of processes are operated so that the Initialize Warning Mode operation (600) can determine whether or not a Warning should be issued, as shown in Element 670 of Figure 6.

[0057] If the Initialize Warning Mode operation (600) determines that a warning, alert, alarm, automated call, or other electronically controllable notice system notice should be issued, it then calls into functional operation the Trigger Warning Systems process, Element 680 in Figure 6. The Trigger Warning Systems process (680) includes, but is not limited to, the issuance of any suitable warning, alert, alarm, automated call, or other electronically controllable notice system notice as needed to ensure that no baby or child is left unattended in any car seat within the motor vehicle.

[0058] The Initialize Warning Mode operation (600) ends, as shown in Element 690 by ending operations as no baby or child has been left unattended, or by returning to the start of the Initialize Warning Mode operation (600) to continue operation of the Baby Car Safe.

[0059] Although the invention has been explained in relation to various embodiments, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention. It should be clear that any person or pet can be detected and saved from being left locked in a motor vehicle with application of the present invention.

CLAIMS

1. A Baby Car Safe apparatus for protecting an unattended child / person in a closed passenger vehicle from being locked inside said vehicle, comprising: a software application integrate-able with a system of the vehicle enabled to detect in the vehicle a first person occupying a seat and a second person simultaneously occupying a seat, and to exercise control over a door lock and window to open the vehicle and an alarm device to make an alert external of the vehicle; wherein the software application exercises the control to open the vehicle and make the external alert only when an unattended child / person is detected and the second person is not detected.
2. The Baby Car Safe apparatus of claim 1 wherein the software application comprises code to operate from a processor in a mobile computing device wirelessly connected to the system.
3. The Baby Car Safe apparatus of claim 1 wherein the software application comprises code to operate the system from a processor in the vehicle.
4. The Baby Car Safe apparatus of Claim 1, wherein the software application comprises code to make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom.
5. The Baby Car Safe apparatus of Claim 1, wherein the software application comprises code to do these: make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a child from said motor vehicle.
6. The Baby Car Safe apparatus of Claim 1, wherein the software application comprises code to do these: poll a sensor to detect the first or second person in a seat in the vehicle, make the

external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a child from said motor vehicle.

7. A Baby Car Safe apparatus for protecting an unattended child / person in a closed passenger vehicle from being locked inside said vehicle, comprising there: a dongle and a software application integrate-able with a system of the vehicle enabled to detect in the vehicle a first person occupying a seat, and a second person simultaneously occupying a seat and to exercise control over a door lock and window to open the vehicle and an alarm device to make an alert external of the vehicle; wherein the software application exercises the control to open the vehicle and make the external alert only when an unattended child / person is detected and the second person is not detected.

8. The Baby Car Safe apparatus of claim 7, wherein the software application comprises code to operate from a processor in a mobile computing device wirelessly connected to the system.

9. The Baby Car Safe apparatus of claim 7, wherein the software application comprises code to operate the system of the vehicle from a processor in the dongle and in the vehicle.

10. The Baby Car Safe apparatus of Claim 7, wherein the software application comprises code to make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom.

11. The Baby Car Safe apparatus of Claim 7, wherein the software application comprises code to do these: make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an

automated phone alert to public safety response authorities capable of safely removing a child from said motor vehicle.

12. The Baby Car Safe apparatus of Claim 7, wherein the software application comprises code to do these: poll a sensor to detect the first or second person in a seat in the vehicle, make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a child from said motor vehicle.

13. A Baby Car Safe apparatus for protecting an unattended pet in a closed passenger vehicle from being locked inside said vehicle, comprising: a software application integrate-able with a system of the vehicle enabled to detect in the vehicle a first pet occupying a seat and a first person simultaneously occupying a seat, and to exercise control over a door lock and window to open the vehicle and an alarm device to make an alert external of the vehicle; wherein the software application exercises the control to open the vehicle and make the external alert only when an unattended pet is detected and the first person is not detected.

14. The Baby Car Safe apparatus of claim 13 wherein the software application comprises code to operate from a processor in a mobile computing device wirelessly connected to the system.

15. The Baby Car Safe apparatus of claim 13 wherein the software application comprises code to operate the system from a processor in the vehicle.

16. The Baby Car Safe apparatus of Claim 13, wherein the software application comprises code to make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom.

17. The Baby Car Safe apparatus of Claim 13, wherein the software application comprises code to do these: make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a pet from said motor vehicle.

18. The Baby Car Safe apparatus of Claim 13, wherein the software application comprises code to do these: poll a sensor to detect the first or second person in a seat in the vehicle, make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a pet from said motor vehicle.

19. A Baby Car Safe apparatus for protecting an unattended pet in a closed passenger vehicle from being locked inside said vehicle, comprising: a dongle and a software application integratable with a system of the vehicle enabled to detect in the vehicle a first person occupying a seat and a first pet simultaneously occupying a seat, and to exercise control over a door lock and window to open the vehicle and an alarm device to make an alert external of the vehicle; wherein the software application exercises the control to open the vehicle and make the external alert only when an unattended pet is detected and the first person is not detected.

20. The Baby Car Safe apparatus of claim 19 wherein the software application comprises code to operate from a processor in a mobile computing device wirelessly connected to the system.

21. The Baby Car Safe apparatus of claim 19 wherein the software application comprises code to operate the system of the vehicle from a processor in the dongle and in the vehicle.

22. The Baby Car Safe apparatus of Claim 19, wherein the software application comprises code to make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom.

23. The Baby Car Safe apparatus of Claim 19, wherein the software application comprises code to do these: make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a pet from said motor vehicle.

24. The Baby Car Safe apparatus of Claim 13, wherein the software application comprises code to do these: poll a sensor to detect the first or second person in a seat in the vehicle, make the external alert from a wirelessly connected mobile computing device capable of issuing visual, audio, or vibratory emanations therefrom, and make an alert issued as an automated phone alert to public safety response authorities capable of safely removing a pet from said motor vehicle.

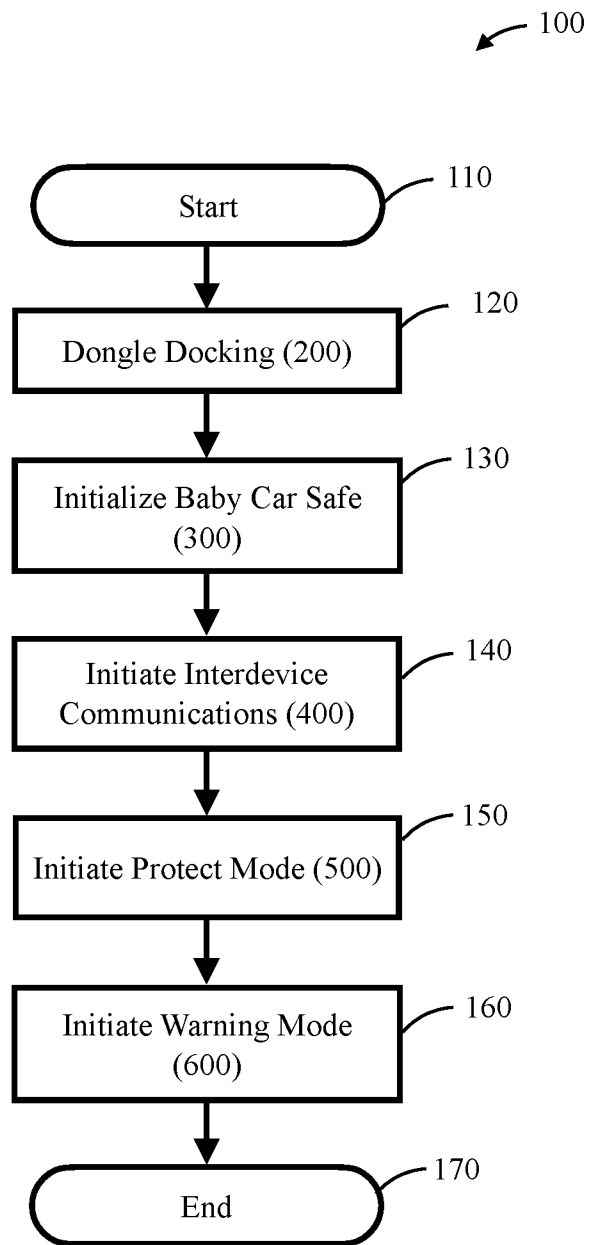


Figure 1

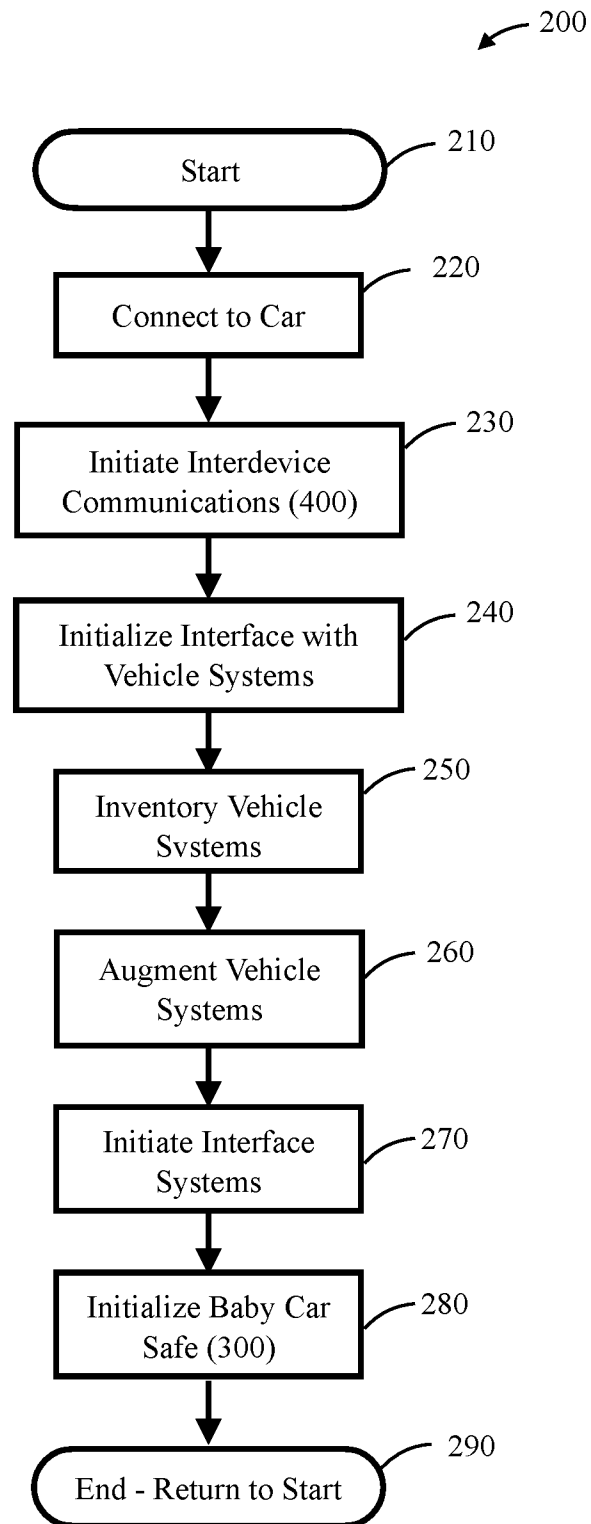


Figure 2

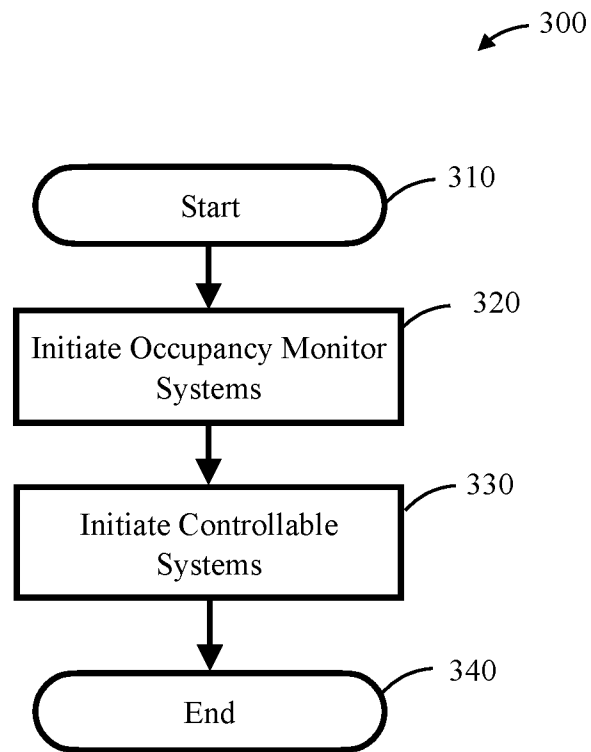


Figure 3

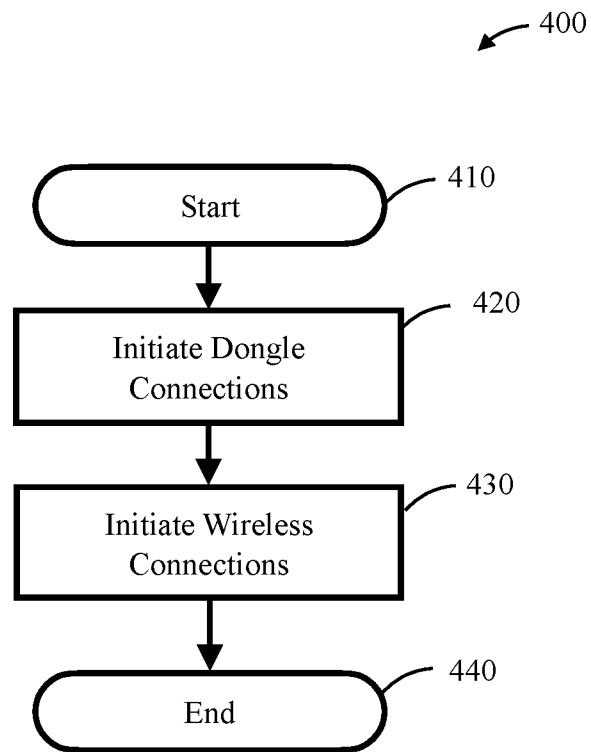


Figure 4

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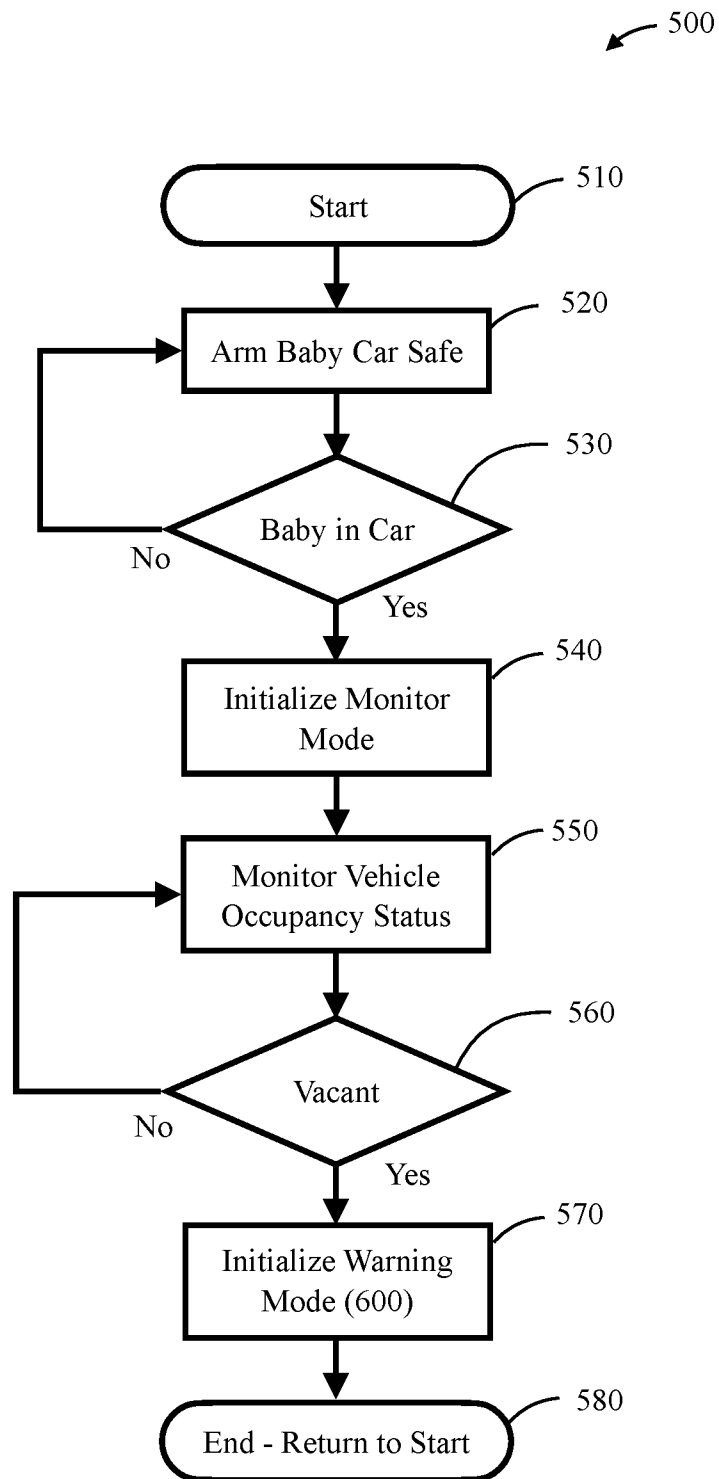


Figure 5

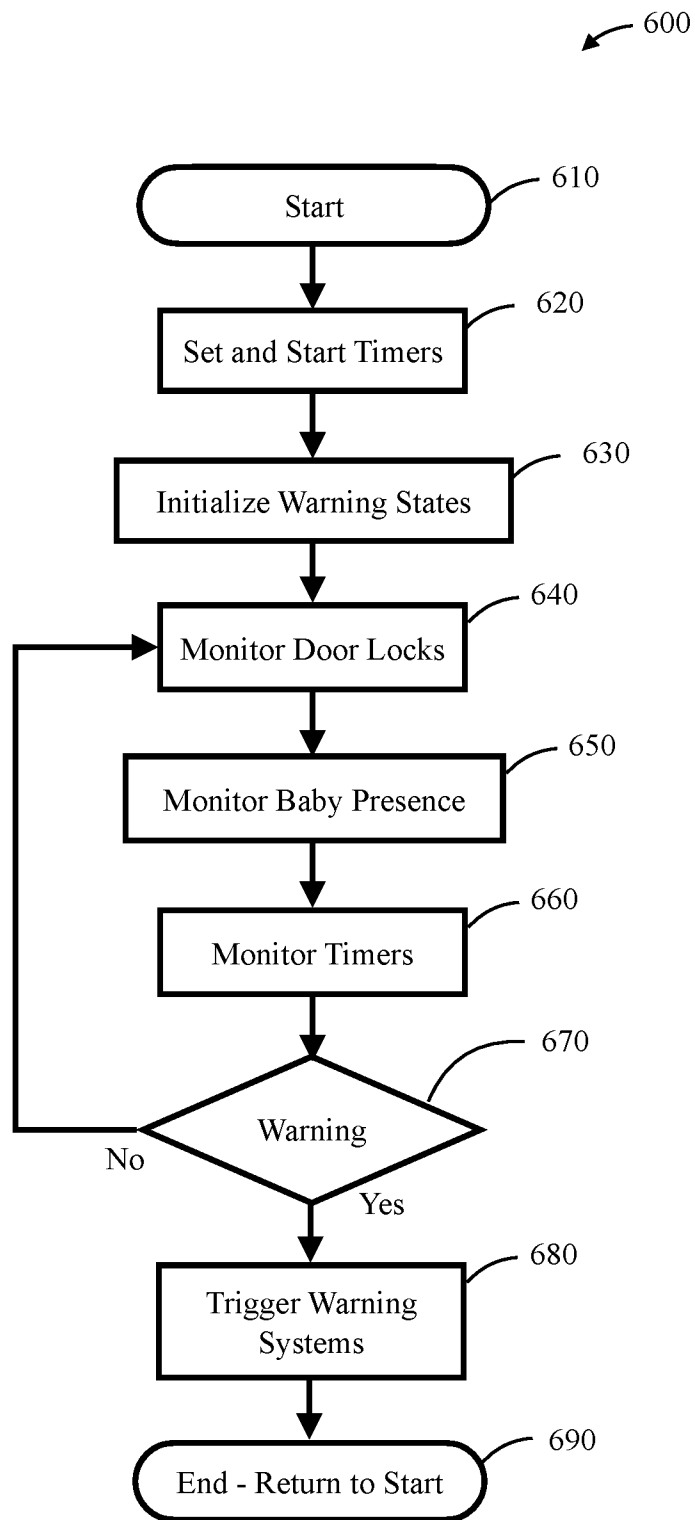


Figure 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 20/40975

A. CLASSIFICATION OF SUBJECT MATTER

IPC - B60Q 1/00 (2020.01)

CPC - B60N 2/2812, B60N 2/002, B60N 2/002, B60N 2/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

See Search History document

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

See Search History document

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

See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2020/0062080 A1 (HERNANDEZ) 27 February 2020 (27.02.2020), entire document, especially Abstract; para [0011-0012]; [0016-0018]; [0021]; [0027]; [0034]	1-24
A	US 2014/0253314 A1 (RAMBADT ET AL.) 11 September 2014 (11.09.2014), entire document	1-24
A	US 2019/0080584 A1 (RUBINSTEIN) 14 March 2019 (14.03.2019), entire document	1-24

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

09 September 2020 (09.09.2020)

Date of mailing of the international search report

06 OCT 2020

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