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(54) PASSENGER AND VEHICLE ELEVATOR SYSTEM

PASSAGIER- UND FAHRZEUGAUFZUGSSYSTEM

SYSTÈME D'ASCENSEUR POUR VÉHICULES ET POUR PASSAGERS

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Description

TECHNICAL FIELD

[0001] The present invention relates to elevators, and particularly to a passenger and vehicle elevator system for carrying a vehicle and at least one passenger within a multi-story building.

BACKGROUND ART

[0002] The increasing cost of urban land, together with the need to provide affordable high density housing, as well as low-cost commercial or professional office space, presents several problems in the development of building complexes, particularly including motor vehicle parking facilities. Specifically, the need to develop affordable high-density housing, such as apartment or condominium complexes, has presented a problem in providing adequate space for parking personal motor vehicles in close proximity to the apartment or condominium building or buildings without encountering the prohibitive cost of erecting buildings with garage facilities directly above, or more commonly, directly below the building floors or levels that are dedicated to multiple dwelling units.

[0003] National and local regulatory requirements with respect to fire ratings of structures with garages directly underneath residential dwelling units is cost prohibitive with respect to providing affordable housing in many urban areas. Further, the irregular shape of land parcels usually available for high-density housing in highly developed urban areas also presents a problem with respect to the placement of adequate parking spaces for personal automobile vehicles, which are closely adjacent the vehicle owner's dwelling unit.

[0004] One solution to the above-mentioned problems is the development of multi-story garages for motor vehicles directly adjacent to, or within, the buildings that include the dwelling units to be occupied by the persons normally parking their vehicles in the garage. Multi-story garages are desired in areas where land costs require a maximum utilization of land area for rentable or saleable building space. However, multi-story garages can be inconvenient to use for many building occupants if parking is required on an upper level of the garage and a pathway between an upper level dwelling unit and the garage requires travel between ground level and the upper garage level, as well as travel between ground level and an upper level dwelling or other occupiable unit in the building or buildings adjacent to the garage.

[0005] Multi-story garages have been constructed in which connecting bridges or walkways between parking decks and upper floors of buildings adjacent thereto have required stairways interconnecting the walkways or bridges with the parking decks, since the decks and the respective building floors have not been placed at the same elevations. Such arrangements have been unsatisfactory for elderly and disabled persons, as well as when moving large articles and furnishings between the garage and living units on the closest adjacent floors.

[0006] Other considerations that must be taken into account in the development of high-density housing with multi-story garages adjacent thereto concerns placement of the garage with respect to the dwelling units while maintaining adequate open space therebetween to conform to regulatory requirements and aesthetic desires of the building occupants.

[0007] It would obviously be desirable to be able to provide the same access between a building dwelling unit on an upper floor or level and an upper story garage parking space as is provided for persons occupying a ground floor dwelling unit and corresponding ground level parking. Consideration should be given not only to the convenience of walking a substantially level pathway between a dwelling unit and the parking place for the building occupants' personal vehicles, but also with regard to such activities as trash disposal, mail delivery and pickup and the ease of moving personal effects and furniture in and out of a dwelling unit. Further, it would also be desirable to be able to maximize space for both parking and the residential or office spaces in such an arrangement.

[0008] Thus, a passenger and vehicle elevator system solving the aforementioned problems is desired.

[0009] DE19842298A1 discloses pallets (1) having axle pair support profiles to be lowered in a transfer box (2) to a track surface level but then raised by the handler (3) for movement to a park storage box. The track surface in the transfer box (2) has indentations conforming to the pallet but to a height less than the pallet standing height, and the handler (3) has a vehicle transporter between transfer and parking boxes designed as a lift or beam hoist complete with flap-down box-facing end ramps. The transporter moves towards the parking boxes and can be rotated round its vertical axis. Below the track and to the sides, the transporter has chain load conveyors which can move in vehicle length sense relative the transporter track surface, and the transporter side facing the bearing system can be flapped down or swung away. Empty pallets can be taken off to a storage compartment arranged below the transporter level or in the transfer box.

[0010] WO2006039830A1 discloses an automated device for parking private vehicles, comprising a modular dismountable construction consisting of one or more automatic parking ramps whereon the driver leaves his/her vehicle, the vehicle being then positioned, mechanically centered, gripped and electronically measured, automatically, so that the vehicle can be displaced by computer and compactly stored. Said device consists essentially of a push system (tractor, 40) moving on a rail (tractor rail, 42), gripping the vehicles at the wheels using forks with specific rollers (45), pulling same onto the lifting platform (31) in centered position on the rollers, moving the platform vertically, rotating the platform about its vertical axis and pushing the vehicle onto the parking platform (8). On request, the vehicles are once more pulled onto the lifting platform, transported to the exit ramp and de-

livered to the user. The entire device consists of a reduced number of mobile components such that the construction and the use of said device are simple and economical. The device uses the basic shapes of modern vehicles combined with the method and a computerized allocation of places enables the space required as well as building and use costs to be considerably reduced.

[0011] EP0445712A1 discloses an underground circular and non circular parking place where vehicles parking areas are obtained and arranged radius-like, or parts thereof, on several underground stories (14) vehicles are fed to said areas (15) by a lift truck (11) which moves vertically from ground story to the lower story and simultaneously rotates around a vertical axis together with the whole bearing column (16), to reach all parking areas; on ground story the lift truck (11) is a continuity element with an incoming (10) and an outgoing area (12); the lift truck (11) consists of a platform (19) on which an upper plane (20) moves in two opposite directions, said plane has two pairs of chains (24) abreast equipped with staves (26) for motorcar supporting and hooking lists (27) to avoid sliding; the ends of said plane are equipped with means (31) engaging with corresponding means in ground areas and underground spaces; said areas and spaces are also equipped with pairs of chains (24) abreast and staves (26) for motorcar support; first motor means (23) for moving the plane in the two directions with respect to the platform (19) are assembled and second motor means (25) for rotating the chains (24) of the plane (20) and the chains (24) of the parking area (15) or underground space to which the plane is temporarily connected.

DISCLOSURE OF INVENTION

[0012] The present disclosure provides a passenger and vehicle elevator system as detailed in claim 1 and a method of parking a motor vehicle using said passenger and vehicle elevator system as detailed in claim 13. Advantageous features are provided in dependent claims.

[0013] The passenger and vehicle elevator system carries a vehicle containing at least one passenger to a desired parking spot within a multi-story building. The passenger and vehicle elevator system includes a plurality of elevator cars arrayed substantially equidistantly from a central shaft of the building. Each elevator car includes a housing and at least one door. The elevator car housing has a floor, a ceiling and at least one sidewall. The elevator car is dimensioned and configured for carrying a vehicle and at least one passenger. Preferably, parking location-related information is read from the vehicle by an external sensor, such as an RFID sensor, bar code reader, or the like.

[0014] A linearly translating platform is mounted to the floor of each of the elevator car housings. The linearly translating platform is adapted for automatically carrying the vehicle and the at least one passenger through the at least one door. Further, the vehicle may be rotated within the housing by driven rotation of the platform or rotation of the floor, allowing for selective angular positioning of the vehicle with respect to the housing. The elevator car ascends and descends within a corresponding elevator shaft in a manner similar to that of a conventional elevator.

[0015] These and other features of the present invention will become readily apparent upon further review of the following specification and drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0016]

Fig. 1 is a diagrammatic plan view of a single exemplary floor of a multi-story building utilizing a passenger and vehicle elevator system according to the present invention.

Fig. 2A is a diagrammatic side view in section of an individual elevator car of the passenger and vehicle elevator system according to the present invention.

Fig. 2B is a diagrammatic top view of the individual elevator car of Fig. 2A.

Fig. 3A is a diagrammatic environmental top view, partially in section, illustrating a vehicle approaching an individual elevator of the passenger and vehicle elevator system according to the present invention.

Fig. 3B is a diagrammatic environmental top view, partially in section, illustrating extension of a platform of the elevator of Fig. 3A to carry the vehicle into the elevator.

Fig. 3C is a diagrammatic environmental top view, partially in section, illustrating the vehicle carried within the elevator of Fig. 3A.

[0017] Similar reference characters denote corresponding features consistently throughout the attached drawings.

BEST MODES FOR CARRYING OUT THE INVENTION

[0018] Fig. 1 illustrates an exemplary floor plan of a single floor of a multi-story building B utilizing the passenger and vehicle elevator system 10. In the exemplary floor plan of Fig. 1, three separate elevators 12, 14, 16 are shown positioned about a central axis A of the building B. It will be understood that each elevator 12, 14, 16 includes an elevator car that may be selectively raised or lowered within a cylindrical elevator shaft by conventional elevator machinery, which is not shown in the drawings for clarity. It should be understood that the cylindrical elevator shaft is shown for exemplary purposes only, and that the contouring and relative dimensions of both the elevator shaft and corresponding elevator car may be varied as desired. Each elevator car includes at least one inner set of doors (or a single door) that selectively open and close, and each floor of the multi-story building includes at least one set of outer doors (or a single door),

and preferably two angularly offset sets of outer doors, corresponding to each elevator 12, 14, and 16. It should be understood that any desired number of elevators may be utilized, and that their positioning with respect to a building floor may be varied. In the exemplary configuration of Fig. 1, in which the three elevators 12, 14, 16 are positioned such that their centers are equidistant from axis A, the elevators 12, 14, 16 are arrayed as an equilateral triangle, with each of elevators 12, 14, 16 serving one of regions 18, 20, 22. For the circular arrangement of the floor plan shown in the example of Fig. 1, each of regions 18, 20, 22 spans approximately 120° of arc, and each region 28, 20, 22 is separated from the adjacent region(s) by exemplary stairwells S or the like.

[0019] In the exemplary configuration of Fig. 1, each of regions 18, 20, 22 is bisected (as indicated by the dashed, radial lines in Fig. 1), such that region 18 is divided into sub-regions 24, 26; region 20 is divided into sub-regions 28, 30; and region 22 is divided into sub-regions 24-34. Each of the sub-regions 24-34 represents an individual office or dwelling space. Thus, in this exemplary layout, each of the three regions 18, 20, 22 contains two individual offices or dwelling spaces. As shown, there are two parking spaces allocated for each sub-region 24-34. Sub-region 24 includes a pair of parking spaces 36; sub-region 26 includes a pair of parking spaces 38; sub-region 28 includes a pair of parking spaces 40; sub-region 30 includes a pair of parking spaces 42; sub-region 32 includes a pair of parking spaces 44; and sub-region 34 includes a pair of parking spaces 46. The living quarters or office space for each sub-region may be disposed radially outward from the corresponding parking spaces for the sub-region.

[0020] Each of elevators 12, 14 and 16 operates in an identical manner. In Figs. 2A and 2B, a single elevator car 12 is illustrated. In order for the elevator car 12 to provide access to any of the two parking space pairs 36, 38 in sector 18 (in the configuration of Fig. 1), either the inner doors 54 of the elevator car of elevator 12 may comprise one set spanning 180° of the elevator car and the elevator 12 may be equipped with a turntable to select either sub-region 24 to access parking spaces 36 or sub-region 26 to access parking spaces 38, or the inner doors 54 of the elevator car may comprise two side-by-side sets which each span 90° and the floor of the elevator car may rotate to select either sub-region 24 or sub-region 26. Preferably sub-region 24 has one set of outer doors 56 that open when sub-region 24 is selected, and sub-region 26 has another set of outer doors 56 that open when sub-region 26 is selected. In the exemplary circular configuration of the elevators illustrated in Figs. 1 and 2B, the inner doors 54 and the outer doors 56 must open and close along an arcuate or circumferential path, rather than the conventional rectilinear path of conventional elevator doors.

[0021] As shown in Fig. 2A, the vehicle V is positioned on a platform 50 within the elevator 12, and the platform 50 is mounted on a controllable, rotational mount 52. This rotational mount drives rotation of the platform 50. This rotation not only allows selection of any of the four parking spaces within a particular region, but further allows the vehicle V to enter the elevator 12 front end first and then be rotated within the elevator to also exit the elevator 12 front end first. Such rotating platforms and drive systems are well known, and any suitable type of controllable, rotational mount 52 may be utilized. One such rotating platform is manufactured by PALIS Global Parking Technologies GmbH of Gersthofen, Germany. Another such mount is the Turntable 505, manufactured by Otto Wöhr GmbH of Fiolzheim, Germany. Other examples of such rotating platforms for vehicles are shown in U.S. Patent No. 4,264,257, issued to Saurwein, and U.S. Patent Application Publication No. US 2005/0095092 A1, to Segal et al.

[0022] In addition to the rotation of the platform 50 by rotational mount 52, the platform 50 is also preferably horizontally translatable. Fig. 3A illustrates a vehicle V first approaching the doors 54 of the elevator 12. In Fig. 3B, the doors 54 have circumferentially opened, as described above, and the platform 50 is linearly translated beneath the vehicle V and raised to carry the vehicle V. Once the platform 50 is fully positioned under the vehicle V and raised to support the vehicle, the platform 50 is translated back into the elevator 12, as shown in Fig. 3C, and the vehicle V may be carried to the desired floor.

[0023] It should be understood that any suitable type of driven platform may be utilized. Such translational dollies and mounts are well known. One such driven platform is manufactured by PALIS Global Parking Technologies GmbH of Gersthofen, Germany. Other examples of other such systems are shown in PCT Application Publication No. WO 2004/045932 A1, to Zangerle et al., and U.S. Patent No. 4,768,914, issued to Sing.

[0024] It should be understood that the system 10 may be used in combination with any suitable type of multi-story building. In use, vehicle V enters a ground floor, below-ground floor or lobby level and drives to one of elevators 12, 14, 16, positioning the vehicle as shown in Fig. 3A. Preferably, at the entrance, the vehicle passes by a sensor 70, as shown in Fig. 3A. Sensor 70 may be a bar code reader, an RFID sensor or the like, exchanging signals 72 with a matching label or device mounted on vehicle V for identifying the vehicle, including data identifying the vehicle's assigned floor and parking space. In response to the identification of the particular vehicle V and its assigned floor and parking space, the vehicle V is directed towards the appropriate entry or staging area in front of the corresponding one of elevators 12, 14, 16 for the particular parking space.

[0025] Once at the appropriate staging area, the driver turns off the ignition of vehicle V and preferably remains within the vehicle V. The doors 54 to the elevator associated with the particular staging area open and the automatically controlled translating platform or dolly 50 moves outward from the elevator. The platform 50 moves underneath the vehicle V, lifts the vehicle V, and with-

draws back into the elevator with the vehicle V remaining on the platform 50. The elevator doors 54 then close and the elevator ascends to the appropriate floor or level.

[0026] Once at the appropriate floor or level, the elevator doors 54 open and the laterally moving platform extends outward and deposits the vehicle V in its assigned parking space. The laterally moveable platform then withdraws from under the vehicle V, moves back into the elevator, the elevator doors 54 close, and the elevator is then ready to move the next vehicle. When the driver of vehicle V wishes the leave the building B, the driver signals for the appropriate elevator and the process is reversed.

[0027] As noted above, since at least two parking spaces are preferably associated with each office or residential unit, the system 10 not only raises the vehicle V from the entrance level to the appropriate floor of the building B, but is also capable of moving the vehicle V to the correct parking space. This is accomplished by the rotating mount 52 for rotating the platform 50. As an alternative, the platform 50 may be equipped with its own turntable, rather than being mounted thereon. During the ascent from the entrance level, the platform 50 may be rotated, if necessary, such that the vehicle V is placed into the correct parking space. During the descent back to the street level, the platform 50 is rotated so that when the elevator doors 54 open, the platform 50 moves the vehicle V outwardly into the departure area. Preferably, the departure area is spaced apart from the staging or loading area such that vehicles may egress from the building without interfering with the progression of other vehicles which are entering the building and waiting in the staging area. It should be understood that though two exemplary parking spaces are shown for each office or residential unit, any desired number of parking spaces may be allotted.

[0028] Since the vehicle V is being transported vertically with one or more passengers within the elevator, and since the vehicles are being parked within the building at a level coextensive with an office or a residence, it is desirable to avoid having the vehicle engine operating either in the elevator or in the parking area. Thus, once the vehicle V initially enters the loading or staging area, a carbon monoxide detector 74 will register if the vehicle engine is operating and a positive response from the carbon monoxide detector 74 will prevent loading the vehicle onto the elevator. For example, doors 54 may remain closed until a zero or minimal level of carbon monoxide is measured by sensor 74. Should the vehicle engine be off upon the entry into the elevator, but the engine started thereafter, one or more carbon monoxide sensors 76 within the elevator will stop the elevator's ascent and return the elevator to the entrance level. It should be understood that any suitable type of sensors may be utilized to ensure that the vehicle is not in operation. Additional sensors may be used to measuring vehicle dimensions, motion or the like, such as laser sensors, for example.

[0029] In order to avoid injury to the operator of the vehicle and/or any passengers, suitable motion detectors or optical sensors 78 may further be provided within the elevator to detect opening of the vehicle door or trunk, which may be utilized as a basis for stopping the ascent or descent of the elevator. Further, conventional smoke, heat or fire detectors may also be mounted within the elevator.

[0030] Although the elevators 12, 14, 16 may be varied in number, size and overall configuration, each elevator should be of a size sufficient to accommodate, for example, a vehicle of approximately six meters in length and two meters in width. Similarly, each elevator should be able to accommodate the weight of a motor vehicle and its passengers, preferably being able to carry loads up to approximately 3,500 kg.

[0031] It is to be understood that the present invention is not limited to the embodiments described above, but encompasses any and all embodiments within the scope of the following claims.

Claims

1. A passenger and vehicle elevator system (10), comprising:

   an elevator car (12, 14, 16) having a housing and at least one door (54) for closing an opening, the housing having a floor, a ceiling and at least one sidewall, the housing being configured for carrying a vehicle (V) and at least one passenger;
   a linearly translating platform (50) mounted on the floor being operable for translating into and out of the elevator car (12, 14, 16), the linearly translating platform (50) being configured for being linearly translated beneath the vehicle and raised for carrying the vehicle (V) and the at least one passenger through the at least one door (54);
   means for selectively rotating the vehicle (V) to provide access to one of a plurality of adjacent parking spaces (36, 38, 40, 42, 44, 46); and
   means for selectively raising and lowering the elevator car (12, 14, 16).

2. The passenger and vehicle elevator system (10) as recited in claim 1, wherein the housing is substantially cylindrical.

3. The passenger and vehicle elevator system (10) as recited in claim 2, wherein the at least one door (54) is arcuate.

4. The passenger and vehicle elevator system (10) as recited in claim 1, further comprising at least one sensor (70) configured for reading parking information from the vehicle (V).

5. The passenger and vehicle elevator system (10) as recited in claim 4, wherein the at least one sensor (70) comprises an RFID reader or a bar code reader.

6. The passenger and vehicle elevator system (10) as recited in claim 1, further comprising at least one sensor (74, 76) for detecting if the vehicle is in operation.

7. The passenger and vehicle elevator system (10) as recited in claim 6, further comprising a means for preventing the vehicle from entering the housing if the at least one sensor (74, 76) detects that the vehicle is in operation.

8. The passenger and vehicle elevator system (10) as recited in claim 7, further comprising a means for preventing the elevator car (12, 14, 16) from parking the vehicle within the building which is responsive to the at least one sensor (74, 76).

9. The passenger and vehicle elevator system (10) as recited in claim 7 or 8, wherein the at least one sensor (74, 76) comprises:

a first carbon monoxide sensor (74) mounted external to the housing; and
the means for preventing the vehicle (V) from entering the housing is operable when the first carbon monoxide sensor (74) detects levels of carbon monoxide indicating an engine of the vehicle (V) is operating.

10. The passenger and vehicle elevator system (10) as recited in claim 9 when dependent on claim 8, wherein the at least one sensor (74, 76) further comprises:

a second carbon monoxide sensor (76) mounted within the housing; and
the means for preventing the elevator car (12, 14, 16) from parking the

vehicle (V) within the building is operable when the second carbon monoxide sensor (76) detects levels of carbon monoxide indicating the engine of the vehicle (V) is operating.

11. The passenger and vehicle elevator system (10) as recited in claim 1, further comprising:

a motion sensor (78) mounted within the housing; and
a means for preventing the elevator car (12, 14, 16) from parking the vehicle (V) within the building is operable when the motion sensor (78) detects motion within the housing.

12. The passenger and vehicle elevator system (10) according to claim 1, further comprising a sub-region (24, 26, 28, 30, 32, 34) with at least one parking space (36, 38, 40, 42, 44, 46), said sub-region (24, 26, 28, 30, 32, 34) having a sub-region door (56) for closing said sub-region (24, 26, 28, 30, 32, 34).

13. A method of parking a motor vehicle (V) using a passenger and vehicle elevator system (10) according to any one of claims 6 to 10; the method comprising:

determining if an engine of the motor vehicle (V) is operating with the sensor (74) of the passenger and vehicle elevator system (10);
loading the motor vehicle (V) into the elevator car (12, 14, 16) with the platform (50) of the passenger and vehicle elevator system (10) when it is determined by the sensor (74) that the engine of the motor vehicle (V) is not operating; and
denying loading of the motor vehicle (V) into the elevator car (12, 14, 16) when it is determined by the sensor (74) that the engine of the motor vehicle (V) is operating.

14. A method of parking a motor vehicle (V) as claimed in claim 13, further comprising;

determining if an engine of the motor vehicle (V) is operating by means of one or more sensors (76) within the elevator car (12, 14, 16) when in the elevator car (12, 14, 16) of the passenger and vehicle elevator system (10);
returning the motor vehicle (V) to an entry area if it is determined that the engine of the motor vehicle (V) is operating or becomes operational while in the elevator car (12, 14, 16);
delivering the motor vehicle (V) to an assigned parking space (36, 38, 40, 42, 44, 46) when the engine of the motor vehicle (V) is in a non-operational state; and
parking the motor vehicle (V) in the assigned parking space (36, 38, 40, 42, 44, 46) when the engine of the motor vehicle (V) maintains the non- operational state.

15. A multi-story building comprising:

individual dwellings and/or offices, each having a respective parking space (36, 38, 40, 42, 44, 46); and
the passenger and vehicle elevator system (10) of any one of claims 1 to 12.

Patentansprüche

1. Personen- und Fahrzeugaufzugsystem (10), umfassend:

eine Aufzugskabine (12, 14, 16), die ein Gehäuse und mindestens eine Tür (54) zum Verschließen einer Öffnung umfasst, wobei das Gehäuse einen Boden, eine Decke und mindestens eine Seitenwand aufweist, wobei das Gehäuse dazu konfiguriert ist, ein Fahrzeug (V) und mindestens einen Passagier zu tragen;
eine lineare Verschiebungsplattform (50), die auf dem Boden montiert ist, die zum Verschieben in die Aufzugkabine (12, 14, 16) und aus ihr heraus betätigbar ist, wobei die lineare Verschiebungsplattform (50) dazu konfiguriert ist, linear unter das Fahrzeug verschoben und zum Tragen des Fahrzeugs (V) und des mindestens einen Passagiers durch die mindestens eine Tür (54) gehoben zu werden;
Mittel zum selektiven Drehen des Fahrzeugs (V), um Zugang zu einem einer Vielzahl angrenzender Parkplätze (36, 38, 40, 42, 44, 46) bereitzustellen; und
Mittel zum selektiven Anheben und Absenken der Aufzugskabine (12, 14, 16).

2. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 1, wobei das Gehäuse im Wesentlichen zylindrisch ist.

3. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 2, wobei die mindestens eine Tür (54) bogenförmig ist.

4. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 1, das ferner mindestens einen Sensor (70) umfasst, der dazu konfiguriert ist, Parkinformationen von dem Fahrzeug (V) zu lesen.

5. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 4, wobei der mindestens eine Sensor (70) einen RFID-Leser oder einen Strichcodeleser umfasst.

6. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 1, das ferner mindestens einen Sensor (74, 76) zum Erfassen, ob das Fahrzeug in Betrieb ist, umfasst.

7. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 6, das ein Mittel zum Verhindern umfasst, dass das Fahrzeug in das Gehäuse eintritt, wenn der mindestens eine Sensor (74, 76) erfasst, dass das Fahrzeug in Betrieb ist.

8. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 7, das ferner ein Mittel zum Verhindern umfasst, dass die Aufzugskabine (12, 14, 16) das Fahrzeug innerhalb des Gebäudes parkt, das auf den mindestens einen Sensor (74, 76) anspricht.

9. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 7 oder 8, wobei der mindestens eine Sensor (74, 76) umfasst:

einen ersten Kohlenmonoxidsensor (74), der außerhalb des Gehäuses montiert ist; und
das Mittel zum Verhindern, dass das Fahrzeug (V) in das Gehäuse eintritt, betreibbar ist, wenn der erste Kohlenmonoxidsensor (74) Kohlenmonoxidpegel erfasst, die angeben, dass ein Motor des Fahrzeugs (V) in Betrieb ist.

10. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 9, wenn abhängig von Anspruch 8, wobei der mindestens eine Sensor (74, 76) ferner umfasst:

einen zweiten Kohlenmonoxidsensor (76), der innerhalb des Gehäuses montiert ist;
und
das Mittel zum Verhindern, dass die Aufzugskabine (12, 14, 16) das Fahrzeug (V) innerhalb des Gebäudes parkt, betreibbar ist, wenn der zweite Kohlenmonoxidsensor (76) Kohlenmonoxidpegel erfasst, die angeben, dass der Motor des Fahrzeugs (V) im Betrieb ist.

11. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 1, ferner umfassend:

einen Bewegungssensor (78), der innerhalb des Gehäuses montiert ist; und
ein Mittel zum Verhindern, dass die Aufzugskabine (12, 14, 16) das Fahrzeug (V) innerhalb des Gebäudes parkt, betreibbar ist, wenn der Bewegungssensor (78) eine Bewegung innerhalb des Gehäuses erfasst.

12. Personen- und Fahrzeugaufzugsystem (10) nach Anspruch 1, das ferner einen Teilbereich (24, 26, 28, 30, 32, 34) mit mindestens einem Parkplatz (36, 38, 40, 42, 44, 46) umfasst, wobei der Teilbereich (24, 26, 28, 30, 32, 34) eine Teilbereichstür (56) zum Verschließen des Teilbereichs (24, 26, 28, 30, 32, 34) aufweist.

13. Verfahren zum Parken eines Kraftfahrzeugs (V) unter Verwendung eines Personen- und Fahrzeugaufzugsystems (10) nach einem der Ansprüche 6 bis 10; wobei das Verfahren umfasst:

Bestimmen, ob ein Motor des Kraftfahrzeugs (V) in Betrieb ist, mit dem Sensor (74) des Personen- und Fahrzeugaufzugsystems (10) ;
Verladen des Kraftfahrzeugs (V) in die Aufzugskabine (12, 14, 16) mit der Plattform (50) des Personen- und Fahrzeugaufzugssystems (10), wenn von dem Sensor (74) bestimmt wird, dass der Motor des Kraftfahrzeugs (V) nicht in Betrieb

ist; und
Verweigern des Verladens des Kraftfahrzeugs (V) in die Aufzugskabine (12, 14, 16), wenn von dem Sensor (74) festgestellt wird, dass der Motor des Kraftfahrzeugs (V) in Betrieb ist.

14. Verfahren zum Parken eines Kraftfahrzeugs (V) nach Anspruch 13, ferner umfassend;

Bestimmen, ob ein Motor des Kraftfahrzeugs (V) in Betrieb ist, mittels eines oder mehrerer Sensoren (76) innerhalb der Aufzugskabine (12, 14, 16), wenn er sich in der Aufzugskabine (12, 14, 16) des Personen- und Fahrzeugaufzugsystems (10) befindet;
Zurückbringen des Kraftfahrzeugs (V) zu einem Eingangsbereich, falls bestimmt wird, dass der Motor des Kraftfahrzeugs (V) in Betrieb ist oder in Betrieb geht, während es sich in der Aufzugskabine (12, 14, 16) befindet;
Ausliefern des Kraftfahrzeugs (V) an einen zugewiesenen Parkplatz (36, 38, 40, 42, 44, 46), wenn sich der Motor des Kraftfahrzeugs (V) in einem nicht betriebsbereiten Zustand befindet; und
Parken des Kraftfahrzeugs (V) auf dem zugewiesenen Parkplatz (36, 38, 40, 42, 44, 46), wenn der Motor des Kraftfahrzeugs (V) den nicht betriebsbereiten Zustand beibehält.

15. Mehrstöckiges Gebäude, umfassend:

einzelne Wohnungen und/oder Büros, die jeweils einen jeweiligen Parkplatz (36, 38, 40, 42, 44, 46) aufweisen; und
das Personen- und Fahrzeugaufzugsystem (10) nach einem der Ansprüche 1 bis 12.

Revendications

1. Système d'ascenseur pour véhicules et pour passagers (10), comprenant :

une cabine d'ascenseur (12, 14, 16) ayant un logement et au moins une porte (54) pour fermer une ouverture, le logement ayant un plancher, un plafond et au moins une paroi latérale, le logement étant configuré pour transporter un véhicule (V) et au moins un passager ;
une plate-forme à translation linéaire (50) montée sur le plancher pouvant fonctionner pour entrer et sortir de la cabine d'ascenseur (12, 14, 16), la plate-forme à translation linéaire (50) étant configurée pour être translatée linéairement sous le véhicule et soulevée pour transporter le véhicule (V) et l'au moins un passager à travers l'au moins une porte (54) ;
un moyen pour faire tourner sélectivement le véhicule (V) pour fournir un accès à l'un d'une pluralité d'espaces de stationnement adjacents (36, 38, 40, 42, 44, 46) ; et
un moyen pour soulever et abaisser sélectivement la cabine d'ascenseur (12, 14, 16).

2. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 1, dans lequel le logement est sensiblement cylindrique.

3. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 2, dans lequel l'au moins une porte (54) est arquée.

4. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 1, comprenant en outre au moins un capteur (70) configuré pour lire des informations de stationnement à partir du véhicule (V).

5. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 4, dans lequel l'au moins un capteur (70) comprend un lecteur RFID ou un lecteur de code à barres.

6. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 1, comprenant en outre au moins un capteur (74, 76) pour détecter si le véhicule est en fonctionnement.

7. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 6, comprenant en outre un moyen pour empêcher le véhicule d'entrer dans le logement si l'au moins un capteur (74, 76) détecte que le véhicule est en fonctionnement.

8. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 7, comprenant en outre un moyen pour empêcher la cabine d'ascenseur (12, 14, 16) de stationner le véhicule à l'intérieur du bâtiment qui est sensible à l'au moins un capteur (74, 76).

9. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 7 ou 8, dans lequel l'au moins un capteur (74, 76) comprend :

un premier capteur de monoxyde de carbone (74) monté à l'extérieur du logement ; et
le moyen pour empêcher le véhicule (V) d'entrer dans le logement peut fonctionner lorsque le premier capteur de monoxyde de carbone (74) détecte des niveaux de monoxyde de carbone indiquant qu'un moteur du véhicule (V) fonctionne.

10. Système d'ascenseur pour véhicules et pour passa-

gers (10) selon la revendication 9 lorsqu'elle dépend de la revendication 8, dans lequel l'au moins un capteur (74, 76) comprend en outre :

un second capteur de monoxyde de carbone (76) monté à l'intérieur du logement ;
et
le moyen pour empêcher la cabine d'ascenseur (12, 14, 16) de stationner le véhicule (V) à l'intérieur du bâtiment peut fonctionner lorsque le second capteur de monoxyde de carbone (76) détecte des niveaux de monoxyde de carbone indiquant que le moteur du véhicule (V) fonctionne.

11. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 1, comprenant en outre :

un capteur de mouvement (78) monté à l'intérieur du logement ; et
un moyen pour empêcher la cabine d'ascenseur (12, 14, 16) de stationner le véhicule (V) à l'intérieur du bâtiment peut fonctionner lorsque le capteur de mouvement (78) détecte un mouvement à l'intérieur du logement.

12. Système d'ascenseur pour véhicules et pour passagers (10) selon la revendication 1, comprenant en outre une sous-région (24, 26, 28, 30, 32, 34) avec au moins un espace de stationnement (36, 38, 40, 42, 44, 46), ladite sous-région (24, 26, 28, 30, 32, 34) ayant une porte de sous-région (56) pour fermer ladite sous-région (24, 26, 28, 30, 32, 34).

13. Procédé de stationnement d'un véhicule à moteur (V) à l'aide d'un système d'ascenseur pour véhicules et pour passagers (10) selon l'une quelconque des revendications 6 à 10 ; le procédé comprenant :

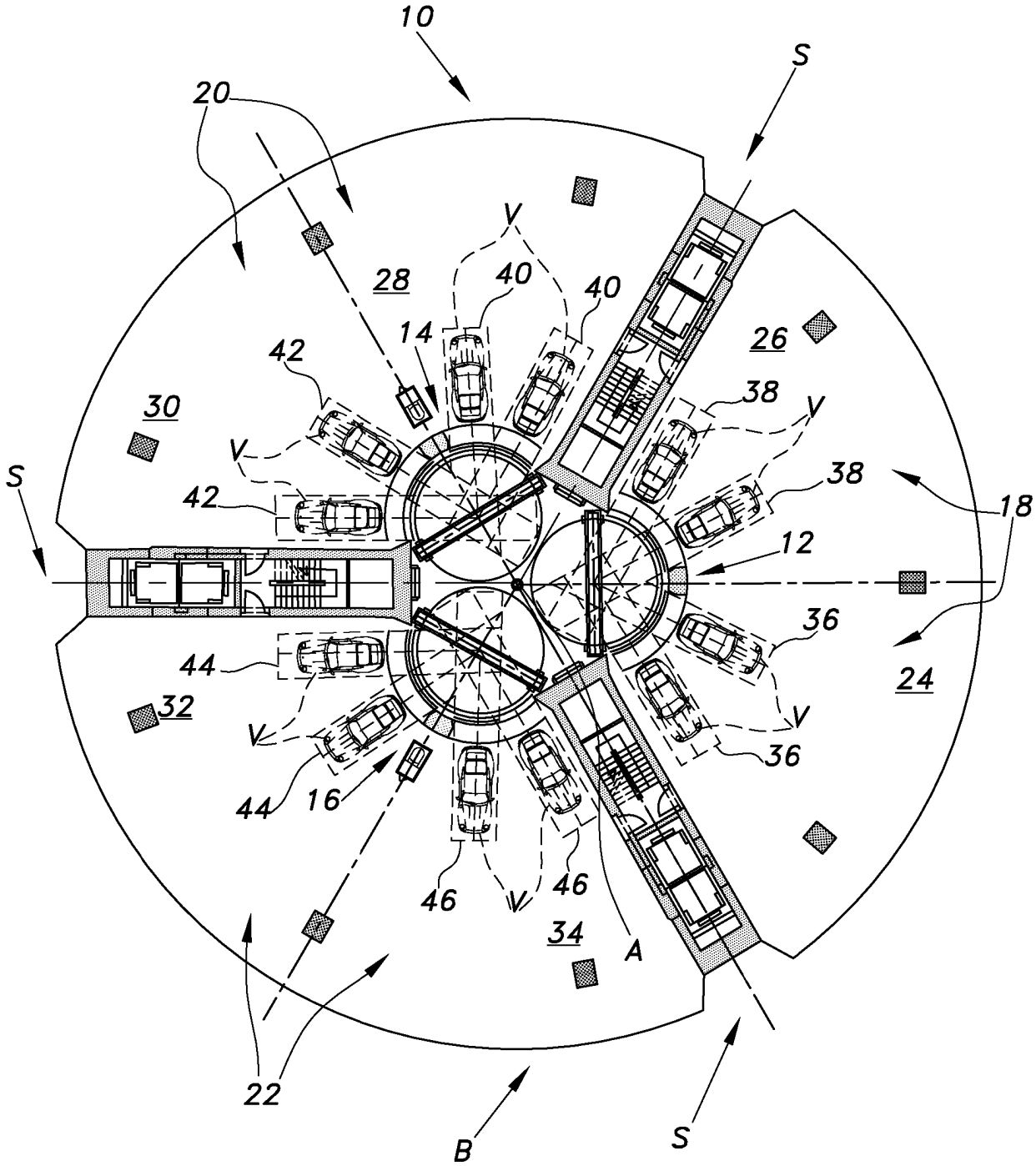
le fait de déterminer si un moteur du véhicule à moteur (V) fonctionne avec le capteur (74) du système d'ascenseur pour véhicules et pour passagers (10) ;
le chargement du véhicule à moteur (V) dans la cabine d'ascenseur (12, 14, 16) avec la plateforme (50) du système d'ascenseur pour véhicules et pour passagers (10) lorsqu'il est déterminé par le capteur (74) que le moteur du véhicule à moteur (V) ne fonctionne pas ; et
le refus du chargement du véhicule à moteur (V) dans la cabine d'ascenseur (12, 14, 16) lorsqu'il est déterminé par le capteur (74) que le moteur du véhicule à moteur (V) fonctionne.

14. Procédé de stationnement d'un véhicule à moteur (V) selon la revendication 13, comprenant en outre ;

le fait de déterminer si un moteur du véhicule à moteur (V) fonctionne au moyen d'un ou de plusieurs capteurs (76) à l'intérieur de la cabine d'ascenseur (12, 14, 16) lorsqu'il se trouve dans la cabine d'ascenseur (12, 14, 16) du système d'ascenseur pour véhicules et pour passagers (10) ;
le retour du véhicule à moteur (V) vers une zone d'entrée s'il est déterminé que le moteur du véhicule à moteur (V) fonctionne ou devient opérationnel alors qu'il se trouve dans la cabine d'ascenseur (12, 14, 16) ;
la fourniture du véhicule à moteur (V) à un espace de stationnement attribué (36, 38, 40, 42, 44, 46) lorsque le moteur du véhicule à moteur (V) est dans un état non opérationnel ; et
le stationnement du véhicule à moteur (V) dans l'espace de stationnement attribué (36, 38, 40, 42, 44, 46) lorsque le moteur du véhicule à moteur (V) maintient l'état non opérationnel.

15. Bâtiment à plusieurs étages comprenant :

des habitations individuelles et/ou des bureaux ayant chacun un espace de stationnement respectif (36, 38, 40, 42, 44, 46) ; et
le système d'ascenseur pour véhicules et pour passagers (10) selon l'une quelconque des revendications 1 à 12.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20
S
28
V
40
40
14
42
26
30
38
V
V
42
38
18
12
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44
24
32
V
36
44
16
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V
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A
22
B
S

Fig. 1

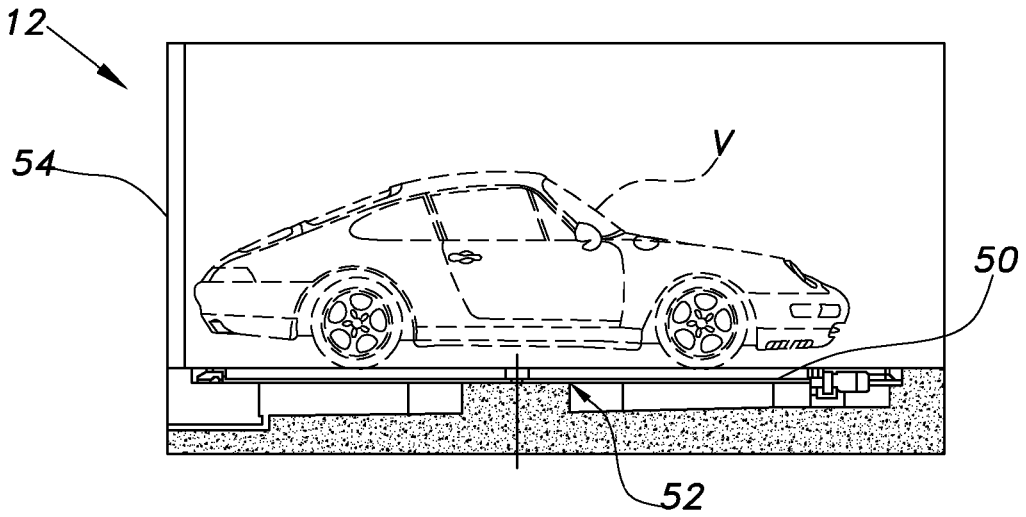

Fig. 2A

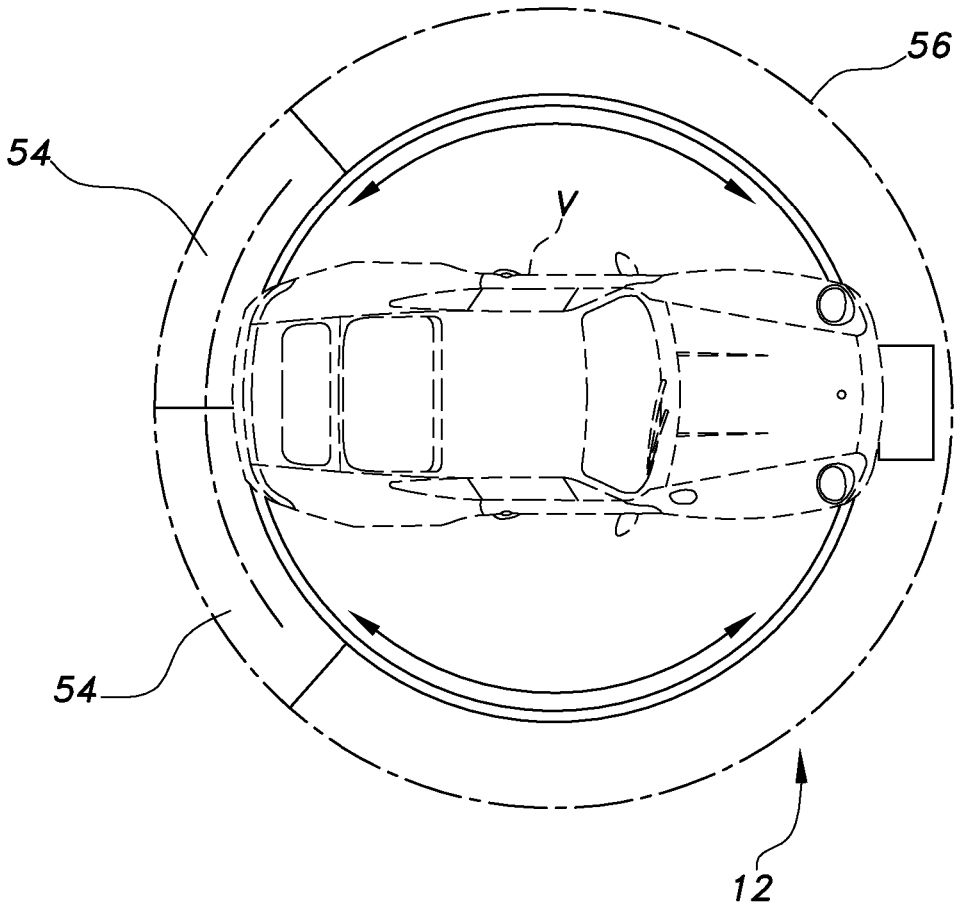

Fig. 2B

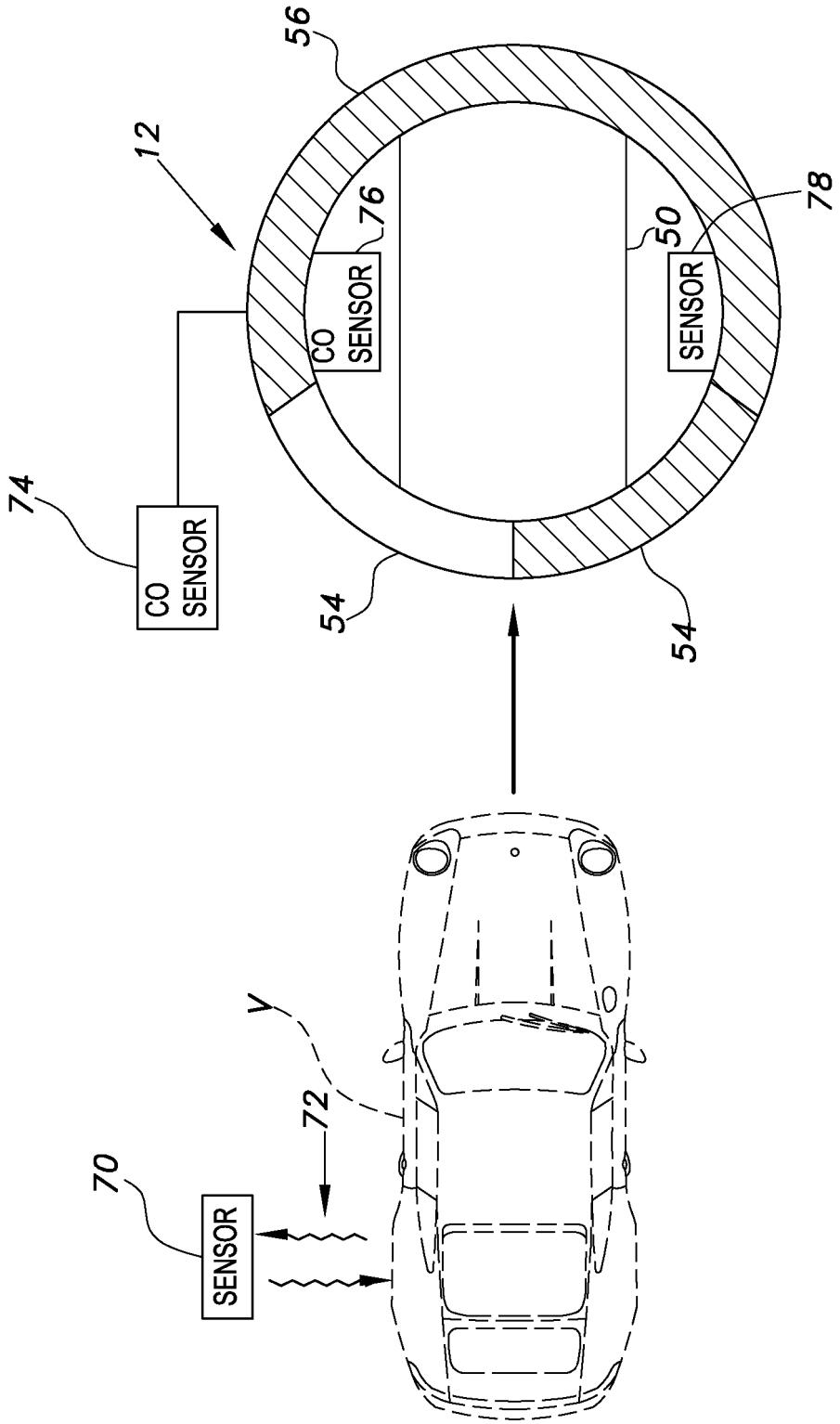

Fig. 3A

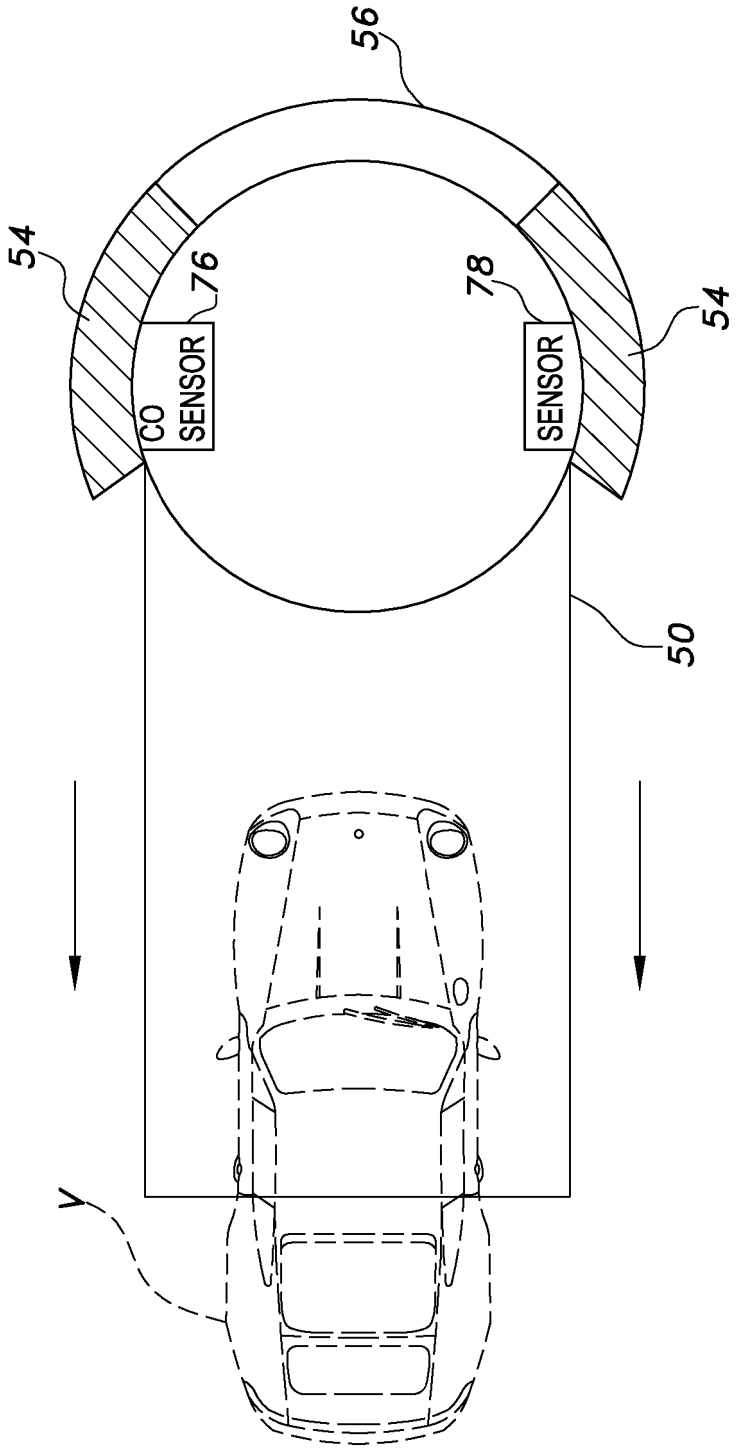

Fig. 3B

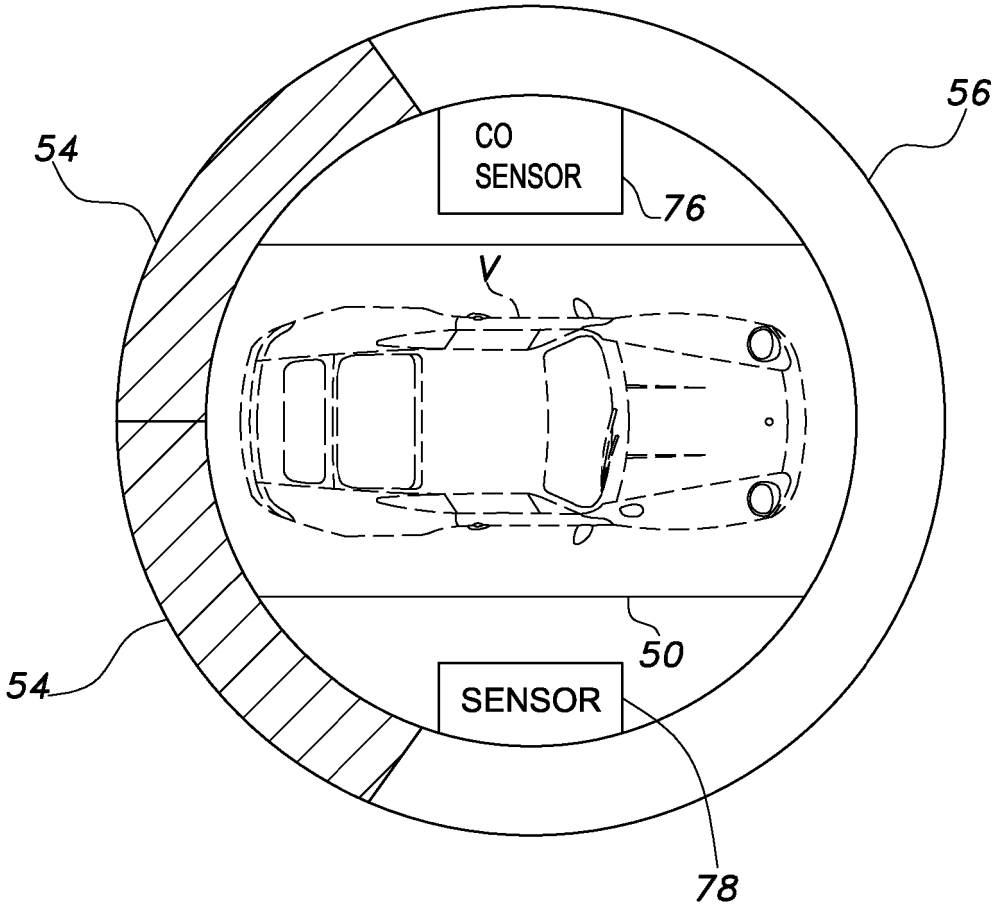

Fig. 3C

REFERENCES CITED IN THE DESCRIPTION

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