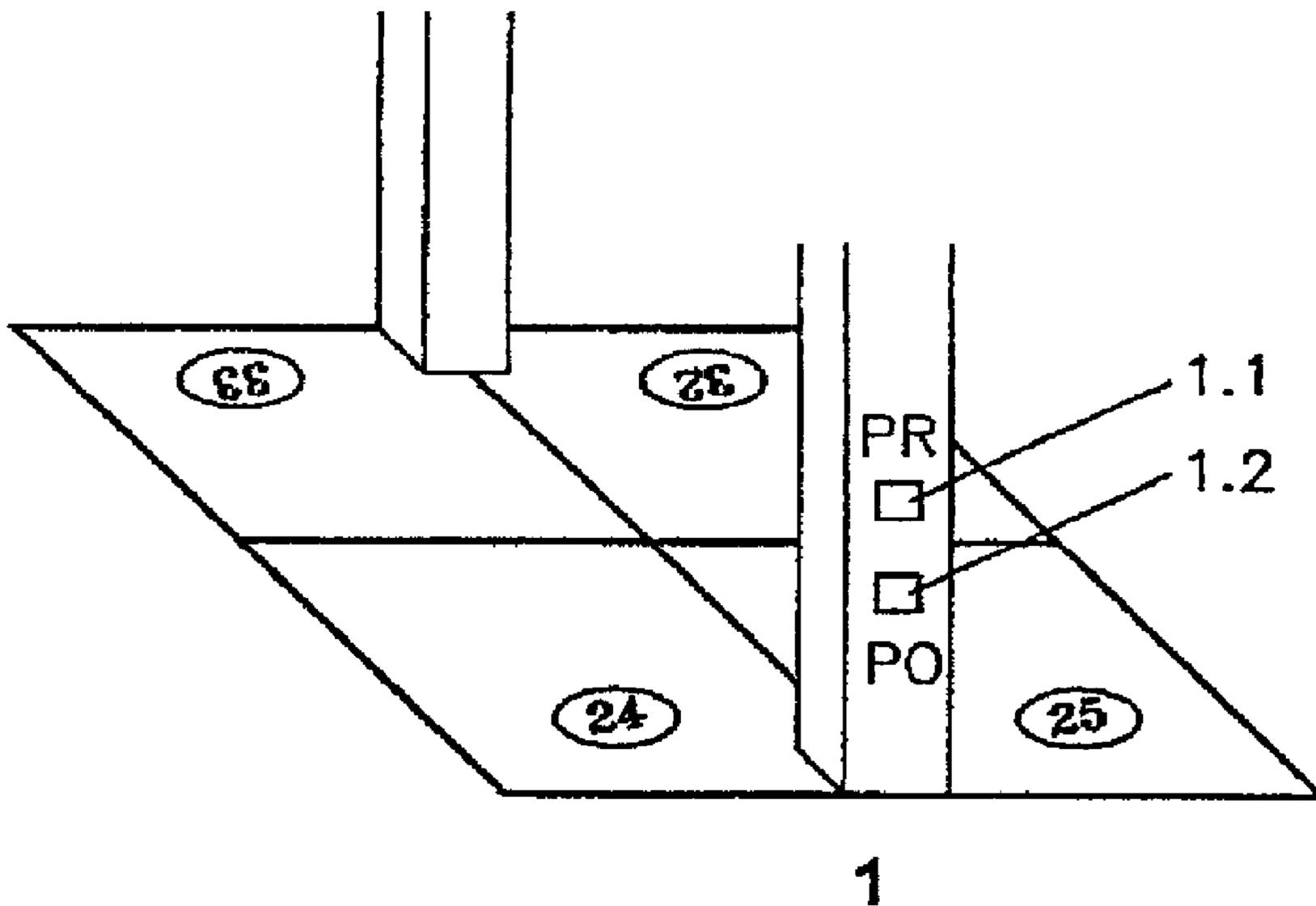




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 (72) Inventeur/Inventor:  
GALLO GARAVANO, CARLOS ANTONIO, ES  
 (73) Propriétaire/Owner:  
GALLO GARAVANO, CARLOS ANTONIO, ES

(54) Titre : SYSTEMES PERMETTANT DE RETROUVER DES VEHICULES GARES DANS DES BATIMENTS ET DANS  
DES SURFACES COUVERTES  
 (54) Title: SYSTEM FOR FINDING VEHICLES PARKED INSIDE BUILDINGS AND ROOFED SURFACES



(57) Abrégé/Abstract:

Problem to solve: Find an automobile or another vehicle parked in a building or areas intended for parking, for example shopping centers, buildings, parking in general, ports and airports, trains and buses terminals, rent a car, and so on. Solution : With widely

(57) **Abrégé(suite)/Abstract(continued):**

used current technology, which are easy to use and without requiring installing additional accessories in the vehicle, or having extra elements in his/her pockets, it is finding the vehicle parked in the parking, allowing not have to worry about its localization. This invention is constituted by: a) System of flat relative cartesian coordinates. b) System of codification which generates the localization code of the parking space that allows to identify the building, floor, level avoiding looking for a mistaken place. c) A module "Registering Posts" which is only installed in parking areas where it is registered the localization code of the parked vehicle, defined by the system of the point a) and b). They are registered once a time in the corresponding to the parking space of the parked vehicle. d) A module "Orienting Posts " which is installed in whichever place of the building intended for parking, where it is visualized the information corresponding to the coordinates difference in a LCD screen, that allows to orient and guide the user until his/her vehicle. It is able to use whichever "Orienting Post" every time that it is considered to get the searching Use the Smart card with its lector, bar code over card or ticket with its lector scanner, audiovisual electronic alerting unit, language selector, and so on.

**ABSTRACT \*****5 System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces**

**Problem to solve:** Find an automobile or another vehicle parked in a building or areas intended for parking, for example shopping centers, buildings, parking in general, ports and airports, trains and buses terminals, rent a car, and so on.

10 **Solution :** With widely used current technology, which are easy to use and without requiring installing additional accessories in the vehicle, or having extra elements in his/her pockets ,it is finding the vehicle parked in the parking, allowing not have to worry about its localization.

This invention is constituted by:

- 15 a) System of flat relative cartesian coordinates.
- b) System of codification which generates the localization code of the parking space that allows to identify the building, floor, level avoiding looking for a mistaken place.
- 20 c) A module "Registering Posts" which is only installed in parking areas where it is registered the localization code of the parked vehicle, defined by the system of the point a) and b). They are registered once a time in the corresponding to the parking space of the parked vehicle.
- 25 d) A module "Orienting Posts " which is installed in whichever place of the building intended for parking, where it is visualized the information corresponding to the coordinates difference in a LCD screen, that allows to orient and guide the user until his/her vehicle. It is able to use whichever "Orienting Post" every time that it is considered to get the searching
- Use the Smart card with its lector, bar code over card or ticket with its lector scanner, audiovisual electronic alerting unit, language selector, and so on.
- 30

\* The applicant will be registered in the request his/her proposal of the publication of the figure 5 with the abstract

**System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces**

5

**DESCRIPTION****Object of the Invention**

10 The present invention which is defended here, consists of a system conformed by several devices that allows to find an automobile or another vehicle parked in areas intended for said purpose, by means of widely used current technology, which are easy to use and do not require installing additional accessories in the vehicle.

15 For a better service to the user of the parking areas, it is convenient to have a device that orients and guides the user until the parking space of his/her vehicle, who does not have to worry about its location.

**Background of the Invention**

20 In the current parking, the only existing method to locate a parked vehicle later on, is the identification of the parking space by means of the letters and digits combination, for example J320. It must be usually completed with the number of the floor or plant and the sector inside the floor or plant, being the localization as follows: floor 3, sector Cinema, street J, parking space 320. The range of colors, is used to delimit the different parking areas.

25 A form to palliate this problem, is that the user takes note of the code, either memorizing, recording or registering it electronically, or writing it in any element at his/her disposal, what means that he/she will have to transport some extra element in his/her pocket.

30 In these places any method that is based on the Global Position System (GPS), GLONASS or similar as the next Galilean lacks usefulness, because there are some obstacles (the own building) that interfere in the satellites signs which must be received by the navigator or receiving GPS installed in the vehicle, to define the exact position in coordinates, at the moment he/she leaves it parked.

When the user wants to find his/her parked vehicle, he/she has the same inconvenience with the receiving portable GPS, where previously it was also impossible to register the localization of the parking space in question. Also this coordinates used to have a short coming of at least 40 meters, unless using differential phase or the DGPS corrections.

In the market there are different optic systems and/or mechanic and/or electronic and/or electromagnetic which solve the problem in question, but their biggest inconvenience reside in the high cost of installation and maintenance, due to its complexity, sophistication and the human personnel who must be devoted to be of that service. These systems can have interferences of different characteristics which diminish their effectiveness in the supposed solution, and which can transform them in unviable or little practical. It can consider that some of them attempt against the anonymity and people's intimacy, due to the type of data that they register.

Therefore it is continued depending on not making a mistake of building, of floor or plants, sector inside the floor or plant, sense of search at the moment to find the parked vehicle, lacking a device that orients and guides him/her to the search vehicle, without adding accessories to the vehicle or to have to carry some extra elements in his/her pocket.

The present invention allows to solve the mentioned difficulties, using current technology, daily and simple use elements, which hierarchize the areas intended for parking vehicles, for its extra service that offers to the user.

The applicant in the search carried out in the databases linked to the O.E.P.M's web page, it didn't find another system to find parked vehicles, with the characteristics of the one is going to describe after, existing the Japanese document JP 03-037800 A (Japanese Patent Office) that uses a point of meeting where a map exists on a panel that has to be interpreted by the user of the parking space to find his/her searched parked vehicle.

#### **Explanation of the Invention**

The main novelty of the invention, object of this presentation, it is based on the registration or storage of the localization of parked vehicle, in an appropriate support and its later process to be able to orient and guide the user until his/her vehicle, without getting wrong.

5 The cards with magnetic band or intelligent chip, are the most spread support in this type of establishments, in order to pay for the time that the vehicle was parked, therefore it takes advantage of the mentioned support to store the localization, keeping up the same quantity of elements which are used at the moment and avoiding any type of added annoyance.

10 The system is characterized by its modular design which consists of the following components: a suitably programmed microcontroller, an audiovisual electronic alerting unit, a Smartcard connector, a bar code laser scanner, a LCD screen, a power source connected to the general net of electric fixtures, a presentation box, Smartcard, ticket - card with bar code, computer programs and flat relative cartesian coordinates, everything appropriately combine to get the objective.

15 The localization of the parked vehicle is defined by means of a system of flat relative cartesian coordinates, own and unique of the building or area intended for such purposed, that is materialized in the code to store. To this code is added the identification of the parking, to avoid the search in a mistaken building, also adding other data for an easy search.

20 A previous study of the parking, the later installation project of the invention now defended and the necessary investment, in such way that it were not a cost to the user, it will condition the quantity of each one of mentioned types posts which allow to define the localization code in relation to each parking space of itself, for its use after materializing the invention physically.

25 It is named "**Registering Post**", to the place by means of a device registers or stores the localization code of the parked vehicle, being only used the nearest to the parking space in question, so that the later search were the correct one and "**Orienting Post**" to the place that by means of another device, partially different to the previous one, it gives the necessary orientation and guided to find the parked vehicle, being able to use whichever and every time that it were necessary until finding the searched place.

30 Once the vehicle is parked, the "**Registering Post**" registers or stores the localization code of the parking space, by means of the option that the parking has installed:

a) If it is bar code it is registered in the magnetic band card by means of a stamp  
5 of automatic ink (simile Trodat), pressing it by hand or also taking away the ticket -  
corresponding card, from the recipient intended for such purposed. b) If it is Smartcard, it  
is inserted in the corresponding connector, to record the data that has to store, taking away  
the card after finishing the recording, which is indicated through an audiovisual sign.

The "**Registering Post**" of bar code, uses the stamp of automatic ink, where the  
10 usual support of rubber is stuck, this has recorded the localization code, needing a  
minimum cleaning maintenance and ink pad replacement with ink, as well as the  
verification of the quality impression. It also uses the ticket - card deposited in a recipient  
that needs the corresponding replacement, which are printed by means of a normal  
15 characteristics computer and the use of an appropriate shears, for its cut, generating a hand  
work. The printing program ticket - card, has stored the localization codes of each parking  
space. The "**Registering Post**" of Smartcard is electronic and automatic and when  
detecting the insertion of the card in the Smartcard connector, it carries out the recording of  
the data belonging to the localization code. .

The "**Orienting Post**" has among its devices, the suitable lector of the support used  
20 to register or store the localization code of the parked vehicle, being a completely  
electronic and automatic process. If the support is of bar code, it has a laser scanner with a  
good configurations , for the used format among its constituents, so that it is activated and  
read automatically before the presence inside its influence area, of the magnetic band card  
or the ticket-card which have registered the corresponding localization code. The  
25 "**Orienting Post**" for Smartcard support, has a Smartcard connector among its  
constituents, turning on mechanics-electronically to the microcontroller when the card is  
inserted in its interior and being carried out the lecturing in automatic way.

The microcontroller processes the localization code, in order to visualize in the  
retro-illuminated LCD screen, by means of an alphanumeric text, the information that will  
30 allow to orient and guide the user which requests it, until the searching parking space. The  
different informations which can be visualized, they allow us to know if the building, floor  
or plants and sector inside the floor or plant are the correct ones, to be able to begin the  
proper search, when we are in the nearest area to the searched vehicle.

In the system of flat relative cartesian coordinates, the difference in the axis "z" (vertical), will indicate the quantity of floors or plants, expressed in units which it must be up or down, to arrive at the right place. In most of the establishments intended for parking, the circulation streets inside the same have a distribution of rectangular form, having as norm the axis "x" parallel to the biggest length streets and the axis "y" parallel to the smallest length streets. When we are in the nearest area to the searched vehicle, the information that is visualized it is the following one: a) steps to walk along the street of the "Orienting Post" (axis "x"), in the indicated direction in the LCD screen and that it coincides with the distance expressed in meters (difference of coordinates axis "x") existing between the "Orienting Post" and the normal point to the parking space in question, on the street that we are going through. b) to get to the normal point we must turn to the left or to the right, according to the result of the difference of the coordinates in the axis "y" between the mentioned normal point and the parking space in question c) steps to walk along the normal to the street of the "Orienting Post" (axis "y"), until get to the parked vehicle which was looked for, and that it coincides with the distance expressed in meters (difference of coordinates axis "y") existing between the mentioned normal point and the parked vehicle.

The invention which is defended here, it checks the different processes, through different computer programs designed especially to such effect and which are registered in the microcontroller memory, during the installation of the system.

The computer program installed in the microcontroller, it is mainly designed to control the following processes: a) the management of the system of flat relative Cartesian coordinate, in all the calculations that the invention carries out b) the recording and lecturing of the localization code of the parked vehicle in the Smartcard c) the data admission sent by the laser scanner, corresponding to the lecturing of the cards which register the localization code, by means of the corresponding bar code d) the visualization of the different informations in the LCD screen that they orient and guide to the user who requests it, to find his/her vehicle e) the control of audiovisual electronic alerting unit f) reset the system g) the lecturing and memorization of the "Post" coordinates h) the auto-checking of the "Post" correct initiation i) the control of the correct operation of the

different devices of the system j) the control of the language change that will be used in  
5 the visualization of the informations.

In the "Orienting Post" in order to achieve a biggest universality, it is able to  
choose the language in which we want to visualize the informations in the LCD screen,  
being able to achieve this selection, pressing once the language button corresponding to the  
10 wanted language. For not increasing the installation costs, a space problem for the buttons  
and memory to have kept the text to visualize ,it limits that selection to less than ten  
options that will allow to select the more used languages in the area where the system is  
installed.

The audiovisual electronic alerting unit has the function of indicating in which  
situation it is, the recording or the lecturing of the localization code of the parked vehicle.  
15 There is a colour visual sign and quantity of Led and an acoustic sign taken place by the  
loudspeaker that identifies the moment in which the microcontroller is carrying out the  
lecturing or recording of the mentioned data, also allowing to know easily when these  
processes finish by means of the different characteristics of the audiovisual sign.

The power sources that the computers use, they improve the modular design and  
20 mainly satisfy the necessities of electric power supply to the tension and strength  
necessary, of the different electronic constituents of the system and being connected to the  
domiciliary general net of electric fixtures, through their transformers.

The box or wrapping has as main function, the protection of the devices that  
contains inside, the execution of the electric security norms and the perfect visualization of  
25 the "Posts", for their identification, also taking advantage of its construction in order to  
facilitate the system assembly, to show the logo of the product, the use guide itself, a  
commercial presentation of the product and others.

#### **Description of the drawings**

30 To facilitate the understanding of the present invention characteristics, it is added  
below a descriptive memory of several figures, in those that with illustrative and never  
limitative character, the following thing has been represented:

The Figure 1 shows a perspective view of a small parking area, where we

distinguish four parking space and two columns belonging to the building that have  
5 anchored the "Registering Post" (1.1) and the "Orienting Post" (1.2).

The Figure 2 shows a perspective view of the two types of available data support,  
the Smartcard (2.1) and the magnetic band card or the ticket - card, with its bar code (2.2)  
in the appropriate format.

The Figure 3 shows a perspective view, of a part of the two types of available  
10 "Registering Post, the Smartcard (3.1) and the bar code (3.2), with its stamp of automatic  
ink and recipient.

The Figure 4 shows a perspective view of the two types of available "Orienting  
Post", the Smartcard (4.1) and the bar code (4.2).

The Figure 5 shows a perspective view of a small parking area, where we  
15 distinguish the way for finding the vehicle parked starting from the information facilitated  
by the "Orienting Post" (1.2) and according to the system of flat relative cartesian  
coordinates.

The Figure 6 shows a perspective view of the LCD screen (6) visualizing some of  
the informations to orient and guide the user that requests it and the buttons (6.1) that  
20 allow to change the language of the text to read.

#### **Exposition of the way to carry out the invention**

According to the previously enunciated, the present invention refers to the Systems  
for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, characterized by a  
25 modular design which consists of the following modules: a suitably programmed  
microcontroller, an audiovisual electronic alerting unit (7), a Smartcard connector(5), a  
barcode laser scanner (8), a retro - illuminated LCD screen (6), a power source connected  
to the general net of electric fixtures, a presentation box, the Smartcard (2.1) and the  
magnetic band card or the ticket - card with bar code (2.2).

30 The Smartcard (2.1) has normal characteristics, not needing protection neither  
special security, should allow the use of the protocol I2C during the lecturing and  
recording what places, it in the range of daily use.

The Smartcard connector (5) for intelligent card (2.1) has normal characteristics, doing the

contact by touching down with the objective of not damage the card contact existing a  
5 detector contact which indicates the insertion itself. When the lecturing or recording of the  
card finishes, the system is prepared for the different expulsion types of itself that are  
automatic or manual, being able to use in the realization of this invention, the simple  
method of pushing and dropping.

The audiovisual electronic alerting unit (7) is compound of a led group (7.1) and a  
10 buzzer (7.2), generating a visual sign (quantity and colour) and another acoustic, by means  
of which it is identified the processes that the microcontroller is carrying out.

The laser scanner (8) for the reading of the barcode ticket (2.2), has normal  
characteristics, configured for the automatic lecturing when the ticket is in the influence  
scanner area. The system is prepared for different types of format codes and inter phase of  
15 communications, being able to use the RS-232 in the data transmission with the  
microcontroller.

The retro - illuminated LCD screen (6), alphanumeric has normal characteristics, it  
optimizes the visualization of the informations that are shown to the user that requests it.  
Among them there is screens of 80 characters (20 x 4) distributed in 4 lines, with big  
20 characters that collaborate with the clarity of what is written. The communication with the  
microcontroller is carried out through a bus of data and another of commands, being  
allowed its control in that way.

The buttons (6.1) that allow to carry out the language selection in which the  
informations will be visualized in the LCD screen, they are completely normal and they  
25 don't have any special characteristics to keep in mind.

The power source is the necessary to be able to give the tension of 5 volt to the  
electronic constituents of the system, being linked to the domiciliary general net of electric  
fixtures. The biggest consumption is due to the retro illumination of the LCD screen that is  
about 1000mA that must be added to the 300mA that the rest of the electronic circuit can  
30 consume.

The microcontroller has normal characteristics, being without inconveniences in the  
market, being of 18, 28 or 40 the quantity paws which are used for its communication with  
the electronic circuit that surrounds it. The speed is not of importance, because the

processes are not complex neither long, therefore there are not delays in the times of  
5 execution. The quantity of necessary memory intended for programs and data, it is satisfied  
using microcontroller families of more than 1 Kbytes for the first one and of 256 bytes for  
the second one.

The box or wrapping allows to set up, to hold and to protect the different  
constituents, being its perfect visualization the one makes easy the identification of the  
10 "Posts." They take the manual use of the system and they are anchored by means of screws  
to the walls or columns, where they are installed according to the optinun of the system. In  
the reproduction of this invention for an expert, the existence of variations in materials,  
forms, size and constituents disposition, these don't affect to the essential of itself, which  
were described in a no limitative way.

**CLAIMS**

1. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, to orient  
5 and guide the user to the place in the building or roofed surface where his/her vehicle is  
parked, **comprising**:
- a) at least one “**Registering Post**” to register once on the data support used in the  
parking, which is one of a smartcard or a ticket-card with a barcode or a magnetic  
band card with barcode, the localization code of the parked vehicle, this localization  
10 code identifying in a univocal way the building or space intended for parking, the  
floor, the sector of the floor and the used parking space using flat relative cartesian  
coordinates, where the vertical axis “z” refers to the floor, level or plant inside the  
building where the vehicle is parked;
  - b) a plurality of “**Orienting Post**” distributed in the building or the roofed surface to  
15 read the localization code of the data support used in the parking and to visualize in a  
retro-illuminated LCD screen the guiding information, relative to the position of each  
particular “**Orienting Post**”, for the user to find his/her searched parked vehicle, each  
of said “**Orienting Post**” comprising:
    - b.1) a microcontroller integrated in the electronic circuit;
    - 20 b.2) an audiovisual electronic alerting unit;
    - b.3) a smartcard connector or a barcode laser scanner;
    - b.4) a retro-illuminated LCD screen;
    - b.5) a power source connected to the general electric net;
    - b.6) a language selector of screen information;
  - c) a code generator to generate the localization code of the parking space of the parked  
25 vehicle; and
  - d) sequence of statements or instructions designed especially to be read and executed by  
a computer, for controlling and managing processes executed in the system.
2. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,  
30 according to claim 1, **characterized** by the flat relative cartesian coordinates, that define  
the localization of parked vehicle, are own, uniques and exclusives of each parking space  
intended for such purpose, inside the same building or used area for parking, which relative  
origin coordinates is the 0,0,0.
3. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,

according to any of preceding claims 1 and 2, **characterized** by the system of flat relative cartesian coordinates, uses three orthogonal axis to define the localization of the parked vehicle, they are own, uniques and exclusives of the building or area intended for parking, by means of the vertical axis named "z", it is defined the floor, level or plant in which the vehicle is parked, the two axis in ground named "x" and "y" define the localization of the parked vehicle inside the floor, level, sector or plant, having the three axis the same relative origin coordinates 0,0,0.

10 4. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2 and 3, **characterized** in that the data support is a smartcard and said "**Registering Post**" automatically records in the smartcard the localization code of the parking space of the parked vehicle and said "**Registering Post**" consist of a smartcard connector, which detects mechanically-electronically the insertion of the smartcard, and an audiovisual electronic alerting unit which alerts of the end of the recording.

5. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2 and 3, **characterized** in that the data support is a ticket-card with a barcode and said "**Registering Post**" is a recipient which contains printed barcodes that express of the localization code of the parking space of the parked vehicle.

6. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2 and 3, **characterized** in that the data support is a magnetic band card and said "**Registering Post**" is a recipient which contains the stamp of pre ink or automatic ink with the localization code of the parking space of the parked vehicle expressed by means of a bar code, said stamp having a rubber support or being of light-sensitive film, and said code needs to be pressed by hand on the said card.

7. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2, 3, 4, 5 and 6, **characterized** in that the module named "**Registering Post**" is only installed in parking areas, existing at most one "**Registering Post**" per parking space intended for such purposed.

8. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to claim 4, **characterized** in that the smartcard is a standard card to be used in a plurality of parkings.

9. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 4 and 8, **characterized** in that the smartcard  
5 connector, makes the contact with the smartcard by the method of touching down, existing a contact detector which indicates the insertion of the card, it mechanically and electronically activates the microcontroller; when the lecturing and recording card finishes, the expulsion itself will be doing by an automatic way or handled by the method of pushing and dropping.

10 10. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2 and 3, **characterized** in that the flat relative cartesian coordinates, which define the user's orientation and guide, from the module named "Orienting Post" until the parked vehicle, are own, uniques and exclusives of each parking space, with respect to the named "Orienting Post" in question, where the relative  
15 origin of coordinates is situated 0,0.

11. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2, 3 and 10, **characterized** in that the system of flat relative cartesian coordinates, uses three orthogonal axis to orient and guide the user until finding his/her parked vehicle; by means of the coordinate difference in the vertical axis  
20 named "z", obtaining the quantity of floor, levels or plants expressed in unities that it must be up or down, to get to the floor, level or plant of the searched vehicle; on every floor, level or plant defining the axis in ground named "x" parallel to the biggest length streets and defining the axis in ground named "y" normal to the "x" axis; by means of the coordinates difference in the axis in ground and in the sense that the LCD screen indicates,  
25 obtaining the distance on the "x" axis in existing metres between the "Orienting Post" and the normal point to the parking space of the searched vehicle; at which to turn right or left and to go along the normal to the "Orienting Post" street the distance on the "y" axis in existing metres between the normal named point and the parked vehicle, according to the coordinates difference in the axis named "y" between the indicated points.

30 12. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2, 3, 10 and 11, **characterized** in that the module named "Orienting Post" has a retro-illuminated LCD screen, with an alphanumeric text to visualize the differences in the axis named "x", "y", "z" of the system of flat relative cartesian coordinates, for displaying information to orient and guide the user who ask for

it, until finding his/her parked vehicle.

5 13. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2, 3, 10, 11 and 12, **characterized** in that each module named “**Orienting Post**”, located inside the parking areas, it is the relative origin coordinates 0,0 of the axes in ground named “x”, “y”, of the system of flat relative cartesian coordinates used to orient and guide the user until finding his/her parked vehicle and each module named “**Orienting Post**”, located out from the parking areas, it is the  
10 relative origin coordinates 0 of the vertical axis named “z”, from the same system.

14. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 4, 5, 6, 8 and 9, **characterized** in that the module named “**Orienting Post**”, it has one of two reading devices to recuperate from the data support, the localization of the parked vehicle:

- 15 a) Intelligent that uses the smartcard, that is electronically reading in automatic way by the device, when it detects mechanically – electronically the insertion of the card into the smartcard connector and by means of the audiovisual electronic alerting unit the end of the reading is known, to be able to remove the card; and
- 20 b) Visual that uses ticket-card with a barcode or the magnetic band card with a barcode own of the parking, that when they pass by the laser scanner reading area, shaped conveniently to the used format, so it is automatically activated and read by the device and by means of the audiovisual electronic alerting unit, the end of the reading is known to be able to remove the card.

25 15. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1 and 12, **characterized** in that the module named “**Orienting Post**”, has buttons, that allow to choose one of languages used in the geographic area where the system is installed, visualizing the informations on the LCD screen in the selected language.

30 16. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1 and 14, **characterized** in that the laser scanner to the reading of bar code registered in the data support, is prepared for different types of format codes and shaped to the automatic activation of the lecturing and the transmission of the localization code, when the ticket-card or the magnetic band card own of the parking it meets in the laser scanner reading area, this code is sent to the microcontroller using for the

communication the Rs232 protocol.

17. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,  
5 according to any of preceding claims 1 and 4, **characterized** in that the module named  
“**Registering Post**” with electronic operation for the smartcard comprising:

- a) a microcontroller integrated in the electronic circuit;
- b) an audiovisual electronic alerting unit;
- c) a smartcard connector; and
- 10 d) a power source connected to the general electric net.

18. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,  
according to any of preceding claims 1, 4, 14 and 17, **characterized** in that the module  
named “**Registering Post**” with electronic operation for the smartcard and the module  
named “**Orienting Post**” has an audiovisual electronic alerting unit, consisting of a visual  
15 colour sign and quantity of Led and an acoustic sign taken place by the loudspeaker to attract  
the user’s attention in order to indicate the process finishing that microcontroller is carried  
out.

19. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,  
according to any of preceding claims 1, 4, 14 and 17, **characterized** in that the module  
20 named “**Registering Post**” with electronic operation for the smartcard and the module  
named “**Orienting Post**”, have a microcontroller, that executes simple and short processes,  
and integrated in an electronic circuit, by means of the paws or communication contacts,  
controlling the processes that are executed in the system, by means of a structured sequence  
of statements or instructions designed especially to develop the necessary functions,  
25 registered in the microcontroller memory when the system is installed, and using for the  
communications with the different devices, the I2c protocol and the Rs232 protocol.

20. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,  
according to any of preceding claims 1, 2 and 3, **characterized** in that the localization code  
of the parking space of the parked vehicle is the combination of flat relative cartesian  
30 coordinates of the parking space of the parked vehicle and of the codes which identifies in  
an univocal way the building or space intended for parking, the floor and the sector of the  
floor; materializing of the localization code being alphanumeric for the smartcard and a  
barcode for a ticket-card or a magnetic band card.

21. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces,

according to any of preceding claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 and 20, **characterized** in that the sequence of statements or instructions that is  
 5 installed in the microcontroller is designed to control mainly the following processes:

- a) the manage system of flat relative cartesian coordinates;
- b) the recording and reading in the smartcard, of localization code of the parked vehicle;
- c) the data admission sent by the laser scanner, corresponding to the reading of the ticket-card and of the magnetic band card which register the localization code, by  
 10 means of the bar code;
- d) the visualization in the LCD screen of the different information;
- e) the control of the audiovisual electronic alerting unit;
- f) reset of the electronic system;
- g) the reading and memorization of the coordinates of each module named “**Registering**  
 15 **Post**” with electronic operation for the smartcard and of each module named  
 “**Orienting Post**”;
- h) the auto – checking of correct initiation of each module named “**Registering Post**”  
 with electronic operation for the smartcard and of each module named “**Orienting**  
**Post**”;
- 20 i) the control of the different devices correct operations of the system; and
- j) the control of the languages change in which the informations are visualized.

22. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20 and 21, **characterized** in that the power source connected to the general net is  
 25 modular and adopts the incoming voltage and current to the different electronic elements of the system.

23. System for Finding Vehicles Parked Inside Buildings and Roofed Surfaces, according to any of preceding claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21 and 22, **characterized** by a presentation box that allows to set up hold and  
 30 protect the different constituents that are inside, fulfilling the electric security norms, easy to locate at modules named “**Registering Post**” and the modules named “**Orienting Post**”, inside the building or areas used for parking, being secured by means of screws to the walls or columns where they are installed, and that a serigraph of the user guide is available for the user’s convenience.

Sheet 1 of 2

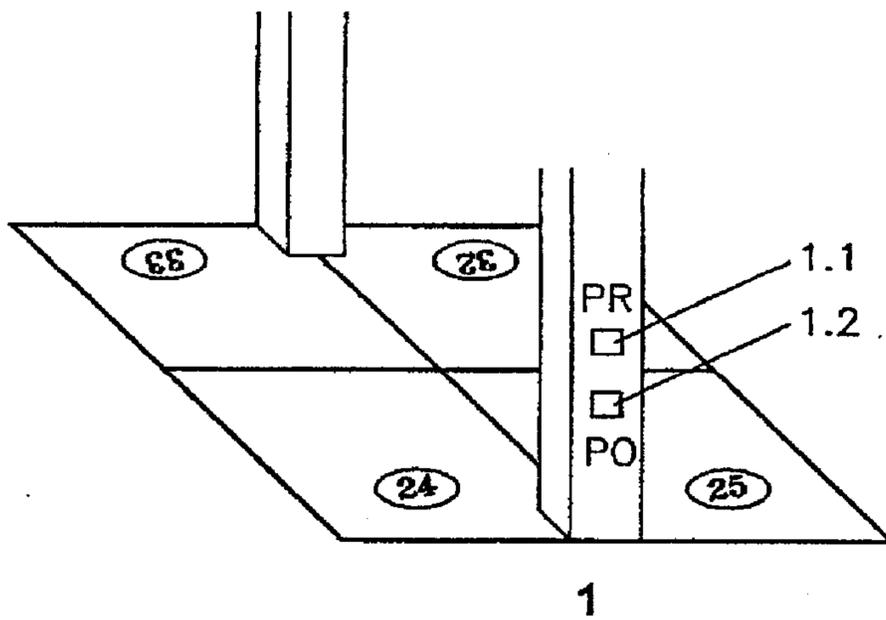


Fig. 1

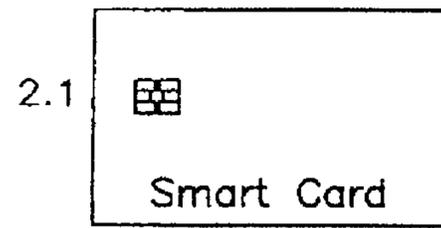
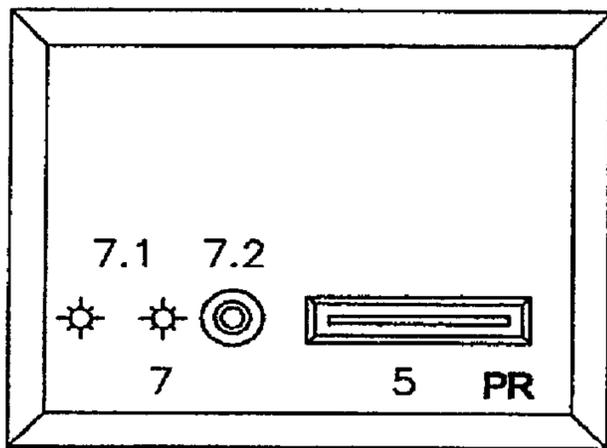
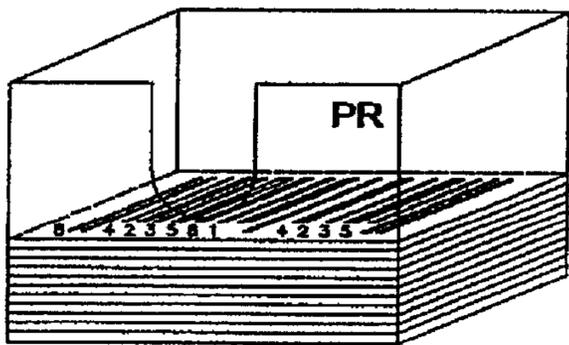
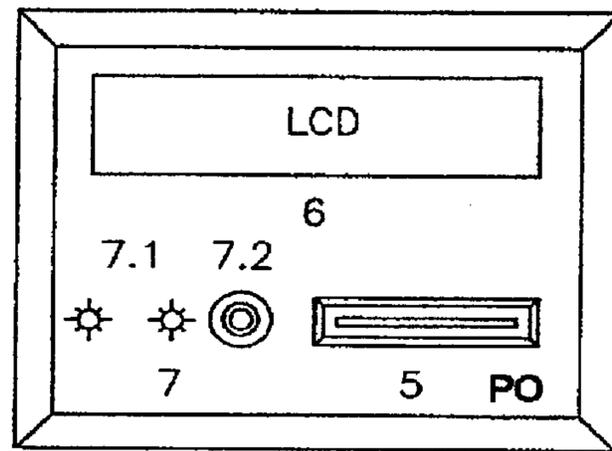


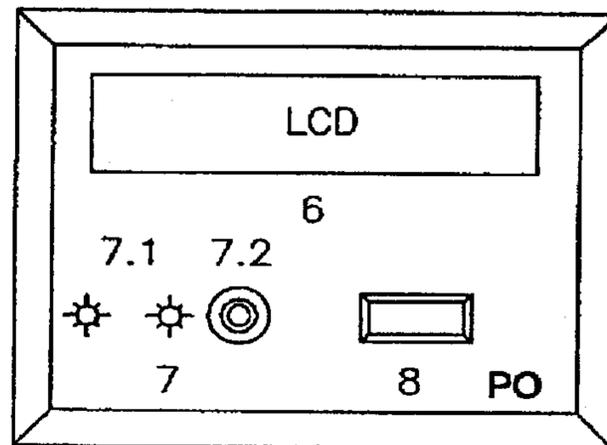
Fig. 2



3.1 4.1



3.2



4.2

Fig. 3

Fig. 4

Sheet 2 of 2

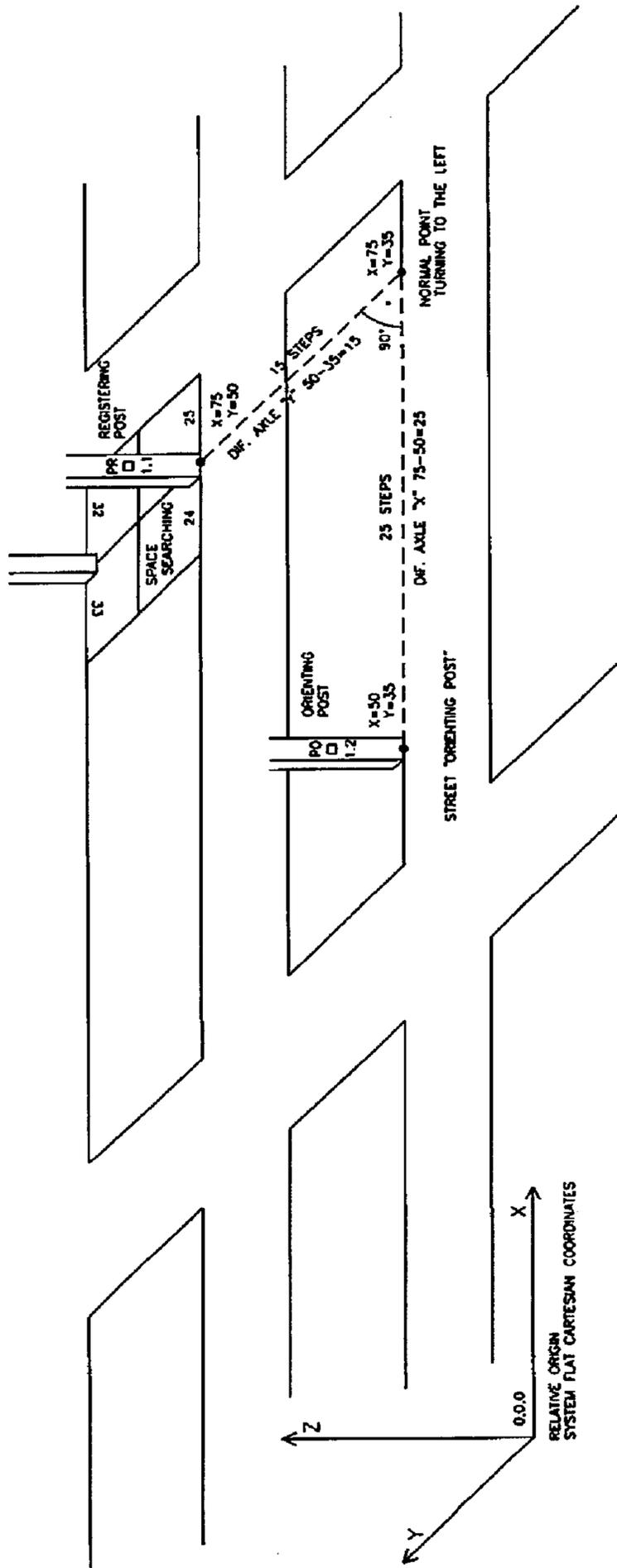


Fig. 5

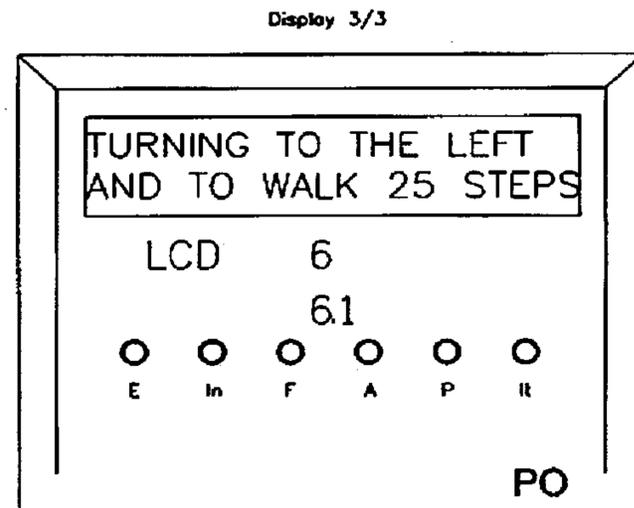
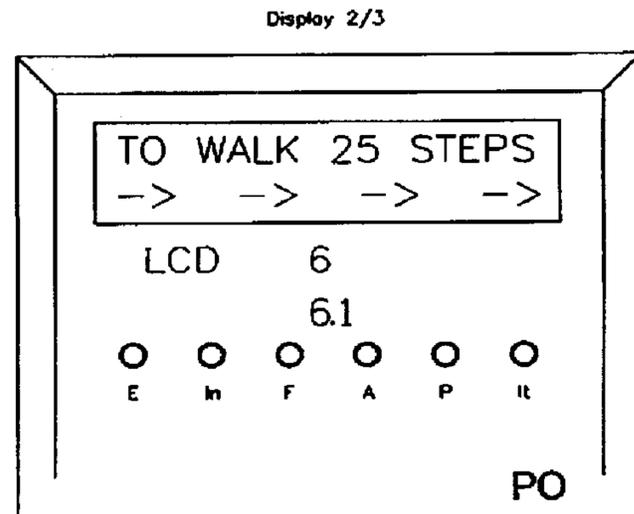
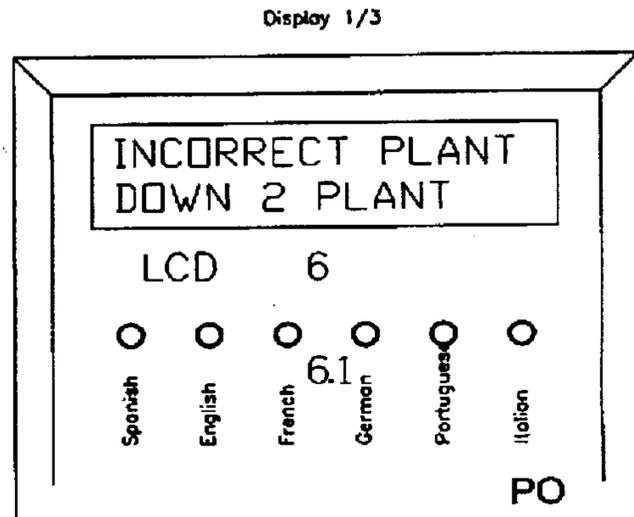


Fig. 6

