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(71) Applicant: **Segurparking, S.L.**
08009 Barcelona (ES)

(72) Inventor: **ORRI PALAGÓS, Xavier**
E-08009 Barcelona (ES)

(74) Representative: **Matamoron Hernandez, José Pedro**
Calle Solano 4, 3.o B
28223 Pozuelo de Alarcon-Madrid (ES)

(54) GARAGE ACCESS CONTROL SYSTEM

(57) Garage access control system comprising means for controlling access to each garage, with opening and closing means provided with at least one signal receiver and a microprocessor that manages the information received from a series of remote controls and the actuation of the means for opening and closing the corresponding access. The system comprises: in each remote control, an identification tag and a programmable memory; in each garage, a remote unit, a database and means for establishing a communication via GPRS mobile telephony with a web server; and a web server including a management software program, a database and means for establishing a communication via GPRS mobile telephony with the remote units and the updating of the relation of active remote controls included in the database.

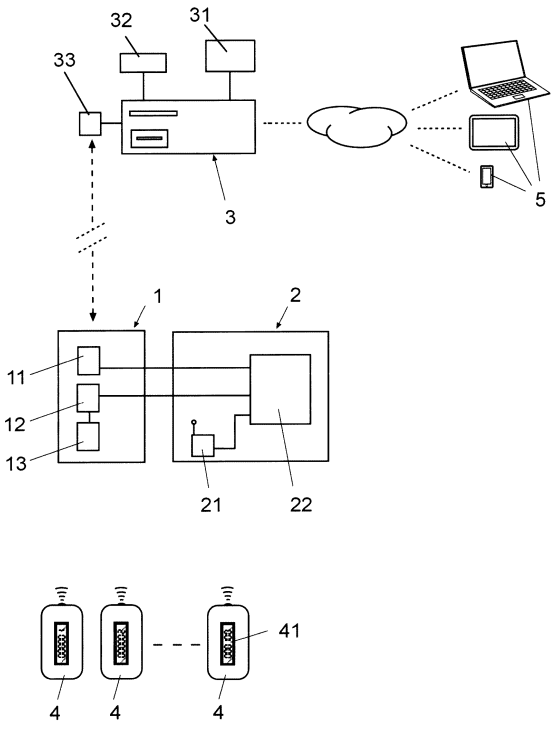

Fig. 1

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Description

Object of the invention.

[0001] The present invention refers to a garage access control system, which features characteristics so as to make possible and to simplify the effective control of remote controls either active or authorized to permit the access to garages, as well as to solve the security problems derived from not having a proper control of all the remote controls which are used in order to access, community garages, as it is not easy to disable those remote controls which must be cancelled due to the fact that they are remote controls lost, stolen or not returned by former tenants.

[0002] This invention enables installers of remote control systems for garages to perfectly control all their garages by means of a Web portal.

[0003] When accessing the portal and being identified by means of an installer name and its corresponding password, the system shows the list of all the garages managed by said installer.

[0004] Inside each installation, a database exists with the parking lots and owners of a specific garage, as well as the codes of the active remote controls related to each parking lot.

[0005] This system permits to activate the new remote controls in the database, so that they are automatically entered in all the accesses of the garage.

Field of application of the invention

[0006] The invention is addressed to being implemented by companies which install access control systems in community garages, garages of companies or organisms, and generally in any restricted access area or site.

Background to the invention.

[0007] The present invention intends to solve the security problem which implies the fact of not having a proper control of all the remote controls which are used to access community garages, as it is not easy to cancel the codes of those remote controls which must be disabled, such as remote controls which are lost, stolen, or simply not returned by former tenants.

[0008] The current problems in order to properly manage the remote controls which are used to access a community garage are as follows:

- Need to make technicians travel.

[0009] Currently, in order to cancel the right of a specific remote control to access a garage, a technician of the installer company which manages the access control must travel to such garage in order to carry out the disabling operation. This complex management, as well as the expenses derived, implies that, in most cases, the referred action is not carried out.

- Communication and software problems.

[0010] In spite of the fact that no remote control manufacturer does so, it is true that, due to the current state of the art, it would be possible to control remote installations by means of an ADSL line and management software, anyway the use of this solution features the following problems:

- An ADSL line will have to be hired with a fix IP at each remote installation, with all the costs derived.
- The installation company will have to have installed specific software in its server or in a specific PC, which implies a problem due to initial setup technique matters, updating and to the need to use some specific computers on a permanent basis.
- ID problems.

[0011] A basic problem in each remote control system is that they are not physically identified with the parking lot number and with its holder, which, due to this lack of identification, makes it almost impossible to properly manage any kind of access control to a garage.

[0012] The first problem arises at the time of delivering remote controls to the owners due to the fact that, if remote controls are not physically identified, it will be impossible to carry out a proper delivery.

- Lack of information.

[0013] In most cases, the owners of parking lots in community garages do not bother to request the remote controls which must be disabled: lost remote controls, stolen remote controls and remote controls not returned by former tenants.

[0014] In this case, it makes no sense installing an access control system, which actually does not carry out any control, as it does not know the number of active remote controls and who are their users.

Description of the invention.

[0015] The control system for garage access object of the invention features some characteristics addressed to give response to the referred problems, one of the objects of the invention being the permission to enable or disable a remote control by means of a web server connection, thus avoiding the problem which implies the travel of technicians to garages in order to cancel the access code of a specific remote control.

[0016] Another object of the invention is to minimize the costs of the communications required in order to operate with remote installations, using any smartphone, PC or digital tablet with an Internet connection.

[0017] Another object of the invention is to physically identify the access remote controls so that each one of them is related to a specific parking lot in a garage and to a specific user in case said lot has several remote controls allocated, and allocating specific access codes to each remote control, so that each remote control is perfectly identified and can be enabled or disabled by accessing the web server.

[0018] Another object of the invention is to solve the problem which implies the fact that, most of the times, parking lot owners do not bother to request the disabling of the remote controls which must be cancelled.

[0019] The control system for garage access of the invention is of the type which includes control means in order to access each garage, which feature opening and closing means of the entrance and exit ways, which feature at least one receiver for activation signals and a chip which manages the information received from a series of remote controls which output opening and/or closing encoded signals, as well as the opening and closing device drives of the corresponding access.

[0020] According to the invention, each remote control comprises: a visible and customized identification tag, in order to allocate it to a specific parking lot and a specific user of such parking lot; and a programmable memory which contains a specific code for each remote control, which is univocally identified within the system, in connection with a garage and a parking lot, or a specific user of such parking lot.

[0021] In this invention, it has been envisaged that the remote controls feature a slight groove in its back side, in order to insert the customized identification tag with the data of the parking lot to which each one of them corresponds.

[0022] The web portal has an application in order to print the tags which are used to properly identify the remote controls.

[0023] The output code programmed in each remote control is a logic code which consists of sub-codes which include: an installer sub-code, an installation sub-code, a parking lot sub-code and the remote control number within each parking lot.

[0024] This kind of logic encoding is very useful, as it permits to perfectly identify a remote control even if its identification tag has been stripped.

[0025] In this way, once an access installation has been carried out, each remote controller is identified by its external tag and its output code, which allows to deliver to each user of each parking lot an identified remote control, and thus, it can be selectively enabled or disabled by the installation company or by the company in charge of controlling the access to the specific garage.

[0026] According to the invention, the systems comprises in each garage: at least one remote device connected to the garage access control means: this remote device including a database with a list of the active opening remote controls, and means in order to set up a communication via GPRS mobile telephony with a web server.

[0027] The system comprises a web server, which includes a management software common to all the existing remote control installations in all the garages managed, and features a database which contains at least one list of the existing parking lots in each garage to be controlled and the codes of the active remote controls for each parking lot or each user of each parking lot in each garage, said web server comprising means in order to set up a communication via GPRS mobile phone with each remote installation and the updating of the list of active remote controls included in its database.

[0028] This web server permits that multiple installation companies of access control systems for garages can manage its multiple installation in the easiest possible way via a web portal.

[0029] In order to operate via the web portal, the installing company will have to identify itself with its user name and its password, then the list of all the garages managed by the company will be displayed, and when a specific garage is selected, the database of the parking lots and owners of the garage will be displayed, together with the codes of the remote controls which are enabled for each parking lot.

[0030] If the installer must deliver a new remote control to an owner, he/she will select "enable" in the database, and it will be automatically updated in all the garage entrance and exit ways. If the installer must carry out the disabling of a remote control, he/she will select "disable" and the remote control will be disabled in all the garage entrance and exit ways. Therefore, it will be no longer necessary for a technician to travel to a garage in order to carry out the disabling of a remote control.

[0031] Another characteristic of the invention is that it features a communication means in the remote installation and in the web server which allows to set up low cost internet communications between them, thus avoiding the costs derived from the installation of an ADSL line in each remote installation of the different garages, bearing in mind that, on beforehand, operating via the internet in order to manage a remote electronic system is only possible if an ADSL line with a fix IP is hired in that remote spot.

[0032] In the present case, the updating of the remote controls in remote installations requires the transmission of only a few bits of information, thus the use of an ADSL line would imply paying relatively high fix rates while under-using the hired line.

[0033] The means included in remote installations in order to set up a communication via GPRS mobile telephone with the web server comprise: a GPRS mobile telephone modem and an M2M card associated to such modem, which features a mobile phone number and a dynamic IP, which communicates with a central server at a specific time, interacting with it in order to update the active remote control list in the database.

[0034] In the case of the web server, the means included in order to set up a communication via GPRS mobile

telephone with each remote installation connected to the access means of the different garages comprise at least one modem and a card capable of making a lost call to any of the remote installations of the different garages, which causes a connection of the remote installation to the GPRS network and the transmission to the web server of the dynamic IP address at that specific time, so that such web server operates and carries out the updating of the active remote controls in the database of the referred remote installation.

[0035] In this communication means, when an installer wants to operate with a remote garage via the web portal, it operates with the server of such portal, and the server of such portal sets up the communication with the remote garage according to the following process.

[0036] When the server of the web portal detects that it is intended to operate via the internet with a specific remote garage, it makes a lost call to the modem of such remote garage, thus giving an order to the remote garage to connect to the GPRS network and to transmit to the server of the web portal the IP address at that specific time. As soon as the server of the web portal has the correct IP address of the remote spot, it can operate normally, and carry out any action required.

[0037] In summary, the referred process minimizes the data transmission cost, when the information to be transmitted is only a few bytes.

[0038] In order to have a proper operation and parameters of the system, it is advisable to determine the maximal number of active remote controls admitted in every parking lot

[0039] The limitation in the number of active remote controls per parking lot is absolutely key to the proper management of the system, due to the fact that parking lot owners, in most cases, do not bother to request the disabling of the remote controls which must be cancelled. When applying this restriction, a natural cleanup occurs of the remote controls which must be disabled, due to the fact that, when an owner requests a new remote control, he/she must request in advance the disabling of the remote control which has been lost, stolen or which the former tennant has not given back.

[0040] In order to enable the control of the limitations of remote controls mentioned above, the web portal permits the parameterization of each managed garage with the following criteria: - number of parking lots of the garage and - number of active remote controls per parking lot.

[0041] In order to deliver remote controls to the users of the different parking lots, it has been envisaged the use of a suitable packaging in order to enhance massive deliveries, and which consists of two boxes: - one box for each remote control, which features an opening which permits to clearly see the identification tag of each one of them, and-one for multiple remote controls, e.g.: fifty units, in a single box, displaying the identification tags of all the remote controls. This is extremely useful when massive deliveries of remote controls must be carried out.

Description of the figures

[0042] In order to complement the description which is currently being carried out, and in order to facilitate the comprehension of the characteristics of the invention, a set of drawings is attached to the present description where, for illustrative purposes and without limitation, the following is represented:

- Fig. 1 schematically displays an embodiment of the system of the invention, where the web server, one of the remote installations corresponding to one entrance to one of the garages whose accesses are to be controlled and three remote controls for the actuation of the opening and closing means of such access have been displayed.
- Fig. 2 shows a scheme plan view of an entrance to a garage where the opening and closing means of the access, together with the related remote installation, have been displayed, according to the invention.
- Fig. 3 shows front and back upper views of an embodiment of a remote control according to the invention.

Preferred embodiment of the invention.

[0043] The system of the invention, as shown in the embodiments of the attached figures, comprises: in each garage, at least one remote installation (1) connected to means for controlling the access (2) to the garage which feature opening and closing means of the entrance and exit accesses of the specific garage; a web server (3); and remote controls (4) outputting encoded signals for the remote operation of the means of opening and closing the accesses to the specific garage.

[0044] The means for access control (2) feature at least one receiver (21) for activating signals proceeding from remote controls (4) and a chip (22) which manages the information received from remote controls (4) and the actuation of the means for opening and closing the corresponding access.

[0045] Each remote installation (1) comprises a database (11) with a list of the opening remote controls (4) which are active, as well as means in order to set up a communication via GPRS mobile telephony with a web server (3). Said means consist on a GPRS mobile telephony modem (12) and an M2M card (13) connected to that modem (12) and which features a mobile telephone number and a dynamic IP address, which periodically communicates with the web server (3).

[0046] The web server (3) includes management software common for the whole set of remote installations (1) existing in the different garages managed, and fea-

tures a database (31) which contains at least a list of the parking lots existing in each garage to be controlled and the codes of the remote controls (4) active for each parking lot, or for each user, of each parking lot, in each garage.

[0047] Such web server (3) comprises means for setting up a communication via GPRS mobile phone with any remote installation, as well as the updating of the list of active remote controls included in its database, said means being represented by a modem and a telephone card (33) with the ability to make a lost call to any remote installation (11) of the different garages when an installer wishes to manage the access of any garage in charge.

[0048] The reception of this lost call causes the remote installation (11) which has received it to connect to the GPRS network and to transmit to the server (3) the dynamic IP address at that specific time, which enables the web server (3) to set up a communication with said remote installation, and the installer to perform, via that connection, the updating of the remote controls (4) active in the database (11) of the referred remote installation (1).

[0049] Each remote control (4) comprises an ID tag (41) visible and customized to be allocated to a specific garage and to a specific user of that parking lot; and a programmable memory (42) which contains an output code, specific for each remote control (4).

[0050] The output code of each remote control (4) includes: one installer sub-code, one installation sub-code, one parking lot sub-code and the number of remote control within each parking lot.

[0051] As shown in Fig. 1, with this system, the installer can operate with remote installations using any terminal (5), such as smartphone, digital tablet or PC, featuring an Internet connection.

[0052] Once the nature of the invention has been described, together with a preferred embodiment, it is stated to the appropriate effects that the materials, shapes, sizes and layout of the described elements can be modified, as well as it does not imply an alteration of the basic features of the invention, which are claimed below.

Claims

1. Control system for garage access; which includes access control means to each garage, which include opening and closing means of the entrance and exit ways, which feature at least one receiver for activation signals and a chip which manages the information received from a series of remote controls which output opening and /or closing encoded signals, as well as the opening and closing device drives of the corresponding access, **characterized by** comprising:

   - in each remote control: a visible and customized identification tag, in order to allocate it to a specific parking lot and a specific user of such parking lot; and a programmable memory which contains a specific code for each remote control, which is univocally identified within the system, in connection with a garage and a parking lot, or a specific user of such parking lot;
   - in each garage: at least one remote device connected to the garage access control means, including such remote device; one database with a list of the active opening remote control devices, and means in order to set up a communication via GPRS mobile phone with a web server; these means comprising: a GPRS mobile phone modem and a M2M card, related to such modem, and which features a mobile telephone number and a dynamic IP address, which regularly reports a central server, interacting in order to update the list of active remote control devices in the database.
   - a web server, which includes a management software common to all the existing remote control installations in all the garage areas managed, and which features a database which contains at least one list of the existing parking lots to be controlled and the codes of the active remote control devices of each parking lot or each user of each parking lot in each garage; such web server comprising means in order to set up a communication via GPRS mobile phone with each remote installation and the updating of the list of active remote control devices included in its database; such means comprising at least one modem and a telephone card capable of making a lost call to any of the remote installations of the different parking areas, which sets up a connection of the remote installation to the GPRS network, and the transmission to the web server of the dynamic IP address at that specific time, so that such web server operates and carries out the updating of the active remote control devices in the database of the referred remote installation.

Amended claims under Art. 19.1 PCT

1. Control system for parking Access; which includes Access control means to each parking, which include opening and closing means of the entrance and exit ways, which feature at least one receiver for activation signals and a chip which manages the information received from a series of remote controls which output opening and /or closing encoded signals, as well as the opening and closing device drives of the corresponding access, **characterized by** comprising:

   - in each remote control: a visible and customized identification label, in order to allocate it to

a specific parking lot and a specific user of such parking lot; and a programmable memory which contains a specific code for each remote control, which is univocally identified within the system, in connection with a parking and a parking lot, or a specific user of such parking lot;

- in each parking: at least one remote device connected to the parking Access control means, including such remote device; one database with a list of teh active opening remote control devices, and means in order to set up a communication via GPRS mobile phone with a web server; these means comprising: a GPRS mobile phone modem and a M2M card, related to such modem, and which features a mobile pone number and a dynamic IP address, which regularly reports a central server, interacting in order to update the list of active remote control devices in the database.
- a web server, which includes a management software common to all the existing remote control installations in all the parking areas managed, and which features a database which contains at least one list of the existing parking lots to be controlled and the codes of the active remote control devices of each parking lot or each user of each parking lot in each parking; such web server comprising means in order to set up a communication via GPRS mobile phone with each remote installation and the updating of the list of active remote control devices included in its database; such means comprising at least one modem and a phone card capable of making a lost call to any of the remote installations of the different parking areas, which sets up a connection of the remote installation to the GPRS network, and the transmission to the web server of the dynamic IP address at that specific time, so that such web server operates and carries out the updating of the active remote control devices in the database of the referred remote installation.

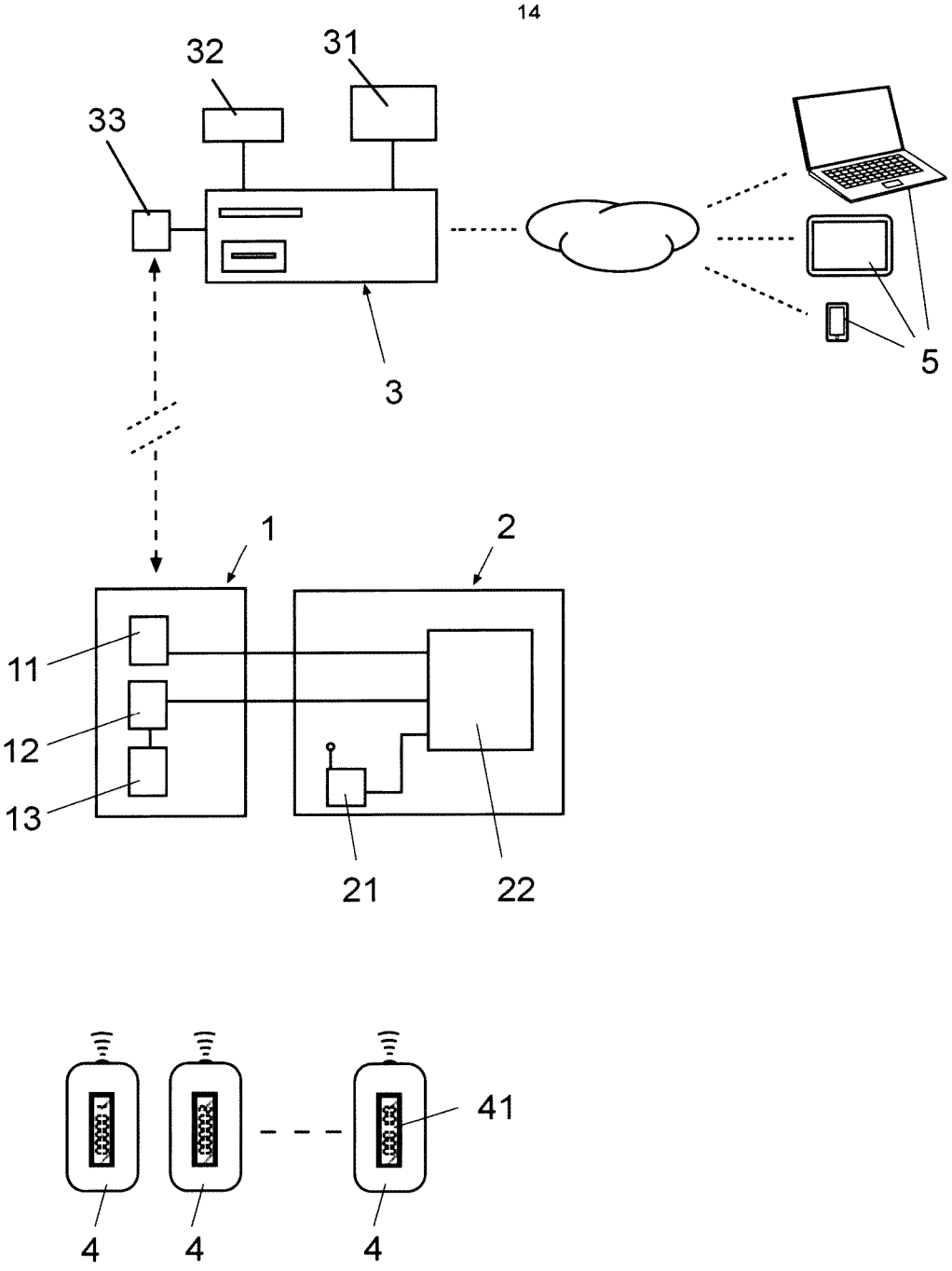

Fig. 1

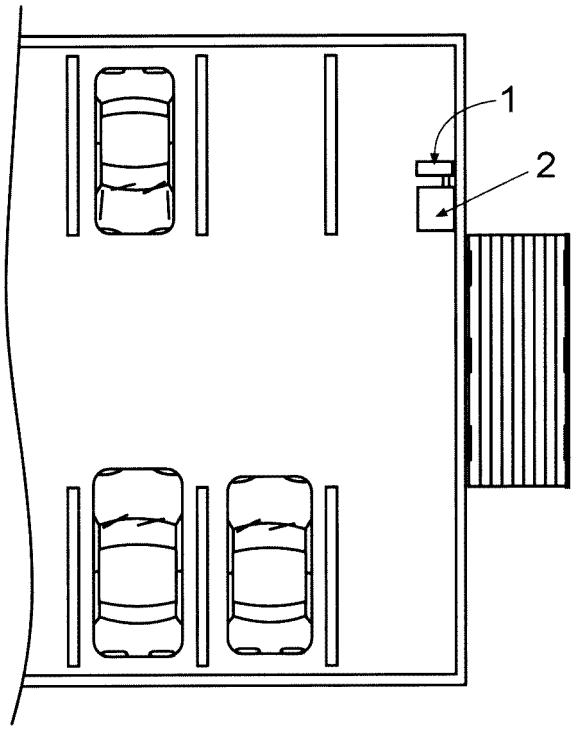

Fig. 2

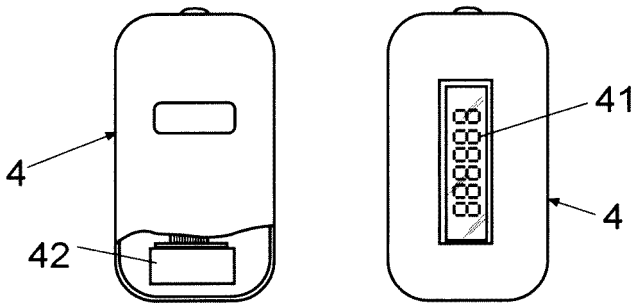

Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2013/000140

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)
G07C, G06F, H04M

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

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

EPODOC, INVENES, WPI, INTERNET

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2079058 A2 (TELECO AUTOMATION S R L) 15/07/2009, paragraphs 13-23; figure.	1-3
A	MARTSOLA, M.; KIRAVUO, T.; LINDQVIST, J.KO; Machine to machine communication in cellular networks; 2nd International Conference on Mobile Technology, Applications and Systems, 2005, ISBN 978-981-05-4573-4 ; ISBN 981-05-4573-8; doi: 10.1109/MTAS.2005.243824.	2, 3
A	ES 1052008U U (SISTEMAS PORTAMATIC S L) 01/11/2002, column 1, line 31-column 2, line 3; column 2, lines 17-36; figures.	1

☐ 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.
"E" earlier document but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure use, exhibition, or other means.
"P" document published prior to the international filing date but later than the priority date claimed
"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 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	Date of mailing of the international search report
08/10/2013	**(09.10.2013)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer M. Lloris Meseguer Telephone No. 91 3495494

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ES2013/000140

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
EP2079058 A2	15.07.2009	ITVE20070099 A1	29.06.2009
ES1052008U U	01.11.2002	ES1052008Y Y	01.03.2003

Form PCT/ISA/210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/ES2013/000140

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G06F13/00 (2006.01)
H04M11/00 (2006.01)

Form PCT/ISA/210 (extra sheet) (July 2009)