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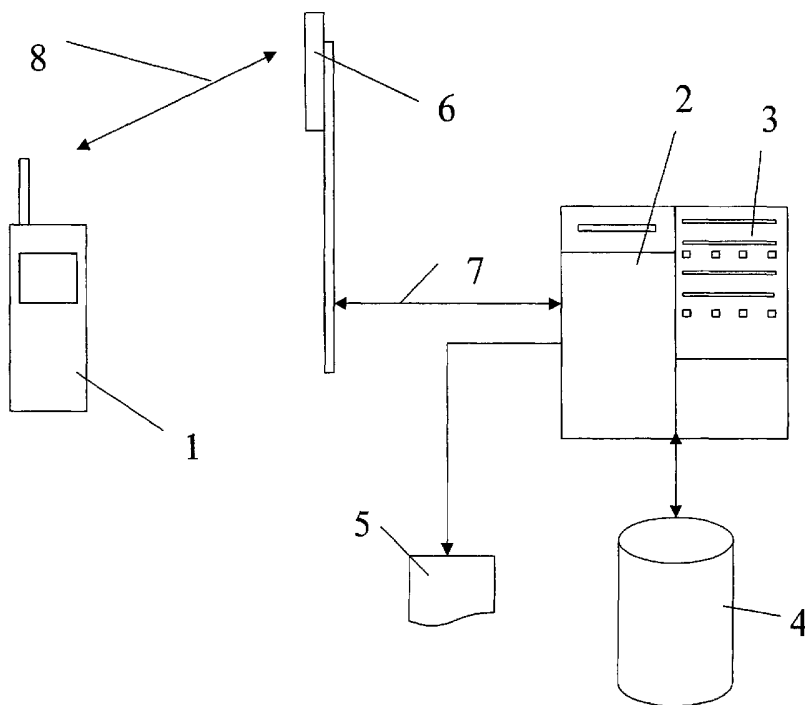
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- (74) Agents: **ÖRTENBLAD, Bertil** et al.; Noréns Patentbyrå AB, Box 10198, S-100 55 Stockholm (SE).
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- (71) Applicant (*for all designated States except US*): **MODUL-SYSTEM SWEDEN AB** [SE/SE]; Veddestavägen 17, S-175 62 Järfälla (SE).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): **HJELMVIK, Torbernt** [SE/SE]; Orionvägen 20, S-175 60 Järfälla (SE).

[Continued on next page]

(54) Title: A METHOD FOR CONTROL OF PARKED VEHICLES



(57) Abstract: The present invention relates to a method of controlling a parked vehicle in which a mobile telephone can be used to commence and to terminate parking of a vehicle, wherein a user sends at least one user specific code to a receiving computer (3) belonging to the parking system via a mobile telephone system or via a fixed telephone system when beginning and terminating a parking period, wherein at the beginning of a parking period the identity of the parking zone concerned is sent to the parking system in which a vehicle specific code is stored in said computer (3) and tied to the user specific code, and wherein a control unit is used for wireless communication with said computer to fetch information as to the identity of those vehicles that have commenced but not yet terminated a parking period in the zone concerned, i.e. are still logged into the system. The invention is characterised in that the control unit

includes a mobile telephone (1) that sends to a receiving telephone device (2) coupled to said computer (3) a voice message from said parking attendant which includes a vehicle registration number, wherein the computer (3) compares this registration number with the registration numbers of logged-in vehicles; and wherein the computer (3) is caused to send to the mobile telephone (1) a voice message in which the registration number understood by the computer (3) is repeated in the mobile telephone (1) and which includes information as to whether the vehicle is logged-in or not.



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## A METHOD FOR CONTROL OF PARKED VEHICLES

The present invention relates to a method of controlling parked vehicles, primarily cars. More specifically, the invention relates to a parking system in which a mobile telephone can be used to commence and terminate parking of a vehicle.

In cities and towns there will be one or more vehicle parking companies who has/have parking meters or so-called pay meters, distributed throughout the city or town in a number of different places, where streets and large parking areas are the most common places in this regard.

In recent times, it has become more and more usual to pay parking fees with different types of bank card or cash card, as a supplement to coin payment. When a cash card is used, the person parking a vehicle will draw the card through a card reader on the parking meter.

The parking meter then issues a parking ticket, which is placed inwardly of the windscreen where it can be seen. When collecting the vehicle, the person concerned must return to the pay meter and again draw the cash card through the meter card reader. The pay meter then calculates the parking fee and stores the fee together with the number of the card to be charged.

A system in which parking of a vehicle at such parking facilities can be initiated and also terminated with the aid of a mobile telephone is known to the art.

Swedish Patent Specification 9800888-1 teaches a simple system for parking vehicles by means of a mobile telephone. According to this Patent, data on a cash card or credit card owned by the user and accepted as payment means by the parking system, and at least a user specific reference are stored in and tied to a database belonging to the parking company concerned.

A user specific reference is the number of the telephone that shall be used when parking the vehicle concerned. The telephone number is detected by the computer of the parking system as the telephone is connected to a telephone number belonging to the parking system.

A vehicle specific reference is the registration number of the vehicle. This registration number is coupled with the telephone number in the computer of the parking system and possibly also with the number of the cash card.

It can be ascertained whether or not commencement of a vehicle parking period has been reported to the parking system, by a parking attendant reading the registration number of the vehicle.

According to said Patent, the parking attendants are equipped with a portable communications unit which is in wireless connection with a computer of the parking company in which data relating to those vehicles where parking has been commenced but not yet terminated is stored. This communications unit may be constructed for example, in accordance with the control unit described in Swedish Patent Specification 9700054-1. The parking attendant enters the parking zone concerned into the control unit and the control unit fetches from the computer a so-called parked vehicle list relating to the parking zone concerned, i.e. a list of the registration numbers of those vehicles with which the commencement of a parking period has been reported. The control unit then compares the registration numbers read-off with the list of parked vehicles and indicates when a commenced parking period has not been reported.

The system described in Swedish Patent Specification 9700054-1 is encumbered with a number of drawbacks. For instance it is desirable to enable the number of entries required by the attendants through the unit keypad to be reduced. It is also desirable to simplify handling of the control unit, which necessitates both reading and entering data. Handling of the unit is particularly difficult in winter when the attendants often wear to wear so-called three-finger gloves.

The present invention solves these problems.

The invention thus relates to a method of controlling parked vehicles, wherein a mobile telephone can be used to commence and to terminate parking of a vehicle, wherein a user sends at least one user specific code to a receiving computer of the vehicle parking system via a mobile telephone or a fixed telephone system when commencing and terminating a

parking period, wherein at the beginning of a parking period the identity of the parking zone concerned is sent to the parking system in which a vehicle specific code is stored in said computer and tied to the user specific code, wherein a control unit is provided for wireless communication with said computer to fetch information as to the identity of those vehicles that have commenced but not yet terminated a parking period in the zone concerned, i.e. are still logged into the system, and wherein the invention is characterised in that the control unit includes a mobile telephone that sends to a receiving telephone device coupled to said computer a voice message from said attendant which includes the registration number of a vehicle, wherein the computer compares this registration number with the registration numbers of logged-in vehicles; and wherein the computer is caused to send to the mobile telephone a voice message in which the registration number understood by the computer is repeated in the mobile telephone and which includes information as to whether the vehicle is logged-in or not.

The invention will now be described in more detail partly with reference to an exemplifying embodiment thereof illustrated in the accompanying drawing, in which Figure 1 is a block diagram illustrative of an inventive method.

The present invention relates to a vehicle parking control method in which a mobile telephone can be used to commence and terminate parking of a vehicle and to send a user specific code to a receiving computer belonging to the parking system. The identity of the zone in which a reporting vehicle is parked is sent to the parking system when parking is commenced. A vehicle specific code is stored in the computer and tied to the user specific code.

The control is effected with the aid of a control unit which is adapted for wireless communication with said computer to fetch information as to the identity of those vehicles that have commenced but not yet terminated a parking period in the zone concerned, i.e. are still logged into the system.

According to the invention, the control unit includes a mobile telephone 1 that sends to a receiving telephone device 2 coupled to said computer 3 a voice message from said attendant which includes vehicle registration numbers. The computer 3 is adapted to compare said registration numbers with the registration numbers of logged-in vehicles. The

computer 3 is also adapted to send to the mobile telephone 1 a voice message in which the registration number understood by the computer 3 is repeated in the mobile telephone 1 and which includes information as to whether the vehicle is logged-in or not.

In the event of the computer 3 giving a different registration number, the parking attendant repeats the earlier number given and the computer then repeats the number last given.

Such repetitions are able to eliminate the risk of the computer misunderstanding the number given by the attendant, which would result in an erroneous fine.

Preferably, the computer 3 will also be programmed to send to the attendant a voice message in which there is given the identity of the zone in which the vehicle concerned is logged-in.

The computer 3 is also conveniently connected to a database 4 containing information relating to vehicle specific codes, the telephone numbers of system users, and billing data tied to each other.

The database 4 may also include the vehicle's make, and its model and color. When such is so, the computer 3 is able to give, e.g., the make and color of the vehicle via a voice message after having repeated the registration number of the vehicle. Moreover, information to the effect that a certain vehicle has been stolen can be fed into the computer 3. Should a parking attendant happen to report the registration number of a stolen vehicle, the computer 3 is able to report this fact to the attendant via a voice message.

In order to enable a relevant parking zone to be given at the beginning of a parking period, each parking zone may for instance be given a unique number comprised of the telephone number that connects the user with the parking system computer. Each zone may have a number for standard parking and a number for residential parking. Other systems are also conceivable, for instance a system in which the user dials a number that connects with the parking system computer and then dials a unique parking zone number, on his/her telephone.

The unique number of the parking zones is suitably indicated on signs, such as on a sign in connection with the parking meters for payment with coins or credit cards.

When wishing to terminate parking, the user again calls the computer 3, which detects the telephone number. The computer scans the database, which discloses that parking has been commenced earlier.

The computer 3 calculates the parking fee on the basis of the time for which the vehicle has been parked, the parking zone and the type of parking concerned. The computer then ties the fee to the credit card tied to the user's telephone number, whereafter the credit card company bills the card owner, i.e. the user.

A vehicle that is included in a telephone parking system is conveniently provided with a sticker or the like that will enable a parking attendant to see readily whether or not a the vehicle can be checked mechanically.

According to a preferred embodiment of the invention, the receiving telephone arrangement 2 includes a voice interpreting device which functions to interpret the registration number spoken into the mobile telephone 1 by the parking attendant.

It is preferred that the mobile telephone 1 of each parking attendant will have a unique telephone number and that this number is detected by the telephone arrangement 2 and stored in the computer 3 together with a message sent by the parking attendant.

It is also preferred that the voice interpreting device will be able to recognise and identify the voice of each parking attendant.

In the event of the computer informing the parking attendant, via the mobile telephone, that a vehicle is not logged-in, it is preferred that the attendant will be able to send a confirmation message to the computer 3 by an appropriate entry through the keypad of the telephone 1 or by an appropriate voice message.

Such confirmation enables the computer to extract the vehicles which are to be fined from a list 5 for forwarding to the appropriate authority. When current rules and regulations

permit, the computer may be programmed to print out parking fines for dispatch, or to draw the amount of the fine from the account number to which the user and the vehicle are tied in the computer 3.

In many parking zones, a vehicle is not considered to be wrongly parked if it has not been parked without payment for a time longer than a predetermined time period. The time limit for which a vehicle may be parked free of charge is thus normally ten minutes.

When a vehicle is deemed to have been wrongly parked in a relevant parking zone after a given predetermined length of time has passed, the computer is caused to store the registration number of the vehicle together with the time at which the parking attendant reported said registration number, wherein the attendant again reports the registration number later on, if the vehicle is still parked, and the computer sends a voice message reporting whether the vehicle is logged-in or not.

The transmission 8 of information between the mobile telephone 1 and the computer 3 takes place via a suitable mobile telephone system or corresponding system. Such a system will include base stations 6 connected to a fixed telephone network 7.

It will be evident that the present invention solves the aforesaid problems. The invention allows a parking attendant, who is constantly connected to the parking system computer, to walk along a street and as he passes a vehicle report the registration number and receive immediately information as to whether or not the vehicle is logged-in, whereafter the attendant takes any necessary steps.

Although the invention has been described above with reference to a number of exemplifying embodiments, it will be understood that the system can be modified with respect to the information in the communication between control unit and system computer.

It will therefore be understood that the present invention is not restricted to the aforescribed embodiments thereof but that variations can be made within the scope of the following Claims.

## CLAIMS

1. A method of controlling a parked vehicle in which a mobile telephone can be used to commence and to terminate parking of a vehicle, wherein a user sends at least one user specific code to a receiving computer (3) belonging to the parking system via a mobile telephone system or via a fixed telephone system when beginning and terminating a parking period, wherein at the beginning of a parking period the identity of the parking zone concerned is sent to the parking system in which a vehicle specific code is stored in said computer (3) and tied to the user specific code, wherein a control unit is provided for wireless communication with said computer to fetch information as to the identity of those vehicles that have commenced but not yet terminated a parking period in the zone concerned, i.e. are still logged into the parking system, and wherein the invention is characterised in that the control unit includes a mobile telephone (1) that sends to a receiving telephone device (2) coupled to said computer (3) a voice message from said attendant which includes a vehicle registration number, wherein the computer (3) compares this registration number with the registration numbers of logged-in vehicles; and wherein the computer (3) is caused to send to the mobile telephone (1) a voice message in which the registration number understood by the computer (3) is repeated in the mobile telephone (1) and which includes information as to whether the vehicle is logged-in or not.
2. A method according to Claim 1, **characterised** in that the computer (3) is arranged to inform the parking attendant, also via said voice message, in which parking zone the vehicle is logged-in.
3. A method according to Claim 2, **characterised** in that in those instances when a vehicle is not deemed to be wrongly parked in a relevant parking zone until a given predetermined length of time has passed, the computer (3) is caused to store the registration number of the vehicle together with the time at which the parking attendant reported said registration number, wherein the parking attendant again reports the registration number later on, if the vehicle is still parked and the computer (3) sends a voice message reporting whether the vehicle is logged-in or not.

4. A method according to Claim 1, 2 or 3, **characterised** in that the receiving telephone arrangement (2) includes a voice interpreting device which functions to interpret the registration number spoken into the mobile telephone (1) by the parking attendant.
5. A method according to Claim 1, 2, 3 or 4, **characterised** in that the mobile telephone (1) of each parking attendant has a unique telephone number and in that this number is detected by the telephone arrangement and stored in the computer (3) together with a message sent by the parking attendant.
6. A method according to Claim 1, 2, 3, 4 or 5, **characterised** in that the voice interpreting device is able to recognise and identify the voice of each parking attendant.
7. A method according to any one of the preceding Claims, **characterised** in that in the event of the computer informing the parking attendant, via the mobile telephone, that a vehicle is not logged-in, the attendant is able to send a confirmation message to the computer by an appropriate entry through the keypad of the mobile telephone or by an appropriate voice message.

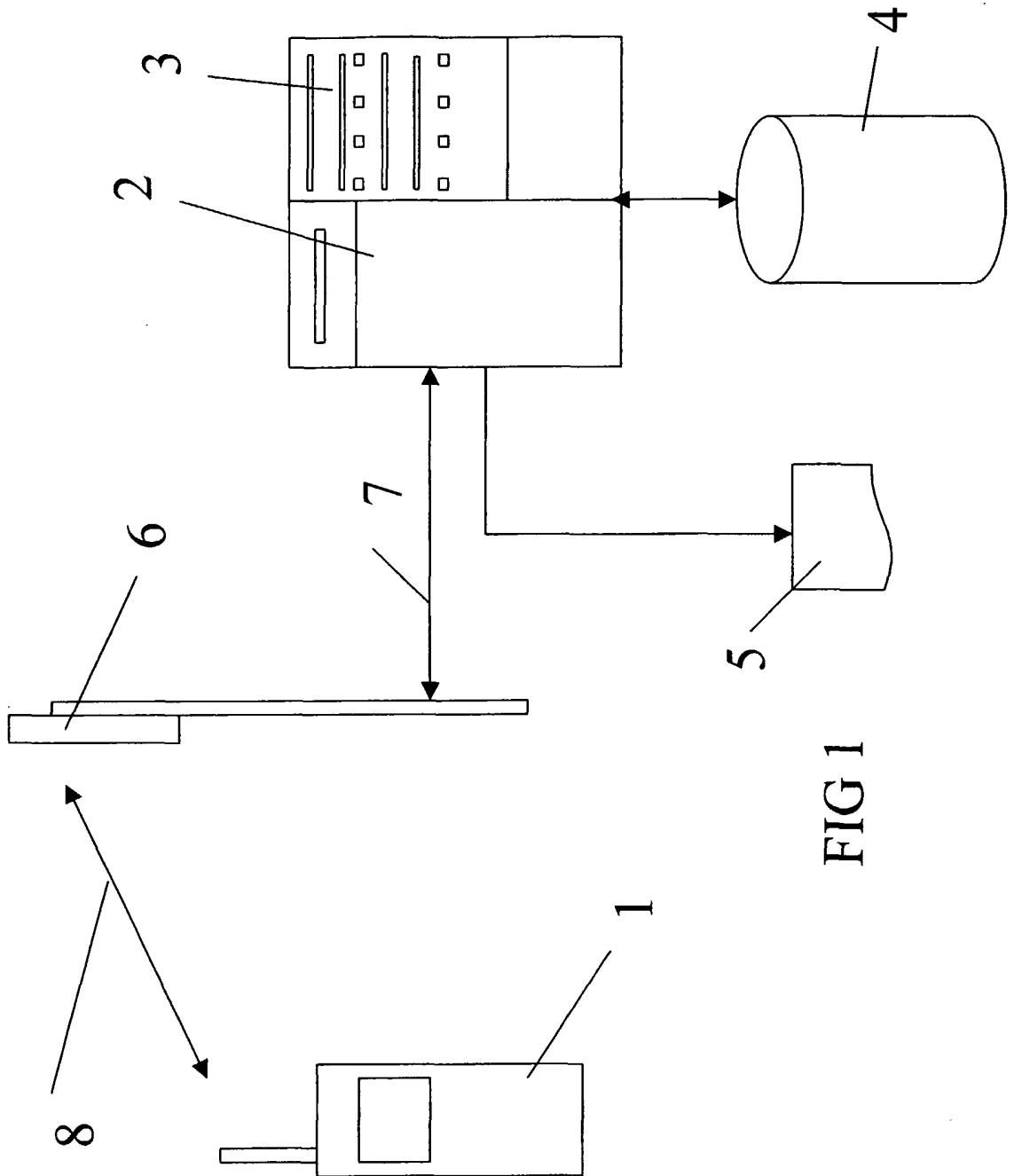


FIG 1

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 03/00052

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G07B 15/02, G07C 1/30, G07F 7/00

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)

IPC7: G07B, G07C, G07F

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

SE,DK,FI,NO classes as above

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

EPO-INTERNAL, WPI DATA, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5263118 A (CORNELISON), 16 November 1993 (16.11.93), column 1, line 66 - column 3, figures 1-3  --	1-7
Y	WO 0116906 A1 (MODUL-SYSTEM SWEDEN AB), 8 March 2001 (08.03.01), column 6 - column 9  --	1-7
Y	WO 9737328 A1 (PARCOFLEX INC.), 9 October 1997 (09.10.97), page 8 - page 9  --	1-7
Y	WO 9611453 A1 (PARKIT OY), 18 April 1996 (18.04.96), claims 10-12  -- -----	1-7

 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 application or patent but published on or after the international filing date

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

"&" document member of the same patent family

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Name and mailing address of the ISA/  
Swedish Patent Office  
Box 5055, S-102 42 STOCKHOLM  
Facsimile No. +46 8 666 02 86

Authorized officer

Inger Löfving / JA A  
Telephone No. +46 8 782 25 00

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

29/03/03

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