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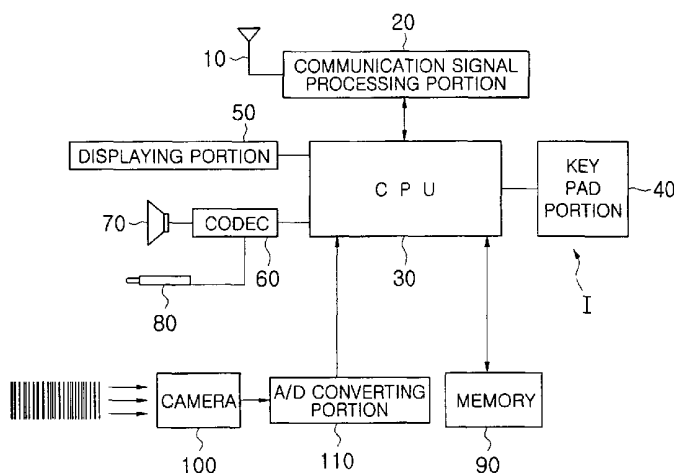
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 - (71) Applicant and
 - (72) Inventor: **KIM, Jung-Yong** [KR/KR]; 503-301, Shin-nae Daelim Apartment, Muk-dong, Jungnang-gu, Seoul 131-140 (KR).
 - (74) Agents: **CHO, Jin-Su** et al.; Byukcheon B/D. 4F, 1597-5, Seocho-dong, Seocho-gu, Seoul 137-876 (KR).
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(54) Title: CERTIFICATE BAR-CODE CIRCULATING METHOD BY MOBILE COMMUNICATION TERMINAL AND COMPUTER READABLE MEDIUM STORED THEREON COMPUTER EXECUTABLE INSTRUCTION FOR PERFORMING THE SAME



(57) Abstract: The present invention relates to a certificate bar-code circulating method by mobile communication terminal and a computer readable medium stored thereon a program for embodying the same. The certificate bar-code circulating method comprises steps of receiving information of the kind of a certificate to be issued and information related to a certificate for issuing the certificate from a client system of a requester connected to an agency system for issuing a certificate bar-code through the communication network; receiving settlement information about the requested certificate bar-code from the requester and verifying if the settlement for the certificate bar-code issuance is possible; receiving a mobile communication terminal phone number of the receiver of the certificate bar-code from the requester and storing the same together with said information related to the certificate in the database of the issuing agency system when the settlement is verified to be possible; transmitting the information related to the certificate transformed into a bar-code data through the system of the mobile communication business proprietor to the receiver's mobile communication terminal by using the phone number.

WO 02/19198 A1

**CERTIFICATE BAR-CODE CIRCULATING METHOD BY MOBILE
COMMUNICATION TERMINAL AND COMPUTER READABLE MEDIUM
STORED THEREON COMPUTER EXECUTABLE INSTRUCTION FOR
PERFORMING THE SAME**

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BACKGROUND OF THE INVENTION

(a) Field of the Invention

The present invention relates to a certificate bar-code circulating method by mobile communication terminal and computer readable medium stored thereon computer executable instruction for performing the same, and more particularly, to a certificate bar-code circulating method by mobile communication terminal in which, when a request of issuing a certificate bar-code is received, a system of issuing agency issues various kinds of certificates possible to circulate on off-line in a bar-code form to a mobile communication terminal that a receiver of the certificate bar-code has and the receiver uses the issued certificate bar-code output from a displaying portion of the mobile communication terminal when needed, and computer readable medium stored thereon computer executable instruction for performing the same.

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(b) Description of the Related Art

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Recently, on off-line, various kinds of valuable certificates certifying that someone who has the same can purchase goods, use facilities, or receive immaterial services such as a merchandise bond; an admission ticket for plays, movies, sports, or else; a coupon for using sports or other facilities; a boarding card for train or airplane, etc are issued and circulated (such various kinds of

valuable certificates issued and circulated on off-line for purchasing or exchanging goods, using facilities, or receiving services are all called certificates hereinafter). The above-mentioned certificates are generally circulated in form of materiality such as paper, plastic sheet, or magnetic or electronic card.

5 Accordingly, the certificates in form of materiality have some defects that someone who wants to receive a certificate should visit a predetermined place to receive a certificate and someone who has already obtained a certificate and wants to use the same should visit a corresponding distributor with carrying the same and present the corresponding certificate. In addition, since the distributor
10 should check if the certificate is true or fake by the naked eye or the computer to provide goods or immaterial services, manpower or any equipment to verify the certificate are required.

 Recently, since the information and communication technology is rapidly developed, the mobile communication terminal such as cellular phone, PCS
15 phone, etc. allowing a voice telephone call, a text message transmission, an image transmission, a connection to internet by WAP(Wireless Application Protocol) is widely spread. Further, the common use of IMT(International Mobile Telecommunication)-2000 terminal or CDMA(Code Division Multiple Access)-2000 terminal called as 'fantastic information and communication apparatus' are also
20 gradually spread.

 The IMT-2000 or CDMA-2000 terminals, next generation mobile communication terminal using a satellite, have an advantage allowing the user to receive services such as voice telephone call, visual telephone call, telex,

facsimile, radio paging, or electronic mail in any place of all over the world. Accordingly, the present mobile communication service where the voice communication service takes the main place will be developed to a mobile communication service based on the IMT-2000 or CDMA-2000 terminals, which
5 can send and receive the high capacity of digital data packet in super-high speed and provide multimedia contents such as moving image or music in real time.

Meanwhile, in the circulation sector of goods, bar-codes are widely used for the systematical distribution and management of goods. The bar-codes are roughly classified into one-dimensional bar-code and two-dimensional bar-code.

10 The one-dimensional bar-code is the one comprising optically readable white bars and black bars each having different thickness one-dimensionally arranged to systematically represent country, manufacturer, number of good, prevention of reading error, etc. and the two-dimensional bar-code is the one comprising
15 optically readable information register unit two-dimensionally arranged in form of matrix not bar to register more amount of information. Now the bar-code is welcomed mainly in the field of distribution and management of goods since the bar-code allows rapidly reading the information registered according to the predetermined rule by bar-code reader and easily grasping the distribution and management status of the goods having bar-code. However, the field using bar-
20 code will be diversified.

Accordingly, the present invention is to overcome the problems of the certificate circulation method according to the conventional art by grafting the bar-code technology welcomed in the field of distribution and management of goods

and the mobile communication technology allowing wirelessly sending and receiving image information for the issuance and circulation of various kinds of certificates.

SUMMARY OF THE INVENTION

5 An object of the present invention is to provide a certificate bar-code circulating method by mobile communication terminal that allows issuing and circulating the certificate, issued and circulated in the form of materiality on off-line, in the form of electronic one by bar-code technology and mobile communication technology.

10 Another object of the present invention is to provide a certificate bar-code circulating method by mobile communication terminal that allows ascertaining the truth of the certificate bar-code issued and circulated in the form of electronic one in real time.

15 Another object of the present invention is to provide a certificate bar-code circulating method by mobile communication terminal that allows using the certificate bar-code in any time and any place when needed by storing the electronic certificate bar-code in the mobile communication terminal.

20 Another object of the present invention is to provide a computer readable medium stored thereon computer executable instruction for performing the certificate bar-code circulating method by mobile communication terminal.

The objects of the present invention are achieved by a certificate bar-code circulating method by mobile communication terminal comprising steps of:

receiving information about the kind of a certificate requested to be issued, information related to the certificate required for issuing the certificate, and a phone number of mobile communication terminal of a receiver of the certificate bar-code from a client system of a requester of the certificate connected to an agency system for issuing the certificate bar-code through the internet; and transmitting the information related to said certificate transformed into a bar-code data to said receiver's mobile communication terminal through a mobile communication business proprietor system.

In the embodiment of the present invention, it is preferable that said issuing agency system is connected to at least more than one distributor client systems through the internet allowing communicating between them, and the certificate bar-code circulating method further comprises a step of transmitting the information related to said certificate to the distributor client system for said distributor to verify if a certificate bar-code to be treated is properly issued.

In the embodiment of the present invention, it is preferable that said issuing agency system is connected to at least more than one distributor client systems through the internet and said distributor accesses said issuing agency system when the certificate bar-code is scanned and requests the authentication for said certificate bar-code.

In the embodiment of the present invention, transforming the information related to said certificate into a bar-code may be performed in said issuing agency system.

In the embodiment of the present invention, transforming the information

related to said certificate into a bar-code may be performed by said mobile communication business proprietor by receiving the information related to said certificate in the form of text data from said issuing agency system. In this case, it is preferable that said mobile communication business proprietor transforms a
5 phone number of the receiver's mobile communication terminal together with the information related to said certificate into a bar-code.

The objects of the present invention are also achieved by a certificate bar-code circulating method by mobile communication terminal comprising steps: receiving information of the kind of a certificate to be issued and information
10 related to a certificate for issuing the certificate from a client system of a requester connected to an agency system for issuing a certificate bar-code through the internet; receiving settlement information about the certificate bar-code requested to be issued from the client system of the requester and making the settlement for the certificate bar-code issuance; receiving a mobile communication terminal
15 phone number of a receiver of said certificate from the client system of the requester and storing the same together with the information related to the certificate in a database of the issuing agency system; and transmitting the information related to the certificate transformed into a bar-code data through the system of the mobile communication business proprietor to the receiver's mobile
20 communication terminal.

The objects of the present invention are also achieved by a certificate bar-code circulating method by mobile communication terminal comprising steps: (a) receiving information of the kind of a certificate to be issued and information

related to a certificate for issuing the certificate from a client system of a requester connected to an agency system for issuing a certificate bar-code through the internet; (b) receiving settlement information about the certificate bar-code requested in the step of (a) from the requester and verifying if the settlement for
5 the certificate bar-code issuance is possible; (c) receiving a mobile communication terminal phone number of the receiver of said certificate, storing the same together with said information related to the certificate in the database of the issuing agency system, and transmitting the same to a client system of a distributor dealing in said certificate bar-code when the settlement is verified to be
10 possible at the step of (b); and (d) transmitting said information related to the certificate in the form of text data to the receiver's mobile communication terminal through the system of said mobile communication business proprietor to form a bar-code of said certificate in the receiver's mobile communication terminal in which transforming text data into bar-code is possible.

15 On the other hand, another object of the present invention can be achieved also by computer readable writing medium stored thereon computer executable instruction for performing the certificate bar-code circulating method by mobile communication terminal. The writing medium includes all kinds of ones whereon programs and data are stored to be read by computer system. For
20 example, ROM(Read Only Memory), RAM(Random Access Memory), CD(Compact Disk)-Rom, DVD(Digital Video Disk)-Rom, magnetic tape, floppy disk, hard disk, optical data storage device, etc. may be mentioned. Further, something implemented in the form of carrier wave(for example, transmission through

internet) is also included. In addition, in such a writing medium, codes which is dispersed in computer systems connected by network and that the computer can read in dispersed way may be stored and executed.

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BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention, and many of the attendant advantages thereof, will be readily apparent as the same becomes better understood by reference to the following detailed description when considered in conjunction with the accompanying drawings in which like reference symbols
10 indicate the same or the similar components, wherein:

Fig. 1 is a block diagram showing the structure of a mobile communication terminal allowing implementation of a certificate bar-code circulating method by mobile communication terminal according to the present invention;

15 Fig. 2 is a structural diagram of network implementing a certificate bar-code circulating method by mobile communication terminal according to the present invention;

Fig. 3 is a flow chart showing an issuing procedure of a certificate bar-code according to the preferred embodiment of the present invention;

20 Fig. 4 is a structural diagram of module of program for processing the bar-code installed in the mobile communication terminal according to the present invention;

Fig. 5 is a flow chart showing a procedure of processing the certificate bar-code in the mobile communication terminal that someone who receives the

certificate has according to the certificate bar-code circulating method by mobile communication terminal of the present invention;

Fig. 6 is a flow chart showing a procedure of processing the certificate bar-code in a distributor according to the certificate bar-code circulating method by mobile communication terminal of the present invention;

Fig. 7 is a diagram for exemplifying various bar-code which may be used as a certificate bar-code according to the certificate bar-code circulating method by mobile communication terminal of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The detailed description of the present invention referring to the experimental examples and embodiments is provided hereinafter. However, the embodiments according to the present invention can be modified in various ways and the claims of the present invention should not be understood to be restricted to the embodiments described below. The embodiments of the present invention are provided to more clearly and easily describe the present invention to a person who has standard knowledge in this technical area.

Fig. 1 is a block diagram showing the structure of a mobile communication terminal allowing implementation of a certificate bar-code circulating method by mobile communication terminal according to the present invention.

According to Fig. 1, a mobile communication terminal I allowing the implementation of the certificate bar-code circulating method according to the

present invention preferably comprises a central processing unit 30 for controlling the whole operation of the mobile communication terminal I; an antenna 10 for receiving or sending communication signal; a communication signal processing portion 20 for processing communication signal that the mobile communication terminal I receives through the antenna 10 or sends through the same; a key pad 5 portion 40 for inputting phone numbers or using various functions provided by the mobile communication terminal I; a displaying portion 50 formed of liquid crystal, etc. for displaying an operating status of the mobile communication terminal I or a processing status of various functions provided by the mobile communication terminal I; a memory 90 for storing a program for processing a certificate bar-code provided according to the present invention or various data connected with the issued bar-code; a speaker 70 for converting voice signal received through the antenna 10 into mechanical vibration energy and outputting voice; a microphone 80 for converting mechanical vibration energy generated in response to voice input through a voice input section of the mobile communication terminal I into electrical voice signal; and Codec 60 connected with the speaker 70 and the microphone 80 for converting an analog signal related to voice into a digital signal or a digital signal related to voice into an analog signal.

When the mobile communication terminal I comprises an image input means for inputting image information of a person who calls, such as a camera 20 100 and an A/D converting portion 110 for digitalizing analog signal photographed by the camera 100, as IMT-2000 or CDMA-2000 terminals do, the camera 100 may be used as a means for scanning a bar-code. In this case, the program for

processing bar-code executed according to the control of the central processing unit 30 of the mobile communication terminal I may include decoding module for decoding the information recorded in the bar-code by deciphering the bar-code scanned by the camera 100 by a predetermined decipherment algorithm such as
5 PDF 417 decipherment algorithm.

Fig. 2 is a structural diagram of network implementing a certificate bar-code circulating method by mobile communication terminal according to the present invention.

According to Fig. 2, a network implementing the certificate bar-code circulating method by the mobile communication terminal I according to the
10 present invention comprises, around an issuing agency system 200, a user client system 300 for requesting the issuance of the certificate bar-code according to the present invention; a mobile communication terminal 330 for receiving, managing and using the certificate bar-code issued according to the present invention; a
15 mobile communication business proprietor system 320 for wirelessly sending the certificate bar-code data provided by the issuing agency system 200 to the mobile communication terminal 330 of a receiver of the certificate; and a client system 310 of a distributor dealing in the certificate bar-code issued according to the present invention. Here, internal system resources of the issuing agency system
20 200 is preferably linked by local area network LAN 240 and a router(not shown) is preferably interposed between the issuing agency system 200 and an external network, internet, to form a network interface.

More precisely referring to the network shown in Fig. 2, the issuing agency

system 200 comprises a web server 210 as a host for processing web documents related to the issuance of the certificate bar-code according to the present invention and communicating with external clients 300 or 310 through the internet; a data managing server 250 for making database out of various information interactively transmitted from the external client 300 or 310 and the external system(not shown) which may be included in the network through business cooperation, etc. in regard to the certificate bar-code circulating method according to the present invention and effectively dispersing the amount of data processing that the web server 210 charges with; a certificate server 260 for processing the authentication for the client system 310 of a distributor; a first database 252 and a second database 262 wherein a large amount of information required for implementing the present invention is registered, updated, and deleted with being linked with the data managing server 250 and the certificate server 260; and an internal client system 270 for managing various system resources inside the issuing agency system 200.

The first and second databases 252 and 262 may be build up as a relational database, distributed database, object-oriented database, etc. The relational database with easy extensibility is preferred, but not being limited to the same.

More particularly, the first database 252 preferably comprises a member information storage section for registering and managing the member's information such as ID, secret number, identification number, address, number of mobile communication terminal, etc.; a certificate bar-code issuing particulars

information storage section for registering and managing the number of mobile communication terminal that receives the certificate bar-code and various information related to the issuance of the certificate bar-code such as the kind of the certificate and the information about goods, facilities, or services purchased, used, or provided by the certificate; a settlement information storage section for registering and managing the information about who requests the issuance of the certificate bar-code used for settlement and the information related to settlement such as settlement method, settlement date, settlement amount, settlement distributor, etc in case that the settlement is made. However, the construction of the first database 252 is not limited to the same.

The second database 262 preferably comprises an authentication key information storage section wherein the authentication key of the certificate bar-code issued from the certificate server 260 is registered when the certificate bar-code is issued according to the present invention. Further, it is more preferable to build up the authentication key information storage section to connect the information of who requests to issue the certificate with the authentication key of the issued certificate bar-code.

The issuing agency system 200 may further comprise a firewall server 232 or an intrusion detection server 230. In this case, the firewall server 232 is positioned between the external network such as internet and the internal network(the issuing agency system 200) to detect intrusion from the external network and protect the internal network information and the system resources. In other words, the information and the system resources of the internal network are

prevented from trouble arising by not allowing access from the external network into the internal one without passing through the firewall server 232. In addition, the intrusion detection server 230 intercepts that a user unauthorized for the internal network approaches to the system resources and the information requiring security of the internal network and does illegal thing.

The user client system 300 that the requester of the certificate bar-code uses may be a lap-top computer of a person or a company. The user client system 300 preferably comprises fundamental hardwares such as a displaying device such as monitor, an input device such as keyboard or mouse, a processor for processing data, a storing medium, and a communication device such as modem or LAN card. In addition, it is preferable that an operating system supporting graphic user interface function such as Windows series of Microsoft and a web browser receiving various web documents provided from the web server 210 of the issuing agency system 200 and displaying the same as a graphic interface, for example, Explorer(trade mark) of Microsoft or Navigator(trade mark) of Netscape are fundamentally installed in the user client system 300. On the other hand, the user client system 300, according to circumstances, may be a mobile communication terminal that can connect with the web server 210 of the issuing agency system 200 through the wireless internet by the widely known wireless internet protocol such as WAP(Wireless Application Protocol. In this case, the issuing agency system 200 preferably comprises a WAP server 280 providing a network interface allowing using the internal system resources of the issuing agency through wireless internet.

The client system 310 of the distributor preferably comprises a bar-code scanner 314 for scanning the certificate bar-code issued according to the present invention and output on the displaying portion 50 of the mobile communication terminal I of the certificate receiver and a database of itself 312 wherein the transmitted information is stored when the information related to the certificate bar-code issued according to the inventive method described below is transmitted from the issuing agency system 200 through the internet.

The database of itself 312 preferably comprises a storage section of information about particulars of issuing the certificate bar-code and a storage section of information about particulars of using certificate bar-code. In the storage section of information about particulars of issuing the certificate bar-code, the information related to the certificate bar-code transmitted from the issuing agency system 200 is registered and in the storage section of information about particulars of using certificate bar-code, the information about particulars of using certificate bar-code is registered. In addition, the client system 310 of the distributor preferably includes a decoding module allowing decoding the information recorded in the bar-code by deciphering the certificate bar-code scanned by the bar-code scanner 314 by using a predetermined decipherment algorithm such as PDF 417 decipherment algorithm to be executed when required.

Fig. 3 is a flow chart showing an issuing procedure of a certificate bar-code according to the preferred embodiment of the present invention.

According to Fig. 3, first, a requester of a certificate accesses to the web server 210 of the issuing agency system 200 by the user client system 300 at the

stage of S10. Then, at the stage of S20, the issuing agency system 200 provides a main web page allowing the requester's access to various web interfaces related to the issuance of the certificate bar-code after the member authentication of the requester to the user client system 300 through the internet. Next, the requester navigates the main web page to approach to various web interfaces related to the issuance of the certificate bar-code and requests a web page for member authentication comprising the interface for member authentication. The issuing agency system 200 provides the web page for member authentication to the client system 300 of the requester at the stage of S30. The requester requests the member authentication by inputting the information for member authentication, i.e. ID and secret number. Then, the issuing agency system 200 verifies if the requester who requests the member authentication is a registered member or not by using the member information storage section inside the first database 252 at the stage of S40.

When the requester is verified not to be a member at S40, a web page comprising a member registration interface is provided for the requester to register as a member by inputting the information required for member registration at the stage of S40. The information input for member registration may comprise ID, secret number, identification number, address, name, age, gender, phone number, e-mail address, phone number of mobile communication terminal, etc. When the requester of the certificate is verified to be a member at S40, a web page for issuing the certificate bar-code is provided to the client system 300 of the requester. The web page for issuing the certificate bar-code preferably comprises

a web navigation including an interface for choosing the kind of certificate to be issued and an interface for inputting the information related to the issuance of the chosen certificate. Here, the information related to the certificate to be issued means the information precisely defining goods, facilities, or services purchased, used, or provided through the certificate. The precise example for the same is described below.

When the web page for issuing the certificate bar-code is provided at the stage of S50, the requester of the certificate determines if he/she receives the certificate bar-code at that time at the stage of S60. When the requester determines not to receive the certificate bar-code at that time, he/she may use another additive services at the stage of S65, and when the requester determines to receive the same, he/she may access the interface for choosing the kind of certificate bar-code to be issued and the interface for inputting the information related to the certificate issuing of the web page for issuing the certificate bar-code and provide the information required for issuing the certificate bar-code to the issuing agency system 200 through the internet. Hereinafter, the embodiment of the present invention is described by specifying the certificate as an admission ticket for movie to precisely describe the present invention. However, there is no wonder for those skilled in the art that the certificate provided in the form of bar-code according to the present invention is not limited to an admission ticket for movie.

More precisely, the requester chooses an admission ticket for movie as a certificate to be issued through the interface for choosing the kind of certificate,

inputs the information required for issuing the admission ticket for movie such as name of movie theater, number or name of screening hall, title of the movie to see, screening date, screening time, number of tickets, etc. through the interface for inputting the information related to the certificate issuing and provide the information to the issuing agency system 200. Then, the requester requests a web page for settlement including a settlement interface for paying the certificate to be issued from the issuing agency system 200 at the stage of S80. The issuing agency system 200 provides the web page for settlement to the client system 300 of the requester through the web server 210 and the requester requests the settlement of the certificate to be issued by inputting the information related to the settlement on the web page for settlement and transmitting the information to the issuing agency system 200.

As a method for settlement through the web page for settlement, various methods for settlement known to those skilled in this art may be used. For example, methods for settlement by credit card, cyber money, depositing without bankbook within a fixed period of time, phone number of mobile communication terminal(a method that the cost for the certificate settlement is charged together with the rate for using mobile communication terminal), etc may be mentioned. Accordingly, the web page for settlement preferably comprises a web interface allowing the requester personally to choose the method for settlement. The information required for settlement of the predetermined certificate issuing cost according to each settlement method is already known to those skilled in the art, so the detailed description is omitted.

When the requester provides the kind of the settlement method and the information required for the settlement according to the chosen settlement method to the issuing agency system 200 through the web page for settlement at the stage of S80, the issuing agency system 200 checks, at the stage of S90, if the settlement according to the chosen settlement method is possible at that time when the settlement is requested. For example, in case that the requester chooses the settlement by credit card, the issuing agency system 200 checks if the settlement for the cost of the certificate to be issued, i.e. the admission ticket for movie by credit card is available through the payment gateway. The issuing agency system 200 performs operation for settlement when the settlement for the same by credit card is verified to be available and provides an error message that the settlement is not possible to make to the client system 300 of the requester at the stage of S95 when not available.

When the settlement for the admission ticket for movie is successfully made at the stage of S90, the issuing agency system 200 provides a web page including a certificate receiver information input interface allowing inputting the phone number of the receiver's mobile communication terminal 330 at the stage of S100. At this moment, the receiver may be the requester him/herself or another person whose phone number of mobile communication terminal 330 is known to the requester. The requester inputs the information related to the certificate receiver such as phone number of mobile communication terminal 330, name, gender, etc. on the web page for inputting the information of the certificate receiver and provides the information to the issuing agency system 200 through

the internet. Then, the issuing agency system 200 stores the information that the requester provides to receive the admission ticket for movie in a corresponding information storage section in the first database at the stage of S110. More precisely, the issuing agency system 200 stores the information related to the admission ticket for movie, i.e. name of movie theater, number or name of screening hall, title of the movie to see, screening date, screening time, number of tickets, and the phone number of mobile communication terminal 330 of the receiver matched with the member information of the requester(for example, member ID) in the certificate bar-code issuing particulars information storage section in the first database 252. At the same time, the issuing agency system 200 issues the authentication key to certify the certificate bar-code when the certificate bar-code is used after issuing the same and stores the authentication key in the certificate bar-code authentication key information storage section in the second database 262 synchronized with the certificate server 260.

Next, the issuing agency system 200 enciphers, at the stage of S120, the information related to the certificate to be issued, i.e. the admission ticket for movie(for example, name of movie theater, number or name of screening hall, title of the movie to see, screening date, screening time, and number of tickets) and the authentication key by using an encryption algorithm, for example, the Hash algorithm. Then, the enciphered information is transformed into a bar code by using a bar code technique well known to those skilled in the art, for example, a PDF417 2D bar code technique. When the amount of information of the certificate to be issued is a lot as in case of the admission ticket for movie, it is preferable to

use a two-dimensional bar-code instead of a one-dimensional one.

Fig. 7 is a diagram for exemplifying various bar-code which may be used as a certificate bar-code according to the certificate bar-code circulating method by mobile communication terminal of the present invention. In order from left upper portion to lower portion, Code Block, Code 49, Code 16, and QR Code are shown and in order from right upper portion to lower portion, Maxi Code, Data Matrix, and PDF-417 are shown in Fig. 7. There is no wonder for those skilled in the art that what type of bar-code among those shown in Fig. 7 is used for the certificate bar-code circulating method according to the present invention is not important.

Then, the issuing agency system 200 transmits, at the stage of S130, the data transformed into the bar-code to the mobile communication business proprietor system 320 and the mobile communication business proprietor system 320 transmits the certificate bar-code data to the mobile communication terminal 330 of the receiver of the certificate through the wireless communication network. At this moment, it is preferable to transmit a simple text data providing the information about bar-code(for example, the information about the kind of the certificate bar-code) together with the bar-code data. Since such transmission of data can be made by a similar method to that of a text message service provided by the mobile communication business proprietor at the present time, a cooperating system between the mobile communication business proprietor and the issuing agency should be made in advance to provide such services.

Next, the issuing agency system 200 transmits, at the stage of S140, the

bar-code issuing particulars(the information including the information registered at the bar-code for the admission ticket for movie and the authentication key) to the client system 310 of the corresponding distributor for the corresponding distributor to easily verify if the bar-code for the admission ticket for movie presented by the receiver is properly paid and issued. Then, the client system 310 of the distributor registers the information transmitted from the issuing agency system 200 at the certificate bar-code issuing particulars information storage section in the database 312 of its own and uses the same information for the authentication of the corresponding certificate bar-code when the receiver uses the certificate bar-code. Finally, the issuing agency system 200 transmits, at the stage of S150, a notice text message(for example, 'The certificate bar-code is issued. Please use the same in the fixed period of time!') more than one time at least through the mobile communication business proprietor for the receiver to use the certificate bar-code in time.

Fig. 4 is a structural diagram of module of program for processing the bar-code installed in the mobile communication terminal according to the present invention.

Referring to Fig.4, the program for processing the bar-code preferably comprises a first module 340 for informing the receiver of the receipt of the certificate bar-code image data by a graphic interface and storing the received data in the memory 90 when the certificate bar-code image data issued by the issuing agency system 200 is received; a second module 350 for outputting the information of the kind of the certificate bar-code stored in the memory 90 listed in

a predetermined order(for example, in received order) to the displaying portion 50 of the mobile communication terminal I when the receiver requests the information; a third module 360 for extracting detailed information related to the certificate registered in the bar-code image data by decoding the bar-code image data stored in the memory 90 and displaying a predetermined format of extracted information on the displaying portion 50 of the mobile communication terminal I in response to the request of the receiver; a forth module 370 for deleting a certificate bar-code data stored in the memory 90 in response to the request of the receiver; a fifth module 380 for displaying a predetermined certificate bar-code data stored in the memory 90 on the displaying portion 50 of the mobile communication terminal I through a graphic interface in response to the request of the receiver; a sixth module 390 for transforming the text type information to be registered in the certificate bar-code transmitted from the issuing agency system 200 to the mobile communication terminal I into a bar-code by using an encryption algorithm such as PDF 417 encryption algorithm and outputting the bar-code image on the displaying portion 50; and a seventh module 400 for deciphering the information registered in the bar-code scanned by the camera 100 comprised in the mobile communication terminal I by a decipherment algorithm such as PDF 417 decipherment algorithm.

Fig. 5 is a flow chart showing a procedure of processing the certificate bar-code in the mobile communication terminal I belonging to the receiver according to the certificate bar-code circulating method by mobile communication terminal of the present invention.

Referring to Fig. 5, at the stage of F10, the receiver of the certificate transmits the instruction of executing the bar-code processing program stored in the memory 90 to the central processing unit 30 through the key pad portion comprised in his/her mobile communication terminal 330. Then, the central processing unit 30 operates the bar-code processing program stored in the memory 90 and provides a 'bar-code selecting menu' for selecting the certificate bar-code stored in the displaying portion 50 of the mobile communication terminal 330 at the stage of F20. Next, when the receiver selects a 'bar-code selecting menu' through the key pad portion 40, the central processing unit 30 lists the bar-code information (for example, the information of the kind of the certificate bar-code) stored in the memory 90 in a predetermined order and provides the same to the receiver by the second module at the stage of F30. The receiver of the certificate selects the certificate bar-code that he/she wants to verify from the list of the certificate bar-code and requests the central processing unit 30 to provide the detailed information of the selected certificate bar-code at the stage of F40. The central processing unit 30 displays, at the stage of F50, the detailed information of the selected certificate bar-code on the displaying portion 50 of the mobile communication terminal 330 by using the third module. Here, the detailed information of the certificate bar-code is preferably the information related to the certificate issuing registered in the certificate bar-code. For example, when the certificate bar-code selected by the receiver is an admission ticket for movie, the detailed information of the certificate bar-code may be name of movie theater, number or name of screening hall, title of movie, screening date, screening time,

and number of ticket, but not limited to the same. When the detailed information of the certificate bar-code is output, a 'bar-code image view menu' for displaying the bar-code image on a predetermined area of the displaying portion 50 is output. When the receiver selects the bar-code image view menu, the central processing unit 30 displays, at the stage of F60, the selected certificate bar-code in the form of image on the displaying portion 50 of the mobile communication terminal 330 by using the fifth module. When the function outputting the detailed information of the certificate bar-code through the displaying portion 50 of the mobile communication terminal 330 is embodied, the same may be embodied by the central processing unit's 30 using the third module or by the issuing agency system's 200 transmitting the detailed information of the certificate bar-code in the form of text together with the bar-code image data to the mobile communication terminal 330. In addition, there is no wonder for those skilled in the art that the bar-code processing program may provide a menu navigation allowing deleting the certificate bar-code data stored in the memory 90 in response to the receiver's request input through the key pad portion 40.

Fig. 6 is a flow chart showing a procedure of processing the certificate bar-code in a distributor according to the certificate bar-code circulating method by mobile communication terminal of the present invention.

Referring to Fig. 6, the receiver of the certificate operates the bar-code processing program by using the key pad portion 40 of the mobile communication terminal, selects the certificate bar-code he/she wants to use at that time among received ones, and displays the certificate bar-code image on the displaying

portion 50 of the mobile communication terminal 330 at the stage of G10. Next, at the stage of G20, in the distributor, the certificate bar-code image output on the receiver's mobile communication terminal 330 is scanned by the bar-code scanner 314 synchronized with the client system 310 of the distributor to input the bar-code image into the client system 310 of the distributor. Then, the bar-code decoding module operating in the client system 310 of the distributor extracts the information related to the certificate issuing and authentication key registered in the bar-code by decoding the scanned certificate bar-code. The client system 310 of the distributor certifies, at the stage of G30, the certificate bar-code scanned at that moment by searching the certificate bar-code issuing particulars information storage section stored in the database of its own by using the information related to the certificate issuing and the authentication key.

When the certificate bar-code scanned at that moment is certified as one properly issued by the issuing agency system 200 at G30, the client system 310 of the distributor registers, at the stage of G40, the fact that the certificate is used in the using particulars information storage section of the database of its own and provides, at the stage of G50, an admission ticket for movie as the detailed information scanned to the receiver of the certificate.

However, when the certificate bar-code scanned at that moment is certified as not properly issued one at G30, the client system 310 of the distributor requests, at the stage of G60, the authentication by transmitting the information about the scanned certificate bar-code(for example, the extracted authentication key) to the issuing agency system 200 and waits for the authentication of the

above-mentioned certificate bar-code from the issuing agency system 200. Then, the certificate server 260 of the issuing agency system 200 performs an authentication process to the certificate bar-code requested to be certified by searching the authentication key information storage section in the second database 262 by using the certificate bar-code information(for example, the extracted authentication key) transmitted at the stage of G60. When the certificate bar-code requested to be certified is properly issued by the issuing agency system 200 is certified and the authentication admission code is transmitted to the client system 310 of the distributor, the client system 310 stores the admission particulars information in the database 312 of its own and provides a actual admission ticket for movie according to the certificate bar-code at the stage of G80. On the contrary, when the admission for the certificate bar-code requested to be certified is not made at the stage of G70, the client system 310 notifies the receiver of the certificate that the certificate bar-code cannot be used at the stage of G90.

So far the preferred embodiment of the certificate bar-code circulating method by the mobile communication terminal according to the present invention is described in detail. As shown in Figs. 3 to 6 and detailed description of the present invention referred to the same, the preferred embodiment of the present invention described above is about a case that when the issuing agency system 200 transforms the certificate to be issued into a bar-code image and transmits the certificate bar-code image to the mobile communication terminal 330 of the receiver of the certificate, the receiver uses the transmitted certificate bar-code

image, which is stored in the memory 90 of the mobile communication terminal 330, at the distributor.

However, in some case, the issuing agency system 200 may not transmit the certificate bar-code of itself formed at the stage of S120 to the receiver's mobile communication terminal 330, but transmit the information of kind of the certificate bar-code only to the mobile communication terminal 330 after registering the formed certificate bar-code in the first database 252 by receivers. In this case, the precise description of the procedure that the receiver of the certificate uses the certificate bar-code at a distributor is as follows.

<Case 1: In case that the requester of the certificate bar-code and the receiver of the certificate are the same person, or although different, the receiver of the certificate is already registered in the issuing agency system 200>

First, the receiver of the certificate visits the off-line distributor and accesses the issuing agency system 200 through a member log-in by using the mobile communication terminal 330. In this case, the WAP server 280 of the issuing agency system 200 should form a network interface between the issuing agency system 200 and the receiver's mobile communication terminal 330. Next, the receiver of the certificate requests a WAP interface allowing calling the certificate bar-code issued for him/her from the issuing agency system 200 and the issuing agency system 200 provides a WAP interface allowing calling the receiver's certificate bar-code in the database to the receiver's mobile communication terminal 330. The receiver may receive the certificate bar-code in graphic interface through the displaying portion 50 of the mobile communication

terminal 330 by calling a certificate bar-code he/she wants to use at that time among certificate bar-codes issued for him/her from the first database 252 of the issuing agency system 200 by the WAP interface. Then, the receiver presents the certificate bar-code in graphic interface displayed on the displaying portion 50 of the mobile communication terminal 330 and the client system 310 of the distributor treats the certificate bar-code according to the practically same procedure as that from G20 to G90 in Fig. 6.

<Case 2: In case that the requester of the certificate bar-code and the receiver of the certificate are different and the receiver of the certificate is not registered in the issuing agency system 200>

In this case, the receiver may call the certificate bar-code on the displaying portion 50 of the mobile communication terminal and use the same through the practically same procedure as that of the case 1 except that the receiver should go through the stages of member registration and member certification when he/she accesses the issuing agency system 200 through the wireless network by the mobile communication terminal 330. The client system 310 of the distributor treats the certificate bar-code according to the practically same procedure as that from G20 to G90 in Fig. 6.

The above-described certificate bar-code circulating method by the mobile communication terminal according to the present invention is not restricted to the above-mentioned embodiment, but variously modified within the scope of the art. For example, the bar-code forming module and the decoding module in the mobile communication terminal I may be embodied as a hardware module.

Plus, contrary to the above-described embodiment, it may also be possible that the issuing agency transmits text data only to be registered in the bar-code and the mobile communication business proprietor transforms the same into bar-code. In this case, the peculiar number of the receiver's mobile communication terminal 330 that the mobile communication business proprietor knows may be further included in the information to be transformed into bar-code. Then, it is more difficult to improperly issue or duplicate the certificate bar-code. Further, it may also possible that the certificate issuing particulars in the form of text is transmitted to the receiver's mobile communication terminal 330 and transformed into the bar-code in the receiver's mobile communication terminal 330. Further, the issuing agency and the mobile communication business proprietor may be the same.

Finally, according to the characteristics of the certificate, it may also be possible that the issuing agency does not provide any information to the distributor at the time of issuance and the distributor accesses the issuing agency and receives the authentication of the certificate bar-code at the time that the distributor treats the certificate bar-code in the receiver's mobile communication terminal 330.

According to an aspect of the present invention for users, since the certificate bar-code is wirelessly received through the mobile communication terminal widely used and always carried, there is no time and space limit and there is no need to carry another certificate.

According to another aspect of the present invention for distributors, the

manpower required for verifying if the certificate is true or fake and for inputting and managing data may be reduced.

While the present invention has been described in detail with reference to the preferred embodiments, those skilled in the art will appreciate that various
5 modifications and substitutions can be made thereto without departing from the spirit and scope of the present invention as set forth in the appended claims.

WHAT IS CLAIMED IS:

1. A certificate bar-code circulating method by mobile communication terminal comprising steps of:

receiving information about the kind of a certificate requested to be issued,
5 information related to the certificate required for issuing the certificate, and a
phone number of mobile communication terminal of a receiver of the certificate
bar-code from a client system of a requester of the certificate connected to an
agency system for issuing the certificate bar-code through the internet; and

transmitting the information related to said certificate transformed into a
10 bar-code data to said receiver's mobile communication terminal through a mobile
communication business proprietor system.

2. The method according to claim 1, wherein said issuing agency
system is connected to at least more than one distributor client systems through
15 the internet allowing communicating between them, and further comprises a step
of transmitting the information related to said certificate to the distributor client
system for said distributor to verify if a certificate bar-code to be treated is properly
issued.

20 3. The method according to claim 1, wherein said issuing agency
system is connected to at least more than one distributor client systems through
the internet and said distributor accesses said issuing agency system when the
certificate bar-code is scanned and requests the authentication for said certificate

bar-code.

4. The method according to claim 1, wherein transforming the information related to said certificate into a bar-code is performed in said issuing agency system.

5. The method according to claim 1, wherein transforming the information related to said certificate into a bar-code is performed by said mobile communication business proprietor by receiving the information related to said certificate in the form of text data from said issuing agency system.

6. The method according to claim 5, wherein said mobile communication business proprietor transforms a phone number of the receiver's mobile communication terminal together with the information related to said certificate into a bar-code.

7. A certificate bar-code circulating method by mobile communication terminal comprising steps:

(a) receiving information of the kind of a certificate to be issued and information related to a certificate for issuing the certificate from a client system of a requester connected to an agency system for issuing a certificate bar-code through the internet;

(b) receiving settlement information about the certificate bar-code

requested to be issued from the client system of the requester and making the settlement for the certificate bar-code issuance;

(c) receiving a mobile communication terminal phone number of a receiver of said certificate from the client system of the requester and storing the same together with the information related to the certificate in a database of the issuing agency system; and

(d) transmitting the information related to the certificate transformed into a bar-code data through the system of the mobile communication business proprietor to the receiver's mobile communication terminal.

8. A certificate bar-code circulating method by mobile communication terminal comprising steps:

(a) receiving information of the kind of a certificate to be issued and information related to a certificate for issuing the certificate from a client system of a requester connected to an agency system for issuing a certificate bar-code through the internet;

(b) receiving settlement information about the certificate bar-code requested in the step of (a) from the requester and verifying if the settlement for the certificate bar-code issuance is possible;

(c) receiving a mobile communication terminal phone number of the receiver of said certificate, storing the same together with said information related to the certificate in the database of the issuing agency system, and transmitting the same to a client system of a distributor dealing in said certificate bar-code

when the settlement is verified to be possible at the step of (b); and

(d) transmitting said information related to the certificate in the form of text data to the receiver's mobile communication terminal through the system of said mobile communication business proprietor to form a bar-code of said certificate in the receiver's mobile communication terminal in which transforming
5 text data into bar-code is possible.

9. A computer readable medium stored thereon a program for embodying the certificate bar-code circulating method by mobile communication
10 terminal according to any one of claims 1 to 8.

1 / 7
FIG. 1

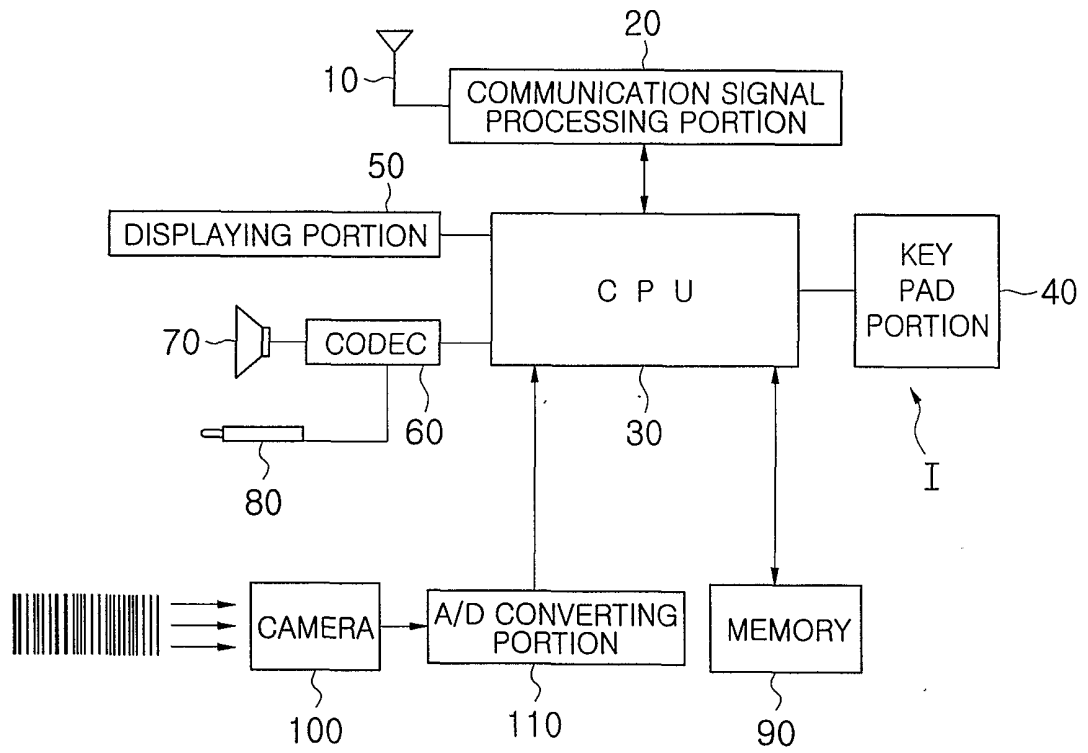
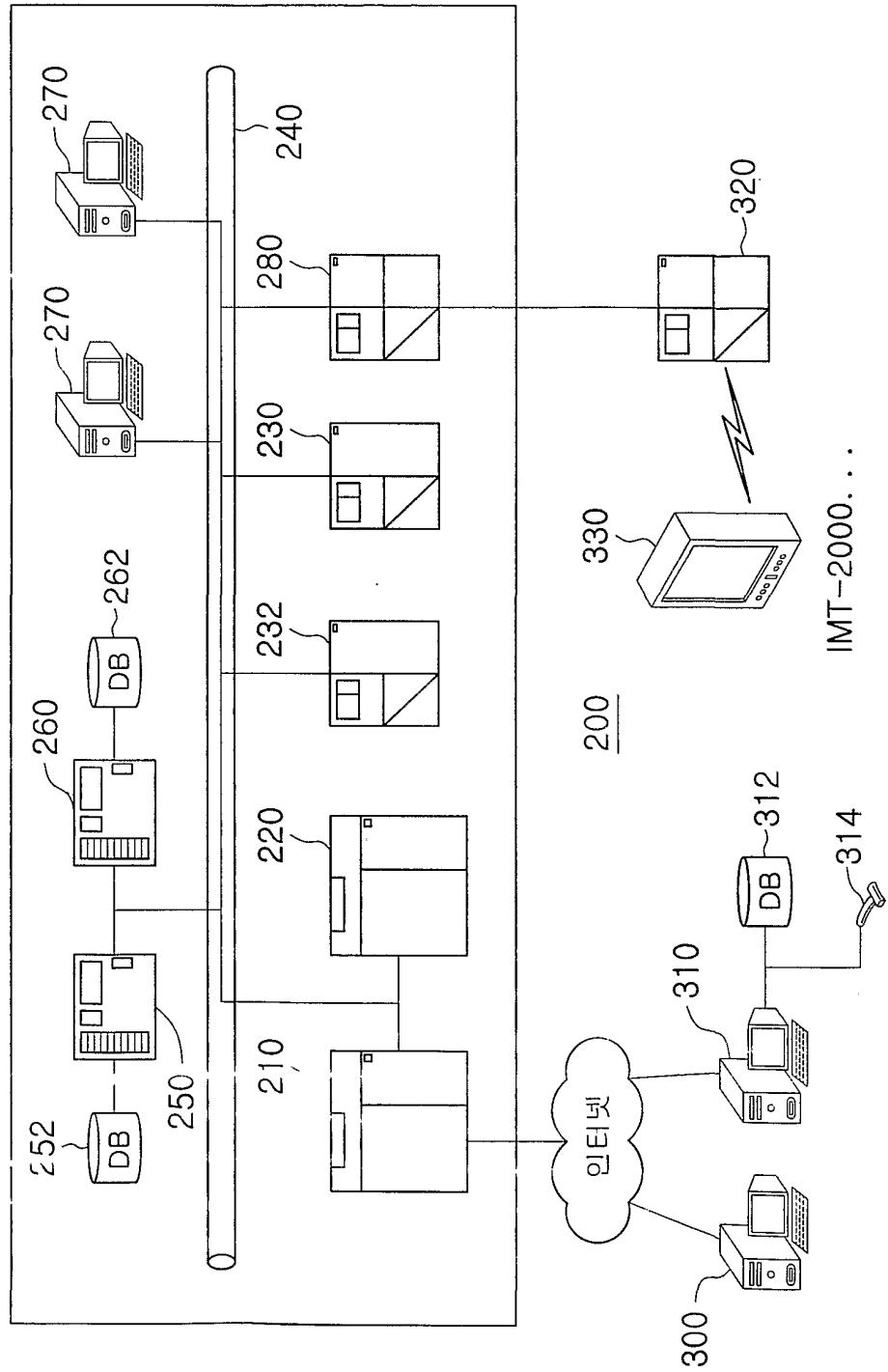


FIG.2



3 / 7
FIG.3

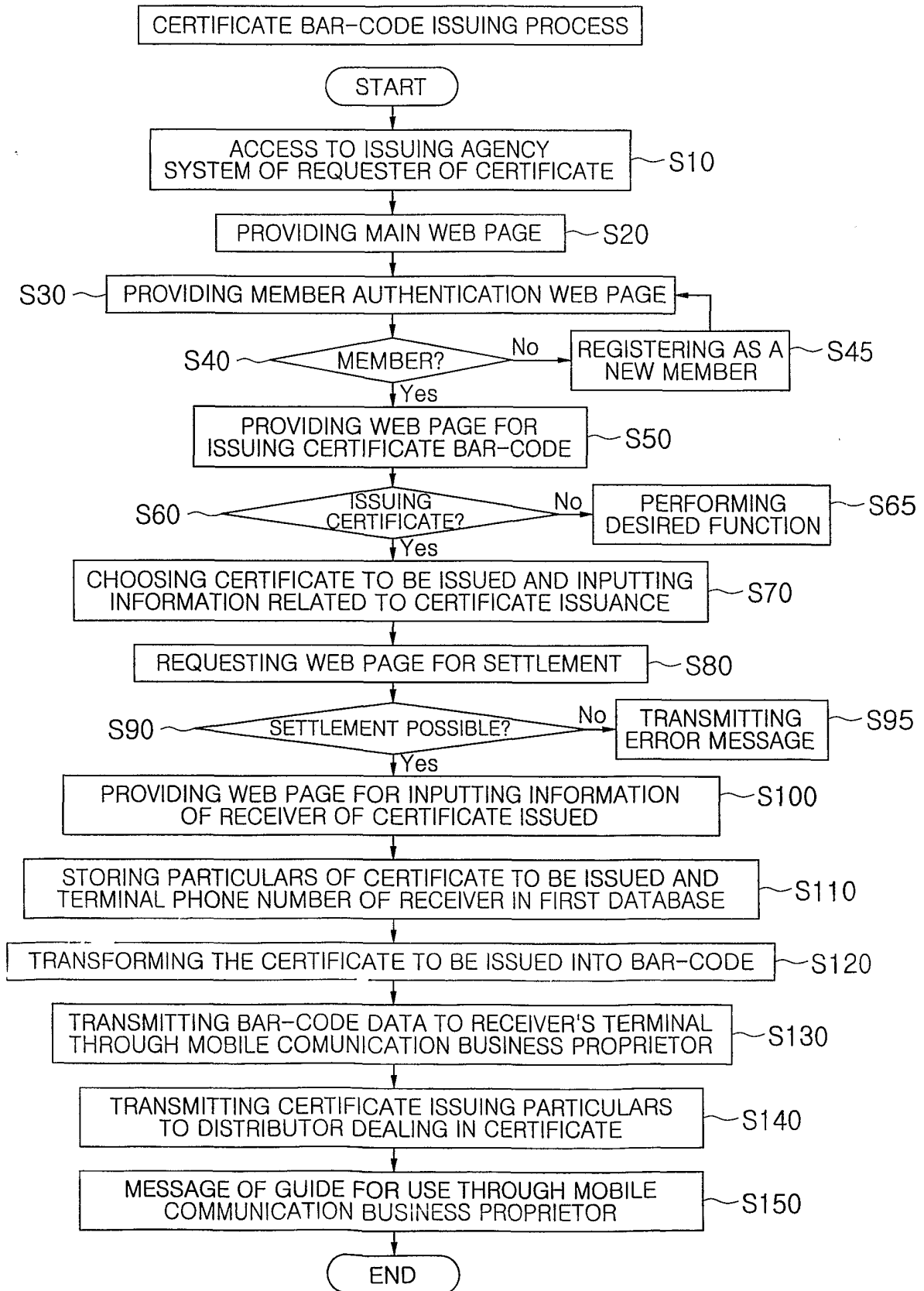
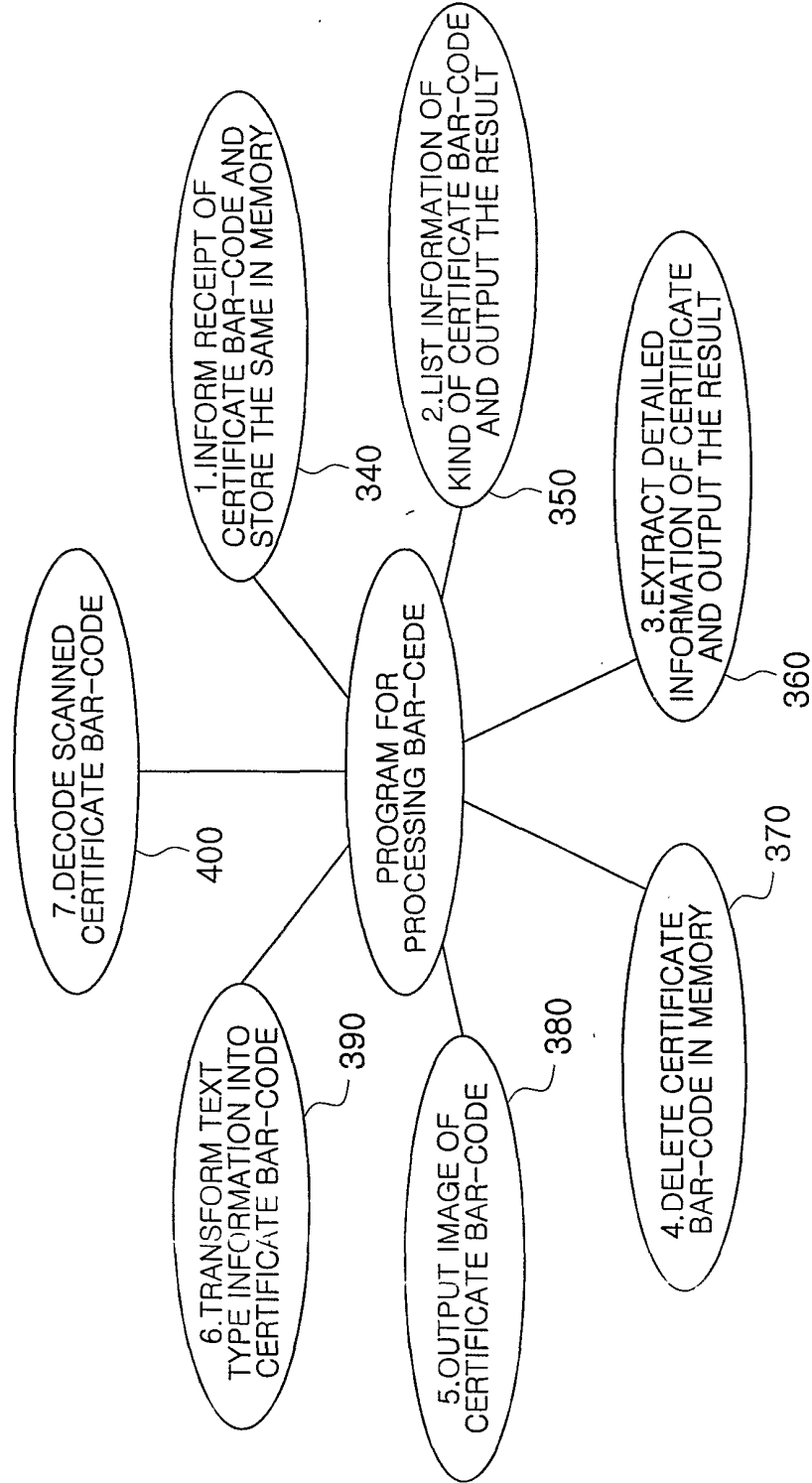
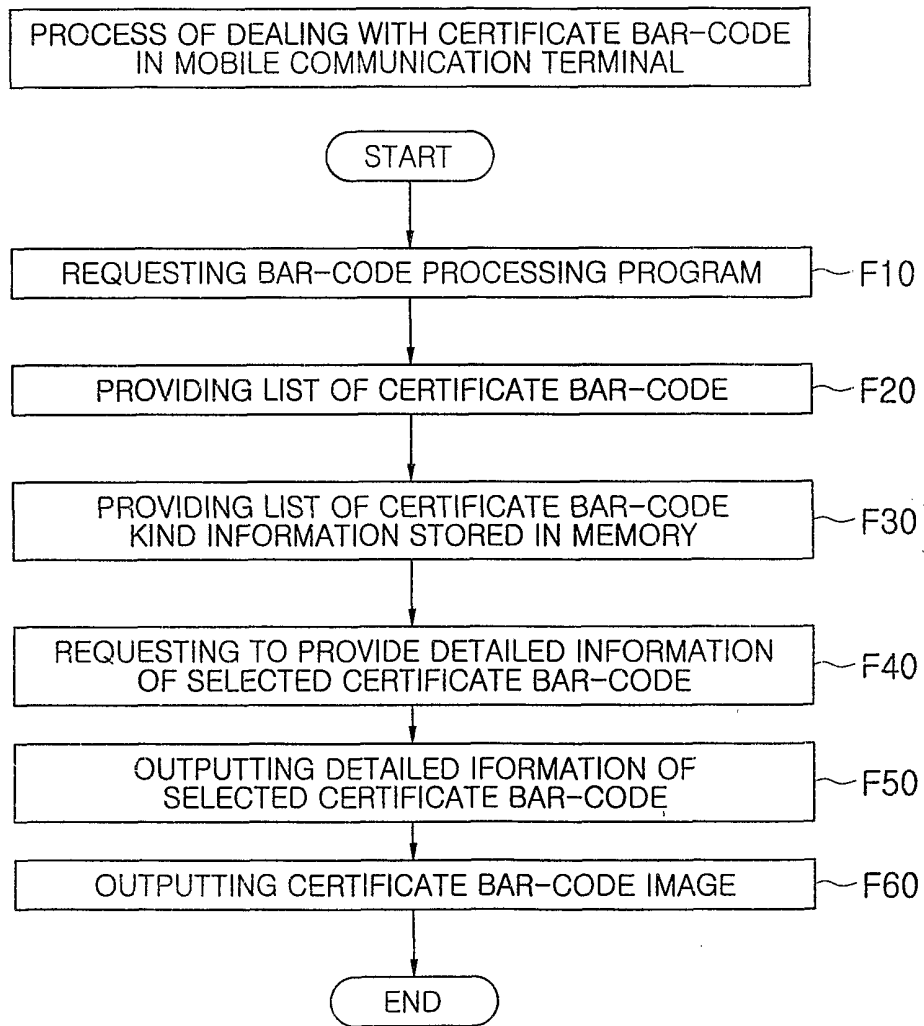


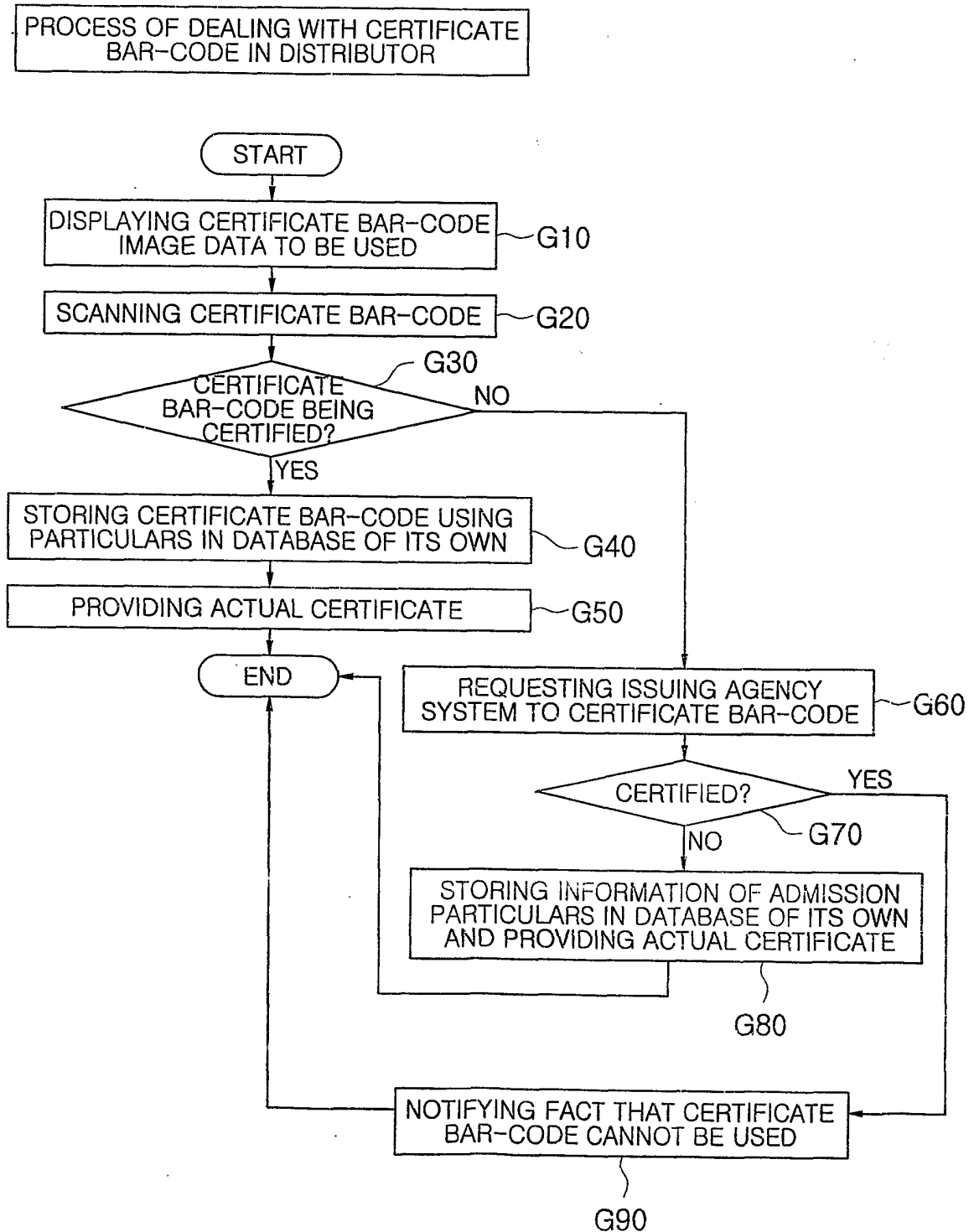
FIG.4



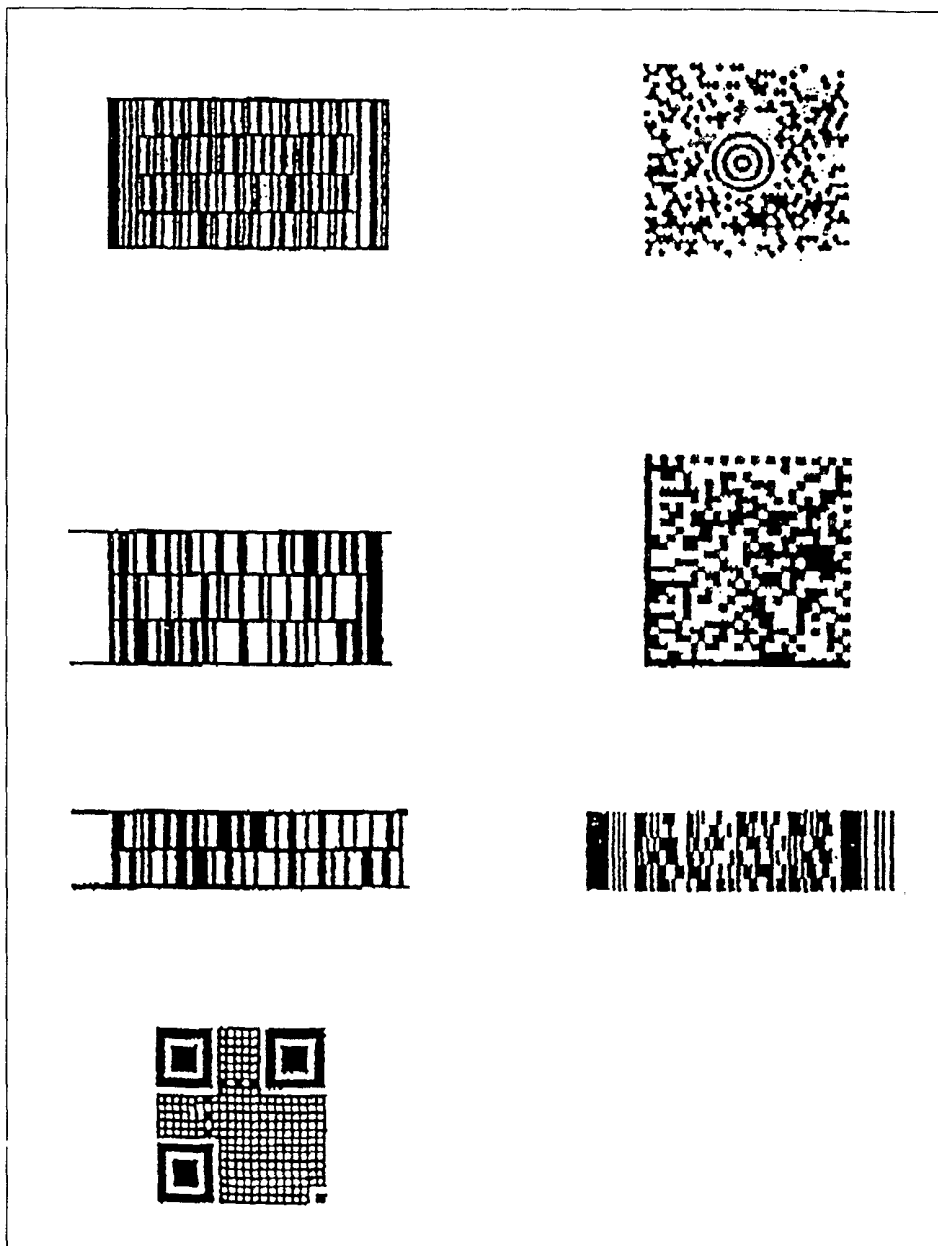
5/ 7
FIG.5



6 / 7
FIG. 6



7 / 7
FIG.7



INTERNATIONAL SEARCH REPORT

National application No.
PCT/KR01/01413

A. CLASSIFICATION OF SUBJECT MATTER
IPC7 G06F 17/60, G06F 19/00
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 G06F 17/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Korean Patents and Applications for Inventions since 1975
Korean Utilities and Applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
http://www.kipo.go.kr(Domestic Search System in the Korean Intellectual Property Office)"internet broadcast server link"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	KR01-0074624(OH SUN HONG) 04 AUGUST 2001 * whole document	1-9
A	KR01-0064678(SAMSUNG ELETRONIC Co.,Ltd.) 11 JULY 2001 * whole document	1-9
A	KR00-0057247(METROLOGIC INSTRUMENTS INCOPORATED) 15 SEPTEMBER 2000 * whole document	1-9
A	KR00-0054472(KIM BONG KYUNG) 05 SEPTEMBER 2000 * whole document	1-9

Further documents are listed in the continuation of Box C. See patent family annex.

<p>* Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier application or patent but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"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</p> <p>"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</p> <p>"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</p> <p>"&" document member of the same patent family</p>
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Date of the actual completion of the international search 29 NOVEMBER 2001 (29.11.2001)	Date of mailing of the international search report 30 NOVEMBER 2001 (30.11.2001)
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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR01/01413

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR01-0074624	04-08-2001	NONE	
KR01-0064678	11-07-2001	NONE	
KR00-0057247	15-09-2000	NONE	
KR00-0054472	05-09-2000	NONE	