

Automatic Access Control Method and System

FIELD OF THE INVENTION

5 The present invention relates to access control methods and systems, in particular for accessing a service automatically making cycles available.

More specifically, the invention relates to an access control method comprising an identification step in which a code identifying a user is read from an information
10 media, in order to allow the user access to a place, or to a product or service.

BACKGROUND OF THE INVENTION

In known methods of this type, the correspondence of the user with a given information medium is generally
15 recorded once and for all. This identification mode however requires the user to use multiple coded information media, for example electronic or magnetic cards, which is impractical.

SUMMARY OF THE INVENTION

20 The particular purpose of the present invention is to remedy this drawback.

For this purpose, the invention proposes an access control method implemented by an automatic access control system comprising automatic means for reading information
25 media and automatic control means suited for selectively authorizing access (to a place, product or service), where the method comprises at least the following steps:

(a) an initial registration step in which a user is registered and given a first identification (coded object
30 or dematerialized identification code),

(b) An association step in which the user is identified with the first identifier and has a coded personal information medium bearing a second identifier read by said automatic reading means, after which the user
35 is associated with the second identifier,

(c) at least one subsequent identification step, in which said automatic reading means is made to read said personal information medium in order to access the second identifier, and the automatic control means is commanded as
5 a function of the reading of said personal information medium.

Because of these arrangements, each user can use their own personal coded information medium so long as it is compatible with the automatic reading means of the
10 system, which allows them to avoid pointlessly multiplying the coded information media that they must have on them.

In various embodiments of the method according to the invention, one and/or the other of the following arrangements (they could be used independently of each
15 other and independently of the aforementioned arrangements) could additionally be called on:

- the personal information medium is an electronic information medium with contactless reading;
- the personal information medium is chosen among an RFID
20 information medium and an NFC information medium;
- the personal information medium is chosen among an electronic card and a mobile telephone;
- during the identification step (d), the automatic access control means are commanded to selectively unlock a cycle
25 initially locked on a locking position.

Additionally, the purpose of the invention is also an automatic access control system comprising command means, automatic information media reading means and automatic control means suited for selectively authorizing
30 an access, where the command means are suited for:

- recording a user and communicating a first identifier to them,
- identifying the user with the first identifier and having said automatic reading means read a second
35 identifier carried by a personal information medium, and

then associating said user with said second identifier,

- subsequently identifying the user by having said automatic reading means read said personal information medium and then commanding the automatic control means based on the reading of said personal information medium.

In various embodiments of the method according to the invention, one and/or the other of the following arrangements (they could be used independently of each other and independently of the aforementioned arrangements) could additionally be called on:

- The automatic reading means are suited for reading at least electronic information media with contactless reading;
- The automatic reading means are suited for reading information media chosen among RFID and NFC information media;
- The access control system is a system for automatically making cycles available in which the automatic control means are commanded by the command means for selectively locking and unlocking cycles on locking positions.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the invention will become apparent during the following description of one of the embodiments thereof, given as nonlimiting example, with reference to the attached drawings.

In the drawings:

- Figure 1 is a schematic perspective view showing an automatic system for making cycles available suited for implementing a process according to an embodiment of the invention.
- And, Figure 2 is a block drawing showing the main electric components of the system from Figure 1.

MORE DETAILED DESCRIPTION

In the various figures, the same references designate identical or similar items.

The present invention relates to an access control method and device serving to give access to a place, product or service. The following description is given for the specific case where access is given to a service making
5 cycles automatically available on the public thoroughfare, in particular an automatic rental service for such cycles.

As shown in Figure 1, the system in question includes cycles 1 such as in particular bicycles, generally stored in several cycle storage stations, one of which is
10 shown in Figure 1. These cycle storage stations can for example be distributed in various areas of a single city.

Each cycle storage station can include a central station position 2, which is shown here as an interactive terminal provided with a user interface including for
15 example a keyboard 3, a screen 4, possibly an electronic portable card reader 5, a ticket printing device, etc. As a variant, the interactive terminal 2 might not comprise a user interface and be a simple communication gateway between the cycle storage station and a central server 8
20 (SERV.).

The interactive terminal 2 communicates both with the central server 8 which manages cycle subscriptions and rentals and also with multiple locking positions 7 which
25 serve to lock cycles during storage and which could for example come in the form of locking terminals attached to the ground on the public thoroughfare and suited for each locking one cycle 1.

Conventionally the cycle 1 comprises a chassis composed of a frame supported by the rear wheel and a fork
30 with handle bars on top and mounted on the front wheel. As shown in Figure 2, each cycle 1 could comprise a central electronic unit 10 (CPU), for example a controller, microprocessor or similar, which can be connected for example to a communication interface 12 (COM) which is
35 suited for communicating with a similar communication

interface 13 (COM) belonging to each locking terminal 7. The communication interfaces 12, 13 can be of any known type and operate for example in wired mode (ohmic contact), by induction, by radio waves or other.

5 The communication interface 13 from the locking terminal 7, for its part, communicates with an electronic central unit 14 (CPU) specific to the locking terminal 7 (microprocessor, microcontroller or other), where this central unit 14 furthermore commands an electronic lock 15
10 (LOCK - an example of such a lock is given for example in the document EP-A-1,820,722) suited for locking a cycle on the locking terminal 7 and communicates with at least one sensor 16 (SENS) suited for detecting the locking of a cycle on the locking terminal 7 and communication interface
15 17 (COM), for example a modem suited for communicating by wire 6 (Figure 1) or by short range radio connection or any other manner, with a similar communication interface 18 (COM) belonging to the aforementioned interactive terminal 2.

20 Each locking position 7 can furthermore comprise a data medium electronic reader 11 (READ), preferably suited for contactless reading, for example for reading an RFID or NFC data medium, in particular a mobile telephone 21 or electronic card (see Figure 1) by means of which subscribed
25 users can identify themselves.

 The interactive terminal 2 comprises, for its part, another central electronic unit 19 (CPU - see Figure 2) such as a microprocessor, microcontroller or other, which communicates with the aforementioned peripherals 3-5 and
30 also with a communication interface 20 (COM) such as a MODEM communicating by radio or wire with the aforementioned central server 8.

 This is how the device which was just described operates.

35 (a) In an initial recording step, for example a

long or short-term subscription step, a new user is recorded on the server 8 and a first identifier is given to the user; the first identifier could be a coded object such as an electronic card, but can advantageously be a
5 temporary identification code, for example printed on a ticket or received by the user on their mobile telephone 21.

(b) To be able to subsequently identify themselves to the system making cycles available, the user next
10 performs an association step, for example the first time the user goes to a cycle storage station for borrowing a cycle. During this step, the user first identifies themselves with the first identifier, for example on the interactive terminal 2 (for example when a code is used,
15 the user can enter this first identifier on the keyboard 3). The interactive terminal 2 then asks the user to have the reader 11 of one of the locking positions 7 (or any other automatic reading means of the system, for example a reader 11 (not shown) included in the interactive terminal
20 2) read a coded personal information medium which the user already processes and which is compatible with the reader 11, for example an RFID or NFC information medium in the example described above (mobile telephone 21 or electronic card 22, or other). This personal information medium has a
25 second identifier which is read by the reader 11 used and which is sent to the server 8, after which the server 8 associates the user with the second identifier.

(c) Subsequently, when the user wishes to borrow a cycle 1 at a cycle storage station, the user can identify
30 themselves by means of the data support 21, 22 used during the aforementioned association step (b), for example by having the reader 11 of the locking position 7 read this information medium 21, 22. The reader 11 reads the aforementioned second identifier and sends it to the server
35 8 which makes the relation with the corresponding user.

The server 8 then verifies whether the user has a right to rent a cycle and if so, the server gives the interactive terminal 2 authorization to release the cycle 1 and notes the time the rental began. The interactive
5 terminal 2 then commands the release of a cycle 1 from the locking terminal 7 thereof so that the user can take it and use it.

Once the cycle 1 has been released by the locking terminal 7, the user can freely use it. When the user has
10 finished using the cycle, the user returns the cycle to a cycle storage station (the one where the cycle was borrowed or another) by engaging the cycle 1 in an available locking terminal 7 of this station. The interactive terminal 2 of this station then informs the server 8 that the cycle 1 has
15 been returned, and then once the server confirms that the situation is in order, has the cycle 1 locked on the locking terminal 7.

CLAIMS

1. An access control method implemented by an automatic access control system comprising automatic means
5 for reading information media and automatic control means suited for selectively authorizing access, where the method comprises at least the following steps:

(a) an initial registration step in which a user is registered and given a first identifier,

10 (b) an association step in which the user is identified with the first identifier and has a coded personal information medium bearing a second identifier read by said automatic reading means, after which the user is associated with the second identifier,

15 (c) at least one subsequent identification step, in which said automatic reading means is made to read said personal information medium in order to access the second identifier, and the automatic control means is commanded as a function of the reading of said personal information
20 medium.

2. Method according to claim 1, in which the personal information medium used during steps (b) and (c) is an electronic information medium with contactless reading.

25 3. Method according to claim 1, in which the personal information medium used during steps (b) and (c) is chosen among an RFID information medium and an NFC information medium.

4. Method according to any one of the preceding
30 claims, in which the personal information medium used during steps (b) and (c) is chosen among an electronic card and the mobile telephone.

5. Method according to any one of the preceding claims, in which during the identification step (d), the
35 automatic access control means are commanded to selectively

unlock a cycle initially locked on a locking position.

6. Automatic access control system comprising command means, automatic information media reading means and automatic control means suited for selectively
5 authorizing an access, where the control means are suited for:

- recording a user and communicating a first identifier to them,
- identifying the user with the first identifier and
10 having said automatic reading means read a second identifier carried by a personal information medium, and then associating said user with said second identifier,
- subsequently identifying the user by having said
15 automatic reading means read said personal information medium and then commanding the automatic control means based on the reading of said personal information medium.

7. System according to claim 6, in which the automatic reading means are suited for reading at least electronic information media with contactless reading.

20 8. System according to claim 7, in which the automatic reading means are suited for reading information media chosen among RFID and NFC information media.

9. System according to any one of claims 6 to 8, for automatically making cycles available in which the
25 automatic control means are commanded by the command means for selectively locking and unlocking cycles on locking positions.