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(54) **ELECTRONIC SYSTEM FOR LOCKING DOORS OR WINDOWS, IN PARTICULAR FOR DOORS**

ELEKTRONISCHES SYSTEM ZUR VERRIEGELUNG VON TÜREN ODER FENSTERN,
INSBESONDERE FÜR TÜREN

SYSTÈME ÉLECTRONIQUE PERMETTANT DE VERROUILLER DES PORTES OU DES FENÊTRES,
EN PARTICULIER DES PORTES

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(72) Inventor: **ALBAN, Giacomo Mario**

36060 Romano d'Ezzelino (Vicenza) (IT)

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(74) Representative: **Lissandrini, Marco**

Bugnion S.p.A.

Via Pancaldo 68

37138 Verona (IT)

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(73) Proprietor: **Alban Giacomo S.p.A.**

36060 Romano d'Ezzelino (VI) (IT)

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Description

TECHNICAL FIELD

[0001] The object of the present invention is an electronic system for locking doors or windows, in particular for doors.

[0002] The invention relates to the technical field of electronic systems for locking doors and windows of buildings and refers to the use of electronic locks. The electronic system for locking can be applied in various sectors, among which, for example hotels, guest houses, community places, offices, or residential.

PRIOR ART

[0003] Generally, closing systems comprise a lock installed on a wing of the door or window and a counter-plate, commonly known as a "strike-plate", installed on a fixed frame of the door or window. The lock is provided with closing means, for example constituted by a latch and/or a chain which, when the wing is in a position aligned to the frame, is moved so as to exit from the lock and engages in the counter-plate so as to determine the locking of the door or window, in particular the door.

[0004] Electromechanical systems are known which use a device known as an "electrical strike-plate".

[0005] The known electromechanical systems, in particular when they use an electrical strike-plate, while having the advantage of being easily interfaceable with the management systems for managing the door or window, for example the door, which are connected by a flank of the door, are not free of drawbacks and problems, at both the structural and operational level, among which poor security, high noise level and difficulty of installation and/or regulation caused by the presence of gaskets on the door.

[0006] Further electromechanical systems are known from documents EP1764460, DE102006042469 and EP3059359. In particular, EP1764460 discloses an electromechanical lock comprising a first infrared device positioned in the counter-plate and configured for transmitting an optical signal, and a second infrared device positioned in the electronic lock configured for receiving the first optical signal, whereas EP3059359 discloses non-contact power and bi-directional data transmission between the striker and the door using induction coils.

AIMS OF THE INVENTION

[0007] In this context, the technical task underpinning the present invention is to provide an electronic system for closing doors or windows that obviates the drawbacks of the prior art mentioned above.

[0008] In particular, an aim of the present invention is to make available an electronic system for closing doors or windows, which is simple to install, interchangeable with the solutions at present adopted and more reliable.

The technical task set and the objects specified are substantially attained by an electronic system for closing doors or windows, which comprises the technical characteristics as set out in one or more of the accompanying claims. The dependent claims correspond to further embodiments of the electronic system according to the present invention.

[0009] In particular, in an aspect, the present invention relates to the integrating of infrared devices in the counter-plate and in the lock operating bidirectionally so as to command the lock and provide information relating to the status of the lock and/or the wing.

DESCRIPTION OF THE DRAWINGS

[0010] Further characteristics and advantages of the present invention will become more apparent from the following indicative, and hence non-limiting, description of a preferred, but not exclusive, embodiment of an electronic system for closing doors or windows.

[0011] This description will be explained below with reference to the appended figure, provided solely for indicative and therefore non-limiting purposes, in which a frontal view of a portion of a door or window is schematically illustrated, comprising the electronic system for locking according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0012] With reference to the appended figure, an electronic system for closing windows or doors, according to the invention, is denoted in its entirety by reference numeral 1 and will be denominated in the following using the term system 1.

[0013] The system comprises 1 a counter-plate 2 installable on a fixed frame 3 of the door or window, for example a door.

[0014] The system 1 further comprises an electronic lock 4 installable on a wing 5 of the door or window and provided with closing means housed inside a lock body 6. The closing means is mobile between a release configuration, in which the closing means engages the counter-plate 2, and a retained configuration (not illustrated), in which the closing means is maintained inside the lock-body 6 and does not engage the counter-plate. The closing means preferably comprises a latch 7 and/or a chain 8.

[0015] The electronic lock 4 comprises an opening device 9 configured to activate a switching of the closing means 5 at least between the retained configuration and the release configuration. In other words the opening device 9 is configured to activate at least the opening of the wing, in particular the door.

[0016] According to a possible embodiment, the opening device 9 can comprise a handle 10 configured to activate a switching of the closing means at least between the retained configuration and the release configuration. In this case therefore the opening of the wing can be

done manually by operating the handle 10.

[0017] In addition to or alternatively to the handle 10, the opening device 9 can be configured to activate an automatic switching of the closing means at least between the retained configuration and the release configuration. In this case therefore the opening of the wing can be done automatically.

[0018] The system 1 advantageously comprises a control system for controlling the opening 11 comprising a first infrared device 12 arranged in the counter-plate and configured to transmit at least a first optical signal "S1" or activating signal and to receive at least a second optical signal "S2". The first optical signal "S1" contains an activating message for activating and/or enabling the opening device 9.

[0019] Further, the control system for controlling the opening 11 comprises a second infrared device 13 arranged in the electronic lock 4, in particular the lock body 6, and configured to receive the first optical signal "S1" and to transmit the second optical signal "S2".

[0020] The second optical signal "S2" contains a message relating to the status of the wing and/or an authentication message suitable for being used by the first infrared device 12 for authenticating the activating message previously sent via the first optical signal "S1".

[0021] With reference to the present description and the claims, "optical signal" is used to mean a serial data signal transmitted through an optical device. In the case under examination, the serial data signal is transmitted via the first and the second infrared device.

[0022] The first and second infrared device are infrared transmitters/receivers which operate according to a serial infrared communications protocol, for example of the IrDA type or the like, generating a bi-directional communication between the electronic lock 4 and at least the counter-plate 2.

[0023] As for example illustrated in figure 1, the first and second infrared device are positioned in a condition of reciprocal visibility at least when the counter-plate 2 is proximal to the electronic lock 4.

[0024] A front portion 6a of the body lock 6 preferably has a window 14 adapted to enable transmission of the second optical signal "S2" and receiving of the first optical signal "S1". A front portion frontal 2a of the counter-plate 2 likewise has a window 15 adapted to enable transmission of the first optical signal "S1" and receiving of the second optical signal "S2".

[0025] In a possible embodiment, of which the accompanying drawing illustrates a non-limiting example, the control system for controlling the opening of the door or window comprises an electronic control board 16 housed in the electronic lock 4, preferably in the lock body 6, and programmed for activating and/or enabling the opening device 9 on receiving the activating signal "S1" from the second infrared device 13.

[0026] In particular, in a case where there is a handle 10, the electronic control board 16 can be programmed to enable the opening of the electronic lock 4 on receiving

the activating signal "S1" from the second infrared device 13. The full opening is carried out manually by operating the handle 10. Alternatively to the handle 10, any manual opening organ can be included, such as knobs or the like.

[0027] In a case in which the electronic control board 16 is programmed to enable the opening of the electronic lock 4, the control system for controlling the opening of the door or window can comprise a timer 17 for enabling switching of the closing means 4 for a preset time interval.

[0028] In a case where the opening device 9 is configured to activate an automatic switching of the closing means 4, the electronic control board 16 can be programmed to activate the opening device in such a way that the opening takes place automatically when the second infrared device 13 receives the activating signal "S1".

[0029] In a possible embodiment, of which the accompanying drawing illustrates a non-limiting example, an electricity storage battery 18 is included, in particular in the form of batteries, arranged in the electronic lock 4, preferably in the lock body 6 and configured to power the electronic control board 16 and the second infrared device 13.

[0030] The second optical signal "S2" can contain a message relative to the status of the wing and thus enable the electronic lock 4 to send, to the counter-plate 2, the information on the status thereof, for example the charge level of the electricity storage battery 18, the open/closed status of the wing, the status of effective mechanical closing of the lock, the positioning of the chain etc.

[0031] The second optical signal "S2" can contain an authentication message suitable for being used by the first infrared device 12 for authenticating the activating message previously sent via the first optical signal "S1" to increase the degree of safety of the data transmission between the first infrared device 12 and the second infrared device 13.

[0032] The control system for controlling the opening of the door or window preferably comprises an electrical control unit 19 associated to said first infrared device 12 and configured to generate a voltage pulse following an external command. The first infrared device 12 is configured to intercept said voltage pulse and to convert the voltage pulse into said activating signal "S1".

[0033] The electrical control unit 19 can be arranged in proximity of the door or window, in particular the frame 3, or in a remote position.

[0034] The present invention further relates to a management method for managing the electronic system 1 which includes a step of bi-directional communication between the first infrared device 12 and the second infrared device 13 in which the first infrared device 12 transmits the first optical signal "S1" and receives the second optical signal "S2" and in which the second infrared device 13 receives the first optical signal "S1" and transmits the second optical signal "S2" when the first and second infrared devices are positioned in a condition of reciprocal visibility. According to the above-described method, a step of activating and/or enabling said opening device 9

is included, on receiving the first optical signal "S1" from said second infrared device 13.

[0035] A step is preferably included of generating a voltage pulse following an external command and converting said electric pulse into said first optical signal "S1".

[0036] The electronic system 1 in use advantageously operates according to the above-mentioned management method so that when the wing 5 is closed, the first and second infrared devices are positioned in a condition of mutual visibility.

[0037] The electric signal, in particular the voltage pulse generated following an external command, coming from the electrical control unit 19, is intercepted by the first infrared device 12 which transforms it into a serial data signal to be sent by infrared transmission to the electronic lock 4 via the second infrared device 13.

[0038] Once the electronic lock 4 has received the correct information via infrared transmission, it is unlocked for a preset time determined by the timer 17 so as to enable the opening thereof. Alternatively the electronic lock 4 is automatically opened.

[0039] The electronic lock 4 can further send to the counter-plate 2 information on the status thereof (discharged batteries, door open/closed, status of effective mechanical closing of the lock, information originating from the positioning of the chain etc.) or the above-mentioned authentication message.

[0040] The invention provides further important advantages.

[0041] Firstly the incorporation into the wing or the counter-plate of infrared devices operating as IR transmitter/receiver modules enables the wing and counter-plate to dialog both to determine consent and/or activation of the opening both so as to restore information on the status of the lock or to make the system safer.

[0042] Further the above-described system is easily insertable in replacement for the present systems, for example to replace the electric strike-plate, thus facilitating installation thereof and using the same voltage pulse (in both dc and ac) which, in the system of the invention, is converted into the activating signal.

[0043] The above-described system is further silent, safe and enables carrying out regulations of the wing and/or the frame.

Claims

1. An electronic system (1) for locking doors or windows, comprising:

- a counter-plate (2) installable on a fixed frame of the door or window;
- an electronic lock (4) installable on a wing (5) of the door or window and provided with closing means (7, 8) mobile between a release configuration, in which the closing means (7, 8) engages the counter-plate (2) when the counter-

plate (2) is proximal to the electronic lock (4), and a retained configuration, in which the closing means (7, 8) is maintained inside the electronic lock (4) and does not engage the counter-plate (2), wherein said electronic lock (4) comprises an opening device (9) configured to activate a switching of the closing means (7, 8) at least between the retained configuration and the release configuration, **characterised in that** it comprises a control system for controlling the opening (11) of the door or window comprising:

- a first infrared device (12) arranged in the counter-plate (2) and configured to transmit at least a first optical signal (S1) or activating optical signal containing an activating message and to receive at least a second optical signal (S2),
- a second infrared device (13) arranged in the electronic lock (4) and configured to receive said first optical signal (S1) and to transmit said second optical signal (S2), said second optical signal (S2) comprising a message relating to the status of the wing and/or an authentication message suitable for being used by the first infrared device (12) for authenticating the activating message previously sent via the first optical signal (S1),

said first and second infrared device (12, 13) being positioned in a condition of reciprocal visibility at least when the counter-plate (2) is proximal to the electronic lock (4).

2. The electronic system (1) for locking according to claim 1, wherein said control system for controlling the opening of the door or window comprises an electronic control board (16) housed in the electronic lock (4) and programmed for activating and/or enabling said opening device (9) on receiving said first optical signal (S1) from said second infrared device (13).
3. The electronic system (1) for locking according to claim 2, comprising an electricity storage battery (18) arranged in said electronic lock (4) and configured to power said electronic control board (16) and said second infrared device (13).
4. The electronic system (1) for locking according to one or more of the preceding claims, wherein said control system for controlling the opening of the door or window comprises an electrical control unit (19) associated to said first infrared device (12) and configured to generate a voltage pulse following an external command, wherein said first infrared device (12) is configured to intercept said voltage pulse and to convert the voltage pulse into said first optical signal (S1).

nal (S1).

5. The electronic system (1) for locking according to one or more of the preceding claims, wherein the closing means comprises a latch (7) and/or a chain (8) of said electronic lock (4). 5

6. The electronic system (1) for locking according to one or more of the preceding claims, wherein said opening device (9) comprises a handle (10) configured to activate a switching of the closing means (7, 8) at least between the retained configuration and the release configuration, and wherein said control system for controlling the opening of the door or window comprises an electronic control board (16) housed in the electronic lock (4) and programmed for enabling the switching of the closing means (7, 8) at least between the retained configuration and the release configuration by means of said handle (10) on receiving said first optical signal (S1) from said second infrared device (13). 10
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7. The electronic system (1) for locking according to claim 6, wherein said control system for controlling the opening of the door or window comprises a timer (17) for enabling switching of the closing means (7, 8) for a preset time interval. 25

8. The electronic system (1) for locking according to one or more of the preceding claims, wherein said opening device (9) is configured to activate an automatic switching of the closing means (7, 8) at least between the retained configuration and the release configuration, and wherein said control system for controlling the opening of the door or window comprises an electronic control board (16) housed in the electronic lock (4) and programmed for activating said opening device (9) on receiving said first optical signal (S1) from said second infrared device (13). 30
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9. A management method for managing an electronic system (1) for locking doors or windows, comprising:
 - a counter-plate (2) installed on a fixed frame (3) of the door or window; 45
 - an electronic lock (4) installed on a wing (5) of the door or window and provided with closing means (7, 8) mobile between a release configuration, in which the closing means (7, 8) engages the counter-plate (2) when the counter-plate (2) is proximal to the electronic lock (4), and a retained configuration, wherein the closing means (7, 8) is maintained inside the electronic lock (4) and does not engage the counter-plate (2), wherein said electronic lock (4) comprises an opening device (9) configured to activate a switching of the closing means (7, 8) at least between the retained configuration and the50
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release configuration,

said management method comprising a step of bi-directional communication between a first infrared device (12) arranged in the counter-plate (2) and a second infrared device (13) arranged in the electronic lock (4), wherein said first infrared device (12) transmits at least a first optical signal (S1) or activating signal containing an activating message and receives at least a second optical signal (S2) and wherein said second infrared device (13) receives said first optical signal (S1) and transmits said second optical signal (S2) when said first and second infrared devices (12, 13) are positioned in a condition of reciprocal visibility, said second optical signal (S2) comprising a message relating to the status of the wing and/or an authentication message suitable for being used by the first infrared device (12) for authenticating the activating message previously sent via the first optical signal (S1).

10. A management method for managing an electronic system (1) for locking doors or windows according to claim 9, comprising a step of activating and/or enabling said opening device (9) on receiving said first optical signal (S1) from said second infrared device (13).

11. A management method for managing an electronic system (1) for locking doors or windows according to claim 9 or 10, comprising a step of generating a voltage pulse following an external command and converting said electric pulse into said first optical signal (S1).

Patentansprüche

1. Elektronisches System (1) zum Verriegeln von Türen oder Fenstern, umfassend:
 - eine Gegenplatte (2), die an einem festen Rahmen der Tür oder des Fensters angebracht werden kann;
 - ein elektronisches Schloss (4), das an einem Flügel (5) der Tür oder des Fensters angebracht werden kann und mit Schließmitteln (7, 8) versehen ist, die beweglich sind zwischen einer Lösekonfiguration, in der das Schließmittel (7, 8) in die Gegenplatte (2) eingreift, wenn sich die Gegenplatte (2) proximal zum elektronischen Schloss (4) befindet, und einer Beibehaltekonfiguration, in der das Schließmittel (7, 8) innerhalb des elektronischen Schlosses (4) bleibt und nicht in die Gegenplatte (2) eingreift, wobei das elektronische Schloss (4) eine Öffnungsvorrichtung (9) aufweist, die konfiguriert ist, um wenigstens das Umschalten des Schließmittels (7, 8)

zwischen der Beibehaltekonfiguration und der Lösekonfiguration zu aktivieren, **dadurch gekennzeichnet, dass** es ein Steuerungssystem zum Steuern des Öffnens (11) der Tür oder des Fensters umfasst, umfassend:

- eine erste Infrarotvorrichtung (12), die in der Gegenplatte (2) angeordnet und konfiguriert ist, um wenigstens ein erstes optisches Signal (S1) oder aktivierendes optisches Signal, das eine Aktivierungsnachricht aufweist, zu übertragen und wenigstens ein zweites optisches Signal (S2) zu empfangen,
- eine zweite Infrarotvorrichtung (13), die in dem elektronischen Schloss (4) angeordnet und konfiguriert ist, um das erste optische Signal (S1) zu empfangen und das zweite optische Signal (S2) zu übertragen, wobei das zweite optische Signal (S2) eine Nachricht umfasst, die sich auf den Status des Flügels und/oder einer Authentifizierungsnachricht bezieht, die zur Verwendung durch die erste Infrarotvorrichtung (12) geeignet ist, um die Aktivierungsnachricht, die zuvor über das erste optische Signal (S1) gesendet wurde, zu authentifizieren,

wobei die erste und zweite Infrarotvorrichtung (12, 13) in einem Zustand gegenseitiger Sichtbarkeit positioniert sind, wenigstens wenn sich die Gegenplatte (2) proximal zum elektronischen Schloss (4) befindet.

2. Elektronisches System (1) zum Verriegeln nach Anspruch 1, wobei das Steuerungssystem zum Steuern des Öffnens der Tür oder des Fensters eine elektronische Steuerleiterplatte (16) aufweist, die in dem elektronischen Schloss (4) untergebracht und programmiert ist, um die Öffnungsvorrichtung (9) zu aktivieren und/oder die Öffnungsvorrichtung (9) zu befähigen, wenn das erste optische Signal (S1) durch die zweite Infrarotvorrichtung (13) empfangen wird.
3. Elektronisches System (1) zum Verriegeln nach Anspruch 2, umfassend eine Elektrizitätsspeicherbatterie (18), die in dem elektronischen Schloss (4) angeordnet und konfiguriert ist, um die elektronische Steuerplatine (16) und die zweite Infrarotvorrichtung (13) zu versorgen.
4. Elektronisches System (1) zum Verriegeln nach einem oder mehreren der vorhergehenden Ansprüche, wobei das Steuerungssystem zum Steuern des Öffnens der Tür oder des Fensters eine elektrische Steuereinheit (19) umfasst, die mit der ersten Infrarotvorrichtung (12) verknüpft und konfiguriert ist, um einen Spannungsimpuls zu erzeugen, der einem ex-

ternen Befehl folgt, wobei die erste Infrarotvorrichtung (12) konfiguriert ist, um den Spannungsimpuls abzufangen und den Spannungsimpuls in das erste optische Signal (S1) umzuwandeln.

5. Elektronisches System (1) zum Verriegeln nach einem oder mehreren der vorhergehenden Ansprüche, wobei das Schließmittel einen Riegel (7) und/oder eine Kette (8) des elektronischen Schlosses (4) umfasst.
6. Elektronisches System (1) zum Verriegeln nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Öffnungsvorrichtung (9) einen Griff (10) umfasst, der konfiguriert ist, um das Umschalten des Schließmittels (7, 8) wenigstens zwischen der Beibehaltekonfiguration und der Lösekonfiguration zu aktivieren, und wobei das Steuerungssystem zum Steuern des Öffnens der Tür oder des Fensters eine elektronische Steuerplatine (16) umfasst, die in dem elektronischen Schloss (4) untergebracht und programmiert ist, um das Umschalten des Schließmittels (7, 8) wenigstens zwischen der Beibehaltekonfiguration und der Lösekonfiguration mittels des Griffes (10) zu ermöglichen, wenn das erste optische Signal (S1) durch die zweite Infrarotvorrichtung (13) empfangen wird.
7. Elektronisches System (1) zum Verriegeln nach Anspruch 6, wobei das Steuerungssystem zum Steuern des Öffnens der Tür oder des Fensters einen Zeitschalter (17) umfasst, der das Umschalten des Schließmittels (7, 8) für ein voreingestelltes Zeitintervall ermöglicht.
8. Elektronisches System (1) zum Verriegeln nach einem oder mehreren der vorhergehenden Ansprüche, wobei die Öffnungsvorrichtung (9) konfiguriert ist, um ein automatisches Umschalten des Schließmittels (7, 8) zu aktivieren wenigstens zwischen der Beibehaltekonfiguration und der Lösekonfiguration und wobei das Steuerungssystem zum Steuern des Öffnens der Tür oder des Fensters eine elektronische Steuerleiterplatte (16) umfasst, die in dem elektronischen Schloss (4) untergebracht und programmiert ist, um die Öffnungsvorrichtung (9) zu aktivieren, wenn das erste optische Signal (S1) durch die zweite Infrarotvorrichtung (13) empfangen wird.
9. Verwaltungsverfahren zur Verwaltung eines elektronischen Systems (1) zum Verriegeln von Türen oder Fenstern, umfassend:
 - eine Gegenplatte (2), die an einem festen Rahmen (3) der Tür oder des Fensters angebracht ist;
 - ein elektronisches Schloss (4), das an einem

Flügel (5) der Tür oder des Fensters angebracht und mit Schließmitteln (7, 8) versehen ist, die beweglich sind zwischen einer Lösekonfiguration, in der das Schließmittel (7, 8) in die Gegenplatte (2) eingreift, wenn sich die Gegenplatte (2) proximal zum elektronischen Schloss (4) befindet, und einer Beibehaltekonfiguration, in der das Schließmittel (7, 8) innerhalb des elektronischen Schlosses (4) bleibt und nicht in die Gegenplatte (2) eingreift, wobei das elektronische Schloss (4) eine Öffnungsvorrichtung (9) aufweist, die konfiguriert ist, um das Umschalten des Schließmittels (7, 8) wenigstens zwischen der Beibehaltekonfiguration und der Lösekonfiguration zu aktivieren, wobei das Verwaltungsverfahren einen Schritt der bidirektionalen Kommunikation zwischen einer ersten Infrarotvorrichtung (12), die in der Gegenplatte (2) angeordnet ist, und einer zweiten Infrarotvorrichtung (13), die in dem elektronischen Schloss (4) angeordnet ist, umfasst, wobei die erste Infrarotvorrichtung (12) wenigstens ein erstes optisches Signal (S1) oder Aktivierungssignal überträgt, das eine Aktivierungsnachricht aufweist, und wenigstens ein zweites optisches Signal (S2) empfängt und wobei die zweite Infrarotvorrichtung (13) das erste optische Signal (S1) empfängt und das zweite optische Signal (S2) überträgt, wenn die erste und zweite Infrarotvorrichtung (12, 13) in einem Zustand gegenseitiger Sichtbarkeit positioniert sind, wobei das zweite optische Signal (S2) eine Nachricht in Bezug auf den Status des Flügels und/oder eine Authentifizierungsnachricht umfasst, die zur Verwendung durch die erste Infrarotvorrichtung (12) geeignet ist, um die Aktivierungsnachricht, die zuvor über das erste optische Signal (S1) gesendet wurde, zu authentifizieren.

10. Verwaltungsverfahren zum Verwalten eines elektronischen Systems (1) zum Verriegeln von Türen oder Fenstern nach Anspruch 9, umfassend einen Schritt des Aktivierens und/oder Befähigens der Öffnungsvorrichtung (9), wenn das erste optische Signal (S1) durch die zweite Infrarotvorrichtung (13) empfangen wird.

11. Verwaltungsverfahren zum Verwalten eines elektronischen Systems (1) zum Verriegeln von Türen oder Fenstern nach Anspruch 9 oder 10, umfassend einen Schritt des Erzeugens eines Spannungsimpulses, der einem externen Befehl folgt, und des Umwandeln des elektrischen Impulses in das erste optische Signal (S1).

Revendications

1. Système électronique (1) de verrouillage des portes ou des fenêtres, comprenant :

- une contre-plaque (2) pouvant être installée sur un cadre fixe de la porte ou de la fenêtre ;
- un verrou électronique (4) pouvant être installé sur un battant (5) de la porte ou de la fenêtre et pourvu de moyens de fermeture (7, 8) mobiles entre une configuration de libération, dans laquelle les moyens de fermeture (7, 8) engagent la contre-plaque (2) lorsque la contre-plaque (2) est proximale du verrou électronique (4) et une configuration de retenue, dans laquelle les moyens de fermeture (7, 8) sont maintenus à l'intérieur du verrou électronique (4) et n'engagent pas la contre-plaque (2), dans lequel ledit verrou électronique (4) comprend un dispositif d'ouverture (9) configuré pour activer une commutation des moyens de fermeture (7, 8) au moins entre la configuration de retenue et la configuration de libération,

caractérisé en ce qu'il comprend un système de commande pour commander l'ouverture (11) de la porte ou de la fenêtre, comprenant ;

- un premier dispositif infrarouge (12) disposé dans la contre-plaque (2) et configuré pour transmettre au moins un premier signal optique (S1) ou signal d'activation optique qui contient un message d'activation et pour recevoir au moins un deuxième signal optique (S2),
- un deuxième dispositif infrarouge (13) disposé dans le verrou électronique (4) et configuré pour recevoir ledit premier signal optique (S1) et pour transmettre ledit deuxième signal optique (S2), ledit deuxième signal optique (S2) comprenant un message relatif à l'état du battant et/ou un message d'authentification pouvant être utilisé par le premier dispositif infrarouge (12) pour authentifier le message d'activation envoyé précédemment via le premier signal optique (S1),

lesdits premier et deuxième dispositifs infrarouges (12, 13) étant positionnés dans un état de visibilité réciproque au moins lorsque la contre-plaque (2) est proximale du verrou électronique (4).

2. Système électronique (1) de verrouillage selon la revendication 1, dans lequel ledit système de commande pour commander l'ouverture de la porte ou de la fenêtre comprend une carte de commande électronique (16) logée dans le verrou électronique (4) et programmée pour activer et/ou valider ledit dispositif d'ouverture (9) lors de la réception dudit premier signal optique (S1) provenant dudit deuxième dispositif infrarouge (13).

3. Système électronique (1) de verrouillage selon la revendication 2, comprenant une batterie de stockage d'électricité (18) disposée dans ledit verrou électronique (4) et configuré pour alimenter ladite carte de commande électronique (16) et ledit deuxième dispositif infrarouge (13) . 5
4. Système électronique (1) de verrouillage selon l'une au moins des revendications précédentes, dans lequel ledit système de commande pour commander l'ouverture de la porte ou de la fenêtre comprenant une unité de commande électrique (19) associée audit premier dispositif infrarouge (12) et configurée pour générer une impulsion de tension à la suite d'une commande extérieure, ledit premier dispositif infrarouge (12) est configuré pour intercepter ladite impulsion de tension et pour convertir l'impulsion de tension en ledit premier signal optique (S1). 10
5. Système électronique (1) de verrouillage selon l'une au moins des revendications précédentes, dans lequel les moyens de fermeture comprennent un loquet (7) et/ou une chaîne (8) dudit loquet électronique (4). 15
6. Système électronique (1) de verrouillage selon l'une au moins des revendications précédentes, dans lequel ledit dispositif d'ouverture (9) comprenant une poignée (10) configurée pour activer une commutation des moyens de fermeture (7, 8) au moins entre la configuration de retenue et la configuration de libération, et dans lequel ledit système de commande pour commander l'ouverture de la porte ou de la fenêtre comprenant une carte de commande électronique (16) logée dans la verrou électronique (4) et programmée pour permettre la commutation des moyens de fermeture (7, 8) au moins entre la configuration de retenue et la configuration de libération au moyen de ladite poignée (10) lors de la réception dudit premier signal optique (S1) provenant dudit deuxième dispositif infrarouge (13). 20
7. Système électronique (1) de verrouillage selon la revendication 6, dans lequel ledit système de commande de l'ouverture de la porte ou de la fenêtre comprenant une minuterie (17) pour permettre la commutation des moyens de fermeture (7, 8) pendant un intervalle de temps prédéterminé. 25
8. Système électronique (1) de verrouillage selon l'une au moins des revendications précédentes, dans lequel ledit dispositif d'ouverture (9) est configuré pour activer la commutation automatique des moyens de fermeture (7, 8) au moins entre la configuration de retenue et la configuration de libération, et dans lequel ledit système de commande pour commander l'ouverture de la porte ou de la fenêtre comprend une carte de commande électronique (16) logée 30
9. Procédé de gestion pour gérer un système électronique (1) de verrouillage de portes ou de fenêtres comprenant : 35
 - une contre-plaque (2) installée sur un cadre fixe (3) de la porte ou de la fenêtre ;
 - une verrou électronique (4) installée sur un battant (5) de la porte ou de la fenêtre et munie de moyens de fermeture (7, 8) mobiles entre une configuration de libération, dans laquelle les moyens de fermeture (7, 8) engagent la contre-plaque (2) lorsque la contre-plaque (2) est proximale du verrou électronique (4), et dans une configuration de retenue, dans laquelle les moyens de fermeture (7, 8) sont maintenus à l'intérieur du verrou électronique (4) et ne s'engagent pas avec la contre-plaque (2), dans lequel ledit verrou électronique (4) comprend un dispositif d'ouverture (9) configuré pour activer la commutation des moyens de fermeture (7, 8) au moins entre la configuration de retenue et la configuration de libération, 40
- ledit procédé de gestion comprenant une étape de communication bidirectionnelle entre un premier dispositif infrarouge (12) disposé dans la contre-plaque (2) et un deuxième dispositif infrarouge (13) disposé dans le verrou électronique (4), dans lequel ledit premier dispositif infrarouge (12) transmet au moins un premier signal optique (S1) ou signal d'activation contenant un message d'activation et reçoit au moins un deuxième signal optique (S2) et dans lequel ledit deuxième dispositif infrarouge (13) reçoit ledit premier signal optique (S1) et transmet ledit deuxième signal optique (S2) lorsque lesdits premier et deuxième dispositifs infrarouges (12, 13) sont positionnés dans un état de visibilité réciproque, ledit deuxième signal optique (S2) comprend un message relatif à l'état du battant et/ou un message d'authentification pouvant être utilisé par le premier dispositif infrarouge (12) pour authentifier le message d'activation précédemment envoyé via le premier signal optique (S1). 45
10. Procédé de gestion pour gérer un système électronique (1) de verrouillage de portes ou de fenêtres selon la revendication 9, comprenant une étape d'activation et/ou de validation dudit dispositif d'ouverture (9) lors de la réception dudit premier signal optique (S1) provenant dudit deuxième dispositif infrarouge (13). 50
11. Procédé de gestion pour gérer d'un système élec- 55

tronique (1) de verrouillage de portes ou de fenêtres selon la revendication 9 ou 10, comprenant une étape de génération d'une impulsion de tension à la suite d'une commande extérieure et de conversion de ladite impulsion électrique en ledit premier signal optique (S1). 5

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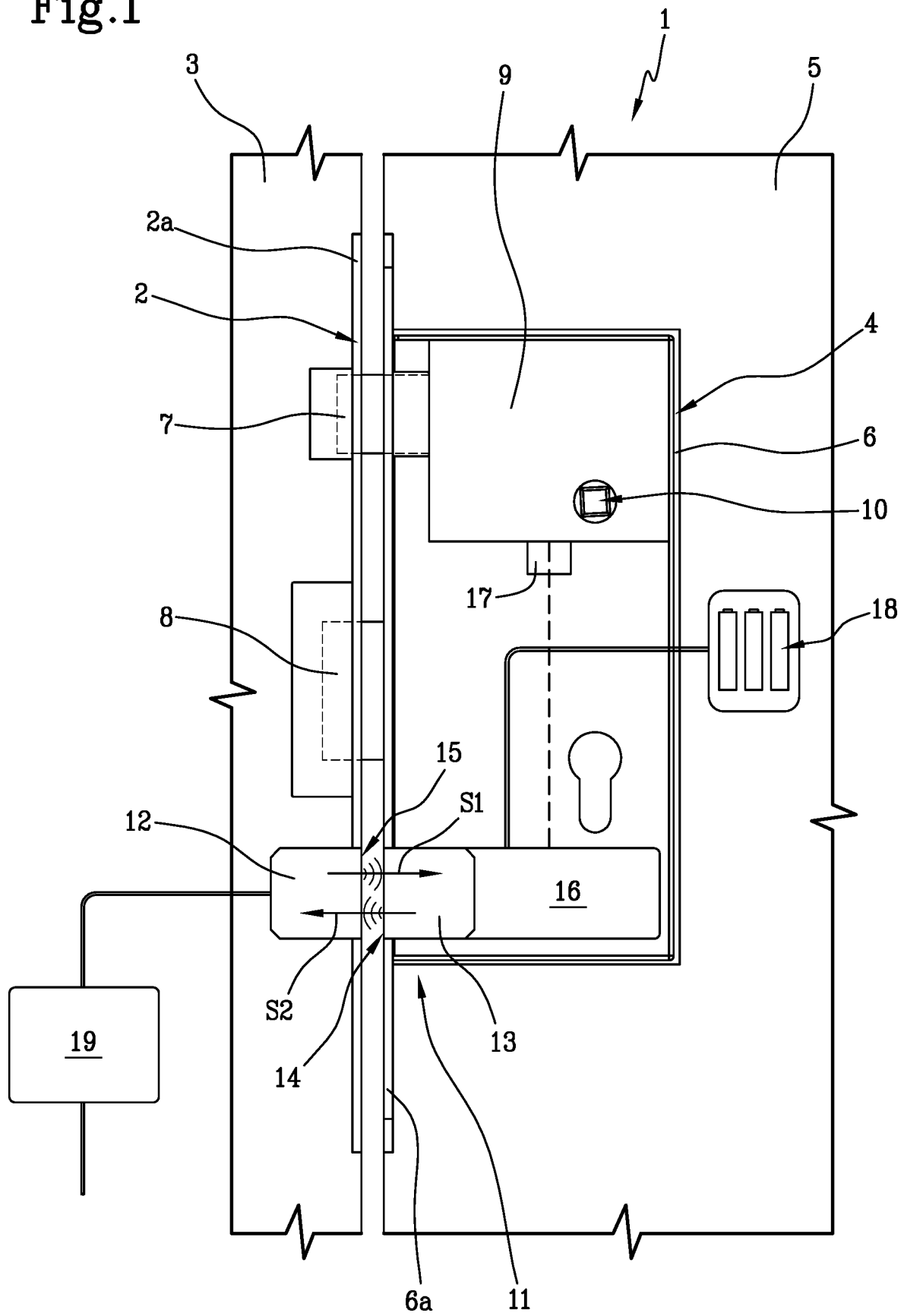
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Fig.1



REFERENCES CITED IN THE DESCRIPTION

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