

(19)



(11)

EP 4 141 201 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.03.2023 Bulletin 2023/09

(51) International Patent Classification (IPC):
E05B 65/08^(2006.01) E05B 63/24^(2006.01)

(21) Application number: **22193124.9**

(52) Cooperative Patent Classification (CPC):
**E05B 1/0046; E05B 15/0073; E05B 47/0038;
E05B 47/004; E05B 63/128; E05B 63/24;
E05B 65/0811; E05B 65/087; E05B 47/0046**

(22) Date of filing: **31.08.2022**

(84) Designated Contracting States:
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(71) Applicant: **J. Neves & Filhos SA
4424-909 Gondomar (PT)**
(72) Inventor: **MARTINS DA SILVA, Pedro Miguel
4510-322 São Pedro da Cova (PT)**
(74) Representative: **Patentree
Edifício Net
Rua de Salazares, 842
4149-002 Porto (PT)**

(30) Priority: **31.08.2021 PT 2021117434**

(54) **LATCH DEVICE AND LOCK WITH CLAMP FOR A SLIDING DOOR OR WINDOW**

(57) The present description relates to a latch device for closure of a sliding door or window in a lock with clamp, comprising a latch and a latch case with said latch on one face of said case, wherein the latch pivots between a retracted position in the latch case and a protruding position from the latch case; wherein the pivoting latch comprises a magnet arranged in the latch with a first magnetic pole oriented outwardly on said face to create a magnetic repulsive force with a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet placed in the lock so that the latch pivots from the retracted position to a protruding position to be locked by the clamp. It also relates to a lock with clamp comprising a lock case for receiving said latch on one face of said case, and comprising a magnet arranged in the lock with a first magnetic pole oriented outwardly on said face to create a magnetic repulsive force with a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet placed on said latch so that the latch pivots from the retracted position to a protruding position to be locked by the clamp.

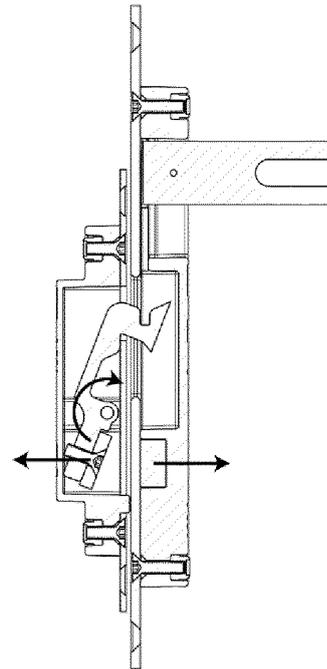


Fig. 9

EP 4 141 201 A1

Description

TECHNICAL FIELD

[0001] The present description relates to a latch device and a lock with clamp for a sliding door or window. The present description further relates to a closure comprising the latch device and the lock with clamp for a sliding door or window.

BACKGROUND

[0002] Several door and window closing devices are available in the prior art. Some of these devices already incorporate magnets.

[0003] WO2018055398 refers to a system for detecting the position of at least one moveable element of a window or door, wherein the system comprises at least one sensor for sensing a magnetic field, at least one sensor configured for sensing a magnetic field, at least one processor means configured to receive output signals associated with the sensed magnetic field from the sensor and to determine the position of at least one moveable element; wherein the system is configured to operate in a calibration mode and a normal mode, wherein in the calibration mode the system is configured to register at least one output value from at least one sensor when the moveable element is at a first predetermined position as a corresponding first reference value and wherein in the normal mode the processor means is configured to use at least the first reference value in determining the position of at least one moveable element.

[0004] WO2017008104 describes a magnetic field generator for use in a locking device for locking a door or window and an adjacent building element, including a permanent magnet; a housing portion for receiving the magnet; an adjustment mechanism for allowing the adjustment of the position of the magnet in the housing.

[0005] WO2020157628 describes a closing device for windows and doors comprising a striker, a lock and a front wall adapted to selectively assume a locking configuration and a retaining configuration. The movement of the latch according to a closing direction is caused by the magnetic interaction between a magnetic abutment system and a magnetic closing system.

[0006] These facts are described in order to illustrate the technical problem solved by the embodiments of the present document.

GENERAL DESCRIPTION

[0007] The present description relates to a latch device for closure of a sliding door or window in a lock with clamp, comprising a latch and a latch case with said latch on one face of said case, wherein the latch pivots between a retracted position in the latch case and a protruding position from the latch case;

wherein the pivoting latch comprises a magnet arranged in the latch with a first magnetic pole oriented outwardly on said face to receive, preferably create, a magnetic repulsive force from a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet placed in the lock so that the latch pivots from the retracted position to a protruding position to be locked by the clamp on approaching said lock.

[0008] In an embodiment the latch has an inclination of 20° with respect to the latch case when in the protruding position.

[0009] In an embodiment, the position of the latch center of mass is located so as to cause a moment in the latch that causes the latch to rotate with respect to an axle, leading to the retracted position when no other force is exerted on the latch, namely repulsive forces by the magnets. The latch center of mass allows this device not to use springs or other elements when the latch moves to the retracted position. It allows the latch to be correctly positioned inside the latch case, without protruding, even if it presents slight angular deviations in its application.

[0010] In an embodiment, the latch pivots from the retracted position to a protruding position when the lock magnet is at a distance equal to or less than 4 cm.

[0011] In an embodiment, the latch comprises an axle for pivoting the latch. Preferably, the axle is located in the latch case.

[0012] In an embodiment, the latch comprises a recess for receiving and locking the clamp for locking the door or window.

[0013] In an embodiment, the magnet is fixed to the latch by fixing means selected from screws or an adhesive.

[0014] In an embodiment, the latch device is fixed for mounting in a door or window frame. The latch device can be fixed directly to the door, i.e. the latch device is a device that is fixedly mounted in a door or window frame.

[0015] Another aspect of the present disclosure relates to a lock with clamp for closure of a sliding door or window on a latch, comprising a lock case for receiving said latch on one face of said case, and comprising a magnet arranged in the lock with a first magnetic pole oriented outwardly on said face to receive, preferably create, a magnetic repulsive force from a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet placed on said latch so that the latch pivots from the retracted position to a protruding position to be locked by the clamp on approaching said lock.

[0016] In an embodiment, said lock comprises a knob so that the clamp moves from a retracted position to a locking position. More specifically, the user presses the displaceable knob which comprises an axle to interact with the clamp, causing the clamp to move into the recess of the latch and thereby lock the latch and lock the sliding door or window.

[0017] In an embodiment, the knob comprises an axle

and the clamp comprises a fork to receive said axle for the knob to move the clamp from a retracted position to a locked position, and *vice versa*.

[0018] In an embodiment, the fork is at an end opposite to a portion of the clamp to lock the latch.

[0019] In an embodiment, the knob is slideable.

[0020] In an embodiment, the magnet is fixed to the lock by fixing means selected from screws or adhesives.

[0021] In an embodiment, the lock with clamp is moveable for mounting on the door or window. The lock with clamp can also be mounted on the door frame.

[0022] Another aspect of the present description concerns a closure for a sliding door or window comprising the latch device described above and comprising the lock with clamp described above.

[0023] The main advantages of the present disclosure are to present a solution wherein:

- mechanisms are completely hidden without any projection towards the passage area, with the door or window open, thus avoiding possible injuries by users;
- magnets replace mechanical elements and springs. As no other mechanical locks or rigid mechanical transmission elements are required in this solution, it cannot be easily vandalized or misused. The clamp always causes the latch to recoil when they come into contact with the outer faces, i.e. when the clamp is moved downwards and the latch hits the clamp;
- magnet repulsion facilitates opening by people with reduced mobility, as it tends to repel the door while other locks on the market tend to "hold" the door when using the conventional sense of magnetism;
- the latch center of mass allows recoil without the use of springs, even with angular misalignment;
- it allows the angular misalignment of the door, without the need for adjustments;
- there is no mechanical connection between the moveable knob actuation cases. It allows slight misalignments in the application, not compromising the proper functioning of the system, reducing noise and friction;
- the reduced thickness of the clamp allows the use of bases or shells of greater depth.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] For an easier understanding, figures are herein attached, which represent preferred embodiments which are not intended to limit the object of the present description.

Figure 1: Schematic representation of an embodiment of the closure.

Figure 2: Schematic representation of an embodiment of the latch device (A) and the lock with clamp (B).

Figure 3: Schematic representation of an embodiment of the closure comprising the latch device and the lock with clamp, in exploded view.

Figure 4A: Schematic representation of an embodiment of the operation of the closure demonstrating the position of the open door or window.

Figure 4B: Schematic representation of an embodiment of the operation of the closure demonstrating the position wherein the latch is in the protruding position but the clamp still does not lock the latch.

Figure 4C: Schematic representation of an embodiment of the operation of the closure demonstrating the position wherein the clamp locks the latch.

Figure 5: Schematic representation of an embodiment of the moveable knob of the lock actuator. In an embodiment, an actuator C is mounted in the outer room and an actuator D, comprising a displaceable knob, is mounted in the inner room, it only being preferably possible to lock the door or window from the inside.

Figure 6: Schematic representation of an embodiment of the lock actuators in an exploded view.

Figure 7A: Schematic representation of the actuation system in the lock, with an embodiment of the actuation system assembly in the lock with clamp being represented.

Figure 7B: Schematic representation of the actuation system of the lock, with the actuator with the displaceable knob and the respective axle being represented.

Figure 7C: Schematic representation of the actuation system in the lock, with an embodiment of the knob actuator assembly on the lock with clamp being represented.

Figure 7D: Schematic representation of the actuation system in the lock, with an embodiment of opening the lock with clamp B from the outside of the door, using the actuator without a knob being represented.

Figure 8A: Schematic representation of an embodiment of the closure, with the device with the latch and the lock with the clamp being represented.

Figure 8B: Schematic representation of an embodiment of the closure, with the device with the latch and the lock with the clamp being represented.

Figure 9: Schematic representation of an embodiment of the closure, with the movement of repulsion of the magnets from the device with the latch and the lock with the clamp being represented.

Figure 10A: Schematic representation of an embodiment of the latch device, representing the force and respective moment caused by the latch center of mass and the movement of the latch from the protruding position to the retracted position, with the latch in the protruding position.

Figure 10B: Schematic representation of an embodiment of the latch device, representing the force and respective moment caused by the latch center of mass and the movement of the latch from the protruding position to the retracted position, with the latch moving to the retracted position.

Figure 10C: Schematic representation of an embodiment of the latch device, representing the force and respective moment caused by the latch center of mass and the movement of the latch from the protruding position to the retracted position, with the latch in the retracted position.

Figure 11: Schematic representation of an embodiment of the lock with clamp, installed on a door.

Figure 12: Schematic representation of an embodiment of the alignments of the lock with clamp and the actuators.

Figure 13: Schematic representation of a top view of an embodiment of the closure.

DETAILED DESCRIPTION

[0025] The present description relates to a latch device for closure of a sliding door or window in a lock with clamp, comprising a latch and a latch case with said latch on one face of said case, wherein the latch pivots between a retracted position in the latch case and a protruding position from the latch case; wherein the pivoting latch comprises a magnet arranged in the latch with a first magnetic pole oriented outwardly on said face to create a magnetic repulsive force from a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet placed in the lock so that the latch pivots from the retracted position to a protruding position to be locked by the clamp. It also relates to a lock with clamp comprising a lock case for receiving said latch on one face of said case, and comprising a magnet arranged in the lock with

a first magnetic pole oriented outwardly on said face to create a magnetic repulsive force from a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet placed on said latch so that the latch pivots from the retracted position to a protruding position to be locked by the clamp.

[0026] Figure 1 represents an embodiment of the closure wherein A represents the latch device; B represents the lock with the clamp and C and D are the actuators.

[0027] Figure 2 represents an embodiment of the closure comprising the latch device A and the lock with the clamp B.

[0028] Figure 3 represents an embodiment of the closure comprising the latch device A and the lock with the clamp B in exploded view, wherein 1 represents a nut, 2 represents the bridle, 3 represents a latch case, 4 represents the latch, 5 represents the frame fixing plate, 6 represents a screw, 7 represents the front of the lock, 8 represents an anti-friction element, preferably a polymeric tape, 9 represents the clamp, 10 represents the lock case, 11 represents an axle, 12 represents the magnet to be arranged in the latch 4, 13 represents a magnet to be arranged in the lock.

[0029] The anti-friction element allows friction and noise caused by the movement of the clamp to be reduced.

[0030] Figure 4 represents the operation of the present disclosure. In particular, Fig. 4A shows the latch device A and the lock with clamp B in a spaced apart position. In this situation, the latch 4 is in the retracted position, being necessary to approach the lock with clamp B to carry out the movement thereof. Fig. 4B shows the latch device and the lock with clamp in an approximate position, without locking. In this position, the latch 4 moves to the protruding position, rotating around the axle 11. More specifically, the movement of the latch 4 is due to the repulsion caused by magnets 12 and 13 (shown by arrows in opposite directions). In this situation, the clamp 9 is in the upper position, i.e., it is in the unlocked position, that is, in the retracted position, and it is possible to move the lock with clamp again, which allows the door to be opened. Fig. 4C shows the latch device and the lock with clamp in an approximate position, with locking. In this situation, the clamp 9 has been moved from an upper position to a lower position, as shown by the arrow, locking the latch 4, which is in the protruding position, preventing the movement of the lock with clamp B, which prevents the door from opening. The movement of the clamp is carried out by the displaceable knob which comprises an axle 21 and that allows the movement of the clamp up and down. In an embodiment, when the lock with the clamp, comprising the fixing plate 7, is at a distance of more than 4 cm from the latch device A, the latch 4 is in the retracted position, the magnet 12 being parallel to the latch device 4. The retracted latch position results from the latch center of mass which allows it to remain retracted in the latch case, since no magnetic repulsive

force is present. Preferably, the magnet **12** of the latch device is in a position parallel to the position of the magnet **13** of the lock with clamp, so that the repulsive force between the magnetic poles of each magnet causes the latch **4** to pivot, allowing the latch to move to the protruding position. The attachment of the magnet **12** to the latch **4** can be by screw **6** or by an adhesive material such as glue. When the lock with the clamp **B** is at a distance equal to or less than 4 cm from the latch device **A**, the latch **4** moves from a retracted position to a protruding position, due to the magnetic repulsive force between the magnet **12** of the latch device and the magnet **13** of the lock, causing the latch **4** to be inclined by 20° in relation to the latch case **3**.

[0031] In an embodiment, to lock the door or window, a clamp **9** is used that moves vertically guided in a case **10**, which in turn is locked in the latch **4** that is installed in the frame of a door or in the frame of a window. More specifically, latch **4** comprises a recess for receiving and locking the clamp **9** and thereby locking the door or window.

[0032] In a preferred embodiment, for the user to move the clamp, he/she needs to move the knob **18**. Preferably, the knob **18** comprises an axle **21** that moves the clamp to the latch lock or latch unlock position.

[0033] In an embodiment, the clamp **9** comprises a fork for receiving the axle **21** of the actuation device **D**.

[0034] In an embodiment, the actuation of the latch **4** is carried out through the use of magnets **12** and **13**. The latch **4** is actuated by magnetic forces caused by the magnets **12** and **13** which are positioned so as to cause the repulsion thereof.

[0035] As soon as the systems approach, the magnetic repulsive force causes the latch **4** to rotate around an axle **11**, being projected to the outside only from that moment, leaving the latch **4** in the protruding position.

[0036] The latch system **4**, together with the magnet **12** and the screw **6** or another fixing system such as adhesives, were developed in such a way that its center of mass causes its movement to the retracted position through gravity, thus avoiding the use of springs in the system. The position of its center of mass guarantees that the latch **4** is correctly positioned inside the latch case, even if it presents slight angular deviations in its application. This change avoids the existence of protruding elements whenever the door is open.

[0037] The use of magnets ensures that there is no rigid lockage in the event that the door or window is closed with the clamp **9** in the closed position, making the latch **4** recoil whenever they contact through the outer faces.

[0038] In an embodiment, the polarity of the magnet **12** of the latch device is equal to the polarity of the magnet **13** of the lock with clamp, so that the magnetic repulsive force is created when the lock with clamp **B** is at a distance equal to or less than 4 cm from the latch device **A** and when the latch **4** moves. That is, the magnet **12** is with a first magnetic pole oriented towards the outside of the face of the latch case **3**, to create a magnetic repulsive

force from a second magnetic pole, having the same polarity as the first pole of magnet **13**, with said poles being oriented in opposite directions.

[0039] The magnets can have any geometric shape, preferably round, square or rectangular.

[0040] In an embodiment, **Figure 5** represents the actuators of the lock with the clamp **B**, wherein **C** does not comprise the displaceable knob and **D** comprises the displaceable knob **18**. The displaceable knob allows the user to lock the door or window once that this knob is in contact with the axle **21** that will move the clamp **9** of the lock up or down, depending on the locking option of the latch **4** and unlocking of the latch **4**.

[0041] In an embodiment, **Figure 6** represents an embodiment of the actuators of the lock in an exploded view, wherein **14** represents the front of the actuator **D**; **15** represents the plate for hiding the mechanism, **16** represents the base, **17** represents the positioning magnet, **18** represents a knob, **19** represents the cover, **20** represents a cover attachment screw, **21** represents an axle of the actuation system, **22** represents a fixing screw for the axle of the actuation system and **23** represents the plate to allow opening/unlocking from the outside.

[0042] **Figure 7A** represents an embodiment of the assembly of actuators **C** and **D** in the lock with clamp **B**. The lock with clamp **B** is actuated by the vertical displacement of the displaceable knob **18**.

[0043] **Figure 7B** represents an embodiment of the actuator **D** comprising the displaceable knob. The displaceable knob **18** is produced in a material with magnetic properties, being attracted by the positioning magnet **17**. This attraction ensures that the displaceable knob **18**, once moved to the unlocked position, remains in this same position until an external force is exerted on the knob **18** to move to the locked position. While the knob **18** remains in the unlocked position, the clamp **9** remains in the upper position, preventing involuntary closing of the system.

[0044] **Figure 7C** represents an embodiment of the actuator **D** in the lock with clamp **B**. The vertical displacement caused by the displaceable knob **18** causes the vertical displacement of the axle **21** and respectively of the clamp **9**. The movement between the axle **21** and the clamp **9** is carried out by the contact between the two elements, since the axle **21** is inserted in the clamp **9**, in the area of the fork. This location allows the lock with clamp **B** and actuators **C** and **D** to be connected together without the need for fixing elements.

[0045] **Figure 7D** represents the opening of the lock with clamp **B** from the outside of the door, using actuator **C**. In actuator **C**, the plate to allow opening from the outside **23** has a geometry that allows the passage of a coin, key, or other accessory of similar geometry to allow the vertical displacement of the axle of the actuation system **21**, which allows the door to be opened from the outside in emergency cases.

[0046] In an embodiment, the user activates the system by moving the knob **18** vertically, which transmits

the movement to an axle **21** which is secured to the knob **18** by a screw **22**. The axle **21** is produced in a polymeric material in order to reduce friction and noise when in contact with the lock. This axle is mounted by the user according to the thickness of the door.

[0047] In an embodiment, the knob **18** can have another displacement such as, for example, radial with respect to the axle, rotary, among others.

[0048] To validate the opening and keep the closure in the open position, the actuator **D** has a magnet **17** housed in its structure in order to create the attraction of the knob **18**, which in turn is made of a metal with magnetic properties. Once in the unlocked position, it is necessary to apply an external force to move the knob **18** to the locked position. This force gives the user the feeling of validation of the closure.

[0049] In emergency cases it is possible to open the door from the outside with an external tool such as a coin or key, using the slots created in the plate to allow opening from the outside **23**, allowing the system to be used in places for public use.

[0050] The plates to allow opening from the outside **23** can be exchanged for plates without slots, making it impossible to open the door from the outside in cases of greater security or even to market the product without an opening mechanism.

[0051] In an embodiment, the movable components are guided in a polymeric base or shell, where the user can place his hand, never having contact between metallic components, in order to guarantee low noise and friction between them. This component also has several cavities on the outside thereof to allow better placement of an adhesive or other fixing element to install on the door.

[0052] In an embodiment, **Figure 8A** represents the approach of the latch device **A** with the lock with the clamp **B**, in the lower position, in which with the repulsive force from the magnets **12** and **13**, the latch **4** is in the protruding position. **Figure 8B** represents the lock **B** with the clamp **9** in the lower position, i.e., the locking position, and since the magnetic repulsive force from the magnets **12** and **13** causes the latch to protrude, the outer faces of the latch **4** and clamp **9** collide. However, the collision causes latch **4** to recoil. Latch **4** movement is only caused by the repulsion from magnets **12** and **13** and does not result from the action of mechanical elements, thus not damaging the various components when closing the door with the clamp in the lower position.

[0053] In an embodiment, the arrows in **Figure 9** represent the repulsive forces of the magnets since the poles are equal, said poles being oriented in opposite directions, causing the latch to move to the protruding position. That is, if the magnet of the latch device has the magnetic pole oriented towards the frame fixing plate, then the magnet of the lock will also have the same polarity oriented towards the front of the lock. For example, if the latch magnet **12** has the south pole oriented towards the face of the latch case, the lock magnet **13** will have the

south pole oriented towards the outside of the lock. On the other hand, if the magnet of the latch device **12** has the north pole oriented towards the frame fixing plate, then the magnet of the lock **13** will also have the north pole oriented towards the front of the lock. This repulsion will promote the movement of the latch, causing it to move from the retracted position to the protruding position.

[0054] In an embodiment, **Figure 10** represents the latch **4** in the various positions, from the protruding to the retracted position. **Figure 10A** shows the latch **4** in the protruding position and the respective force caused by the latch center of mass **4** at the moment wherein the lock with clamp **B** moves away and there are no longer magnetic forces acting on the latch **4**. The position of the latch center of mass **4** is located in such a way as to cause a moment in latch **4** that causes latch **4** to rotate in relation to axle **11**, moving latch **4** to the retracted position, when no other force is exerted on latch **4**, the use of springs or magnets being unnecessary for this function. **Figure 10B** shows the moment caused in latch **4**, starting its movement to the retracted position. In **Figure 10C**, the latch **4** is shown in the retracted position and the respective force caused by the center of mass of the latch **4**.

[0055] In an embodiment, **Figure 11** represents the lock with clamp installed on a door. In a preferred embodiment, the clamp **9** comprises a fork, which allows an offset and respective decrease in the precision necessary for installing the actuation system. The front of the lock **7** presents a geometry that allows the entry of the latch **4**, even with misalignments in relation to the latch device **A**, without the need for adjustments in the door for the correct operation of the closure.

[0056] In an embodiment, **Figure 12** represents an embodiment of the lock alignments with actuation elements. The movement between the axle **21** and the clamp **9** is carried out by the contact between the two elements, since the axle **21** is inserted in the clamp **9**, in the area of the fork. This location allows the lock with clamp **B** and actuators **C** and **D** to be attached together without the need for fixing elements.

[0057] In an embodiment, **Figure 13** represents a top view of an embodiment of the closure, where the clamp **9** has a reduced thickness of, preferably, 2 mm, which allows the use of handles with a greater depth in relation to conventional lock systems.

[0058] The term "comprises" or "comprising" whenever used herein is intended to indicate the presence of the features, elements, integers, steps and components mentioned, but does not preclude the presence or addition of one or more other features, elements, integers, steps and components, or groups thereof.

[0059] The present invention is of course in no way restricted to the embodiments described herein and a person with ordinary skills in the art may foresee many possibilities of modifying it and replacing technical features with equivalent ones depending on the requirements of each situation as defined in the appended

claims.

[0060] The following claims define additional embodiments of the present description.

Claims

1. Latch device (A) for closure of a sliding door or window in a lock with clamp (B), comprising a latch (4) and a latch case (3) with said latch (4) on one face of said case, wherein the latch pivots between a retracted position in the latch case (3) and a protruding position from the latch case; wherein the pivoting latch comprises a magnet (12) arranged in the latch with a first magnetic pole oriented outwardly on said face to create a magnetic repulsive force with a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet (13) placed in the lock so that the latch pivots from the retracted position to a protruding position to be locked by the clamp (9) on approaching said lock. 5
2. Device according to the preceding claim wherein the latch (4) has an inclination of 20° with respect to the latch case (3) when in the protruding position. 10
3. Device according to any one of the preceding claims wherein the latch (4) is arranged to pivot from the retracted position to a protruding position when the magnet (13) of the lock is at a distance equal to or less than 4 cm. 15
4. Device according to any one of the preceding claims, wherein the latch (4) comprises an axle (11) for pivoting the latch (3). 20
5. Device according to any one of the preceding claims wherein the latch (4) comprises a recess for receiving and locking the clamp (9) for locking the door or window. 25
6. Device according to any one of the preceding claims, wherein the magnet (12) is fixed to the latch (4) by fixing means selected among screws or adhesive. 30
7. Device according to any one of the preceding claims wherein the latch device is a device that is fixedly mounted in a door or window frame. 35
8. Lock with clamp (B) for closure of a sliding door or window on a latch, comprising a lock case (10) for receiving said latch (4) on one face of said case, and comprising a magnet (13) arranged in the lock with a first magnetic pole oriented outwardly on said face to create a magnetic repulsive force with a second magnetic pole, having the same polarity as the first pole and oriented opposite to the first magnetic pole, from another magnet (12) placed on said latch (4) so that the latch pivots from the retracted position to a protruding position to be locked by the clamp (9) on approaching said lock. 40
9. Lock according to the preceding claim wherein said lock comprises a knob (18) for moving the clamp (9) from a retracted position to a locked position. 45
10. Lock according to the preceding claim wherein the knob comprises an axle and the clamp comprises a fork for receiving said axle for the knob (18) to move the clamp from a retracted position to a locked position, and *vice versa*. 50
11. Lock according to claim 10 wherein the fork is at an end opposite to a portion of the clamp to lock the latch. 55
12. Lock according to claims 9 to 10 wherein the knob is slideable.
13. Lock according to any one of claims 8 to 12 wherein the magnet (13) is fixed to the lock by fixing means selected from screws or adhesive.
14. Lock according to any one of claims 8 to 13 wherein the lock with clamp (B) is moveable for mounting on the door or window.
15. Closure for sliding door or window comprising the latch device (A) according to any one of claims 1 to 7 and comprising the lock with clamp (B) according to any one of claims 8 to 14.

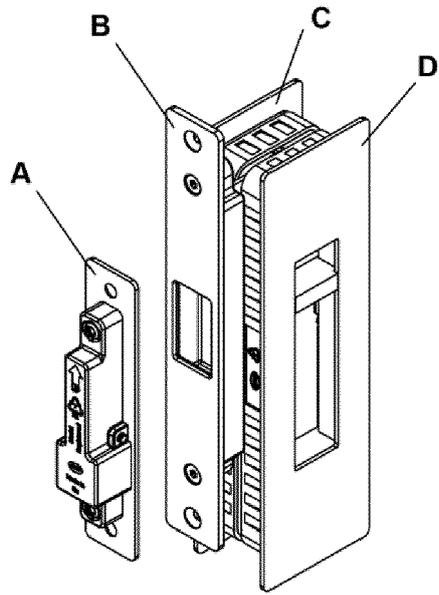


Fig. 1

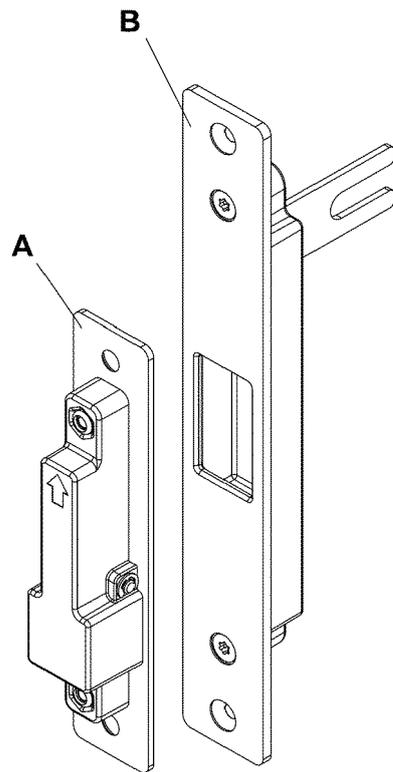


Fig. 2

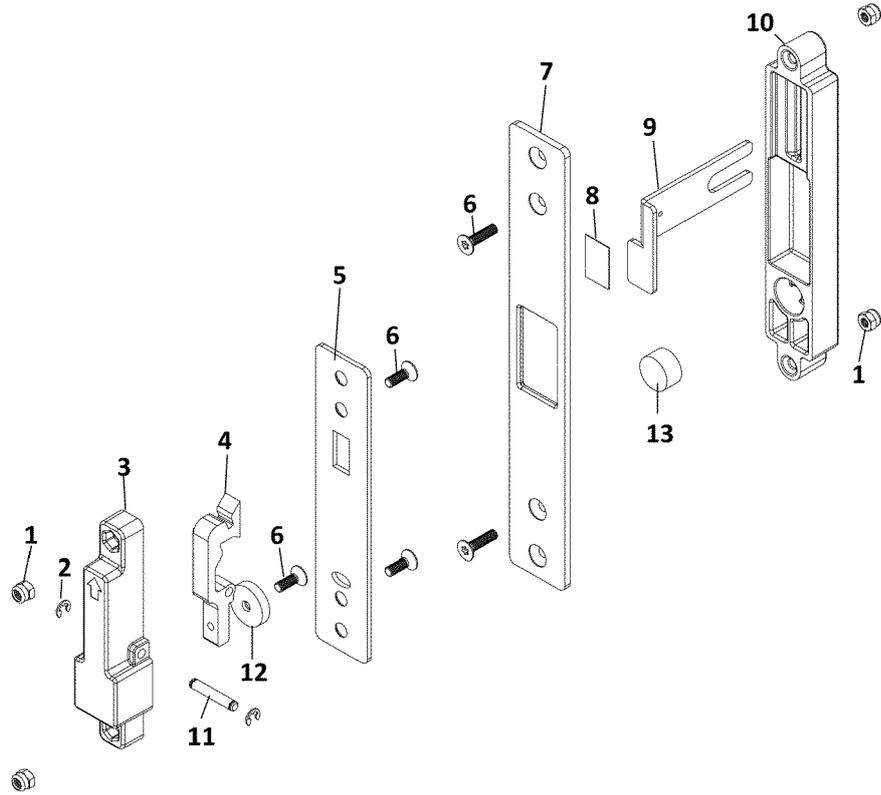


Fig. 3

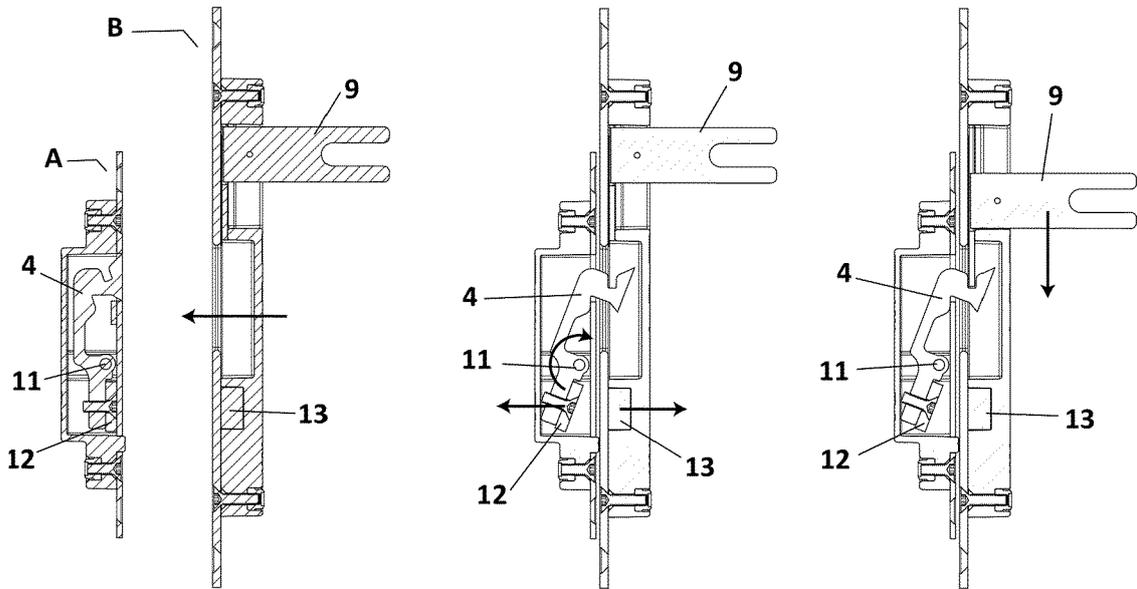


Fig. 4A

Fig. 4B

Fig. 4C

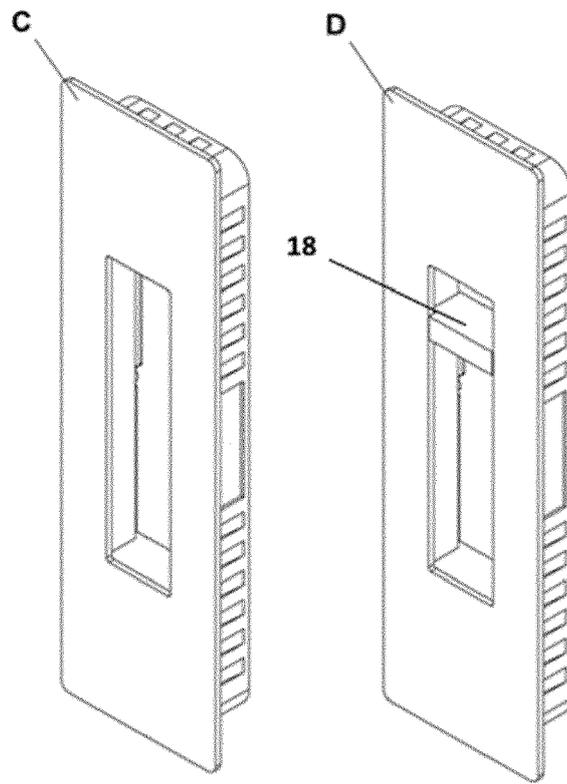


Fig. 5

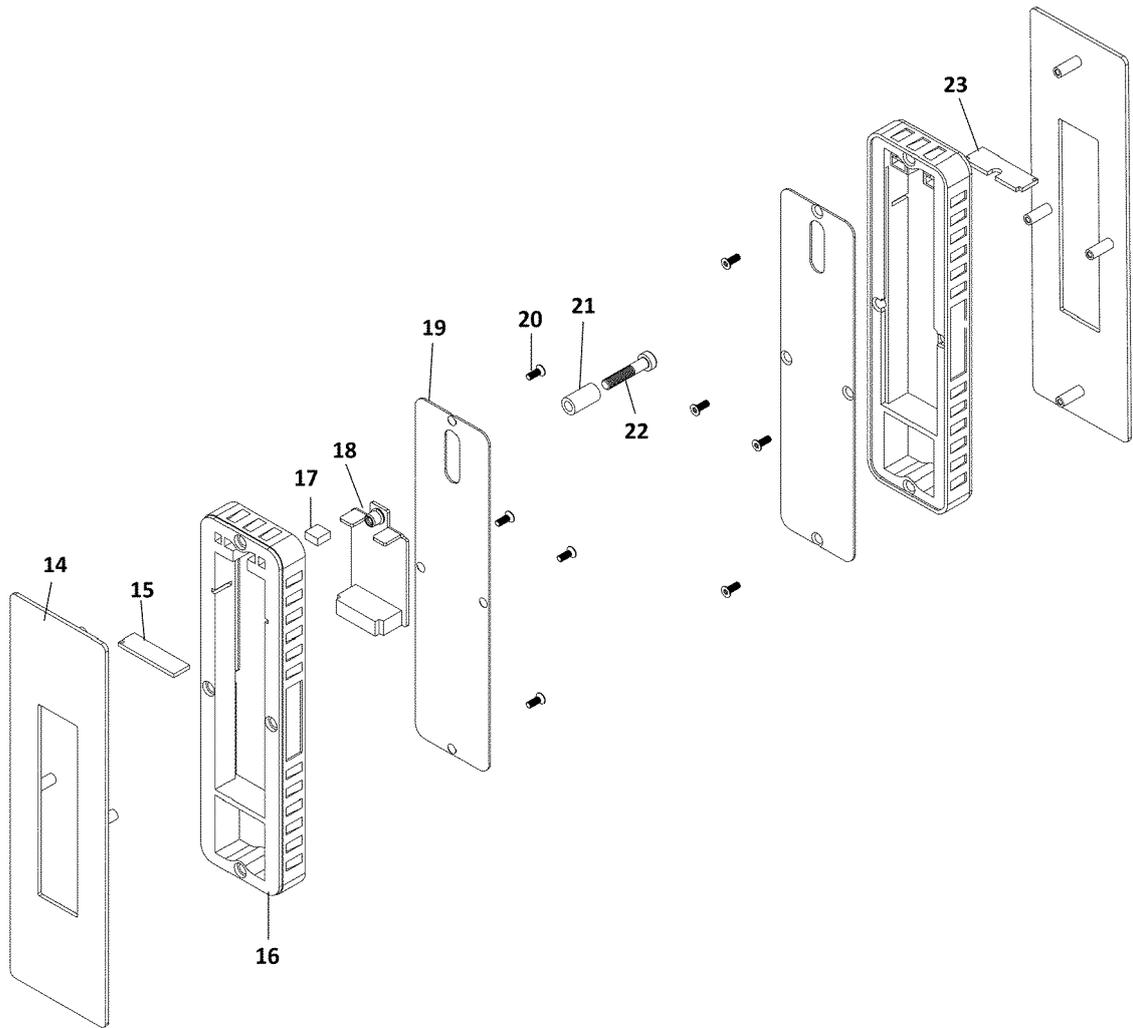


Fig. 6

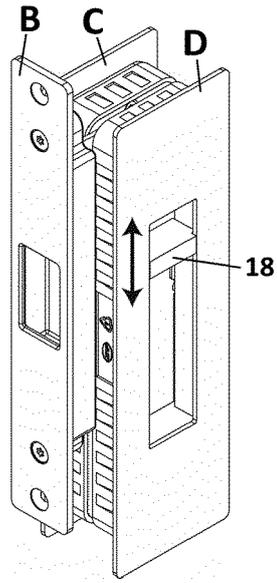


Fig. 7A

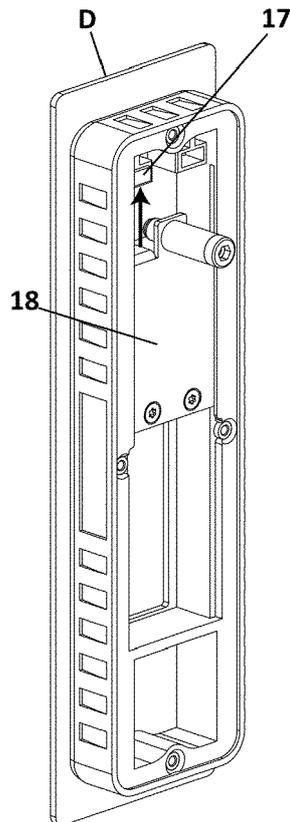


Fig. 7B

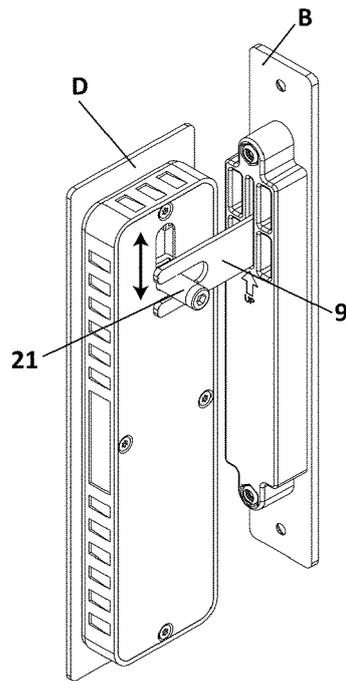


Fig. 7C

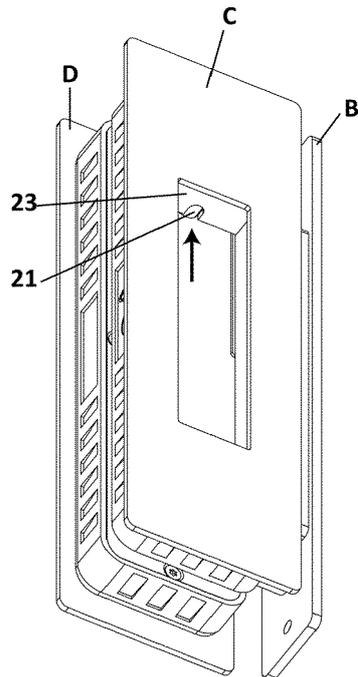


Fig. 7D

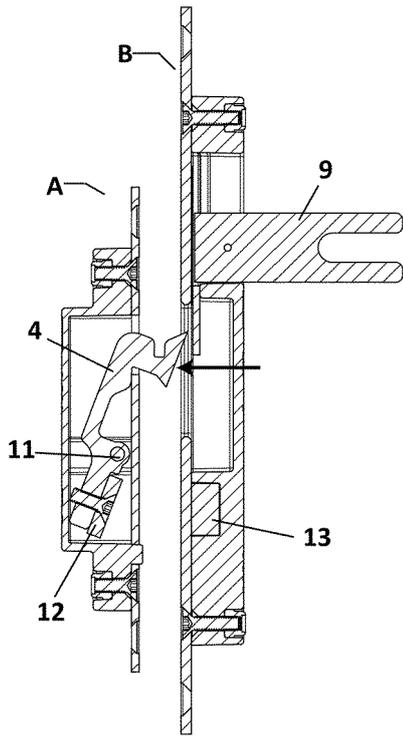


Fig. 8A

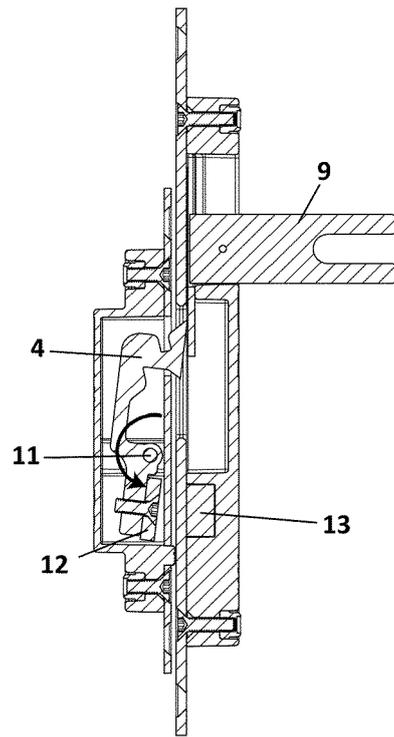


Fig. 8B

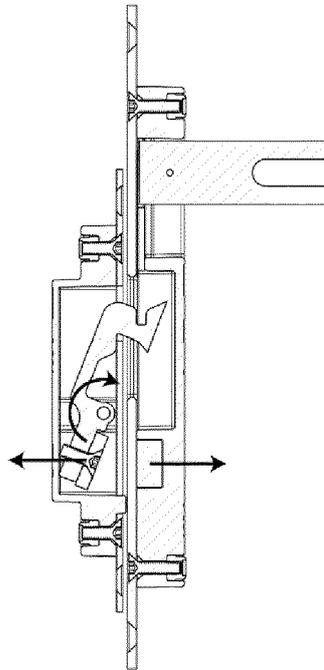


Fig. 9

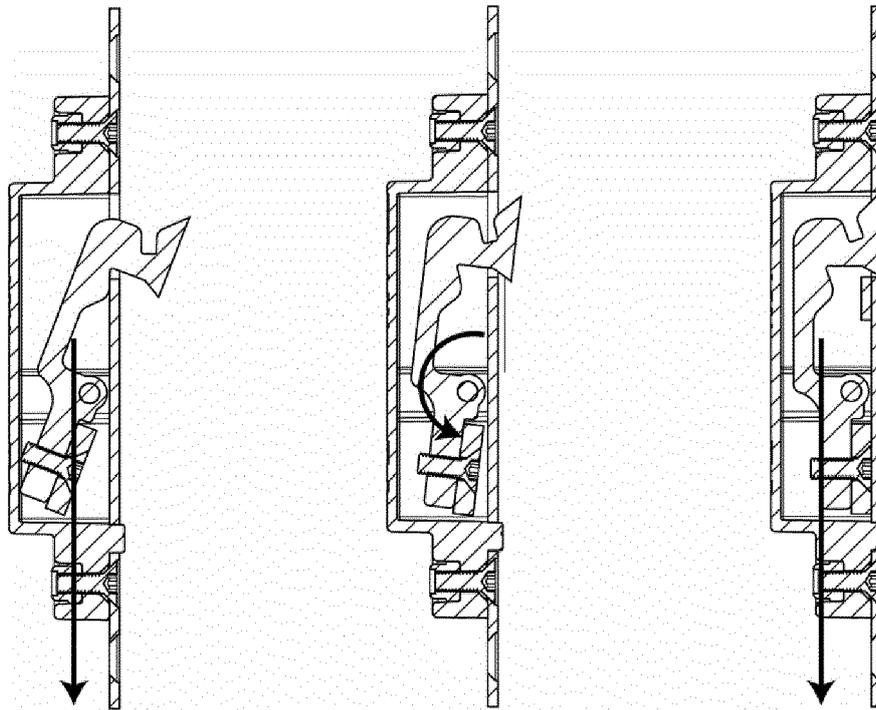


Fig. 10A

Fig. 10B

Fig. 10C

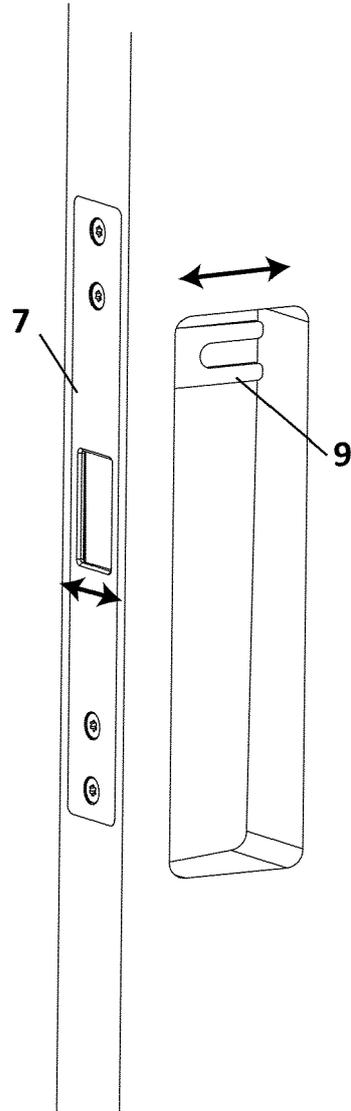


Fig. 11

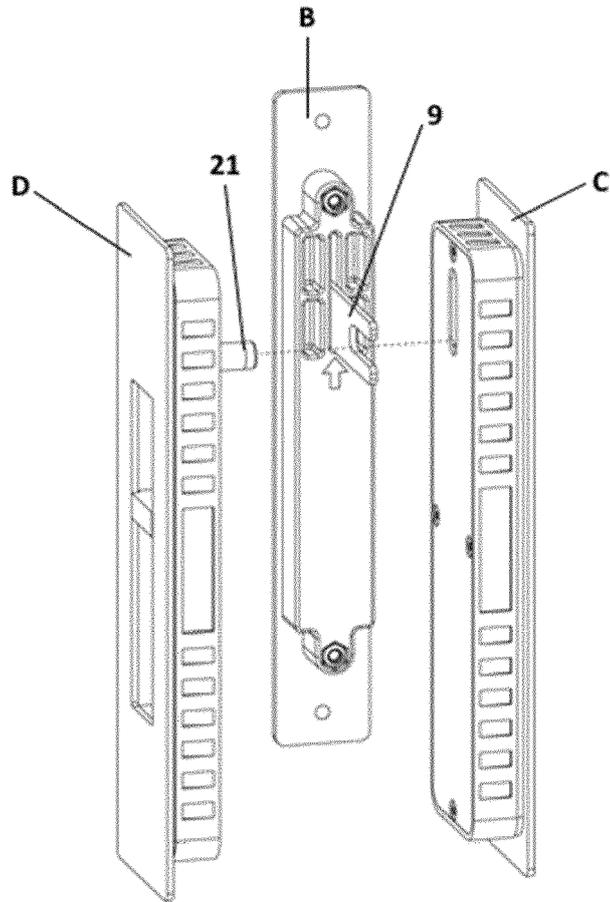


Fig. 12

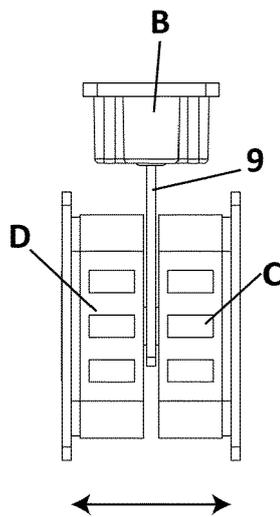


Fig. 13



EUROPEAN SEARCH REPORT

Application Number
EP 22 19 3124

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2011/069323 A1 (LI JIANHUA [CN]) 16 June 2011 (2011-06-16) * the whole document * -----	1-15	INV. E05B65/08 E05B63/24
A	JP H10 273986 A (ALPHA CORP) 13 October 1998 (1998-10-13) * the whole document * -----	1-15	
A	DE 20 2007 014103 U1 (HEGER KARL [DE]) 14 February 2008 (2008-02-14) * the whole document * -----	1-15	
A	US 2017/298650 A1 (MINTER PETER J [US] ET AL) 19 October 2017 (2017-10-19) * column 6, line 19 - column 11, line 12; figures 1-15 * -----	1, 8, 15	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 January 2023	Examiner Goddar, Claudia
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

1
EPO FORM 1503 03.82 (F04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 22 19 3124

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-01-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2011069323 A1	16-06-2011	CN 101718159 A WO 2011069323 A1	02-06-2010 16-06-2011
JP H10273986 A	13-10-1998	NONE	
DE 202007014103 U1	14-02-2008	NONE	
US 2017298650 A1	19-10-2017	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 2018055398 A [0003]
- WO 2017008104 A [0004]
- WO 2020157628 A [0005]