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(54) **LOCK FRAME FOR SECURITY DEVICE FOR CLOSING TWO HINGED ELEMENTS**

(57) Lock frame, comprising a plate with a hole for receiving a latch and holes for receiving fastening elements to a swing element, characterized in that it comprises a recess of the thickness of the plate in contact with at least one side of said hole, on the outer face of the plate.

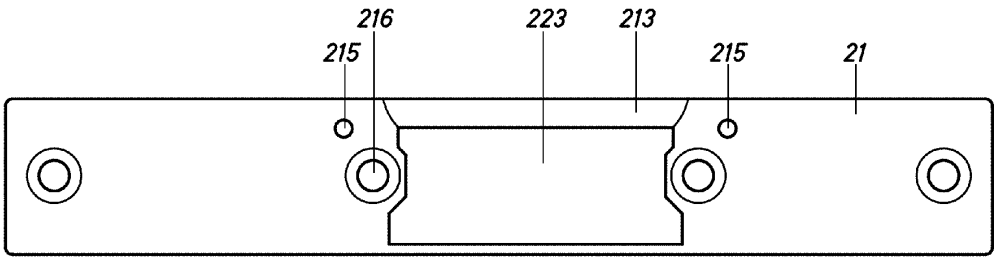

Fig.14

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Description

[0001] The present invention relates to door and window closing systems, and more specifically to security means in said systems for preventing the unauthorised opening thereof by intruders. Even more specifically, the present invention relates to a security device for closing two hinged elements, to a door opener and to a door which comprises said device.

[0002] A lock connects two hinged elements to each other. Hinged element or door element may include, for example, door or window leaves or panels, or door or window frames, among others.

[0003] Modern locks have their origin in the horizontal wooden bolt which, attached to the back portion of the door, was slid through a rudimentary guide in order then to fit into a hole which was made in the jamb or frame. To give the lock greater security, with the passage of time the mechanism evolved into components made of metal, resulting ultimately in the conventional barrel bolts. The introduction of the retractable latch in the modern lock was a substantial advance owing to the convenience of pushing the door and allowing said door to close autonomously owing to the sloping surface of the latch, compared to its precursors where a bolt had to be moved manually to keep said door closed after being passed through. However, this important advance in user convenience gave the doors a vulnerability which up to the present time has been taken advantage of by intruders to gain unauthorised access to spaces very easily, at little cost and without leaving any trace as there was no forced entry. All that is needed is a flexible card or sheet which is inserted in the gap between the door leaf and the frame such that when said card or sheet is slid vertically or horizontally, said card or sheet makes contact with the sloping region of the latch and by making a pushing movement succeeds in moving the latch, causing said latch to retract and the door to open.

[0004] To confront this problem, locksmiths have devised many solutions, mostly consisting of interposed components which attempt to prevent access to the latch from the outside. Said components are additional accessories which project, installed on the outside of the lock or the frame and which attempt to prevent the sheet from reaching the latch, by being interposed.

[0005] An example of said device is the accessory commercialised under the name Magic Key by the company Factoria de Ideas Practicas para el Hogar, S.L.

[0006] These accessories, as well as not being totally reliable, because most can be circumvented, have drawbacks as they are components which project from the frame and may result in a considerable change to the original installation or alternatively can easily cause accidents as said components may become caught in the clothing of users, or in other components. Similarly, this drawback also causes damage to the system over time owing to items becoming caught.

[0007] In addition, lock systems have been developed which automatically immobilise the latch, as shown in document ES1047686U, for example. Said systems are reasonably effective, although more costly and complex to install. For example, those that function with an extra trigger fail if the distance between the frame and the lock is very great, as the greater distance means that the loader is not under sufficient pressure and does not ultimately immobilise the latch. Furthermore, if a door comprising this system is properly installed in the summer but operating at its limit, when winter arrives and the door contracts, it may not immobilise the latch.

[0008] An object of the present invention is to disclose security means for all types of doors and windows which do not have the drawbacks described above.

[0009] More particularly, the present invention discloses a security device for closing two hinged elements, said device comprising interposition means intended to block access to the latch through a channel between the hinged elements to be closed. The interposition means has at least an inactive position in which said means is retracted and an active position in which said means is preferably deployed. The device also comprises an actuation mechanism for actuating the interposition means when the door is closed.

[0010] The present invention discloses the use of a retractable interposed element or means which is actuated only in response to the closing of the door or window. This has a series of advantages which cannot be found in the prior art. The system is simple and does not deteriorate over time. Furthermore, as said system is moveable and deployable, it produces a force which prevents unauthorised opening. In addition, said system can be designed so that in the inactive position it does not project beyond the lock, door opener or hinged element, thus overcoming the problem of known interposed structures. The solution of the invention is especially advantageous in the field of so-called door openers.

[0011] An object of the present invention is to prevent unauthorized access preventing by blocking the introduction of an element, for example flat and flexible, until contacting the latch. For this, preferably, access must be prevented not only directly through the level at which the latch is located, but also from points located superiorly and inferiorly, that is, by introducing the element at a point away from the latch and then sliding it along of the slot until the handle is reached. It is, therefore, to avoid an attack to the handle not only frontal, but also superior or inferior. For this, preferably, the interposition means of the present invention must have dimensions greater than the latch, and, more preferably, that the orifice intended to give access to the space or reception box of the latch.

[0012] The interposition means may take the form of a screen or casing, for example.

[0013] The device can be designed so that any event related to the closing of the door deploys the interposition means. For example, closure sensors or the entry of the latch into its space during closing could be used, taking full advantage of the force thereof to produce the deploy-

ment movement or alternatively the metallic contact of the latch with another component could be used to produce the deployment signal.

[0014] The interposition means (or casing) could be deployed in any way and present different movement kinematics between the inactive position and the active position. However, according to the present invention, it is particularly advantageous for the interposition means to be tiltably or rotatably connected to the actuation mechanism in such a way that the interposition means passes from the inactive position to the active position by means of rotation. This makes it possible to ensure that the device does not project in the inactive position and also facilitates actuation, as the device can be arranged so as to rock about its axis of rotation, in such a way that the entry of the latch at one end causes the interposition means to emerge at the other.

[0015] The terms 'rotation' and 'rotatably' in the present application cover, in addition to rotations in the strict sense, movements made up of translation and displacement.

[0016] Preferably, the interposition means, in the inactive position, exceeds the limits or laterals of the space or reception box of the latch. This gives additional protection when the interposition means is activated, especially when activated by rotation, since if the interposition means has dimensions equal to or lower than those of the box or space and, moreover, does not exceed the limits of the space or latch reception box along the plane of development of the interposition means when it is placed in the inactive position, then, the interposition means, in active position, that is, raised, would leave a free space through which it would be possible to access to force the lock. However, if the end of the interposition means that is deployed is initially located beyond at least some limits or sides of the box, covering them, said available space is limited and even nullified. The interposing means can exceed different sides of the space or box to avoid attacks from any direction, it being preferable that one end of the free interposition means parallel to the axis of rotation and that unfolds when the interposition means is activated surpasses or cover one limit or side of said space or box.

[0017] Accordingly, preferably, the actuation means comprises an arm which can be actuated and is connected to the interposition means through a common axis of rotation, in such a way that actuation of the arm causes the actuation by rotation of the interposition means. This drive arm can occupy part or all of the area of reception of the latch.

[0018] According to the present invention, it is advantageous for the arm and/or the interposition means to be flexible. In particular, by means of its non-permanent deformation, the flexibility of the arm and/or the interposition means facilitates the full entry of the latch even when the interposition means abuts the opposite door leaf before the latch reaches the end of its travel.

[0019] To assist this effect, the device preferably comprises a bent rod having the ability to rotate relative to said common axis of rotation and which has at least a first length in contact with the interposition means and a second length in contact with the arm.

[0020] The rod, or strip, may perform various functions, including:

- Helping the above-mentioned arm to flex, and/or
- Transmitting movement from the arm to the interposition means, and/or
- Acting as a resilient means, the force of which tends to take the interposition means to the inactive position thereof.

[0021] Alternatively, the interposition means may have, in an integrated manner, respective projections (for example, axes), which are placed in corresponding rotary connection areas for the interconnection means pivoting on said rotary connection areas. The device can have several rotation grooves, parallel to these to receive said axes, in order to adjust the position of the interposition means.

[0022] In the closed position, the distance between the hinged elements to be closed varies depending on the installation constraints. If the distance is very small, there is a risk, in some embodiments, that the interposition means may not rise or deploy sufficiently. To minimise this risk, the present invention provides for the device to be able to have an auxiliary interposition means or screen in contact with the arm. Said auxiliary interposition means may have smaller dimensions than the main interposition means or screen.

[0023] Preferably, the interposition means has a plurality of grooves on its outer face, which are preferably oblique relative to the plane of said outer face and which are cut into the face in a direction moving away from the axis of rotation. Said grooves are an additional means of protection, as they act as hooks for cards inserted in order to get round the interposition means and reach the latch. Even more preferably, the profile of the interposition means is shaped so as to form a ramp in the direction of said grooves. The purpose of this feature is to direct the card towards the grooves. For example, one end of the interposition means may be flared.

[0024] One of the advantages of the present invention is that it can be applied to any type of lock. It can also be applied to existing locks. The device may accordingly comprise a connection plate (or strike plate) embedded in a hinged element (for example a frame or door leaf), the plate having an aperture for receiving a latch. Preferably, the interposition means does not project beyond said plate. Preferably, said arm is located in said aperture for receiving a latch. Preferably, the device has lugs which are inserted into corresponding holes in the plate in order to reinforce the mechanical stability of the entire mechanism.

[0025] Preferably, the interposition means has a through hole for allowing access to elements of the box

when the interposition means is in the inactive position.

[0026] The present invention also relates to door openers that comprise the device according to the present invention. Preferably, it comprises an outer surface for alignment with the cant of a hinged element, and in the inactive position is housed in the lock and does not project beyond the outer surface. More preferably, the actuation mechanism is located in a space for receiving a latch of the lock, such that the entry of the latch in said space produces the actuation of the device. Even more preferably, the door opener is an electromechanical, electromagnetic, motorised, pneumatic or hydraulic opening component.

[0027] The present invention also discloses doors and/or windows that comprise a device or a door opener according to the present invention. Preferably, said door opener is embedded in or placed on the frame of the door and/or window.

[0028] The present invention applies in particular to entry phone systems, although the invention may be applied to any type of lock, such as a simple latched lock actuated manually and/or with a key.

[0029] In conclusion, the present invention is considered to be a system that emerges from the frame or door when the door is closed in order to protect the latch, and is fully or partly withdrawn when the door is open. An advantage of the present invention is that it may be an independent system or it may be incorporated in another system such as a door opener, for example. The present invention can be adjusted so as to adapt to any installation or latch. Moreover, the present invention allows the provision of additional protection systems such as auxiliary screens, ramps, for example, for deflecting cards, hooks, etc., which make it more difficult to break into the system from any direction. In addition, a series of stops can be included that prevent excessive rotation of the interposition element, thus ensuring its integrity against undue use. Finally, the present invention also has the advantage of being adaptable to the distance between the door and the frame.

[0030] As can be deduced, the present invention also discloses a lock frame or strike plate, which comprises a plate with a hole for receiving a latch and holes for receiving fastening elements to a hinged element, said frame comprising a recess of the thickness of the plate in contact with at least one side of said hole, on the outer face of the plate. Preferably, said strike plate further comprises holes for receiving lugs. More preferably, the recess has a length greater than that of said lateral. Even more preferably, said recess is in the form of a dovetail.

[0031] To aid understanding, explanatory yet non-limiting drawings are included of embodiments of the present invention.

Fig. 1 is a diagrammatic view of a door leaf and a frame, comprising a latch in the open position and an interposition means according to the present invention in the inactive position.

Fig. 2 shows diagrammatically the arrangement from Fig. 1 in the closed position and with the interposition means in the active position.

Fig. 3 is a perspective view of an embodiment of the present invention, showing an electric door opener which has a security device according to the present invention.

Fig. 4 is a view from above corresponding to the example from Fig. 3, in which for informational purposes some of the components of the security device and a portion of the door opener have been removed.

Fig. 5 is a perspective view of the components that can be seen in Fig. 4.

Fig. 6 is a perspective view from a different point of view of the example from Fig. 4, with the security device in the inactive position.

Fig. 7 is a perspective view which corresponds to Fig. 6, with the security device in the active position, the arrow indicating the action of the latch.

Fig. 8 is a diagrammatic view of a cross section in a horizontal plane of the device from Fig. 3 to 7 installed in a door, the door being open.

Fig. 9 is a diagrammatic view which corresponds to Fig. 8, at an intermediate stage of closure.

Fig. 10 corresponds to Fig. 8 and 9, with the door completely shut, and only a very small gap between the leaves of the door (or between door and frame).

Fig. 11 shows three possible embodiments of the interposition means.

Fig. 12 shows a perspective view of a second embodiment of a lock release with safety device according to the present invention.

Fig. 13 shows another perspective view from a lower point of view of the door opener of the previous figure.

Fig. 14 shows the plate for recessed connection of an embodiment.

Fig. 15 shows a view of a plate with stiffening lugs used in an embodiment.

Fig. 16 shows a perspective view of a second plate used in said second embodiment.

[0032] In the figures, elements that are the same or equivalent have been identified with the same reference numerals.

[0033] Fig. 1 and 2 show a first embodiment of the present invention diagrammatically. The components have been shown very schematically and shapes, distances and proportions have not been faithfully preserved. Moreover, in the closed position the rotation of the door leaf -100- about its hinge and hence its movement in a circular trajectory have been omitted.

[0034] In Fig. 1, two door leaves -100-, -101- can be seen (the second door leaf -101- could also be a door frame). A latch -50- has been shown on the first door leaf -100-. An interposition means or shield has been shown on the second door leaf -101-, which in the inactive position remains inside the door leaf -101- and does not project relative to the outer surface of the edge of the second door leaf -101-. In Fig. 2, the door has been closed and the interposition means -1- has been deployed and has moved to the active position.

[0035] The function of the interposition means -1- is to block unwanted access, in an attempt to force the door open. The interposition means according to the present invention therefore deploys until, preferably, making contact with the first door leaf -100-. In the example shown, the deployment takes place by translation, in particular by a linear displacement. Translation may take place in a manner impelled by a resilient means or by any other means (mechanical thrust, electric motor, hydraulic or pneumatic thrust, etc.). Any type of deployment trajectory is possible. The event that causes the actuation of the interposition means -1- should be related to the closing of the door. More specifically, said means may be actuated by a sensor for the door closing, for a movement of the door leaf -100-, the entry of the latch -50- into its reception space in the second door leaf -101-, or for any other event.

[0036] It is observed that the interposition means deploys preferably until contacting the outer surface of the hinged element (door leaf -100-) without entering any hole therein. In preferred embodiments, there is no recess for receiving the interposition means -1- in the leaf element -100- that receives the interposition means -1- in the active (deployed) position.

[0037] The figures show that the system is not affected by the free space between the door leaves -100-, -101-, as the interposition means -1- can be deployed until contact is made with the first door leaf -100-. The system is therefore equally effective for a wide range of distances remaining between door leaves -100-, -101-, or between leaf and door, during the installation of the door. Another advantage that can be seen is that the interposition means, in the inactive position, do not project beyond the edge of the second door leaf -101-.

[0038] Preferably, the interposition means -1- has a dimension greater than that of the latch -50-. It is more advantageous even if the interposition means -1- has larger dimensions than the orifice into which the latch -50- is inserted. In particular, in the example, it results It is convenient that in the direction perpendicular to that shown in Figs. 1 and 2 (that is, a direction parallel to the junction between the swing elements -100- and -101-), the interposition means -1- is larger than the latch and the recess for the same, thus offering greater protection against unauthorized access.

[0039] Fig. 3 to 10 show an exemplary embodiment of the present invention. In the different figures, elements that are the same or similar have been identified with identical reference numerals. In particular, Fig. 3 to 10 show an electric door opener -2- which has a security device according to the present invention. This type of door opener is normally used in entry phone systems and access controls, and presents the security problems present in lock latches, as the doors are kept closed only by the action of a latch.

[0040] In the example shown, the region which comprises the lower region of the rod -12- up to the connection part -111- acts as a spring.

[0041] In the example shown in Fig. 3 to 10, a portion of an embeddable door opener -2- contains what is known as a catch, that is, a space -28- or recess for receiving a latch and, in this specific example, components for the normal opening thereof. The opening function is produced by releasing the internal mechanism which frees the rotation of the catch -29-. When pushing the door, the user pushes the catch of the door opener -29- by means of the latch of the lock -50-, causing said catch to rotate until the latch of the lock is released, at this point the door is opened.

[0042] The example shown in Fig. 3 to 10 can be produced from a door opener of a known type, by substituting the connection plate -21-, to which the interposition means -1- is connected. The connection plate -21-has a recess for receiving the interposition means -1- in such a way that said interposition means does not project. This can easily be carried out, as in most door openers the door opener mechanism is connected to the plate -21- by screws -22-. The purpose of the plate -21- is to remain approximately flush with the cant of the door leaf or frame in which said plate is installed and therefore without projecting therefrom. Thus, the plate -21- comprises an outer surface for alignment with the cant of a hinged element.

[0043] As shown in the figures, the interposition means -1- is rotatably connected (in this case by means of rotating connection regions -15-, which in this case take the form of projections, of which the function is to reduce friction and encourage rotation). In the inactive position, said interposition means remains inside the framework and does not project from the door opener (and hence not from the cant in which said means is installed) while moving to the active position by means of rotation.

[0044] In the rest position shown in figure 3, it is observed how the interposition means -1- exceeds limits of the space -28- or reception box of the latch on the plane along which the interposition means lays. In particular, in the case shown, the interposition means exceeds a side of the latch box by the end -113-that unfolds during the rotation of the interposition means. In this case, said part exceeding limits of the box is housed in a recess

-213- in the plate -21- to prevent the interposition means -1- protruding from the connection plate -21- in the inactive position. However, the interposition means, despite exceeding the limits of the box on its side, does not protrude from the plate in a direction perpendicular to it.

[0045] Resilient means, for example, may be provided to ensure the return of the interposition means to the inactive position from the active position. In the example shown, this can be achieved by the action of the rod -12-, magnets, spring or strip. Accordingly, in some cases it would also be possible to use known operating components in door openers such as an automatic-function pin or micro-switch actuation element.

[0046] In the example, the interposition means -1- is actuated by the latch. To do this, the device comprises an arm -19-. The arm is located in the opening for receiving the latch defined, for example, by the plate -21-. The arm is connected to the interposition means -1- on the side opposite the axis of rotation of the interposition means -1-, in such a way that the entry of a latch pushes the arm -19- towards the inside of the catch, causing the interposition means to come out. In the specific example shown in figures 3 to 10 and 12, the arm -19- is flexible, which allows said arm to continue to flex allowing the latch to enter even when the interposition means has made contact with the door leaf and, therefore, no longer rotates. To encourage said flexing, the rod -12- is bent and has a length in contact with the arm -19-. Said length of the rod -12- in contact with the arm -19- is separated from the axis of rotation to assist the lever arm and the flexion. Moreover, the rod -12- is in contact with the interposition means -1- on a face opposite that in contact with the arm -19- (in reference to the axis of rotation), so that the rod can also act as a transmitter of the movement of the arm -19- to the interposition means -1-.

[0047] The interposition means -1- has grooves -13-, -14- (see Fig. 6) and/or steps, the purpose of which is to act as hooks to deflect and block attempts to overcome the interposition means from above or below using cards with special shapes, for example L-shaped. If the card makes contact with one of the grooves -13-, -14-, when the interposition means is deployed, said grooves trap and block the card. Accordingly, the grooves in a possible example are oblique relative to the plane of the outer face of the interposition means -1- in which said grooves are located in and cut into the face/interposition means in a direction moving away from the axis of rotation. Preferably, said grooves are located in the vicinity of the axis of rotation, although they may be positioned anywhere.

[0048] The action of the grooves -13-, -14- is complemented by the flared or triangular free end -113-. Said regions -18- form ramps at the perimeter of the interposition means which directs a card inserted in the groove towards the ramps. Likewise, the fact that the free end -113- has, in the direction of the axis of rotation of the interposition means -1-, a length greater than that of the area for reception of the larch -50-also hinders unauthorized access by means of cards or rods to the device to violate the safety of the same.

[0049] In the example shown, the interposition means has two parts, and also comprises an auxiliary screen -11-. The purpose of this arrangement is to help the device to adapt to very small distances between door leaves or between groove and door leaf. In this case, the interposition means should not prevent the latch from entering fully.

[0050] This construction can be seen in Fig. 4, 5 and 8 to 10. For reasons of clarity, some of the elements shown have been eliminated in said figures. In all the figures, most of the door opener has been eliminated, except for the opening mechanism -29- (said mechanism is not necessary for implementing the invention, which can be applied to other types of closure devices). In Fig. 4 and 5, the shield of the interposition means -1- has also been eliminated, although it can be seen in Fig. 8 to 10.

[0051] The auxiliary screen -11- together with the arm -19- and the connection part -111- are preferably components made of a flexible material which are connected to the interposition means -1-. The arm -19- and the auxiliary screen -11- can be connected in such a way that the flexion of the arm -19- always produces a raising of the auxiliary screen which, if the interposition means -1- does not rise, occurs independently of the interposition means. In this case, the auxiliary screen -11- may perform functions of the interposition means. The connection part -111- in the example is incorporated in the arm -19- although they can work separately, and its function is to actuate as a spring which tends to retract the device when the door is opened both arm -19- and connection part -111- can be connected to the interposition means -1-. Said connection is produced, for example, by means of openings -112- in the arm -19- (see Fig. 5) and projections or lugs -113'- positioned on the lower face of the interposition means -1- (see Fig. 8 to 10).

[0052] Fig. 8 to 10 show the process of closing and deploying the security mechanism. Fig. 8 shows the moment when, on closing the door, the latch -50- makes contact with the arm -19-. The interposition means does not project from the outer surface -21-, and remains incorporated within the framework. In Fig. 9, the latch has entered further, pressing and pushing the arm -19- inwards and causing the interposition means -1- to come out, because the assembly pivots about its axis of rotation (which coincides with the main axis or axis of rotation of the rod -12-). For this to occur, it is advantageous if the resilient force applied by the arm -19- is less than that of the latch spring. Fig. 10 shows that the latch has been inserted to the end, but in this case the arm has flexed without causing the main portion of the interposition means to further rotate. It is therefore advantageous for the arm to be sufficiently yielding to allow this effect without overcoming the force of the latch spring (not shown). As can be seen in Fig. 10 , the interposition means -1- has not moved respective to Fig. 9, but it can be seen that the auxiliary screen -11- has been deployed, until it practically touches the door leaf -100-.

[0053] The interposition means may have various grooves for placing same in different positions relative to the axis of rotation. This allows the position of the interposition means -1- or shield to be adjusted. This may be useful if the latch is wide or the tab of the door opener needs to be adjusted for adjusting the door lock.

[0054] In Fig. 8 to 10, the interposed component -1- has been shown as not sufficiently flexible to deform. In some cases, however, this may be a desired effect, as by deforming the contact surface between the interposition means -1- and the cant of the first door leaf -100- would increase.

[0055] In the present specification, the term flexible or flexible material should be understood to mean capable of being bent/deformed under the forces experienced in normal use, while retaking its original form when the external force in question stops. In general, plastics materials and/or synthetic materials may be used as resilient materials, although metal may also be used, provided that the dimensioning thereof allows the effect indicated to be obtained.

[0056] Fig. 11 shows three possible embodiments -500-, -600-, -700- of the interposition means -1-. Elements that are the same or equivalent to those shown earlier have been identified with identical reference numerals and will not be explained in detail. In the embodiment -500-, there is a square central region -19- for the rod -12-. A straight strip enters said region -19- which on flexing rotates on the edge of the groove acting as a rod -12-. In this case, the articulated connection region -15- of the interposition means is a component that reduces friction in rotation which occurs at the ends of the equivalent rod -12-.

[0057] In the embodiment -600-, the arm -19- is thick and is therefore not flexible. The articulated connection region -15'- are projections which can be integrated or form part of the interposition element -1- and which do not have an opening for the rod or strip and which can act like the ends of the rod -12- in other embodiments, with the possibility of being used without said rod.

[0058] The embodiment -700- is intended to be the strong, hard and flexible embodiment (for example, metallic) of the interposition means. This embodiment is intended to combine in a single part the functions of interposition means -1- and arm -19-. Accordingly, the interposition means is Z-shaped. The embodiment has no anti-card grooves, but they could eventually be implemented. It can also be used without a rod, for example by using another resilient return component (for example, the pin for the automatic function of a door opener).

[0059] In the three embodiments -500-, -600-, -700- the interposed component is a single part, and has no auxiliary screen device.

[0060] Fig. 12 to 16 show a further embodiment of a device according to the present invention. Equal elements, similar or equivalent to those of the embodiments shown above have been identified with identical numerals.

[0061] As seen in the figures, the interposition means -1- is of the rotating type. The free end -113- of the interposition means -1- surpasses a side of the box -28- parallel to the axis of rotation of the interposition means. In addition, the length of said free end -113- is greater than the length of said side on the box. Also, the interposition means has an orifice -110- that allows access to the bottom of the box, in order to be able to access terminals for adjustment or disassembly of the assembly without the need to operate or disassemble the interposition means.

[0062] Additionally, the device has locking lugs -51-, which are inserted into corresponding holes -215- of the plate -21-. The lugs -54- stiffen the system

[0063] In Fig. 14 the plate -21- is shown with the hole -223- corresponding to the box, the recess -213- for receiving the free end of the interposition means (protruding from the recess) and the corresponding holes -215- for the lugs. The holes -216- are also observed for screwing the edge of the hinged element (not shown in the figures).

[0064] In this example, the lugs -51- shown are integrated in a plate -5- (see figure 15) which, together with another plate -6-, is interposed between the built-in door opener -2- and the plates -21-. The plate -5-has, in addition to the lugs, an empty zone -523- corresponding to the hole of the space -28- of the door opener -2-, of holes -59- corresponding with the holes -216- for screws of the plate -21-. It also has several slots -559- for receiving the axis of rotation of the interposition means -1-. The other plate -6- it prevents the interposition element -1- from coming out of its housing in the plate -5- during operation and during the regulation process. It has reinforcements -61- which ensure an optimum distance between the mechanism of the door opener -2- and the plate -21-, protect the means -111- and ensure a correct positioning of the other plate -5-. On the other hand, other adjustment systems are possible to adjust the position of the interposition element, such as, for example, the displacement of the assembly formed by the plates -5- and -6- with respect to the screws -22-, making the holes -59- elongated. In this case, the adjustment can be ensured by means of serrations located on the rear part of the plate -5- and on the contact surface with the door opener -2- or plate -21- (not shown).

[0065] In this example, the rod has been eliminated and integrated into the piece that forms the interposition means, becoming thus solid. In particular, an axis is arranged on each side of the interposition means, integrated in it. The interposition means pivots on said axes. This construction is more resistant than that of the rod.

[0066] Although the invention has been set out and described with reference to embodiments thereof, it should be understood that these do not limit the invention, and that it is possible to alter many structural or other details that may prove obvious to persons skilled in the art after interpreting the subject matter disclosed in the present description, claims and drawings. In particular,

in principle, all the features of each of the different embodiments and variants shown and/or suggested may be combined with each other. Therefore, the scope of the present invention includes any variant or equivalent that could be considered covered by the broadest scope of the following claims.

CLAUSES

[0067]

1. Security device for closing two hinged elements, the device comprising an interposition means intended to block access to the latch through a channel between the hinged elements to be closed, characterised in that the interposition means has at least an inactive position in which said means is retracted and an active position, and in that the device also comprises an actuation mechanism for moving the interposition means from the passive position to the active position when the hinged elements are closed.

2. Device, according to clause 1, characterized in that, in the inactive position, the interposition means excesses at least through a side the limits of an orifice intended to give access to an space or recess for reception of the latch.

3. Device, according to clause 2, characterized in that the interposition means has larger dimensions than the reception hole of the latch, in order to protect said space of unauthorized accesses that may occur through the slot that is between the swinging elements coming from different directions.

4. Device according to any of the preceding clauses, characterised in that the interposition means is rotatably connected to the actuation mechanism, in such a way that the interposition means moves from the inactive position to the active position by means of rotation.

5. Device, according to any of clauses 2 to 4, characterized in that the interposition means excesses the limits of the hole by a side corresponding to an end of the interposition means that unfolds when the interposition means rotates to pass to the active position.

6. Device, according to clause 5, characterized in that said lateral is parallel to the axis of rotation of the interposition means.

7. Device according to any one of the preceding clauses, characterised in that the actuation mechanism comprises an arm which can be actuated and which is connected to the interposition means through a common axis of rotation, in such a way that actuation of the arm causes the actuation by rotation of the interposition means.

8. Device according to clause 7, characterised in that the arm is a flexible arm intended to allow flexion thereof when the interposition means makes contact with one of the hinged elements, blocking said access.

9. Device according to clause 8, characterised in that it comprises a rod which can rotate relative to said common axis of rotation and which has at least a first length in contact with the interposition means and a second length in contact with the arm.

10. Device according to clause 8 or 9, characterised in that it has an auxiliary interposition means to help the device adapt to small distances between the hinged elements.

11. Device according to any one of the preceding clauses, characterised in that the interposition means has a plurality of grooves on its outer face, which preferably are oblique relative to the plane of said outer face and which are cut into the face in a direction moving away from the axis of rotation.

12. Device, according to the preceding clause, characterized in that the profile of the interposition means is shaped so as to form a ramp in the direction of said grooves.

13. Device according to the preceding clause, characterized in that the interposition means has a flared end.

14. Device according to any one of the preceding clauses, characterised in that it also comprises a plate for embedded connection in a hinged element, the plate having an opening for receiving a latch.

15. Device according to the preceding clause, characterised in that in the inactive position the interposition means does not project from said plate.

16. Device according to clause 15 and any of clauses 4 to 6, characterized in that the plate has a recess for receiving the part of the interposition means protruding from said hole.

17. Device according to any one of the preceding clauses, characterised in that the interposition means takes the form of a shield or screen.

18. Device according to any of the preceding clauses, characterized in that the interposition means has a hole to favour access to elements located behind the interposition means when the interposition

means is in the inactive position.

19. Door opener, the door opener being an electromechanical, electromagnetic, motorised, pneumatic or hydraulic opening component, characterised in that it comprises a security device according to any one of the preceding clauses.

20. Door opener according to the preceding clause, characterised in that it comprises an outer surface for alignment with the cant of a hinged element, and in that the device, in the inactive position, is housed in the door opener, and does not project from the outer surface.

21. Door, characterised in that it comprises a security device according to any one of clauses 1 to 18 or a door opener according to clause 19 or 20.

22. Door according to the preceding clause, characterised in that said door opener is embedded in the frame of the door or placed on the frame of the hinged elements.

23. Lock frame, comprising a plate with a hole for receiving a latch and holes for receiving fastening elements to a swing element, characterized in that it comprises a recess of the thickness of the plate in contact with at least one side of said hole, on the outer face of the plate.

24. Lock frame according to the preceding clause, characterized in that it also includes orifices to receive lugs.

25. Lock frame, according to clause 23 or 24, characterized in that the recess extends along a length greater than said side.

Claims

1. Lock frame, comprising a plate with a hole for receiving a latch and holes for receiving fastening elements to a swing element, **characterized in that** it comprises a recess of the thickness of the plate in contact with at least one side of said hole, on the outer face of the plate.

2. Lock frame according to the preceding claim, **characterized in that** it also includes orifices to receive lugs.

3. Lock frame, according to claim 1 or 2, **characterized in that** the recess extends along a length greater than said side.

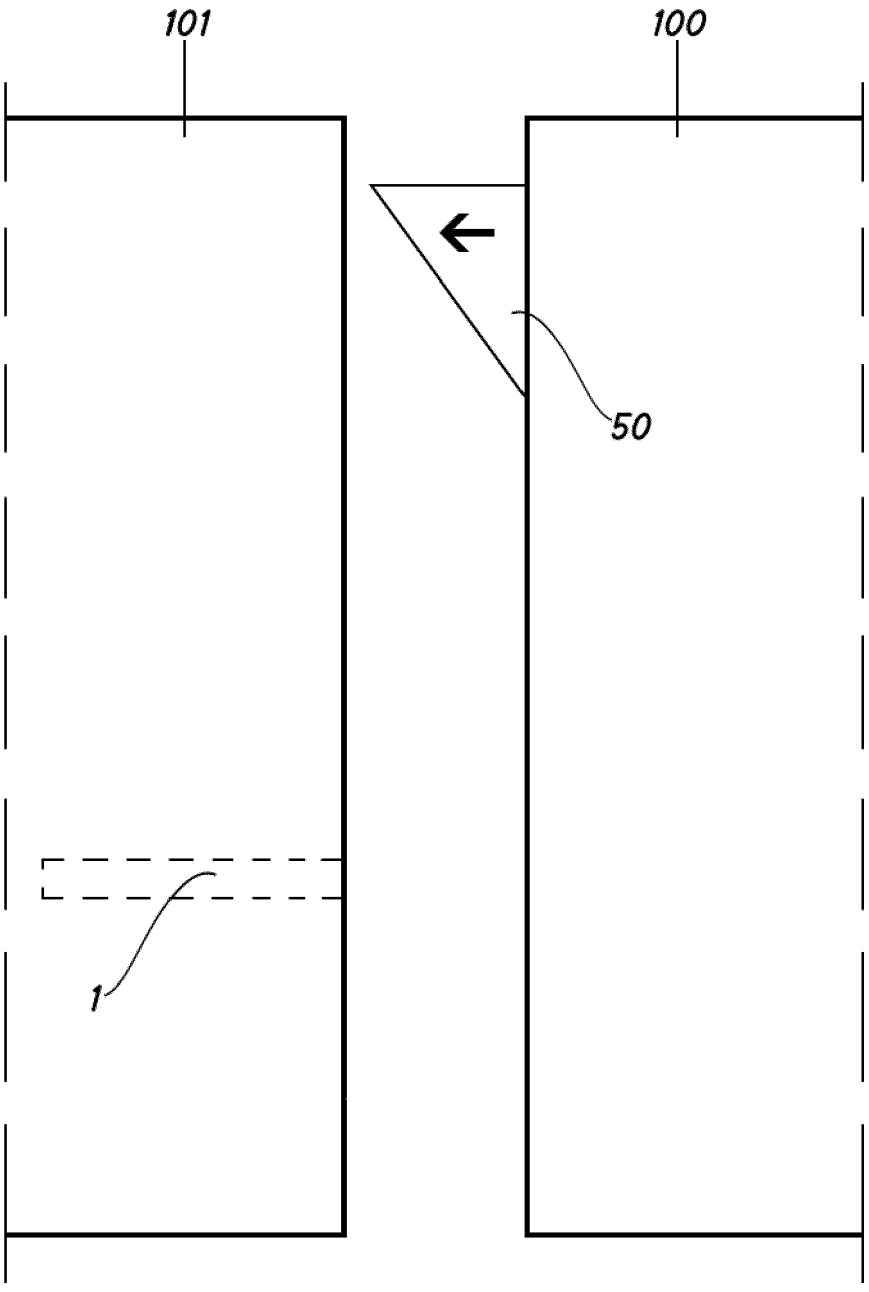

Fig.1

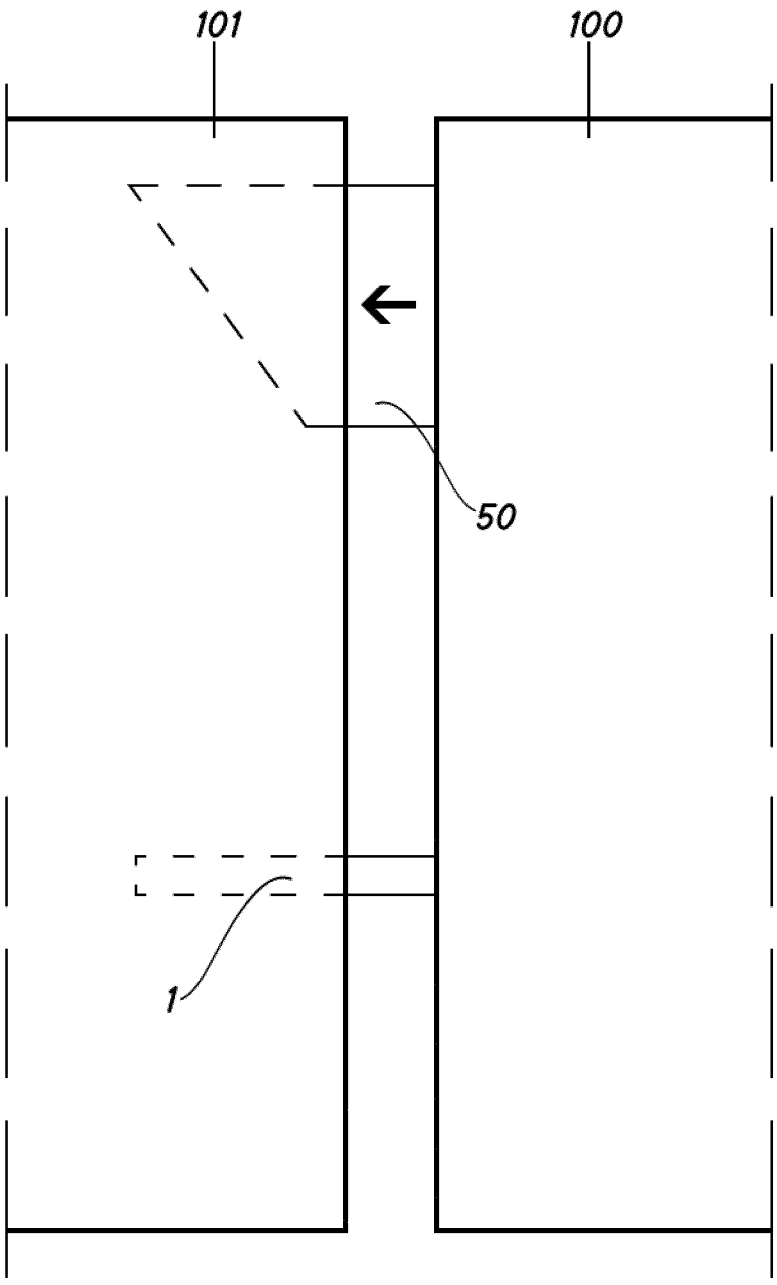

Fig.2

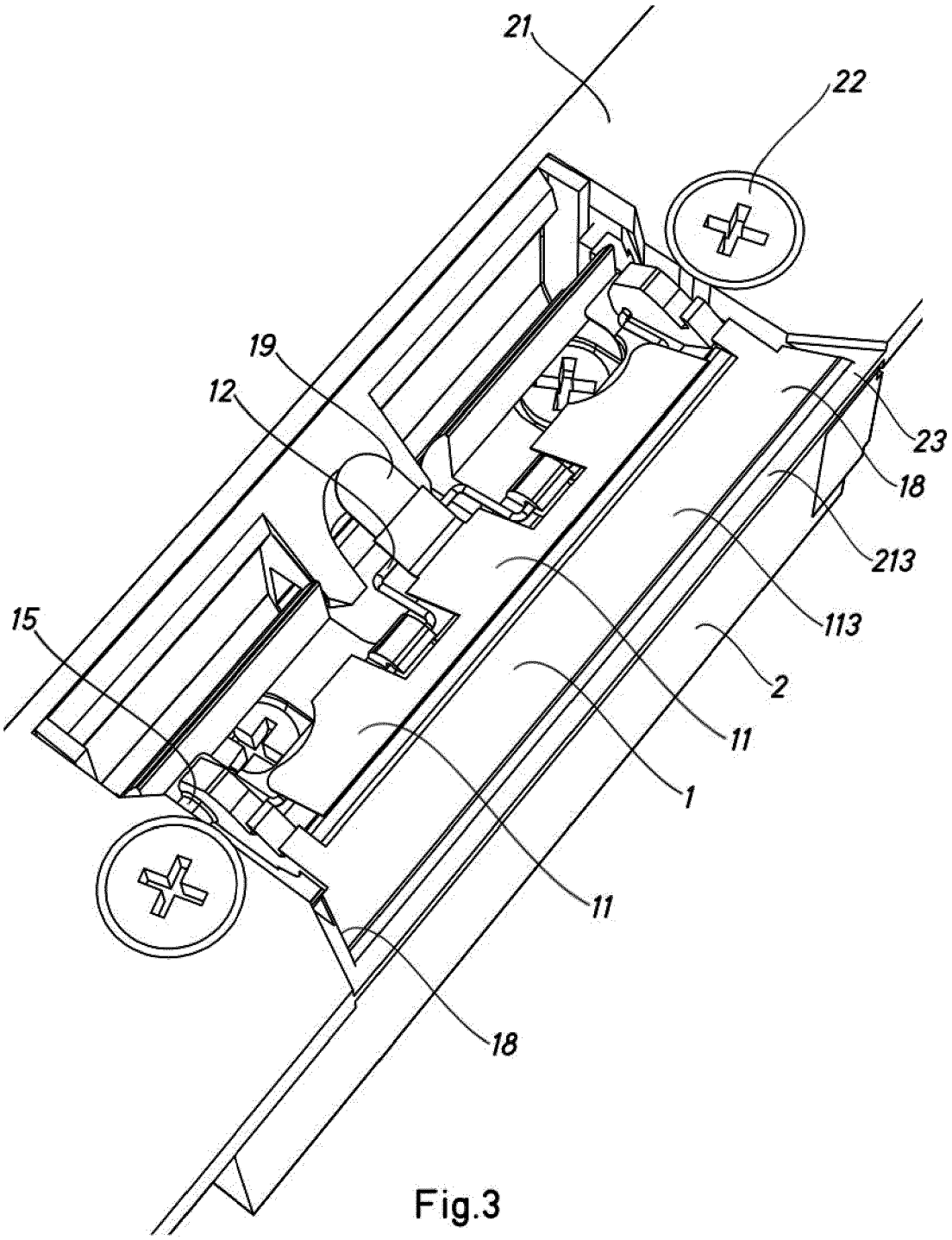

Fig.3

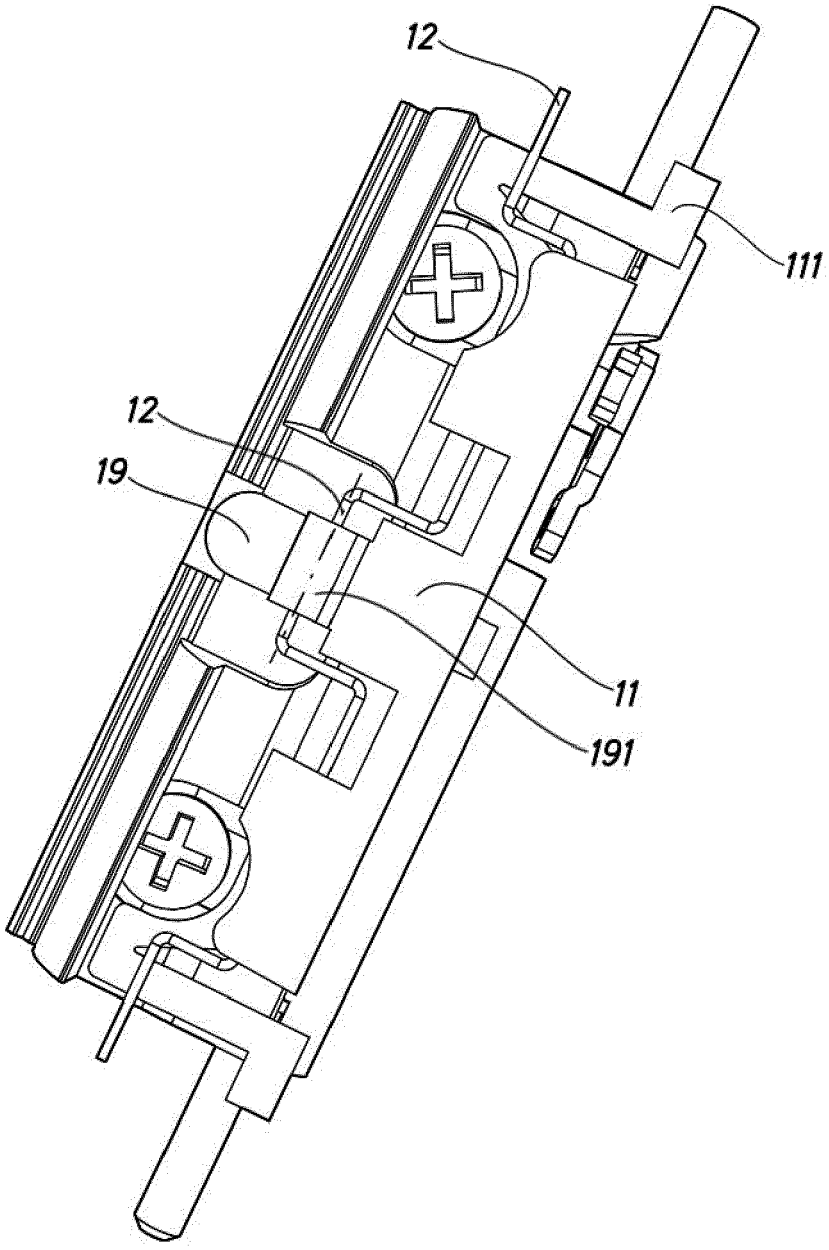

Fig.4

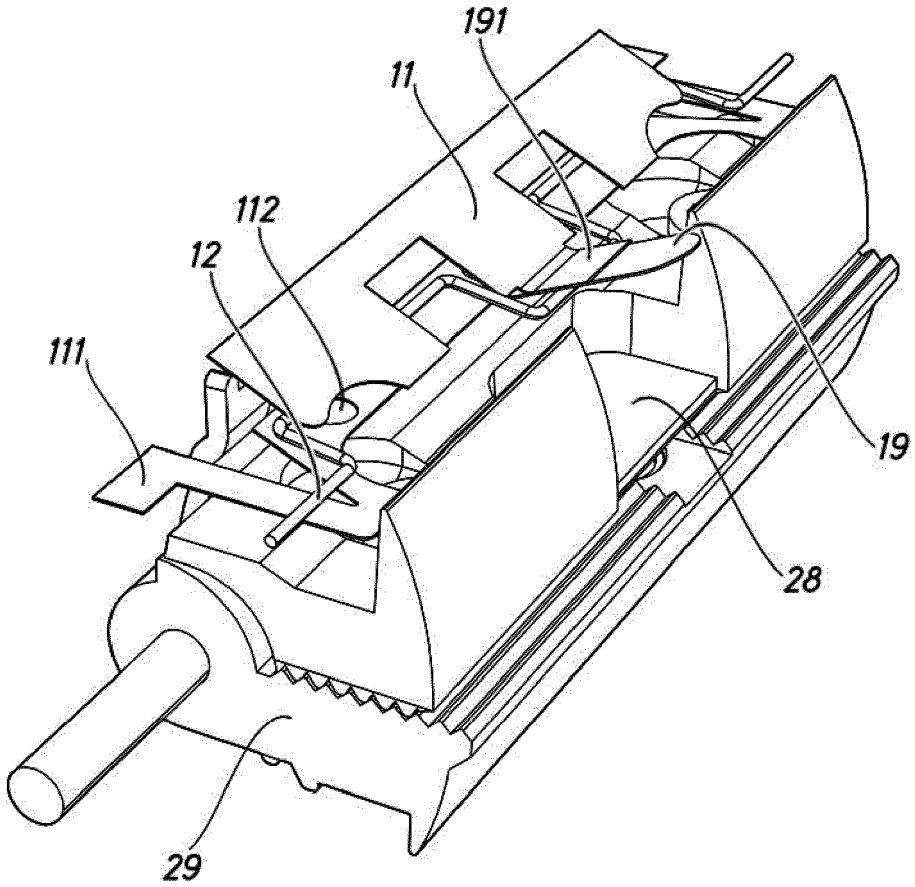

Fig.5

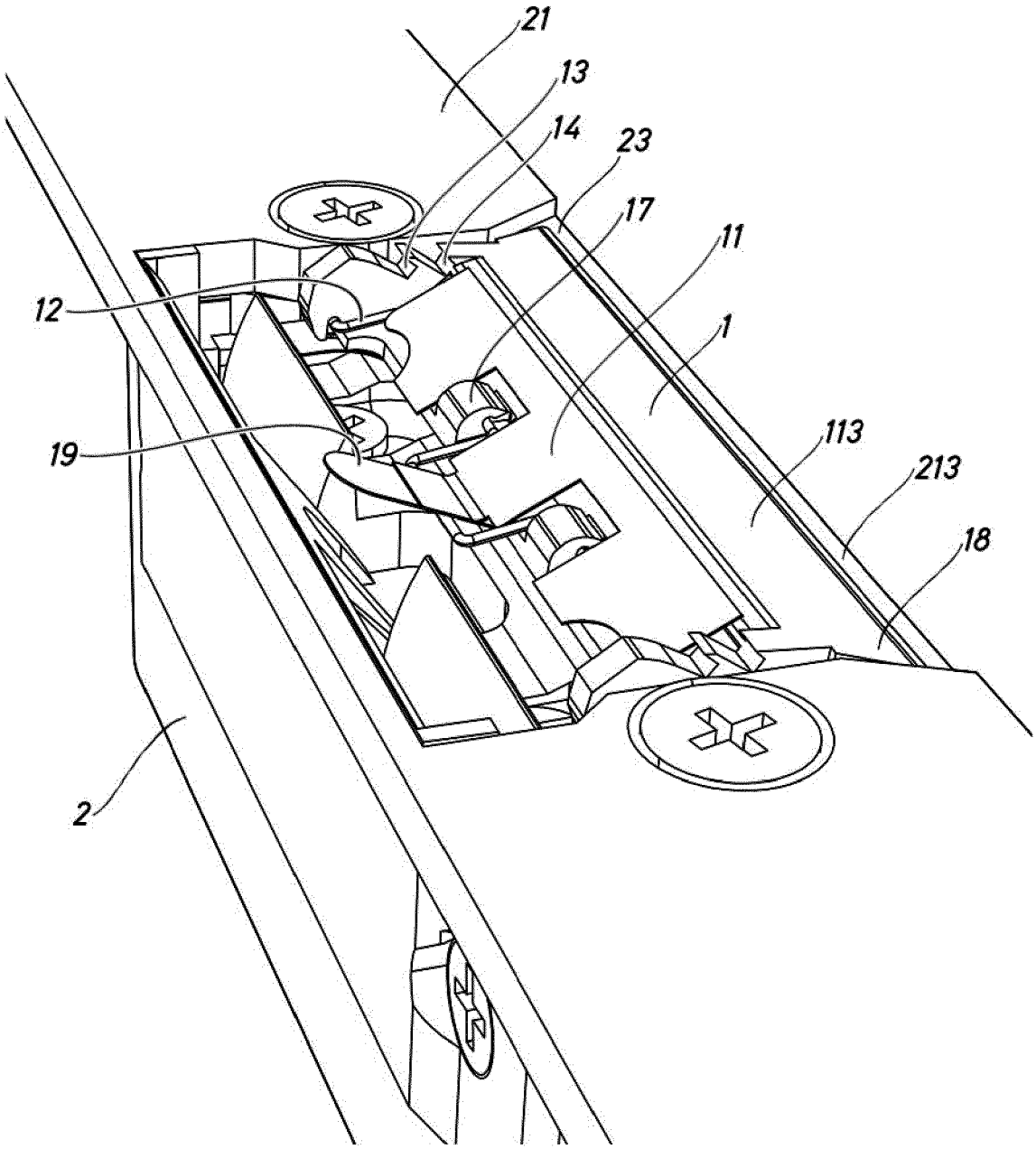

Fig.6

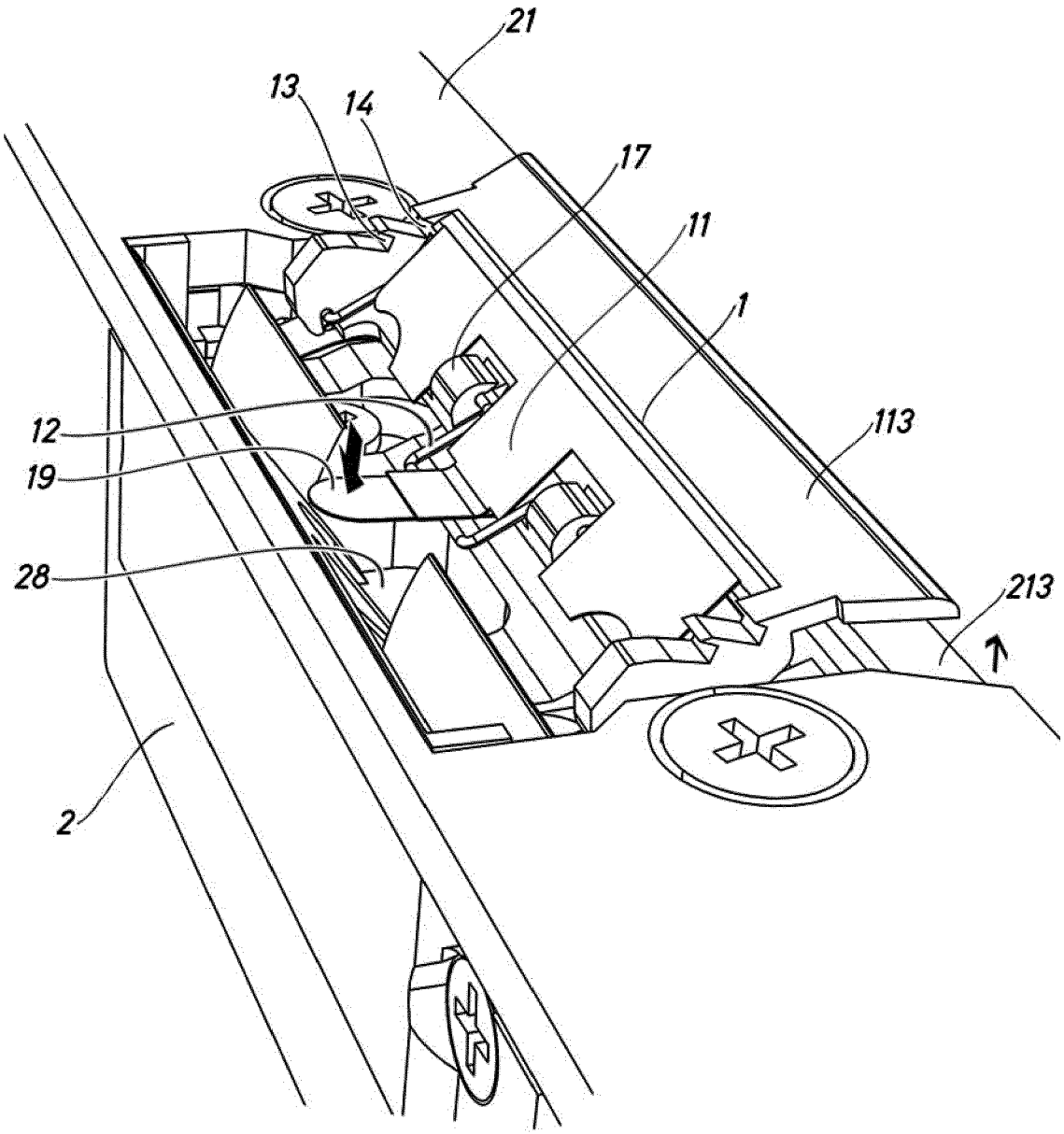

Fig.7

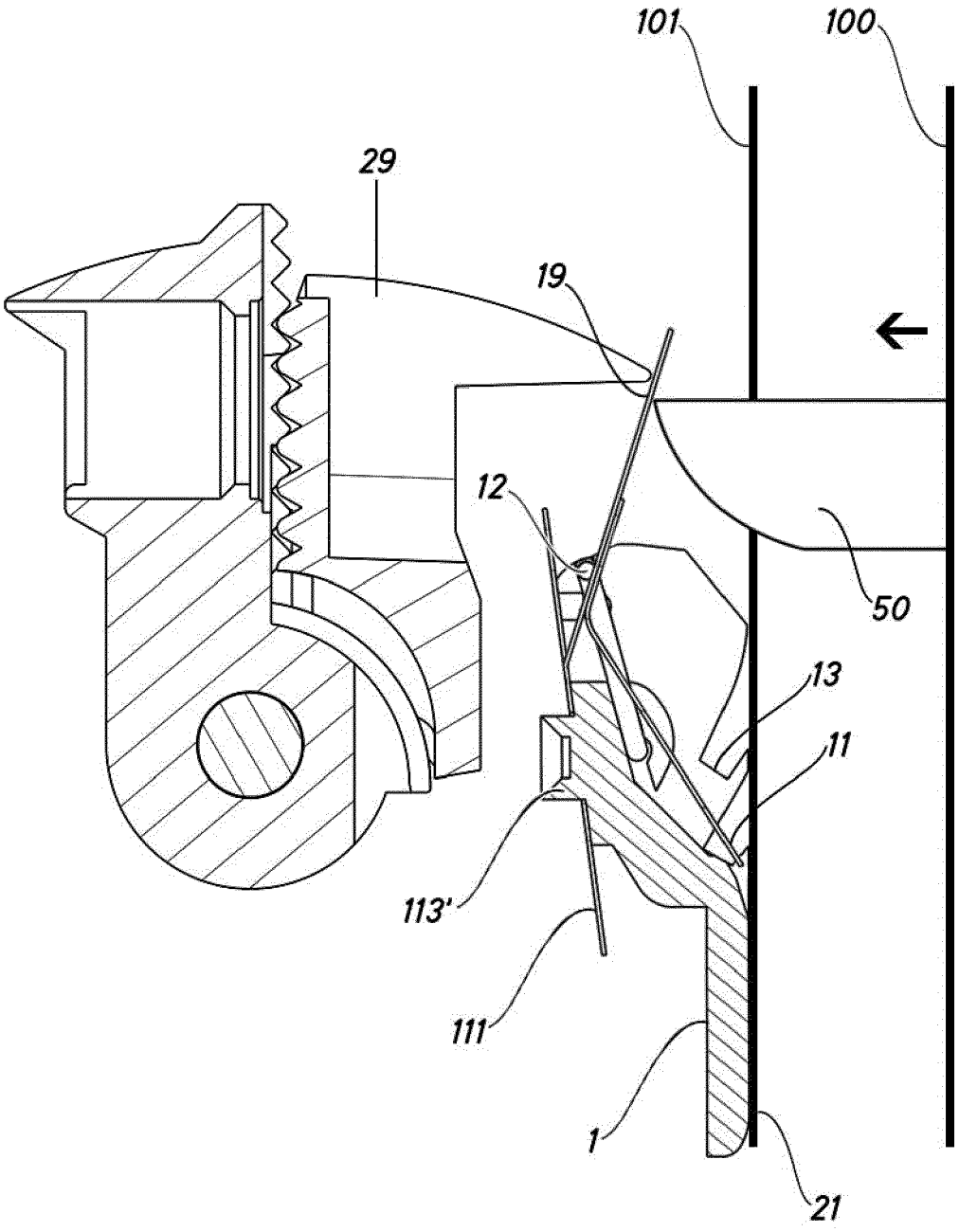

Fig.8

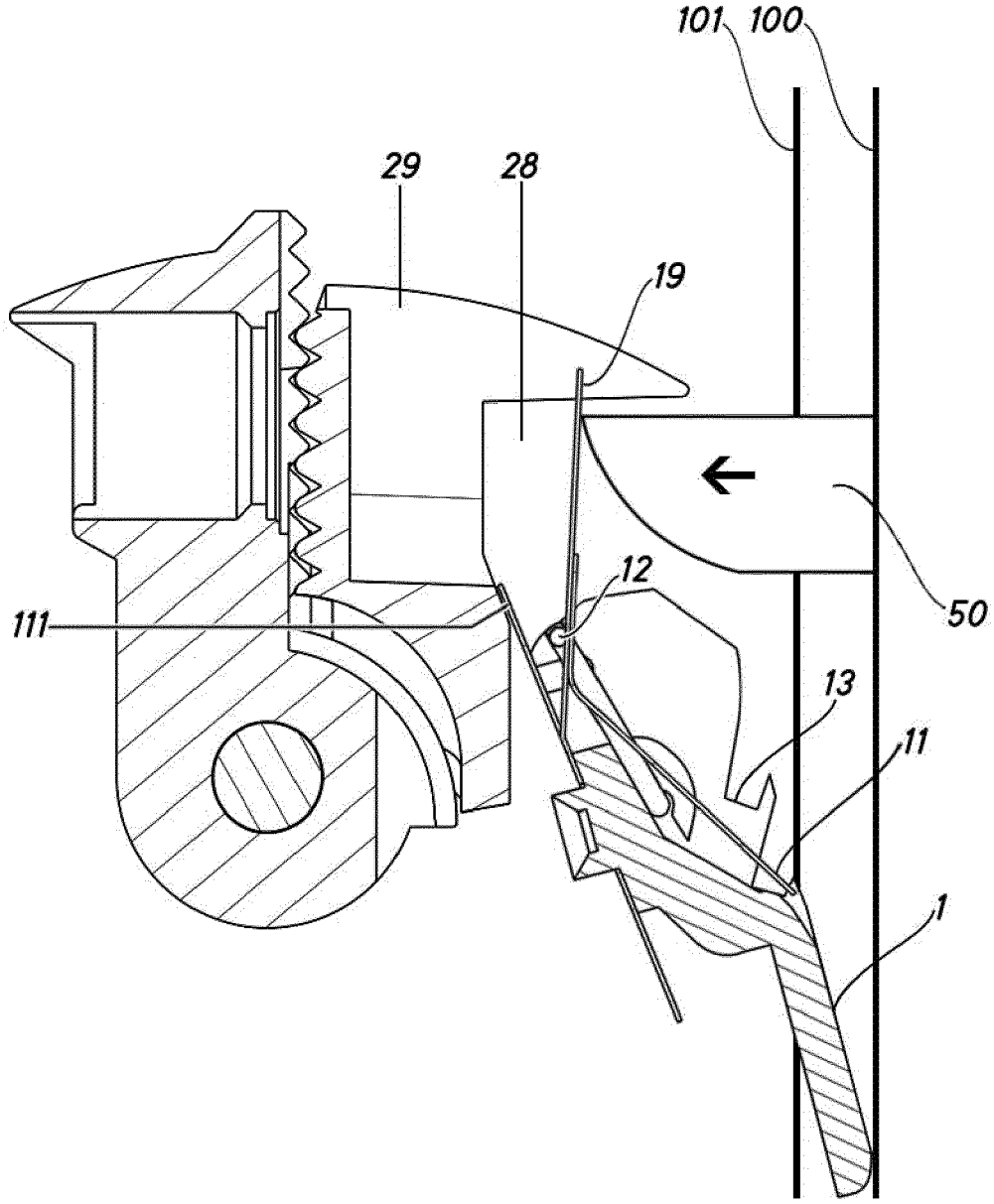

Fig.9

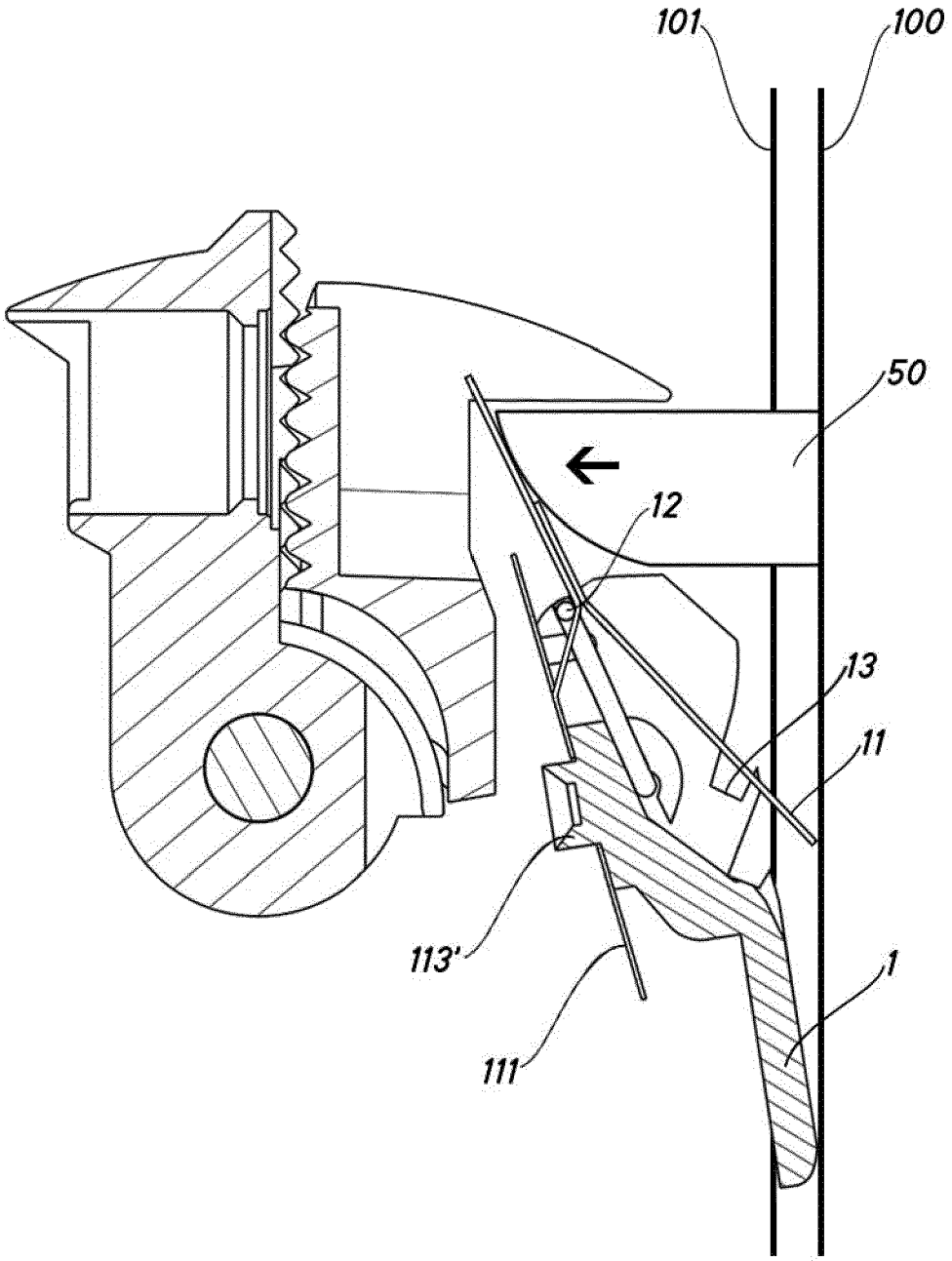

Fig.10

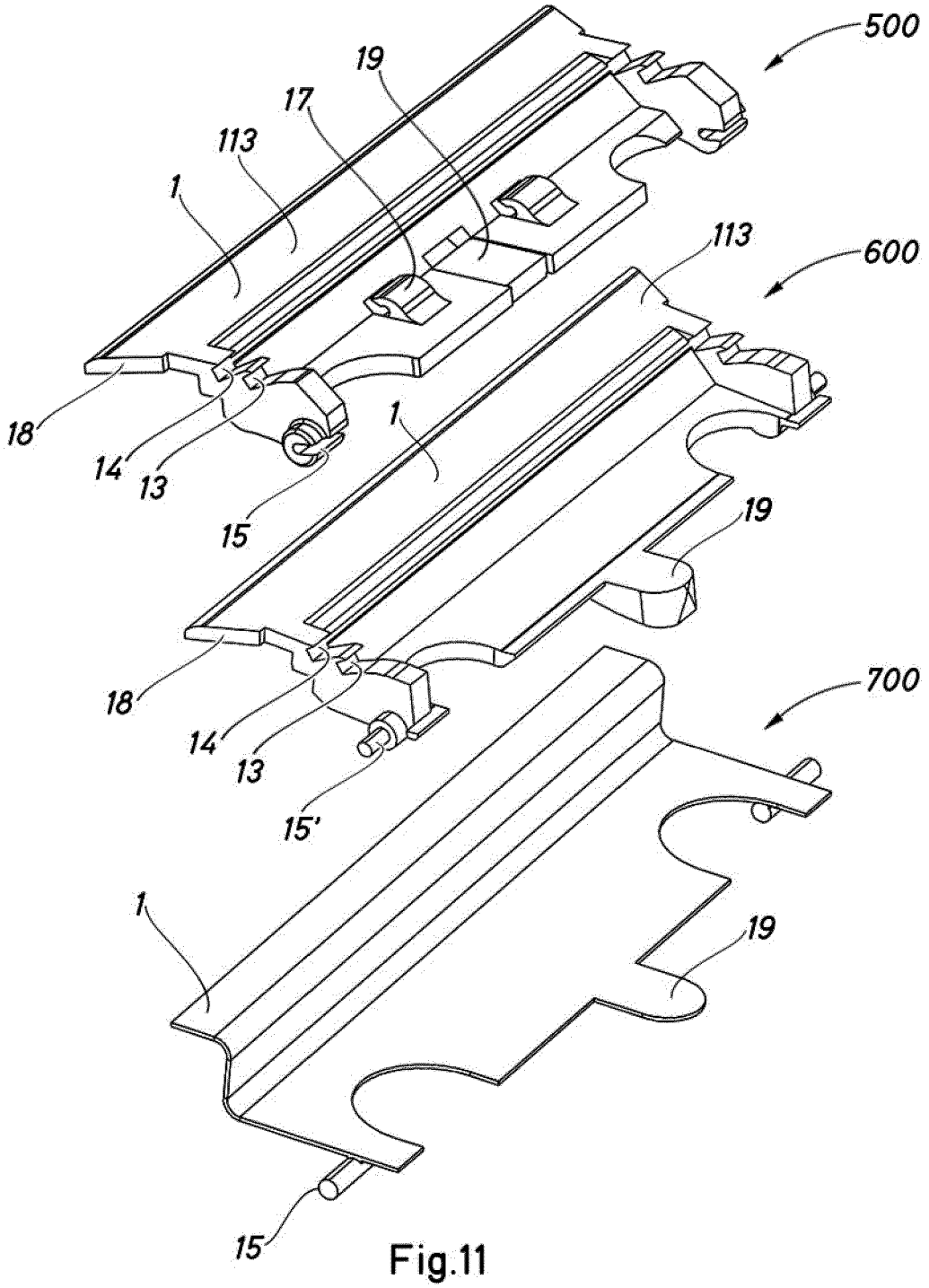

Fig.11

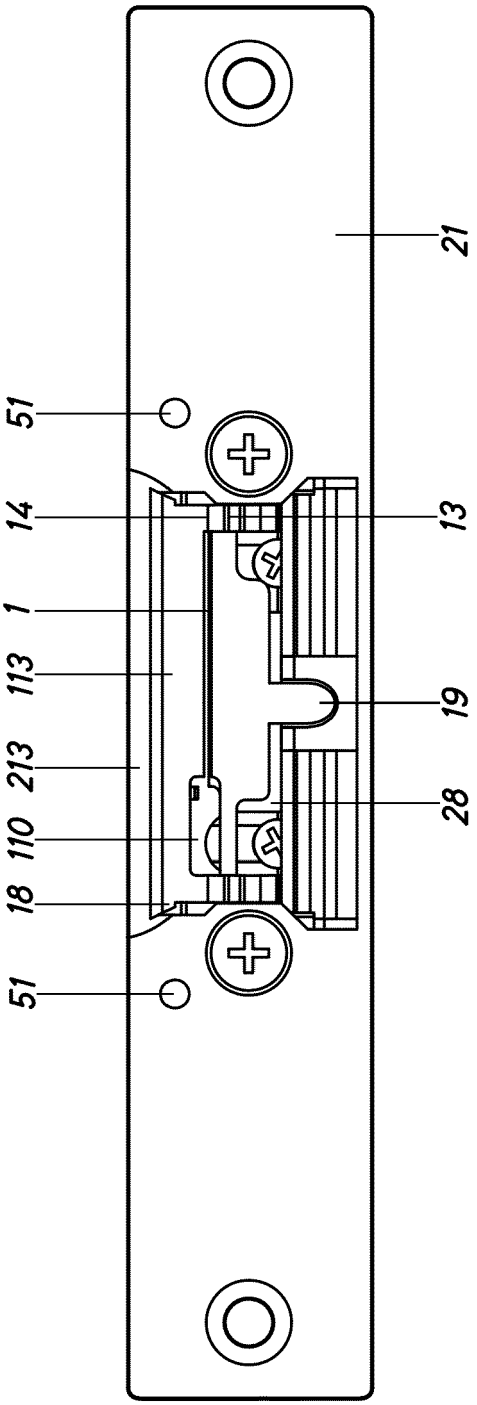

Fig.12

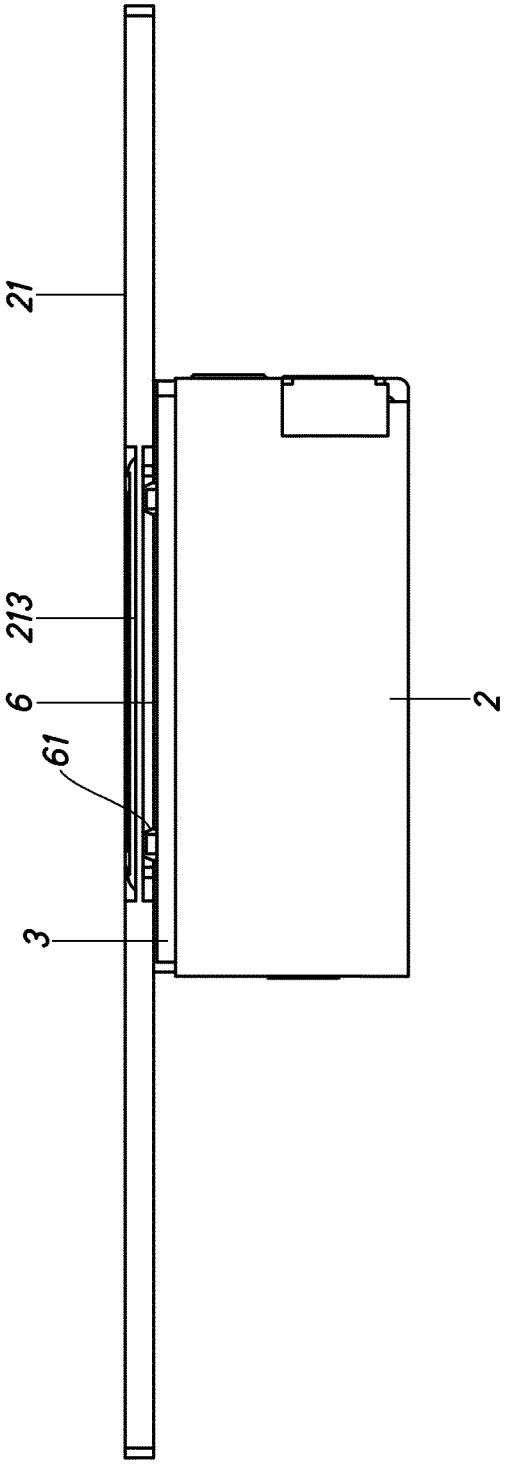

Fig.13

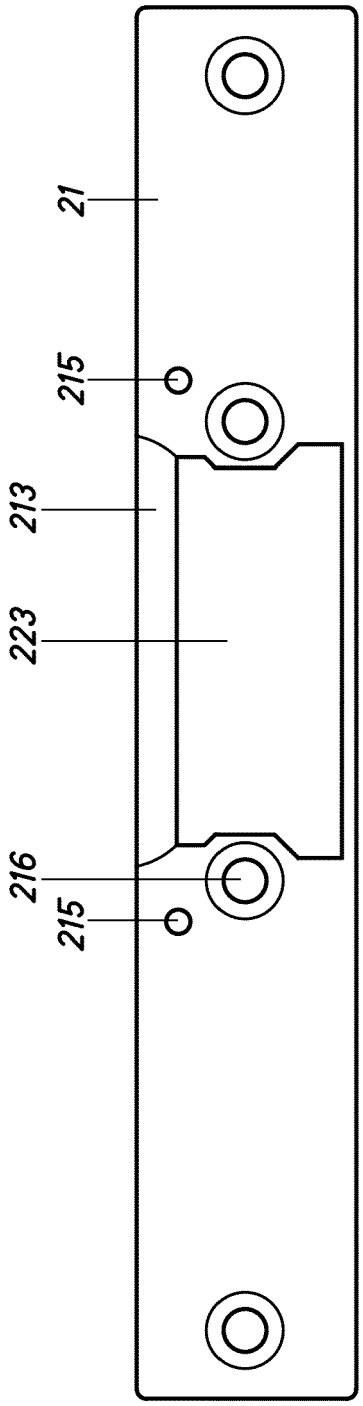

Fig.14

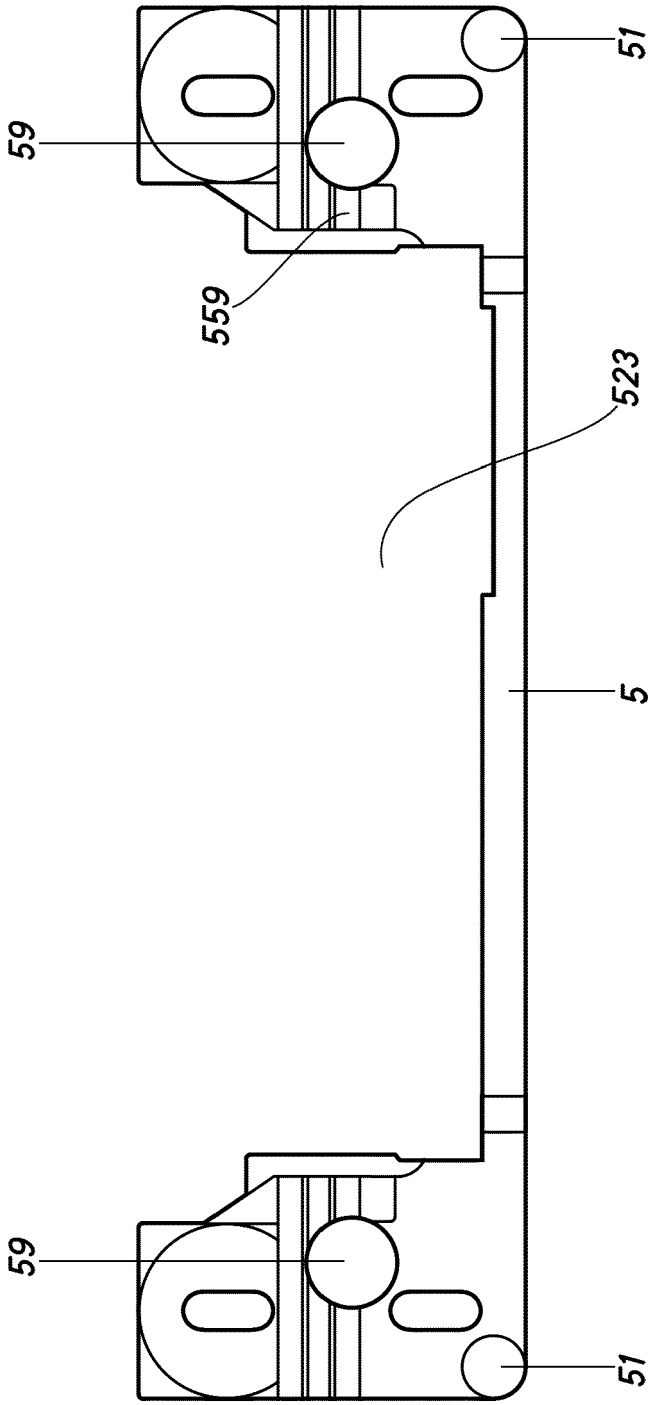

Fig.15

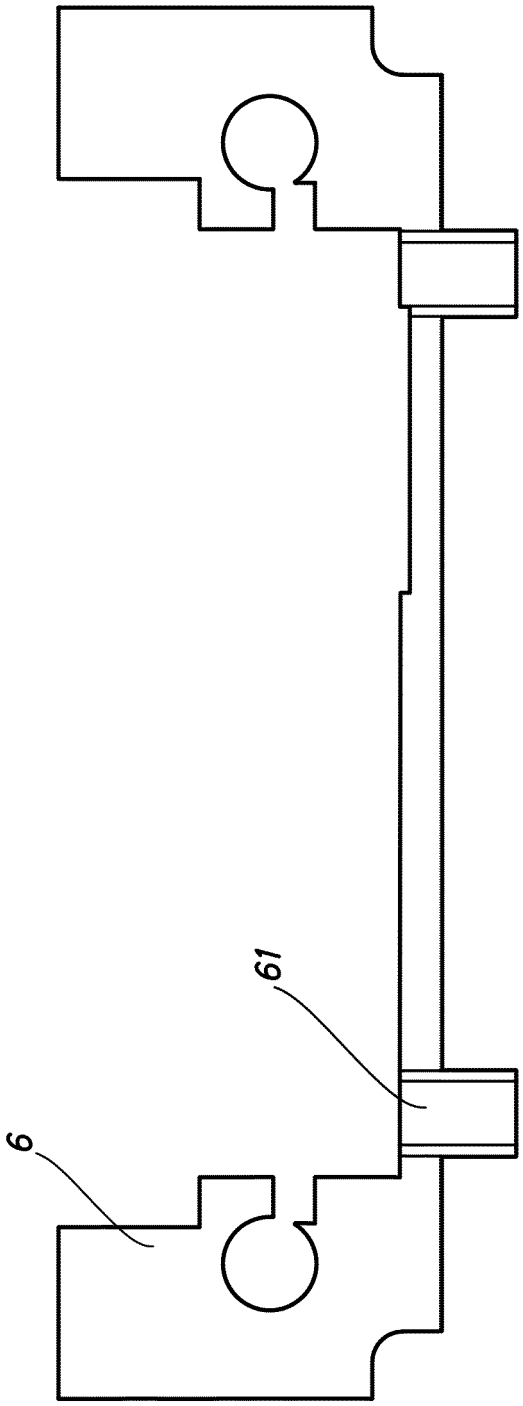

Fig.16

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EUROPEAN SEARCH REPORT

Application Number
EP 21 17 8631

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 1 574 640 A2 (FUHR CARL GMBH & CO KG) 14 September 2005 (2005-09-14) * figure 1 * -----	1-3	INV. E05B15/02
X	DE 203 14 843 U1 (FUHR CARL GMBH & CO KG) 27 November 2003 (2003-11-27) * figures 1,3 * -----	1-3	
X	DE 66 08 192 U (FUSS FRITZ KG) 8 July 1971 (1971-07-08) * figure 3 * -----	1-3	
			TECHNICAL FIELDS SEARCHED (IPC) E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 September 2021	Van Beurden, Jason

CATEGORY OF CITED DOCUMENTS

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07-09-2021

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		EP 1518978 A2	30-03-2005
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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