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(54) Opening restrictor and kit of parts for assembling an opening restrictor

(57) This invention relates to restrictor and a kit of parts for assembling a restrictor. In particular the restrictor is a cable restrictor suited to limiting the opening movement of a movable panel relative to its surrounding frame. The restrictor (10) has a first fixing part (24) and a second fixing part (30) interconnected by a flexible cable (16), and a first mounting part (26) and a second mounting part (32) by which it may be mounted adjacent to the panel. The first fixing part (24) is releasably connectable to the first mounting part (26) and the second fixing part (30) is connected to the second mounting part (32). The first and second fixing parts are interchangeable and may be identically formed. There is also provided a kit of parts for assembling into a cable restrictor.

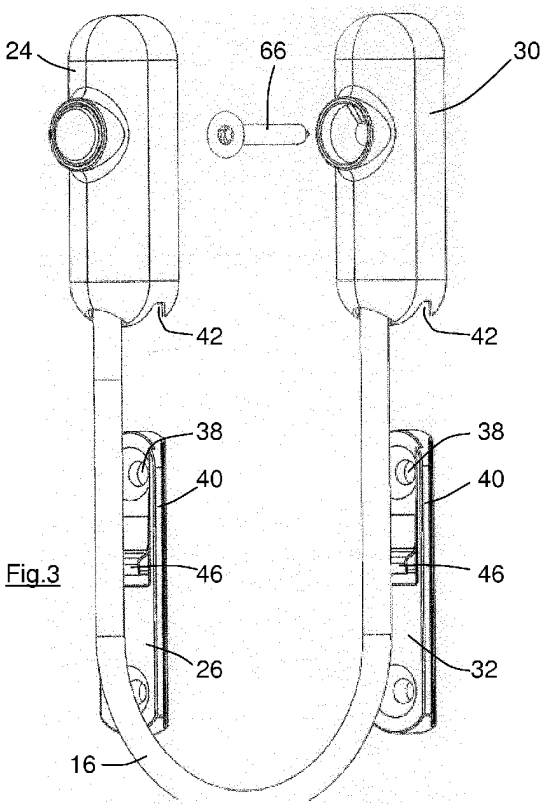

Fig.3

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Description

FIELD OF THE INVENTION

[0001] This invention relates to restrictor and a kit of parts for assembling a restrictor. In particular the restrictor is a cable restrictor.

BACKGROUND TO THE INVENTION

[0002] A cable restrictor comprises a short length of flexible (typically multi-stranded) wire, the ends of which are fitted to respective housings. One of the housings is adapted for securement to a movable panel such as a window, the other of the housings is adapted for securement to the fixed frame surrounding the panel. The flexible cable is of a length, and the housings are suitably positioned, so that the panel may be moved (opened) only a relatively short distance before the cable becomes taut and further opening movement is prevented.

[0003] Typically, one of the housings has means for releasing the end of the cable so as to permit full opening of the panel when desired. The releasable end of the cable may for example be secured to its housing by a key-operated lock, so that insertion of the key is required to release the end of the cable.

[0004] A cable restrictor is therefore similar to a security chain which may be used to restrict the opening movement of a door, and cable restrictors are known to be used for such a purpose. However, cable restrictors are more commonly used to restrict the opening movement of windows, in particular if it is desired to prevent young children opening the window and perhaps falling out of the opened window. Cable restrictors are therefore typically distinguished from security chains by using a length of flexible wire rather than a length of chain, and by providing primarily a safety function rather than primarily a security function. These products are, however, often interchangeable, although the use of a loose chain to restrict the opening movement of a window is not aesthetically acceptable to many users.

[0005] In an attempt to increase the aesthetic appeal of a security chain, it is known to locate the chain within a flexible sleeve. Even with this modification, however, cable restrictors having a flexible wire are generally more aesthetically pleasing, and therefore tend to be used to restrict the opening movement of windows.

[0006] In addition to their application in improving the safety of some windows, some cable restrictors also provide an increase in security. For example, the lock which secures the releasable end of the cable to its housing can be a multi-disc type of lock, such locks being known to be relatively secure, although perhaps not totally secure against a person who is expert in picking locks. The provision of a key-operated lock makes it more difficult for the window to be opened so that an intruder can gain entry (or ease of egress) from a building, even if the intruder is able to access the cable restrictor.

[0007] Notwithstanding that the term "cable restrictor" is often used to distinguish from a security chain, it will be understood that the present invention is not limited to the use an actual "cable", and could for example be used with a chain. Accordingly, the term "cable" when used in the following description and claims should be interpreted to encompass a wire, a loose chain, a chain within a protective sleeve, and any other elongate flexible securing member which is connected to respective housings for the purpose of restricting the opening movement of a movable panel.

[0008] Other devices are known to restrict the opening movement of a movable panel, for example the stays or restrictors of GB 2 263 934, GB 2 391 901 and EP 2 085 546. Those restrictors all use rigid members which pivot as the panel is opened, and are therefore distinguished from cable restrictors in not using a flexible cable.

SUMMARY OF THE INVENTION

[0009] The inventors have conceived a cable restrictor having a relatively small number of components, and a large degree of commonality amongst the componentry, whereby to reduce the complexity and cost of the cable restrictor. It is believed that reducing the complexity and cost of the cable restrictor will increase its utilisation, so that the enhanced safety benefits can be enjoyed more widely.

[0010] According to the invention there is provided a restrictor comprising a flexible cable having a first end and a second end, the first end of the cable being permanently connected to a first fixing part, the second end of the cable being permanently connected to a second fixing part, the restrictor further comprising a first mounting part and a second mounting part whereby the restrictor may be mounted adjacent to a movable panel, the first fixing part being releasably connected to the first mounting part, the second fixing part being connected to the second mounting part, the first and second fixing parts being interchangeable.

[0011] Making the first and second fixing parts interchangeable requires them to be substantially identically formed, so that the parts can be common and manufactured upon the same tooling.

[0012] Preferably the first and second mounting parts are interchangeable, and can therefore also be substantially identically formed, further commonising the manufacture of the restrictor.

[0013] Desirably, the first fixing part and the first mounting part have at least one cooperating rail and channel whereby the first fixing part can slide relative to the first mounting part, the first fixing part being slidable between its connected and released positions.

[0014] Preferably, the first fixing part is secured to the first mounting part by way of a lock member which prevents movement of the first fixing part to its released position. The lock member may be released by a key so that the restrictor is key-lockable.

[0015] Alternatively, the lock member may be released by a control button which is mounted upon the first fixing part and therefore remains with the first fixing part. Notwithstanding that a restrictor in which the lock member is actuated by a control button is not as secure as a restrictor in which the lock member is actuated by a (removable) key, it nevertheless provides additional safety against inadvertent window opening, and does not require the key to be located in the case of an emergency.

[0016] Preferably, the first fixing part and the second fixing part are identically formed, desirably as identical plastic mouldings or identical metallic castings. The first and second fixing parts may differ only in the provision of a key or a control button for the first fixing part, and a blanking plug to obscure the keyhole of the second fixing part.

[0017] Desirably, the first mounting part and the second mounting part are identically formed, desirably as identical plastic mouldings or identical metallic castings. The first and second mounting parts may differ only in the addition of a separate lock member to the first mounting part.

[0018] The restrictor can include a screw or other fastener(s) to secure the second fixing part to the second mounting part, the second fixing part and the second mounting part together comprising a housing to which the second end of the cable is substantially permanently secured.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0019] The invention will now be described in more detail, by way of example, with reference to the accompanying drawings, in which:

Fig.1 shows a perspective view of a window panel and its surrounding frame, fitted with a restrictor according to the present invention;

Fig.2 shows an enlarged view of the area labelled "A" in Fig.1;

Fig.3 shows an exploded view of the restrictor of Fig.1;

Fig.4 shows a sectional view through the first housing of the restrictor of Fig.1, prior to insertion of the key;

Fig.5 shows a view as Fig.4 following insertion of the key; and

Fig.6 shows a view as Fig.4 following insertion and rotation of the key.

DETAILED DESCRIPTION

[0020] The restrictor 10 of the present invention has been designed primarily for use with an opening panel such as window 12 which can be opened relative to its surrounding frame 14. The window 12 is a pivoting window, but it will be understood that the restrictor 10 could alternatively be used upon a tilt and turn window, or a sliding window, or a door, as desired.

[0021] The restrictor 10 includes a flexible cable 16 in the form of a multi-stranded wire sheathed in a plastic covering, so that this embodiment matches the form of known cable restrictors. The restrictor 10, like the known cable restrictors, is not primarily intended as a security product, notwithstanding that it does increase the security of the window 12. Instead, the restrictor is designed primarily to provide additional safety, for example for windows in high-rise buildings where it is desired to prevent the inadvertent full opening of the window, for example by young children. Thus, it will be understood that when the restrictor 10 is in its operative position as shown in Figs. 1 and 2, the window 10 may be only partially opened before the cable 16 becomes taut and further opening movement is prevented. In order to permit full opening of the window 12 the restrictor 10 must be released, as explained below.

[0022] The restrictor 10 comprises a first housing 20 and a second housing 22. As better seen in Fig.3, the first housing 20 comprises a first fixing part 24 and a first mounting part 26. The second housing comprises a second fixing part 30 and a second mounting part 32.

[0023] As seen in Fig. 4, the first end 34 of the cable 16 is permanently secured to the first fixing part 24 by way of a crimped collar 36. The second end of the cable 16 is similarly permanently secured to the second fixing part 30. Other means of securing the respective ends of the cable to the fixing parts could be used if desired, it being necessary that the connection is sufficiently secure to resist attempts to forcibly open a restricted panel, and that the connection cannot easily be accessed and/or released by a person intent on disabling the restrictor.

[0024] As seen in Fig.3, the first and second mounting parts 26, 32 each have a pair of mounting holes 38 by which the mounting parts may be secured to the respective panel 12 and frame 14 by suitable fixings. The mounting parts 26, 32 also have a pair of projecting rails 40 (only one of which can be seen in Fig.3), which rails cooperate with respective channels 42 in the first and second fixing parts 24, 30. By way of the cooperating rails 40 and channels 42, the first fixing part 24 can be slid downwardly as viewed in Fig.3, so as to overlie the first mounting part 26 (and the second fixing part 30 can be similarly slid downwardly to become mounted upon the second mounting part 32).

[0025] It will be understood that other embodiments could require upwards movement (as drawn) of the fixing part to mount it to a mounting part. Also, in other embodiments the rails could be provided on the fixing part with the channels being provided on the mounting parts. It will also be understood that it is not necessary for the rails and/or the channels to be continuous, and it is only nec-

essary that the fixing part and mounting part cooperate so as to allow relative movement in a chosen direction.

[0026] The mounting parts 26 and 32 each carry a lock member 46. The lock member 46 is a resilient clip which is depressed as the respective fixing part 24, 30 is slid downwardly thereover. When the fixing part 24, 30 reaches its mounted position as shown in Figs. 1 and 2, the resilient clip 46 opens into an undercut region 50 of the respective fixing part 24, 30 (see Fig.4).

[0027] From the position of Fig.3 in which the first fixing part 24 is separate from the first mounting part 26, the first fixing part 24 is moved downwardly as viewed in Figs. 3-6, so that the cooperating rails 40 and channels 42 interengage. The rails and/or channels can have chamfered leading edges so as to facilitate ease of fitment. As the first fixing part 24 is slid downwards relative to the first mounting part 26, its leading edge 52 engages and depresses the lock member 46. When the first fixing part 24 has moved to the position of Fig.4, the resilient lock member 46 enters the undercut recess 50. It will be understood that subsequent attempts to remove the first fixing part 24 are resisted by the lock member 46, i.e. the lock member 46 engages the wall 54 of the undercut recess 50, preventing upwards relative sliding movement of the first fixing part 24.

[0028] In order to release the first fixing part 24 from the first mounting part 26 it is necessary to depress the lock member 46, i.e. to move the lock member 46 out of the undercut recess 50. To achieve this, the key 56 is inserted into the keyhole 58, to the position shown in Fig. 5. Subsequent rotation of the key through approximately 180°, to the position of Fig.6, causes the leading end of the key to depress the lock member 46 and thereby allow the release of the first fixing part 24, and consequently the release of the first end 34 of the cable 16.

[0029] It will be seen that the key 56 used in this embodiment has only minor security features, specifically two depressions 60 which cooperate with corresponding formations (not shown) within the keyhole 58. Clearly, in other embodiments the key 56 and keyhole 58 can be made more complex whereby to increase the security offered, if desired.

[0030] As seen in Fig.6, the key 56 is retained within the keyhole 58 by way of its engagement with wall 62 as the first fixing part 24 is removed from the first mounting part 26. It is therefore necessary to rotate the key 56 back to the position of Fig.5 in order to remove the key.

[0031] Whilst Figs. 4-6 only show the first fixing part 24 and the first mounting part 26, it will be understood that the form of the second fixing part and the second mounting part are similar, and perhaps identical. Since, however, it is not necessary (or desirable) for the second fixing part to be releasable, a key is not provided for the second housing 22. Instead, the keyhole 58 of the second fixing part 30 is ideally closed and obscured by a plug 64 so as to prevent access to the lock member of the second mounting part 32. In addition, a screw or other fastener (such as the screw 66 shown in Fig.3) could be fitted through the keyhole 58, through the second mounting part 32, and into the underlying frame 14, so as to substantially permanently secure the second fixing part 30 to the second mounting part 32. Clearly, if a screw or other fastener is to be used to secure the second fixing part to the first fixing part, the lock member 46 will not be required. It is nevertheless desirable to include the lock member in the second mounting part 32 so as to make the first and second mounting parts identical and thereby totally interchangeable, even if the lock member is a separate component to the remainder of the mounting part and is assembled thereto.

[0032] If it was desired to use a manual control button to release the first fixing part (rather than the key 56) a control button (not shown) could be mounted within the keyhole 58. The control button could for example carry a resilient tang which locates underneath the wall 62 so as to retain the control button in place. Depression of the control button could directly depress the lock member 46, but preferably rotation of the control button through approximately 180° would be required to depress the lock member in a similar fashion to rotation of the key as described in relation to Figs. 5 and 6.

[0033] The manufacturer of the restrictor 10 could therefore provide a kit of parts to the customer, the kit comprising

a flexible cable 16 permanently secured to first and second fixing parts 24, 30; two mounting parts 26, 32;

at least one lock member 46 for the first mounting part 26 (if the lock member 46 is a separate component such as that shown it may be fitted by the manufacturer or by the customer, but if the lock member is integral then preferably each of the first and second mounting parts has an integral lock member so that the mounting parts are identical);

screws or other fixings allowing the customer to secure the mounting parts to the panel and its surrounding frame;

a screw 66 or other fixing allowing the customer to substantially permanently secure the second fixing part 30 to the second mounting part 32;

a blanking plug 64 allowing the customer to plug the keyhole 58 of the second fixing part 30 (and thereby obscure the lock member and/or securing screw if present),

a key 56 and/or a control button (providing both a key and a control button will allow the customer to choose whether to operate the restrictor 10 by way of the key or the control button).

[0034] Importantly, the first and second fixing parts 24, 30 are interchangeable, so that the first fixing part 24 can be mounted to the first or to the second mounting part 26, 32, and vice versa. It is therefore not necessary for the customer to fit a particular mounting part to the frame 14 or panel 12.

[0035] It will therefore be understood that the first and second fixing parts 24, 30 can be identical, and also that the first and second mounting parts 26, 32 can be identical, so that the number of plastic mouldings (if made from plastic), or the number of metallic castings (if made

from metal), is minimised.

[0036] It will be seen from Fig.2 in particular that the mounting holes 38 (and also the screws or other fixings which are located therein) of the mounting parts 26, 32 are obscured by the respective fixing parts 24, 30 when the restrictor is in its operative condition. The restrictor is therefore more secure and less prone to tampering than the prior art cable restrictors in which the fixing screws remain visible.

Claims

1. A restrictor (10) having a first fixing part (24) and a second fixing part (30) interconnected by a flexible cable (16),
a first mounting part (26) and a second mounting part (32), the first fixing part (24) being releasably connectable to the first mounting part (26), the second fixing part (30) being connected to the second mounting part (32), **characterised in that** the first and second fixing parts are interchangeable.

2. The restrictor according to claim 1 in which the first and second fixing parts (24, 30) are substantially identical.

3. The restrictor according to claim 1 or claim 2 in which the first and second mounting parts (26, 32) are interchangeable.

4. The restrictor according to claim 3 in which the first and second mounting parts (26, 32) are substantially identical.

5. The restrictor according to any one of claims 1-4 in which the first fixing part is releasably connectable by way of a lock member (46) carried by the first mounting part.

6. The restrictor according to claim 5 in which the lock member (46) is automatically actuated when the first fixing part (24) is connected to the first mounting part (26).

7. The restrictor according to claim 3 or claim 4 in which the first and second mounting parts (26, 32) differ only in that the first mounting part includes a lock member (46).

8. The restrictor according to any one of claims 5-7 in which the lock member (46) is a separate component which is assembled to the remainder of the first mounting part.

9. The restrictor according to any one of claims 3-6 in which both of the first and second mounting parts (26, 32) have a respective lock member (46).

10. The restrictor according to any one of claims 1-9 in which the first fixing part (24) and the first mounting part (26) have at least one cooperating rail (40) and channel (42) whereby the first fixing part can slide relative to the first mounting part, the first fixing part being slidable between connected and released positions.

11. A restrictor according to any one of claims 1-10 in which the second fixing part (30) and the second mounting part (32) have at least one cooperating rail (40) and channel (42).

12. A kit of parts for assembling a restrictor, the kit comprising:

    a first fixing part (24) and a second fixing part (30) interconnected by a flexible cable (16), each of the first and second fixing parts having a keyhole (58);
    a first mounting part (26) and a second mounting part (32), each of the first fixing part (24) and the second fixing part (30) being connectable to each of the first mounting part and the second mounting part, at least the first mounting part having a lock member (46);
    fixings for securing the mounting parts (26, 32) to a chosen movable panel and its surrounding frame respectively;
    a fixing to substantially permanently secure the second fixing part (30) to the second mounting part (32);
    a blanking plug (64) to plug the keyhole (58) of the second fixing part (30);
    a key (56) and a control button each of which is adapted to release the lock member (46) by way of the keyhole (58) in the first fixing part (24).

13. The kit of parts of claim 12 in which each of the first and second mounting parts (26, 32) has a respective lock member (46).

14. The kit of parts according to claim 12 or claim 13 in which the first and second fixing parts (24, 30) are substantially identical.

15. The kit of parts according to any one of claims 12-14 in which the first and second mounting parts (26, 32) are substantially identical.

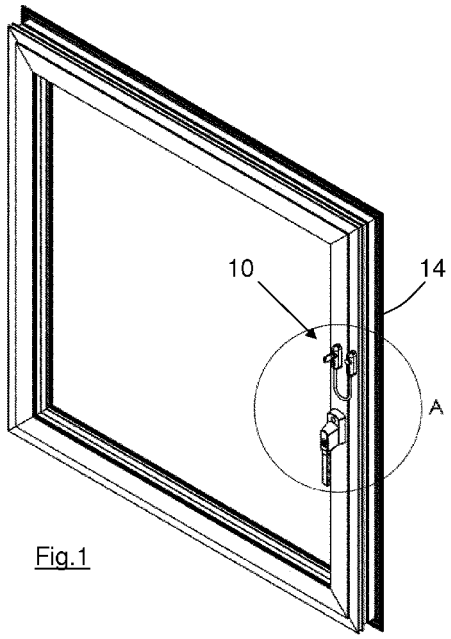

Fig.1

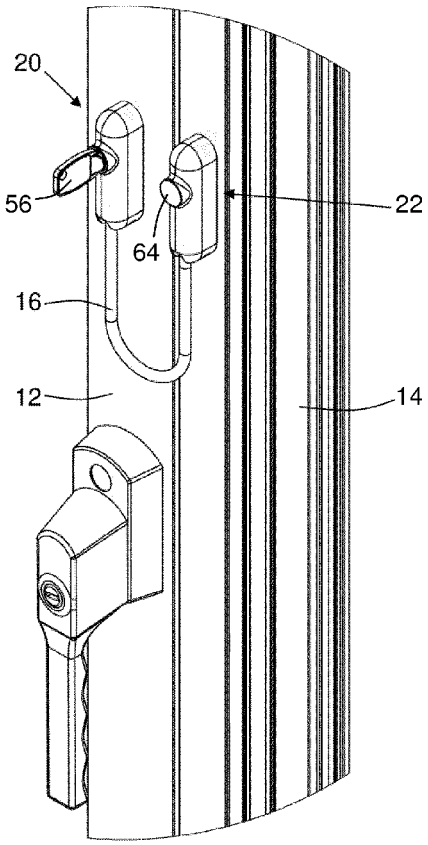

Fig.2

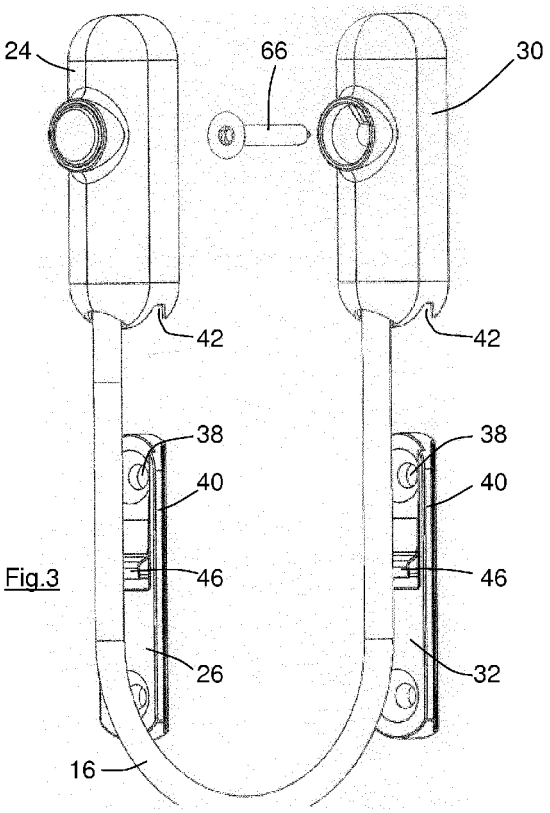
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Fig.3

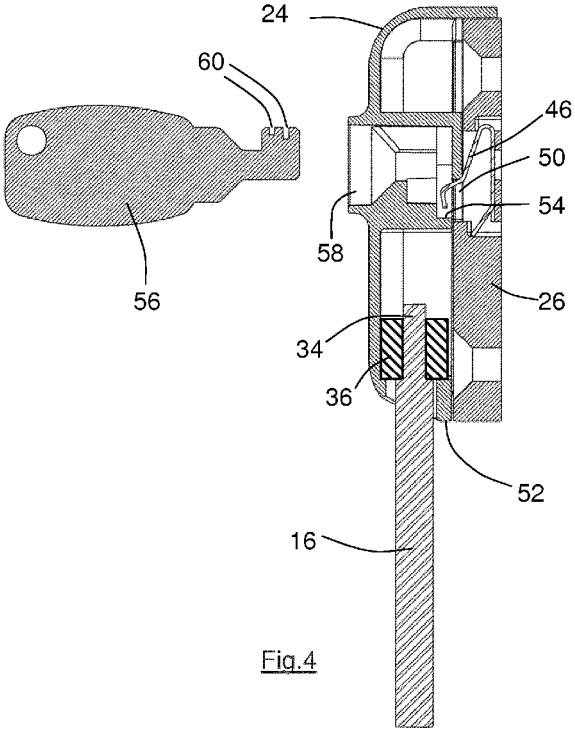
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Fig.4

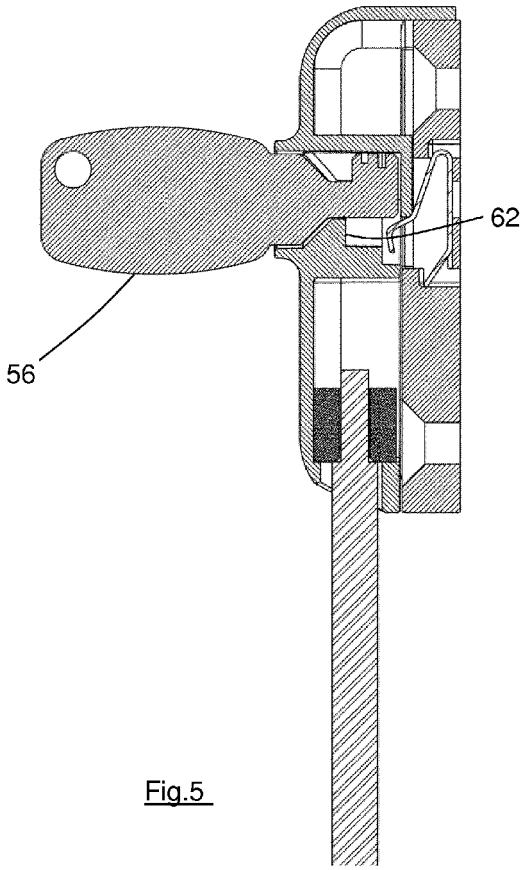

Fig.5

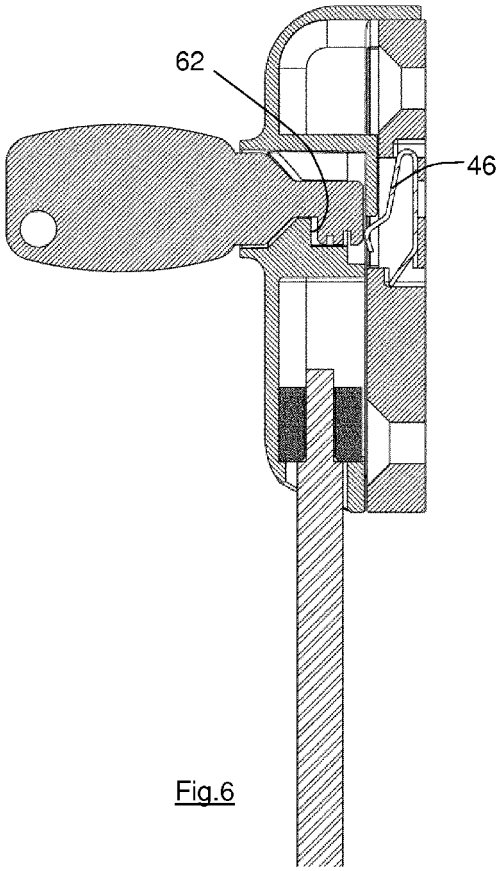

Fig.6

REFERENCES CITED IN THE DESCRIPTION

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