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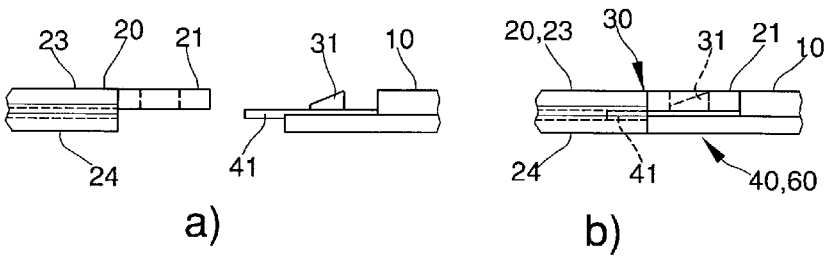

Fig. 2

(57) Abstract: A group (1) of hardware for windows and doors comprising at least one first and one second given members (10,20) and first coupling means (30) suitable, in use, to couple said first and second given members (10,20) in an axially fixed manner relative to each other along a given direction; characterised by comprising safety means (60) suitable, in use, to prevent accidental uncoupling of said first and second given members (10,20).

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GROUP OF HARDWARE

DESCRIPTION

The present invention relates to a group of hardware for windows and doors. In particular the present invention relates to a group of hardware for windows and doors of the modular type, starting from a plurality of distinct functional members. In more detail the present invention relates to a group of hardware for windows and doors comprising a plurality of functional members that can be snap coupled to one another.

BACKGROUND TO THE INVENTION

In the field of hardware for windows and doors, with particular reference to revolving or hopper windows and balcony doors, the use is well known of groups of hardware comprising a plurality of functional members or elements that can be coupled to one another according to a predesigned scheme. In particular, these groups of hardware usually comprise a switching device for opening/closing the leaf actuated by a respective control member, for instance a cremone bolt, at least one closing member or bolt suitable, in use, selectively to engage the frame of the window or door, and at least one control rod for transferring to a respective closing member the action exerted by the switching device. In more detail and with particular reference to the leafs produced starting from a metal profile, the functional members that are part of the group of hardware are usually housed inside a longitudinal seat, which is obtained in the profile perimeter and is laterally delimited by a pair of respective ribs coupling the movable functional members in a substantially prismatic manner. To operate correctly, each group of hardware must be obviously designed and dimensioned according to the characteristics of the profile onto which it will be

mounted; in particular, the control rods shall present a linear extension commensurate with the extension of the profile perimeter seat.

The above illustrated technical solution is well known and it has been improved over the years to increase its safety in use and easiness of installation. However, the ordinary modular groups of hardware for windows and doors still present some drawbacks, the main of which is that the movable members shall be aligned and connected to one another before being inserted in the respective seat in the profile. This operation is often onerous and difficult during installation. Furthermore, once the members of the hardware group have been reciprocally coupled, they shall be inserted in the respective profile through a respective access area at the end of the respective seat. Therefore, it is clearly apparent that the assembly operation can be easily performed only if the installer has available a rest surface that, in addition to containing the leaf profile, also allows the alignment of the chain of members of the group of hardware, that shall be reciprocally coupled and then inserted in the respective longitudinal seat. Obviously, a similar surface is not always available for the installer, in particular when the leaves are of great dimensions, for instance over 2 meters in height.

To solve this problem some operators in the hardware sector have developed control rods comprising an elongated central body and a pair of elastic ribs transversally extending from this body and designed to snap couple in a substantially prismatic manner with the side ribs delimiting the seat obtained in the profile. Examples of these control rods that can be coupled to the leaf 103 on the front are described in the patent documents DE19859587 and EP117911 and illustrated in figure A that has been taken from the document DE'587.

These elastic ribs allow a front insertion of the control rods and simplify the installation.

However, the use of an elastic snap coupling does not ensure that the control rods remain correctly in seat during all the operational steps, and an even partial lifting of a control rod can often cause the accidental and undesired uncoupling of a member from the respective hardware group.

The use of ordinary control rods designed to snap couple with the profile of the respective leaf on the front does not represent therefore a strong reliable technical solution, as the substantial reversibility of the elastic snap coupling represents a limit for the safety of the windows or doors as regards burglaries.

In view of what illustrated above, the technical problem of having available a modular group of hardware that is easy to be installed and, at the same time, strong and safe is currently solved in a dissatisfactory manner. In particular, it would be desirable to have available a group of hardware that, even though it comprises movable members that can be installed on the front in the respective profile, however presents a safety and sturdiness level comparable to those of the ordinary groups of hardware requiring lateral insertion of the control rod chain and respective closing members/hardware. In fact, these groups of hardware would allow to overcome the drawbacks of the prior art described above and to define a new standard in the market of hardware for windows and doors.

SUMMARY OF THE PRESENT INVENTION

The present invention relates to a group of hardware for windows and doors. In particular the present invention relates to a group of hardware for windows and doors of the modular type, starting from a plurality of distinct

functional members. In more detail the present invention relates to a group of hardware for windows and doors comprising a plurality of functional members that can be snap coupled to one another.

An object of the present invention is to provide a group of hardware for windows and doors, which allows the disadvantages described above to be solved, and which is suitable to satisfy a plurality of requirements that to date have still not been addressed, and therefore, suitable to represent a new and original source of economic interest and capable of modifying the current market of hardware.

According to the present invention, a group of hardware is provided, whose main characteristics will be described in at least one of the appended claims.

A further object of the present invention is to provide a method validly usable for installing, quickly and easily, a group of hardware comprising a plurality of mechanical members that are functionally distinct and can be reciprocally coupled.

According to the present invention a method is provided for installing a group of hardware for windows and doors, and the main characteristics of this method will be described in at least one of the appended claims.

BRIEF DESCRIPTION OF DRAWINGS

Further characteristics and advantages of group of hardware according to the present invention will be more apparent from the description below, set forth with reference to the accompanying drawings, which illustrate a non-limiting example of embodiment. In particular:

- figure A is a schematic perspective view of a detail extracted from a prior art group of hardware;

- figure 1 shows a schematic perspective view of a group of hardware for windows and doors according to the present invention;

- figure 2 is a side elevation and plan view in enlarged scale of a detail of figure 1 in two different operating configurations;

- figure 3 illustrates a cross section according to the plane III-III of figure 2; and

- figure 4 is an exploded perspective view of a variant of a detail of figure 1.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

In figure 1 number 1 indicates, in its entirety, a group of hardware installed on a window or door 100 comprising a frame 102 and a respective leaf 103 that, just by way of non-limiting example, has been represented in figure 1 as a window leaf coupled to the respective frame 102 in a revolving manner. This group 1 of hardware can comprise a plurality of functionally distinct mechanical members designed to be coupled to one another stably. With particular reference to figure 1, the group 1 of hardware comprises at least one switching device 51 suitable, in use, to adjust the closing/opening status of the leaf 103. This switching device can be actuated, in use, through a respective control member 52, for instance a handle that will be indicated, for the sake of simplicity, with the same reference number 52. Again with reference to figure 1, the group 1 of hardware furthermore comprises at least one closing member 10 presenting one closing element or bolt 15 longitudinally projecting from the end of the closing member 10 that, in use, is arranged at the side of the frame 102. In use, this bolt 15 is suitable selectively to engage the frame 102 in a substantially integral manner to block the leaf 103 in a respective closing operating position.

Each closing member 10 is connected with the switching device 51 through at least one respective control rod 20 that is substantially rigid and allows therefore to

transmit the control mechanical action exerted by the switching device 51 to each respective closing member 10 or bolt 15 of the group 1 of hardware.

At this point, before describing the group 1 according to the present invention, it should be specified that hereinafter the term member or the expression functional member will be indifferently used to indicate any type of mechanical member that ca be associated with the group 1 of hardware and in particular any closing member/bolt, any control rod, any movable member associated with a switching device and any further hardware element.

In more detail, with reference to figure 1 again, it should be specified that the leaf 103 comprises a respective profile 105, preferably made of metal or plastic, for instance steel or PVC respectively, presenting a longitudinal first seat 104, substantially rectilinear and extending preferably around at least one segment of the perimeter of the leaf 103. This seat 104 is laterally delimited by a pair of respective side first ribs 106 and is designed to house and/or couple stably functional members associated with the group 1 of hardware. In particular, these side first ribs 106, similarly to what illustrated in figure A of the prior art, are substantially L-shaped so that the first seat 104 is suitable, in use, to house in a freely sliding manner and couple in a prismatic manner each movable member of the group 1, for instance each closing member 10. In more detail it should be noted that the first seat 104 can indifferently present a single rectilinear segment, preferably along the vertical side of the profile 105 arranged at opposite side from the hinges of the leaf 103, or present a plurality of adjacent segments arranged along the sides of the profile 105 and therefore preferably perpendicular to one another. In any case, hereinafter the axial direction along which each

single segment of the first seat 104 extends will be indicated indifferently with the expression given direction D. With particular reference to figures 2a, 2c, and 3a, each control rod 20 preferably presents an elongated first portion 23 that can be interpreted as the main body of the control rod 20. Each control rod 20 furthermore presents a pair of longitudinal side second ribs 24, parallel, substantially elastic and transversally carried by and projecting from the elongated first portion 23. These second ribs 24 also act as stiffening ribs and make the respective control rod 20 substantially rigid against bending and tensile stresses. With particular reference to figure 3a again, the side second ribs 24 present a respective cross section which is preferably, although without limitation, L- or T-shaped to define:

- a pair of grooved second seats 25 extending along the outer side surfaces of each rod 20; and
- a third seat 42 inside the respective control rod 20 and preferably opened at opposite side from the elongated first portion 23.

In particular, the second seats 25 are designed and dimensioned to be engaged, in use, by the side first ribs 106 so that each control rod 20 is coupled in a substantially prismatic manner to the respective first seat 104 and delimits it at opposite side from the profile 105. In more detail, as it will be better explained below, each control rod 20 is designed to be snap coupled on the front to the respective seat 104 through the reciprocal engagement of the side first and second ribs 106 and 24. In fact, resting a control rod 20 on the first seat 104 and exerting on the first portion 23 a pressure directed towards the leaf 103, the side second ribs 24 progressively deform towards the inside of the third seat 42 and then return elastically and suddenly to their original

configuration when the first ribs 106 have stably engaged the respective second seats 25.

With particular reference to figure 2 again, each control rod 20 presents at least one end second portion 21 preferably comprising a segment of the elongated first portion 23 which is devoid of the side second ribs. In more detail, each control rod 20 preferably presents at the respective ends a pair of second portions 21 and each of these end second portions 21 presents a respective through fourth seat 32 obtained transversally in the first portion 23 of the rod 20 and preferably hole-like or slot-like shaped. At this point it should be specified that each end second portion 21, being devoid of the side second ribs 24, presents a substantially elastic behaviour relative to bending stresses exerted perpendicularly to the surface of the elongated first portion 23. Each end second portion 21 can be therefore interpreted substantially as an elastic foil 21 longitudinally carried by and projecting from the respective control rod 20.

With particular reference to figure 2, it should be noted that each closing member 10 is substantially shaped as a parallelepiped dimensioned so as freely to translate in a prismatic manner along the first seat 104 and therefore along the given direction D. With reference to figure 2 again, the closing member 10 presents a first longitudinal abutment element 41 carried by and projecting from an end third portion 11 arranged at opposite side from the bolt 15, along the given direction D. This first abutment element 41 is preferably, although without limitation, obtained in a single piece from the closing member 10 and, for the sake of construction simplicity, presents preferably a substantially parallelepiped shape. In particular, each first abutment element 41 is dimensioned for shape engaging a respective third seat 42

inside a control rod 20 in a substantially conjugated manner. In this regard, it should be specified that, when a first abutment element 41 engages a respective third seat 42, the corresponding closing member 10 is coupled to the respective control rod 20 in a substantially prismatic manner. Furthermore, through the first abutment element 41, the closing member 10 is suitable to exert a return force, constantly addressed towards the leaf 103, that, in use, holds the control rod 20 inside the seat 104 and is therefore suitable to prevent an accidental uncoupling of the leaf 103.

In view of the above description, the set of each first abutment element 41 and each respective third seat 42 can be therefore interpreted both as a coupling device 40 suitable, in use, stably to connect two adjacent functional members, and as a safety device 60 suitable, in use, to prevent accidental uncoupling of a functional member associated with the group 1 and in particular to prevent uncoupling of a control rod 20 from the second seat 104 and therefore from the leaf 103.

At this point, with particular reference to figures 2b and 3b, the closing member 10 also presents a second abutment element 31 that, in use, is carried rigidly by and projecting from the end third portion 11 of the closing member 10 at opposite side from the leaf 103. Preferably, although without limitation, this second abutment element 31 is substantially wedge-shaped. Each second abutment element 31 is furthermore dimensioned stably to shape-engage, in use, a respective fourth seat 32 obtained in a respective control rod 20. At this point it should be specified that, when a closing member 10 and a respective control rod 20 are housed in the first seat 104 and arranged adjacent relative to each other along the given direction D, the foil/end second portion 21 of the rod 20

is put over the end third portion 11 of the closing member 10 and, at the same time, the second abutment element 31 engages the respective fourth seat 32. The set of the first portion 21 and of the respective fourth seat 32 and of the end third portion 21 and of the respective second abutment element 31 can be therefore interpreted as a second coupling device 30 suitable, in use, stably to connect two adjacent functional members, form instance a closing member 10 with a respective control rod 20. In more detail, this second device 30 is suitable, in use, stably to maintain coupled the control rod 20 and the respective closing member 10 in an axially fixed manner relative to each other along the given direction D. Therefore, in view of the above description, it is clearly apparent that the first and second coupling devices 40 and 30 are suitable, in use, to collaborate for coupling in a substantially integral manner two adjacent functional members so that these two members move, in use, as a single body with a freely sliding motion along the longitudinal seat 104.

At this point, in view of what illustrated above, it is clearly apparent that the contextual actuation of the first and second coupling devices 40 and 30 can be interpreted both as a system and as a method for coupling stably two of the functional members associated with the group 1 of hardware according to the present invention. For instance, through this coupling system it is possible to connect a control rod 20 not only with a respective closing member 10 but also with a switching device 51 or with any other hardware element associated with the group 1 of hardware and housed, in use, inside the first seat 104 of the leaf 103. In particular, with reference to the switching device 51, it should be noted that this device presents a respective body 53 that, in use, is rigidly connected with the leaf 103 and a movable switching member

10' housed inside the first seat 104 and suitable to move in a sliding manner under the action exerted by a user through the control member/the handle 52. This movable switching member 10' is preferably parallelepiped-shaped and presents at least one end fourth portion 55 shaped in a substantially equivalent manner to the end third portion 11 of the closing member 10. Each of these end fourth portions 55 presents therefore first and second abutment elements 41 and 31 that are, as regards both structure and function, substantially identical to the abutment elements described above with reference to the closing member 10 and hereinafter they will be thus indicated with the same reference number.

The use of the group 1 of hardware illustrated above is clearly apparent from the description above and requires no further explanations. However, it could be useful to specify some advantages deriving from the use of this group of hardware. First of all, the presence of a safety system 60 preventing the accidental uncoupling of the control rods 20 from the first seat 10 allows to have rods 20 that can be snap coupled on the front to the leaf 103 without affecting the stiffness and reliability of the group 1 of hardware. Furthermore, the contextual use of the first and second coupling devices 40 and 30 allows to couple reciprocally the functional members and the control rods 20 associated with the group 1 in a simple and particularly rigid manner. Lastly, the possibility of snap coupling on the front the control rods 20 to the leaf 103 facilitates the installation and maintenance operations of the window or door 100 as it is not necessary for all the movable members of the group 1 to be reciprocally coupled in series before being inserted in the first seat 104 from a respective side opening. In this way it is possible both to limit the working surface necessary for the installer and

to adapt easily a group of hardware to a given window or door by correctly dimensioning the linear extension of the control rods 20.

Furthermore, it is clearly apparent that modifications and variants can be made to the group 1 of hardware described and illustrated herein, without however departing from the protective scope of the present invention. For instance, according to a variant, not shown, of the group 1 of hardware, the first coupling device 40, instead of comprising a fourth seat 42 inside a control rod 20 or inside a different functional member, comprises a rigid or semi-rigid second foil 21' arranged parallel to the foil 21 and spaced from this latter by a distance substantially equivalent to the thickness of the end third portion 11 carrying the second abutment element 31. In this way, when the two members are adjacent, the end third portion 11 engages the foil 21 through the second abutment element 31 and is coupled in a substantially vice-like manner between the first and the second foil 21 and 21' so as to prevent accidental uncoupling of one of the two members from the first seat 104. Consequently, according to this variant, not shown, the set of the first and second foil 21 and 21' of the end third portion 11 define the safety device 60. Furthermore, according to a further variant, not shown, of the group 1 of hardware according to the present invention, at least one control rod 20 can present a respective cross section different than the cross section illustrated in figure 3a. In particular, the side second ribs 24 can present respective cross sections different from one another so as to give the control rod 20 a substantially asymmetrical cross section. For instance, a side first rib 24 can present a substantially L-shaped transverse profile, whilst the further side second rib 24 can present a substantially upside-down T-shaped cross section.

Alternatively, one of the side second ribs 24 can present a particularly long respective transverse segment substantially shaped to close the third seat 42 at opposite side from the elongated first portion 23.

Lastly, with reference to figures 1 and 4, the group 1 of hardware can comprise at least one auxiliary bolt 17 carried by functional members of the group 1 and transversally projecting relative to the given direction D. In particular, with reference to figure 1, an auxiliary bolt 17 can be produced by coupling a preferably cylindrical blocking head 17' to a closing member 10. This blocking head 17' is coupled to the respective support functional member through a threaded coupling provided with a respective screw arranged in a substantially eccentric position relative to the axis of the cylindrical head 17' to facilitate installation and adjustment of this bolt.

Alternatively, as illustrated in figure 4, an auxiliary bolt 17 can be carried preferably, although without limitation, by a respective control rod 20 through a support element 26 comprising a base 27, preferably made of metal, presenting a pair of first sides 27' presenting a respective linear extension that is slightly shorter than the transverse extension of the first portion 23 of the rod 20. This base 27 furthermore presents a pair of substantially rigid side wings 28 that are coplanar to the base 27, extend transversally from the first sides 27' and are dimensioned to shape engage the third seat 42; and a threaded seat of substantially conical shape arranged in the middle of the base 27 and designed stably to couple the head 17' of an auxiliary bolt 17 through a respective screw arranged eccentric relative to the axis of symmetry of the head 27'.

At this point, with particular reference to figure 4 again, it should be noted that the control rod 20 presents

a respective intermediate segment 29 where no side second ribs 24 are present, so as to define a fifth seat that for the sake of practicality will be indicated with the same reference number 29. This segment 29 presents a longitudinal extension that is slightly greater than the linear extension of the second sides 27'' of the base 27 of the support element 26. In this way it is possible to install stably and substantially integrally the support element 26 inside the fifth seat 29 by substantially snap inserting the wings 28 inside the third seat 42.

At this point it should be specified that the present invention also relates to a method for installing the group 1 of hardware for windows and doors indicated above. This method comprises first of all a step of coupling the functional members associated with the group 1 to the leaf 103; this step can comprise, alternatively or in combination, at least one step of snap coupling a control rod 20 to the respective seat 104 on the front, and at least one step of housing at least one functional member, for instance a closing member 10 or a switching member 10' associated with a switching device 51, inside the seat 104. It should be noted that this step of coupling the functional members associated with the group 1 to the leaf 103 can be also interpreted as a step of aligning at least two of these functional members along the given direction D. This is followed by a step of moving at least two adjacent functional members progressively towards each other along the given direction D until to bring these members abut against each other. In view of what illustrated above, this step of moving at least two adjacent functional members progressively towards each other requires the contextual execution of a step of coupling these functional members to each other in an axially fixed manner along the given direction D through a

second coupling device 30, and a step of coupling these functional members in a prismatic manner along the given direction D through a first coupling device 40. Furthermore, it should be noted that this step of coupling these functional members in a substantially prismatic manner along the given direction D through a first coupling device 40 can be interpreted as a step of actuating a safety device 60 suitable, in use, to prevent uncoupling of at least one functional member from the respective seat 104. In more detail, the step of coupling functional members in a substantially prismatic manner along the given direction D through a first coupling device 40 comprises the step of inserting the first abutment element 41 inside the respective third seat 42 through a translation along the given direction D. Similarly, the step of coupling functional members in an axially fixed manner relative to each other along the given direction D through a second coupling device 30 comprises the step of progressively deforming the foil 21 above the end third portion 11 and the second abutment element 31 until this second abutment element 31 stably engages the respective fourth seat 32. Clearly, to complete the installation of a group 1 of hardware, the method according to the present invention can require to perform many times some of the above illustrated steps to couple different pairs of adjacent functional members.

CLAIMS

1. An installation method for installing a group (1) of hardware for windows and doors (100) comprising at least one first and one second given members (10,10')(20); said method comprising a phase of aligning said first and second given members (10,10')(20) along a given direction (D), followed by a phase of coupling said first and second given members (10,10')(20) in an axially fixed manner relative to each other along said given direction (D) through first coupling means (30); characterised by comprising a phase of actuating safety means (60) suitable, in use, to prevent accidental uncoupling of said first and second given members (10,10')(20).

2. A method according to claim 1, characterised in that said phase of actuating safety means (60) is performed together with said phase of coupling said first and second given members (10,10')(20) in an axially fixed manner relative to each other.

3. A method according to claim 1 or 2, characterised in that said phase of actuating safety means (60) comprises a phase of coupling in a substantially prismatic manner said first and second given members (10,10')(20) through second coupling means (40).

4. A method according to claim 3, characterised in that said second coupling means (40) comprise a first abutment element (41) carried by said first member (10,10') along said given direction (D), and a first seat (42) obtained in said second given member (20) according to said given direction (D) and shaped in a substantially conjugated manner relative to said first abutment element (41); said phase of coupling said first and second given members (10,10')(20) in a substantially prismatic manner comprising the phase of inserting said first abutment element (41) inside the respective said seat (42) through a translation

of at least one said first or second member (10,20) along said given direction (D).

5. A method according to any one of the previous claims, characterised in that said first coupling means (30) comprise a second abutment element (31) carried by and projecting from said first given member (10,10') and a second seat (32) obtained in a foil (21) carried by and projecting from a first end portion (21) of said second given member (20) along the given direction (D); said phase of coupling said first and second given members (10,10')(20) in an axially fixed manner relative to each other comprising a phase of progressively deforming said foil (21) above said second abutment element (31) until said second abutment element (31) stably engages the respective said second seat (32).

6. A method according to any one of the previous claims, characterised in that said windows and doors (100) comprise a leaf (103) presenting a longitudinal third seat (104) extending along said given direction (D); said second member (20) comprising a control rod (20) associated with said group (1) of hardware; said phase of aligning said first and second given members (10,10')(20) according to said given direction (D) comprising at least one phase of snap-coupling frontally said control rod (20) and said third seat (104) in a prismatic manner.

7. A method according to claim 6, characterised in that said phase of actuating safety means (60) comprises a phase of exerting on said control rod (20) a return action constantly directed toward the said third seat (104) through an abutment element (41) associated with said first member (10,10') to prevent accidental uncoupling of said control rod (20) from said leaf (103).

8. A method according to any one of the previous claims, characterised in that said phase of actuating safety means

(60) and/or said phase of coupling said first and second given members (10,10')(20) in an axially fixed manner relative to each other comprise a phase of progressively moving said first and second given members (10,10')(20) toward each other along said given direction (D) until to bring said first and second given members (10,10')(20) abutting against each other.

9. A group (1) of hardware for windows and doors (100) comprising at least one first and one second given members (10,10')(20) and first coupling means (30) suitable, in use, to couple said first and second given members (10,10')(20) in an axially fixed manner relative to each other along a given direction (D); characterised by comprising safety means (60) suitable, in use, to prevent accidental uncoupling of said first and second given members (10,10')(20).

10. A group according to claim 9, characterised in that said safety means (60) comprise second coupling means (40) suitable, in use, to couple said first and second given members (10,10')(20) in a substantially prismatic manner along said given direction (D).

11. A group according to claim 10, characterised in that said second coupling means (40) comprise a first abutment element (41) carried by said first given member (10,10') along said given direction (D), and a longitudinal first seat (42) obtained in said second member (20) according to said given direction (D); said first seat (42) and said first abutment element (41) being designed so as substantially to shape-couple so that, in use, said first abutment element (41) is suitable to move inside the respective said first seat (42) with a purely translational motion along the given direction (D).

12. A group according to any one of claims 9 to 11, characterised in that said first coupling means (30)

comprise a second abutment element (31) carried by said first given member (10,10') and a respective second seat (32) obtained in a first portion (21) of said second given member (20); said second seat (32) being shaped to couple stably with said second abutment element.

13. A group according to claim 12, characterised in that said second abutment element (31) comprises a substantially wedge-shaped projection and in that said first portion (21) of said second given member (20) is an end portion comprising a substantially elastic foil (21); said second seat (32) comprising a slot obtained transversally in said substantially elastic foil (21) and designed to shape-couple with said wedge-shaped projection.

14. A group according to any one of the previous claims, characterised in that said windows and doors (100) comprise a leaf (103) presenting a longitudinal third seat (104) extending along said given direction (D); at least one of said first and/or second given members (10,10')(20) being designed to couple, in use, with said third seat (104) in prismatic manner.

15. A group according to claim 14, characterised in that said second given member (20) comprises a control rod (20) presenting a respective elongated second portion (23), which, in use, delimits said first seat (42) at opposite side from said leaf (103).

16. A group according to claim 15, characterised in that said control rod (20) presents a pair of parallel side ribs (24) carried by and projecting from said second portion (23); said side ribs (24) being of the elastic nature to allow a front snap-coupling between said control rod (20) and said third seat (104).

17. A group according to claim 15 or 16, characterised in that said first seat (42) is substantially open and is delimited laterally and at the bottom by a pair of said

side ribs (24).

18. A group according to any one of claims 14 to 17, characterised in that said first given member ((10) comprises a closing member (10) presenting at least one respective bolt (15, 17), designed so that it can be housed inside said third seat (104) and can be coupled stably with a respective control rod (20) through said first and/or second coupling means (40 and 30).

19. A group according to any one of claims 14 to 17, characterised in that said first given member (10') comprises a switching member (10') associated with a switching device (51) suitable, in use to regulate an operating status for opening/closing said leaf (103).

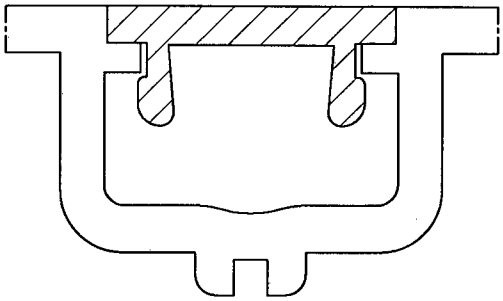


Fig. A

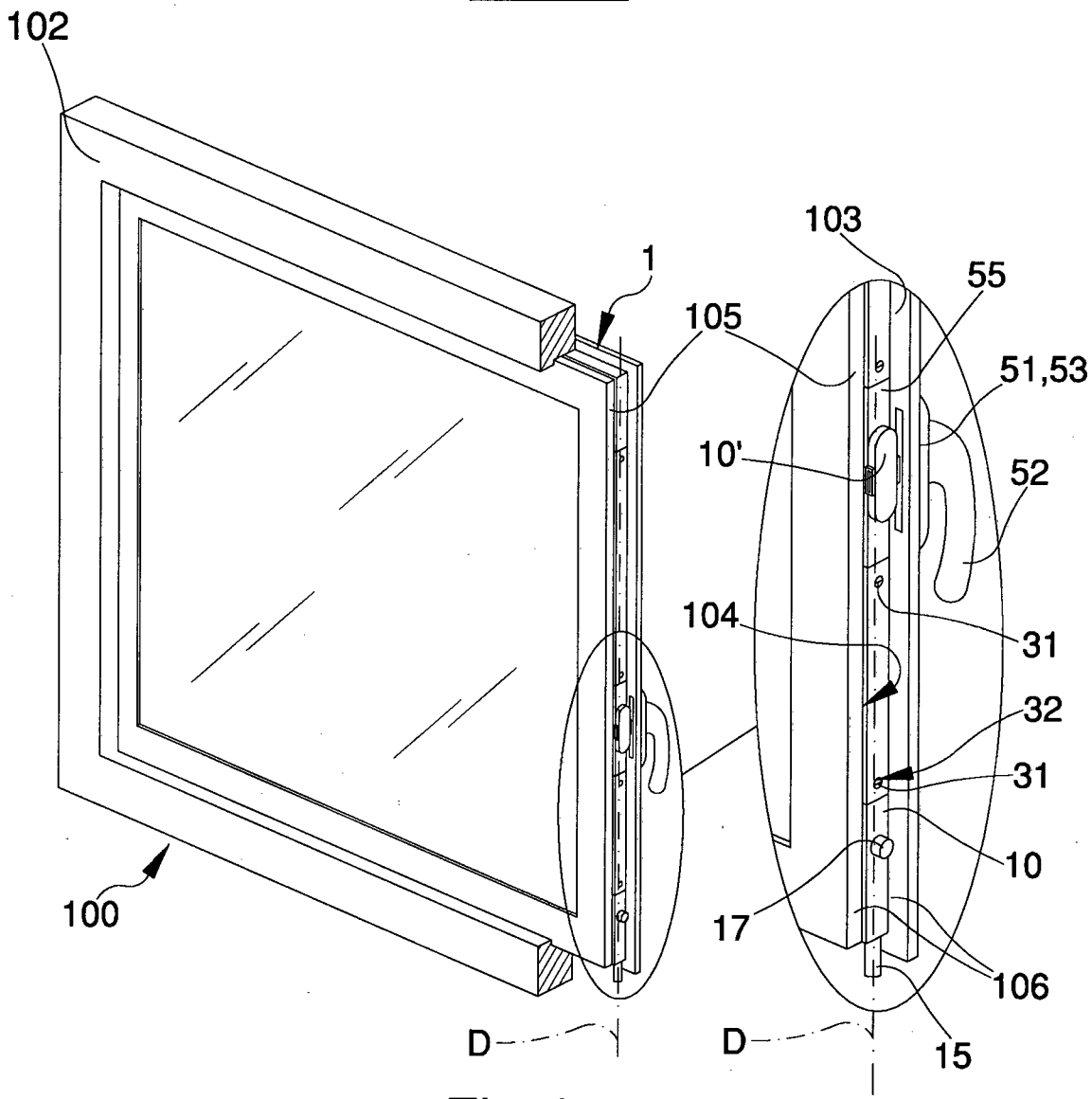
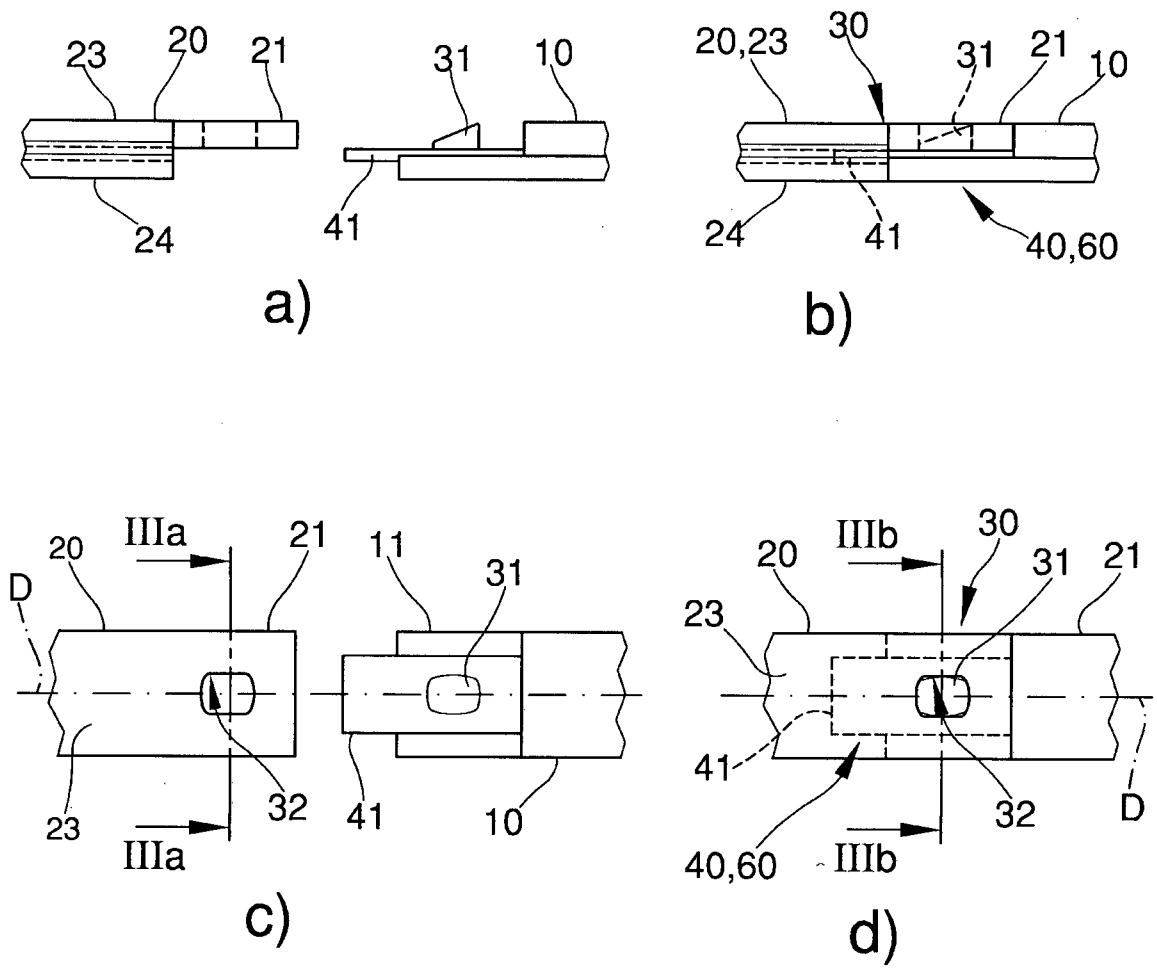


Fig. 1


23
20
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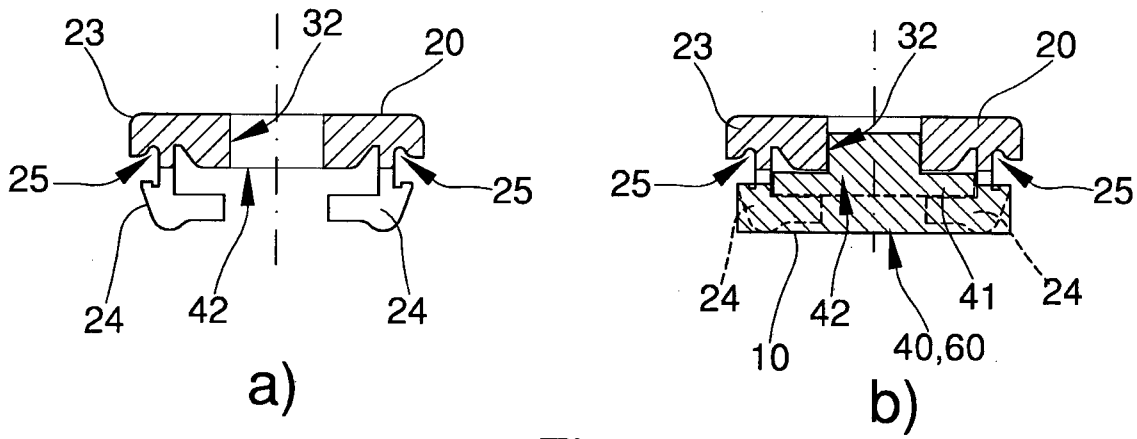
24
31
10
41
a)
20,23
30
31
21
10
24
41
40,60
b)
IIIa
20
21
D
11
31
23
32
41
10
IIIa
c)
IIIb
30
20
31
21
23
41
32
D
40,60
IIIb
d)

Fig. 2


23
32
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25
25
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42
24
a)
23
32
20
25
25
24
42
41
24
10
40,60
b)

Fig. 3

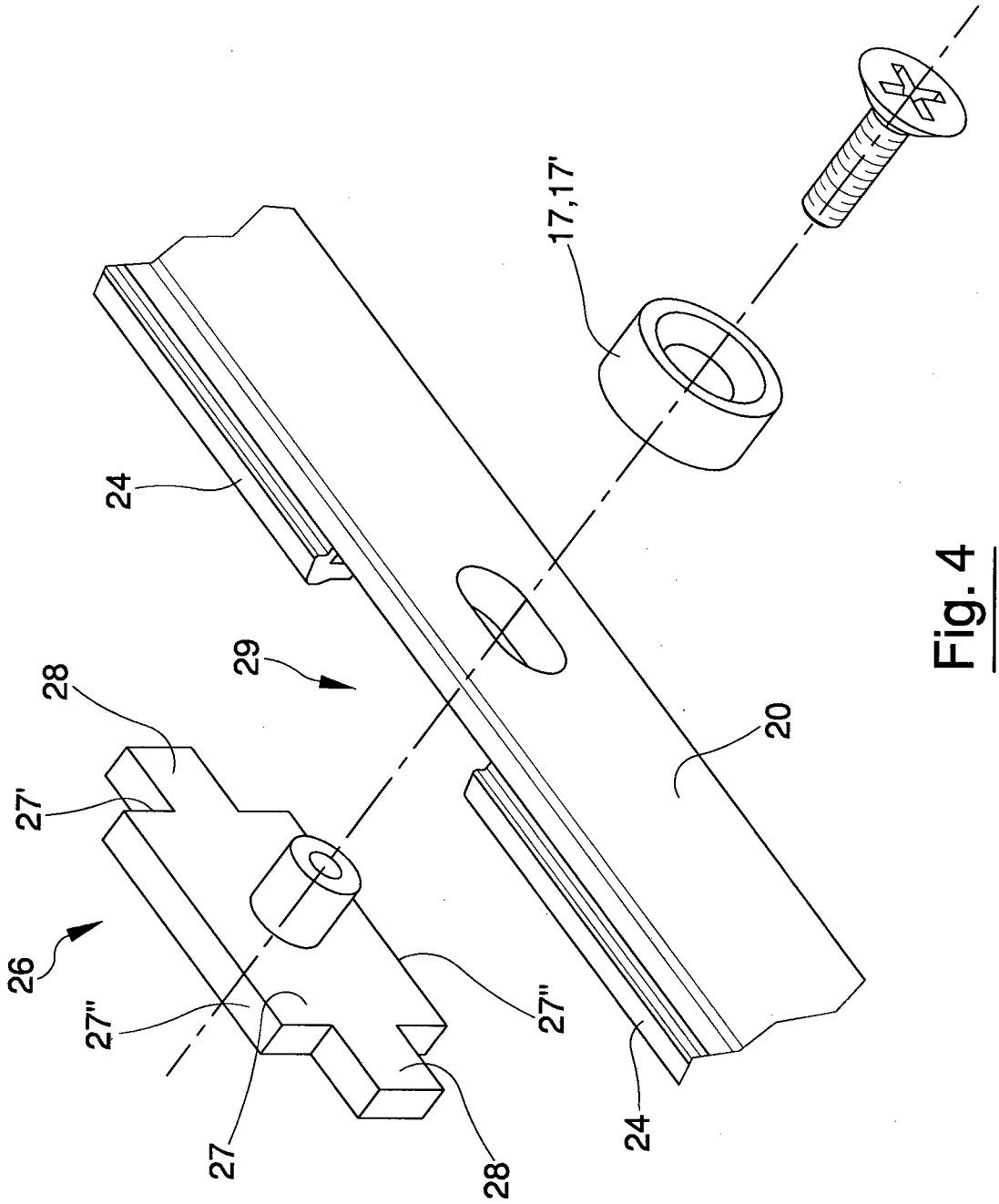

Fig. 4

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/000790

A. CLASSIFICATION OF SUBJECT MATTER
INV. E05C9/20 E05C9/18 E05C9/22 E05C9/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
E05C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 1 936 081 A2 (GARBARINI S R L [IT]) 25 June 2008 (2008-06-25) paragraph [0018] - paragraph [0021]; figures 2,6-10	1-5,8-13 6,14
X	EP 0 620 344 A1 (SCHUECO INT KG [DE]) 19 October 1994 (1994-10-19) page 2, line 22 - line 47; figures 4-7	1-4,8-10
X	EP 1 270 855 A1 (FERCO INT USINE FERRURES [FR]) 2 January 2003 (2003-01-02) paragraphs [0022], [0027]; figures 1-9	1-4,8-11
X	DE 101 06 121 A1 (SIEGENIA FRANK KG [DE]) 14 August 2002 (2002-08-14) paragraphs [0003], [0004]; claim 1; figures 1,3,4,5	1-4,8-13

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 August 2012	06/09/2012

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Ansel, Yannick

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2012/000790

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 785 563 A1 (ERRETI SRL [IT]) 16 May 2007 (2007-05-16) paragraphs [0018], [0019], [0030]; figures 1-8 -----	1,9

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2012/000790

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