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(54) **Handle for Sliding Wings**

(57) A recessed handle (1) for a sliding wing (2) is disclosed, which designed to be housed in an elongated slot (3) of the same wing (2); the handle comprises a casing (10) provided with an elongated housing (17), bordered by two respective end portions (19, 20) of which a first (19) houses a coupling member (21) of the fixed type designed to block the casing (10) to the slot (3), and a second (20) of the two portions (19, 20) houses a further coupling member (26) with concentrated elasticity, and elastically deformable on a plane parallel to the slot (3) to co-operate elastically with the first member (21) and allow, selectively, engaging/blocking of the casing (10) in the slot (3).

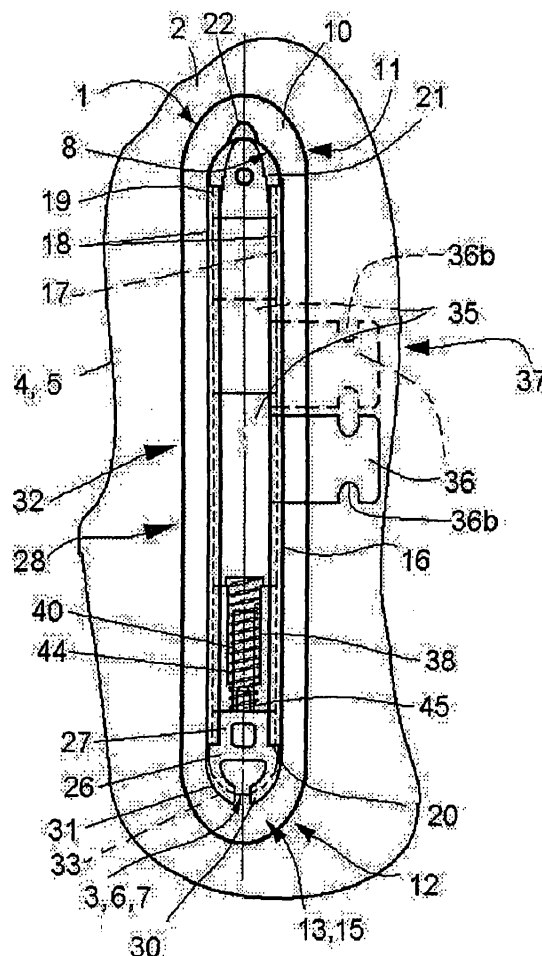


Fig.1

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Description

[0001] The present invention relates to a recessed handle for sliding wings.

[0002] In the field of doors and windows, windows with sliding wings are normally used when the glazed surfaces are extensive so that the masses to be moved are heavy and bulky. In this case the choice of revolving wings is particularly disadvantageous both during construction and during installation, and due to problems of accident prevention related thereto and, finally, on account of the costs which the windowpane support structures entail.

[0003] This type of window unit is also found in the case wherein wings are required which can be opened in areas where the space available is minimal, or already occupied by furniture, or simply because it has to be left clear to avoid obstructing portions of space.

[0004] Patents are known in the field of handles for sliding wings, belonging to French companies such as Ferco Int. Usine Ferrures and Croisee DS, and to the Spanish company Giesse Group Iberia (hereinafter referred to as Giesse). These patents include in particular the Ferco US6019400 patent, "Lock for sliding closure", the patent US6019401 with the same title and the patent US6247341 entitled "Lock 25.2 for sliding closure, window or like closure". The patent US6019400 is particularly relevant to the subject dealt with in this patent application, in that it relates to a handle with a casing having a pair of longitudinal ribs, and a mechanism which comprises respective attachment means held by the casing in respective end portions, to couple the handle stably to the wall of the same wing. A first of the two attachment means is a fixed stop, rigidly connected to the handle, and the second has at least one portion contained inside a longitudinal housing formed in the casing of the handle. This latter portion is retractile elastically towards the centre of the casing, in order to allow snap assembly of the handle in a slot of the extruded bar which borders the sliding wing laterally. This retractile portion is, more specifically, mobile longitudinally against the thrust of a spring between an extracted working position, wherein the distance of the retractile portion from the centre of the casing of the handle is maximum, and an assembly position, wherein the respective distance from the centre of the casing of the handle is minimum, and assembly of the handle in the slot on the casing of the handle is permitted. Once an end portion of the handle is coupled to one of the two ends of the slot provided for housing it, the handle is assembled by pressure, through elastic yielding and with snapping of the longitudinal retractile portion of the prismatic mechanism housed in the casing. This elastic yielding is achieved through application of a longitudinal force on the body of the handle to compress the mechanism and reduce its overall longitudinal dimension, in this way allowing insertion of the handle in the slot. To facilitate application of this longitudinal force, the end of

the handle provided with the fixed stop has, in turn, a head provided with a slanting surface, designed to co-operate with an edge of the slot wherein the handle is to be installed, and which is oriented in such a way as to transform the pressure applied frontally to the casing into a longitudinal thrust acting on the retractile portion, which is thus pushed towards the interior of the casing in an intermediate assembly position. In this configuration the means of attachment of the handle are arranged in such a way as to allow assembly and subsequent attachment of the handle inside the slot, which takes place once the casing has been installed inside the slot of the profile; when the slanting surface of the fixed stop loses contact with the edge of the slot, the longitudinal thrust on the spring ends, and the handle regains its non-deformed configuration.

[0005] This is followed by recovery of the deformation of the spring, induced indirectly by the pressure exerted on the external face of the casing, and the attachment of the casing to the extruded bar of the wing. The closure/opening block of the lock is installed between the two attachment means and comprises a transverse latch designed to engage a recess formed in the frame of the window unit and free to slide longitudinally through manual switching.

[0006] A solution similar to that of Ferco has been adopted by Giesse, and in both cases it can easily be observed that the retractile attachment means, which the two producers manufacture in metal, normally aluminium, has large overall dimensions and a very complex shape. This leads to unjustified increased heaviness of the handle, localisation of the attachment forces which act on the corresponding end position of the edge of the slot, and an uneconomical increase in costs, correlated with a high production cost, due to a high cost of the mould of the retractile portion, also caused by the decision to adopt a metal material for the special type of operation of the component.

[0007] For these reasons, the retractile portion described above makes the handle excessively complex and costly, and the design of the corresponding end of the handle has to be adapted in order to reduce its overall cost without altering the structural layout, yet differentiating from what has been realised by competitor companies, such as for example Ferco and Giesse.

[0008] The object of the present invention is to provide a recessed handle which is free of the disadvantages listed above, which is easy and practical to install, and which has, in place of the aforementioned retractile portion thrust elastically by a spring, a component having an elastic portion and which, after assembly, is in a condition free from internal tensions.

[0009] A further object of the present invention is to provide a shape coupling between the same recessed handle and the respective housing wherein the handle is retained with reduced local pressure on a par with the force applied to the edge of the slot. This is in order to allow repeated operations of assembly and disassembly

of the same handle inside the same slot, without causing deterioration of the longitudinal ends of the same slot, and therefore a higher level of quality and reliability of the handle, in addition to increased durability of the bar of the window unit which holds the same slot, and of the deformable snap part responsible for retaining the handle in position.

[0010] An additional object of the present invention is to provide a component which can be installed rigidly in an end position in the casing of the handle, which can be snap-deformed elastically to cause shape coupling of the casing of the handle to the wall of the sliding wing and, therefore, once assembly has taken place, is in a condition of substantial lack of internal tensions, so as to be made with low-cost materials via industrial process with a low cost percentage.

[0011] Another object of the present invention is that the component can be obtained directly through moulding.

[0012] An additional object of the present invention is to provide a recessed handle which can act as an anti-intrusion security device, designed to prevent lifting of the wing wherein the same handle can be installed.

[0013] According to the present invention a handle is provided for sliding wings, the features whereof are described in claim 1 onwards.

[0014] According to the present invention a coupling member is provided for a recessed handle, the features whereof are described in at least one of the claims succeeding claim 1.

[0015] According to the present invention an anti-intrusion security device is also provided, the features whereof are described in at least one of the claims succeeding claim 1.

[0016] The invention will now be described with reference to the accompanying drawings, which illustrate some of its non-limiting embodiment examples, wherein:

- Figure 1 is a rear elevation view of the internal part of a handle made according to the present invention, in installation conditions;
- Figure 2 is a side elevation view, partial and sectioned, and on an enlarged scale, of an upper portion and of a lower portion of Figure 1;
- Figure 3 is a view on an enlarged scale of a detail taken from Figure 1;
- Figure 4 is a view, with some parts removed for the sake of clarity, of a detail of a second preferred embodiment of the present invention;
- Figure 5 is a side elevation view on an enlarged scale of a second preferred embodiment of a handle made according to the present invention;
- Figure 6 is a schematic perspective view, on an enlarged scale, of a second embodiment of a detail taken from Figure 5;
- Figure 7 is a side view, with parts sectioned and parts removed for the sake of clarity, of a third em-

bodiment of the handle of Figure 1;

- Figure 8 is a front elevation view, on an enlarged scale for clarity, of a first detail taken from Figure 7;
- Figure 9 is a side elevation view of the detail of Figure 8;
- Figure 10 is a plan view of the detail of Figure 8;
- Figure 11 is a front elevation view, on an enlarged scale for the sake of clarity, of a second detail taken from Figure 7;
- Figure 12 is a side elevation view of the detail of Figure 11;
- Figure 13 is a side elevation view, on an enlarged scale for the sake of clarity, of a variant of the detail of Figure 8;
- Figure 14 is a side elevation view of the detail of Figure 13; and
- Figure 15 is a plan view of the detail of Figure 14.

[0017] 1 in Figure 1 denotes, as a whole, a recessed handle for sliding wings 2, which can be installed frontally inside a slit or slot 3 formed in an extruded bar 5, and which has transversely a profile formed by the same wing 2. The slot 3 is formed in a narrow front wall 4 of the bar 5, and is bordered peripherally by an elongated annular edge 6 obtained by transverse cutting of the material of the bar 5. The slot 3, moreover, is bordered longitudinally by two respective end portions 7 and 8, the first whereof is placed in a lower position in relation to the other in Figure 1. The bar 5, which normally has a horizontal C section, borders the wing 2 laterally/transversely to the direction of motion, and is designed to couple with a known fixed stop of the frame, known and not illustrated, whereto the wing 2 is coupled slidably. In Figure 1 the lower face of this wall 4 can be seen, while the cross section can be seen in Figures 2a and 2b. More particularly the slot 3 is bordered by a narrow edge 6, whereto a casing 10 of the handle 1 is coupled via respective end portions 11 and 12, upper and lower respectively. Naturally the wing 2 and the respective bar 5, wall 4 and slot 3 have been included in this description for the sole purpose of localising more easily the type of application whereto the handle 1, the object of the present invention, is dedicated, and therefore, serving solely to provide a better understanding of the field of application of the invention, are not part thereof.

[0018] The end portions 11 and 12 of the handle 1 are shaped so as to house two blocking members which will be described in greater detail herein below. The casing 10 has a wall 13 bordered internally by a substantially flat face 15 for coupling to the wall 4, elongated in shape, and which is provided externally with an external edge 16 shaped similarly to the slot 3. Particularly, the external edge 16 extends slightly in excess with respect to the slot 3, to abut against it externally.

[0019] The casing 10 has, on the side of the respective face 15, a pair of ribs 18, parallel one to the other and facing each other respectively, which border transversely a longitudinal housing 17, in turn bordered lon-

gitudinally by two respective end portions 19 and 20. The portion 20, shown at the top in Figure 1, houses a fixed coupling member 21, which comprises a projection 22, shaped with a slanting surface and seen in greater detail in Figure 2a, and which is designed to transform, during use, a thrust acting on the casing 10 in a transverse direction to the housing 17 into a longitudinal thrust acting on the same casing 10. Therefore the member 21 is a component whose shape is designed to attach the casing 10 internally to the slot 3. The portion 20, shown at the bottom of Figure 1, houses a further coupling member 26, which member is preferably but not exclusively made in plastic, and is shaped in such a way as to define, together with the member 21, shape coupling 28 of the elastic type, which, similarly to the member 21, is designed to block the casing 10 to the wall 4. Referring to Figure 1, the member 26 comprises a shank 27 via which it is installed, fixed, inside the housing 17 and, on the opposite side to the shank 27, a fork 31. This fork 31 is provided with at least two arch-shaped retaining members and, in particular, two arms 30, of which one at least is elastically deformable on a plane parallel to the wall 13 in such a way that the fork 31 can be inserted in the slot 3 itself. It should be noted that the overall longitudinal extension 15 of the housing 17 and of the two members 21 and 26 housed therein exceeds the longitudinal dimension of the slot 3 when there are no deformation loads suitable for pushing one arm 30 against the other, and hence for reducing the overall transverse dimension thereof.

[0020] From what has been described it is clear that the necessary condition for allowing installation of the handle 1 on the wall 4 of the wing 2 is the temporary reduction in the longitudinal extension of the assembly 32 comprising the casing 10, with the respective ribs 18, and of the blocking members 21 and 26 rigidly installed in the casing 10, which is obtained through the deformability of at least one of the two arms 30. Referring to Figure 1, the two members 21 and 26 are held by the casing 10 in such a way as to be selectively removable; however this cannot and must not be considered a limitation for the present invention in that, costs permitting, the two members 21 and 26 could also be an integral part of a casing 10 which comprises them fully. In any case, referring to Figures 1-4, the two members 21 and 26 have been illustrated as housed. The fork 31, therefore, concentrates the elastic characteristic of this assembly 32, concentrating the elastic characteristic of the same member 26 below the coupling shank 27. In particular the two arms 30 are designed to co-operate elastically one with the other to attach the casing 10 to the bar 5 inside the slot 3. It has to be noted that the fork 31, and hence the same member 26, has a portion of edge 33 designed to couple with the wall 4 in a matching manner. This edge portion 33 is also shaped, point by point and radially, as a slanting surface (Figure 2b), so as to distribute the reduced blocking thrust on an extended portion of the edge 6 of the slot 3 at the same

member 26, to cause limited and evenly distributed contact pressure, and safeguard maintaining of the good state of repair of the local edge portion of the slot 3.

[0021] The handle 1 also comprises a slider 35 which is shown schematically in Figure 1 alone. Referring to this figure, the slider 35 is separated from the member 26 by a longitudinal elastic member 44, normally a spring, which is placed between the slider 35 and the same member 26 to exert a direct thrust towards the member 21, in such a way as to maintain the slider 35 normally thrust on the opposite side to the fork 31, towards the respective position of closure or opening, according to where the installer has placed a transverse stop element for the benefit of stability of the position which the slider 35 is to adopt stably, and in that the fixed stop 36b for a latch 36 is arranged on the side of the portion 19 or portion 20. Referring to Figure 1, for the sake of convenience the fixed stop 36b is positioned on the side of the portion 19, and the member 26 has a guide 45 which can be implemented via a housing, to be illustrated further on, or via a pin 45, held by the member 26 on the opposite side to the arms 30 of the fork 31. Therefore the spring 44, by exerting an upward thrust, is designed to maintain the latch 36 in a constant raised working position, which position becomes one of closure when the latch 36 couples with the corresponding fixed stop 36b.

[0022] It should be noted that the fixed stop 36b is installed rigidly in a known frame which is not illustrated, having decided not to illustrate it due to the fact that the same frame is not part of the present invention. The reader is therefore required to imagine the stop 36b, illustrated separately in Figures 1 and 7, as rigidly connected to the known frame, not illustrated, with which the wing 2 can co-operate through sliding.

[0023] In the case wherein the handle 1 has to be simplified, it is possible to modify the corresponding part of the same handle 1 according to the following instructions. In particular the slider 35 is provided below with a small bar 38, also referred to as positioner, which can be seen in Figure 2b, and the member 26 provided in turn with a longitudinal elastic element which faces the small bar 38, and which rises up from the shank 27 (Figure 4). This longitudinal elastic element is provided via a small bar 40, slanting towards the wall 4, whose function is to retain the small bar/positioner 38, and hence the slider 35, in one of the working positions of closure/opening, according to where the installer has positioned a transverse stop 36b, whereto the handle 1 can be coupled to maintain the wing 2 in a blocked sliding position. In this respect the small bar 38 has a face 39 which has a serrated shape and is turned to the opposite side to the wall 4, and ends on the side of the portion 20, with a free slanting surface end. The small bar 40 ends with a curved end 41 on the opposite side to the respective slant (to the right in Figure 2b), which end is designed to act as a rabbet for the latch 36 and, in particular, for a lower portion of the slider 35. The small bar 40 also

has an internal face 43 shaped similarly to the face 39, to co-operate with the latter through the tongue and groove coupling of the two faces 39 and 43. The face 38 is obviously designed to control the positioning of the slider 35 inside the housing 17 in a longitudinal position which can be defined, as required, between a lowered position of free sliding of the wing 2 in relation to the known and not illustrated frame of the same wing 2 (Figure 1 with latch 36 represented by a dotted line), and a raised position (Figure 1 with latch 36 represented by an unbroken line) wherein a latch 36 engages by hooking the fixed stop 36b. The slider 35 and the latch 36, rigidly connected one to the other, define mobile equipment 37 of the handle 1, which is free to slide in the casing 10, to control closure and opening of the wing 2 as a result of manual switching, and is the only longitudinally mobile element inside the housing 17 of the handle 1.

[0024] Use of the handle 1 is clear from what is described above and does not require further explanations. It should however be noted that the handle 1 has, at respective end portions 19 and 20, two elements, and in particular the members 21 and 26 rigidly coupled to the housing 17. Therefore the member 26 is particularly effective for performing the task of retaining in position the handle 1 at the respective wing 2, without thereby being mobile inside the housing 17, and therefore subject to mechanical stresses of friction which would require its manufacture in metal. The fact that this member 26 can also be made in a material which is inexpensive, both in itself and due to the economical nature of the relevant technological production process, makes the handle 1 incorporating this component decidedly innovative.

[0025] From what is described above it is clear that the handle 1 described above is easy and practical to install and maintain. Through the use of one single component, namely the member 26, which can be installed as fixed in the housing 17, the problems of sliding of the retractile portion, held inside a similar housing to the longitudinal housing 17, have been eliminated. The member 26 is free of internal tensions once it has been installed in the slot 3 of the wall 4. Moreover, the member 26 can be produced with low-cost materials and via industrial processes such as moulding, which allow high production volumes with very low unit costs, and hence excellent contribution margins, due to the fact that the member 26 has a very simply geometrical shape and is sufficiently deformable in a first phase of snapped installation.

[0026] For the sake of clarity, and always with the aim of demonstrating the full achievement of the objects which the Applicant had set out to attain with the present invention, the positive repercussions of the choice of plastic material for the member 26 on the production costs and on the quality of the member 26 should be pointed out. For example, with reference to the disadvantages which the possible choice of a metal material

would have entailed. For example, with a metal material, the required elasticity of the member 26 could only have been obtained with an appropriate design and appropriate machining process, also entailing, in addition to design work, the performance of a plurality of machining processes which, having opted for the plastic material, are not required. In the case wherein the metal part has obtained its elastic characteristic as a result of torsion of a section of metal rod with high mechanical properties, or through punching of a metal sheet to obtain a small plate to be bent into a U or ring shape, it would have been necessary to involve more than one department of the production firm, with the result that, if these departments are separate from each other within the firm, numerous movements of semimanufactures have to be taken into account. Moreover, the choice of the most appropriate metal material and possible heat treatments would also have been crucial steps for the satisfactory stability of the handle 1, to prevent the member 26 in a metal material from being deformed once installed. Naturally the costs of the handle 1 would have been affected, both to due to the increased extent of the design work, and to the higher cost of the components, arising from the higher cost of the materials and of the production process. Vice versa, a cursory choice of the metal material could have led to production of an end blocking member which would have had shape retention, and whose mechanical properties would have changed in time, so that the stability of the handle 1 would have been weakened, with the result that the handle 1 would have been easily uninstalled by prowlers, due to the lower residual elasticity of the metal member. Moreover the required commitment of company resources in terms of internal logistics would have been considerable, with the result that the production times would have been in any case long, and the costs considerable. The Applicant was the first to identify in the simple combination of the plastic material and the moulding technology the key to reducing the production times, through simplification of the production cycle, and the costs of the material, in that the moulding of plastic allows a finished product to be obtained which has immediately the elasticity required at minimum costs.

[0027] Given the above description, the objects of the invention can easily be achieved by implementing the invention as illustrated above.

[0028] Therefore it is clear that, by using the member 26 which, once installed, recovers the non-deformed shape overall, it is possible to produce an effective and low-cost handle, which can be connected stably to and selectively disengaged from the respective wall once the pre-installation overall dimensions have been restored elastically. The handle 1 therefore has, when installed, a zero deformation component overall in the plane transverse to the plane of the housing slot 3, with the result that the reliability, hold and ease with which it is possible to perform maintenance on the same handle 1 are decidedly optimised.

[0029] It is finally clear that changes and variations can be applied to the recessed handle 1 described and illustrated here without thereby departing from the sphere of protection of the present invention.

[0030] For example, with reference to Figure 4, a variant of the member 26 is illustrated, wherein the fork 31 has been modified to improve the stability of the two arch-shaped members 30. In particular the modification entails the lengthening of each arm 30 beyond the edge portion 33, on the opposite side to the small bar 40. In this way each arm 30 ends with a head 34, one of whose portions is tapered, in such a way as to have a thickness which is slightly smaller than the thickness of the shank 27 of the member 26, as in the case illustrated below in Figure 2b. Each head 34 is therefore suitable for being inserted in the bar 5 to come into contact internally with the wall 4 when assembling the handle 1, and for maintaining the same handle 1 rigidly connected to the wall 4 inside the slot 3.

[0031] This type of solution allows the additional object to be achieved that the handle 1, whose fork 31 has the respective heads 34, is retained inside the slot 3 with minimal local pressure on a par with the force applied to the edge 6 of the slot 3 in the other solutions discussed. Therefore replacement and maintenance of this handle 1 is easy, and also of the wing 2 whereon this handle 1 is installed, due to the particular ease of performing repeated operations of assembly and disassembly of the same handle 1 inside the slot 3, which prevents deterioration of the longitudinal ends of the slot 3.

[0032] It will have been noted that, here and further on in the description, the numbering of equivalent components is left unchanged, although describing alternative embodiments of the member 26 and of other details which, during use, are designed to interact in various ways with the member 26 itself. This is the result of a specific choice, which confirms the unity of the inventive step of the present invention and, in particular, that the variations of the embodiments of the handle 1 and of the respective components are necessary for adapting the invention to the external limitations of the doors and windows whereon the handle 1 and member 26 are to be installed.

[0033] Referring to Figure 3, an additional embodiment of the member 26 is illustrated, provided with an elastic reinforcement element 25 which, without undermining the general features of the component in question, could have a substantially annular shape as in Figure 3, or be shaped in another way. This element 25 is placed between the shank 27 and the arms 30, to maintain the two retaining members 30 open, in such a way as to act as an elastic reserve of the same members 30, in the case of repeated dismantling of the handle 1 from the slot 3. In this case it can be said that the fork 31 is made in a composite material, with elasticity distributed differently on different parts and components of the same member 26.

[0034] Referring to Figures 5 and 6, a description is given of another type of handle 1 which has the positioner 38, and which is suitable for coupling with walls 4 with internal ribbing oriented in a direction which traverses the slot 3. In this case the extruded bar 5 of the wing 2 with the slot 3 has internally a rib 60 for stiffening which is oriented in a longitudinal direction 61, shown vertically in Figure 5a. Once the bar 5 is cut to form the slot 3, each of the truncated portions of the rib 60 defines, on opposite sides to the slot 3, a longitudinal obstacle for installation of the member 26. Therefore each of the two truncated portions of the rib 60, only one of which can be seen in Figures 5a and 5b, represents a longitudinal limitation to installation of the member 26 in the slot 3, and therefore also of the corresponding casing 10. In particular the member 26 shown in Figures 5 and 6 has a second housing 62 in at least one of the heads 34 of the arms 30. This housing 62 is shaped in such a way as to be engaged longitudinally by a head 63 of the rib 60, and therefore will have a shape adequate for the section of the rib 60, and at the distance of the head 63 in relation to the wall 4. As in the more frequent cases, the rib 60 shown in Figures 5a and 5b has a T section, and therefore the housing 62 of the corresponding member 26 is formed on the side of the wall 4, and is shaped in such a way as to house a longitudinal head portion of the rib 60. However the housing 62 could also be formed through reduction in the thickness of the same heads 34 on the opposite side to the wall 4, as in Figure 6b, if the head of the rib 60 is particularly high in relation to the wall 4.

[0035] Again referring to Figures 5 and 6, it should be noted that the small bar 40 of the member 26 has been modified to comprise a profile 48 provided with a pair of slanting surfaces 49, whose parts of greatest height are opposite one in relation to the other. The two slanting surfaces 49 are separated by a flat section 50 which is parallel to the wall 4 and separates two portions of reduced thickness designed to define front housings 51. It should also be noted that the guide element 45 of the spring of the member 26 has also been modified. In the version of Figure 4 it was a pin 45, whereas in Figure 5 it comprises a housing 46 formed in the body of the same member 26. In the version in question, the small bar 38 has also been modified to couple with the trapezium-shaped face 43. In particular the modified small bar 38, which can be seen in Figure 5a in two separate working positions corresponding to the positions of opening and closure of the latch 36 illustrated with reference to Figure 1, is bordered by a flat surface, ends with a free end 42, with a stop 47, and has a sufficient elastic characteristic to maintain the end 42 in constant contact with the modified face 43, with sufficient pressure for maintaining the mobile equipment 37 in any one of the two working positions, in contact with one of the two front housings 51.

[0036] It should be noted that in the case of a concentrated thrust acting from the bottom upwards being ap-

plied to the handle of Figure 1, for example via a break-in tool such as a wrecking bar, the assembly 32, comprising the combination of the two blocking members 21 and 26, of the casing 10 which houses them, the first placed above the second, of the latch 36 and stop 36b, is not designed to prevent forcing of the wing 2. Indeed, in the case wherein this thrust is applied between the bar 5 provided with the slot 3 and the floor below the handle 1, the handle 1 of Figure 1 would remain blocked by the stop 36b in the vertical direction due to the respective coupling with the latch 36, yet the wing 2 could in any case be raised due to the play which would be formed between the upper end portion 19 due to the elastic yielding of the arms 30 of the member 26 whereon the thrust would have effect. The overall result would be that the portion 19 of the handle 1 of Figure 1 would lose peripheral contact with the upper portion 8 of the edge 6 of the slot 3 on the upward raising of the door 2, and that the conditions would be created for removal of the handle 1 from the slot 3. In particular, if this span between the projection 22 of the member 21 and the portion 8 of the edge 6 of the slot 3 assumes proportions which are comparable to the longitudinal height of the projection 22, the handle 1 of Figure 1 can be freely removed from the wing 2 and, as a result of this removal, the wing 2 would become free to slide, and hence to allow a break-in.

[0037] To avoid this disadvantage it is possible to modify the handle 1 by using a modified rigid member 21 as shown in Figures 11 and 12, designed to be installed at the portion 20 of the handle 1. Similarly, the elastic member 26 is modified as in Figures 8-10, or 12-15, to be installed inside the housing 17 at the portion 19. The rigidity of the blocking member 21 modified in this way, and held below by the handle 1, allows the distance between the member 21 and the fixed stop 36b to be maintained unchanged, and hence prevents raising of the wing 2, at least to the limit of resistance of the coupling between the latch 36 and the stop 36b.

[0038] Referring to Figure 7, a version of the handle 1 is illustrated, equipped with the two locking members 21 and 26 just described, the first placed below the second respectively, in such a way that the handle 1 can act as an anti-raising security device 70 for the wing 2 in combination with the fixed stop 36b. Therefore the security device 70 could also be said to comprise the assembly 32, in turn provided with the casing 10 and the members 21 and 26 connected thereto, the latch 36, and the corresponding fixed stop 36b.

[0039] In Figure 7, and subsequent drawings, it was preferred, for reasons of simplicity, not to illustrate the latch 36 of Figure 1, but to illustrate the stop 36b, in order to provide a visual reference of the zone wherein the handle 1 of Figure 7 would hold the latch 36. Moreover, again for the sake of simplicity, in Figure 7 and subsequent drawings 8-15, the reference numerals of the components of the handle 1 have, for the sake of convenience, been left identical to the reference numerals

of the equivalent components of the handles 1 already discussed with reference to Figures 1, 2 and 4, and 5.

[0040] Again with reference to Figure 7, the handle 1 has a respective member 26 which differs from those illustrated in Figures 2, 3, 5 and 6 due to the fact that it is modelled to be installed in the housing 17 on the side of the end portion 19, and in combination with a member 21, in turn designed to be installed in the housing 17, on the side of the end portion 20 in Figure 1. In Figure 7 the latch 36 has not been illustrated for reasons of simplicity, while the fixed stop 36b held by the frame, known and not illustrated, of the window or door unit which comprises the wing 2 has been illustrated, sectioned, by an unbroken line, with the sole purpose of facilitating understanding of what is described above to justify the interpretation of the handle 1 as a security device.

[0041] The mobile equipment 37 of Figure 7 holds below, in the same Figure 7, the respective small bar 38, which is represented with the respective stop element 47 arranged on the side of the member 21, to couple with one of the housings 51 of the profile 48, on the basis of the position attributed longitudinally to the mobile equipment, for switching of the handle 1 of Figure 7 from a position of closure, with the element 47 which engages the housing 51 arranged above in the same Figure 7, and with the element 47 which engages the housing 51 arranged below in the same Figure 7.

[0042] The member 26 of Figure 7, which can be seen separately from the respective handle 1 in Figures 8, 9 and 10, is derived from the member 26 of Figures 5 and 6, and differs from the latter due to the absence of the profile 48, which has been combined with the member 21 of Figure 7, due to the need to couple with the small bar 38 positioned below. Given what is described above, the description of the member 26 illustrated in Figure 7, and in Figures 8, 9 and 10, is omitted for the sake of brevity. It should be noted that the member 26 of Figures 8, 9 and 10 has the housings 62 of the two arms 30, reciprocally facing, while the member 26 of Figures 13-15 has each of the housings 62 formed on the external side of the respective arm 30.

[0043] Referring to Figures 11 and 12, the member 21 of Figure 7 is illustrated, which member differs from that illustrated in Figure 1 and in Figure 2a due to the fact that the respective projection 22, shaped with a slanting surface, has been doubled into two projections 22a and 22b, substantially identical one to the other, albeit symmetrical and arranged symmetrically in relation to a median geometrical plane in Figure 11, traced by a dotted and dashed line. The member 21 has a shank 29 for coupling with the ribs 18 of the casing 10, which ends below with a body 24 which is bordered below by a semicylindrical surface, which holds the projections 22a and 22b downwards, and a housing 23 for said wall 4.

Claims

1. Recessed handle (1) which can be installed in a slot (3) formed in a wall (4) of a wing (2) for doors and windows of the slidingly mobile type; said slot (3) being bordered by an internal edge (6), and having respective end portions (7,8) of a specific shape; said handle (1) comprising an elongated casing (10) bordered longitudinally by a first and by a second end portion (19)(20); **characterised in that** said casing (10) holds between said first and second end portion (19)(20) single equipment (37), slidingly mobile freely and longitudinally. 5
2. Handle according to claim 1, **characterised in that** said mobile equipment (37) comprises a latch (36) which is mobile longitudinally from a first working blocking position in conditions of closure of said wing (2) and a second working blocking position in conditions of opening of said wing (2). 10
3. Handle according to claim 1 or 2, **characterised in that** each of said first and second end portions (20) (19) has a first and second blocking member (21) (26) designed to couple with said wall (4) to block said casing (10) inside said slot (3); said first locking member (26) being elastically and snappingly deformable to cause shape coupling of said casing (10) with said slot (3). 15
4. Handle according to claim 3, **characterised in that** said first member (26) is shaped so as to concentrate the respective deformability on a longitudinal plane substantially parallel to said wall (4). 20
5. Handle according to claim 4, **characterised in that** said first coupling member (26) comprises at least one blocking element (30) designed to co-operate with a second member (21) held by said casing (10) at said second portion (19), to react snappingly and elastically to stresses acting longitudinally on said casing (10), and to exhibit deformation temporarily in a plane parallel to said slot (3), in such a way as to allow, selectively, engaging and/or disengaging of said casing (10) in and from said slot (3). 25
6. Handle according to claim 4, **characterised in that** said first coupling member (26) comprises a fork (31) facing an internal surface of said casing (10) and provided with two blocking elements (30), at least one of which being designed to co-operate with a second member (21) held by said casing (10) at said second portion (19), to react snappingly and elastically to stresses acting longitudinally along said casing (10), and to exhibit deformation temporarily in a plane parallel to said slot (3), in such a way as to allow, selectively, engaging and/or disengaging of said casing (10) in and from said slot (3). 30
7. Handle according to claim 6, **characterised in that** said blocking elements (30) are arranged facing each other, and shaped to be, during use, elastically mobile one towards the other through stresses acting longitudinally along said casing (10). 35
8. Handle according to any one of the previous claims, **characterised in that** said casing (10) has an internal face (15) which is substantially flat and suitable for abutting externally against said wall (4); said face (15) being provided with an external (16) edge shaped in a geometrically similar manner to a first end portion (7) of said slot (3); said first member (26) comprising an edge portion (33) designed to be coupled by shape to said internal edge (6) of said slot (3); this edge portion (33) being shaped with a slanting surface, point by point in a radial direction, so as to distribute blocking thrusts on an extended portion of said slot (3), and to distribute contact pressures uniformly, to safeguard the maintaining of the good state of repair of the local portion of said slot (3). 40
9. Handle according to any one of the previous claims, **characterised in that** said casing (10) has a pair of longitudinal ribs (18), parallel one in relation to the other and reciprocally facing, designed to border an elongated housing (17) and to define a first housing (20) for said first member (26). 45
10. Handle according to claim 7 or 8, **characterised in that** at least one of said two blocking elements (30) has a second housing (62), shaped in such a way as to be engaged longitudinally by an internal projection (60) of said wall (4); said second housing being formed from the internal part of said face (15) inside said casing (10). 50
11. Handle according to any one of the previous claims, **characterised in that** said first member (26) has a guide (45) for a longitudinal elastic element (44) placed between said mobile equipment (37) and said first member (26) to push said latch (36) towards said position of closure and/or opening. 55
12. Handle according to claim 11, **characterised in that** said guide element (45) comprises a pin (45) placed on the opposite side to said locking elements (30). 60
13. Handle according to claim 11, **characterised in that** said guide element (45) comprises a housing (46) formed inside said first member (26) on the side of said latch (36). 65
14. Handle according to any one of claims 1-10, **characterised in that** it comprises retaining means (38) (40) designed to maintain said latch (36) selectively

in said first and second blocking positions.

15. Handle according to claim 14, **characterised in that** said retaining means (38)(40) comprise a first retaining element (38) connected rigidly to said latch (36), and a second retaining element (40) connected rigidly to said casing (10); at least one of said first and second retaining elements (38)(40) being deformable to interact elastically with the remaining element (40)(38) to connect rigidly said latch (36) to said casing (10).
16. Handle according to claim 15, **characterised in that** said first element (38) comprises a first small bar (38) connected rigidly to said latch (36), and said second element (40) comprises a second small bar (40) connected rigidly to said casing (10).
17. Handle according to claim 16, **characterised in that** said second small bar (40) is held by said first member (26) on the side of said latch (36).
18. Handle according to claim 16 or 17, **characterised in that** said first small bar (38) extends towards said first coupling member (26); said second small bar (40) extending towards said latch (36) and being bordered, on the side of said latch (36), by a free end (41) provided with a rabbet element (41) for said latch (36).
19. Handle according to claim 17 or 18, **characterised in that** said second small bar (40) extends towards said latch (36); said first small bar (38) extending towards said first coupling member (26), and being bordered longitudinally by a free end (42), on the side of said first member (26).
20. Handle according to claim 17 or 18, **characterised in that** said first small bar (38) is elastically deformable and extends towards said first coupling member (26) with one clear end (42) bordered by a stop element (47); said second bar (40) extending towards said latch (36) and having at least one housing designed to house said stop element (47) in at least one of said working positions of said latch (36).
21. Handle according to any one of claims 16-20, **characterised in that** said second small bar (40) is carried by said second member (21) on the side of said latch (36), and comprises a longitudinal profile (48).
22. Handle according to claim 21, **characterised in that** said first member (26) is, during use, held by said casing (10) above said second member (21).
23. Handle according to claim 22, **characterised in that** said first member (26) is, during use, held by said casing (10) below said second member (21).
24. Handle according to claim 21 or 22, **characterised in that** said first small bar (38) extends towards said second coupling member (21); said second small bar (40) extending towards said latch (36) and being bordered, on the side of said latch (36), by a free end (41) provided with a rabbet element (41) for said latch (36).
25. Handle according to claim 24, **characterised in that** said second small bar (40) extends towards said latch (36); said first small bar (38) extending towards said second coupling member (21), and being bordered longitudinally by a free end (42), on the side of said second member (21).
26. Handle according to claim 25, **characterised in that** said first small bar (38) is elastically deformable and extends towards said second coupling member (21) with one free end (42) bordered by a stop element (47); said second small bar (40) extending towards said latch (36) and having at least one housing (51) designed to house said stop element (47) in at least one of said working positions of said latch (36).
27. Handle according to claim 26, **characterised in that** said first small bar (38) has a sufficient elastic characteristic for maintaining, during use, said stop element (47) in contact with said second small bar (40) with sufficient pressure for maintaining the mobile equipment (37) in any one of said first and second working positions.
28. Handle according to any one of claims 21-27, **characterised in that** said profile (48) comprises, in a position facing said first small bar (38), at least a pair of slanting surfaces (49) opposite one to the other.
29. Handle according to claim 28, **characterised in that** said two slanting surfaces (49) are separated by a flat section (50) parallel to said wall (4), and bordered longitudinally by two portions of reduced thickness, to define a pair of front housings for said stop element (47).
30. Handle according to any one of the previous claims, **characterised in that** said first member (26) is made in a plastic material through a moulding process.
31. Handle according to any one of claims 1-29, **characterised in that** said first member (26) is made in a composite material, with elasticity distributed differently on different parts and making up the same first member (26).
32. Handle according to any one of the previous claims,

characterised in that at least one of said first and second members (26) (21) comprises an elastic reinforcement element (25), placed in contact with at least one of said blocking elements (30) to keep them reciprocally apart and suitable for gripping below said wall (4).

33. Handle according to any one of the previous claims, **characterised in that** said first coupling member (26) has, on the side of said latch (36), a respective shank (27) coupled to said housing (17) at said second end portion (20).

34. Handle according to any one of the previous claims, **characterised in that** said second coupling member (21) has, on the side of said latch (36), a respective shank (29) coupled to said housing (17) at said second end portion (20).

35. Handle according to any one of the previous claims, **characterised in that** said second member (21) has, on the opposite side to said latch (36), at least one projection (22) shaped as a slanting surface, which is designed to transform, during use, a thrust acting on said casing (10) in a transverse direction to the housing (17) into a longitudinal thrust acting on the same casing (10), and a lowered circular portion designed to define a housing for said wall (4).

36. Handle according to claim 35, **characterised in that** said second member (21) has, on the opposite side to said latch (36), a pair of projections (22), substantially parallel one to the other and shaped with slanting surfaces, designed to transform, during use, a thrust acting on said casing (10) in a transverse direction to the housing (17) into a longitudinal thrust acting on the same casing (10), and a lowered circular portion designed to define a housing for said wall (4).

37. Coupling member (26) for a recessed handle (1) of the type comprising a casing (10) which can be installed in a slot (3); said slot (3) being formed in a wall (4) of a wing (2) for doors or windows of a slidingly mobile type; said casing (10) being bordered longitudinally by two respective end portions (19, 20), whereof a first portion (19) is provided with a second fixed blocking member (21) designed to couple the casing (10) to said slot (3); **characterised in that** it is housed, fixed, in one of said two end portions (19,20) via a respective shank (27), and **in that** it can be deformed snappingly and elastically to cause shape coupling of said casing (10) to said slot (3).

38. Member according to claim 37, **characterised in that** it comprises at least one arm (30), designed to be deformable snappingly and elastically in a plane

parallel to said wall (4), on application of a longitudinal force, so as to allow, selectively, blocking of said casing (10) inside said slot (3) and/or disengaging of said casing (10) from said wall (4).

39. Member according to claim 37, **characterised in that** it comprises a fork (31) placed on the opposite side to said shank (27); said fork (31) having two arms (30), at least one of which being designed to be deformable snappingly and elastically towards the other in a plane parallel to said slot (3), on application of a longitudinal force, in such a way that said fork (31) is snappingly deformable in an elastic manner solely in a plane substantially parallel to the same slot (3) so as to allow, selectively, blocking of said casing (10) inside said slot (3) and/or disengaging of said casing (10) from said slot (3).

40. Member according to any one of claims 37-39, **characterised in that** it has an edge portion (33) suitable for shape blocking said wall (4); said edge portion (33) being shaped point by point and radially as a slanting surface, in such a way as to distribute the blocking thrust on an extended portion of said slot (3) at said first member (26), and cause an evenly distributed pressure to safeguard maintaining of the good state of repair of the local portion of said slot (3).

41. Member according to claims 37, 39, 40, **characterised in that** at least one of said two arms (30) has, on the side of said internal face (15) of said casing (10), at least one housing (62), shaped in such a way as to be longitudinally engaged by a projection (60) held internally by said wall (4).

42. Member according to any one of claims 37-41, **characterised in that** it is made in a plastic material.

43. Member according to any one of claims 37-42, **characterised in that** it is made in a composite material, with elasticity distributed varyingly on respective different parts.

44. Member according to any one of claims 37, 39-43, **characterised in that** it comprises an elastic reinforcement element (25), arranged below at least one of said arms (30) to keep them reciprocally apart and suitable for gripping below said wall (4).

45. Member according to claim 43 or 44, **characterised in that** said elastic reinforcement element (25) is made in a metal material.

46. Member according to any one of claims 41-45, **characterised in that** it comprises, on the opposite side to said arms (30), a small elastic bar (40) pro-

vided with a profile (48) suitable for acting as a longitudinal blocking member.

47. Member according to claim 46, **characterised in that** said profile (48) is provided with at least one pair of slanting surfaces (49) opposite one to the other; said two slanting surfaces (49) being separated by a flat section (50) parallel to said wall (4), and bordered longitudinally by two portions of reduced thickness, to define a pair of front housings for a stop element (47). 5
48. Coupling member (21) for a recessed handle (1) of the type comprising a casing (10) which can be installed in a slot (3); said slot (3) being formed in a wall (4) of a wing (2) for slidingly mobile doors or windows; said casing (10) being bordered longitudinally by two respective end portions (19, 20); **characterised in that** it is housed, fixed, in one of said two end portions (19, 20) via a respective shank (29), and is provided with at least one projection (22) shaped with a slanting surface, which is designed to transform, during use, a thrust acting on said casing (10) in a transverse direction to the housing (17) into a longitudinal thrust acting on the same casing (10), and a lowered circular portion designed to define a housing (23) for said wall (4), to cause shape coupling of said casing (10) to said slot (3). 10 20 25 30
49. Member according to claim 48, **characterised in that** it has, on the opposite side to said latch (36), a pair of projections (22) substantially parallel one to the other, and shaped with a slanting surface, designed to transform, during use, a thrust acting on said casing (10) in a transverse direction to the housing (17) into a longitudinal thrust acting on the same casing (10), and a lowered circular portion designed to define a housing for said wall (4), to cause shape coupling of said casing (10) to said slot (3). 35 40
50. Member according to any one of claims 48-49, **characterised in that** it comprises retaining means (40) designed to maintain said latch (36) selectively in said first and second blocking positions. 45
51. Member according to claim 50, **characterised in that** said retaining means (40) comprise a profile (48) which can be deformed to retain elastically said latch (36) stably in a longitudinal position defined with reference to said casing (10). 50
52. Member according to claim 51, **characterised in that** it has at least one housing for a stop element (47) of said latch (36). 55
53. Member according to claim 52, **characterised in that** it comprises at least one pair of slanting sur-

faces (49), opposite one to the other, and separated respectively by a raised flat section (50), in such a way as to define, to the side of said raised flat section (50), a pair of housings (51) for a stop element (47) of said latch (36).

54. Anti-intrusion device for wings (2) for slidingly mobile doors and windows, said device being **characterised in that** it comprises a recessed handle (1) of the type which can be snap-engaged in a slot (3) formed in a wall (4) of a sliding wing (2), and a stop (36b) fixed in relation to said handle (1).
55. Device according to claim 54, **characterised in that** said handle (1) comprises an elongated casing (10) bordered longitudinally by an upper end portion (19) and a lower end portion (20); a latch (36) mounted slidingly in relation to the casing (10) and mobile between a working position of closure wherein said latch (36) is designed to couple with said fixed stop (36b), and a working position of opening wherein said latch (36) is free from said fixed stop (36b); and a first rigid blocking member (21), integral with said casing (10), and designed to define and maintain, in association with said fixed stop (36b), a fixed distance defined between said lower portion of said slot and said fixed stop (36b), in such a way as to resist rigidly attempts to break the wing (2).
56. Device according to claim 55, **characterised in that** said first body (21) is housed via a respective shank (29) in said lower end portion (20), and is provided with at least one projection (22) shaped with a slanting surface, designed to interact with an edge (6) of said slot (3) to transform, during use, a thrust acting on said casing (10) in a transverse direction to said casing (10) into a longitudinal thrust acting on the same casing (10); said first body (21) comprising a lowered circular portion designed to define a housing (23) for said wall (4), so as to cause shape coupling of said casing (10) to said slot (3), and a longitudinal profile (48) for a positioner (38) of said latch (36) belonging to said handle (1).

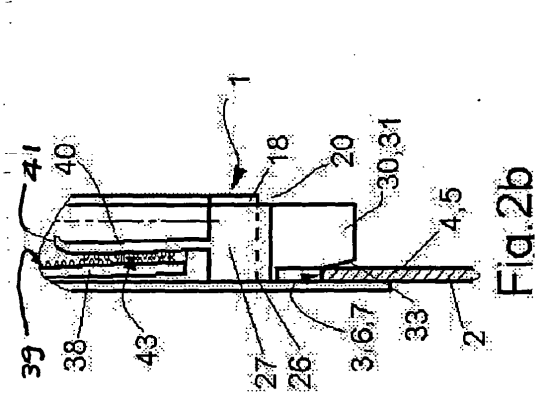


Fig. 2a

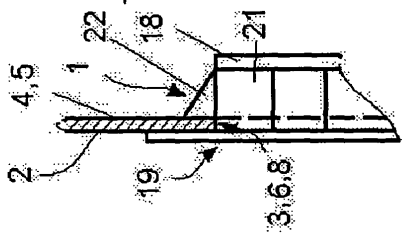


Fig. 2b

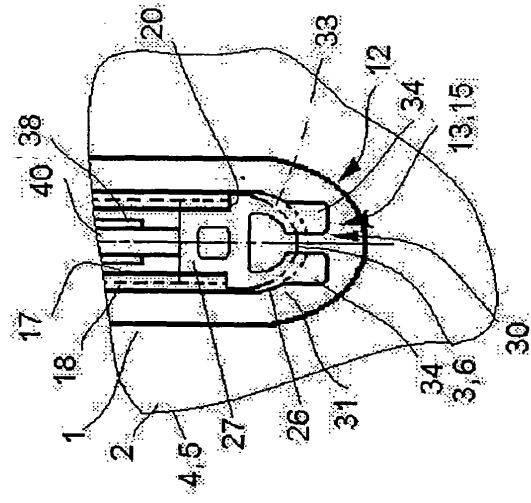


Fig. 3

Fig. 4

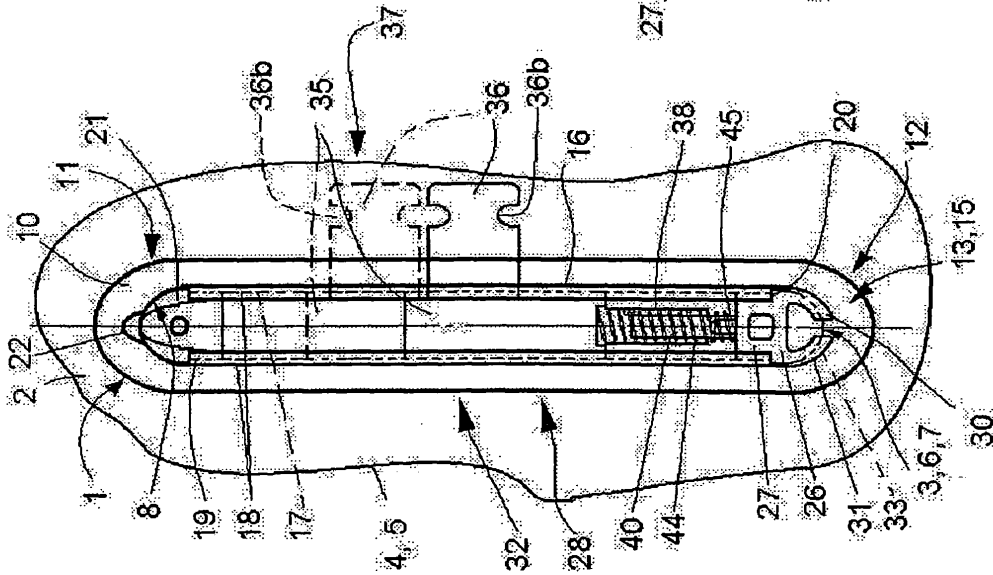


Fig. 1

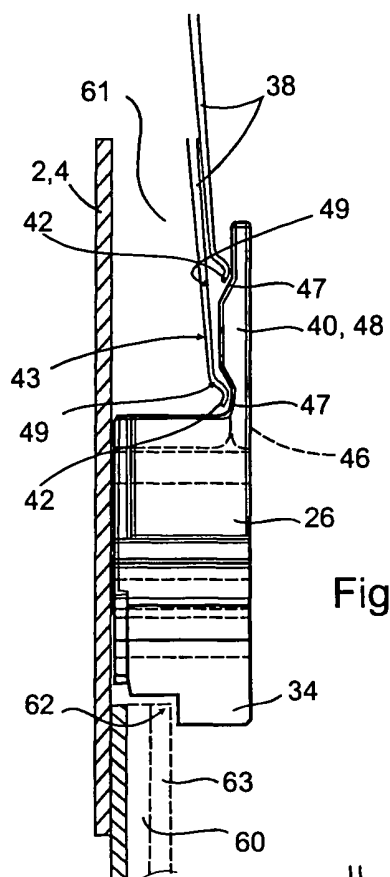


Fig. 5a

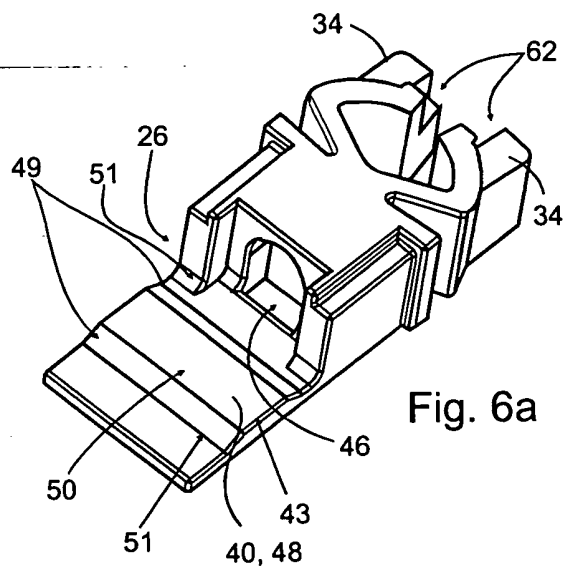


Fig. 6a

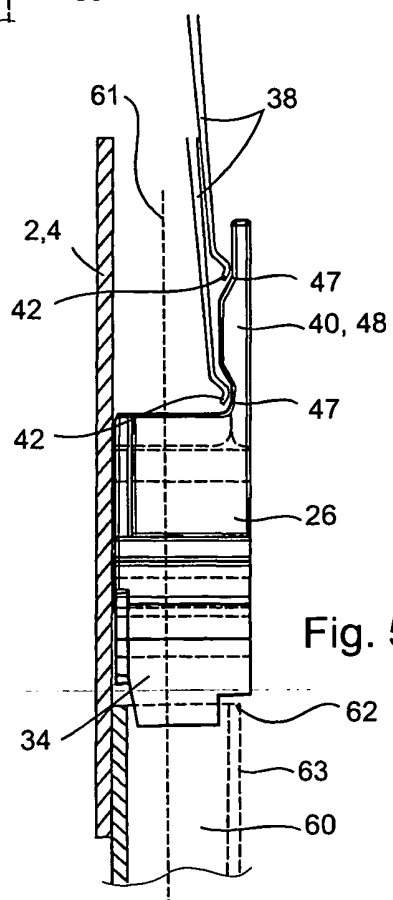


Fig. 5b

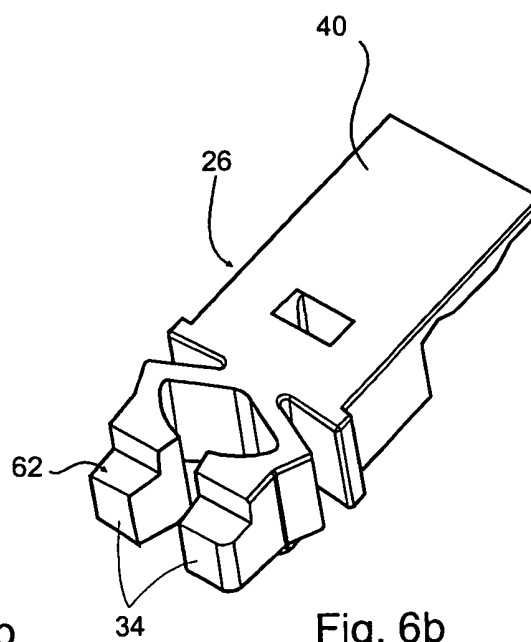
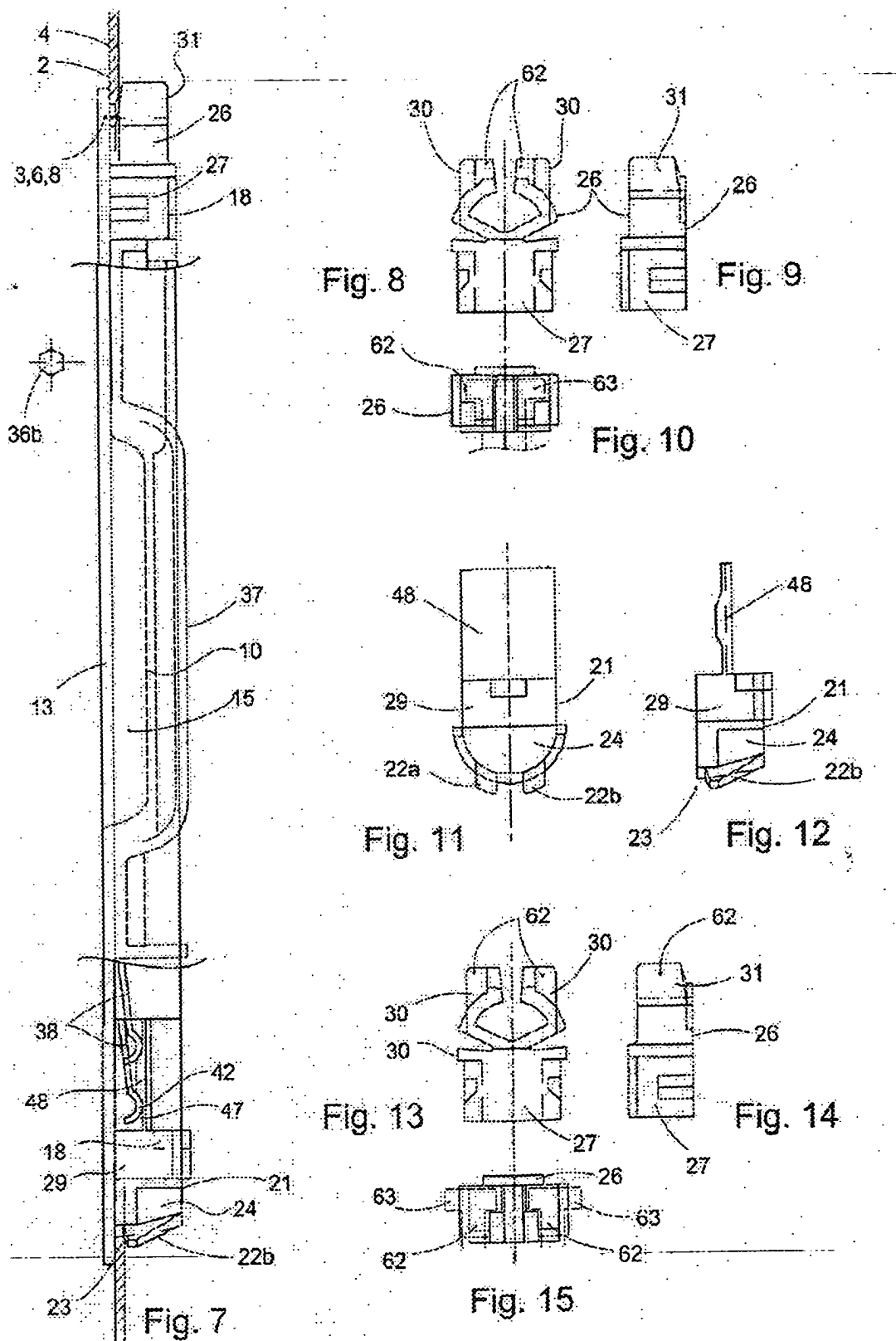


Fig. 6b





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 00 3070

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
D,X	US 6 019 400 A (DESPLANTES GERARD ET AL) 1 February 2000 (2000-02-01) * column 4, line 49 - column 5, line 22; figures * ---	1-9, 33-35, 37-50, 54-56	E05B65/08 E05B9/08
X	FR 2 811 696 A (PRUNET CHARLES) 18 January 2002 (2002-01-18) * abstract; figures *	1,2,54, 55	
A	---	37,48	
X	US 6 357 808 B1 (SUPERNAT THIERRY) 19 March 2002 (2002-03-19) * abstract; figures * -----	1,2,5,6, 8,9, 37-39, 54,55 48	
A			
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E05B
The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 30 April 2004	Examiner Vacca, R
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

EPO FORM 1503 03/02 (P04C01)



European Patent
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Application Number

EP 04 00 3070

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



European Patent
Office

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 04 00 3070

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-36

Handle for sliding wing provided with a casing holding a sliding single equipment.

2. Claims: 37-47

Coupling member for a handle for sliding wings, snappingly and elastically deformable to couple the handle on the wing.

3. Claims: 48-53

Coupling member for a handle for sliding wings, having a projection with slanting surface.

4. Claims: 54-56

Anti-intrusion device for sliding wings, comprising a handle and a stop.

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

EP 04 00 3070

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

30-04-2004

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