



(11) **EP 1 382 779 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.01.2004 Bulletin 2004/04

(51) Int Cl.7: **E05B 9/00, E05B 3/06**

(21) Application number: **03425475.5**

(22) Date of filing: **15.07.2003**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PT RO SE SI SK TR
 Designated Extension States:
AL LT LV MK

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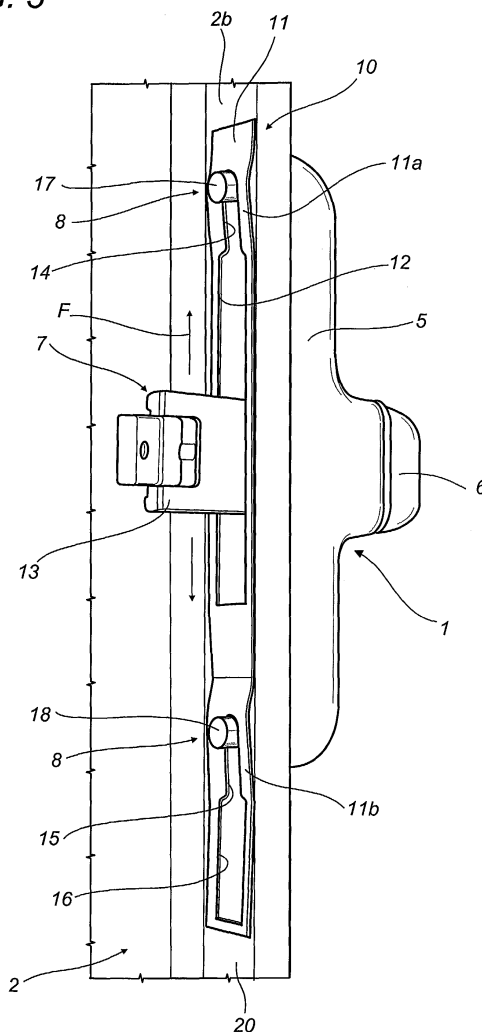
(30) Priority: **18.07.2002 IT BO20020461**

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(54) **A method for fitting handles to doors or windows and a handle embodying the method**

(57) The invention relates to a method for fitting a handle (1) to a door or window sash (2) presenting an outside surface (2a) and a through slot (3); the handle (1) comprising: a handle body (5), from one side of which there protrudes a handgrip (6) designed to operate drive elements (7) that protrude from the opposite side of the handle body (5); and the method comprising the following steps: positioning the handle body (5) on the outside surface (2a) in such manner that the drive elements (7) are inserted into the through slot (3) and first means (8) for fastening the handle (1) are simultaneously accommodated in cavities or holes (9) made in the sash or door (2); positioning second fastening means (10) on an inside surface (2b) of the sash or door (2) to coincide with the drive elements (7) and with the first fastening means (8); sliding the second fastening means (10) along the inside surface (2b) until they intercept the first fastening means (8) protruding from the inside surface (2b) and in such manner as to create a secure reciprocal connection between the first fastening means (8) and the second fastening means (10), thus locking the handle (1) to the sash or door (2) by a single movement of the second fastening means (10).

FIG. 3



Description

[0001] The present invention relates to a method for fitting handles to doors or windows and a handle that embodies this method.

[0002] The present specification refers in particular to Cremone bolt handles applicable to window or door sashes made of metal, for example, of aluminium, but without thereby excluding other types of handles from the scope of application of the method according to the invention.

[0003] Handles for Cremone bolts usually comprise:

- a handle body, normally prismatic in shape;
- an operating handgrip protruding from one side of the handle body;
- drive elements protruding from the side opposite the handle body and designed to actuate the device for closing the sash;
- means for fixing the handle to the sash, the latter having holes or slots in it for the passage of the drive elements and for the fixing means themselves.

[0004] The drive elements comprise one or two sliders (depending on the type of window or door the handle is fitted to), which, when mounted on the sash, are coupled with drive rods of the opening and closing systems which slide in grooves made in the sash members. Thus, turning the handgrip to defined positions causes the sliders to slide to defined positions each corresponding to a different configuration of the door or window sash, such as, for example, closed, turn opened or tilt opened.

[0005] At present, handles made in this way are fitted to the sashes, using the fixing means, during assembly of the sashes themselves.

[0006] The fixing means typically include screws (to be inserted from the back of the sash member) and are inserted into through holes made in the sash member itself to join the part of the handle body from which the sliders protrude to the corresponding sash member of the door or window.

[0007] In some cases, to improve the fastening to the sash member (in the case of thin sash profiles) a suitably shaped shimming plate, fixed by the screws, is added.

[0008] Normally, the handles are fitted to the sashes when the latter are assembled off site and prior to their installation in a building. After being assembled, the sashes are stored in a warehouse until the time they are required at the place of installation.

[0009] The practice of fitting handles to door and window sashes prior to their installation on site has several disadvantages.

[0010] These disadvantages are:

- since the handle protrudes from the rest of the sash, there is the risk of damaging it during subsequent handling and transportation;

- on account of the protruding handle, assembled sashes occupy more space for storage and transportation;
- handle fitting times are relatively long and fitting requires specific tools.

[0011] The present invention has for an aim to overcome the above mentioned disadvantages by providing a method for fitting handles to doors or windows as well as a handle to suit this method, that is simple, sure and fast and that can be applied after the sash has been installed in the door or window unit in a building.

[0012] The above aim is achieved by a method for fitting a handle to a sash presenting an outside surface and a through slot; the handle comprising a handle body from one side of which there protrudes a handgrip designed to operate drive elements that protrude from the opposite side of the handle body; the method comprising the following steps: positioning a handle body on the outside surface in such manner that the drive elements are inserted into the through slot and first handle fastening means are simultaneously accommodated in cavities or holes made in the sash; positioning second fastening means on an inside surface of the sash to coincide with the drive elements and the first fastening means; sliding the second fastening means along the inside surface until they intercept the first fastening means protruding from the inside surface and in such manner as to create a secure reciprocal connection between the first and second fastening means and thus locking the handle to the sash by a single movement of the second fastening means.

[0013] The present invention also provides a handle embodying the above method and equipped with fastening and locking means comprising first fastening means associated with the handle body and protruding from the handle body, and second fastening means associated with an inside surface of the sash and slidable along the inside surface to create a stable connection with the first fastening means, which are positioned on the path along which the second fastening means are slid and in such manner as to stably lock the handle to the sash.

[0014] The technical characteristics of the invention, with reference to the above aims, are clearly described in the claims below and its advantages are apparent from the detailed description which follows, with reference to the accompanying drawings which illustrate a preferred embodiment of the invention provided merely by way of example without restricting the scope of the inventive concept, and in which:

- Figure 1 is a schematic perspective view, with some parts cut away in order to better illustrate others, of a handle and a part of a sash to which the method according to the invention, for fitting handles to doors or windows, can be applied;
- Figure 2 illustrates a first step of the method accord-

ing to the invention, in a perspective view, with some parts cut away in order to better illustrate others;

- Figure 3 illustrates a second step of the method according to the invention, in a perspective view, with some parts cut away in order to better illustrate others;
- Figure 4 is a perspective exploded view of the handle and fastening means embodying the fitting method according to the invention;
- Figure 5 illustrates an enlarged detail from Figure 3, again in a perspective view with some parts cut away;
- Figures 6 and 7 are, respectively, a side view and a front view of the fastening means forming part of the handle according to the invention.

[0015] With reference to the accompanying drawings, in particular Figure 1, the method according to the invention is used to fit a handle 1 to a door or window sash 2.

[0016] The handle 1 illustrated is of the type used with a Cremona bolt but this must not be construed as restricting the method to only this type of door or window handle and, furthermore, the method can be applied to Cremona bolt handles of the one-way or two-way type.

[0017] Similarly, the door or window sashes illustrated are of the type made of metal but, again, without restricting the scope of the invention to doors or windows of this type only.

[0018] As illustrated in Figure 1, the handle 1 essentially comprises: a handle body 5, having a prismatic shape, from one side of which there protrudes a handgrip 6 designed to operate drive elements 7 that actuate a device for closing the window or door.

[0019] The drive elements 7 consist of one or two first sliders 13 (depending on whether door or window can be opened only by turning or by tilting or turning) protruding from the side opposite the handle body 5.

[0020] Of the window or door, the accompanying drawings illustrate only the part of the sash 2 to which the handle is fitted, this part presenting an outside surface 2a and an inside surface 2b and having made in it a slot 3, through which the drive elements 7 can pass, and a pair of cavities or holes 9.

[0021] As illustrated in Figures 2 and 3, the method according to the invention comprises the following steps, assuming that the handle is fitted preferably after the window or door unit has been installed:

- positioning the handle body 5 on the outside surface 2a in such manner that the drive elements 7 are inserted into the through slot 3 and first handle 1 fastening means 8, located on the same side of the handle body 5 as that from which the drive elements 7 protrude, are simultaneously accommodated in cavities or holes 9 made in the sash 2 (see Figures 1 and 2);
- positioning second fastening means 10 on an inside

surface 2b of the sash 2 to coincide with the drive elements 7 and first fastening means 8 (see Figure 2);

- sliding the second fastening means 10 along the inside surface 2b until they intercept the first fastening means 8 protruding from the inside surface 2b and in such manner as to create a secure reciprocal connection between the first and second fastening means 8 and 10, locking the handle 1 to the sash 2 by a single movement of the second fastening means 10 (see Figure 3 and arrow F).

[0022] In particular, the step of sliding the second fastening means 10 may be performed by acting directly on the fastening means or indirectly by a sliding movement of the drive elements 7.

[0023] Preferably, if the sliding movement is applied by the drive elements 7, the sliding step is accomplished by turning the handgrip 6 (see arrow F1, Figure 1).

[0024] More specifically, the handgrip 6 is turned through an angle α approximately equal to a right angle, equivalent to the movement applied to the handgrip 6 to open or close the window or door 2 during normal operation.

[0025] As explained in more detail below, the sliding step causes the first and second fastening means 8 and 10 to be coupled with each other, thus locking the handle body 5 against the outside surface 2a of the door or window sash 2: this compensates for sash 2 thickness differences.

[0026] The aforementioned step of positioning the second fastening means 10 can be performed before the step of positioning the handle body 5 on the outside surface 2a of the sash 2. These second fastening means 10 are positioned in a groove 20 formed in the inside surface 2b of the sash 2 and held in place by retaining means 25.

[0027] The handle 1 for doors or windows that embodies the method according to the invention comprises, in addition to the aforementioned elements, means for fastening the handle 1 itself.

[0028] These means comprise the above mentioned first and second fastening means 8 and 10 (see Figures 2 and 3).

[0029] The first fastening means 8 are associable with the handle body 5 and protrude from the handle body 5 itself.

[0030] The second fastening means 10 are associable with the inside surface 2b of the sash 2 and slidable in the groove 20 formed in the inside surface 2b in such manner as to create a stable connection with the first fastening means 8, which are positioned on the path along which the second fastening means 10 are slid and in such manner as to stably lock the handle 1 to the sash 2.

[0031] As shown also in Figure 4, the first fastening means 8 comprise, preferably, a pair of pins 17 and 18 protruding from the same side of the handle body 5 as

that from which the drive elements 7 protrude and positioned at both ends of the latter.

[0032] While the solution with the pins 17 and 18 is preferable, it will be understood that customary screws (not illustrated) screwed to the handle body 5 can be used as fasteners without losing the novelty of the invention.

[0033] Each of the pins 17 and 18 preferably has a central groove 19 where its diameter is smaller than the diameter of the rest of the pin 17 and 18: this makes it possible for them to snap lock securely to the second fastening means 10 when the latter are slid.

[0034] Again, this is a preferred structural solution and, instead of the groove 19, there may be an ordinary undercut on the pins 17 and 18 or on the screws without losing the novelty of the invention.

[0035] The second fastening means 10 (see Figures 4, 6 and 7) may consist of a single, rod-like element 11 that can be positioned on the inside surface 2b of the sash 2.

[0036] In this case too, the preferred embodiment illustrated includes a single rod-like element, but the fastening means 10 may comprise two separate elements without departing from the scope of the inventive concept.

[0037] In a non-restricting, exemplary solution, this rod or second slider 11 may present:

- a first slot 12 for the passage of the drive elements 7 constituted by the first slider 13 and one of the two pins 17 and 18, and
- a third slot 16, separate from the first slot 12, for the passage of the other pin 17 and 18.

[0038] The first and third slots 12 and 16 each have a second slot 14 and 15, whose width L is smaller than the width L1 of the respective first and third slots 12 and 16, and which defines a slot extension at one end of the first and third slots 12 and 16, respectively. These second slots are engageable by the respective pins 17 and 18 upon sliding of the rod 11: in other words, sliding of the rod 11 causes the pins 17 and 18, thanks to the groove 19 in each of them, to be coupled with the respective second slots 14 and 15.

[0039] As shown in Figure 4, the end 12a of the first slot 12, opposite the end with the second slot 14, forms a contact surface for the slider 13 of the drive elements 7 which, when the handgrip 6 is rotated, causes the rod 11 to slide by pushing on the latter.

[0040] The second slots 14 and 15 extend in the same direction from corresponding ends of the first and third slots 12 and 16, respectively, so that sliding in direction F causes the pins 17 and 18 to be coupled simultaneously with the slots 14 and 15 (see Figure 3 again).

[0041] Further, as shown in Figures 5 and 6, the rod 11 has curved portions 11a and 11b coinciding with the areas where the second slots 14 and 15 are made: in this way, the contact between the portions 11a and

11b and the pins 17 and 18, when the pins 17 and 18 are coupled stably with the slots 14 and 15, creates a thrust force (thanks to the intrinsic elasticity of the rod 11) applied to the pins 17 and 18 themselves and such as to strengthen the coupling between the pins 17 and 18 and the rod 11. More specifically, the curved profile of the portions 11a and 11b of the rod 11 extends towards the inside of the sash 2 to apply a constant thrust on the pins 17 and 18 towards the inside of the sash 2 so that, if necessary, any differences in thickness between different sashes 2 can be compensated.

[0042] As mentioned above, during the stage of assembling the sash 2, the rod 11 can be positioned close to the slot and holes 9 and held in place by the rod 11 retaining means 25.

[0043] With reference in particular to Figures 6 and 7, these retaining means 25 consist of two U-shaped elastic extensions 26 at the ends of the rod 11. Each of the U-shaped extensions 26 comprises a first leg 27 associated with the rod 11, whilst the other leg 28 of the U is free-ended and extends at an angle to the plane in which the rod 11 lies: this enables it to make sure and stable contact within the groove 20 formed in the inside surface 2b of the sash 2.

[0044] To facilitate movement of the rod 11 within the groove 20 between the slack and locked positions, each second leg 28 has a button-like protuberance 29 on the end of it which can be pressed in such a way that the second leg 28, normally at an angle to the rod 11 when the latter is in the locked position, is moved to a slack position flat against the rod 11 such that the rod can easily be moved. Thus, the rod 11 can be placed in the groove 20 quickly and easily and can be left there until the handle 1 is fitted.

[0045] Obviously, the retaining means 25 are designed only to prevent the rod 11 from falling out of the groove 20. Simple finger pressure or the force applied by the slider 13 are sufficient to cause the rod 11 to slide when required.

[0046] The fitting method and handle according to the invention as described above achieve the aforementioned aims thanks to an extremely simple structure which can be fitted in a few easy steps.

[0047] The possibility of fitting the handle after the door or window has been installed in a building significantly reduces the risk of damaging the handle during transportation because it does not protrude from the door or window as it does when it is fitted prior to installation of the door or window.

[0048] Moreover, less space is required for storage and transportation.

[0049] Fitting is quick and easy without using special tools.

[0050] The special design of the fastening rod with its curved portions keeps the handle well against the sash, even in the case of sashes of varying thickness, thus providing an excellent quality trim finish under all circumstances.

[0051] Moreover, in the event of necessity, there is nothing to prevent the handle according to the invention from being fitted, following the method as described above, prior to installation of the door or window.

[0052] It will be understood that the invention can be modified and adapted in several ways without thereby departing from the scope of the inventive concept. Moreover, all the details of the invention may be substituted by technically equivalent elements.

Claims

1. A method for fitting a handle (1) to a sash (2) forming part of a door or window unit and presenting an outside surface (2a) and at least one through slot (3); the handle (1) comprising: a handle body (5), from one side of which there protrudes a handgrip (6) designed to operate drive elements (7) that actuate a device for closing the window or door and that protrude from the opposite side of the handle body (5); the method being **characterised in that** it comprises the following steps:

- positioning the handle body (5) on the outside surface (2a) in such manner that the drive elements (7) are inserted into the through slot (3) and first handle (1) fastening means (8), located on the same side of the handle body (5) as that from which the drive elements (7) protrude, are simultaneously accommodated in cavities or holes (9) made in the sash (2);
- positioning second fastening means (10) on an inside surface (2b) of the sash (2) to coincide with the drive elements (7) and with the first fastening means (8);
- sliding the second fastening means (10) along the inside surface (2b) until they intercept the first fastening means (8) protruding from the inside surface (2b) and in such manner as to create a secure reciprocal connection between the first fastening means (8) and the second fastening means (10), locking the handle (1) to the sash (2) by a single movement of the second fastening means (10).

2. The method according to claim 1, **characterised in that** the step of sliding the second fastening means (10) is performed by a sliding action of the drive elements (7).

3. The method according to claim 1, **characterised in that** the step of sliding the second fastening means (10) is performed by a sliding action of the drive elements (7) produced by turning the handgrip (6).

4. The method according to claim 3, **characterised in that** the handgrip (6) is turned through an angle (α)

approximately equal to a right angle.

5. The method according to claim 1, **characterised in that** the sliding step causes the first fastening means (8) and the second fastening means (10) to be coupled with each other by a partial elastic deformation of the means (10), thus locking the handle body (5) against the outside surface (2a) of the door or window sash (2).

6. The method according to claim 1, **characterised in that** the step of positioning the second fastening means (10) is performed before the step of positioning the handle body (5) on the outside surface (2a) of the sash (2).

7. The method according to claim 1, **characterised in that** the steps of fitting the handle (1) are performed after the door or window has been installed.

8. A handle for doors or windows, the handle (1) being of the type comprising: a handle body (5), from one side of which there protrudes a handgrip (6) designed to operate drive elements (7) that actuate a device for closing the window or door and that protrude from the opposite side of the handle body (5); the handle (1) to be fitted to a surface (2a) of a sash (2) of the door or window and presenting at least one slot (3) for the passage of the drive elements (7), and at least two cavities or holes (9) made at opposite ends of the slot (3) for the means (8, 10) for fastening the handle (1), the latter being **characterised in that** the fastening means comprise:

- first fastening means (8) associable with the handle body (5) and protruding from the handle body (5) itself;
- second fastening means (10) associable with the inside surface (2b) of the sash (2) and slidable along the inside surface (2b) in such manner as to create a stable connection with the first fastening means (8), which are positioned on the path along which the second fastening means (10) are slid and in such manner as to stably lock the handle (1) to the sash (2).

9. The method according to claim 8, **characterised in that** the second fastening means (10) consist of at least one rod-like element (11) that can be positioned on the inside surface (2b) of the sash (2).

10. The handle according to claim 8, **characterised in that** the second fastening means (10) consist of: at least one rod or second slider (11) presenting at least one first slot (12) for the passage of the drive elements (7), constituted by a first slider (13), and of the first fastening means (8); and at least two second slots (14, 15), whose width (L) is smaller than

the width (L1) of the first slot (12), forming an extension at both ends of the first slot (12) and engageable by the first fastening means (8) upon sliding of the rod (11).

11. The handle according to claim 8, **characterised in that** the second fastening means (10) consist of: at least one rod or second slider (11) presenting a first slot (12) for the passage of the drive elements (7), constituted by a first slider (13), and of a part of the first fastening means (8); and a third slot (16), separate from the first slot (12), for the passage of the other part of the first fastening means (8); the first slot (12) and the third slot (16) each having a respective second slot (14, 15), whose width (L) is smaller than the width (L1) of the first slot (12) and of the third slot (16), forming an extension at one end of both the first slot (12) and of the third slot (16) and engageable by the first fastening means (8) upon sliding of the rod (11).

12. The handle according to claim 11, **characterised in that** the end (12a) of the first slot (12) opposite the end from which the second slot (14) extends forms a contact surface for the drive elements (7) which, when the handgrip (6) is rotated, cause the rod (11) to slide.

13. The handle according to claim 8, **characterised in that** the first fastening means (8) comprise a pair of pins (17, 18) protruding from the same side of the handle body (5) as that from which the drive elements (7) protrude; each of the pins (17, 18) having a central groove (19) where its diameter is smaller than the diameter of the rest of the pin (17, 18) so as to enable it to be coupled securely with the second fastening means (10) upon sliding of the latter.

14. The handle according to claim 11, **characterised in that** the second slots (14, 15) extend in the same direction from corresponding ends of the first slot (12) and third slot (16), respectively, so that sliding in direction (F) causes the first fastening means (8) to be coupled simultaneously with both slots (14, 15).

15. The handle according to claim 11, **characterised in that** the rod (11) has curved portions (11a, 11b) coinciding with the areas where the second slots (14, 15) are made, so as to allow contact with the first fastening means (8), upon creation of the stable coupling, thus applying elastic thrust force on the first fastening means (8) such as to strengthen the coupling between the first fastening means (8) and the second fastening means (10).

16. The handle according to claim 15, **characterised in that** the profile of the curved portions (11a, 11b)

of the rod (11) extends towards the inside of the sash (2).

17. The handle according to claim 9, where the inside surface (2b) of the sash (2) has a longitudinal groove (20) formed in it, the handle being **characterised in that** the rod (11) has retaining means (25) acting between the rod (11) and the groove (20) in such a way as to enable the rod (11) to be securely positioned in the groove (20).

18. The handle according to claim 17, **characterised in that** the retaining means (25) consist of two U-shaped elastic extensions (26) at the ends of the rod (11); each of the U-shaped extensions (26) comprising a first leg (27) associated with the rod (11) and a second leg (28) being separate from the rod (11) and extending at an angle to the plane in which the rod (11) lies so as to enable secure contact between the latter and the groove (20).

19. The handle according to claim 18, **characterised in that** each second leg (28) has a button-like protuberance (29) on the free end of it which can be pressed in such a way that the second leg (28), normally at an angle to the rod (11) when the latter is in the locked position, is moved to a slack position flat against the rod (11).

FIG. 1

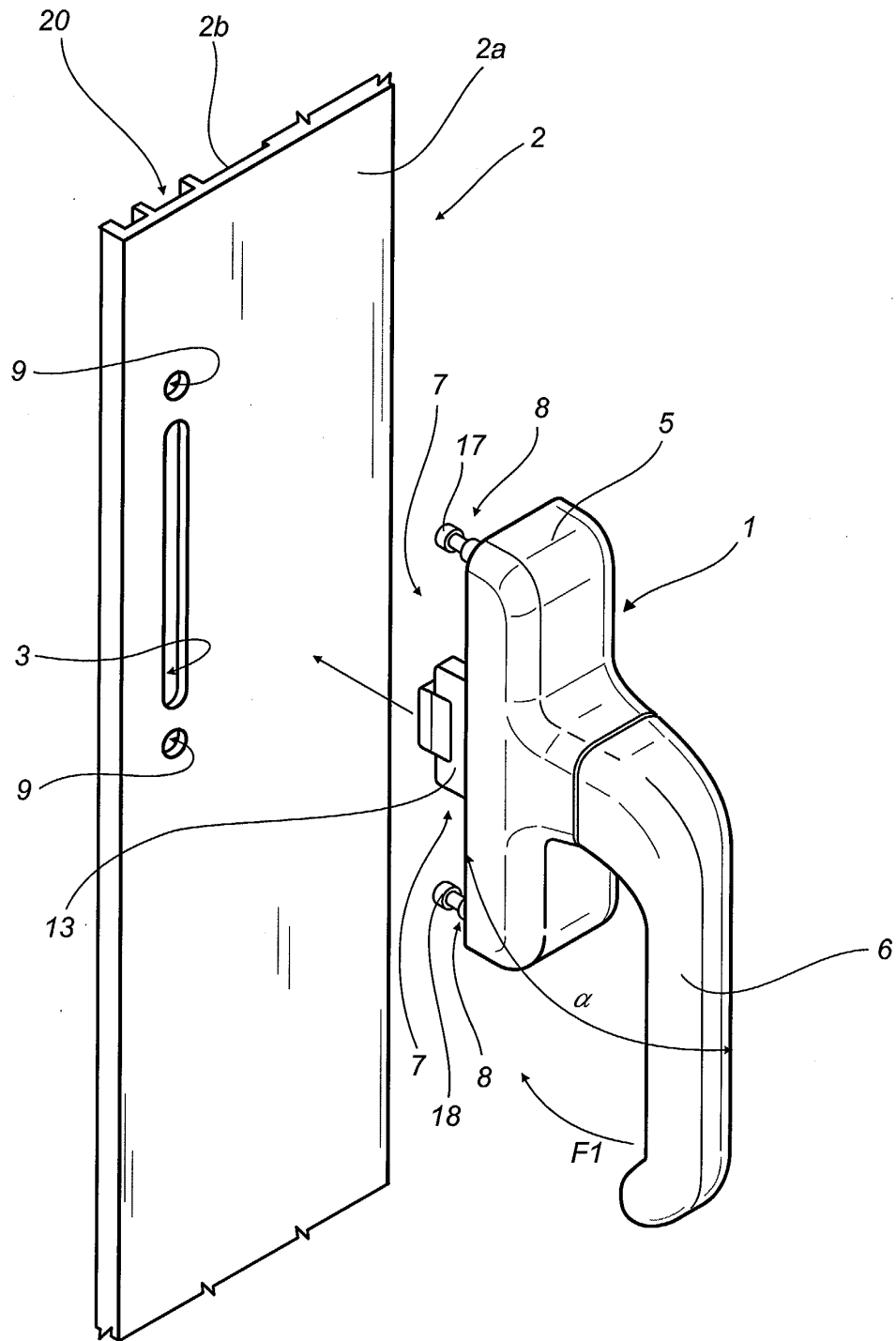


FIG. 2

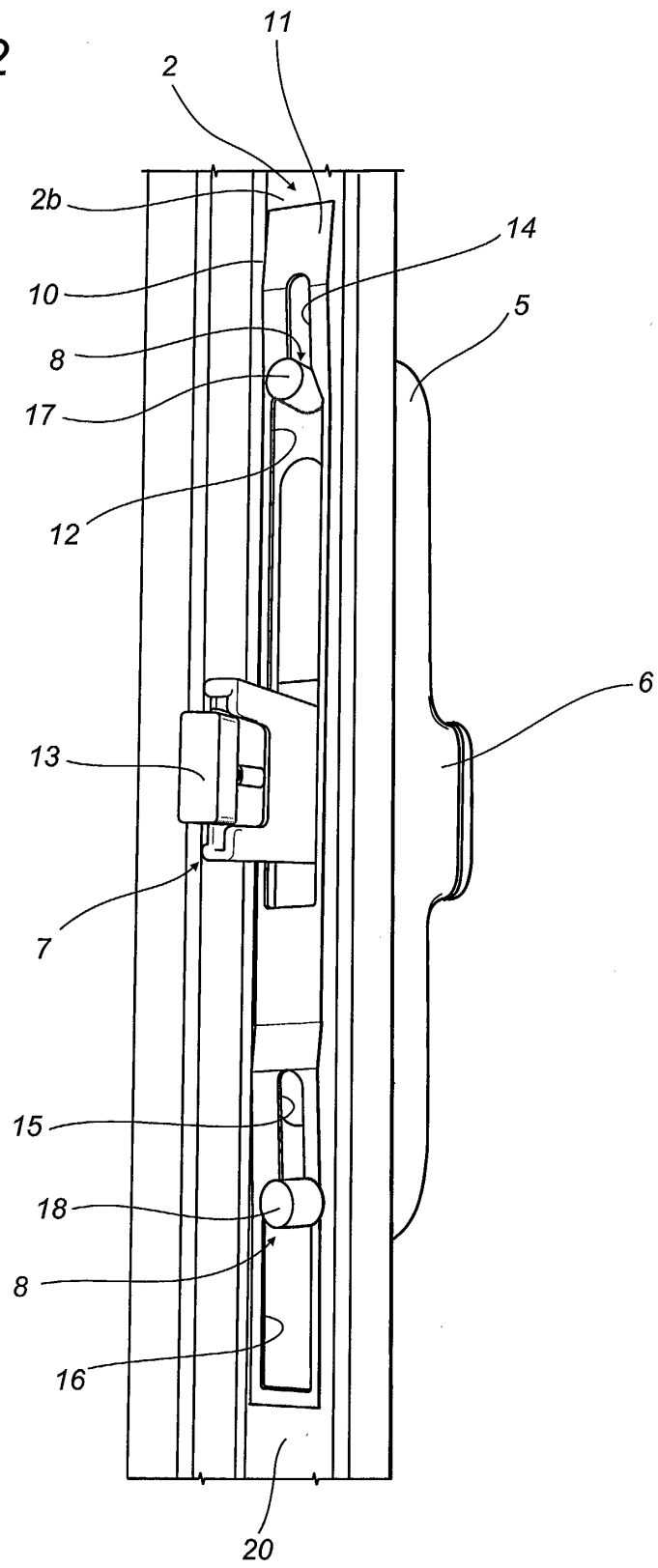


FIG. 3

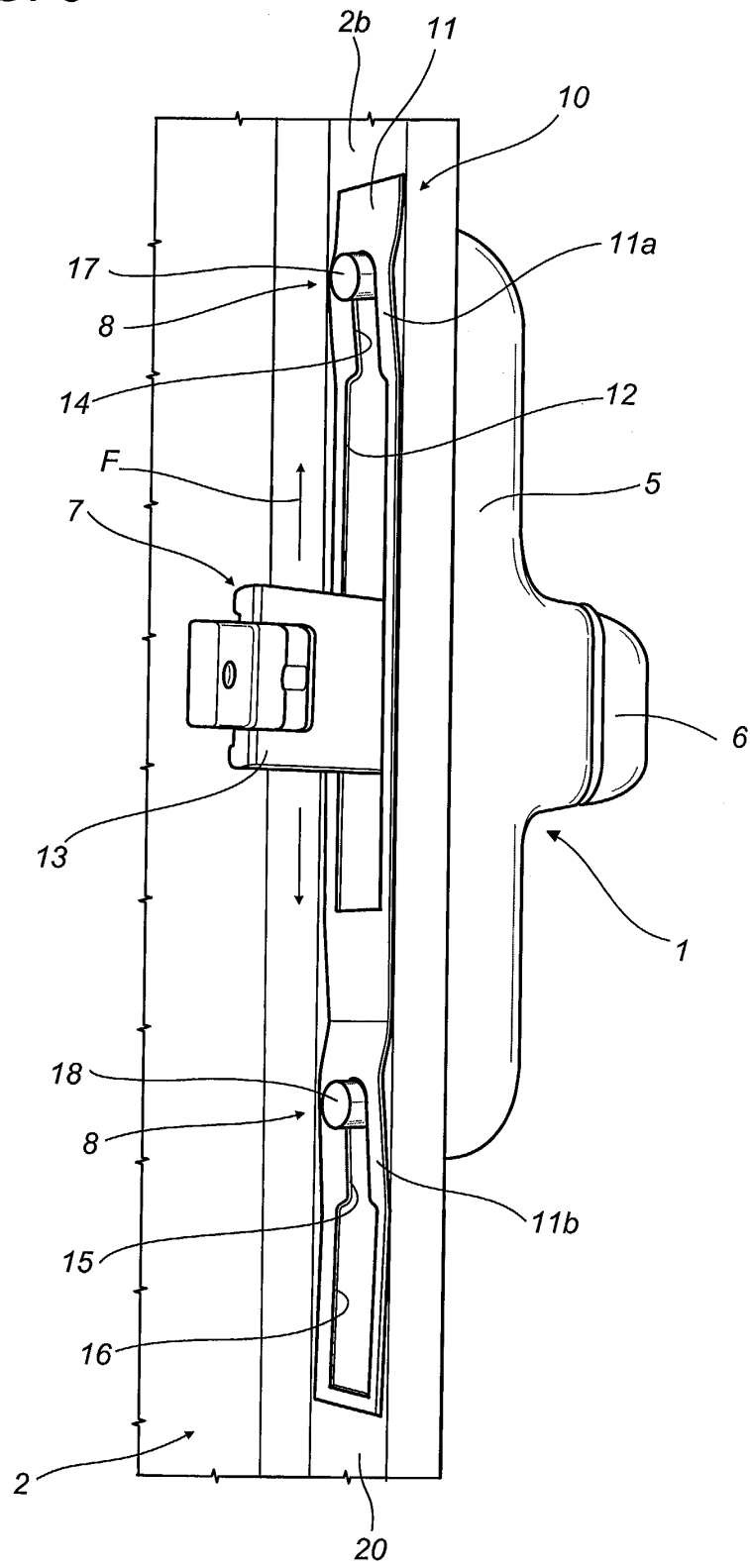


FIG. 4

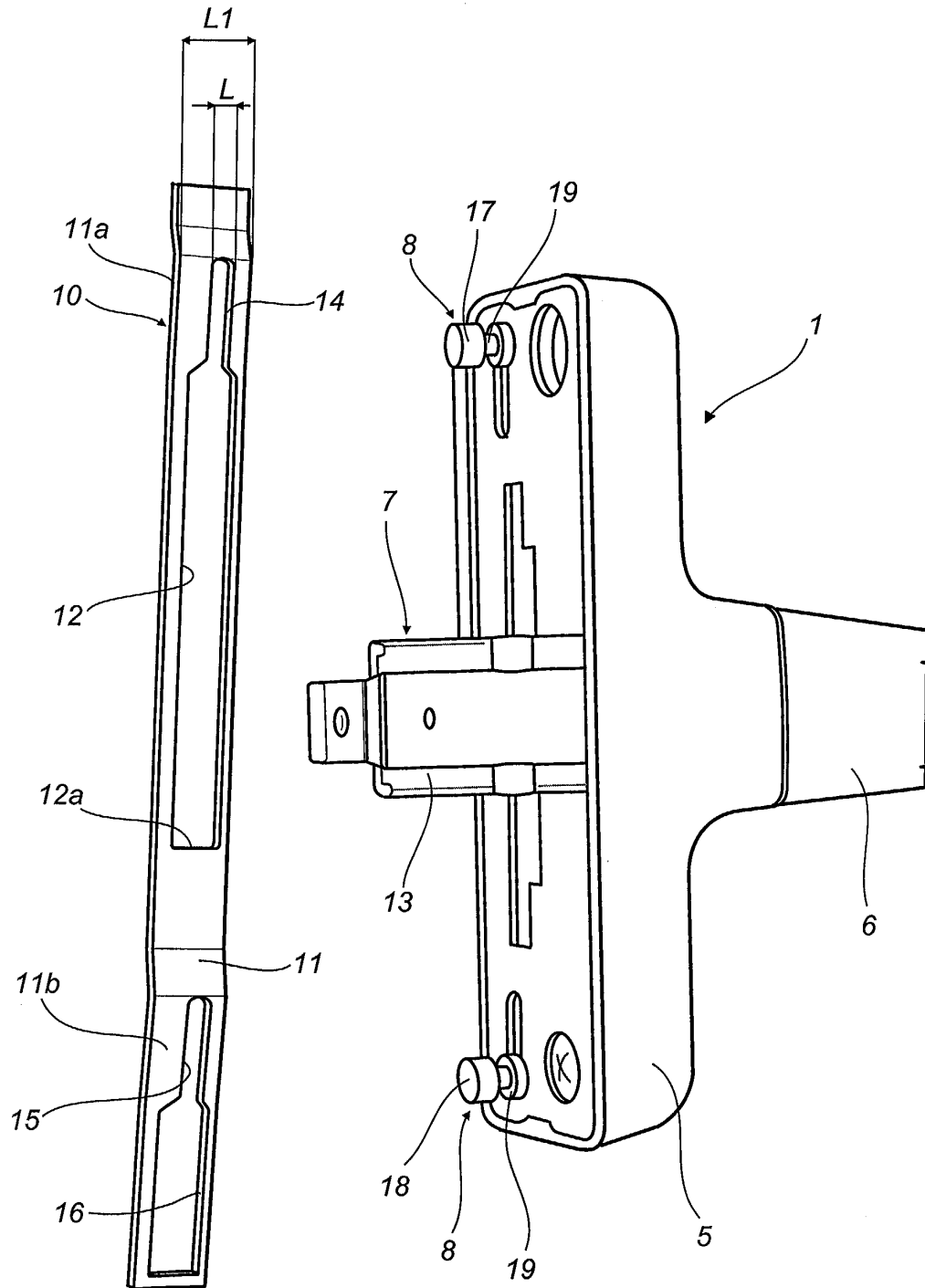


FIG. 5

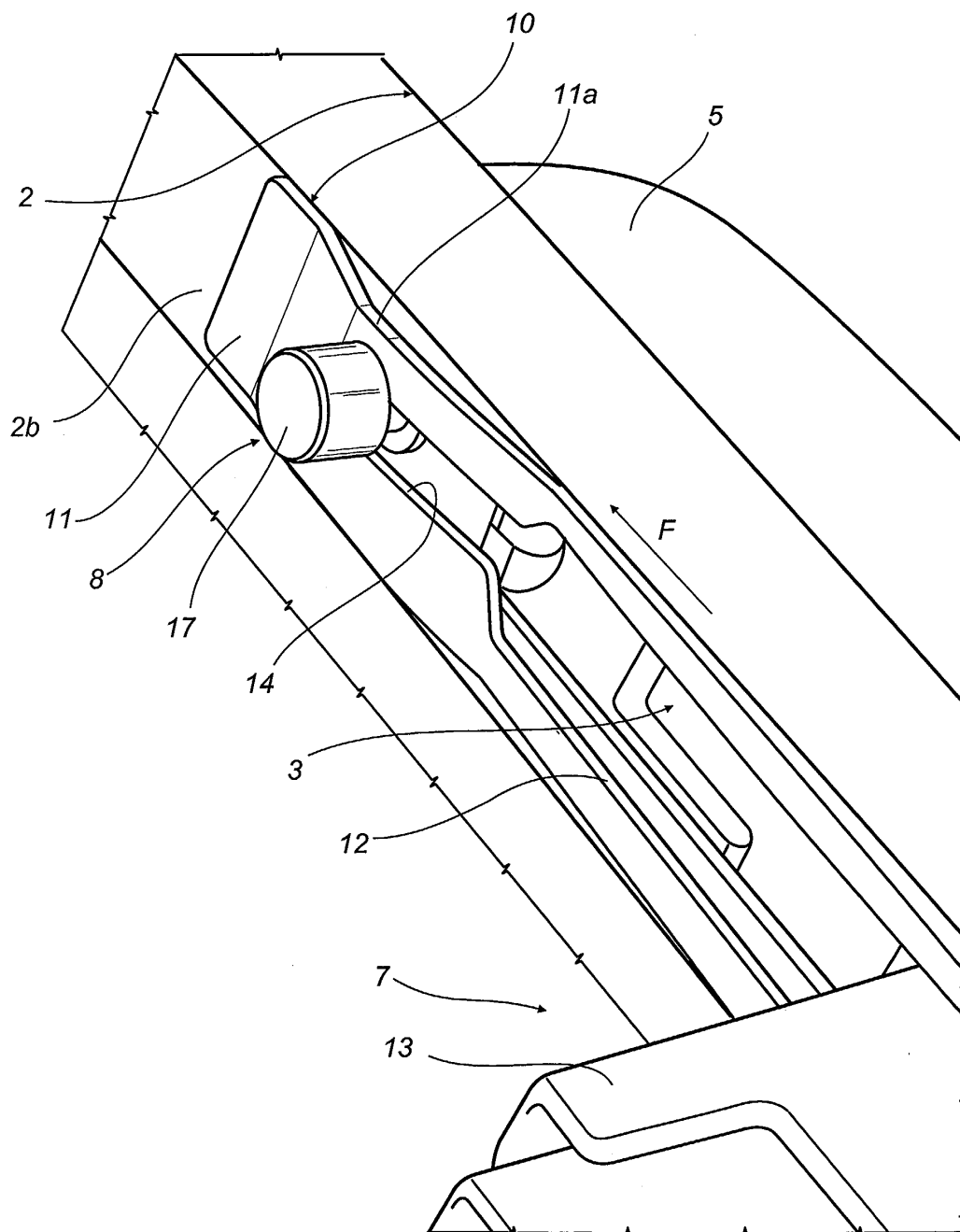


FIG. 7

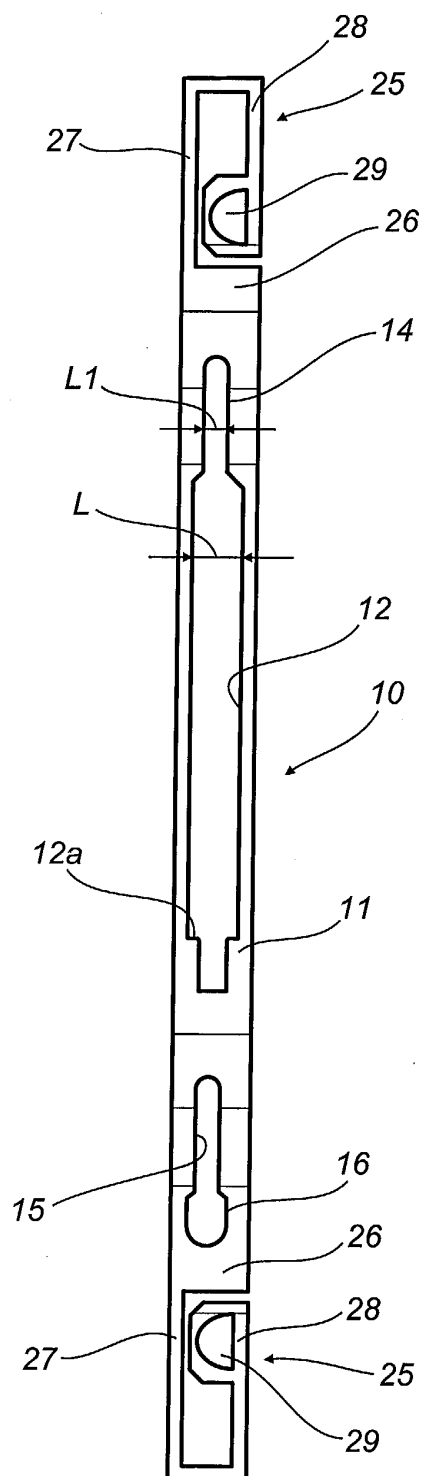
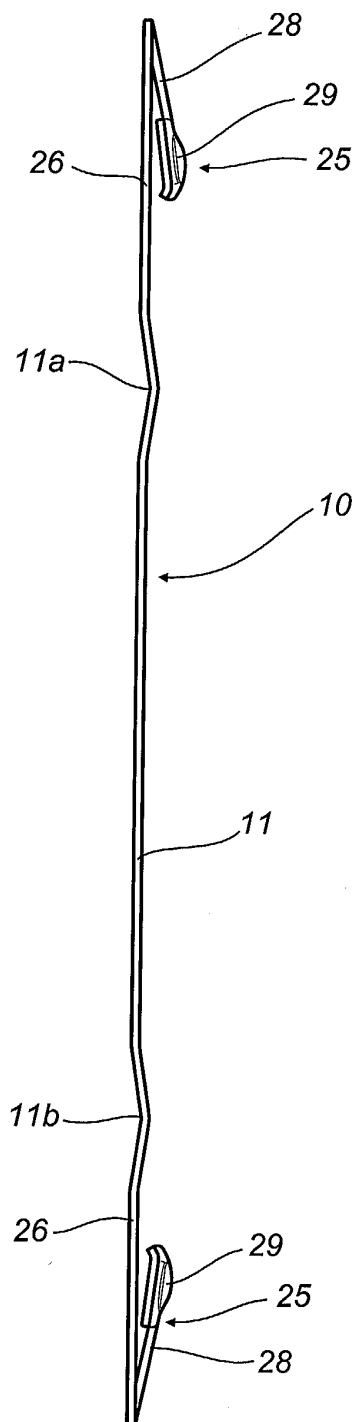


FIG. 6





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 42 5475

DOCUMENTS CONSIDERED TO BE RELEVANT			
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			TECHNICAL FIELDS SEARCHED (Incl.7)
			E05B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
MUNICH		10 September 2003	Vacca, R
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