(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 445 403 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
11.08.2004 Bulletin 2004/33

(51) Int Cl.[7]: **E05B 17/20**, E05C 9/18

(21) Application number: **03075352.9**

(22) Date of filing: **05.02.2003**

(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 SE SI SK TR
Designated Extension States:
AL LT LV MK RO

(71) Applicant: **VKR Holding A/S**
2860 Soeborg (DK)

(72) Inventor: **Kammersgaard, Tommy**
Timring, 7480 Vildbjerg (DK)

(74) Representative: **Olesen, Kaj**
Patentgruppen,
Arosgaarden,
Aaboulevarden 31
8000 Aarhus C (DK)

(54) Locking system for windows, doors or the like, locking member and striker plate

(57) Locking system for windows, doors or the like, comprising a striker plate (1) and a moveable locking member (20) such as a pawl, a ratchet or the like, for cooperating with said striker plate, said striker plate (1) comprising a recess, slot or the like (2) for cooperating with the locking member in a locking position. To prevent break-ins etc., the locking member features means for locking the locking member (20) in relation to the striker plate (1), and said means, which may be a surface (28), a boss (26) or an indentation (29), is designed to engage with a part, for instance a surface (12), of the striker plate when force is applied to the locking member in an at least partly sideways direction.

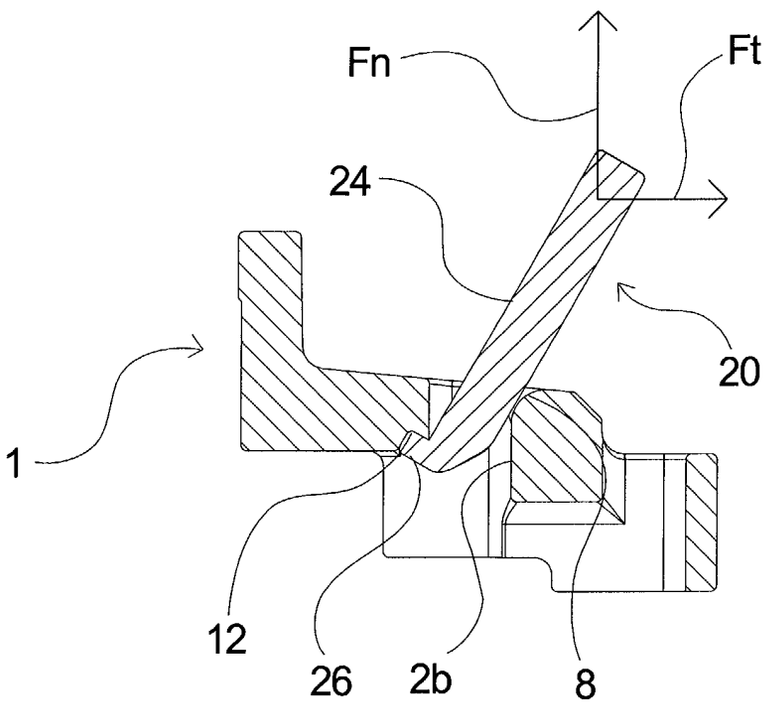

Fig. 9

EP 1 445 403 A1

Description

Field of the invention

[0001] The invention relates to a locking system for windows, doors or the like, and comprises a striker plate and a moveable locking member such as a pawl, a ratchet or the like, for cooperating with said striker plate. The invention also relates to a locking member such as a pawl, a ratchet or the like, for cooperating with a striker plate, and finally the invention relates to a striker plate.

Background of the invention

[0002] Locking system for windows, doors and analogous constructions, in which a moveable locking member such as a ratchet, bolt, pawl or the like may cooperate with a striker plate designed for this purpose, are commonly known in a number of variations and embodiments. One aspect relating to such systems is the securing against break-ins etc., where for example a window or door is forced open by driving a tool such as for instance a pinch bar, a crow bar, a screw driver or the like, between the frame and sash, after which the frame and sash may be forced from each other when applying a sufficiently large amount of force. In this manner, a burglar or the like may cause the frame and sash to separate so far from each other that for instance the pawl or pawls may be lifted out of engagement with the striker plates and the window or door subsequently be opened.

[0003] WO 01/96699 describes how this problem may be avoided with a system comprising a striker plate and pawl and/or ratchet, said striker plate being provided with a recess for cooperating with the pawl or ratchet. The recess of this prior art is designed in such a manner that it is wider at the end at which the pawl or ratchet is inserted in the opening than it is at the other end, at which the pawl or ratchet is in locking position. Correspondingly, the pawl or ratchet is provided with a boss at the end, so that the pawl or ratchet at its end has a dimension corresponding to the increased width of the striker plate. The pawl or ratchet may thus be inserted in the recess of the striker plate at the end featuring the increased width, but it will not be possible to lift it out of engagement when in locking position, since the end dimension of the pawl or ratchet exceeds the width of the recess in the striker plate.

The invention

[0004] It is an object of the invention to provide an improved locking system for windows, doors or the like.

[0005] In particular, it is an object of the invention to provide a system which features a high degree of security against break-ins and intrusion.

[0006] Also, it is an object of the invention to provide a system which may be obtained in a relatively simple manner and by applying relatively simple means.

[0007] Further, it is an object of the invention to provide a system which is relatively undemanding in terms of tolerances and adjustment and/or mounting of the striker plate, pawl or the like in relation to each other.

[0008] Finally, it is an object of the invention to provide a striker plate and a locking member to be applied in connection with such a system.

[0009] These and other objects are obtained by the invention as will be described in detail in the following.

[0010] The invention relates to a locking system for windows, doors or the like, and comprises a striker plate and a moveable locking member such as a pawl, a ratchet or the like for cooperating with said striker plate, said striker plate comprising a recess, slot or the like for cooperating with the locking member in a locking position, said locking member and striker plate each featuring a first surface capable of engaging with each other to obtain a locking function. According to the invention, as specified in the characterizing part of claim 1, the locking member features means for locking of the locking member in relation to the striker plate, said means being designed to engage with a part of the striker plate when the locking member is influenced in an at least partly sideways direction.

[0011] In this manner, a surprisingly simple way of securing against forcing open a window or door or the like provided with such a locking system is obtained.

[0012] Since any attempt to force open the frame of the door or window by means of a tool such as crow bar, the frame and thereby also the locking member, i.e. the pawl or the ratchet etc., will be affected by force in a sideways direction, i.e. force which may e.g. extend essentially perpendicularly to the longitudinal direction of the locking member, such an attempt (to force anything open) will cause engagement between the means of the locking member for locking and the striker plate.

[0013] The locking is independent of the design of the recess, slot or the like, which is provided in the striker plate for cooperating with the locking member. The recess or the like, and hereby also the striker plate, may thus be manufactured in a simpler and more advantageous manner, and thus with reduced costs, compared to the striker plate used in connection with the above-mentioned system described in WO 01/96699 A1, in which the striker plate must be designed with a recess with two different widths.

[0014] Thus, it is realized by the invention that it would be possible to use one and the same striker plate irrespective of the direction, in which the pawl or the like is inserted in the recess of the striker plate, contrary to the above-mentioned prior art, in which the striker plate must be designed in such a manner that the largest width of the recess must be provided at the end at which the pawl is inserted in the recess. Thus, prior art may require two types of locking plates, for instance a right-hand and a left-hand plate, which is not required by the invention.

[0015] In a preferred embodiment, as specified in

claim 2, said means may comprise a boss or the like extending sideways from a position near the end of the locking member.

[0016] By this embodiment, the locking member will be designed in such a manner that the dimension of the locking member does not exceed the width of the recess or the like of the striker plate, and not even when the locking member is provided with said boss, pint or the like. This will be arranged on the side of the locking member facing the frame, so that when affected sideways in the outwards direction as a consequence of a break-in attempt, it may engage with a device on the striker plate, for instance on the back of the striker plate.

[0017] By another preferred embodiment, as specified in claim 3, said means may comprise a groove, a recess or the like, designed in the locking member at a position near its end. It will also be arranged on the side of the locking member facing the frame, so when affected sideways in the outwards direction in said manner as a consequence of a break-in attempt, it may engage with a device on the striker plate, for instance the back of the striker plate. By this embodiment, the locking member as such may be designed with a dimension which essentially corresponds to the width of the recess or the like in the striker plate, if desired.

[0018] By yet another preferred embodiment, as specified in claim 4, said means may comprise a surface part designed in the locking member at a position near its end, and which surface extends across the longitudinal axis of the locking member. This surface part arranged on the side of the locking member facing the case and essentially pointing upwards, may be designed in several different ways, but will have one characteristic in common which is that the surface part will be able to engage with a member on the striker plate during a break-in attempt.

[0019] Preferably, as specified in claim 5, said surface may extend essentially perpendicularly to said longitudinal axis of the locking member.

[0020] In a particularly preferred embodiment, as specified in claim 6, said part of the striker plate may comprise a surface part extending essentially sideways in relation to the recess, slot or the like of the striker plate, and opposite said first surface. In this manner, it will be relatively easy to cause a locking of the striker plate and the locking member to each other when an attempt to force it open is made, during which the locking member may gradually be brought to assume an angle due to the sideways force via its suspension or bedding. As the locking member is also lifted due to the force applied, the locking means of the locking member will abut said surface of the striker plate at a certain point so that continuous movement of the locking member, as well as further angling and further displacement in the longitudinal direction will be prevented.

[0021] Preferably, as specified in claim 7, said surface of the striker plate may extend at least partly in such a manner that it forms an acute angle in relation to the locking member when in locking position. In this manner, additional reinforcement of the engagement between the locking member and the striker plate will be obtained.

[0022] By yet another preferred embodiment, as specified in claim 8, said recess, slot or the like of the striker plate may have a second wall surface positioned opposite said first surface, and said surface of the striker plate may extend at least partly in such a manner that an acute angle is formed in relation to the second wall surface. Thus, it should be understood that the side wall of the striker plate facing the frame at its lower edge may adjoin said surface of the striker plate serving as counterpart to the means for locking of the locking member. Potentially, this surface may extend over the entire length of the recess or the like in the striker plate and it should be understood that it may be a shelf or the like arranged at the back of the striker plate.

[0023] By yet another preferred embodiment, as specified in claim 9, said first surface of the striker plate may form an abutment for the locking member when said force is applied to the locking member in an at least partly sideways direction. This abutment may also help define the movements of the locking member during said force impact. The outwards movement of the locking member will be limited by said first surface of the striker plate, e.g. the side wall in the recess, and due to the continued application of force, the locking member will gradually turn around an upper edge of the first surface, until the locking element abuts the striker plate on the opposite side.

[0024] In this manner, it is ensured that the means for locking of the locking member will engage with the corresponding means on the striker plate.

[0025] Preferably, as specified in claim 10, the locking system may comprise a pasquil system.

[0026] The invention also relates to a locking element, as specified in claim 11, such as a pawl, a ratchet or the like, for cooperating with a striker plate, said locking member having a first surface capable of engaging with the striker plate in order to create a locking function. The locking member according to the invention has means for locking the locking member in relation to the striker plate, and said means are designed to engage with part of the striker plate when force is applied to the locking member in an at least partly sideways direction.

[0027] In this manner, utilization of such a locking element offers in a surprisingly simple manner security against forcing open a window, door or the like.

[0028] Since any attempt to force open the frame of the door or window by means of a tool such as a crow bar, the frame and thereby also the locking member, i. e. the pawl or ratchet etc., will be influenced by a force in a sideways direction, i.e. force which may e.g. extend essentially perpendicularly to the longitudinal direction of the locking member, such an attempt (to force anything open) will cause engagement between the means of the locking member for locking and a striker plate.

[0029] By a preferred embodiment, as specified in claim 12, said means may comprise a boss or the like extending sideways from a position near the end of the locking member.

[0030] By yet another preferred embodiment, as specified in claim 13, said means may comprise a recess or the like designed in the locking member near its end position.

[0031] As specified in claim 14, said means according to yet another preferred embodiment may comprise a surface designed in the locking member at a position near its end, and which surface extends across a longitudinal axis of the locking member.

[0032] Preferably, as specified in claim 15, said surface may extend essentially perpendicularly to the longitudinal direction of the locking member.

[0033] Further, the invention relates to a striker plate, as specified in claim 16, comprising a recess, slot or the like for cooperating with a locking member in a locking position, said striker plate featuring a first surface with which the locking member may engage to create a locking function. According to the invention, this striker plate comprises a surface part extending essentially sideways in relation to said recess, slot or the like of the striker plate and opposite said first surface, which surface is designed to cooperate with a part of the locking member when the locking element is influenced in an at least partly sideways direction.

[0034] In this manner, a number of advantages over the prior art may be obtained.

[0035] By utilization of the striker plate according to the invention, the locking will not depend on the design of the recess, slot or the like, arranged in the striker plate for cooperating with the locking element. This recess, slot or the like, and hereby also the striker plate, may thus be manufactured in a more simple and advantageous manner, and thus also at reduced costs, compared to the striker plate used in connection with the system described in the above-mentioned WO 01/96699 A1, in which the striker plate must be designed with a recess featuring two different widths.

[0036] Thus, it should be noted that according to the invention one single striker plate may be used irrespective of the direction in which a pawl or the like is inserted in the recess of the striker plate, contrary to that of the above-mentioned prior art, in which the striker plate must be designed in such a manner that the widest part of the recess must be at the end at which the pawl is inserted in the recess. Thus, the prior art may utilize two kinds of locking plates, for example a right-hand and a left-hand plate, which is not required by this invention.

[0037] By a preferred embodiment of the invention, as specified in claim 17, said surface of the striker plate may extend at least partly in such a manner that it forms an acute angle in relation to the locking member when in locking position.

[0038] By another preferred embodiment, as specified in claim 18, said recess, slot or the like of the striker plate may have a second wall surface placed opposite said first surface, and said surface of the striker plate may extend at least partly in such a manner that it forms an acute angle in relation to the opposite wall surface.

[0039] Preferably, as specified in claim 19, said first surface of the striker plate may form an abutment for the locking member when said force is applied to the locking member in an at least partly sideways direction.

Figures

[0040] The invention will be explained in detail in the following with reference to the drawings, in which

- fig. 1 is a perspective illustration of a striker plate according to an embodiment of the invention,
- fig. 2 shows the striker plate of fig. 1 from above,
- fig. 3 is a cross section of the striker plate of fig. 1 along the line III-III,
- fig. 4 is a perspective illustration of a locking member according to an embodiment of the invention,
- fig. 5 shows the locking member of fig. 4 from the side,
- fig. 6 shows a locking member corresponding to that of fig. 4 from the end,
- fig .7 is a perspective view of a locking element and a striker plate engaging with each other according to an embodiment of the invention,
- fig. 8 shows the situation of fig. 7 from above,
- fig. 9 is a cross section along the line IX-IX of fig. 8,
- fig. 10 is a schematic illustration of a window or a corresponding opening during an attempt of forcing it open, and
- fig. 11 illustrates other embodiments of a locking member according to the invention.

Embodiments

[0041] Fig. 1 shows a striker plate, generally designated 1, which is basically designed in a commonly known manner. Thus, this striker plate features a recess, groove, slot or the like 2, capable of cooperating with a locking member, which may for instance be a pawl, ratchet or the like. As illustrated, the recess or the like 2 is provided with a wall surface 2a limiting the opening in a direction facing the frame, and a wall surface 2b which is essentially arranged opposite the wall surface 2a. The striker plate 1 is usually fixed to a frame part of for instance a window or a door, potentially in a milled recess or the like, and may be fixed by means of screws or the like mounted through screw holes 4. These screw holes 4, for instance provided in a part of the striker plate 1 designed as a wall part 6, may as shown in figs. 1 and 2 be provided with depressions 9 for receiving a screw head. The striker plate 1 may furthermore in known manner be designed with an additional opening so that for instance a window or a door may be fixed in a ven-

tilation position.

[0042] Thus, it is understood that when a locking member on a moveable part, such as a window sash or a door, is inserted into the opening 2, the moveable part will be prevented from opening, since the locking member will abut against the wall surface 2b and thus force and/or fix the moveable part against the frame. In practice, the wall surface 2a will not have a corresponding function since the frame will normally define a locking position of the moving part, but it is to be understood that the opening 2 must necessarily have a wall surface 2a, which may potentially cooperate with the locking member.

[0043] As illustrated in figs. 1, 2 and 3, the striker plate 1 according to the invention may furthermore be designed in such a manner that the recess 2, i.e. the wall surface 2b or at least part of it, adjoins the upper side of the striker plate by an angled, chamfered or curved edge part 8.

[0044] As illustrated in fig. 3, which shows a cross section along the line III-III of fig. 2, the striker plate according to this embodiment is provided with a surface part 12 adjoining the wall surface 2a on the back of the striker plate 1. This surface part 12 will essentially be inclined in an inwards and upwards direction in relation to the wall surface 2a, which shows an essentially vertical run 3 in the illustration in fig. 3, and it will form an angle of less than 90°. The effect hereof will be described in detail in the following.

[0045] A locking member cooperating with such a striker plate will be described in the following with reference to figs. 4, 5 and 6. Here, the locking member is generally designated 20 and in the shown embodiment, it may be an elongated body 24 featuring organs 22 at the one end, by means of which it is connected to a locking mechanism. Thus, the organs 22 may be a shaft or swivel as illustrated, and it should be understood that the locking member is of the pivotal kind, e.g. a pawl to be used in connection with a pasquil pawl as is known from prior art. The elongated body 24 is thus also illustrated by an elongated body 24 in the figures, which curves slightly in accordance with prior art when used in connection with a pasquil system. However, it should be understood that other types of locking members may be relevant.

[0046] At the other end, the locking member is provided with an protruding boss or the like 26, which may feature an upper surface 28 as illustrated, whose function will be described later. Furthermore, a chamfer, inclined surface(s) or the like 27 may be featured as illustrated in figs. 5 and 6, which may serve to make it easier to insert the locking member into the opening 2 or the opening 8, if such an opening is present, when a window or door should be locked or fixed in a ventilation position.

[0047] Figs. 7, 8 and 9 show a striker plate 1 and a locking member 20 in operative engagement with each other and in a situation in which an attempt at forcing the locking system open is made.

[0048] To explain this further, fig. 10 illustrates such an attempt of forcing it open schematically. Thus, a frame 30 of e.g. a window is illustrated with a sash 31 and a window 32. It should be understood that the frame and sash are fixed to each other by means of one or more sets of striker plates 1 and locking members 20, which are, however, not illustrated in fig. 10.

[0049] A tool, for instance a crow bar, a screw driver or the like 34 is edged in between the frame 30 and the sash 31, and an attempt is made to try to pry open the window by applying force in the direction of the arrow. This tool 34 will tip around a point on the frame 30, e.g. the outer rim of the frame, and it should be understood that the sash 31 will be affected partly by a force Fn in the upwards direction and partly by a force Ft in the horizontal plane (in the construction shown in fig. 10) and will thus try to push the sash out of the frame. It should be understood that the force (or the resulting force) will affect the engagement between the locking plate 1 and the locking member 20 as is illustrated in figs. 7, 8 and 9. The force Fn will attempt to lift the end of the locking member 20 out of the opening 2 in the striker plate 1, but at the same time, the force Ft will affect the locking member in the sideways direction. As the locking member 1 will consequently abut the side wall 2b in the opening 2, the locking member will tilt and assume an inclined position as illustrated, since the material of the locking member and or its suspension will give way under the influence of the force. As illustrated, an upper edge 8 of the side wall 2b may be designed in such a manner that appropriate control of the movement of the locking member may be obtained during this movement. As illustrated, the boss 26 located on the side of the locking member facing the frame and the side wall 2a in the opening, will be "caught" by the surface 12 which is arranged on the back of the striker plate 1 and adjoins the side wall 2a, as previously described. As can be seen, this surface 12 may form part of a recess or the like arranged on the back of the striker plate 1. This recess may be designed in such a manner that is corresponds to the size and/or shape of the boss 26 on the locking member 1. However, the angling of the surface 12 will preferably correspond to the angle assumed by the upper side 28 (cf. fig. 4) of the boss 26 when the locking member 1 is positioned with one side against the edge 8 and the other side or end against the side wall 2a or its lower edge. The upper side 28 of the boss 26 may be designed in such a manner that it is essentially perpendicular to the side of the locking member 20, but the angle may, however, also deviate from the perpendicular. For instance, the angle formed may be less than 90°, whereby a particularly effective locking between the two members may be obtained, but a larger angle may also be applied.

[0050] It should be understood that once force is applied, as shown in fig. 9 (and 10), the locking member 1 will gradually assume the illustrated position, since an angle change takes place while lifting the locking mem-

ber upwards. In particular, it should be noted that the parts may be designed in such a manner that the boss 26 will directtly be received by the surface 12, but it will also be possible to design the elements in such a manner that when the locking member assumes such an angle that further angling is limited by the side walls 2a and 2b, the upper side 28 of the boss 26 will not yet abut the surface 12. This is achieved by additional application of force to the locking member. In this manner, it is ensured that a locking of the locking member 20 in relation to the striker plate 1 is always obtained.

[0051] Further, it can be seen that by appropriate dimensioning of the elements, the resulting force (combined by Fn and Ft) may run in the direction of the locking member or essentially in this direction when the locking member is in the position shown in fig. 9. The force to be used when subsequently attempting to force open the window, door or a corresponding element, will thus be absorbed as tension alone in the locking member (or essentially as tension). This also means that the risk of the locking member breaking is minimized.

[0052] The means, whereby the locking member may lock to the striker plate, and which has been illustrated as a boss 26 or the like in the previous figures, may be designed in a number of other ways, some of which will be described in the following with reference to figs. 11a-11e. These figures show cross sections, corresponding to the illustration in fig. 9, of various embodiments of a locking member.

[0053] Thus, fig. 11a shows an embodiment corresponding to that illustrated in fig. 9 for comparative reasons, in which a pin or the like 26 has been provided at the end of the locking member with an upper surface 28 capable of engaging with the surface 12 of the striker plate 1.

[0054] Fig. 11b shows an embodiment with a indentation 29b on the side of the locking member, said indentation being capable of featuring a number of various embodiments, with the one thing, however, in common that it features an upwards directed surface 28b capable of engaging with the surface 12.

[0055] Fig. 11c also shows an embodiment with an indentation 29c on the side of the locking member, said indentation having an upwards directed surface 28c, which is essentially perpendicular to the longitudinal axis of the locking member.

[0056] Fig. 11d shows an embodiment, in which the means for locking are designed with a formation or a boss 26d on the side of the locking member 20, said formation having an upper surface 28d which is essentially perpendicular to a longitudinal axis of the locking member.

[0057] Fig. 11e shows an embodiment, in which a formation or boss 26e has also been made on the side of the locking member, said formation being rounded but yet with a pronounced upper surface 28e, which may engage with the surface 12 on the back of the striker plate.

[0058] As is apparent from the examples above, and as previously mentioned, the anglings of the surfaces 28, 28b, 28c, 28d and 28e may be designed in a variety of ways so that the angle may fall within a wide interval, both over or under 90° or equal to 90°, in relation to the body or the side of the locking member 20. However, certain conditions indicated in fig. 9 are of significant importance to the angle, namely the inclination assumed by the locking member in relation to the striker plate when both sides abut the striker plate, and the angle of the corresponding surface 12 of the striker plate. Thus, it can also be seen that the depth and width of the slot 2 in the striker plate - and thereby the location of the points of abutment/surfaces of the locking member - may also influence the size of the angle. Similar conditions apply to the angling of the surface 12 of the striker plate. Thus, it should be understood that a person with knowledge of the description above and the subsequent claims will be able to determine the individual angle sizes in relevant constructions in relation to the invention, so that engagement between the locking member and the striker plate is obtained during an attempted forcing open.

[0059] It will be obvious to a person skilled in the art that other embodiments than those illustrated are possible within the scope of the invention. Also, it will be obvious that the part of the striker plate contributing to the locking may be designed in other ways than those illustrated in the figures.

List of reference numbers

[0060]

1	Striker plate
2	Recess, groove, slot or the like
2a,2b	Wall surfaces, side walls
4	Bolt holes
6	Wall part
7	Additional opening for ventilation position
8	Edge part
9	Depression
12	Surface part of striker plate
20	Locking member, pawl, ratchet or the like
22	Organs for support, swivel or the like
24	Body for locking member
26, 26d, 26e	Pin, boss or the like
27	Chamfer on locking member
28	Upper surface
28b,c,d,e	Upper surface
29b, 29c	Indentation
30	Frame
31	Sash
32	Window
34	Tool

Claims

1. Locking system for windows, doors or the like, comprising a striker plate (1) and a moveable locking member (20) such as a pawl, a ratchet or the like, for cooperating with said striker plate, said striker plate comprising a recess, slot or the like (2) for cooperating with the locking member in locking position, and the locking member and striker plate each having a first surface capable of engaging with each other in order to obtain a locking function, **characterized by** the locking member (20) having means for locking of the locking member in relation to the striker plate (1), and by said means being designed to engage with a part of the striker plate when force is applied to the locking member in an at least partly sideways direction.

2. Locking system according to claim 1 **characterized by** said means comprising a boss or the like (26, 26d, 26e) extending sideways from a position near the end of the locking member (20).

3. Locking system according to claim 1 or 2 **characterized by** said means comprising a recess or the like (29b, 29c) designed in the locking member (20) at position near its end.

4. Locking system according to claim 1, 2 or 3 **characterized by** said means comprising a surface (28, 28b, 28c, 28d, 28e) designed in the locking member (20) at a position near its end, and which extends across a longitudinal axis of the locking member.

5. Locking system according to claim 4 **characterized by** said surface (28, 28b, 28c, 28d, 28e) extending in an essentially perpendicular direction in relation to the said longitudinal axis of the locking member.

6. Locking system according to one or more of claims 1-5 **characterized by** said part of the striker plate (1) comprising a surface part (12) extending essentially sideways in relation to the said recess, slot or the like (2) of the striker plate and opposite the first surface (2b).

7. Locking system according to claim 6 **characterized by** said surface (12) of the striker plate extending at least partly in such a manner that an acute angle is formed in relation to the locking member (20) when in locking position.

8. Locking system according to claim 6 or 7 **characterized by** said recess, slot or the like (2) of the striker plate having a second wall surface (2a) situated opposite said first surface (2b) and by said surface (12) of the striker plate extending at least partly in such a manner that an acute angle is formed in relation to the second wall surface (2a).

9. Locking system according to one or more of claims 1-8 **characterized by** said first surface (2b) of the striker plate (1) forming an abutment for the locking member (20) when force is applied to the locking member in an at least partly sideways direction.

10. Locking system according to one or more of claims 1-9 **characterized by** the system comprising a pasquil system.

11. Locking member such as a pawl, a ratchet or the like for cooperating with a striker plate (1), said locking member having a first surface capable of engaging with the striker plate in order to obtain a locking function **characterized by** the locking member (20) having means for locking of the locking member in relation to the striker plate (1), and by said means being designed to engage with a part of the striker plate when force is applied to the locking member in an at least partly sideways direction.

12. Locking system according to claim 11 **characterized by** said means comprising a boss or the like (26, 26d, 26e) extending sideways from a position near the end of the locking member (20).

13. Locking system according to claim 11 or 12 **characterized by** said means comprising a recess or the like (29b, 29c) designed in the locking element (20) at a position near its end.

14. Locking system according to claim 11, 12 or 13 **characterized by** said means comprising a surface (28, 28b, 28c, 28d, 28e) designed in the locking element (20) at a position near its end, and which extends across a longitudinal axis of the locking member.

15. Locking system according to claim 14 **characterized by** said surface (28, 28b, 28c, 28d, 28e) extending essentially perpendicularly in relation to said longitudinal axis of the locking member.

16. Striker plate comprising a recess, slot or the like for cooperating with a locking member (20) in a locking position, said striker plate having a first surface with which the locking member may engage in order to obtain a locking function **characterized by** the striker plate (1) comprising a surface (12) extending essentially sideways in relation to said recess, slot or the like (2) of the striker plate and opposite said first surface (2b), said surface (12) being designed to engage with a part of the locking member (20) when force is applied to the locking member in an at least partly sideways direction.

17. Striker plate according to claim 16 **characterized by** said surface (12) of the striker plate extending at least partly in such a manner that an acute angle is formed in relation to the locking member (20) when in locking position.

18. Striker plate according to claim 16 or 17 **characterized by** said recess, slot or the like (2) of the striker plate having a second wall surface (2a) situated opposite said first surface (2b), and by said surface (12) of the striker plate extending at least partly in such a manner that an acute angle is formed in relation to the second wall surface (2a).

19. Striker plate according to one or more of claims 16-18 **characterized by** said first surface (2b) of the striker plate forming an abutment for the locking member (20) when said force is applied to the locking member in an at least partly sideways direction.

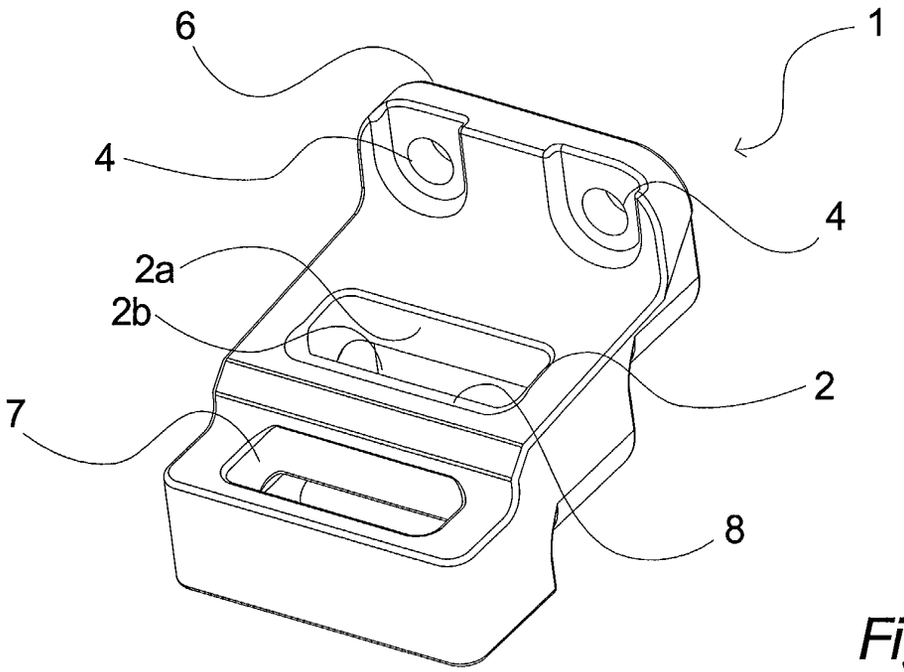

Fig. 1

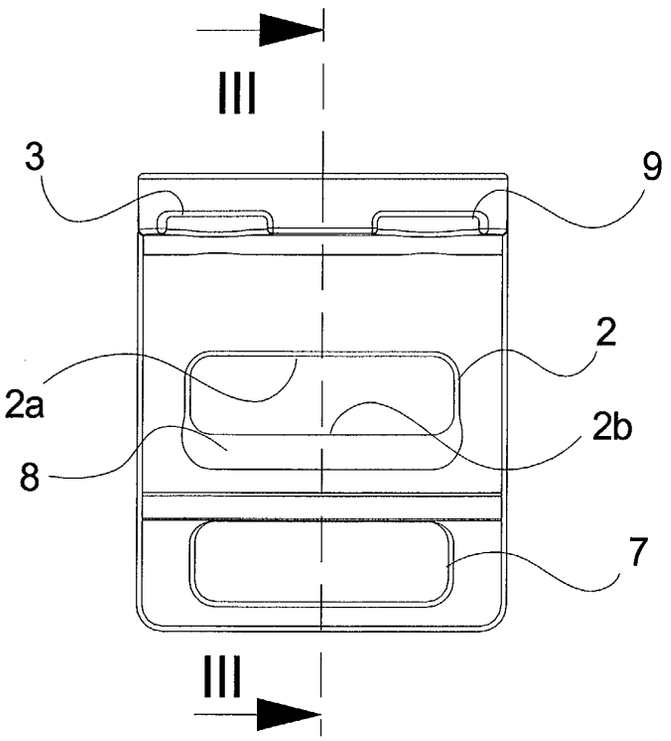

Fig. 2

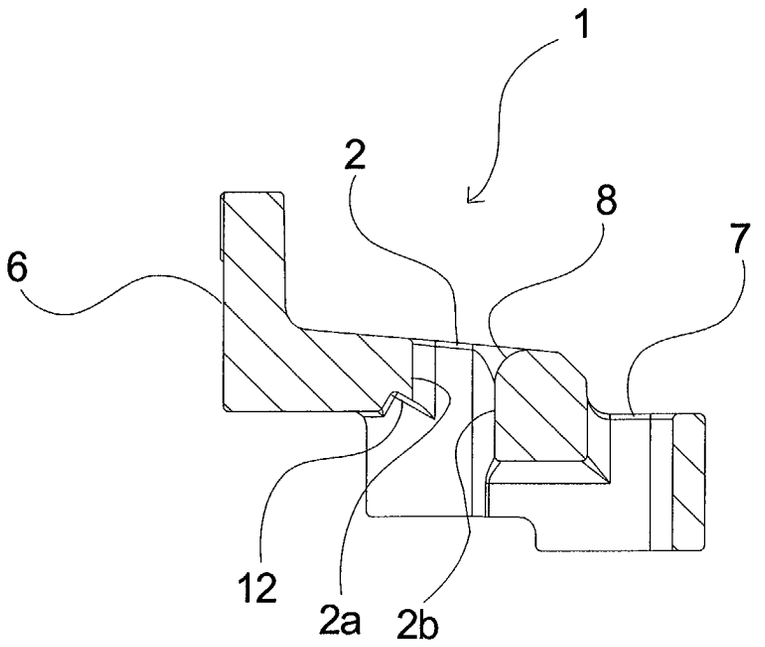

Fig. 3

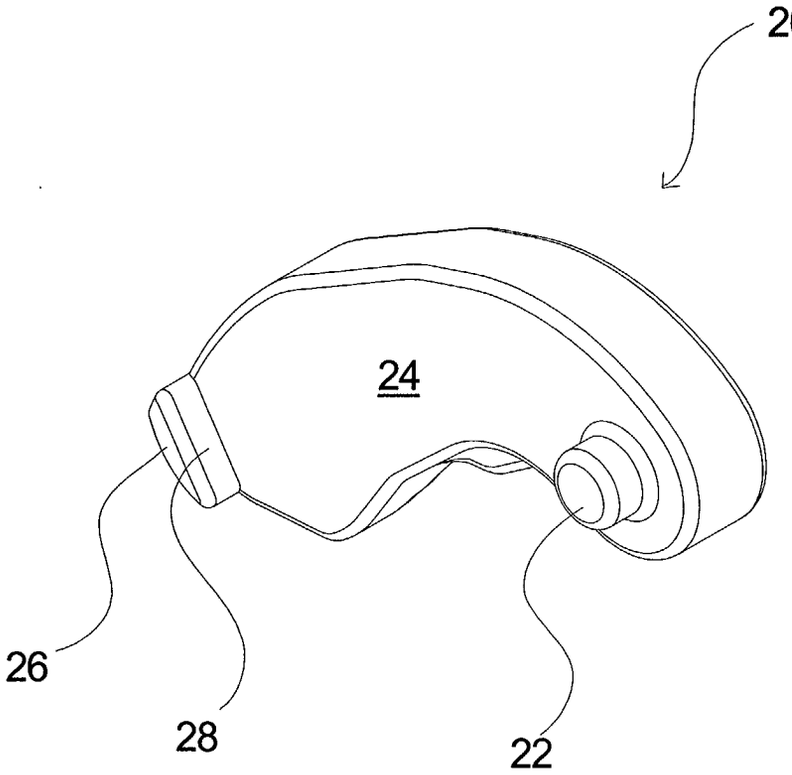

Fig. 4

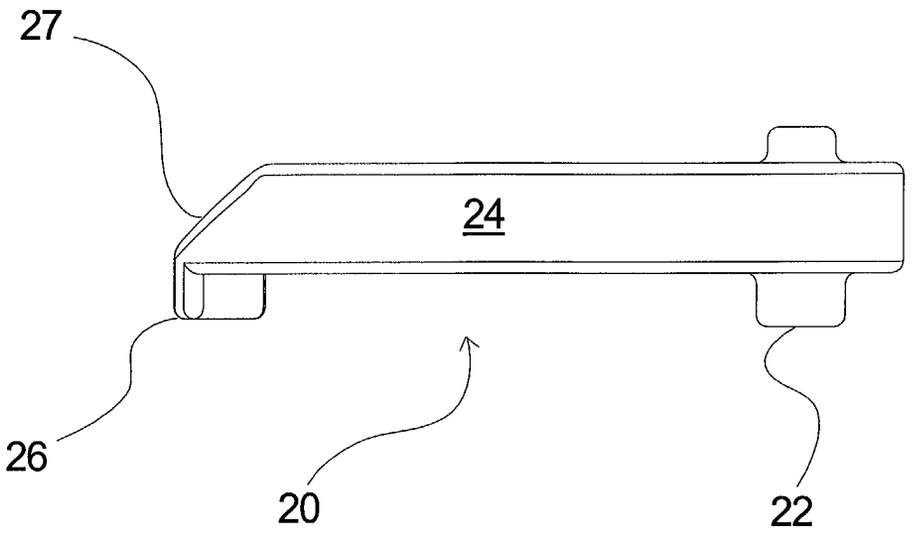

Fig. 5

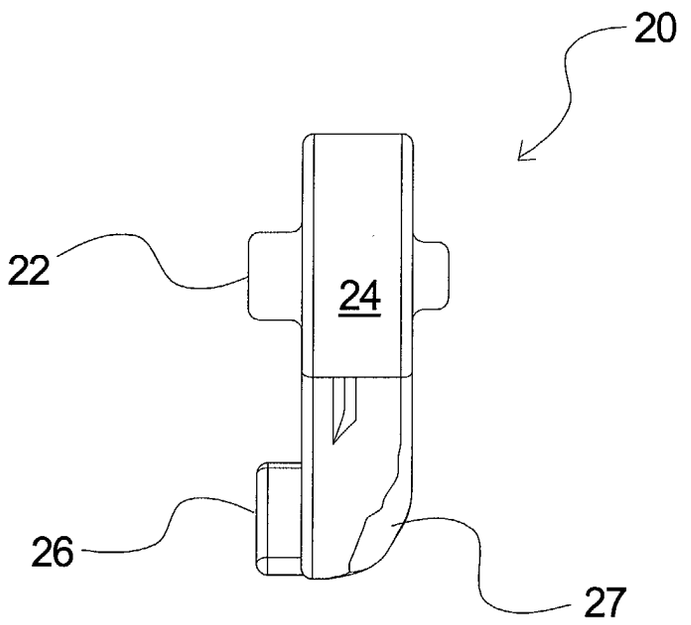

Fig. 6

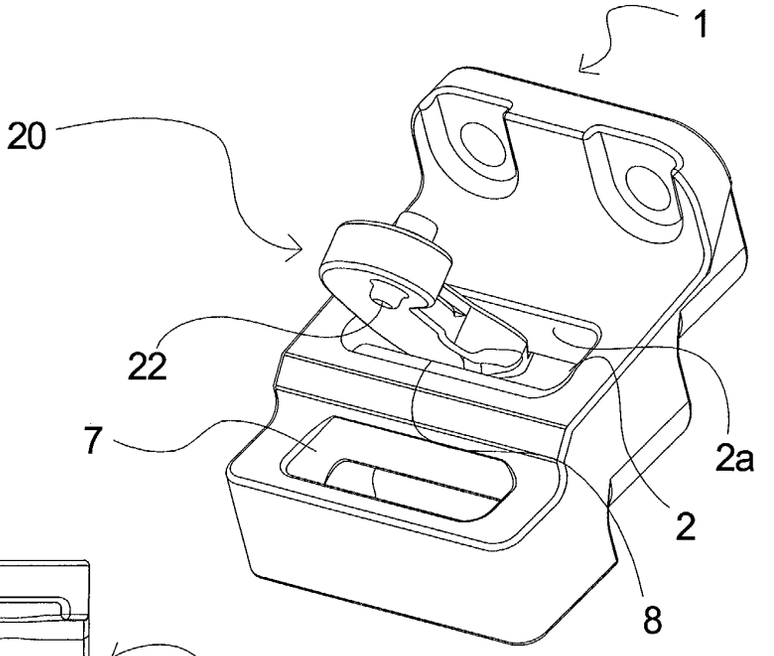

Fig. 7

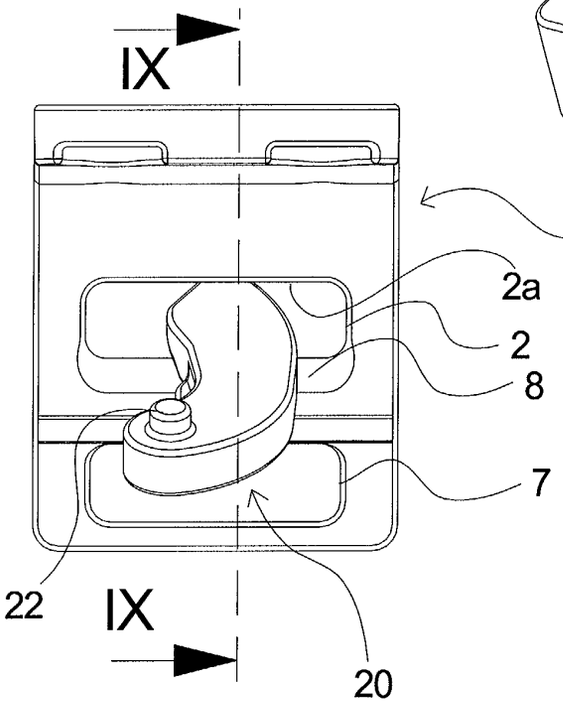

Fig. 8

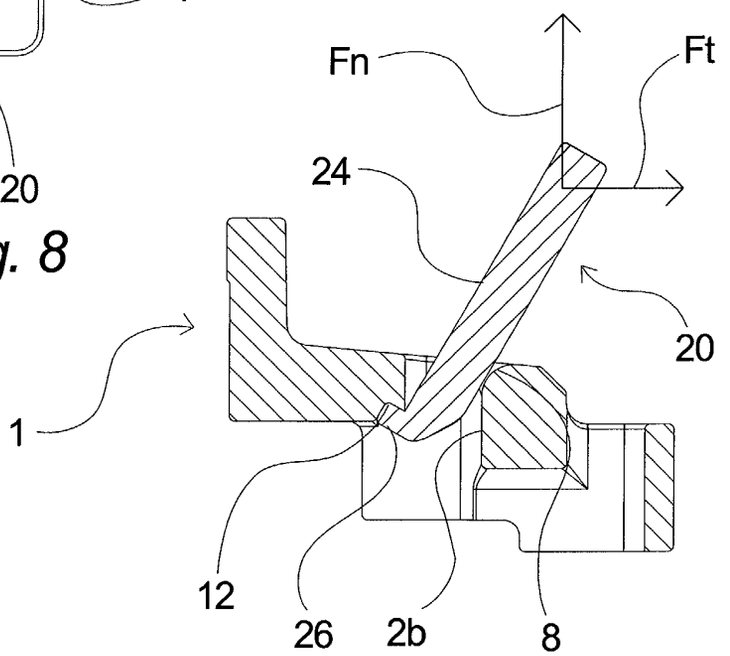

Fig. 9

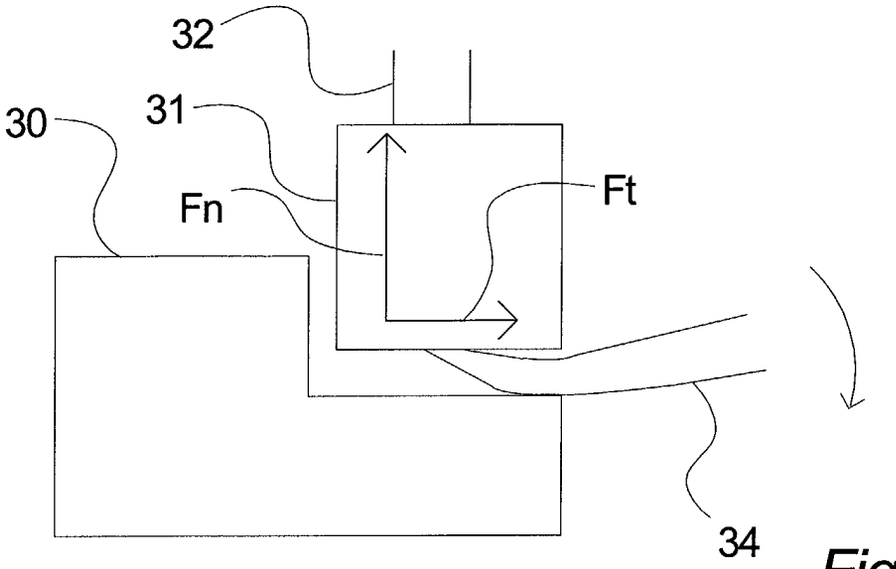

Fig. 10

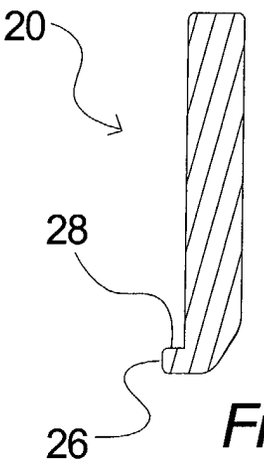

Fig. 11a

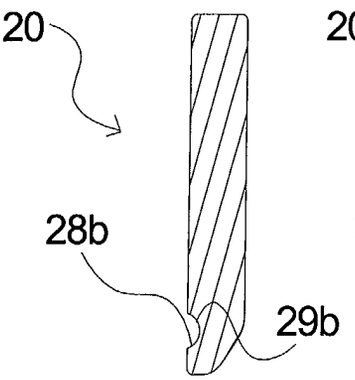

Fig. 11b

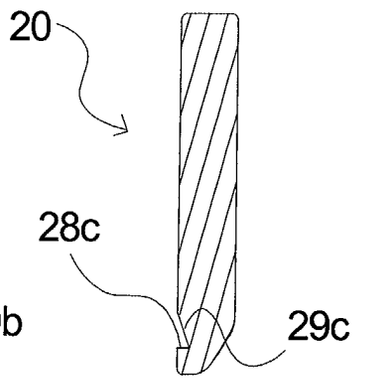

Fig. 11c

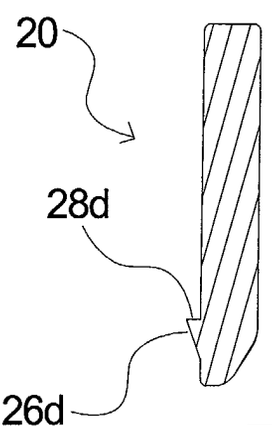

Fig. 11d

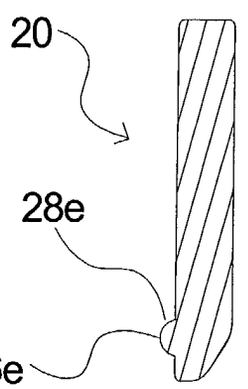

Fig. 11e

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 03 07 5352

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)
X	EP 1 045 097 A (UNILUX AG) 18 October 2000 (2000-10-18) * column 11, line 17 - column 11, line 31; figures *	1-19	E05B17/20 E05C9/18
D,X	WO 01 96699 A (THORSEN ANDERS ;VKR HOLDING AS (DK)) 20 December 2001 (2001-12-20) * abstract; figures *	1-19	
X	GB 2 270 537 A (GORDON IAN ALEXANDER) 16 March 1994 (1994-03-16) * figures *	1-19	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E05B
E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	22 July 2003	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 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 07 5352

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.

22-07-2003

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 1045097 A	18-10-2000	DE 19916341 A1	19-10-2000
		AT 223993 T	15-09-2002
		DE 50000469 D1	17-10-2002
		DK 1045097 T3	20-01-2003
		EP 1045097 A1	18-10-2000
		ES 2183759 T3	01-04-2003
WO 0196699 A	20-12-2001	AU 7388401 A	24-12-2001
		WO 0196699 A1	20-12-2001
		EP 1297233 A1	02-04-2003
GB 2270537 A	16-03-1994	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82