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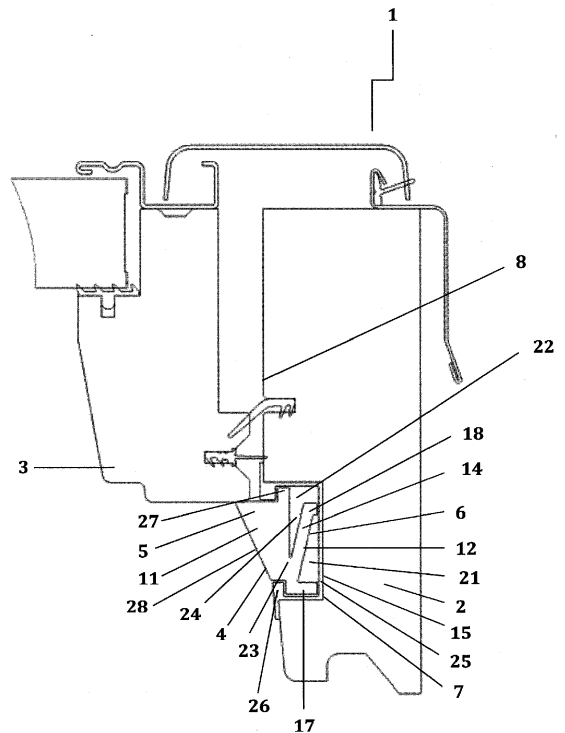
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(54) **A roof window with a locking apparatus**

(57) The present invention provides a roof window (1) comprising a frame (2), a sash (3) pivotally mounted within the frame (2), and a latch for releasably coupling the sash (2) and frame (3) together in a closed coplanar position. The roof window (1) having a sash movement restrictor (4) mounted thereon comprising a movable barrier (5) operable between a locking position and an open position via biasing member (6). The movement restrictor (4) prevents movement of the sash (3) into a substantially open position when the latch is fully disengaged, or in an intermediate ventilation position. The movement restrictor (4) further prevents access from the outside by intruders simply pushing a bar through the ventilation gap to open the latch when the latch is in the ventilation position, or simply pushing the sash (3) open if the latch is in the disengaged position.



**Figure 1**

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## Description

**[0001]** The present invention relates to a locking apparatus and in particular to a locking apparatus for a roof window.

**[0002]** It has been a long standing practice to install roof window units into properties to provide additional light and ventilation. Roof windows generally consist of a frame, within which a sash is mounted which rotates about a pivot point between itself and the frame and carries the glass. The sash and frame also typically have a latch which secures the two components together when the sash is in the closed position. Modern latches also possess an additional feature which allows the user to move the latch handle and permit ventilation of the room without affecting the lock between the sash and the frame. While ventilation can occur without unlocking the latch between the sash and the frame, when the latch handle is moved into the ventilation position, the sash can be readily rotated from either the interior or exterior of the window. From the outside, a person can push a bar through the ventilation opening to fully open the latch handle allowing a person on the outside to open the sash. This causes a significant security risk as criminals often have knowledge of the typical features of doors and windows. This ventilation position of the latch handle presents criminals with a vulnerability to exploit and readily allows criminals access to a premises. Moreover, the ventilation feature is often utilized by users while they are absent from their properties to air the building, further exacerbating the security risk.

**[0003]** It is an object of the present invention to obviate or mitigate the problem of providing criminals with easy access to a property through a roof window with a latch handle in the ventilation position.

**[0004]** Accordingly, the present invention provides a window comprising a frame, a sash pivotally mounted within the frame, and a latch means for releasably coupling the sash and frame together in a closed coplanar position, the window having a sash movement restriction means mounted thereon comprising a movable barrier means operable between a locking position and an open position via biasing means.

**[0005]** Preferably, the window is a roof window.

**[0006]** Ideally, when the movable barrier means is in the locking position, the sash is substantially restricted from moving away from the closed position.

**[0007]** Preferably, when the movable barrier means is in the open position, the sash is free to pivot relative to the frame when the latch means is in the disengaged position.

**[0008]** Ideally, the latch means having a locked position for securely coupling the sash and frame together in a coplanar position, the latch means having a ventilation position for securely coupling the sash and frame together in a co-planar position allowing air to pass between the frame and the sash, and the latch means having a disengaged position wherein the frame and sash are de-

coupled allowing the sash to pivot about the frame.

**[0009]** Advantageously, when the latch means is in the ventilation position or in the disengaged position, the sash is unable to pivot away from the closed position when the moveable barrier means is in the locking position and is operable between the sash and the frame. This prevents access from the outside by intruders simply pushing a bar through the ventilation gap to open the latch means when the latch means is in the ventilation position or simply pushing the sash open if the latch means is in the disengaged position.

**[0010]** Preferably, the movable barrier means is locatable in or on the frame or sash.

**[0011]** Ideally, the movable barrier means is locatable at least partially in a recess formed in the frame or sash facing surface of the sash or frame respectively.

**[0012]** Preferably, the sash movement restriction means is located proximal to one end of the window.

**[0013]** Ideally, the sash movement restriction means is located proximal to the end of the window having the latch means.

**[0014]** Preferably, where the movable barrier means is locatable in or on the sash, a recess is formed in the frame for receiving at least a part of the movable barrier means.

**[0015]** Ideally, the biasing means is disposed between the frame or sash and the movable barrier means.

**[0016]** Preferably, the biasing means is integrally formed with the movable barrier means.

**[0017]** Most preferably, the biasing means and movable barrier means is formed as a homogenous one piece component.

**[0018]** Ideally, the biasing means is disposed between a recess in the frame or sash and the movable barrier means.

**[0019]** Preferably, the movable barrier means allows the sash to move from an open position to a closed position but prevents the sash from moving from a closed position to an open position.

**[0020]** Preferably, the movable barrier means is movable from a locking position to an open position and back to a locking position by moving the sash past the movable barrier means in the direction of closing of the sash.

**[0021]** Preferably, the movable barrier means is movable between a locking position and a closed position by moving the sash past the movable barrier means in the direction of closing the sash.

**[0022]** Ideally, the movable barrier means is movable from a locking position to an open position manually by a user.

**[0023]** Preferably, in the locking position, the movable barrier means protrudes from the recess in the frame or sash.

**[0024]** Advantageously, as a default, the movable barrier means is in a locking position when the sash is in a closed position thereby inhibiting the movement of the sash unless the movable barrier is manipulated by a user.

**[0025]** Ideally, in the open position, the movable barrier

means protrudes from, is flush with, or is below the surface of the frame or sash.

**[0026]** Ideally, the movable barrier means has a sash locking member protrudable from the recess of the sash or frame and a biasing member located within the recess.

**[0027]** Preferably, the biasing member comprises a flexible element mechanically coupleable between the sash locking member and the recess.

**[0028]** Ideally, the flexible element comprises a flexible member mechanically coupled to the sash locking member.

**[0029]** Preferably, the flexible member extends along part of the base of the recess.

**[0030]** Advantageously, this allows the flexible member to extend along the base of the recess as a result of compression of the flexible member due to depression of the sash locking member.

**[0031]** Preferably, the flexible member has a heel spacing the flexible member away from the base of the recess, the flexible member extending to a toe resting on the base of the recess.

**[0032]** Ideally, a gap exists between the underside of the flexible member and the base of the recess.

**[0033]** Ideally, the sash locking member is mechanically coupled to the heel of the flexible member protruding forward from the heel in a jaw like configuration, defining an expanding mouth between the flexible member and the sash locking member.

**[0034]** Preferably, the mechanical coupling between the sash locking member and the heel of the flexible member is flexible.

**[0035]** Preferably, a gap exists between the top of the flexible member and a base of the sash locking member. Advantageously, this gap allows the sash locking member to move in and out of the recess between the locking position and the open position.

**[0036]** Preferably, the flexible member is a flexible ramp.

**[0037]** Ideally, an insert is located in the recess.

**[0038]** Preferably, the insert is an open profile thin walled insert.

**[0039]** Ideally, the insert is formed for snug fitting in the recess.

**[0040]** Preferably, the insert has a generally C-Channel cross section.

**[0041]** Ideally, the insert and the movable barrier means have co-operating retaining members for retaining the movable barrier means in the recess.

**[0042]** Preferably, the insert has two overhang members protruding part of the way across the opening of the insert.

**[0043]** Ideally, the movable barrier means has a sloped contact surfaces formed for allowing movement of the sash or frame over the sloped surface of the movable barrier means.

**[0044]** Preferably, the sloped surface of the movable barrier means is orientated relative to the sash or frame so that closing the sash causes the sash or frame to move

in a direction up the sloped surface simultaneously depressing the movable barrier means between the locking position and the open position.

**[0045]** Preferably, the sloped surface of the movable barrier means is orientated relative to the sash or frame so that closing the sash causes the sash or frame to move in a direction up the sloped surface simultaneously depressing the movable barrier means into the recess between the locking position and the open position.

**[0046]** The invention will now be described with reference to the accompanying drawing which shows by way of example only one embodiment of an apparatus in accordance with the invention.

**[0047]** In the drawing, there is shown a section through a roof window indicated generally by the reference numeral 1 having a frame 2, a sash 3 pivotally mounted within the frame 2 and a latch not shown for releasably coupling the sash 3 and frame 2 together in a closed coplanar position. The window 1 has a sash movement restriction arrangement 4 mounted on the frame having a movable barrier 5 operable between a locking position as shown in the drawing and an open position by a biasing arrangement 6. When the movable barrier 5 is in the locking position, the sash 3 is substantially restricted from moving away from the closed coplanar position. When the movable barrier 5 is in the open position, the sash 3 is free to pivot relative to the frame 2 when the latch is in the disengaged position.

**[0048]** The latch has a locked position for securely coupling the sash 3 and frame 2 together in a coplanar position. The latch also has a ventilation position for securely coupling the sash 3 and frame 2 together in a co-planar position allowing air to pass between the frame 2 and the sash 3. The latch also has a third disengaged position wherein the frame 2 and sash 3 are decoupled allowing the sash 3 to pivot about the frame 2. Advantageously, when the latch is in the ventilation position or in the disengaged position, the sash 3 is unable to pivot away from the closed position when the moveable barrier 5 is in the locking position operating between the sash 3 and the frame 2. This prevents access from the outside by intruders simply pushing a bar through the ventilation gap to open the latch when the latch is in the ventilation position or by simply pushing the sash 3 open if the latch is in the disengaged position.

**[0049]** The movable barrier 5 is located in the frame 2 partially in a recess 7 formed in the sash facing surface 8 of the frame 2. The biasing arrangement 6 is disposed between the frame 2 and the movable barrier 5. The biasing arrangement 6 is integrally formed with the movable barrier 5. The biasing arrangement 6 and movable barrier 5 are formed as a homogenous one piece component.

**[0050]** The biasing arrangement 6 is disposed between a recess 7 in the frame 2 and the movable barrier 5. The movable barrier 5 allows the sash 3 to move from an open position to a closed position but prevents the sash 3 from moving from a closed position to an open

position. The movable barrier 5 is movable from a locking position to an open position and back to a locking position by moving the sash 3 past the movable barrier 5 in the direction of closing of the sash 3. The movable barrier 5 is movable between a locking position and a closed position by moving the sash 3 past the movable barrier 5 in the direction of closing the sash 3. The movable barrier 5 is movable from a locking position to an open position manually by a user. In the locking position, the movable barrier 5 protrudes from the recess 7 in the frame in the normally biased condition. Advantageously, as a default, the movable barrier 5 is in a locking position when the sash 3 is in a closed position thereby inhibiting the movement of the sash 3 unless the movable barrier 5 is manipulated by a user. In the open position, the movable barrier 5 is flush with or below the surface of the frame 2.

**[0051]** The movable barrier 5 has a sash locking member 11 protruding from the recess 7 of the frame 2 and a biasing member 12 located within the recess 7. The biasing member 12 has a flexible element 14 mechanically coupled between the sash locking member 11 and the recess 7. The flexible element 14 comprises a flexible ramp 14 mechanically coupled to the sash locking member 11. The flexible ramp 14 extends along part of the base 15 of the recess 7.

**[0052]** Advantageously, this allows the ramp 14 to extend along the base 15 of the recess 7 as a result of compression of the ramp 14 due to depression of the sash locking member 11 into the recess 7. The flexible ramp 14 has a heel 17 spacing the ramp 14 away from the base 15 of the recess 7, the ramp 14 extending to a toe 18 resting on the base 15 of the recess 7. A gap 21 exists between the underside of the flexible ramp 14 and the base 15 of the recess 7. The sash locking member 11 is mechanically coupled to the heel 17 of the flexible ramp 14 protruding forward from the heel 17 in a jaw like configuration, defining an expanding mouth 22 between the flexible ramp 14 and the sash locking member 11.

**[0053]** The mechanical coupling 23 between the sash locking member 11 and the heel 17 of the flexible ramp 14 is also flexible. A gap 24 exists between the top of the flexible ramp 14 and a base of the sash locking member 11. Advantageously, this gap 24 allows the sash locking member 11 to move in and out of the recess 7 between the locking position and the open position. An insert 25 is located in the recess 7 and the insert 25 is an open profile thin walled insert. The insert 25 is formed for snug fitting in the recess 7 and has a generally C-Channel cross section. The insert 25 and the movable barrier 5 have co-operating retaining members 26, 27 for retaining the movable barrier 5 in the recess 7.

**[0054]** The insert 25 has two overhang members 26 protruding part of the way across the opening of the insert 25. The movable barrier 5 has a sloped contact surface 28 formed for allowing movement of the sash 3 over the sloped surface 28 of the movable barrier 5. The sloped surface 28 of the movable barrier 5 is orientated relative to the frame 2 so that closing the sash 3 causes the sash

3 to move in a direction up the sloped surface 28 simultaneously depressing the movable barrier 5 into the recess 7 between the locking position and the open position.

**[0055]** In relation to the detailed description of the different embodiments of the invention, it will be understood that one or more technical features of one embodiment can be used in combination with one or more technical features of any other embodiment where the transferred use of the one or more technical features would be immediately apparent to a person of ordinary skill in the art to carry out a similar function in a similar way on the other embodiment.

**[0056]** In the preceding discussion of the invention, unless stated to the contrary, the disclosure of alternative values for the upper or lower limit of the permitted range of a parameter, coupled with an indication that one of the said values is more highly preferred than the other, is to be construed as an implied statement that each intermediate value of said parameter, lying between the more preferred and the less preferred of said alternatives, is itself preferred to said less preferred value and also to each value lying between said less preferred value and said intermediate value.

**[0057]** The features disclosed in the foregoing description or the following drawings, expressed in their specific forms or in terms of a means for performing a disclosed function, or a method or a process of attaining the disclosed result, as appropriate, may separately, or in any combination of such features be utilised for realising the invention in diverse forms thereof as defined in the claims.

### 35 Claims

1. A roof window (1) comprising a frame (2), a sash (3) pivotally mounted within the frame (2), and a latch means for releasably coupling the sash (3) and frame (2) together in a closed coplanar position, the roof window (1) having a sash movement restriction means (4) mounted thereon comprising a movable barrier means (5) operable between a locking position and an open position via biasing means (6).
2. A roof window (1) according to claim (1) wherein the movable barrier means (5) allows the sash (3) to move from an open position to a closed position but prevents the sash (3) from moving from a closed position to an open position.
3. A roof window (1) according to any of the preceding claims, wherein when the movable barrier means (5) is in the locking position, the sash (3) is substantially restricted from moving away from the closed position and when the movable barrier means (5) is in the open position, the sash (3) is free to pivot relative to the frame (2).

4. A roof window (1) according to any of the preceding claims wherein the movable barrier means (5) is locatable in or on the frame (2) or sash (3).
5. A roof window (1) according to any of the preceding claims wherein the movable barrier means (5) is locatable at least partially in a recess (7) formed in the frame or sash facing surface of the sash or frame respectively.
6. A roof window (1) according to any of the preceding claims wherein the biasing means (6) is integrally formed with the movable barrier means (5) as a homogenous one piece component.
7. A roof window (1) according to any of the preceding claims wherein the movable barrier means (5) is movable from a locking position to an open position and back to a locking position by moving the sash (3) past the movable barrier means (5) in the direction of closing of the sash (3).
8. A roof window (1) according to any of the preceding claims wherein the movable barrier means (5) is movable from a locking position to an open position manually by a user.
9. A roof window (1) according to any of the preceding claims wherein the biasing means (6) is disposed between the frame (2) or sash (3) and the movable barrier means (5), or the biasing means (6) is disposed between a recess (7) in the frame (2) or sash (3) and the movable barrier means (5).
10. A roof window (1) according to claim (8) or claim (9), wherein the movable barrier means (5) has a sash locking member (11) protrudable from the recess (7) of the sash (3) or frame (2) and a biasing member (12) located within the recess (7), the sash locking member (11) protruding from the recess (7) in the frame (2) or sash (3) in the locked position and protruding from, flush with, or below the surface of the frame (2) or sash (3) in the open position.
11. A roof window (1) according to claim (10) wherein the biasing member (12) comprises a flexible member (14) mechanically coupleable between the sash locking member (11) and the recess (7), the flexible member (14) extending along part of the base (15) of the recess (7), the flexible member (14) being extendable further along the base (15) of the recess (7) as a result of compression of the flexible member (14) due to depression of the sash locking member (11).
12. A roof window (1) according to claim (11) wherein the flexible member (14) has a heel (17) spacing the flexible member (14) away from the base (15) of the recess (7), the flexible member (14) extending to a toe (18) resting on the base (15) of the recess (7) and a gap (21) between the underside of the flexible member (14) and the base (15) of the recess (7).
13. A roof window (1) according to claim (12) wherein the sash locking member (11) is mechanically coupled, flexibly or otherwise, to or formed integrally with the heel (17) of the flexible member (14) protruding forward from the heel (17) in a jaw like configuration, defining an expanding mouth (22) between the flexible member (14) and the sash locking member (11), the expanding mouth (22) comprising a gap (24) between the top of the flexible member (14) and a base of the sash locking member (11) allowing the sash locking member (11) to move in and out of the recess (7) between the locking position and the open position.
14. A roof window (1) according to any of claims (9) to (13) wherein an insert (25) is located in the recess (7), the insert (25) being an open profile thin walled or other such insert formed for snug fitting in the recess (7), the insert (25) and the movable barrier means (5) having co-operating retaining members (26), (27) for retaining the movable barrier means (5) in the recess (7), the retaining members (26), (27) of the insert (25) being in the form of two overhang members (26), (27) protruding part of the way across the opening of the insert (25).
15. A roof window (1) according to any of the preceding claims wherein the movable barrier means (5) has a sloped contact surface (28) formed for allowing movement of the sash (3) or frame (2) over the sloped surface (28) of the movable barrier means (5), the sloped surface (28) of the movable barrier means (5) being orientated relative to the sash (3) or frame (2) so that closing the sash (3) causes the sash (3) or frame (2) to move in a direction up the sloped surface (28) simultaneously depressing the movable barrier means (5) between the locking position and the open position.

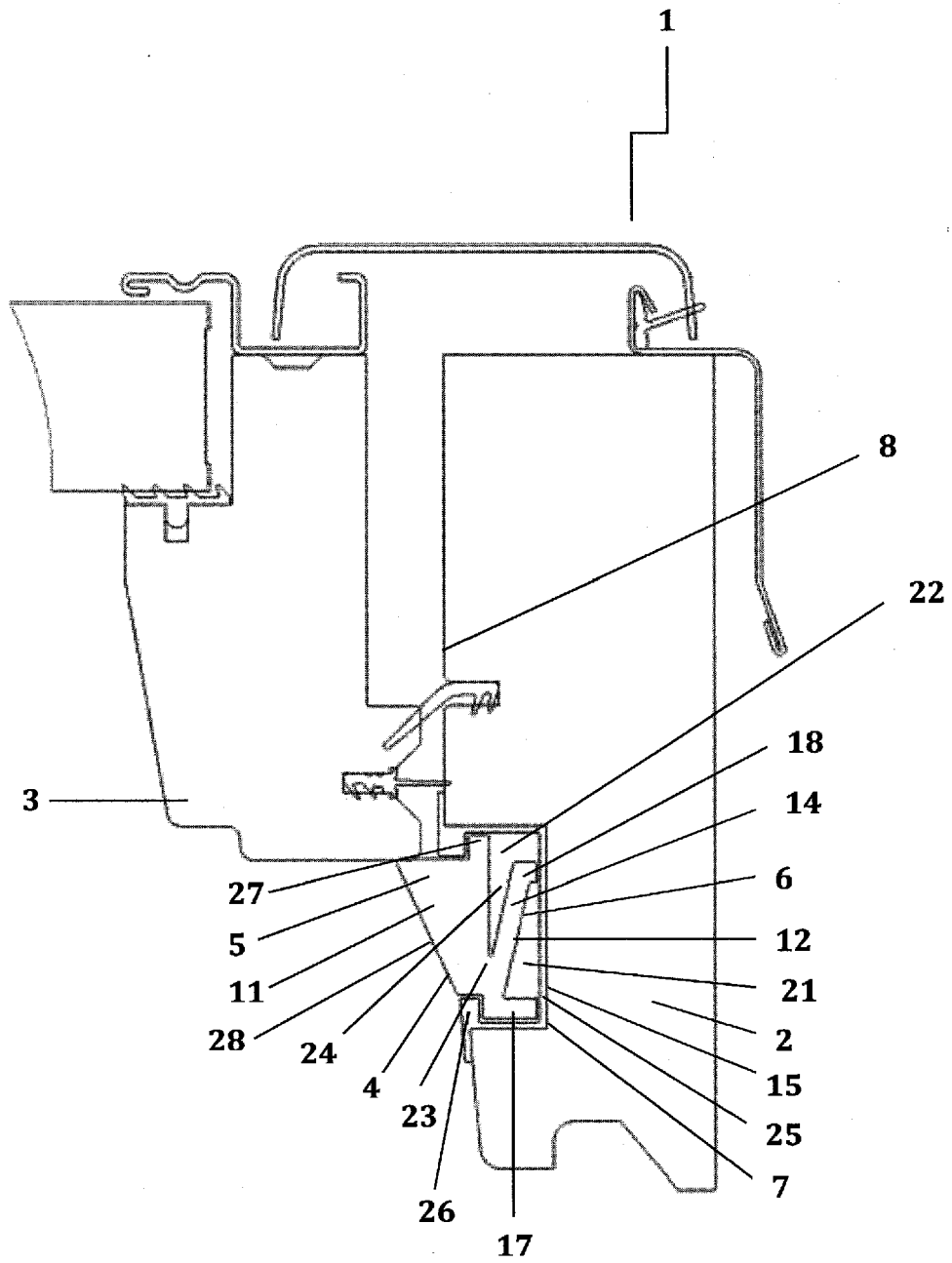


Figure 1



EUROPEAN SEARCH REPORT

Application Number  
EP 13 19 6336

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X A	WO 2004/018812 A1 (VKR HOLDING AS [DK]; HOLM CLAUS [DK]) 4 March 2004 (2004-03-04) * figures 1,6,7 * * page 6, line 35 - page 9, line 4 * -----	1-6, 8-10,14 7,11-13, 15	INV. E04D13/035 E05B63/00
X	EP 2 157 262 A1 (T J DE ROOIJ WOOD DESING [NL]) 24 February 2010 (2010-02-24) * figure 4 * -----	1-4,8,9	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04D E05B E05C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 17 March 2014	Examiner Tran, Kim Lien
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			

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EPO FORM 1503 03/82 (P04C01)

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

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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  
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17-03-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2004018812 A1	04-03-2004	AT 435352 T	15-07-2009
		AU 2003263213 A1	11-03-2004
		CN 1675444 A	28-09-2005
		EP 1537285 A1	08-06-2005
		WO 2004018812 A1	04-03-2004
-----			
EP 2157262 A1	24-02-2010	NONE	
-----			