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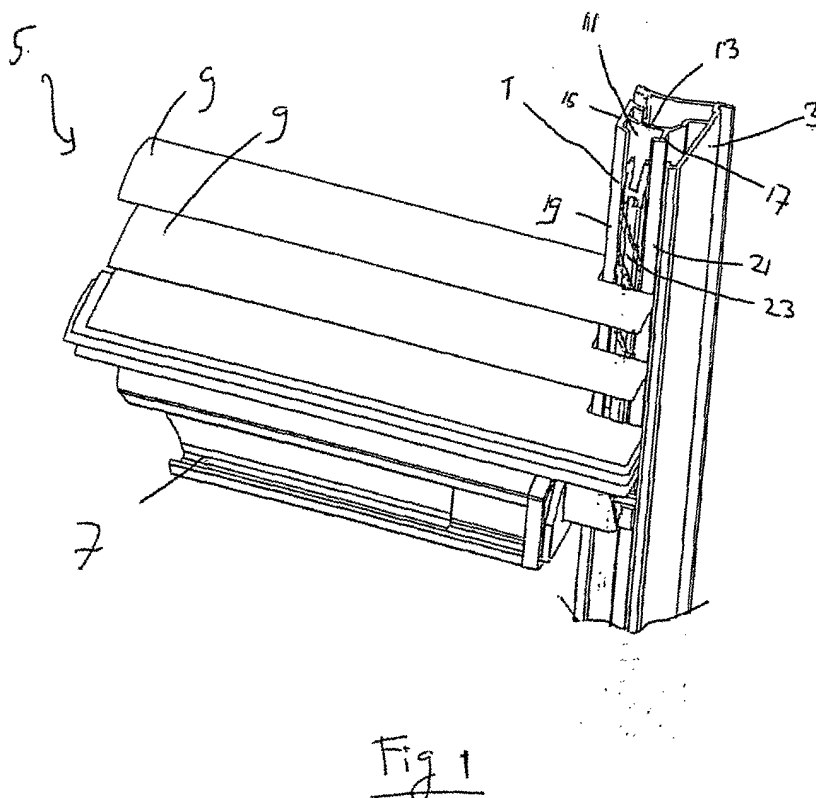
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(54) **Venetian blind**

(57) A slat slide (1) for carrying the slats (9) of a side guided venetian blind such that when the blind is completely raised all the slats are stacked on the slat slide, said slat slide being mountable in fixed relation relative to a bottom bar (7) and slidable relative to a side guide

(3) of the venetian blind, said slat slide comprising an elongate body (25) having opposite parallel first and second body sides (29, 31), a top (39) and a bottom (41) and wherein the slat slide comprises means (49, 51, 53) for adapting the overall length of the slat slide body.



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Description

[0001] This invention relates to a window covering with horizontal slats such as a venetian blind. More particularly this invention a slat slide or slide shoe for a side guided venetian blind in an inclined window for preventing the slats of the blind contacting the side guides when the blind is raised or lowered.

[0002] Such a slat slide is known from DE 31 13 957, where the slat slide is provided in fixed connection to the bottom rail of the venetian blind.

The slat slide carries the slats of the blind, and when the blind is completely raised all its slats are stacked along the length of the slat slide. A problem is that the slat slide is of a fixed length, but the number and thickness of the slats of venetian blinds vary with the size of the window and material of the slats.

So a range of slat slides of different length have to be provided for a range of blind sizes.

A solution to this problem has been presented in EP 0,879,340 where the bottom rail is mounted movable relative to the slat slide. When the blind is raised and the top of the slat slide abuts against the head rail of the blind or the top window sash member, the bottom rail slides upward until all slats are neatly contained between the head rail and the bottom rail. So only a single slat slide body can suit many slat stack sizes, since its effective length is varied by the bottom rail sliding along it.

However since the bottom rail can slide upward along the slat slide body unhindered, this can result in squeezing the slat stack between the head rail and the bottom rail. This can damage the slats by dents and the like in at least the uppermost slat.

[0003] In accordance with this invention a slat slide is provided for carrying the slats of a side guided venetian blind such that when the blind is completely raised all slats are stacked on the slat slide, said slat slide being mountable in fixed relation relative to a bottom bar and slidable relative to a side guide of the venetian blind, said slat slide comprising an elongate body having opposite parallel first and second body sides, a top and a bottom wherein the slat slide comprising means for adapting the overall length of the slat slide body.

According to one aspect of the length adapting means of the slat slide include at least one portion removable from said slat slide.

According to another aspect of the slat slide the at least one removable portion is a break-off portion defined by at least one preformed groove projecting from the first side to the opposite side of the slat slide body.

According to a further particular aspect of the invention the slat slide further comprises snag prevention means for preventing a slat when sliding along the slat slide during operation of the blind from getting snagged by the at least one preformed groove.

More particularly each at least one preformed grooves includes a pair of first and second opposite

groove lines crossing the slat slide body defining the groove between them and wherein said snag prevention means comprise the orientation of the at least one groove and its groove lines in an angle relative to a central axis of the elongated slat slide body, said angle preferably being chosen such that a line projecting from a start point of the second groove line on the first body side and perpendicular to it ends in a directly opposite projection point on the second body side wherein said opposite projection point is situated closer to the top of the slat slide than the end point of the first groove line, thus creating an area of overlap.

Yet another aspect of the slat slide of the invention is that each at least one preformed grooves includes a pair of first and second opposite groove lines crossing the slat slide body from a start point on the first body side to an end point on the second body side of the slat slide defining the groove between them and wherein said snag prevention means comprise the orientation of the at least one groove and its groove lines in an angle relative to a central axis of the elongated slat slide body and the distance between adjacent grooves, said angle and the distance between adjacent grooves are preferably being chosen such that a line projecting perpendicular from the start point of the first groove line on the first body side of a first groove, ends in a directly opposite projection point on the second body side wherein said opposite projection point is situated closer to the top of the slat slide than the end point of the first groove line of an adjacent groove that is situated above the first groove on the slat slide, thus creating an area of overlap.

[0004] Further aspects of the invention will be apparent from the detailed description below of particular embodiments and the drawings thereof, in which:

Figure 1 is a schematic perspective partial view a slat slide according to the invention in cooperation with a side guide of a venetian blind

Figure 2a and 2b show a top view and a side view of the slat slide of figure 1.

Figure 3a and 3b show a schematic representation of a number of angled preformed grooves in the slat slide body.

Figure 4 shows in schematic perspective view the slat slide of figure 1 which is shortened by breaking off a portion.

[0005] Figure 1 shows a slat slide 1 of a first embodiment in co-operation with a partially shown side guide profile 3 of a venetian blind 5 having a bottom rail 7 and a plurality of slats 9. The venetian blind is a blind that is suitable for being mounted in an inclined window, such as a roof window. When mounted in such windows the blind includes side guides for guiding the slats and preventing them from hanging away from the window by their weight. The side guide profile 3 also includes a channel 11 for slidably receiving the slat slide 1. The slat slide will carry the slats of the blind such that when the

blind is raised the slats are progressively lifted onto the slat slide and thus away from contact with the side guide channel. Thus preventing screeching sounds and wear and tear on both the side guide and on the slats which would occur if no slat slide would be present. The channel 11 is generally C-shaped in cross-section and includes a rear wall 13, left and right side walls 15, 17 perpendicular to the rear wall, and left and right opposite front flanges 19, 21 extending perpendicular from the side walls and parallel to the rear wall. A front opening 23 is defined between left and right front flanges 19, 21. The slat slide 1 as best shown in figure 2 is an elongated generally rectangular body 25, having a rear surface 27, first or left elongated body side and second or right elongated body side 29, 31 with first and second wings 33, 35 extending from the first and second body sides, a front or slat carrying surface 37, a top or ramp surface 39 for lifting the slats 9 of a venetian blind onto the slat carrying surface 37 and a bottom portion 41 for attaching the slat slide to the bottom rail 7. The general cross-sectional shape of the slat slide is configured to slidingly co-operate with the channel 11 of the side guide profile. The slat carrying surface 37 extends beyond the left and right front flanges 19, 21 of the channel in order to keep the slats from sliding along the side guide when the blind is lifted.

The slat slide of the invention is provided means for adapting the overall length of the slat slide body. This is useful because each blind has a different number of slats and also different types of slats having different thickness can be used. The length of the slat slide can be adapted to the blind. If the length of the slat slide body would not be adapted, it would either be too short for the blind, and not all slat could be accommodated on the slat slide. Or the slat slide would be too long and would abut against the head rail or window frame before the blind from is totally raised causing a light gap between the head rail and bottom rail by unstacked slats. In a first embodiment the means for adapting the overall length include at least one break-off portion defined by a preformed groove. In the embodiment of figures 2A and 2B the slat slide 1 has three preformed grooves 43, 45, and 47 defining as many break-off portions 49, 51 and 53. Each groove comprises a first or top groove line 43A, 45A, 47A and a second or bottom groove line 43B, 45B, 47B defining the actual groove between them. The break-off portions allow the length of slat slide to be adapted to the required length. As shown in figure 2B the grooves 43, 45 and 47 can have counter grooves 43C, 45C, 47C in the rear surface of the slat slide. This is of course not necessary if the grooves 43, 45, 47 in the front surface of the slat slide are deep enough for the break-off function. It is also feasible to have only grooves in the rear of the slat slide, like grooves 43, 45, 47 that are deep enough for the break-off function.

[0006] Since the slats 9 are to slide along the slat carrying surface 37 in case there are grooves in the front of the slat slide as shown in the figures, there is a risk

that slats get snagged by the grooves. The raising of the blind will than not progress smoothly, and slats can even get stuck in a groove damaging the slat and maybe even the blind in the process. Therefore the grooves 43, 45, 47 as shown in the figures 2A, 2B are designed such as to prevent the slats from getting snagged by the grooves of the break-off portions that are not removed. This is schematically shown in figures 3A and 3B. The snag prevention means include the angle α of the grooves relative to a vertical axis A of the slat slide. A slat is less likely to get stuck in an angled groove than in a straight groove that is perpendicular to the slat slide body sides. The angle α is carefully chosen. Depending on the width of the groove between first groove line 43A, 45A, 47A and second groove line 43B, 45B, 47B the groove angle α provides an area of overlap 55 in the slat carrying surface 37 that will carry any slat sliding over the adjacent groove. Since the slat is now always carried by the slat slide body, even when crossing the groove, it cannot fall in the groove or get 'snagged' by it. The area of overlap 55 for angled groove 43 is the area extending from the first groove line 43A to a portion on the second slat body side 31 between a projection point 57 and the end point 59 of the first groove line 43A. The projection point 57 is the end point of a line 67 projecting from the start point 63 of the second groove line 43B and running perpendicular to axis A across the slat body. Similarly the other grooves 45, 47 on a slat slide are also configured to have such an overlap portion. The height H of each overlap portion between projection point 57 and end point 59 must be more than the thickness of a single slat.

[0007] Additionally where more than a single groove is present in the slat carrying surface of a slat slide body the distance between two adjacent grooves e.g. 43 and 45 preferably is such that a similar second overlap 61 A is created. If this additional overlap is not present the grooves cannot be close together. If the grooves are not close together the break-off portion become larger and the adaptation of the length of the slat slide body can be used in less situations. For a more versatile slat slide body it is desirable to have the grooves relatively close together so that the slat slide can be used for a number of different sizes of blinds and types of slats. The second overlap 61 A is shown in figure 3B for angled grooves 43 and 45 and is the area extending from the first groove line 43A of top groove 43 to the second slat body side 31 between a projection point 57A and the end point 59 of the first groove line 43A on the second slat body side 31. The projection point 57A is the end point of a line 67A projecting from the start point 63A of the first groove line 45A of adjacent groove 45 below groove 43 and running perpendicular to axis A across the slat body. The height H' of the overlap portion 61A between projection point 57A and end point 59 is less than height H of overlap 55 and but must also be more than the thickness of a single slat.

[0008] Preferably the grooves 43, 45, 47 run through the slat carrying surface 37 of the slat slide body 1, so

that when a break off section 49, 51, 53 is removed a clean surface is exposed. In case of grooves solely in the rear of the slat slide body there is a risk that ragged edges are formed which snag the slats when they slide over slat slide. This can of course be solved by simply sanding or polishing the ragged edge, but constitutes an additional task for the installer or consumer.

Preferably the grooves 43, 45, 47 are V-shaped grooves as illustrated in figure 2B. The V-shape is preferred because with it a ramp can be created at the top of the shortened slat slide body. The ramp is suitable for scooping up the slats when the blind is raised. Conventional slat slides have a ramp portion at the top. A shortened slat slide without ramp would not function smoothly. The V has a downwardly sloped surface 43D, 45D, 47D from first groove line 43A, 45A, 47A to the bottom of the V, and an opposite upwardly sloped surface 43E, 45E, 47E from the bottom towards the second groove line 43B, 45B, 47B.

[0009] The upwardly sloped surface 43E, 45E, 47E of each V-shaped groove will be exposed when the adjacent break off portion 49, 51, 53 is removed and will form a top ramp 43E, 47E, 49E similar to ramp 39 of the slat slide. This is most clearly shown in Figure 4.

[0010] The preferred angle α of the grooves is between 15 and 30 degrees. The upwardly sloped surface 43E, 45E, 47E of each V-shaped groove 43, 45, 47 forming a sloped ramp when the adjacent break-off portion 49, 51, 53 is removed, is preferably between 25 and 35 degrees.

In general slats having a thickness of approximately 0.2mm are most likely to be used, like conventional aluminum slats for venetian blinds. In which case the most preferable angle of the grooves is an angle α of 20 degrees. The height H or H' of the overlap area is than preferably around 0.3mm, but always at least more than the slat thickness. With these slats the most preferred upwardly sloped surface angle for creating the ramp when the slat slide body is shortened is about 30 degrees.

[0011] The clean break surface or exposed ramp surface 43E, 45E, 47E at least has to be present on the part of the ramp of the shortened slat slide that projects beyond the left and right front flanges 19, 21 of channel 11 of the side guide profile 3. Having at least front grooves ensures the clean break on the ramp that is exposed after breaking-off a section without the need of additional sanding or other smoothening actions by installer or consumer. The number of grooves is related to the number of break-off sections.

As shown in figures 1, 2 and 4 the slat slide has a generally W-shaped cross-section. The shape of the slat slide is chosen to co-operate with the channel in the side guide. If the channel has a different shape and size the slat slide body will have to be adapted thereto. In the figures 2A, 2B in particular the channel-like recesses in front and rear are for injection molding purposes and present no technical function to the function of the slat

slide as such. The slat carrying surface 37 projects approximately 1 mm beyond the front flanges 19, 21 of the side guide channel 11.

Claims

1. A slat slide (1) for carrying the slats (9) of a side guided venetian blind such that when the blind is completely raised all the slats are stacked on the slat slide, said slat slide being mountable in fixed relation relative to a bottom bar (7) and slidable relative to a side guide (3) of the venetian blind, said slat slide comprising an elongate body (25) having opposite parallel first and second body sides (29, 31), a top (39) and a bottom (41) and wherein the slat slide comprises means (49, 51, 53) for adapting the overall length of the slat slide body.
2. The slat slide of claim 1, wherein said length adapting means including at least one portion (49, 51, 43) removable from said slat slide.
3. The slat slide of claim 2, wherein said at least one removable portion is a break-off portion (49, 51, 53) defined by at least one preformed groove (43, 45, 47) projecting from the first side (29) to the opposite side (31) of the slat slide body.
4. The slat slide of claim 3, wherein the slat slide further comprises snag prevention means (α , 55, 61A, H, H') for preventing a slat when sliding along the slat slide during operation of the blind from getting snagged by the at least one preformed groove.
5. The slat slide of claim 4, wherein each at least one preformed groove includes a pair of first and second opposite groove lines (43A, 43B, 45A, 45B, 47A, 47B) crossing the slat slide body defining the groove (43, 45, 47) between them and wherein said snag prevention means comprise the orientation of the at least one groove and its groove lines in an angle (α) relative to a central axis (A) of the elongated slat slide body, said angle (α) preferably being chosen such that a line (67) projecting from a start point of the second groove line (43B, 45B, 47B) on the first body side (29) and perpendicular to it ends in a directly opposite projection point (57) on the second body side (31) wherein said opposite projection point (57) is situated closer to the top of the slat slide than the end point of the first groove line, thus creating an area of overlap (55).
6. The slat slide of claim 4 wherein each at least one preformed groove (43, 45, 47) includes a pair of first and second opposite groove lines (43A, 43B, 45A, 45B, 47A, 47B) crossing the slat slide body from a start point on the first body side to an end point

on the second body side of the slat slide defining the groove (43,45,47) between them and wherein said snag prevention (α ,H,H') means comprise the orientation of the at least one groove and its groove lines in an angle (α) relative to a central axis (A) of the elongated slat slide body and the distance between adjacent grooves, said angle (α) and the distance between adjacent grooves are preferably being chosen such that a line (61 A) projecting perpendicular from the start point of the first groove line (45A) on the first body side (29) of a first groove (45), ends in a directly opposite projection point (57A) on the second body side (31) wherein said opposite projection point (57A) is situated closer to the top of the slat slide than the end point (59) of the first groove line (43A) of an adjacent groove (43) that is situated above the first groove (45) on the slat slide, thus creating an area of overlap (61A).

7. The slat slide of claim 5 or 6, wherein the height of the area of overlap (H, H') between the projection point (57,57A) and the end point (59) of the first groove line (43A) is larger than the thickness of a slat.
8. The slat slide of claim 5, 6 or 7 wherein the height (H,H') area of overlap is at least 0.3mm.
9. The slat slide of claim 5, 6, 7 or 8 wherein the angle (α) is preferably between 20 and 30 degrees.
10. The slat slide of any of the claims 3-9 wherein the preformed groove is a V-shaped groove having a downward sloped surface (43D,45D,47D) from the first groove line (43A, 45A,47A) towards the rear of the slat slide body and an upwardly sloped surface (43E, 45E, 47E) from the bottom of the V shape towards the second groove line (43B, 45B, 47B).
11. The slat slide of claim 10 wherein the angle (α) of the upwardly sloped surface (43E, 45E, 47E) is between 20 and 40 degrees.
12. The slat slide of claims 10 or 11 wherein the upwardly sloped surface (43E, 45E, 47E) of the V-shaped groove (43, 45, 47) forms a ramp surface for lifting slats on the slat slide body when the break-off portion (49,51,53) defined by the groove (43, 45, 47) is removed.
13. The slat slide of claims 10, 11 or 12 wherein the upwardly sloped surface (43E, 45E, 47E) of the V-shaped groove (43,45,47) is preferably 30 degrees.

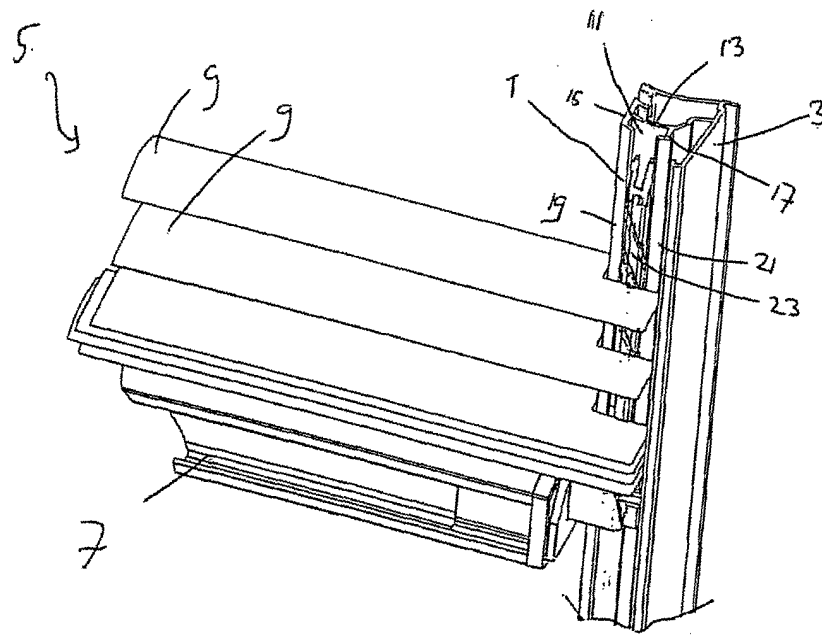


Fig 1

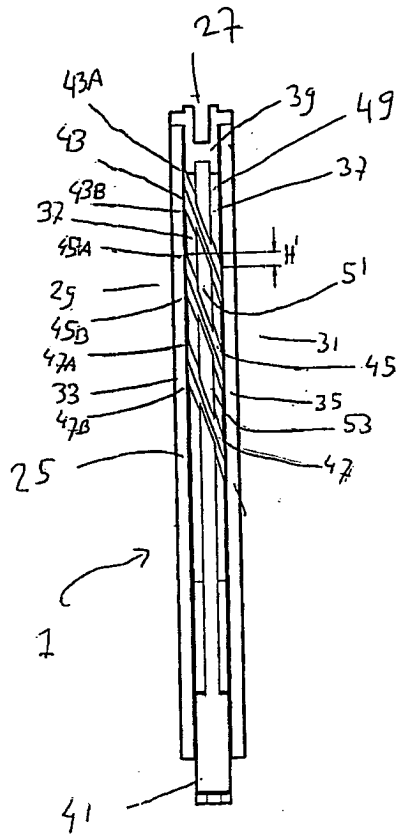


Fig 2A

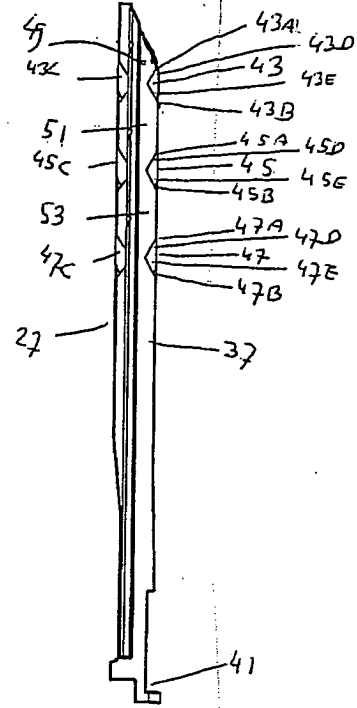


Fig 2B

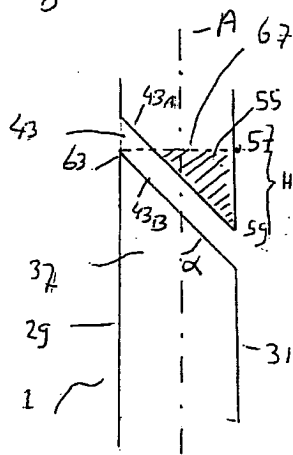


Fig 3A

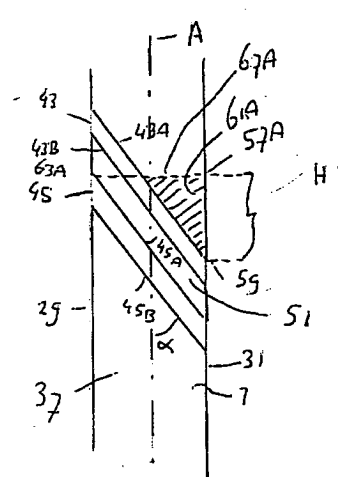


Fig 3B

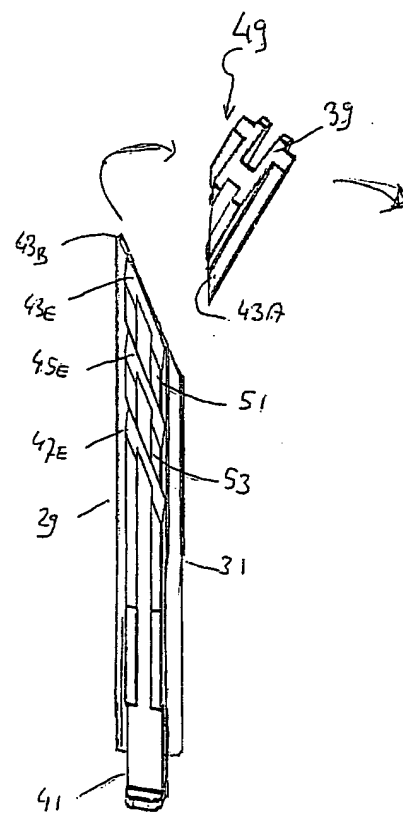


Fig 4



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EUROPEAN SEARCH REPORT

Application Number
EP 05 25 1114

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)
A,D	EP 0 879 340 A (VELUX INDUSTRI A/S) 25 November 1998 (1998-11-25) * paragraphs [0009] - [0013]; figures 1-4 *	1-13	E06B9/327 E06B9/388
A,D	DE 31 13 957 A1 (HANSA METALLWARENGESELLSCHAFT MBH THIESSEN & HAGER) 21 October 1982 (1982-10-21) * pages 7-9; figures 2,3 * -----	1-13	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 April 2005	Examiner Kofoed, P
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 05 25 1114

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22-04-2005

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0879340	A	25-11-1998	DK 127695 A	16-05-1997
			AT 189504 T	15-02-2000
			AU 7210296 A	05-06-1997
			CA 2235342 A1	22-05-1997
			DE 69606561 D1	09-03-2000
			DE 69606561 T2	14-09-2000
			DK 879340 T3	29-05-2000
			EP 0879340 A1	25-11-1998
			JP 2000500200 T	11-01-2000
			PL 326845 A1	26-10-1998
			RU 2147661 C1	20-04-2000
			US 6035920 A	14-03-2000
			CN 1202216 A ,C	16-12-1998
			CZ 9801510 A3	17-02-1999
			WO 9718378 A1	22-05-1997
			ES 2144265 T3	01-06-2000

DE 3113957	A1	21-10-1982	NONE	

EPO FORM P0459

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