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(72) Inventors:
• **Filsø, Carsten**
7100 Vejle (DK)
• **Træholt, Carsten**
6933 Kibæk (DK)

(71) Applicant: **Skjern Vinduer A/S**
6900 Skjern (DK)

(74) Representative: **Sundien, Thomas et al**
Zacco Denmark A/S
Hans Bekkevolds Allé 7
2900 Hellerup (DK)

(54) **Energy windows with glass as bearing part**

(57) This invention relates to a sash part with a glass part to be used as part of an energy window, wherein said sash part with a glass part is adapted for mounting

in a frame of said energy window where said sash part is glued to said glass part, resulting in an energy window where the glass part is the bearing part of said energy window.

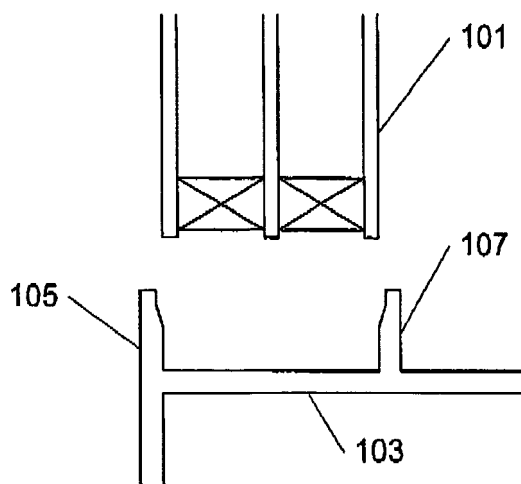


Fig. 1a

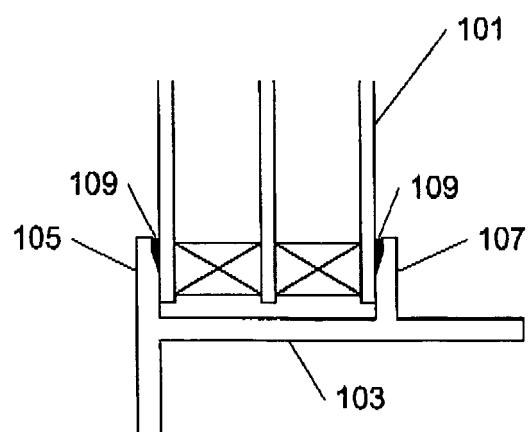


Fig. 1b

Description

FIELD OF THE INVENTION

[0001] The invention concerns an energy window and a method of making an energy window where a sash part with a glass part is adapted for mounting in a frame of the energy window, resulting in an energy window where the glass part is the bearing part.

BACKGROUND OF THE INVENTION

[0002] The focus on energy usage reduction has increased significantly over the last years and this also includes focus on buildings and the isolation of buildings.

[0003] In connection with buildings a lot of focus and research effort has been given to windows and this has resulted in energy windows typically comprising multiple layers of glass spaced apart from each other.

[0004] Research has resulted in glass for windows that isolates extremely well, and therefore it has become possible that a large area of the building is constituted by glass so more daylight will enter the interior of the building, but the frames surrounding and holding the glass still take up a relatively large part of the entire area taken up by the window, since they have to be strong enough to hold the glass.

[0005] The governments keep increasing the demand to energy windows, and energy windows fulfilling future demands require that a special gas, e.g. kryptonite, is added between the glass layers. A problem is that these special gasses, e.g. kryptonite, are quite expensive thereby resulting in expensive energy windows. Further, the adding of kryptonite can be a quite troublesome process.

OBJECT AND SUMMARY OF THE INVENTION

[0006] The object of the invention is to solve the above-mentioned problems.

[0007] This is obtained by the present invention where a sash part with a glass part is to be used as part of an energy window, wherein said sash part with a glass part is adapted for mounting in a frame of said energy window where said sash part is glued to said glass part, resulting in an energy window where the glass part is the bearing part of said energy window.

[0008] This configuration reduces the area taken up by the sash part and results in the glass part of the window taking up a larger part of the total area of the entire window (sash + glass).

[0009] In the prior art documents, glass is first inserted into the sash part and then glass and sash are mounted in the frame part. Thus, for a given window area, the glass portion has a reduced area.

[0010] In the present invention, the effective area of glass in the window frame is increased. This increases the effective amount of sunlight entering into the building

through windows.

[0011] If the glass is broken or damaged, the glass and sash are changed, whereas with today's windows you can change the glass part without having to change the sash along with it.

[0012] In one embodiment of the invention the sash part is made from fiber composite.

[0013] In one embodiment of the invention the sash part comprises four side pieces, each side piece having been separately connected to the glass part.

[0014] The invention also concerns an energy window comprising a sash part according to claim 1-3 and a frame part.

[0015] The invention also concerns a method of making a sash part with a glass part for mounting in a window frame, wherein said sash part is glued on said glass part resulting in an energy window where the glass part is the bearing part of said energy window.

[0016] In one embodiment of the method of making a sash part with a glass part the sash part comprises 4 side pieces, each side piece being separately connected to the glass part.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] In the following, preferred embodiments of the invention will be described referring to the figures, where;

figure 1a and 1b illustrate the principle behind an energy window according to the present invention, in an unassembled state and in an assembled state, respectively,

figure 2 illustrates the parts of the energy window according to an embodiment of the present invention,

figure 3a, 3b and 3c illustrate an embodiment of an energy window described in figure 2, seen from different angles,

figure 4a and 4b illustrate the window in an opened position seen from different angles.

DESCRIPTION OF EMBODIMENTS

[0018] Figure 1 a and 1 b illustrate the principle behind an energy window according to the present invention, in an unassembled state and in an assembled state, respectively.

[0019] In figure 1a the glass part 101 of a window and the profile of the sash part 103 are illustrated. The sash profile comprises a U shape with two flanges 105, 107 ensuring that the sash part 103 can be positioned around the edges of the glass part 101. The glass part 101 is thereby positioned between the flanges 105, 107 and the distance between the flanges 105, 107 corresponds to the thickness of the glass part 101 in such a way that the

flanges can be mounted around the glass part. In figure 1b the sash part 103 has been connected to the glass part by mounting the sash part 103 on the glass part, and further glue 109 has been used to secure the sash part to the glass part 101. In this example the glue is positioned between the flanges 105, 107 and the edge of the glass part. Alternatively the glue 109 could be positioned differently; the important thing is that a sufficiently strong connection between the glass part 101 and the sash part 103 is obtained. The glue 109 could e.g. be fast drying hot melt glue or any other glue being useable for creating a strong connection between the material of the sash part 103 and the glass part 101.

[0020] In figure 2 the parts of the energy window according to an embodiment of the present invention are illustrated as a cut seen from the side. Here the side 200 is outside and the side 202 is inside.

[0021] The window comprises the glass part 201 and the sash part 203 with flanges 205, 207 mounted around the edge of the glass part 201. In this embodiment the sash part 203 has been designed having a composite sash part 204 - and on the inside a wooden sash part 209. The window is mounted to a frame part 211 via hinges 210, where hinge elements are mounted on the sash part 203 of the window and the frame part 211, respectively, enabling opening of the window. The frame part 211 has been designed having a composite frame part 213 and a wooden frame part 215. In the embodiment in figure 2 the window has been mounted to the composite frame part 213 of the frame part 211. Further, gaskets 217 are mounted between the frame and the sash enabling that the frame and the sash are closely sealed, which further helps reducing the heat migrating from the inside to the outside of the window in the building.

[0022] Figure 3a, 3b and 3c illustrate an embodiment of an energy window described in figure 2, seen from different angles. In figure 3a the window is seen from the front. Figure 3b shows the window along the axis A-A where 301 is the glass part and 303 is part of the frame. Here the side 300 is outside and the side 302 is inside. The encircled area D is enlarged and identical to figure 2. Figure 3c shows the window along the axis B-B where 301 is the glass part and 303 is part of the frame. Again, here the side 300 is outside and the side 302 is inside and 304 is the top and 306 is the bottom of the window.

[0023] Figure 4a and 4b illustrate the window in an opened position seen from different angles. On the figures it can be seen that the sash part 301 with the glass part in one embodiment opens up in a way where the sash is hinged 305 to the sides of the frame 303, and where the bottom of the sash part opens up away from the frame. Figure 4b is seen from the same angle as figure 3c, but with the window opened instead of closed. Again, here the side 300 is outside and the side 302 is inside and 304 is the top and 306 is the bottom of the window.

[0024] In an embodiment, the sash is hinged to the bottom or the top of the frame so that the sash part can

open up in any way the user wants it to. In another embodiment the sash is fixed to the frame rendering it impossible to open the window.

Claims

1. A sash part with a glass part to be used as part of an energy window, wherein said sash part with a glass part is adapted for mounting in a frame of said energy window **characterized in that** said sash part is glued to said glass part, resulting in an energy window where the glass part is the bearing part of said energy window.
2. A sash part according to claim 1, wherein said sash part is made from fiber composite.
3. A sash part according to claims 1-2, wherein said sash part comprises four side pieces, each side piece having been separately connected to the glass part.
4. An energy window comprising a sash part according to claims 1-3 and a frame part.
5. A method of making a sash part with a glass part for mounting in a window frame, wherein said sash part is glued on said glass part resulting in an energy window where the glass part is the bearing part of said energy window.
6. A method of making a sash part with a glass part according to claim 5, wherein said sash part comprises 4 side pieces, each side piece being separately connected to said glass part.

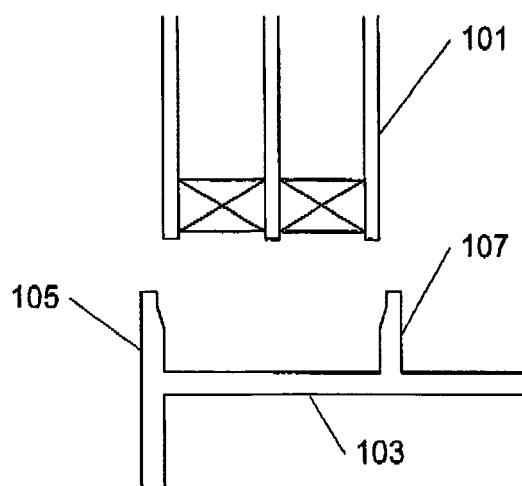


Fig. 1a

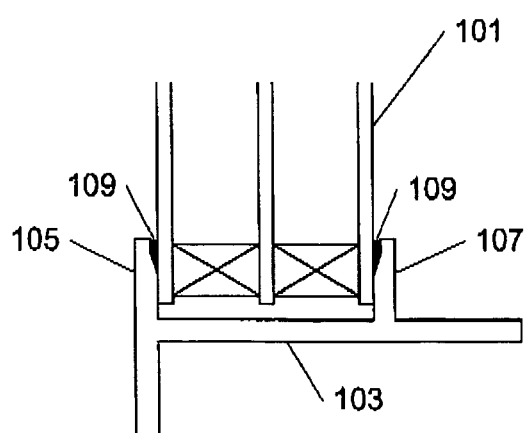


Fig. 1b

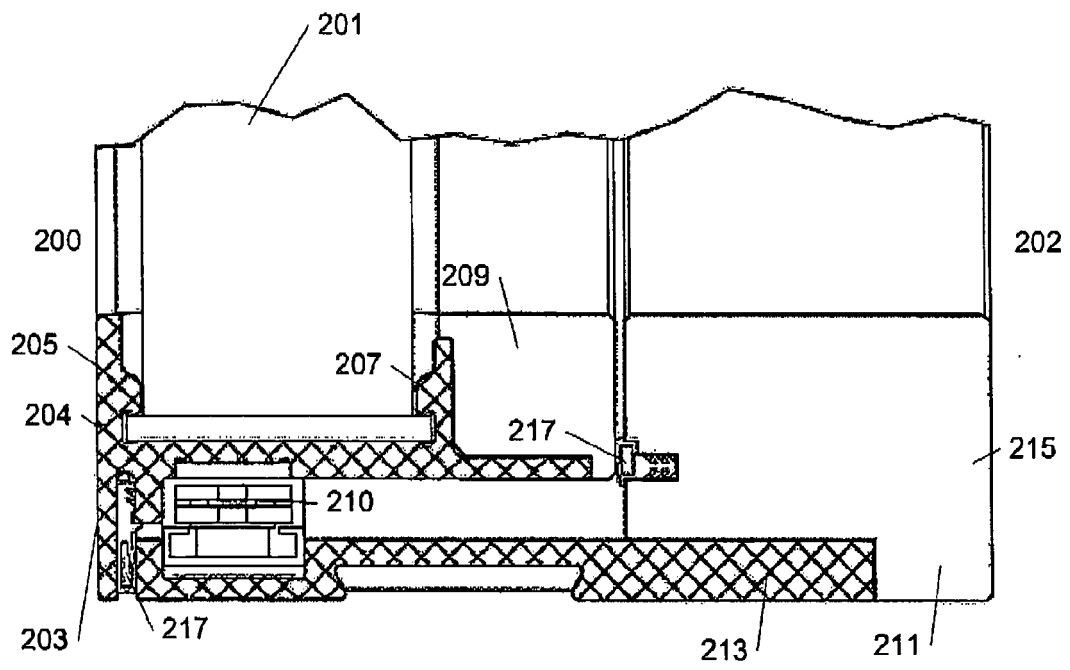


Fig. 2

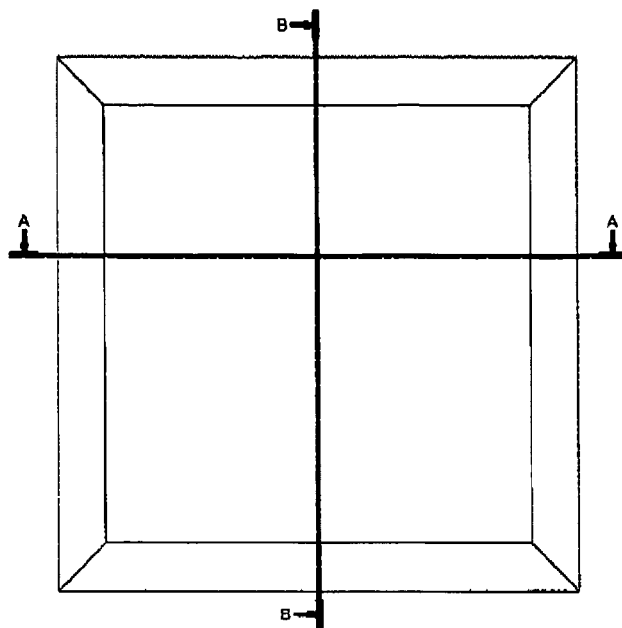


Fig. 3a

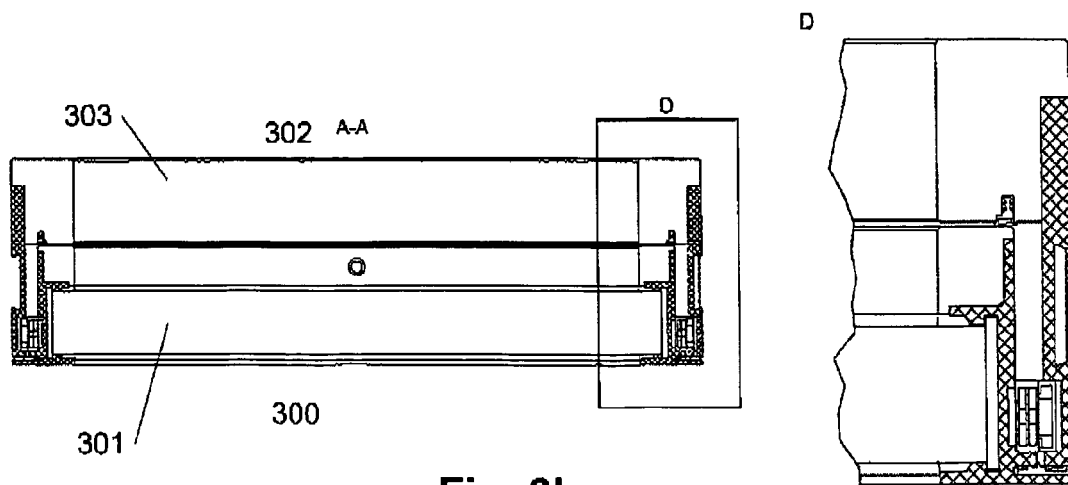


Fig. 3b

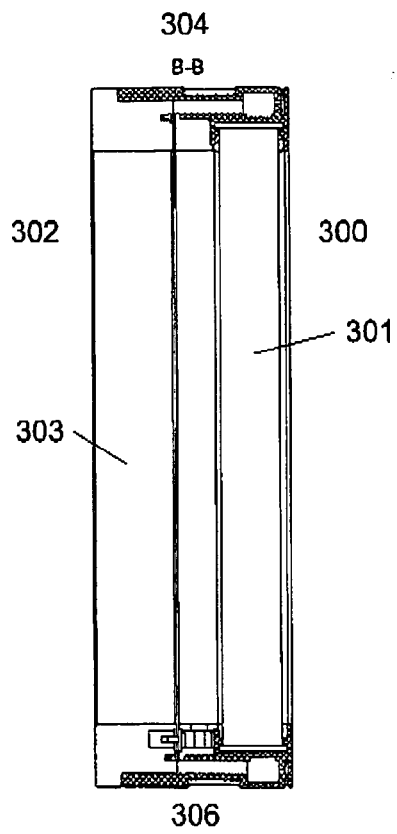


Fig. 3c

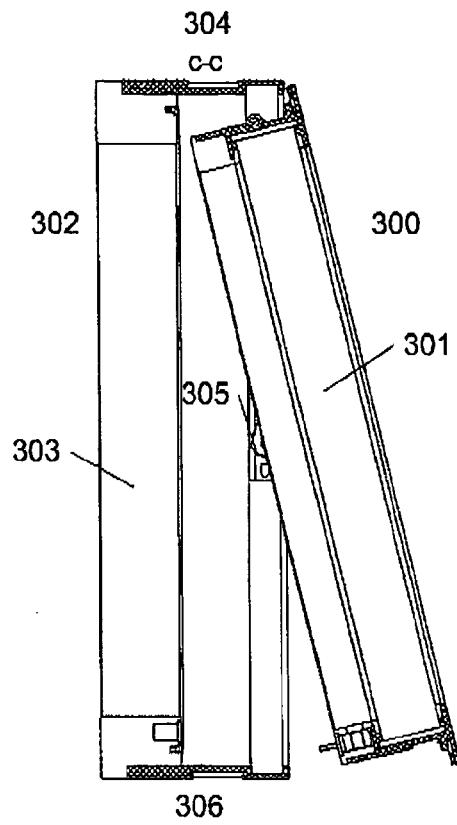


Fig. 4b

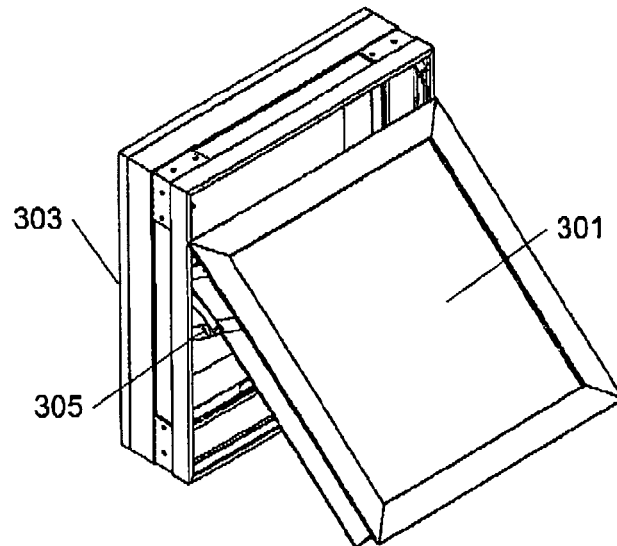


Fig. 4a



EUROPEAN SEARCH REPORT

Application Number
EP 10 00 0001

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	FR 2 881 784 A1 (IMTEC SARL [FR]) 11 August 2006 (2006-08-11) * page 1, line 19 - page 2, line 22; claims 1-4; figure 1 *	1-6	INV. E06B3/54 E06B3/56
X	US 2005/081981 A1 (HEIKKILA KURT E [US]) 21 April 2005 (2005-04-21) * paragraph [0019] - paragraph [0029]; claims 1,5,8,9; figures 1,2A,2B,2C *	1-3,5-6	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 4 March 2010	Examiner Kofoed, Peter
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.**

EP 10 00 0001

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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04-03-2010

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
FR 2881784	A1	11-08-2006	NONE	
US 2005081981	A1	21-04-2005	CA 2481473 A1	16-04-2005