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(54) **Roofwindow frame structure and roofwindow**

Dachfensterrahmenstruktur und Dachfenster

Structure de châssis d'une fenêtre de toiture et fenêtre de toiture

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Description

FIELD OF THE INVENTION

[0001] The invention relates to a window frame used to install a window and to a sloped roof window according to the preambles of claims 1 and 10, respectively. Such window frames and windows are known eg. from WO 98/22684.

BACKGROUND OF THE INVENTION

[0002] To construct a window in a sloped roof, first need to install the frame in the roof by means of supporters, then fit the sash with glass on the frame, with the frame and the sash covered with a covering and a flashing part and some other necessary parts.

[0003] The combination of the frame, the sash with other means or parts and the combination of the frame with the sash satisfies people's normal use of the window constructed in the sloped roof.

[0004] Apparently, all the parts of the window, especially the frame is very important, the structure of the frame and other parts determine for the entire window the production process, production cost, installation, connection, seal, waterproof, flashing part, usage and maintenance and so on.

[0005] Generally, the frame and the top, bottom and outward facing side part of the sash is covered to protect the wood material of the frame and the sash, so that the weather for example the rain, the sun, or the blizzard does not erode the wood or other material of the frame or sash. The sash covering comprises top covering, side covering and bottom covering, the sash bottom covering covers the outward facing side of the bottom part thereof. In order to cover the bottom part of the sash, the bottom covering is exposed in the air. Particularly after the installation of the exterior vertical side of the bottom covering on the sash, it will be easily scratched by other sharp and hard material during transportation, installation, utilization and maintenance, or damaged by the friction with the floor or the wall, This severely will cause the failure of the bottom covering and reduces its life. Meanwhile it brings the inconvenience to the utilization and maintenance, increases the production costs and consumes costs. For example, in the application WO99/51830 "AN OPENABLE WINDOW WITH MAIN FRAME AND SASH COVERING MEMBERS", the covering member in its published specification is the like.

[0006] In the application WO99/51831 "A ROOF WINDOW WITH MAIN FRAME AND SASH COVERING MEMBERS", the exterior side of the bottom frame is covered by the frame bottom covering, the exterior side of the bottom sash is covered by the sash bottom covering, which covers at the same time the frame bottom covering, then the exterior cavity formed in between may produce a vertex which prevent the frame and the sash from the interior erosion by the weather. Although this bottom cov-

ering structure is well windproof and waterproof, its frame bottom outward facing front surface is a complete vertical surface, refer to this vertical surface, the sash bottom covering is being outward away from the frame bottom, also it will produce the same damage problem of the sash bottom covering.

[0007] Besides, for the flashing part, which connects to the frame bottom covering, is entirely constructed in the air at the outward front side of the frame bottom. With a slight collision by the parts, it may cause the unsteadiness of the flashing part. Plus the flashing part is usually made of light metal or complex material, the collision between parts or heavier force tends to deform the flashing parts, thus jeopardize the usage thereof.

[0008] Under certain circumstance, it is necessary to configure vertically several windows in the sloped roof, this needs to connect the two vertically adjacent windows, and then waterproof and drain the lower combination part of the upper window and the upper combination part of the lower window. Due to the limitation of the aforesaid frame structure, it will cause the same unreasonable waterproof and drainage in the combination part.

[0009] Nowadays, with the development of the material technology, some high intensity, water resistant, erosion resistant material is used on the frame and the sash, it may lead to an increase of the material costs; the consumption needs in different areas will vary with the weather and the environment. The change of the production will lead to change of the window parts, increase of the production costs. To lower the costs, improve the performance, make it more competitive, make the production of the window frame simpler and more convenience, cut down the material cost to its maximum extent without decreasing the technical performance, all are the real problems people longing for solutions.

SUMMARY OF THE INVENTION

[0010] In order to overcome the disadvantage of the prior art, the purpose of the present invention is to provide a frame structure which can well cooperate with the window parts.

[0011] Another purpose of the present invention is to provide a frame structure, which effectively protect the sash bottom covering.

[0012] Another purpose of the present invention is to provide a frame structure, which easily connects the adjacent vertically lined windows.

[0013] Another purpose of the present invention is to provide a frame structure, which is low cost, convenient made.

[0014] Another purpose of the present invention is to provide a sloped roofwindow, which comprises a window frame according to the invention.

[0015] Therefore, the present invention provides a window frame, according to claim 1 and a sloped-roof window according to claim 10.

[0016] Additional preferable features of said window

frame and said sloped-roof window are contained in dependent claims 2 to 9 and 11 to 17 respectively.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]

Fig. 1 is a perspective view of an embodiment of a window frame according to the invention;
 Fig. 2a is a cross section of the bottom part in Fig. 1;
 Figs. 2b - 2c are a cross section of the bottom part according to other embodiments of the invention;
 Fig. 3 is a cross section of the side part in Fig. 1;
 Fig. 4 is the cross section of the top part in Fig. 1;
 Fig. 5 is the cross section of the entire assembly including the frame bottom part, sash bottom part and the covering;
 Fig. 6 is a partial cross section view of the frame interior structure according to the invention;
 Fig. 7 is a perspective view of the window according to the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] The invention will now be explained in detail in the following with reference to the drawings and embodiment:

[0019] Referring to Fig. 1, the window frame 100 of the patent comprises a top part 110, a bottom part 150 and two side parts 130. The frame may be formed into a single piece or be assembled by separate parts, which are made from various materials. For example, the top part, bottom part and side parts are mould from aluminum alloy or plastic, or other metal or nonmetal composite materials.

[0020] As shown in Fig. 2a, an operative surface 153 is extended from the top edge 151 of the front surface (the outward facing exterior surface) of bottom part 150 gradually downward to the bottom edge 152. It cooperates with a flashing part (not shown) that is connected to the frame. The operative surface 153 can cooperate well with the window members; in particular with the flashing part (not shown) having a curved surface, it also provides good support and protection of the flashing part, and improves the drainage of the window.

[0021] Figs. 2a - 2c show a part of the window frame incorporated respectively with operative surfaces which are concave. The front surface of the bottom part 150 (the exterior surface of the bottom 150 facing outward) in Figs. 2a-2c extends forward and gradually downward from the top edge 151 to the front bottom edge 152 of the bottom part. Between the top edge 151 and the bottom edge 152 of the bottom part is at least one operative surface 153 provided for cooperating with a flashing part (not shown) connected with the frame. The operative surface 153 can well cooperate with the corresponding window members, especially with the flashing part to provide a good support and protection of the flashing part, and

hence an improved waterproof and drainage with the window.

[0022] This thickness determines the position of the perimeter basic edge of the frame exterior surface.

5 [0023] The operative surface 153 is concave as in Figs. 2a and 2b. The preferable operative surface is such a concave one as shown in Fig. 2a, so that it can be easily installed and cooperate with other members.

10 [0024] Fig. 2b shows that a cross section of the concave surface is profiled by straight lines.

[0025] As shown in Fig. 2a, the operative surface 153 is extended from the top edge 151 of the front surface (the outward facing exterior surface) of bottom part 150 gradually downward to the bottom edge 152. It cooperates with the flashing part (not shown) having a curved surface, it also provides good support and protection of the flashing part, and improves the drainage of the window.

15 [0026] Fig. 2c shows that the cross section of the concave surface is curved.

20 [0027] The operative surface 153 of the bottom part 150 extends from the front edge 154 outwards beyond the bottom covering 450 connected with the sash 200, as shown in Fig. 5. Thus, the operative surface 153 extends from the top edge 151 to the front surface edge 154 and outwards exceeds the exterior surface of the bottom covering 450. This extended surface well protects the bottom covering 450, provides an expanded supporting area for the flashing part, and facilitates the rain drainage. In Fig. 5, the sash bottom covering 450 also covers the frame bottom covering 350.

25 [0028] The front surface edge 154 is the bottom edge of the operative surface 153 but it may be also the top edge 154 of the second front surface 155 of the horizontal part.

30 [0029] The operative surface 153 shown in Fig. 2 is located at the bottom part of the window frame or it may also be located at the top part of the frame, or both at the top part and at the bottom part.

35 [0030] When the frame 100 is integrated by molding, there is perimeter basic edge 131 at the exterior surface of the frame 100, as shown in Fig. 1. The position of the basic edge 131 can be determined by the position of the top edge 151 of the operative surface 153 at the exterior surface. There is configured a slope along the basic edge 131 facing inwards at the exterior surface of the frame, as the slope 155 shown in Fig. 1, 2a, the slope 132 shown in Fig. 1, 3 and the slope 112 shown in Fig. 4., It facilitates the demolding production of the frame.

40 [0031] In Fig. 1, the exterior of the frame 100 has a perimeter basic edge 131 along which a sloped exterior surface is configured. As the exterior sloped surface 133 shown in Fig. 1, 3, the exterior sloped surface 113 in Fig. 4. The exterior sloped surface is at the top part 110 and the two side parts 130 of the frame at the same time in this embodiment of the invention.

45 [0032] On the side part 130 in Fig. 3 and the exterior sloped surface 133, 113 of top part 110 in Fig. 4, there

are formed supporters 134, 114 protruding from the slopes and allow the frame remain erect. The supporters 134, 114 allow the finished frame to stand upright on the floor steadily.

[0033] The supporting area of the supporters 134, 114 may be plane or line-shaped. It may be a plane for a bigger supporting area. There are a plurality of supporters 134, 114 lined apart from each other; which facilitates the stability of the frame.

[0034] The supporters may comprise a plurality of dot-shaped, point-shaped surfaces and/or line-shaped surfaces, as shown in Figs. 4a and 4b.

[0035] The supporters 134, 114 are at the side part 130, top part 110 respectively. In the case of the operative surface configured at the bottom part of the frame, the preferred way is to arrange an upright supporting pillar (not shown) at the bottom end 135 of the two side parts, while the bottom plane of the pillar is at the level of the bottom surface of the bottom part 150.

[0036] The interior structure of the horizontal part (including the top part and bottom part) and side parts of the frame 100 in Fig. 6 consists of the exterior layer and the interior layer 3, the exterior layer is the coating, and the interior layer is wooded. The coating can give the wood a good protection. The coating consists of two layers, one layer is PUR 1 and the other is paint 2. The paint layer 2 strengthens and protects the coating. The thickness of the PUR is variable/various about the interior layer 3 from thick to thin or from thin to thick.

[0037] The sloped roofwindow in Fig. 7 consists of a window frame 100 and a sash 200 according to the present invention.

Claims

1. A window frame (100), comprising at least one bottom part (150), which has a top surface edge (151) and an exterior side going downwards, extending to the bottom surface edge (152) of the bottom part, and where the top surface edge and the bottom surface edge between them creates an operative surface (153), adapted to work together with a flashing part (350), which is connected to the frame, wherein the operative surface of the bottom part extends forward so as to, when a sash is mounted on the frame, enable it to exceed a bottom covering (450) of the sash, so that it protects the covering **characterized in that** the operative surface is placed within the upper part of the front of the bottom part, and creates a first front surface of the bottom part, and a second front surface (155) between a front surface edge (154) being the bottom edge of the operative surface and the bottom surface edge, wherein the operative surface is concave, wherein the cross-section of the concave surface is profiled by straight lines, by straight and curved lines or by curved lines.
2. A window frame according to claim 1, wherein an operative surface is placed also at the top part (110) of the frame and/or also at the side parts (130) of the frame, wherein the exterior of the frame has a perimeter basic edge along which a sloped exterior surface is configured.
3. A window frame according to any of the preceding claims, wherein frame supporters (114,134) are configured on the sloped or concave exterior surface protruding therefrom.
4. A window frame according to claim 3, wherein the frame supporters (114,134) are dot-shaped, point-shaped or line-shaped or combinations thereof.
5. A window frame according to claim 3 or 4, wherein the members of frame supporters (114,134) are apart from each other.
6. A window frame according to any of claims 3-5, wherein the frame supporters (114,134) at least are placed at two ends of the lengths of the top part (110) or side parts (130) of the frame.
7. A window frame according to any of the preceding claims, wherein the cross-section of the bottom (150), top (110) or side parts (130) of the frame comprises a shell with an exterior layer (1,2) and an interior layer (3), where the exterior layer is preferably a coating and the interior layer is preferably wood.
8. A window frame according to claim 7, wherein the coating consists of two layers, one (1) preferably being PUR, and the other (2) preferably being paint.
9. A window frame according to claim 7 or 8, wherein the thickness of the one layer (1) varies along the perimeter of the interior layer (3) in certain areas from thick to thin.
10. A sloped-roof window, comprising a frame (100), a sash (200) and a covering, in which the frame and the sash comprises top (110), bottom (150,250) and side parts (130), having a top surface edge (151) and an exterior side going downwards, extending to the bottom surface edge (152) of the bottom part of the frame, and where the top surface edge and the bottom surface edge between them creates an operative surface (153), adapted to working together with a flashing part (350), which is connected to the frame, wherein the operative surface of the bottom part of the frame extends forward to exceed the bottom covering (450) of the sash, so that it protects the covering, **characterized in that** the operative surface is placed within the upper part of the front of the bottom part of the frame, and creates a first front surface of the bottom part, and a second front surface

(155) between a front surface edge (154) being the bottom edge of the operative surface and the bottom edge of the bottom surface edge, wherein the operative surface is concave, wherein the cross-section of the concave surface is profiled by straight and/or curved lines.

11. A sloped-roof window according to claim 10, wherein an operative surface is placed at the side parts (130) and/or the top part (110) of the frame, wherein the exterior of the frame has perimeter basic edge along which a sloped exterior surface is configured.
12. A sloped-roof window according to claim 10 or 11, wherein frame supporters (114, 134) are configured on the sloped or concave exterior surface protruding therefrom.
13. A sloped-roof window according to claim 12, wherein the frame supporter surfaces are point-shaped or line-shaped or combinations thereof
14. A sloped-roof window according to claim 12 or 13, wherein the members of frame supporters are apart from each other.
15. A sloped-roof window according to any of claims 10-14, wherein the cross-section of the top (110), bottom (150) or side parts (130) of the frame consist of exterior layer (1,2) and interior layer (3), where the exterior layer is preferably a coating and the interior layer is preferably wood.
16. A sloped-roof window according to claim 15, wherein the coating (1,2) consists of two layers, one (1) preferably being PUR, and the other (2) preferably being paint.
17. A sloped-roof window according to claim 16, wherein the thickness of the one layer (1) varies along the perimeter of the interior layer (3) in certain areas from thick to thin.

Patentansprüche

1. Fensterrahmen (100) mit wenigstens einem unteren Teil (150), das eine obere Oberflächenkante (151) und eine Außenseite aufweist, die nach unten verläuft und sich zu der unteren Oberflächenkante (152) des unteren Teils erstreckt, und wobei die obere Oberflächenkante und die untere Oberflächenkante zwischen sich eine Funktionsfläche (153) bilden, die angepasst ist, mit einem Verkleidungsteil (350) zusammenzuwirken, der mit dem Rahmen verbunden ist, wobei sich die Funktionsfläche des unteren Teils nach vorne erstreckt, um, wenn ein Flügel an dem Rahmen angebracht ist, ihr zu ermöglichen, über ei-

ne untere Abdeckung (450) des Flügels vorzustehen, so dass sie die Abdeckung schützt, **dadurch gekennzeichnet, dass** die Funktionsfläche in dem oberen Teil der Vorderseite des unteren Teils angeordnet ist und eine erste vordere Fläche des unteren Teils und eine zweite vordere Fläche (155) zwischen einer vorderen Oberflächenkante (154), die die untere Kante der Funktionsfläche ist, und der unteren Oberflächenkante bildet, wobei die Funktionsfläche konkav ist, wobei der Querschnitt der konkaven Oberfläche durch gerade Linien, durch gerade und gekrümmte Linien oder durch gekrümmte Linien profiliert ist.

2. Fensterrahmen nach Anspruch 1, wobei eine Funktionsfläche auch an dem oberen Teil (110) des Rahmens und/oder auch an den Seitenteilen (130) des Rahmens angeordnet ist, wobei die Außenseite des Rahmens eine Umfangsbasisante hat, entlang derer eine geneigte äußere Oberfläche ausgebildet ist.
3. Fensterrahmen nach einem der vorhergehenden Ansprüche, wobei Rahmenhalter (114, 134) an der geneigten oder konkaven Außenfläche ausgebildet sind, die davon vorstehen.
4. Fensterrahmen nach Anspruch 3, wobei die Rahmenhalter (114, 134) abgerundet, spitz oder linienförmig oder Kombinationen davon sind.
5. Fensterrahmen nach Anspruch 3 oder 4, wobei die Teile der Rahmenhalter (114, 134) voneinander beabstandet sind.
6. Fensterrahmen nach einem der Ansprüche 3 bis 5, wobei die Rahmenhalter (114, 134) wenigstens an zwei Enden der Länge des oberen Teils (110) oder der Seitenteile (130) des Rahmens angeordnet sind.
7. Fensterrahmen nach einem der vorhergehenden Ansprüche, wobei der Querschnitt des unteren (150), des oberen (110) oder der Seitenteile (130) des Rahmens eine Schale mit einer äußeren Schicht (1,2) und einer inneren Schicht (3) umfasst, wobei die äußere Schicht vorzugsweise eine Beschichtung und die innere Schicht vorzugsweise Holz ist.
8. Fensterrahmen nach Anspruch 7, wobei die Beschichtung aus zwei Schichten besteht, eine (1) vorzugsweise aus PUR und die andere (2) vorzugsweise aus Farbe.
9. Fensterrahmen nach Anspruch 7 oder 8, wobei die Dicke der einen Schicht (1) entlang des Umfangs der inneren Schicht (3) in bestimmten Bereichen von dick zu dünn variiert.
10. Fenster für ein geneigtes Dach mit einem Rahmen

(100), einem Flügel (200) und einer Abdeckung, wobei der Rahmen und der Flügel obere (110), untere (150, 250) und Seitenteile (130) aufweisen, die eine obere Oberflächenkante (151) und eine Außenseite, die nach unten verläuft und sich zu der unteren Oberflächenkante (152) des unteren Teils des Rahmens erstreckt, haben, und wobei die obere Oberflächenkante und die untere Oberflächenkante zwischen sich eine Funktionsfläche (153) bilden, die angepasst ist, mit einem Verkleidungsteil (350) zusammenzuwirken, der mit dem Rahmen verbunden ist, wobei sich die Funktionsfläche des unteren Teils des Rahmens nach vorne erstreckt, um über die untere Verkleidung (450) des Flügels vorzustehen, so dass sie die Verkleidung schützt, **dadurch gekennzeichnet, dass** die Funktionsfläche in dem oberen Teil der Vorderseite des unteren Teils des Rahmens angeordnet ist und eine erste vordere Fläche des unteren Teils und eine zweite vordere Fläche (155) zwischen einer vorderen Oberflächenkante (154), die die untere Kante der Funktionsfläche ist, und der unteren Kante der unteren Oberflächenkante bildet, wobei die Funktionsfläche konkav ist, wobei der Querschnitt der konkaven Oberfläche durch gerade und/oder gekrümmte Linien profiliert ist.

11. Fenster für ein geneigtes Dach nach Anspruch 10, wobei eine Funktionsfläche an den Seitenteilen (130) und/oder dem oberen Teil (110) des Rahmens angeordnet ist, wobei die Außenseite des Rahmens eine Umfangsbasislinie aufweist, entlang derer eine geneigte äußere Oberfläche ausgebildet ist.
12. Fenster für ein geneigtes Dach nach Anspruch 10 oder 11, wobei Rahmenhalter (114, 134) an der geneigten oder konkaven äußeren Oberfläche ausgebildet sind, die davon vorstehen.
13. Fenster für ein geneigtes Dach nach Anspruch 12, wobei die Rahmenhalteroberflächen spitz oder linienförmig oder Kombinationen davon sind.
14. Fenster für ein geneigtes Dach nach Anspruch 12 oder 13, wobei die Elemente der Rahmenhalter voneinander beabstandet sind.
15. Fenster für ein geneigtes Dach nach einem der Ansprüche 10 bis 14, wobei der Querschnitt der oberen (110), der unteren (150) oder der Seitenteile (130) des Rahmens aus einer äußeren Schicht (1, 2) und einer inneren Schicht (3) bestehen, wobei die äußere Schicht vorzugsweise eine Beschichtung und die innere Schicht vorzugsweise Holz ist.
16. Fenster für ein geneigtes Dach nach Anspruch 15, wobei die Beschichtung (1, 2) aus zwei Schichten besteht, eine (1) vorzugsweise aus PUR und die andere (2) vorzugsweise aus Farbe.

17. Fenster für ein geneigtes Dach nach Anspruch 16, wobei die Dicke der einen Schicht (1) entlang des Umfangs der inneren Schicht (3) in bestimmten Bereichen von dick zu dünn variiert.

Revendications

1. Structure de châssis de fenêtre (100), comprenant au moins une partie inférieure (150), laquelle comporte un bord de surface supérieur (151) et un côté extérieur allant vers le bas, s'étendant vers le bord de surface inférieur (152) de la partie inférieure, et dans lequel le bord de surface supérieur et le bord de surface inférieur créent entre eux une surface fonctionnelle (153), adaptée pour agir avec une partie de raccordement (350), laquelle est raccordée à la structure de châssis, dans laquelle la surface fonctionnelle de la partie inférieure s'étend vers l'avant de façon, lorsqu'un ouvrant est monté sur la structure, à lui permettre de dépasser la couverture inférieure (450) de l'ouvrant, de sorte qu'il protège la couverture, **caractérisé en ce que** la surface fonctionnelle est placée à l'intérieur de la partie supérieure de l'avant de la partie inférieure, et crée une première surface avant de la partie inférieure, et **en ce qu'**une seconde surface avant (155) située entre un bord de surface avant (154) qui est le bord inférieur de la surface fonctionnelle et le bord de surface inférieur, dans laquelle la surface fonctionnelle est concave, dans laquelle la section transversale de la surface concave est profilée selon des lignes droites, selon des lignes droites et courbes ou selon des lignes courbes.
2. Structure de châssis de fenêtre selon la revendication 1, dans laquelle une surface fonctionnelle est également placée au niveau de la partie supérieure (110) de la structure et/ou également au niveau des parties latérales (130) de la structure, dans laquelle l'extérieur de la structure de châssis présente un bord périphérique de base le long duquel une surface extérieure inclinée est configurée.
3. Structure de châssis de fenêtre selon l'une quelconque des revendications précédentes, dans laquelle des supports de structure de châssis (114, 134) sont configurés sur la surface extérieure concave ou inclinée s'avancant à partir de là.
4. Structure de châssis de fenêtre selon la revendication 3, dans laquelle les supports de structure de châssis (114, 134) sont configurés en forme de points, de pointes ou de lignes ou des combinaisons de ces configurations.
5. Structure de châssis de fenêtre selon la revendication 3 ou 4, dans laquelle les éléments de support

de structure (114, 134) sont séparés les uns des autres.

6. Structure de châssis de fenêtre selon l'une quelconque des revendications 3 à 5 dans laquelle les supports de structure de châssis (114, 134) sont placés au moins au niveau des deux extrémités des segments formant la partie supérieure (110) ou les parties latérales (130) de la structure. 5
7. Structure de châssis de fenêtre selon l'une quelconque des revendications précédentes, dans laquelle la section transversale des parties inférieure (150), supérieure (110) ou latérales (130) de la structure comporte une enveloppe pourvue d'une couche extérieure (1, 2) et d'une couche intérieure (3), dans laquelle la couche extérieure est, de préférence, un revêtement et la couche intérieure est, de préférence, du bois. 10
8. Structure de fenêtre selon la revendication 7, dans laquelle le revêtement est constitué de deux couches, l'une (1) qui est, de préférence, PUR, et l'autre (2) qui est, de préférence, une peinture. 15
9. Structure de châssis de fenêtre selon la revendication 7 ou 8, dans laquelle l'épaisseur de la première couche (1) varie le long du périmètre de la couche intérieure (3) dans certaines zones d'épaisse à mince. 20
10. Fenêtre pour toiture en pente, comprenant une structure de châssis (100), un ouvrant (200) et une couverture, dans laquelle la structure de châssis et l'ouvrant comportent des parties supérieure (110), inférieure (150, 250) et latérales (130), présentant un bord de surface supérieur (151) et un côté extérieur allant vers le bas, s'étendant vers le bord de surface inférieur (152) de la partie inférieure de la structure, et dans laquelle le bord de surface supérieur et le bord de surface inférieur créent entre eux une surface fonctionnelle (153), adaptée pour agir avec une partie de raccordement (350), laquelle est raccordée à la structure de châssis, dans laquelle la surface fonctionnelle de la partie inférieure de la structure s'étend vers l'avant afin de dépasser la couverture inférieure (450) de l'ouvrant, de sorte qu'elle protège la couverture, **caractérisée en ce que** la surface fonctionnelle est placée à l'intérieur de la partie supérieure de l'avant de la partie inférieure de la structure, et crée une première surface avant de la partie inférieure, et une seconde surface avant (155) située entre un bord de surface avant (154) qui est le bord inférieur de la surface fonctionnelle et le bord inférieur du bord de surface inférieur, dans laquelle la surface fonctionnelle est concave, dans laquelle la section transversale de la surface concave est profilée selon des lignes droites et/ou 50

courbes.

11. Fenêtre pour toiture en pente selon la revendication 10, dans laquelle une surface fonctionnelle est placée au niveau des parties latérales (130) et/ou de la partie supérieure (110) de la structure de châssis, dans laquelle l'extérieur de la structure possède un bord de base périphérique le long duquel une surface extérieure inclinée est configurée. 55
12. Fenêtre pour toiture en pente selon la revendication 10 ou 11, dans laquelle des supports de structure de châssis (114, 134) sont configurés sur la surface extérieure concave ou inclinée, s'avancçant à partir de là. 10
13. Fenêtre pour toiture en pente selon la revendication 12, dans laquelle les surfaces de support de la structure de châssis sont configurées en forme de points, de pointes ou de lignes ou des combinaisons de ces configurations. 15
14. Fenêtre pour toiture en pente selon la revendication 12 ou 13, dans laquelle les éléments des supports de structure de châssis sont séparés les uns des autres. 20
15. Fenêtre pour toiture en pente selon l'une quelconque des revendications 10 à 14, dans laquelle la section transversale des parties supérieure (110), inférieure (150) ou latérales (130) de la structure de châssis sont constituées d'une couche extérieure (1, 2), et d'une couche intérieure (3), dans laquelle la couche extérieure est, de préférence, un revêtement et la couche intérieure est, de préférence, du bois. 25
16. Fenêtre pour toiture en pente selon la revendication 15, dans laquelle le revêtement (1, 2) est constitué de deux couches, l'une (1) étant, de préférence, PUR, et l'autre (2) étant, de préférence, une peinture. 30
17. Fenêtre pour toiture en pente selon la revendication 16, dans laquelle l'épaisseur de la première couche (1) varie le long du périmètre de la couche intérieure (3), dans certaines zones, d'épaisse à mince. 35

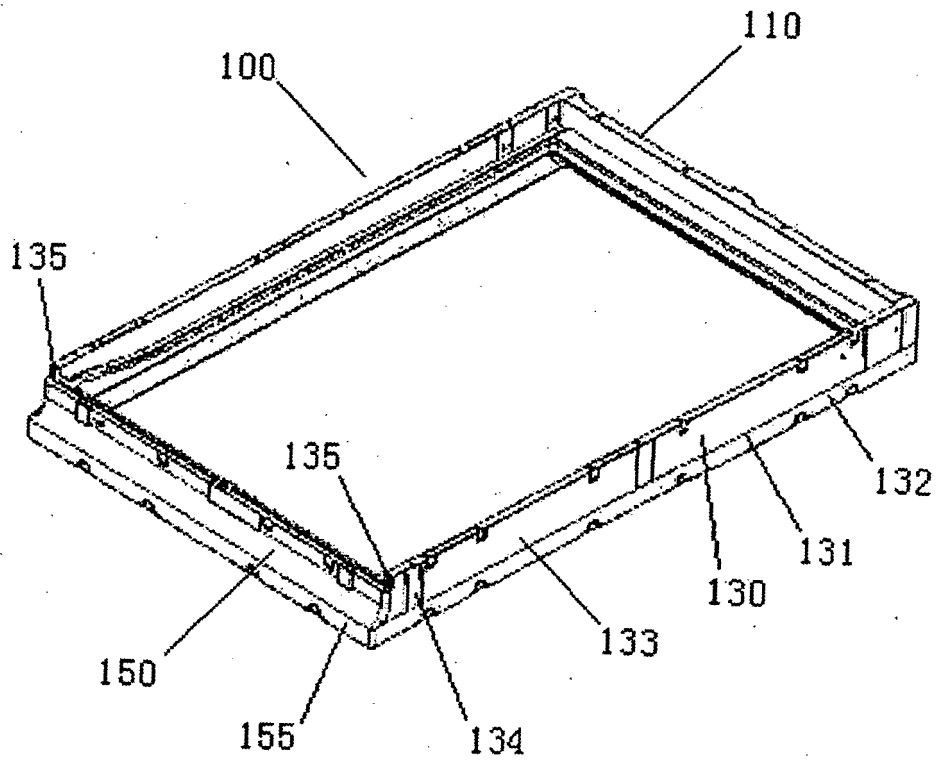


Fig. 1

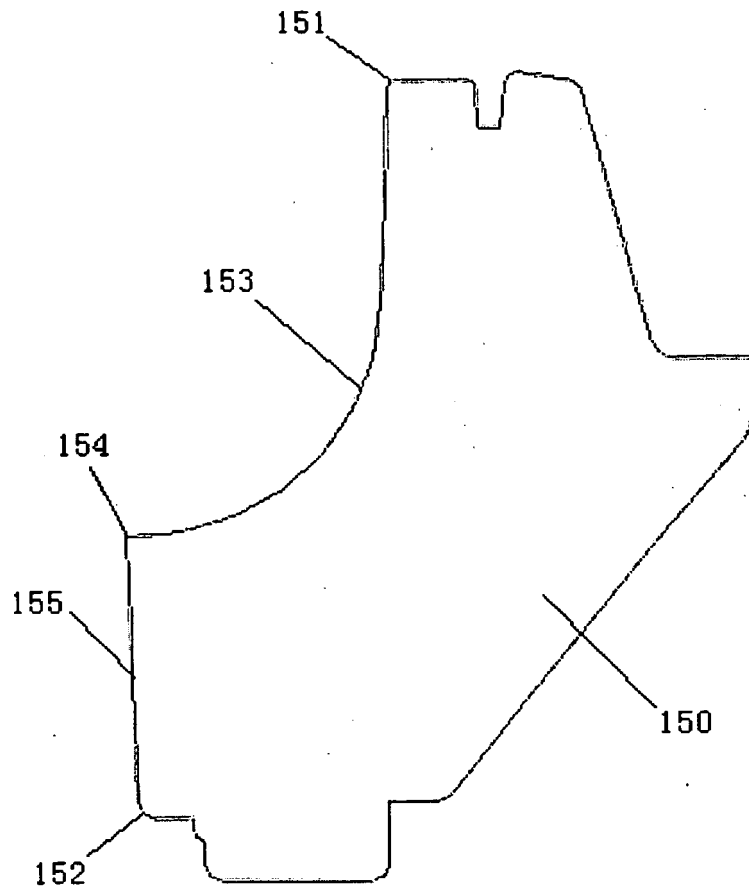


Fig. 2a

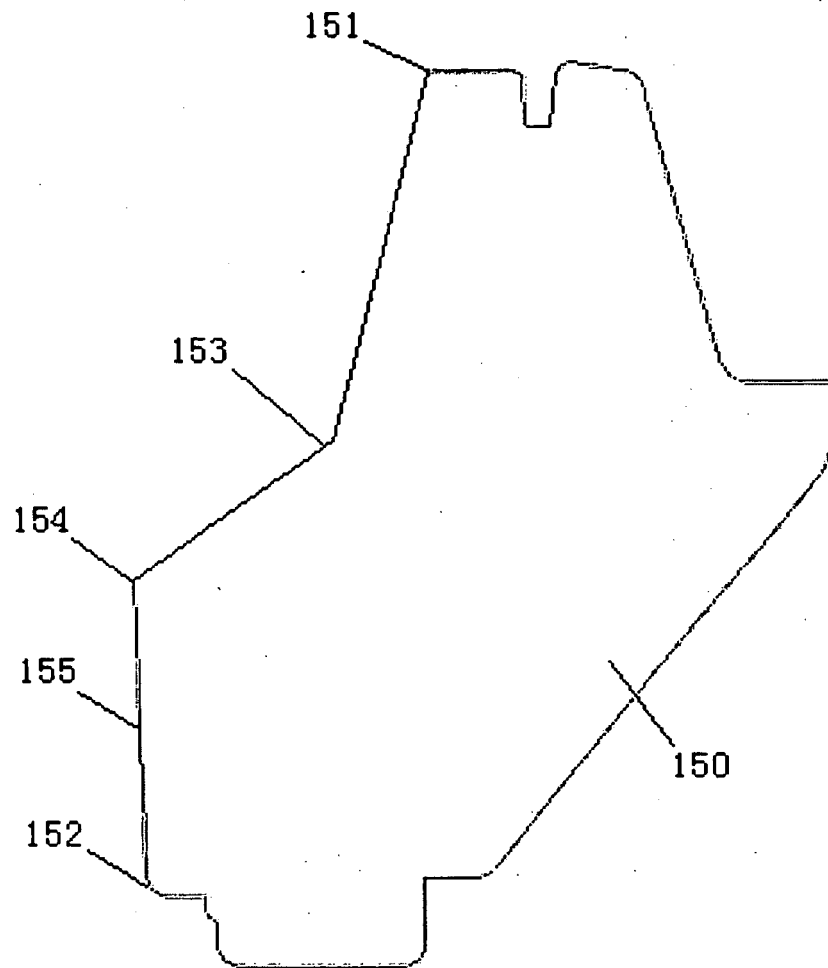


Fig. 2b

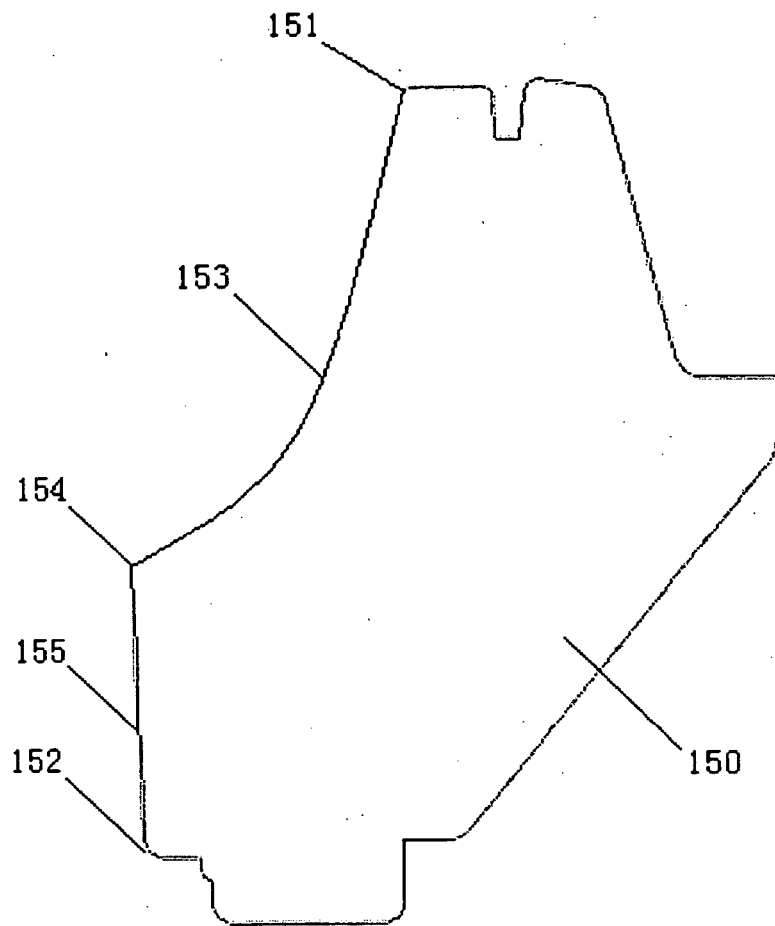


Fig. 2c

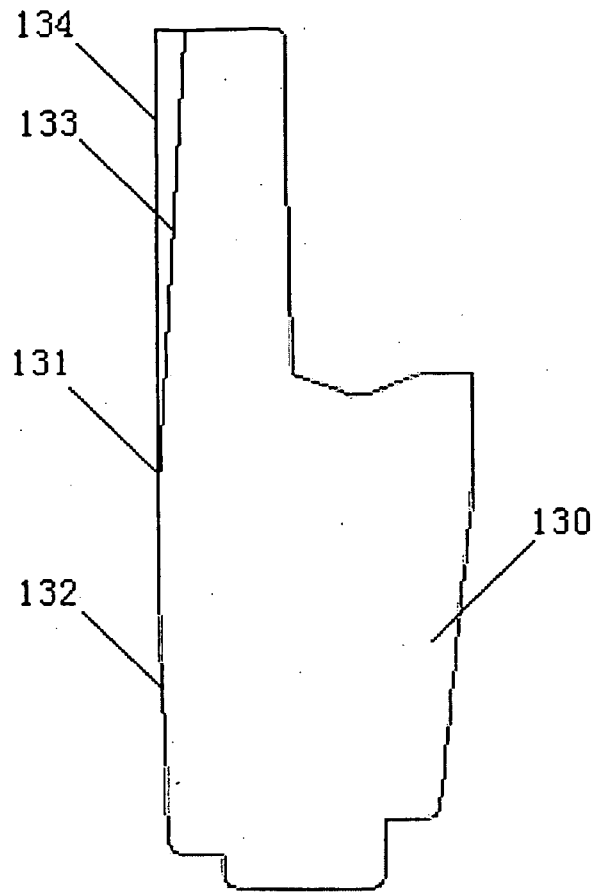


Fig. 3

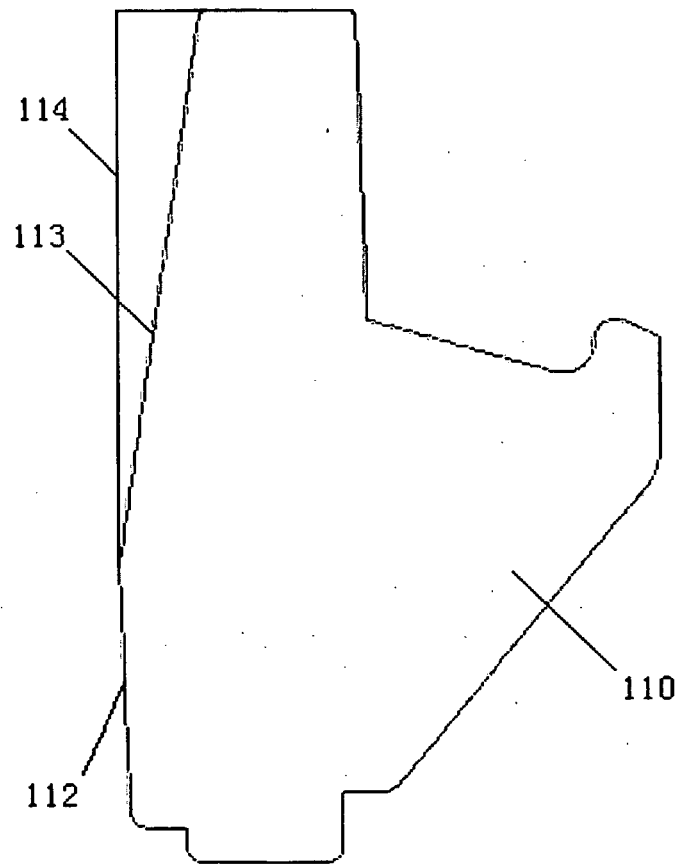


Fig. 4

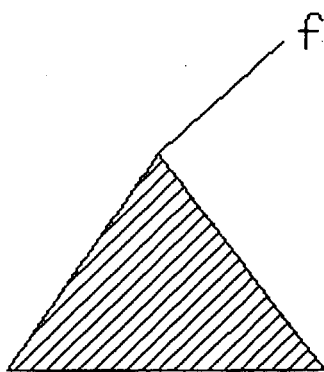


Fig. 4a

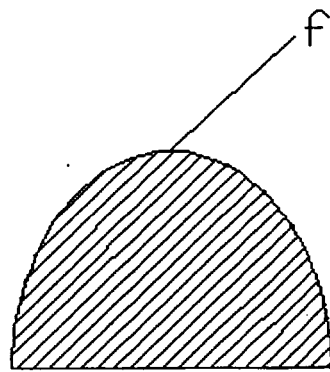


Fig. 4b

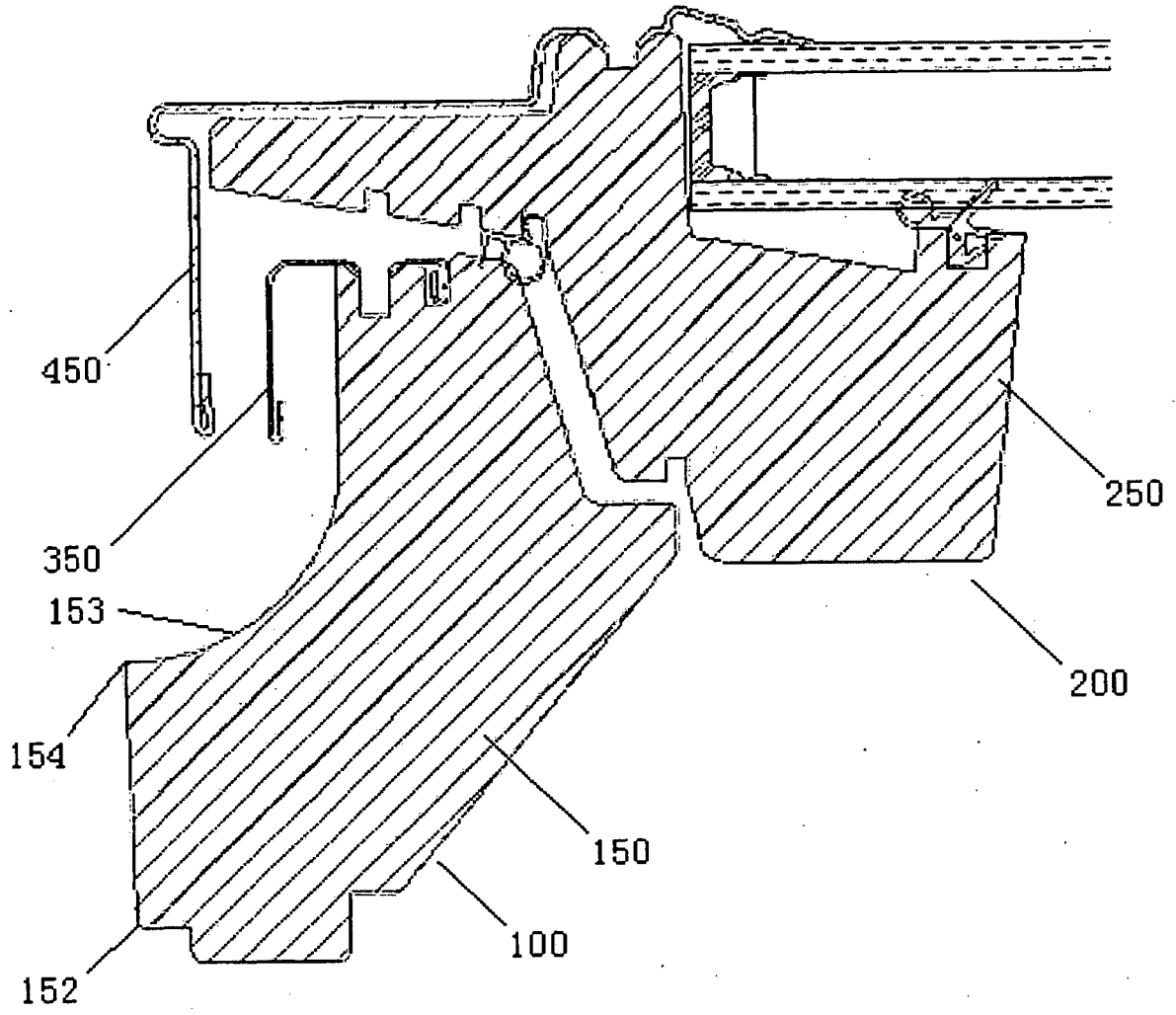


Fig. 5

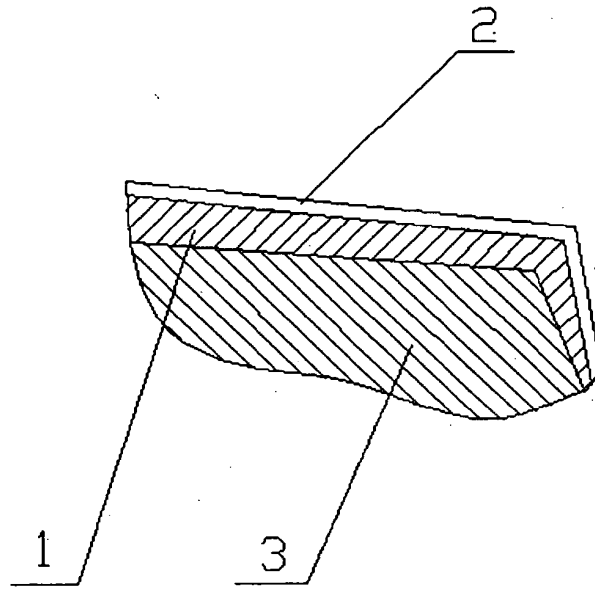


Fig. 6

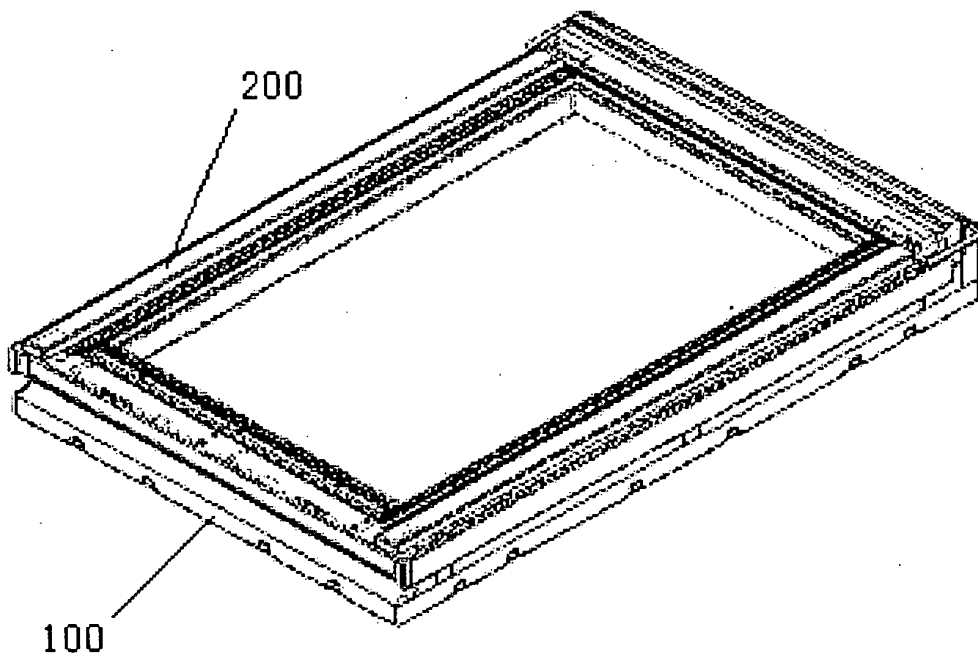


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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