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GB 2186239 A
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DE 004301283 A
US 5411360 A
EP 0885772 A
WO 2006/136523 A
DE 004300822 A

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(54) Abstract Title: **Load supporting framework**

(57) A load supporting framework 80 for supporting sheet glass articles on a vehicle. The framework comprises at least two support structures 82 which are adapted to be affixed in an upright mutually agreed relationship relative to a body of a vehicle, and which provide an inclined support surface to receive one or more sheet articles. Each support structure 82 is formed from a rigid metal sheet which is folded to provide an upright body, and upright edge region 83 which extends transversely to the body. The upright edge region 83 provides the inclined surface. There is also provided a method of manufacturing the load supporting framework 80.

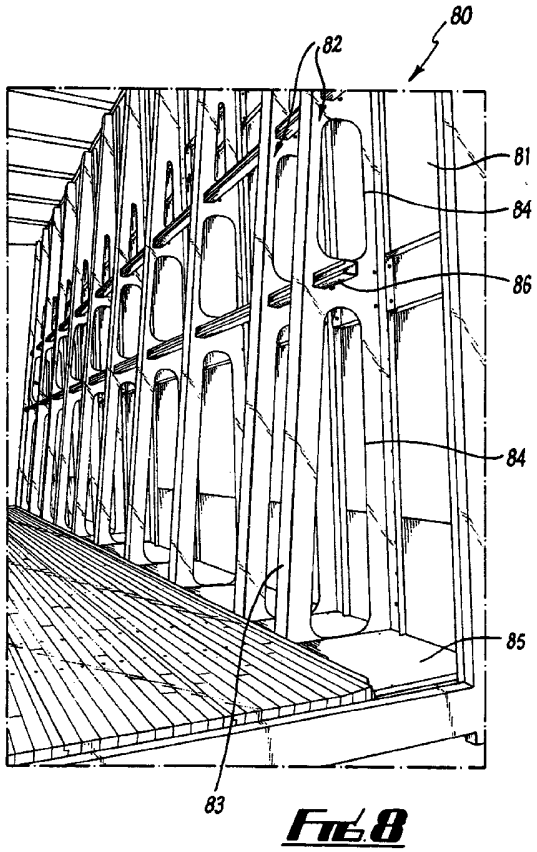

Fig.8

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 22(1) of the Patents Rules 2007.

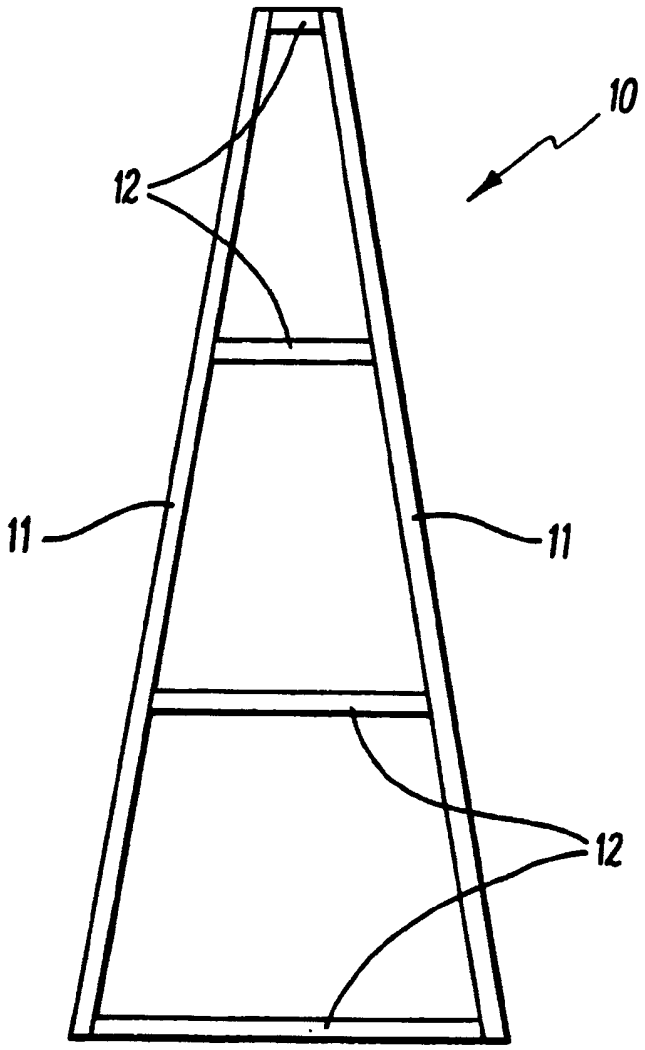

FIG. 1

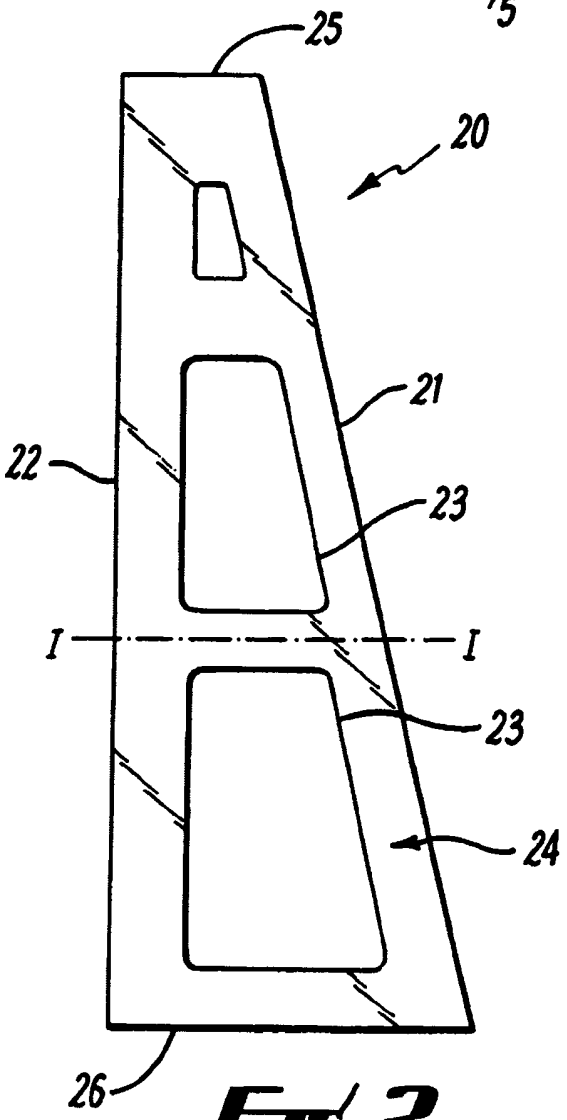

FIG. 2

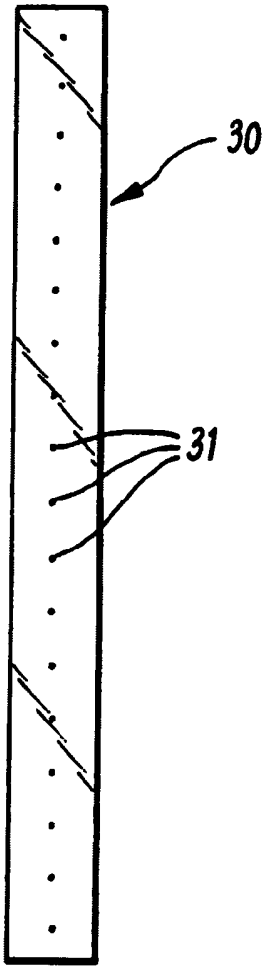

FIG. 3

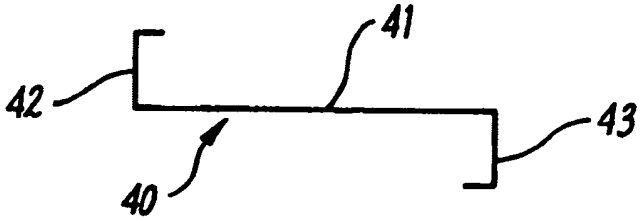

FIG. 4

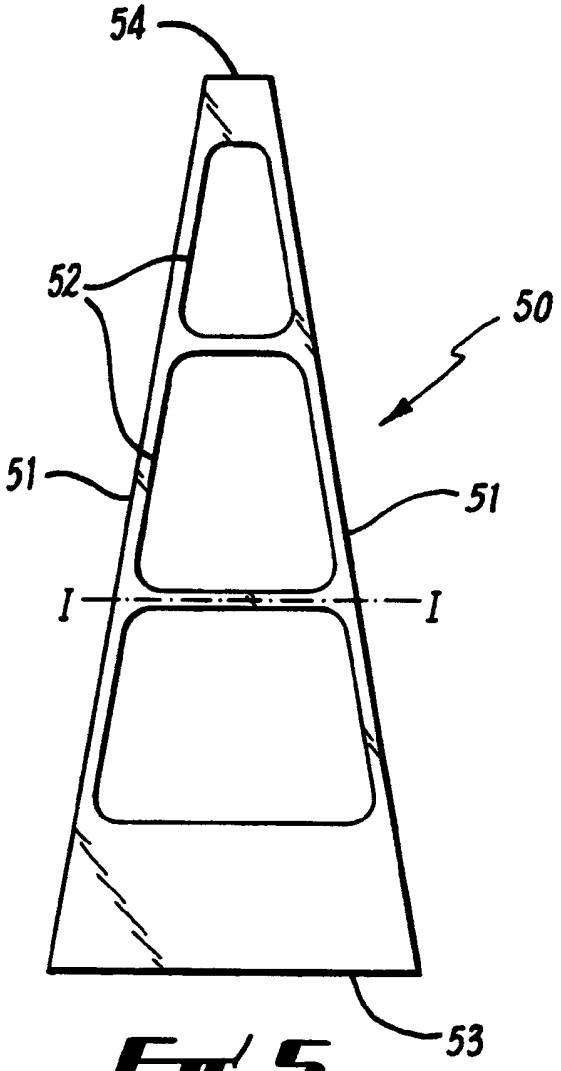

FIG. 5

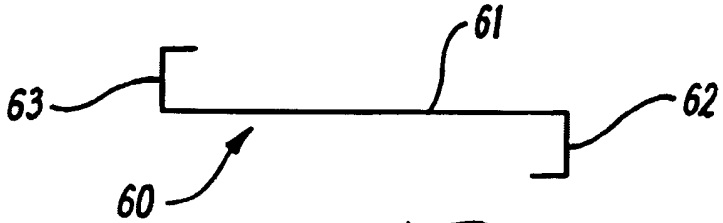

FIG. 6

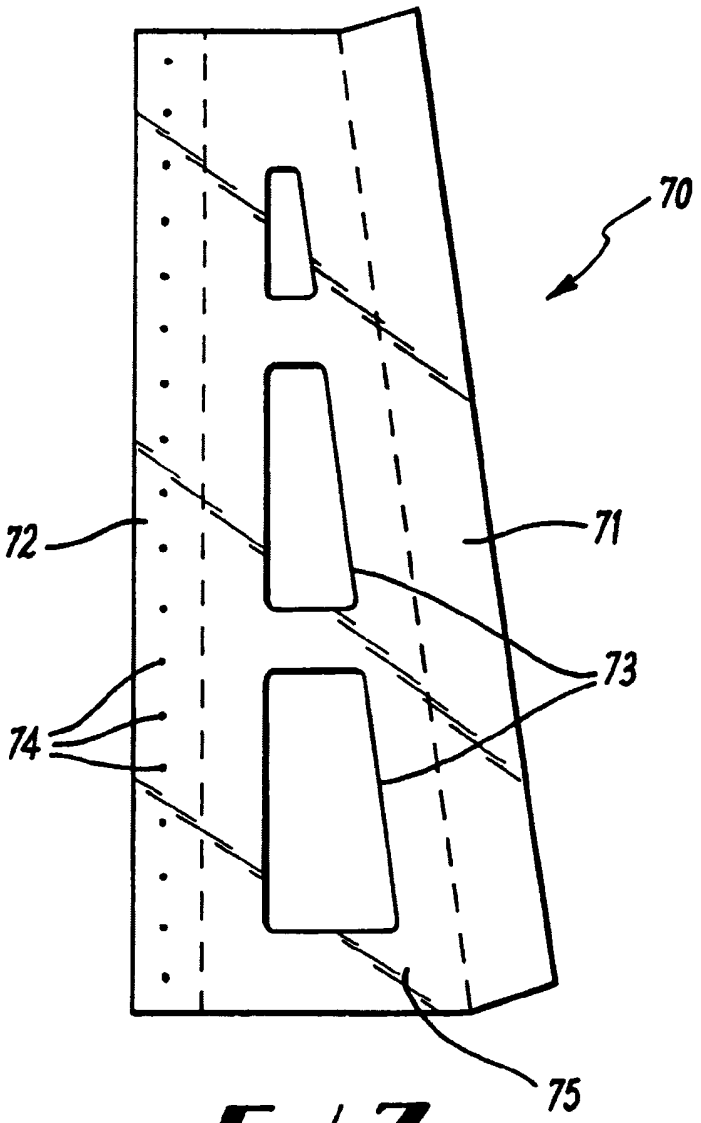

FIG. 7

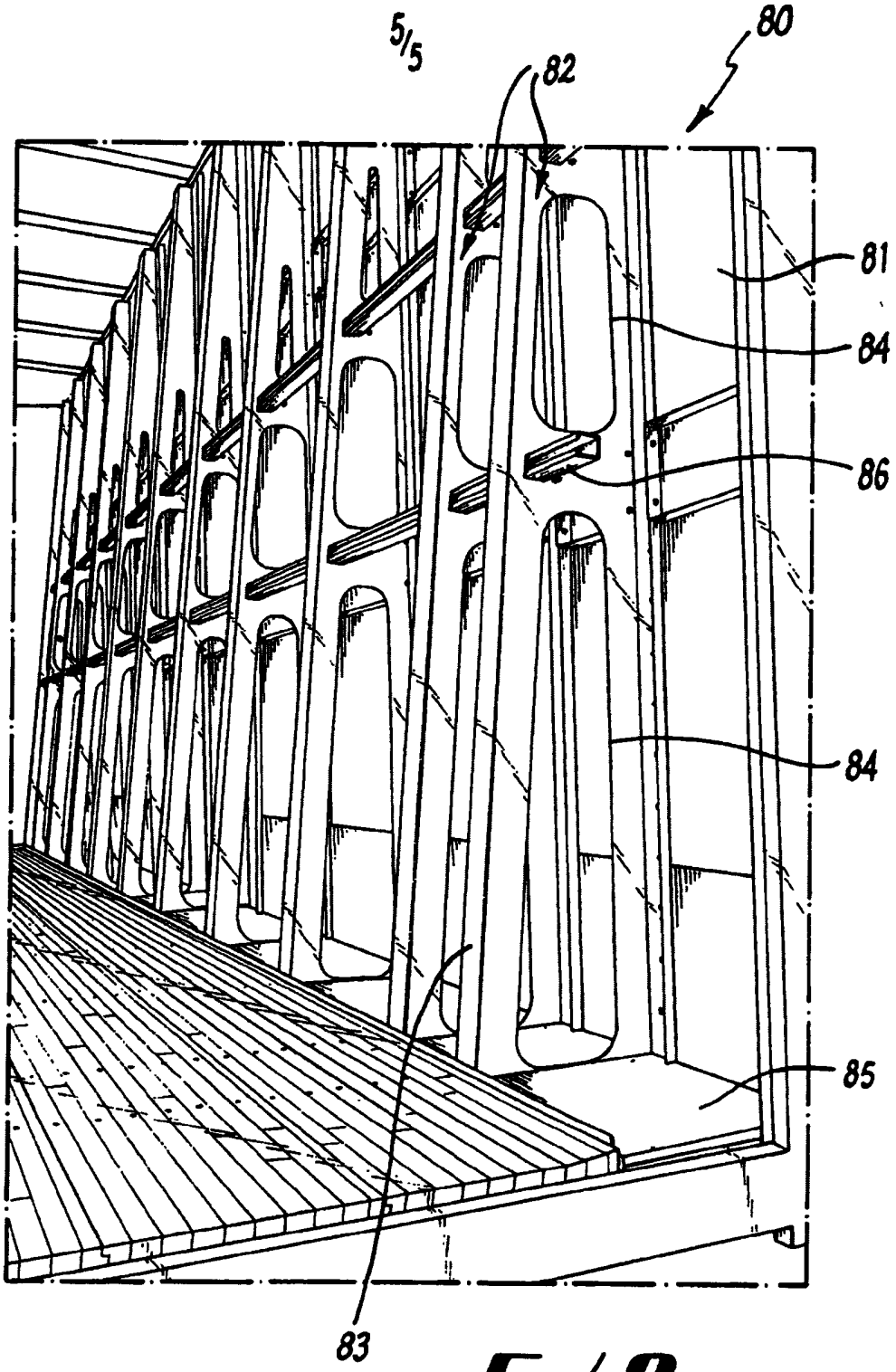

FIG. 8

LOAD SUPPORTING FRAMEWORK

The present invention relates to a load supporting framework for supporting sheet glass articles, by which is meant articles consisting of or including glass panes or similar sheet-like structure.

Sheet glass is commonly transported on a supporting framework or frail which is mounted either to an exterior or interior surface or wall of a suitable vehicle. The glass rests at its lower edge, on a ledge whilst leaning at a slight angle (around 4-5°) from the vertical against support bars of the supporting framework. The glass can be clamped to the support framework using rubber pads on upright rigid poles in order to ensure that the glass is securely attached and maintained at the inclined angle.

Known supporting frameworks for transporting glass sheets have a plurality of box sections which are fixed together by welding or bolting to provide a framework. The framework may have fixing points on one side which are shaped to cooperatively engage the side of a van. The framework typically has a number of tracks attached to an exterior surface which allow placing of glass sheets against it.

The disadvantages of the box section structure of prior frameworks are that they are expensive, time consuming, and difficult to make. Additionally, box section frameworks can be particularly heavy and, in addition to the weight of the load carried, can add considerably to the total weight of the vehicle. A framework may consist of a large number of box sections of metal which must all be individually made to different sizes and shapes in order that they form the framework when they are joined together.

There is a considerable need to solve the problem of providing a load supporting framework which does not have the disadvantages of prior frameworks as

detailed herein.

The present invention seeks to provide a load supporting framework which can be less expensive and easier to manufacture, and which can be lightweight.

The present invention also seeks to provide a method of making a load supporting framework.

According to a first aspect of the present invention there is provided a load supporting framework for supporting sheet glass articles on a vehicle, the framework having at least two support structures being adapted to be affixed in an upright mutually spaced relationship relative to a body of a vehicle, so as to provide an inclined support surface to receive one or more sheet glass articles, characterised in that each support structure is formed from a rigid metal sheet folded to provide an upright body and upright edge region extending transversely to the body, whereby the said edge region of the respective support structure provides the said inclined support surface.

According to a second aspect of the present invention there is provided a method of manufacturing the load supporting framework of the first aspect, the method comprising the steps of:

forming flat templates from rigid metal sheets for at least two support structures;

folding each flat template to form support structures to provide an upright body and upright edge region extending transversely to the body,

affixing said support structures in an upright mutually spaced relationship relative to a body of a vehicle so as to provide an inclined support surface to receive one or more sheet glass articles.

According to a third aspect of the present invention there is provided a vehicle comprising the load supporting framework of the first aspect.

It has been found that having upright support structures formed from rigid metal sheets can provide for a load supporting framework which is simple and cheap to make, lightweight, and easy to fix to a vehicle in different configurations. These advantages are provided due to the use of folded and cut metal sheets which form the upright support structures of the framework. Unlike prior frameworks, the load supporting framework of the present invention does not require manufacture of multiple box section segments which require welding.

With this arrangement, it is possible to attain conveniently secure carrying and transport of large and heavy sheet glass articles. The term "sheet glass articles" as used herein includes glass sheets and flat glass, such as window panes or the like. Additionally, the term includes articles which comprise sheet glass such as framed glass for use as glazed windows or double glazed units.

The load supporting framework may be arranged on a vehicle in several different configurations.

The load supporting framework may be fixed on to a panel, such as a glass reinforced plastic panel, which itself forms the side of a vehicle body. The load supporting framework may be fixed to a surface of the panel which will form the inside of the vehicle body, thereby allowing sheet glass articles to be carried internally on the vehicle. Alternatively, the framework may be fixed on a surface of the panel which will form the outside of the vehicle body, thereby allowing sheet glass articles to be carried externally on the vehicle.

The load supporting framework may therefore comprise one inclined support

surface side which is adapted to receive sheet glass articles, and a second side which is substantially vertical and is adapted to be affixed to the vehicle surface or panel.

In an alternative embodiment the load supporting framework may comprise two inclined support surface sides both adapted to receive sheet glass articles. The load supporting framework may in this embodiment have a bottom surface or base which can be affixed to the vehicle body. In this embodiment, the load supporting framework will be in an "A-frame" configuration.

The framework having two inclined support surface sides may be arranged in a vehicle either to form the vehicle side thereby allowing for simultaneous carrying of sheet glass both inside and outside the vehicle body. The framework may also be arranged such that it is freestanding and affixed to the vehicle floor, thereby allowing sheet glass to be carried on the inside of the vehicle on both inclined support surface sides of the framework.

In the "A-frame" configuration, each support structure of the load supporting framework may comprise two upright edge regions extending transversely to the upright body. The two edge regions may each provide an inclined support surface. The framework comprising such support structures would therefore have two inclined support surfaces, each adapted to receive one or more glass sheet articles.

It is envisaged that a vehicle may comprise any suitable combination of frameworks of the above embodiments. For example, a vehicle may comprise a framework having two inclined support surfaces on the vehicle floor for glass to be carried internally, and two frameworks each having one inclined support surface, and each fixed to the external surface of a vehicle panel to provide for glass to be carried externally. In this example, the vehicle would have three frameworks with a total of

four support surfaces.

Each upright edge region extends transversely from the respective support structure. Each upright edge region may have a width which is less than the width of the structure to which it extends from. The width of the edge region may be at least 50% less than that of said structure.

Each upright edge region may extend at an angle of approximately 90° to the plane of the respective support structure. Each upright edge region may comprise a further region extending at an angle of approximately 90° from the edge region. The further region is therefore arranged such that it is parallel to the plane of the support structure. The width of the further region may be less than the width of the upright edge region. Both the upright edge region and further region are formed by folding the sheet metal of the support structure.

Each upright edge region, and each further region if present, may extend substantially along all of the vertical length of the support structure. Preferably, along at least 90% of the vertical length of the support structure. Most preferably, along 100% of the vertical length of the support structure.

The load supporting framework may be provided on a pallet, which can be easily moved on to and off a vehicle by means, for example, of a forklift truck.

The support surface of the support structures may have protective edgings or the like for contact with the glass sheet load. Alternatively, the framework may comprise elongate members. The elongate members may extend substantially across the support surfaces of the framework, and may be a pole which is preferably of square of rectangular cross-section. The pole may engage at its bottom end a bottom ledge or flange extending from the framework. The pole may engage a further flange

projecting from the framework at its top end. The pole may alternatively engage a surface of the vehicle body, such as the vehicle body floor or roof.

The pole may be adjustably mounted so that it can be located at different spacings relative to the framework. Preferably, there are two or more poles positioned side-by-side, each having a respective said pair of glass sheet fixing elements.

There may be more than one pair of sheet fixing elements on the (or each) elongate member, such pairs being mounted at space positions along the elongate member. In order to facilitate securing of the glass sheets the fixing elements are preferably positionable along the elongate member.

With regard to the fixing elements, these may comprise sleeves, bored blocks or the like, which fit slidably around the elongate member. A fixing device may be provided for holding each fixing element in an adjusted position along the length of the elongate member. This may be a clamp screw which engages a threaded bore in the fixing element and can be screwed in to bear against the side of the elongate member.

The load supporting framework may comprise additional holding means for securing the sheet glass articles to the load supporting framework. Suitable holding means include clamps, clamping bars, straps and the like.

Most preferably the load supporting framework is upright and there may be a bottom ledge or arrangement of projecting flanges or the like to support a bottom edge of the sheet glass articles.

The support structures may preferably be tapered having a wider lower section and a narrower upper section. The tapering may be effected by the inclined support

surface such that sheet glass articles can be lent against the support structures.

The load supporting framework may therefore be inclined outwardly away from the vertical plane to facilitate support of the sheet glass articles. Typically the incline is 4-5° with regard to the vertical plane. The specific amount of incline may be determined with reference to the vehicle to which the framework is attached, or to the specific sheet glass articles carried by the framework.

The inclined support structure results in the majority of the weight of the sheet glass articles being placed on the support structure rather than the vehicle floor. Therefore, it is essential that the support structures and the framework have sufficient strength and rigidity to enable safe carrying of potentially very heavy sheet glass articles.

The support structures of the load supporting framework may comprise a plurality of fixing points to allow for fixing to a vehicle body. Alternatively, the support structures of the framework may be fixed to a fixing bar or sheet, which itself is attached to the vehicle body.

In an alternative embodiment, the support structures may comprise a second upright edge region which is adapted for fixing to a vehicle body. The second edge region may comprise a plurality of fixing points which allow fixing of the support structures to the vehicle surface.

Each support structure may therefore comprise two upright edge regions which both provide inclined support surfaces. Alternatively, the support structure may comprise a first upright edge region which provides an inclined support surface, and a second upright edge region which comprises fixing points in order to allow for fixing to a vehicle surface. In both embodiments, the upright edge regions may

extend in the same direction from the plane of the support structure thereby providing approximately a "C" shaped support structure in a horizontal section view. Alternatively, the upright edge regions may each be arranged such that they extend in mutually opposite directions from the support structure, and are therefore at 180° with respect to each other. This alternative embodiment thereby provides approximately a "Z" shaped support structure in a horizontal section view.

It is envisaged that the embodiment wherein the upright edge regions extend in mutually opposite directions is preferable. Said embodiment provides a support structure with greater strength and rigidity. Additionally, it is easier to fix a support structure of this embodiment to a vehicle wall as the first upright edge region does not obscure the second upright edge region.

The fixing points are adapted and suitable for bonding to a vehicle body formed from glass reinforced plastic or riveted alloy sheets. The fixing points allow for threading of bolts or screws to secure the support structure to a vehicle body. Additionally, an adhesive resin may be applied between the vehicle body and support structure. The fixing points in the form of holes allow for extrusion of adhesive therethrough when the support structure is placed against the vehicle body. This extrusion of adhesive through the fixing points provides for better bonding and grip of the support structure to the vehicle body.

The templates for the support structures may be formed by any suitable means. Suitable methods include mechanical cutting, laser cutting, and punching out.

The support structures may be made from any suitable material such as pressed or plated steel, alloy sheet, or aluminium so as to resist corrosion.

The rigid metal sheet which forms each template for the support structure is

preferably a single continuous rigid metal sheet. This will be understood as not including metal sheets which are themselves formed from a plurality of metal sheets joined together.

The template may be folded to form the support structures using any suitable method, such as use of sheet metal bending machines.

It is envisaged that the framework may be manufactured to any desired size depending upon the use to which it will be put. For example, the framework may be made to sizes to fit vehicles being vans of 3.5 tonnes up to lorries of 18 tonnes.

The load supporting framework may comprise additional support bars. The support bars may be arranged substantially horizontally on or through the framework, and may be attached to two or more support structures. The support bars may provide additional structural rigidity to the load supporting framework.

The support bars may be adapted to receive slats which are horizontally disposed across the support surfaces of the support structures. The slats may have a surface which is disposed between the sheet glass articles and the support surface, and is adapted to receive sheet glass articles. The surface of the slats may therefore comprise cushioning, protective edges, or be faced with a resilient material such as rubber or felt.

The slats may be formed from any suitable material such as metal or wood.

The slats may therefore be in contact with the sheet glass articles. Preferably, the framework comprises a plurality of slats arranged in a mutually spaced vertical relationship over the support surfaces of the support structure.

Alternatively, the support surfaces of the load supporting framework may comprise cushioning or other suitable protective edges. The sheet glass articles may

be placed on and be in contact with the support surfaces. The support surfaces may also be faced with a resilient material such as rubber, in order that the sheet glass articles laid in contact therewith are not likely to be damaged by such contact. Such cushioned or protective edges will act to protect the sheet glass from scratching and provide additional support.

The support structures may comprise, in section view, a spacer section which extends in a perpendicular plane to the sheet glass articles. The support structures may also each comprise cut out sections which are arranged through the spacer section. The support structures may comprise at least one cut out section, or may comprise a plurality of cut out sections.

The cut out sections may be of any suitable shape. Suitable shapes may include, for example, oblong, circles, squares, or rectangular cut outs.

The cut out sections advantageously reduce further the weight of each support structure, and therefore reduce the overall weight of the framework. Additionally, the amount and shape of cut out sections in each support structure may be present such that the each said structure does not suffer any substantial loss in rigidity or strength.

Support structures having cut out sections therefore have areas of metal, and areas which are cut out and therefore blank. The cut out sections may be preset such that each support structure has a larger blank surface area than surface area of metal. For example, at least 60% of the surface area of each support structure may be cut out sections. Preferably, at least 80% may be cut out sections. This would provide spacer sections which comprise cross pieces connecting the upright edge regions and areas of cut out sections.

The length of at least one or the cut out sections in each support structure may

be greater than the maximum width of the support structure itself. Preferably, the length of each of all the cut out sections in each support structure is greater than the width of the support structure itself.

The cut out sections may extend substantially along the full length of each of the support structures. The cut out sections may be shaped such that the side of each section closest to the support surface is parallel to the incline of the support surface. Additionally, the side of the cut out section farthest from the support surface may be parallel to the second upright edge region.

The shape of the cut out sections may therefore provide a support structure with large blank areas, and metal areas next to each upright edge region with width of 20cm or less.

Such a configuration provides support structures with metal in box-like sections, having cross pieces (i.e. non cut out sections) joining said box-like sections.

The cut out sections of the support structures may be formed by any suitable cutting method. Suitable cutting methods include mechanical cutting, laser cutting, and punching out.

The framework may also comprise a bottom ledge or arrangement of projecting flanges or the like to support a bottom edge of the sheet glass articles. The framework may be inclined outwardly away from the vertical to facilitate support of the sheet glass articles.

In an embodiment where the load supporting framework is fixed to an exterior surface of a vehicle, the framework may have at a lower end a lower ledge extending outwardly of the vehicle. The lower end of the framework would advantageously lie below the vehicle base or floor so that large sheet glass articles may be carried.

The framework is formed from at least two support structures. The exact number of support structures used for each framework may be determined by the type and weight of sheet glass articles to be carried, or the type of vehicle to which the framework is to be affixed.

The support structures are in a mutually spaced relationship, and may have a spacing of between 2 metres and 30cm.

One or more sheet glass articles may be placed with a lower edge on the ledge or to be supported thereby, and are laid back to be in face to face contact with the support surfaces of the framework.

All of the features described herein may be combined with any of the above aspects, in any combination.

For a better understanding of the invention, and to show how embodiments of the same may be carried into effect, reference will now be made, by way of example, to the accompanying diagrammatic drawings in which:

Figure 1 shows a schematic plan view of an existing load supporting framework; and

Figure 2 shows a schematic side view of support structure; and

Figure 3 shows a schematic end view of the support structure of Figure 2; and

Figure 4 shows a schematic view of the support structure of Figure 2 across the section marked I; and

Figure 5 shows a schematic end view of a support structure; and

Figure 6 shows a schematic view of the support structure of Figure 5 across the section marked I; and

Figure 7 shows a schematic section view of a support structure prior to

manufacture of a load supporting framework; and

Figure 8 shows a photograph of a load supporting framework affixed to an interior vertical surface of a lorry.

Referring to Figure 1, there is shown a schematic side view of a prior load supporting framework 10. The prior framework 10 comprises elongate members 11 which form the exterior side surface of the framework 10, and are adapted to receive glass sheets. The framework 10 also comprises bracing members 12 which are arranged horizontally and act to take the load on the elongate members 11 and to keep the elongate members 11 in a spaced relationship.

The existing framework 10 of Figure 1 has a number of disadvantages due to the manufacture of the framework from multiple box section members. These disadvantages are as previously discussed herein.

Referring to Figure 2, there is shown a schematic side view of a support structure 20 of the present invention. The support structure 20 comprises a spacer section 24 which has a narrower top section 26 and a wider bottom section 26, resulting in the support structure 20 being tapered overall. The support structure 20 comprises an angled sheet glass receiving surface 21, and a vertical fixing surface 22.

The support structure 20 comprises three cut out sections 23. The cut out sections 23 reduce the weight of the support structure 20, but do not substantially reduce either the rigidity or strength of the support structure 20. It can be seen that the cut out sections 23 occupy the majority of the surface area of the support structure 20. Additionally, each edge of the cut out sections 23 is parallel to either the receiving surface 21 or fixing surface 22.

Referring to Figure 3, there is shown a schematic end view of the support

structure 20 of Figure 2. The end view shows the fixing edge section 30, and a number of fixing points 31 arranged therethrough. As a number of fixing points 31 are provided on the fixing edge 31, the support structure 20 can be fixed to a wall or surface using any suitable combination of the fixing points 31. The fixing points 31 also allow for extrusion therethrough of adhesive resin placed between the support structure 20 and the wall or surface, thereby providing a stronger bond. This allows for a load supporting framework to be fixed to a variety of vehicle surfaces with little required alteration.

Referring to Figure 4, there is shown a schematic section view of the support structure 20 of Figure 2 at the line marked I. The section view shows the folded metal sheet 40 is arranged to provide a longer spacer section 41 across the width of the support structure 20. The section view also shows two shortened edge regions 42 and 43, which are extending in mutually opposite directions from the sheet 40. One of the edge regions 42 provides a fixing surface with a plurality of fixing points as shown in Figure 3. The other edge region 43 is a receiving or support surface for sheet glass articles.

Referring to Figure 5, there is shown a side view of an alternative support structure 50. The support structure 50 of Figure 5 has two receiving surfaces 51, each able to receive sheet glass. Both outward surfaces 51 of the support structure 50 are inclined at an angle to the vertical, and therefore the support structure 50 is tapered overall. The support structure 50 is mounted to a vehicle body through the base 53, or additionally by the top surface 54 to a vehicle roof. The support structure 50 has an "A-frame" configuration.

The sides of the cut out sections 52 are parallel to the respective support

surfaces 51 they are in proximity to. The majority of the support structure 50 surface area comprises cut out sections 52.

The support structure 50 also comprises three cut out sections 52 which allow for a reduction of weight for the support structure 50 without any substantial reduction of either rigidity or strength. The support structure 50 of Figure 5 is mounted in the middle of the floor in a van or lorry, and therefore is adapted to have glass placed and transported on both sides 51.

Referring to Figure 6, there is shown a sectional 60 view of the support structure 50 of Figure 5 across the line marked as I. The section 60 view shows the sheet of folded metal is arranged to provide a wider spacer section 61. The section view 60 also shows two upright edge regions 62 and 63 extending in mutually opposite direction from the plane of the spacer section 61. As shown in Figure 5, the shortened regions 62 and 63 are both adapted to receive and support sheet glass.

Referring to Figure 7, there is shown a schematic view of a flat template 70 of a support structure . The flat template 70 is shown prior to folding, and comprises a wider spacer section 75 and first 72 and second 71 shortened sections. The first shortened section 72 when folded forms an upright edge region. The first shortened section 72 comprises a number of fixing points 74 to allow mounting on a vertical body. It is not necessary to use all the fixing points 74, and a number of fixing points 74 used may be sufficient to hold the support structure securely against the vehicle body. The second shortened section 71, when folded, forms the support surface upon which sheet glass may be placed.

The second shortened section 71, when folded, forms an inclined support surface. The inclined surface therefore allows the glass sheets to be leant against the

support structure such that the weight of the glass is carried by the support structures. The flat template 70 also has three cut out sections 73 which are arranged through the spacer section 75. These cut out sections 73 reduce the weight of the template 70 and the subsequently formed support structure, whilst retaining strength and rigidity.

It will be seen that, when folded, the flat template 70 of Figure 7 provides a support structure similar to that shown in Figure 2. The flat template 70 for forming the support structure can be easily, quickly, and cheaply manufactured by pressing or cutting templates 70 from sheet metal. The process of manufacturing includes bending or folding the template 70 in order to form the support structures.

It will be seen that flat templates for forming support structures of an "A-frame" or double sided configuration as shown in Figure 5 can be formed in a similar fashion. Each template would comprise two shortened sections which, when folded, would each form inclined upright edge regions providing support surfaces.

Referring to Figure 8, there is shown a load supporting framework 80 mounted on a glass reinforced plastic panel 81. The panel is vertical and forms the side of a vehicle body. The structure 80 comprises support structures 82 which are affixed to the panel 81 at one side, and have support surfaces 83 on an outward side to support sheet glass articles. The support surfaces are inclined in order to more efficiently support the glass sheet. There are also cut out sections 84 which form the majority of the support structures 82 in order to further reduce the weight of the load supporting framework 80.

A bottom ledge is provided by the floor 85 of the vehicle to provide additional support to the glass sheet, although the majority of the weight of the glass is borne by the framework 80. The load supporting framework 80 also has horizontally extending

support bars 86 which are arranged through, and connect with, the support structures 82. The support bars 86 provide additional strength and rigidity to the framework 80. The support bars allow connection of slats (not shown) which have a surface arranged between the support surfaces 83 and the sheet glass. The sheet glass is therefore in direct contact with the slat surfaces, and the glass sheets can be placed on the framework 80.

The glass sheets can be secured by use of straps or clamps.

It is to be understood that the invention is not to be limited to the details of the above embodiments, which are described by way of example only. Many variations are possible.

Claims

1. A load supporting framework (80) for supporting sheet glass articles on a vehicle, the framework having at least two support structures (20, 50, 82) being adapted to be affixed in an upright mutually spaced relationship relative to a body of a vehicle, so as to provide an inclined support surface to receive one or more sheet glass articles, characterised in that each support structure (20, 50, 82) is formed from a rigid metal sheet folded to provide an upright body and upright edge region (21, 43, 51, 62, 63, 83) extending transversely to the body, whereby the said edge region (21, 43, 51, 62, 63, 83) of the respective support structure (20, 50, 82) provides the said inclined support surface.

2. A load supporting framework (80) according to claim 1, wherein the load supporting framework (80) comprises one inclined support surface side (21, 43, 83) which is adapted to receive sheet glass articles, and a second side (22, 42) which is substantially vertical and is adapted to be affixed to the vehicle surface or panel.

3. A load supporting framework (80) according to claim 1, wherein the load supporting framework (80) comprises two inclined support surface sides (51, 62, 63) both adapted to receive sheet glass articles, and said framework having a bottom surface or base (53) which can be affixed to a vehicle body.

4. A load supporting framework (80) according to any preceding claim, wherein each upright edge region (21, 43, 51, 62, 63, 83) extends transversely from the respective

support structure (20, 50, 82), and each upright edge region (21, 43, 51, 62, 63, 83) has a width which is less than the width of the structure (20, 50, 82) to which it extends from.

5. A load supporting framework (80) according to any preceding claim, wherein each upright edge region (21, 43, 51, 62, 63, 83) extends at an angle of approximately 90° to the plane of the respective support structure (20, 50, 82).

6. A load supporting framework (80) according to any preceding claim, wherein each upright edge region (21, 43, 51, 62, 63, 83) comprises a further region extending at an angle of approximately 90° from the edge region (21, 43, 51, 62, 63, 83), and each further region is parallel to the plane of the support structure (20, 50, 82).

7. A load supporting framework (80) according to any preceding claim, wherein each upright edge region (21, 43, 51, 62, 63, 83) extends substantially along all of the vertical length of the support structure (20, 50, 82).

8. A load supporting framework (80) according to any preceding claim, wherein the load supporting framework (80) is provided on a pallet.

9. A load supporting framework (80) according to any preceding claim, wherein the framework (80) comprises elongate members which extend substantially across the support surfaces (21, 43, 51, 62, 63, 83) of the framework, and which engage at its bottom end a bottom ledge or flange extending from the framework (80).

10. A load supporting framework (80) according to any preceding claim, wherein the load supporting framework (80) is upright and there is a bottom ledge or arrangement of projecting flanges to support a bottom edge of the sheet glass articles.

11. A load supporting framework (80) according to any preceding claim, wherein each support structure (20, 50, 82) is formed from a single continuous rigid metal sheet.

12. A load supporting framework (80) according to any preceding claim, wherein the load supporting framework (80) comprises additional support bars (86) arranged substantially horizontally on or through the framework (80), and said bars (86) are attached to two or more support structures (20, 50, 82).

13. A load supporting framework (80) according to any preceding claim, wherein the support structures (20, 50, 82) comprise, in section view, a spacer section which extends in a perpendicular plane to the sheet glass articles.

14. A load supporting framework (80) according to any preceding claim, wherein the support structures (20, 50, 82) also each comprise at least one cut out section (23, 52, 84) arranged through the spacer section.

15. A load supporting framework (80) according to claim 16, wherein at least 60% of the surface area of each support structure (20, 50, 82) are cut out sections (23, 52, 84).

16. A load supporting framework (80) according to either claim 14 or claim 15, wherein the cut out sections (23, 52, 84) extend substantially along the full length of each of the support structures (20, 50, 82).

17. A load supporting framework (80) according to any preceding claim, wherein the support structures (20, 50, 82) are in a mutually spaced relationship having a spacing of between 2 metres and 30cm.

18. A vehicle comprising the load supporting framework (80) of any of claims 1 to 17.

19. A method of manufacturing the load supporting framework (80) of claim 1, the method comprising the steps of:

forming flat templates (70) from rigid metal sheets for at least two support structures (20, 50, 82);

folding each flat template (70) to form support structures (20, 50, 82) to provide an upright body and upright edge region (72) extending transversely to the body,

affixing said support structures (20, 50, 82) in an upright mutually spaced relationship relative to a body of a vehicle so as to provide an inclined support surface to receive one or more sheet glass articles.

20. A load supporting framework (80) as substantially as hereinbefore described and with reference to Figures 2 to 8.

Application No:	GB0723571.6	**Examiner:**	Melanie Bull
Claims searched:	1-20	**Date of search:**	23 February 2009

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	.	EP0885772 A (LANSING)
A	.	US5411360 A (HILLIKER)
A	.	DE4301283 A (BORN)
A	.	EP0503615 A (GLASER)
A	.	GB2186239 A (WRIGHT)
A	.	DE4300822 A (HEGLA)
A	.	WO2006/136523 A (SOSSAI)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

B60P; B65G

The following online and other databases have been used in the preparation of this search report

WPI and EPODOC

International Classification:

Subclass	Subgroup	Valid From
B60P	0003/00	01/01/2006