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GB 2502456 A **GB 2344846 A**
GB 1315499 A **EP 0717164 A1**

(58) Field of Search:
INT CL **E06B**
Other: **EPODOC, WPI**

(54) Title of the Invention: **A glazing assembly**
Abstract Title: **A glazing assembly**

(57) A fire resistant glazing assembly securing a glazing panel comprising: a glazing panel 6, a frame with a core 3 having a major surface (12, Figure 3) and an aperture 5 therein; the aperture receiving the panel, a bead 7 with internal portion lying within the aperture and securing the panel, and a liner 9 external to the core and overlying an edge of the aperture, wherein the internal portion of the bead lies between a portion of the liner facing the glazing panel; and an edge of the glazing panel within the aperture. Optionally a second liner may be included and the bead will additionally lie between the edge of the glazing panel within the aperture and a portion of the second liner facing the glazing panel. Also disclosed are a kit of parts relating to the glazing assembly and a method of manufacturing.

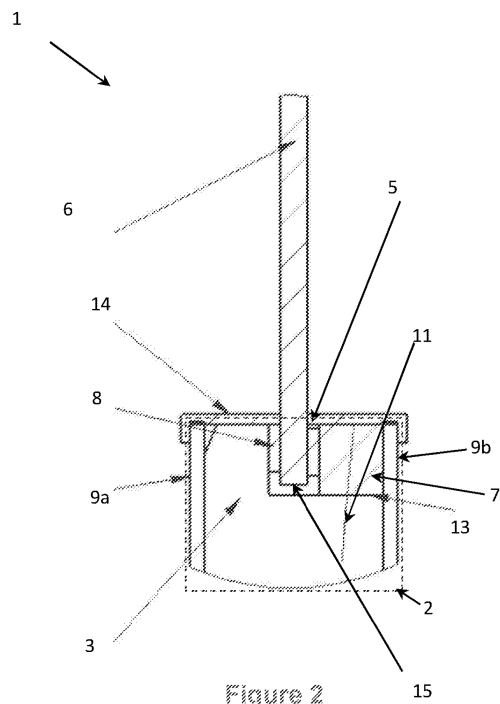


Figure 2

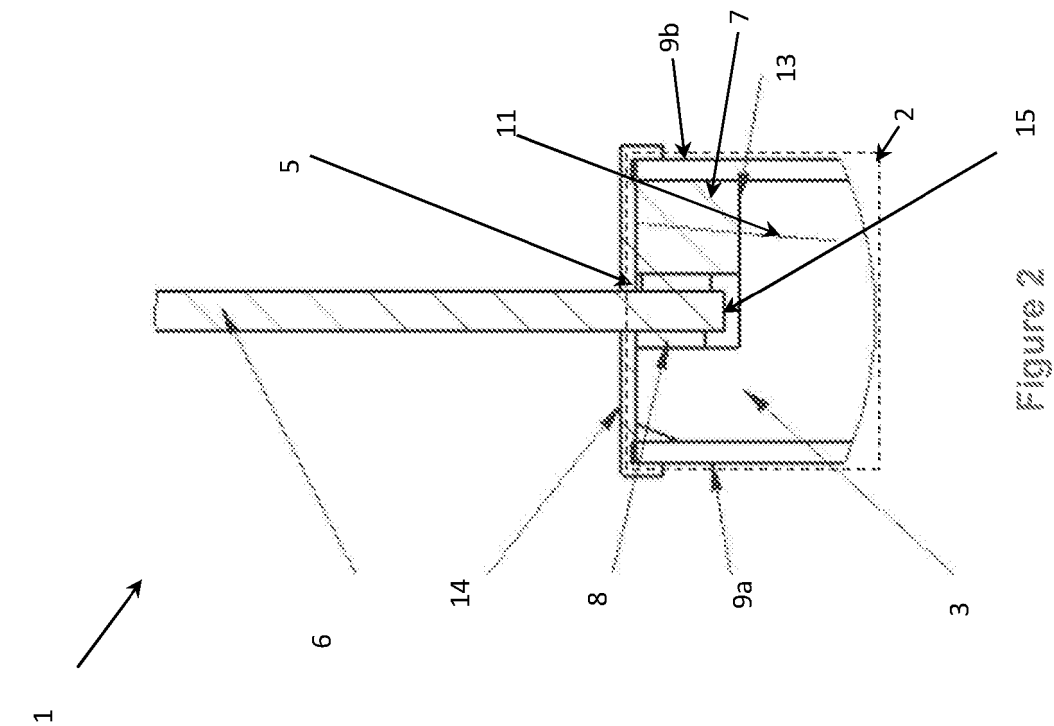


Figure 1
PRIOR ART

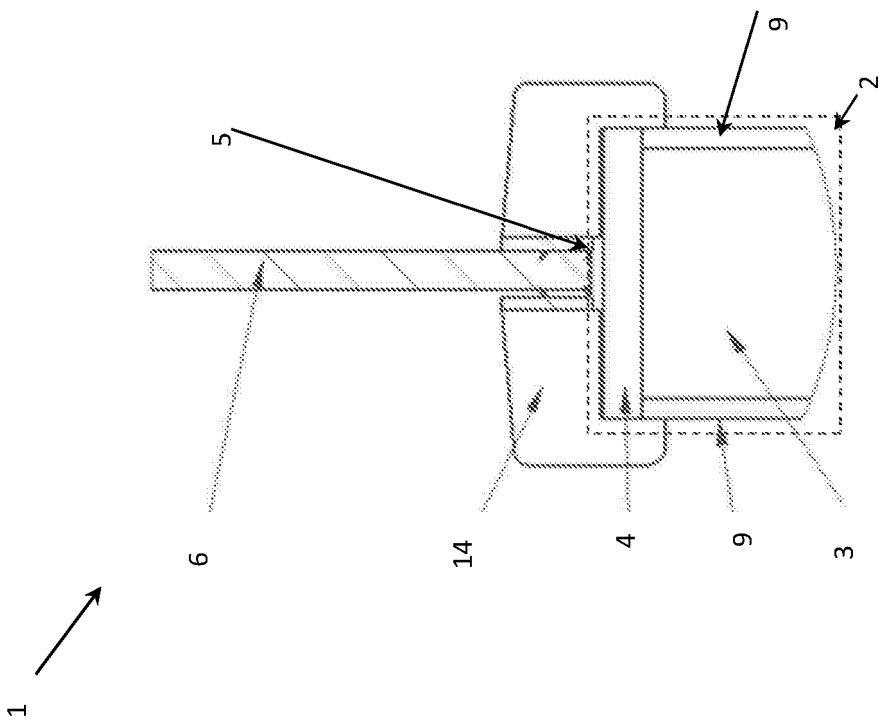


Figure 2

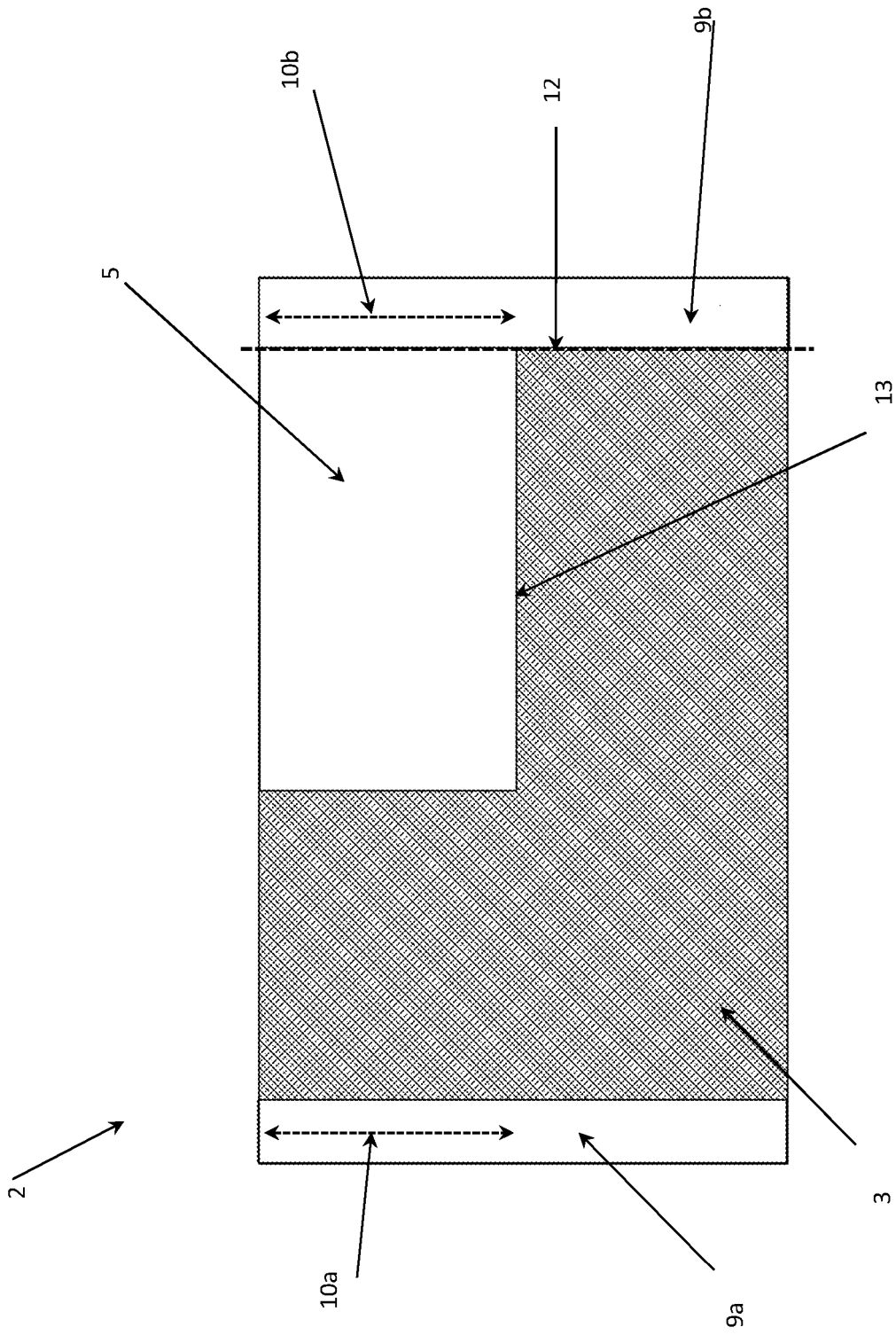


Figure 3

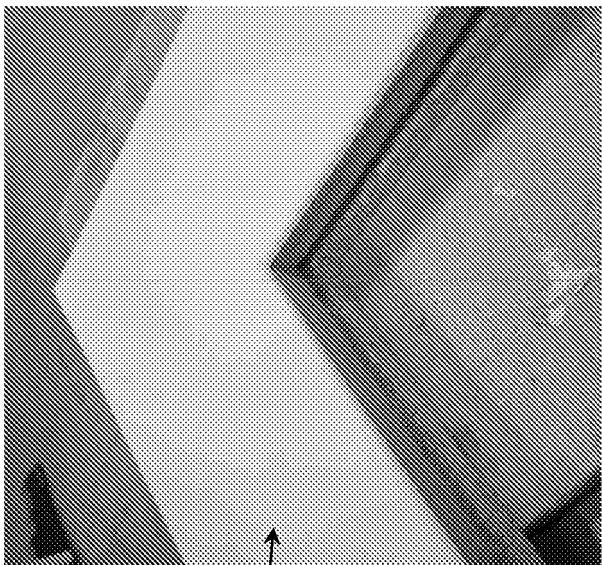


Figure 6

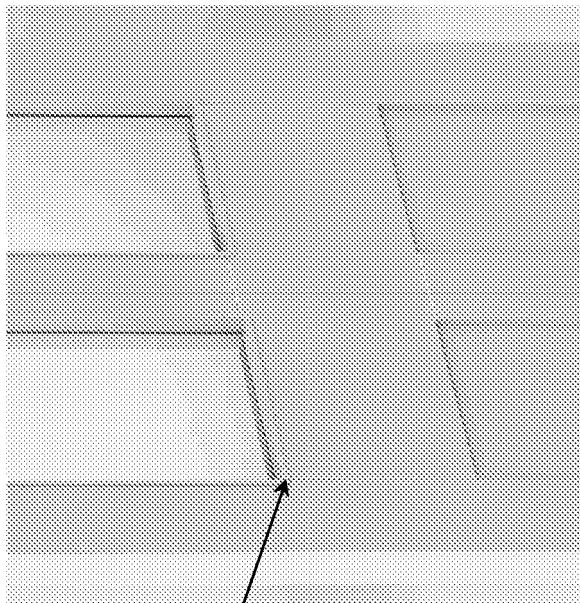


Figure 7

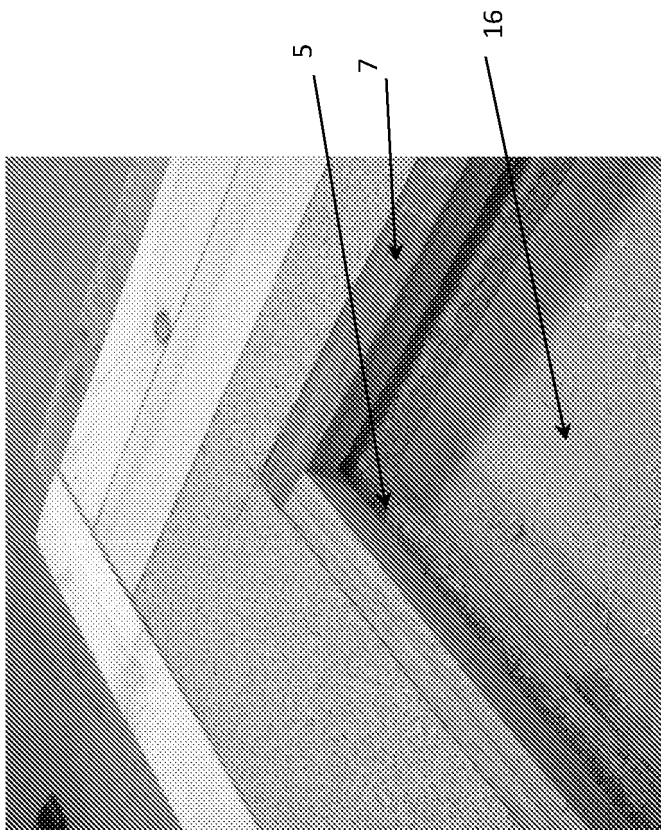


Figure 4

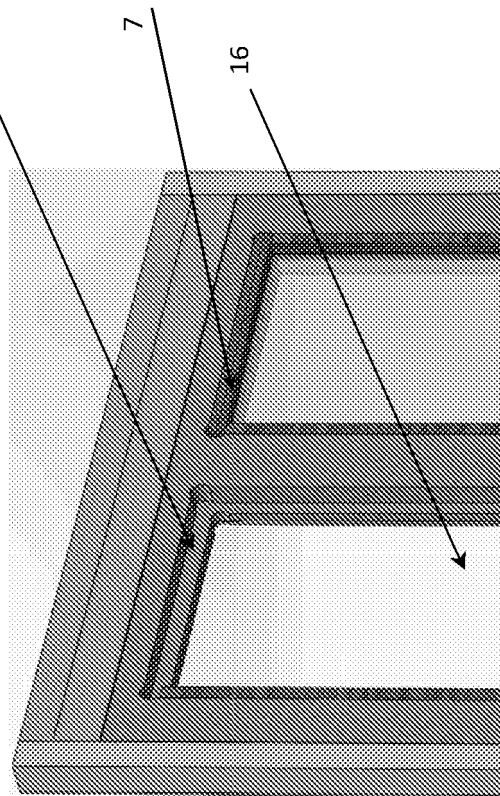


Figure 5

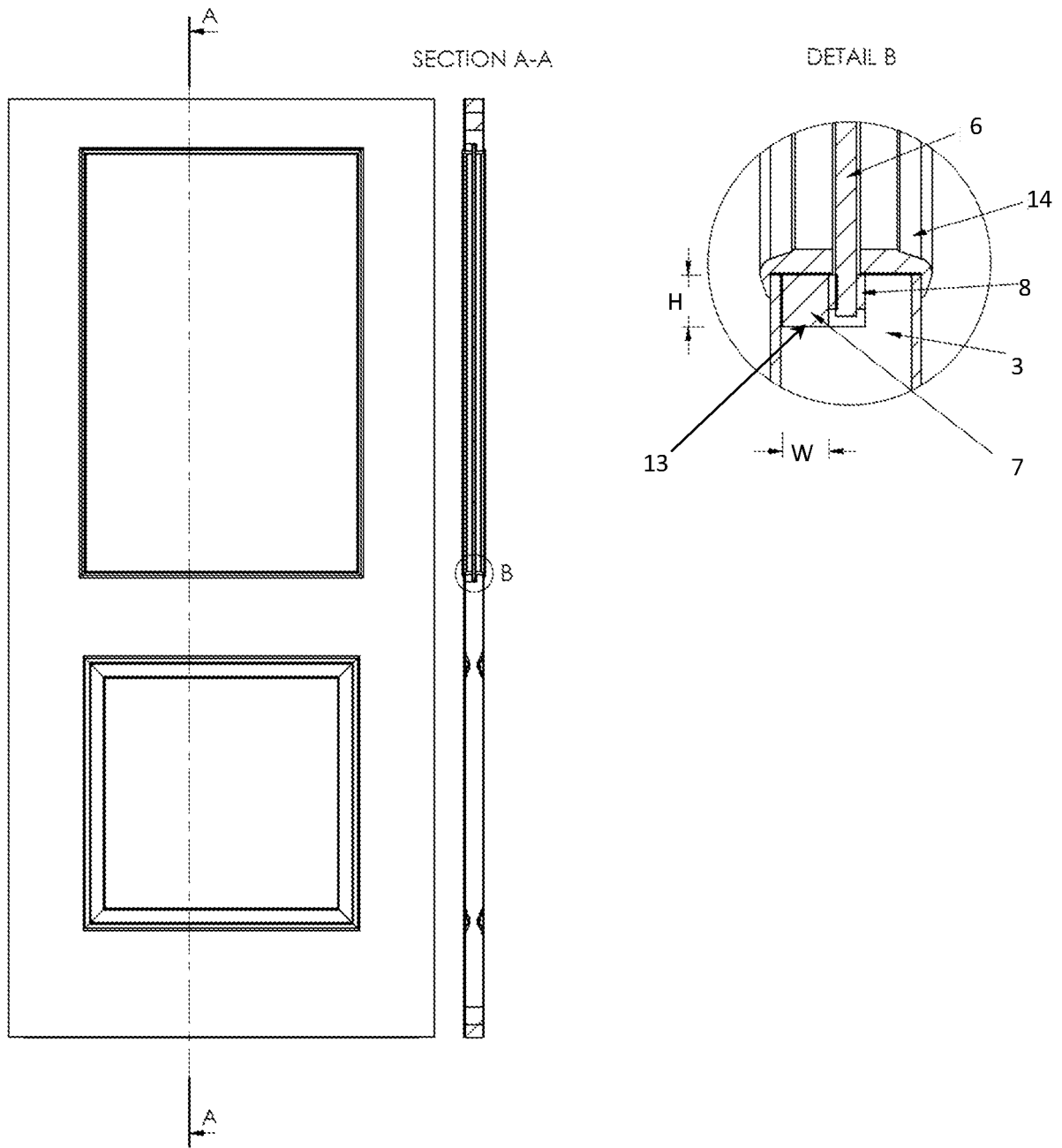


Figure 8

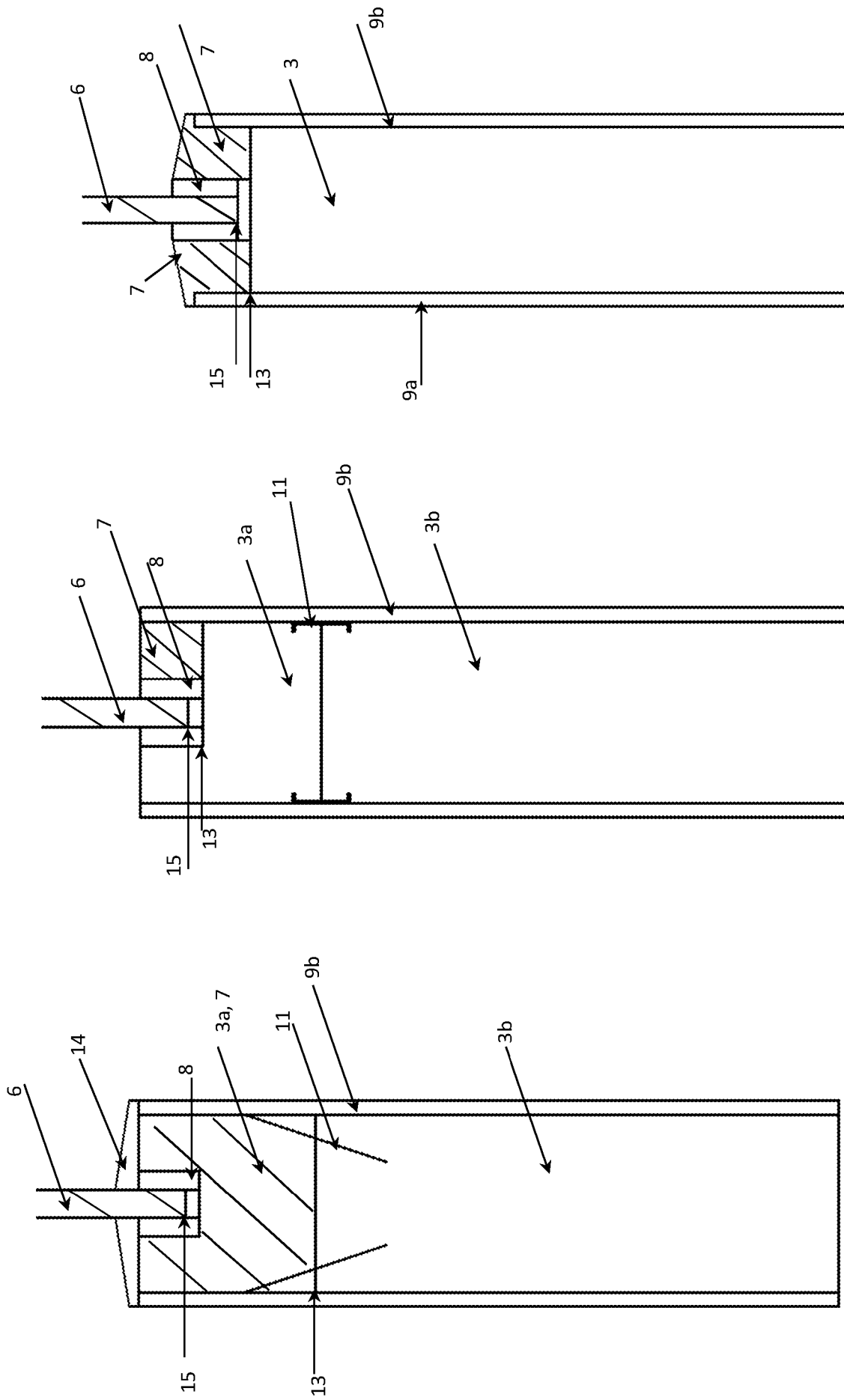


Figure 11

Figure 10

Figure 9

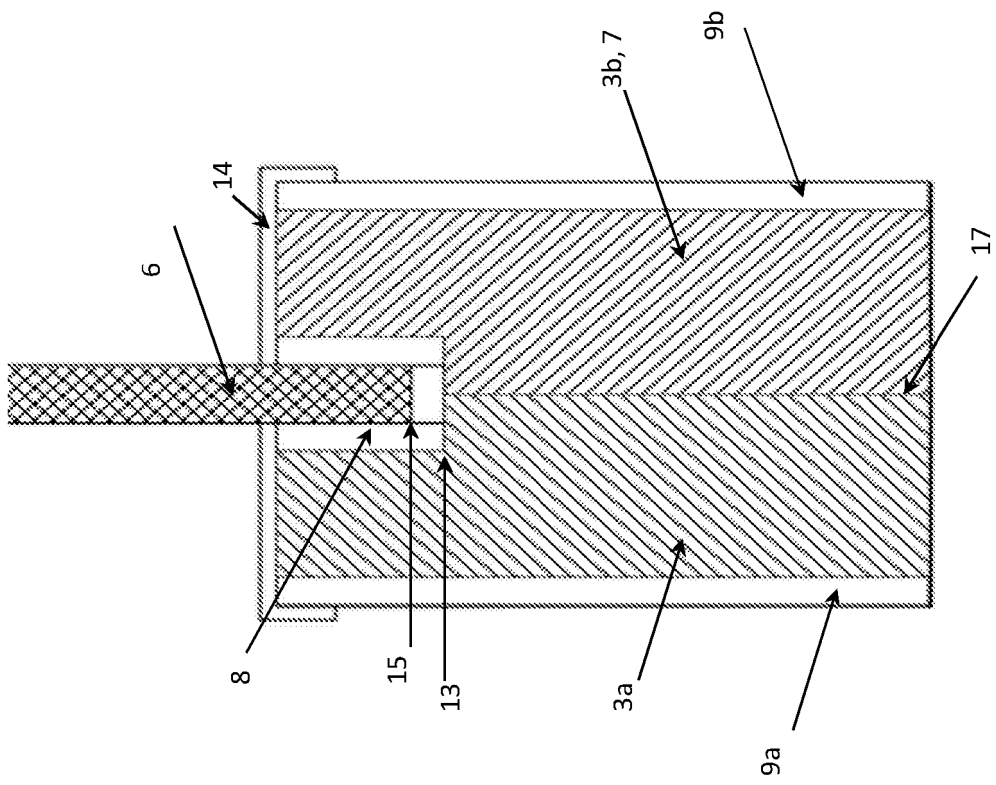
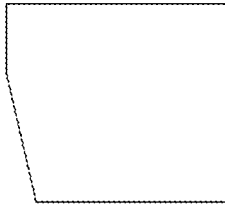
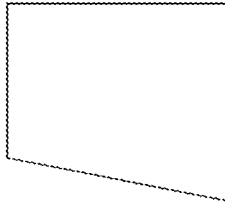


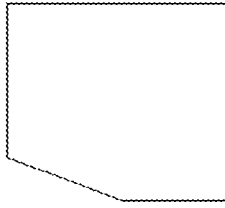
Figure 12



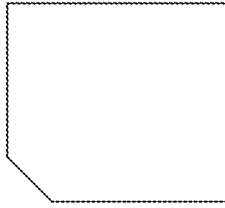
Top Chamfer



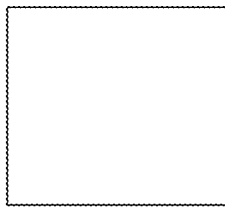
Full Side Chamfer



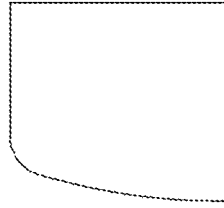
Side Chamfer



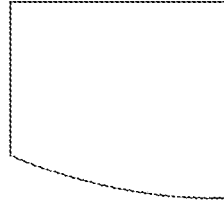
Corner Chamfer



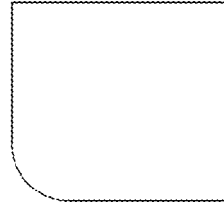
Square



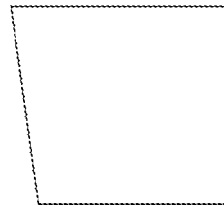
Curved Side with Radius Corner



Curved Side



Radius Corner



Full Top Chamfer

Figure 13

Title: A glazing assembly

5 Background

This invention relates to improvements in glazing assemblies, particularly fire
glazing assemblies. The invention has particular uses for fire resistant barriers
for buildings, specifically partitions comprising glazed openings such as doors
10 and windows.

Fire resistant barriers commonly include glazing panels. For these barriers to
be effective, the interface between the glazing panel and the surrounding
material needs to be optimally sealed in fire conditions.

15

It is known to place intumescent material around the edge of a glazing panel
fitted in an aperture in the barrier, and secure the glazing panel in the aperture.
In a fire, the intumescent material expands as it heats up, sealing any gaps
between the glazing panel and the rest of the barrier, reducing the volume of
20 smoke passing through the barrier.

The present invention seeks to provide an improved fire resistant glazing
assembly, particularly providing optimal fire resistance, but also reducing the
time for manufacturing and reducing material use. The invention also seeks to
25 improve the aesthetics of a glazing assembly, offering fire integrity and
insulation in both domestic and commercial applications.

Brief description of the prior art

Figure 1 shows a cross-sectional view of a prior art glazing assembly 1.

Figure 1 shows the assembly 1 comprising a glazing frame 2 (shown dashed)
5 having a core 3, enclosed by two liners 9 on opposing sides, and a frame end cap 4. An external 'capping' bead 14 surrounds the glazing frame 2 and forms an aperture 5. The aperture 5 is layered with intumescent tape 8 and a glass panel 6 is received in the aperture, secured by the external bead 14.

10 In the prior art example of figure 1, the external bead 14 is prominent and significantly overlaps the glazing frame.

GB2394246 discloses a system for securing a glass panel in a glazing frame, using recesses within the frame. GB'246 teaches providing a recess with an
15 extended depth to allow for installation of the glass panel.

Brief description of the drawings

In order that the present invention may be readily understood, embodiments
20 thereof will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows a cross-sectional view of a prior art glazing assembly;

Figure 2 shows a cross-sectional view of a glazing assembly according to an
25 embodiment of the present invention;

Figure 3 shows a cross-sectional view of a glazing frame, illustrating various terms used in the following description;

Figure 4 shows a photograph of a prototype embodying the present invention, without door liners;

30 Figure 5 shows a CAD render of the prototype of figure 4 without frame liners;

Figure 6 shows a photograph of the prototype of figure 4 with frame liners fitted;

Figure 7 shows a CAD render of the finished product of figure 5;

Figure 8 shows a third-angle CAD projection of an embodiment of the present invention;

Figures 9 to 12 show cross-sectional views of additional embodiments of the present invention; and

Figure 13 shows various bead profiles that may be used with the present invention.

Brief description of the invention

10

In a first aspect, the present invention provides a fire resistant glazing assembly securing a glazing panel, the assembly comprising:

- i) a glazing panel,
- ii) a glazing frame with a core having a major surface and an aperture in the major surface, the aperture receiving the glazing panel,
- 15 iii) a bead, an internal portion of the bead lying within the aperture and securing the glazing panel in the aperture, and
- iv) a liner external to the core and overlying an edge of the aperture, wherein the internal portion of the bead lies between a) a portion of the liner facing the glazing panel; and b) an edge of the glazing panel within
- 20 the aperture.

In a second aspect, the present invention provides a fire resistant glazing assembly securing a glazing panel, the assembly comprising:

- 25 i) a glazing panel,
- ii) a glazing frame with a core having a major surface and an aperture in the major surface, the aperture receiving the glazing panel,
- iii) a bead, an internal portion of the bead lying within the aperture and securing the glazing panel in the aperture, and
- 30 iv) first and second liners external to the core and overlying an edge of the aperture, wherein the internal portion of the bead lies between:

a) a portion of the first liner facing the glazing panel; and b) an edge of the glazing panel within the aperture; and additionally between
b) the edge of the glazing panel within the aperture; and c) a portion of the second liner facing the glazing panel.

5

The present invention also provides a kit of parts to construct a fire resistant glazing assembly, the kit comprising:

- i) a glazing panel,
- ii) a glazing frame with a core having a major surface and an
10 aperture in the major surface,
- iii) a bead with an internal portion sized to lie within the aperture, for securing the glazing panel in the aperture, and
- iv) a liner sized to overlie an edge of the aperture such that, when
the kit is assembled, the internal portion of the bead lies between a) a portion
15 of the liner facing the glazing panel; and b) an edge of the glazing panel within the aperture.

The present invention additionally provides a method for assembling a fire resistant glazing assembly comprising a glazing frame having a core and a
20 glazing panel, the method comprising:

- securing the glazing panel in an aperture in the core of the glazing
frame using a bead, an internal portion of the bead lying within the aperture
and thereby securing the glazing panel in the aperture; and
- securing an liner to the glazing frame, external to the core and overlying
25 an edge of the aperture, wherein the internal portion of the bead thereby
lies between a) a portion of the liner facing the glazing panel; and b) an
edge of the glazing panel within the aperture.

The present invention further provides assemblies and methods as claimed.

30

The present invention has numerous benefits, including:

- reduced use of materials (including reduced material waste) and therefore material costs;
- improved fire resistance performance;
- 5 • improved aesthetics; and
- improved manufacturing speed and efficiency.

Detailed description of the invention

- 10 Figure 2 shows a cross-sectional view of a glazing assembly according to an embodiment of the present invention. The glazing assembly 1 of figure 2 comprises a glazing frame 2 having a core 3 that is partially enclosed by two liners 9a,9b, these being located on opposing sides. Figure 3 shows the glazing frame 2 of the embodiment of figure 2 pre-assembly, illustrating
- 15 various terms used in the following description. A major surface 12 (shown dashed in figure 3) of the core 3 is adjacent to the liner 9b. There is an aperture or recess 5 in the major surface 12 of the core 3 of the glazing frame 2 (best shown in figure 3).
- 20 As shown in figure 2, a square/rectangular bead 7 is located within the glazing frame 2 and is a distinct element that effectively forms part of, thus is within, the core 3. The bead 7 is secured to the core 3 by a securing element 11, in the form of a pin.
- 25 A glass panel 6 is also received in the aperture 5, secured in the aperture 5 by the internal bead 7. Intumescent tape 8 surrounds the edges of the glass panel 6 in the aperture 5. The aperture 5 is thus a receptor for the glazing panel 6 and the internal portion of the bead 7. Effectively, part of the core 3 provides a recess for the glazing panel 6 and the bead 6 abuts the glazing
- 30 panel 6 and secures it in place in the aperture 5. In this embodiment, the bead 7 is fully internal (i.e. it does not have any external or exposed faces).

The liner 9b adjacent to the bead 7 is external to the core 3 and overlies a lowermost edge 13 of the aperture 5 (best shown in figure 3). The bead 7 thus lies between a portion 10b (best shown in figure 3) of the liner 9b that faces the glazing panel 6 (when installed, as per figure 2) and an edge 15 of the glazing panel 6 that is within the aperture 5 (again, when installed, as per figure 2). In other words, in the cross-sectional view shown in figure 2, the liners 9a,9b, the core 3 and the bead 7 sandwich the glazing panel 6, securing it in place.

10

In the cross-sectional view of figure 2, the edge 15 of the glazing panel 6 is the lowermost edge of the glazing panel 6. As shown for example in figure 5, a similar securing arrangement is used for securing the opposing (upper) end of the glazing panel 6, and the skilled person would appreciate that the corresponding edge 15 of the glazing panel 6 within the aperture 5 would be the uppermost edge. These terms are defined with the glazing assembly 3 in the vertical orientation, as shown in figure 2.

Preferably, as shown in figure 2, the outermost edges of the bead 7 and the core 3 are flush, so that the liner 9b (which may be a thin 'skin') provides a smooth finish covering the outermost edges of the bead 7 and core 3. In other words, preferably, the extent of the or each liner 9a, 9b overlying the lowermost edge 13 is the height of the bead 7, (see figure 8), thus the uppermost edge(s) of the or each liner and the uppermost edge of the bead 7 are flush. In other embodiments, the or each liner 9a, 9b may overlie the lowermost edge 13 by just a few mm, preferably at least 3 mm and more by preferably 5 to 20 mm.

In figure 2, an additional L-shaped external bead 14 is provided on either side of the glazing panel 6, providing an improved aesthetic finish, as illustrated in figure 7. The external bead 14 can be of any profile to match the aesthetics of the glazing assembly 3, and is not required for fire integrity.

30

Figures 4 and 5 show the assembly of figure 2 in more detail, illustrating the make-up of the assembly with the bead 7, without the glazing panel 6 in place. An opening 16 for receiving the glazing panel 6 is shown in figure 4. As shown in figures 4 and 5, preferably the outermost edges of the bead 7 are flush with the outermost edges of the core 3, thus the beading system is not detectable by the end user when the liner 9 is installed. Figure 6 shows the assembly with the liner 9 in place. Figure 7 shows the final make-up of the assembly with the additional external bead 14 described above.

10

The embodiment of figures 3 to 7 demonstrates numerous advantages over the prior art example of figure 1. In particular, the embodiment of figures 3 to 7 reduces material use, since the core 3 of the glazing frame is used to secure the glass panel 6 on one side. The glass panel 6 is thus effectively surrounded by the solid core 3 and bead 7, with no gaps needed for assembly, providing optimal fire integrity. As a result, the external bead 14 is entirely optional and is not needed to provide any support to the glass panel 6. Accordingly, this arrangement provides a more robust and secure assembly, since the bead 7 is not exposed and thus is not affected by fire as quickly, enhancing effectiveness as a fire barrier. By contrast, in the prior art example of figure 1, the external bead 14 is quickly affected by fire, and thus, as the bead 14 supports the glazing panel 6, the panel 6 can become loose, allowing transmission of smoke and the potential for collapse – the glazing panel can potentially fall from securement.

25

Another advantage is that the intumescent tape 8 is more robustly secured in place as it expands in the heat of a fire.

The use of the bead 7 with glazing frame liners 9 also means that the assembly process is suitable for use with press-glazing methods (see details below) for rapid, automated assembly.

30

As shown in figure 8, preferably the bead 7 is dimensioned to be flush with the remainder of the core 3 of the glazing frame. Exemplary dimensions of the bead 7 are 15 mm height (H) and 13.5 mm width (W). Of course, suitable dimensions are dictated by the dimensions of the whole glazing assembly. In other embodiments, the bead is substantially 3 to 30 mm, preferably 5 to 20 mm and most preferably 14 to 16 mm in height; and substantially 2.5 to 30 mm, preferably 5 to 20 mm, more preferably 10 to 15 mm and most preferably 11 to 14 mm in width when located on only one side of the core 3, as in figure 8.

10

If two bead parts are used, such as is possible in the embodiments of figures 9 and 11, then each bead part may have the above dimensions. In further embodiments, the bead 7 may be notably wider, preferably 5 to 75 mm, more preferably 20 to 60 mm, most preferably 25 to 40 mm, extending across more (or all) of the core 3.

15

As shown in figures 3 and 8, preferably the aperture 5 is essentially rectangular and has a substantially constant depth across its width (this being easiest to form). Preferably, as shown in figure 8, the depth of the portion of the aperture 5 for receiving the glazing panel 6 is the same as the height of the bead, so that the lowermost edges of the bead 7 and the glazing panel 6 are substantially parallel in the aperture 5 (save for any intumescent material 8 between the glazing panel 6 and the core 3 that might not necessarily be used between the bead 7 and the core 3). In other embodiments (e.g. as shown in figure 9), these heights may differ, typically by no more than 75%, preferably less than 25% and more preferably less than 10%, so as to make optimal use of the core 3 material.

20

25

Figures 9, 10, 11 and 12 show alternative embodiments of the present invention. In summary, the glazing assembly 1 of figure 9 differs from that of figure 2 in that the bead 7 of the figure 9 embodiment is substantially U-shaped. The aperture 5 (the receptor for the glazing panel 6 and the internal

30

portion of the bead 7) is in the core 3 and the bead 7 (in the aperture 5) fully lies within the core 3. The bead 7 is located within the glazing frame 2 and effectively forms a first part 3a of the core 3. The bead 7 is secured to a second part of the core 3b by two securing elements 11, in the form of pins.

5 Again, the liner 9b adjacent to the bead 7 is external to the core 3 and overlies the (lowermost) edge 13 of the aperture 5. The bead 7 thus lies between the portion 10b of the liner 9b that faces the glazing panel 6 and the (lowermost) edge 15 of the glazing panel 6 that is within the aperture 5 and (additionally) between a portion 10a of the liner 9a that faces the glazing panel 6 and the
10 edge 15 of the glazing panel 6 that is within the aperture 5.

In some embodiments, the bead 7 comprises multiple parts or elements and at least an (first) internal portion of a first part of the bead 7 lies between a) the portion 10a of the first liner 9a facing the glazing panel 6; and b) the edge 15
15 of the glazing panel 6 within the aperture 5; and at least a (second) internal portion of a second part of the bead 7 lies between: b) the edge 15 of the glazing panel 6 within the aperture 5; and c) the portion 10b of the second liner 9b facing the glazing panel 6. The portion of the aperture 5 for receiving the glazing panel 6 is formed between the two bead parts.

20

In figure 9, an external bead 14 is also shown, providing an improved aesthetic finish. The external bead 14 is chamfered, which helps to reduce fire propagation. This external bead 14 can either sit flush with the liners 9a, 9b, or have a lipped profile as in figures 2 and 7. This allows for quicker production
25 and hides any radius corners when forming the aperture 5.

In all of figures 9 to 12, three separate strips of intumescent tape 8 surround the edges of the glass panel 6 in the aperture 5.

30 In figure 10, a further embodiment is illustrated. This embodiment is similar to the figure 2 embodiment, but without an external bead 14. In this embodiment, the core is in two portions, 3a, 3b. The bead 7 effectively forms part of the first

portion 3a of the core 3 and the first portion of the core 3a is secured to the second portion by securing elements 11 in the form of staples. The bead 7 is fully internal and within the core, but has an exposed face.

- 5 The embodiments of figures 9 and 10 are advantageous as they are modular in nature and the assembly can be made in two phases: i) the glass panel 6 is secured to the bead 7 and ii) the core parts 3a, 3b are secured.

10 In figure 11, a further embodiment is illustrated. Here, the bead 7 provides the functionality of both the internal bead 7 and the optional external bead 14. The bead 7 has an internal portion, forming part of the core 3, and an external portion protruding past the liners 9a,9b, providing an aesthetic finish and having a chamfer to reduce fire propagation. The aperture 5 (the receptor for the glazing panel 6 and the internal portion of the bead 7) is in the core 3,
15 within the bead 7, but may extend further into the core 3. The bead 7 may be a single, substantially U-shaped bead, or may comprise two (or more) parts, the portion of the aperture 5 for receiving the glazing panel 6 being formed between or within the multiple parts, as discussed above. In either case, the glass panel 6 is secured within the core 3 of the glazing frame. In some
20 variants, the bead 7 is a push-fit into the aperture 5.

Again, the liner 9b adjacent to the bead 7 is external to the core 3 and overlies the (lowermost) edge 13 of the aperture 5. The bead 7 thus lies between the portion 10b of the liner 9b that faces the glazing panel 6 and the (lowermost)
25 edge 15 of the glazing panel 6 that is within the aperture 5. Additionally, as in figure 9, the bead 7 lies between opposing portions (10a,10b) of the liners 9a, 9b that face the glazing panel 6 and the (lowermost) edge 15 of the glazing panel 6 that is within the aperture 5.

30 A yet further embodiment is shown in figure 12. In this embodiment, the core 3 has two parts: a first part 3a, the bead 7 forming the second core part 3b. In this embodiment, bead 7 extends the full length of the frame. The two parts 3a,

3b of the core 3 are shown to be symmetrical about a joining edge 17.

Additionally, the aperture 5 is a receptor for receiving the glazing panel 6 and is formed between recesses in the first 3a and second 3b parts of the core 3.

As in the earlier embodiments, an internal portion (edge) of the bead 7 lies

5 within the aperture 5 and secures the glazing panel 6 in the aperture 5.

As in the previous embodiments, the liner 9b adjacent to the bead 7 is external to the core 3 and overlies the (lowermost) edge 13 of the aperture 5. The

bead 7 thus lies between the portion 10b of the liner 9b that faces the glazing

10 panel 6 and the (lowermost) edge 15 of the glazing panel 6 that is within the aperture 5.

In the cross-sectional views of the figure 9, 11 and 12 embodiments, the liners 9a,9b and the bead 7 (forming part of the core 3) sandwich the glazing panel

15 6, securing it in place.

In some embodiments, the bead 7 and/or the external bead 14 comprises a chamfer or radius to direct flames in a fire. Figure 13 shows various profiles that may be used with the present invention. These bead profiles may be

20 used on any of the beads in the assembly, with the chamfer/curvature generally facing out from the core 3. Compared to the square profile, the chamfered/radius edges can help deflect flames away from the core 3.

Preferred dimensions are approximately 3mm radius of curvature and approximately 1.5mm chamfer, these providing a preferable balance of fire

25 deflection, aesthetics and integrity.

The standard profile is:

a) square; other preferred profiles include:

b) corner chamfer

30 c) side chamfer

d) full side chamfer

e) top chamfer

- f) full top chamfer
- g) radius corner
- h) curved side
- i) curved side with radius corner, as illustrated in figure 12.

5

Assembly

A method of construction and assembly will now be described. The present invention can be constructed by routing a frame (that becomes the glazing frame) to accommodate the glazing panel 6, for example by forming a straight-through opening 16 for the glazing panel 6 in a block of suitable material in a first pass (if no opening is provided) and then forming an aperture 5 or recess/rebate in the core 3 for securing the glazing panel 6 in a second pass. Of course, either/both of these operations may not be necessary if using a frame with suitable openings/apertures, or these may be combined into a single process.

The glazing panel 6 is then received in the opening 16 and secured in the aperture 5 with the bead 7, preferably additionally with intumescent material 8 such as tape or mastic between the glazing panel 6 and the aperture 5 and/or between the bead 7 and the glazing panel 6. The bead 7 is fixed to the core 3, compressing the glazing panel 6 into position, using a securing element 11, such as a pin, screw, nail or adhesive.

A suitably-shaped liner 9 is then fitted to the frame, e.g. by pressing and gluing, thereby concealing and sealing the fire glazing system. Of course, the liner 9 may be shaped in a similar way as the frame, if needed.

In some embodiments, an external capping bead 14 may additionally be used for aesthetic purposes, and could be secured by any suitable means, such as adhesive tape.

To produce the assembly of figure 12, two core boards are used (one as the core frame 3a and the other forming the bead 7), each machined with an opening for the glazing panel 6 and an aperture/recess 5 to hold the glazing panel 6 therebetween. The internal joining edge 17 between the core parts 3a, 3b is secured e.g. with glue or pinning and then pressed with the glazing panel 6 and outer liners 9a, 9b.

The fire glazing assembly may optimally be constructed using the hot-press or cold-press methods. In the hot-press method, glazing frames enter multiple banks of single presses which are lined with rotating belts. These chambers are then decreased in height to make contact with the frames. The frames are held for a set amount of time to transfer heat through the facing of the frame, activating glue. The glue then bonds all materials together within the core 3, creating a solid construction. The frames then leave the press on the belts and are then sized and finished.

In the cold-press method, frames are assembled (normally by hand) into stacks (normally of varying height, depending on order number). The stacks are transported on belts into a hydraulic or pneumatic press. The press makes contact with the frames under pressure, in which each frame transfers the load. The press is held for set amount of time (longer than in a hot-press) until the glue cures. As per the hot-press method, the frames then leave the press on the belts and are sized and finished.

Further modifications and improvements

In some embodiments, the bead 7 is shown to be square/rectangular in shape. In other embodiments, the bead 7 may be any other shape, preferably comprising a lip or a rebate for supporting an underside of the glass panel 6, which can reduce burn-through to the core 3. Preferably, the bead is b-, d-, L- or U- shaped.

In some embodiments, intumescent tape 8 is used in the aperture 5 between the core 3 and the glass panel 6, to reduce fire propagation. In some embodiments, mastic may be used.

In some embodiments, securing elements 11 are used to secure parts of the core 3 together. In particular examples, pins, tape and staples are used, but any other securing elements such as mastic, other adhesives or mechanical fasteners (screws, nails, pins, rivets etc.) may be used. Any number of securing elements may be used. Some securing elements 11 may be temporary and removed later in the process (e.g. when securing the liners).

In some embodiments, two liners 9 are shown. In some embodiments, only one liner may be required. In some embodiments, the liners 9 may be thin skins. In other embodiments, thicker layers may be used.

In some embodiments, multiple strips/sections of intumescent tape 8 are shown between the core 3 and the glazing panel 6; and/or between the glazing panel 6 and at least the internal portion of the bead 7. In other embodiments, a single continuous strip/section may be used, the tape may be replaced with an alternative insulating or intumescent material, or omitted entirely.

Preferred materials

The term 'glazing' includes any transparent or translucent materials such as glass, plastics and similar materials.

5

Preferably, the bead 7 is manufactured from wood, a wood-based material, composite, metal, plastic or plant-based material. Particularly preferred materials include chipboard, sugarcane and flax as these are inexpensive, environmentally friendly and have suitable fire resistance

10

The types of glazing panel 6 can include un-insulated, insulated or wired glass, and also non-glass materials.

When used in this specification and claims, the terms "comprises" and "comprising" and variations thereof mean that the specified features, steps or integers are included. The terms are not to be interpreted to exclude the presence of other features, steps or components.

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

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Index to reference numerals

- | | | |
|----|------|--|
| | 1. | Glazing assembly |
| | 2. | Glazing frame |
| 5 | 3. | Core of glazing frame |
| | 3a. | Core of glazing frame (first part) |
| | 3b. | Core of glazing frame (second part) |
| | 4. | Glazing frame end cap (prior art) |
| | 5. | Aperture in core of glazing frame |
| 10 | 6. | Glazing panel |
| | 7. | (Internal) bead |
| | 8. | Intumescent tape |
| | 9. | Liner for glazing frame |
| | 9a. | First liner |
| 15 | 9b. | Second liner |
| | 10. | Portion of liner facing glazing panel |
| | 10a. | Portion of first liner facing glazing panel |
| | 10b. | Portion of second liner facing glazing panel |
| | 11. | Core securing elements |
| 20 | 12. | Core major surface |
| | 13. | Edge of aperture |
| | 14. | (External) bead |
| | 15. | Edge of glazing panel in aperture |
| | 16. | Opening for glazing panel |
| 25 | 17. | Joining edge |

Claims

1. A fire resistant glazing assembly securing a glazing panel, the assembly comprising:
 - 5 i) a glazing panel,
 - ii) a glazing frame with a core having a major surface and an aperture in the major surface, the aperture receiving the glazing panel,
 - iii) a bead, an internal portion of the bead lying within the aperture and securing the glazing panel in the aperture, and
 - 10 iv) a liner external to the core and overlying an edge of the aperture, wherein the internal portion of the bead lies between a) a portion of the liner facing the glazing panel; and b) an edge of the glazing panel within the aperture.

- 15 2. A fire resistant glazing assembly securing a glazing panel, the assembly comprising:
 - i) a glazing panel,
 - ii) a glazing frame with a core having a major surface and an aperture in the major surface, the aperture receiving the glazing panel,
 - 20 iii) a bead, an internal portion of the bead lying within the aperture and securing the glazing panel in the aperture, and
 - iv) first and second liners external to the core and overlying an edge of the aperture, wherein the internal portion of the bead lies between:
 - 25 a) a portion of the first liner facing the glazing panel; and b) an edge of the glazing panel within the aperture; and additionally between:
 - b) the edge of the glazing panel within the aperture; and c) a portion of the second liner facing the glazing panel.

- 30 3. The glazing assembly of any preceding claim, wherein the internal portion of the bead comprises a lip or rebate for supporting the edge of the glazing panel within the aperture.

4. The glazing assembly of any preceding claim, wherein the bead is substantially b-, d-, L- or U- shaped.
- 5 5. The glazing assembly of any preceding claim, wherein the bead is fully internal and does not protrude beyond an edge of the liner.
6. The glazing assembly of any of claims 1 to 4, wherein the bead comprises an internal portion and an external portion that protrudes beyond an edge
10 of the liner.
7. The glazing assembly of any preceding claim, wherein the bead is at least partially constructed from an intumescent material.
- 15 8. The glazing assembly of any preceding claim, wherein the bead comprises a chamfered or curved edge on one or more edges facing out of the core.
9. The glazing assembly of any preceding claim, wherein the glazing frame core comprises multiple parts and two or more of the parts are joined to
20 form the whole glazing frame core.
10. The glazing assembly of any preceding claim, further comprising an additional, external bead.
- 25 11. The glazing assembly of claim 10, wherein the external bead comprises a chamfered or curved edge on one or more externally-facing edges.
12. The glazing assembly of any preceding claim, wherein the securement is by an interference fit and/or adhesive and/or tape.
- 30 13. The glazing assembly of any preceding claim, further comprising:

intumescent tape within the aperture, between the core and the glazing panel; and/or

intumescent tape between the glazing panel and at least the internal portion of the bead.

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14. The glazing assembly of any preceding claim, further comprising one or more additional liners surrounding the glazing frame.

15. The glazing assembly of claim 2, wherein the bead comprises multiple

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parts and at least an internal portion of a first part of the bead lies between:

a) the portion of the first liner facing the glazing panel; and b) the edge of the glazing panel within the aperture; and

at least an internal portion of a second part of the bead lies between:

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b) the edge of the glazing panel within the aperture; and c) the portion of the second liner facing the glazing panel.

16. The glazing assembly of any preceding claim, wherein an outermost edge of the bead is flush with an outermost edge of the core.

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17. A kit of parts to construct a fire resistant glazing assembly, the kit comprising:

i) a glazing panel,

ii) a glazing frame with a core having a major surface and an aperture in the major surface,

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iii) a bead with an internal portion sized to lie within the aperture, for securing the glazing panel in the aperture, and

iv) a liner sized to overlie an edge of the aperture such that, when the kit is assembled, the internal portion of the bead lies between a) a portion of the liner facing the glazing panel; and b) an edge of the

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glazing panel within the aperture.

18. A glazing assembly substantially as described herein with reference to any one or more of figures 2 to 12.
19. A method of constructing a fire resistant glazing assembly comprising a
5 glazing frame having a core and a glazing panel, the method comprising:
securing the glazing panel in an aperture in the core of the glazing
frame using a bead, an internal portion of the bead lying within the aperture
and thereby securing the glazing panel in the aperture; and
securing an liner to the glazing frame, external to the core and overlying
10 an edge of the aperture, wherein the internal portion of the bead thereby
lies between a) a portion of the liner facing the glazing panel; and b) an
edge of the glazing panel within the aperture.
20. The method of claim 19, wherein the method involves securing first and
15 second liners to the glazing frame, wherein the internal portion of the bead
thereby lies between:
a) a portion of the first liner facing the glazing panel; and b) an
edge of the glazing panel within the aperture; and additionally between:
b) the edge of the glazing panel within the aperture; and c) a
20 portion of the second liner facing the glazing panel.
21. The method of claim 20, wherein the bead comprises multiple parts and at
least an internal portion of a first part of the bead lies between:
a) the portion of the first liner facing the glazing panel; and b) the edge
25 of the glazing panel within the aperture; and
at least an internal portion of a second part of the bead lies between:
b) the edge of the glazing panel within the aperture; and c) the portion
of the second liner facing the glazing panel.
- 30 22. The method of any of claims 19 to 21, further comprising:
forming an opening in the glazing frame for receiving the glazing frame.

23. The method of any of claims 19 to 22, further comprising:
forming the aperture in the glazing frame for securing the glazing frame.
24. The method of any of claims 19 to 23, further comprising:
5 securing the bead in the aperture by pinning, screwing, using adhesive
or tape.
25. The method of any of claims 19 to 23, further comprising:
securing the glazing panel in the aperture with intumescent tape.
10
26. The method of any of claims 19 to 23, further comprising:
securing the glazing panel in the aperture with intumescent tape
between the core and the glazing panel and/or between the glazing panel
and the bead.
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27. The method of claim 19, 20 or 21, further comprising:
forming an opening in the glazing frame by routing the frame;
forming an aperture in the glazing frame by routing the frame;
securing the glazing panel in the aperture, covering the opening, with
20 intumescent tape; and
pressing the or each liner onto the core, sealing the glazing assembly.
28. The method of any of claims 19 to 27, wherein the bead is formed of
multiple parts and the method comprises:
25 securing the multiple parts of the bead to the core of the glazing frame,
forming the aperture for receiving the glazing panel between the
multiple parts.
29. The method of any of claims 19 to 28, wherein the glazing frame core
30 comprises multiple parts and the method further comprises:
joining two or more of the parts to form the whole glazing frame core.

30. The method of any of claims 19 to 29, wherein an edge of the internal bead is flush with an edge of the glazing frame core .

31. The method of any of claims 19 to 30, further comprising:
5 finishing the assembly with an additional, external bead.

32. The method of any of claims 19 to 31, further comprising:
pressing an additional liner onto the assembly.

Amendment to the claims have been filed as follows:

Claims

1. A fire resistant glazing assembly, comprising:

- 5
- i) a glazing panel,
 - ii) a glazing frame with a core having a major surface and an aperture in the major surface, the aperture receiving the glazing panel,
 - iii) a bead, an internal portion of the bead lying within the aperture and securing the glazing panel in the aperture, and
 - iv) a liner external to the core and overlying an edge of the aperture,
- 10
- wherein the internal portion of the bead lies between a portion of the liner facing the glazing panel; and an edge of the glazing panel within the aperture.

2. A fire resistant glazing assembly, comprising:

- 15
- i) a glazing panel,
 - ii) a glazing frame with a core having a major surface and an aperture in the major surface, the aperture receiving the glazing panel,
 - iii) a bead, an internal portion of the bead lying within the aperture and securing the glazing panel in the aperture, and
 - iv) first and second liners external to the core and overlying an edge of the aperture,
- 20
- wherein the internal portion of the bead lies between:
- a portion of the first liner facing the glazing panel; and an edge of the glazing panel within the aperture; and additionally between:
- 25
- the edge of the glazing panel within the aperture; and a portion of the second liner facing the glazing panel.

3. The glazing assembly of any preceding claim, wherein the internal portion of the bead comprises a lip or rebate for supporting the edge of the glazing panel within the aperture.

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4. The glazing assembly of any preceding claim, wherein the bead is substantially b-, d-, L- or U- shaped.
5. The glazing assembly of any preceding claim, wherein the bead is fully internal and does not protrude beyond an edge of the liner.
6. The glazing assembly of any of claims 1 to 4, wherein the bead comprises an internal portion and an external portion that protrudes beyond an edge of the liner.
7. The glazing assembly of any preceding claim, wherein the bead is at least partially constructed from an intumescent material.
8. The glazing assembly of any preceding claim, wherein the bead comprises a chamfered or curved edge on one or more edges facing out of the core.
9. The glazing assembly of any preceding claim, wherein the glazing frame core comprises multiple parts and two or more of the parts are joined to form the whole glazing frame core.
10. The glazing assembly of any preceding claim, further comprising an additional, external bead.
11. The glazing assembly of claim 10, wherein the external bead comprises a chamfered or curved edge on one or more externally-facing edges.
12. The glazing assembly of any preceding claim, wherein the securement is by an interference fit and/or adhesive and/or tape.
13. The glazing assembly of any preceding claim, further comprising:
 - intumescent tape within the aperture, between the core and the glazing panel; and/or

intumescent tape between the glazing panel and at least the internal portion of the bead.

5 14. The glazing assembly of any preceding claim, further comprising one or more additional liners surrounding the glazing frame.

15. The glazing assembly of claim 1, or any of claims 3 to 14 when dependent on claim 1, wherein the bead comprises multiple parts.

10 16. The glazing assembly of claim 2, or any of claims 3 to 14 when dependent on claim 2, wherein the bead comprises multiple parts and at least an internal portion of a first part of the bead lies between:

the portion of the first liner facing the glazing panel; and the edge of the glazing panel within the aperture; and

15 at least an internal portion of a second part of the bead lies between:

the edge of the glazing panel within the aperture; and the portion of the second liner facing the glazing panel.

20 17. The glazing assembly of any preceding claim, wherein an outermost edge of the bead is flush with an outermost edge of the core.

25 18. The glazing assembly of claim 1, or any of claims 3 to 17 when dependent on claim 1, wherein the bead extends along the full length of the glazing frame.

19. A kit of parts to construct a fire resistant glazing assembly, the kit comprising:

i) a glazing panel,

30 ii) a glazing frame with a core having a major surface and an aperture in the major surface,

iii) a bead with an internal portion sized to lie within the aperture, for securing the glazing panel in the aperture, and

iv) a liner sized to overlies an edge of the aperture such that, when the kit is assembled, the internal portion of the bead lies between a portion of the liner facing the glazing panel; and an edge of the glazing panel within the aperture.

5

20. A glazing assembly substantially as described herein with reference to any one or more of figures 2 to 12.

21. A method of constructing a fire resistant glazing assembly comprising a glazing frame having a core and a glazing panel, the method comprising:
10 securing the glazing panel in an aperture in the core of the glazing frame using a bead, an internal portion of the bead lying within the aperture and thereby securing the glazing panel in the aperture; and
 securing an liner to the glazing frame, external to the core and overlying
15 an edge of the aperture, wherein the internal portion of the bead thereby lies between a portion of the liner facing the glazing panel; and an edge of the glazing panel within the aperture.

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22. The method of claim 21, wherein the method involves securing first and
20 second liners to the glazing frame, wherein the internal portion of the bead thereby lies between:

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 a portion of the first liner facing the glazing panel; and an edge of the glazing panel within the aperture; and additionally between:
 the edge of the glazing panel within the aperture; and a portion of
25 the second liner facing the glazing panel.

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23. The method of claim 21, wherein the bead comprises multiple parts.

24. The method of claim 22, wherein the bead comprises multiple parts and at
30 least an internal portion of a first part of the bead lies between:

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 the portion of the first liner facing the glazing panel; and the edge of the glazing panel within the aperture; and

at least an internal portion of a second part of the bead lies between:
the edge of the glazing panel within the aperture; and the portion of the
second liner facing the glazing panel.

5 25. The method of any of claims 21 to 24, further comprising:
forming an opening in the glazing frame for receiving the glazing frame.

26. The method of any of claims 21 to 25, further comprising:
forming the aperture in the glazing frame for securing the glazing frame.

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27. The method of any of claims 21 to 26, further comprising:
securing the bead in the aperture by pinning, screwing, using adhesive
or tape.

15 28. The method of any of claims 21 to 26, further comprising:
securing the glazing panel in the aperture with intumescent tape.

29. The method of any of claims 21 to 26, further comprising:
securing the glazing panel in the aperture with intumescent tape
20 between the core and the glazing panel and/or between the glazing panel
and the bead.

30. The method of claim 21, 22, 23 or 24, further comprising:
forming an opening in the glazing frame by routing the frame;
25 forming an aperture in the glazing frame by routing the frame;
securing the glazing panel in the aperture, covering the opening, with
intumescent tape; and
pressing the or each liner onto the core, sealing the glazing assembly.

30 31. The method of any of claims 21 to 30, wherein the bead is formed of
multiple parts and the method comprises:

securing the multiple parts of the bead to the core of the glazing frame, forming the aperture for receiving the glazing panel between the multiple parts.

5 32. The method of any of claims 21 to 31, wherein the glazing frame core comprises multiple parts and the method further comprises:
joining two or more of the parts to form the whole glazing frame core.

10 33. The method of any of claims 21 to 32, wherein an edge of the internal bead is flush with an edge of the glazing frame core.

34. The method of any of claims 21 to 33, further comprising:
finishing the assembly with an additional, external bead.

15 35. The method of any of claims 21 to 34, further comprising:
pressing an additional liner onto the assembly.



Application No: GB1611416.7

Examiner: Mr Gerard Byrne

Claims searched: 1-18

Date of search: 26 August 2016

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		GB2502456 A (NOBBS) See whole document, especially glazing panel 1, frame members 2, bead 7, gaskets 14 and 15, sealant 13.
A		GB1315499 A (HALL et al) See whole document, especially glazing panel A, sealing strips 7 and 10 and beads 5 and 6.
A		GB2344846 A (WILLIAMS et al) See whole document, especially glazing panel 10, frame 12, bead 20 and seals 16 and 28.
A		EP0717164 A1 (PETTERSON et al) See whole document, especially glazing panel 10, bead 12 and sealing strips 28 and 50,

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 :

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

E06B

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

EPODOC, WPI

International Classification:

Subclass	Subgroup	Valid From
E06B	0003/58	01/01/2006
E06B	0005/16	01/01/2006