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(51) INT CL<sup>7</sup>:  
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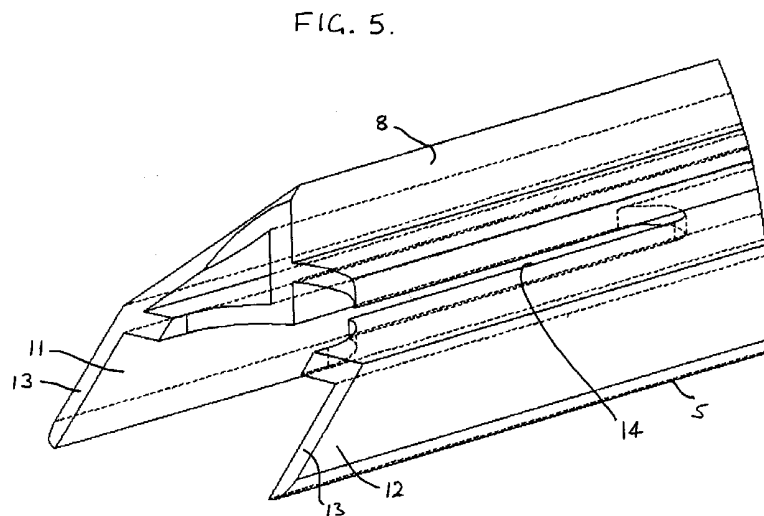
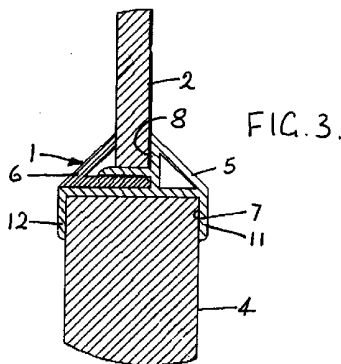
(52) UK CL (Edition W ):  
**E1J JGB**

(56) Documents Cited:  
**GB 1548915 A** **US 3995405 A**  
**US 3455080 A** **US 2304423 A**

(58) Field of Search:  
UK CL (Edition W ) **E1J, E1R**  
INT CL<sup>7</sup> **E06B**  
Other:

(54) Abstract Title: **Panel frame assembly**

(57) A panel frame assembly for mounting a panel in an opening 3 in a structure 4 such as a door comprises, at each side of the opening, a frame member 6 and a beading member 6 which together define a peripherally outwardly facing channel 7 to receive margins of the structure surrounding the opening, and a peripherally inwardly facing channel 8 to receive margins of the panel. The frame and beading members have cooperating formations so that they can be pressed together to form a snap-fit connection. The frame members may be mitred at their ends for forming a polygonal frame, in which case at least one frame member is longitudinally split 14 at least at one end between the outwardly facing channel side walls 11, 12 so that those walls can be spread to allow their mitred ends to ride over an adjacent frame member in order to complete assembly of the frame.



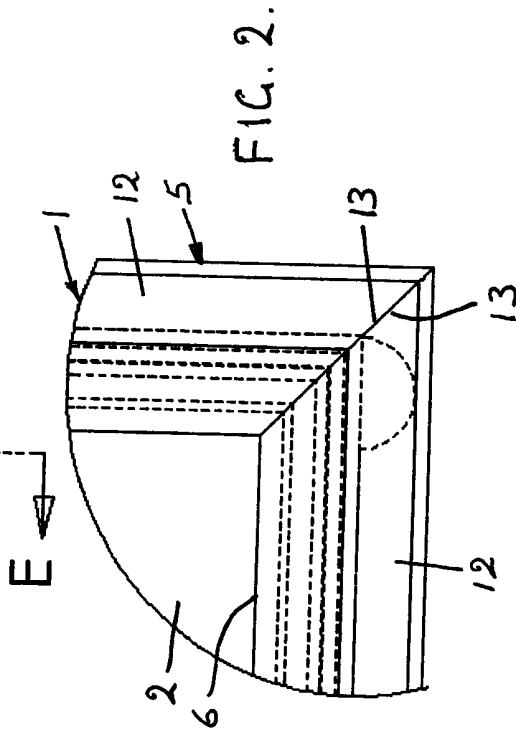
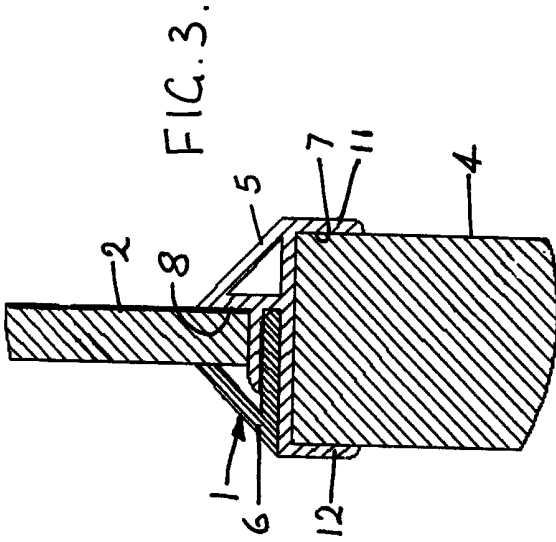
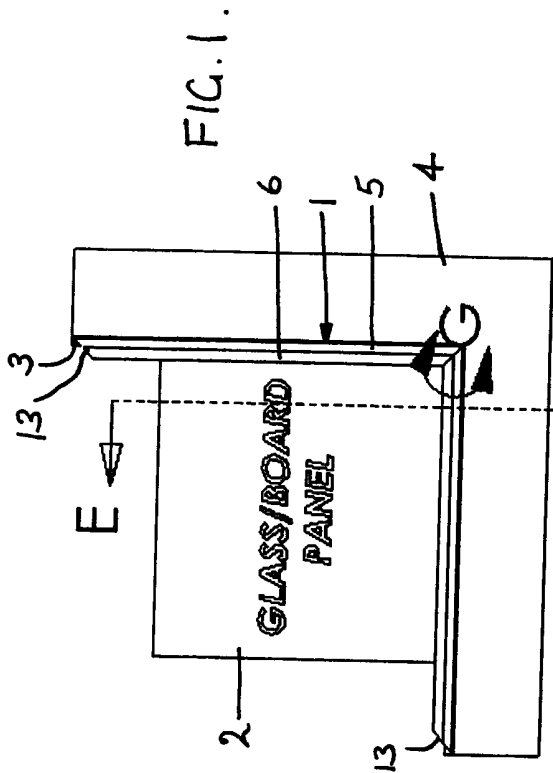


FIG. 4.

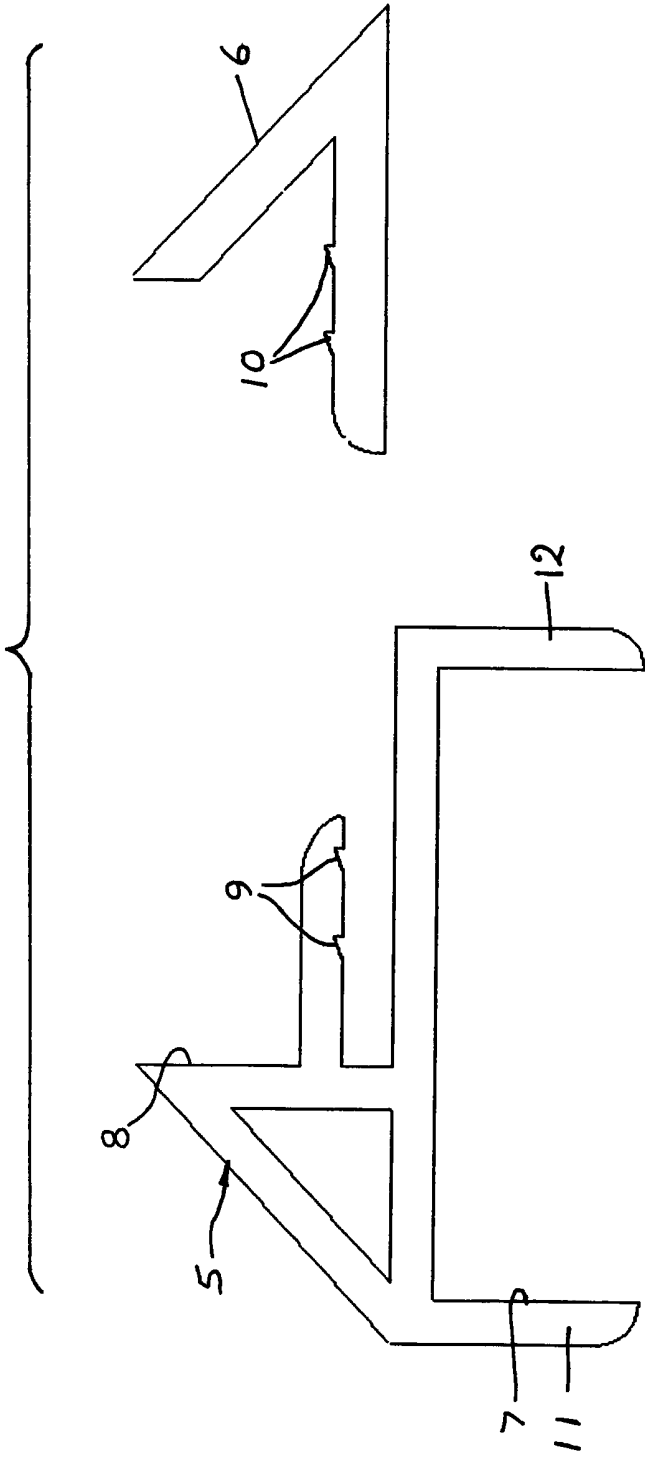
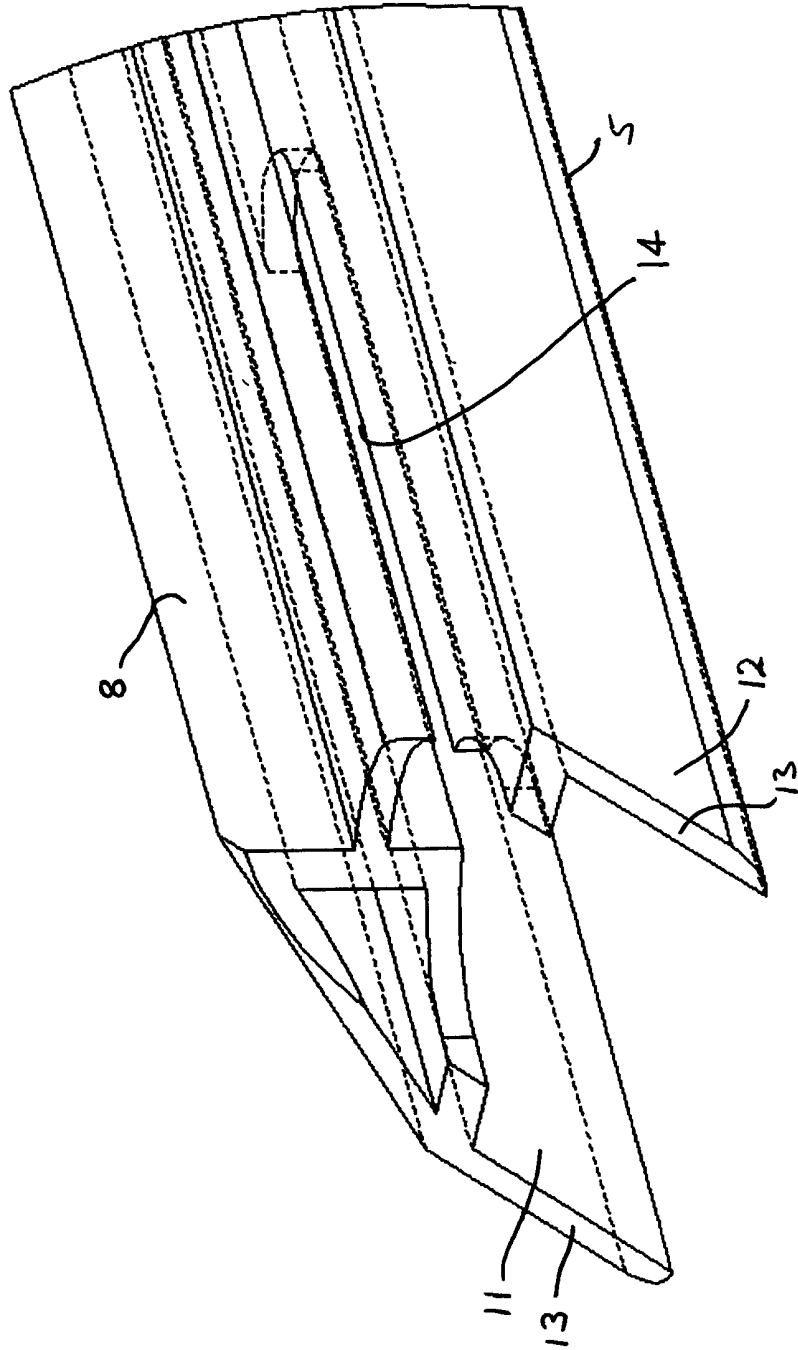


FIG. 5.



## PANEL FRAME ASSEMBLY

This invention relates to panel frame assemblies for mounting panels in openings in structures such as doors.

There are many occasions when a panel such as a glazing panel requires to be mounted in a frame in a door or elsewhere and there have been very  
5 many proposals to provide a frame assembly for mounting a such a panel.

It is an object of this invention to provide a panel frame assembly which is simple to install to provide a secure mounting for a panel, and which is simple and inexpensive to manufacture.

According to the present invention, there is provided a panel frame  
10 assembly for mounting a panel in an opening in a structure such as a door, the assembly comprising, at each side of the opening, frame and beading members which, at least when assembled together, define a peripherally outwardly facing channel for accommodating a margin of said structure surrounding the opening, and a peripherally inwardly facing channel for  
15 accommodating margins of said panel, said frame and beading members respectively being provided with co-operating formations so that they can be pressed together in a direction substantially normal to the plane of the opening to form a retaining connection.

Preferably the co-operating formations provide a snap-fit connection to  
20 retain the frame and beading members together.

In some embodiments of the invention, one side wall of the outwardly facing channel is formed by a frame member while the opposed side wall of that channel is formed by a beading member, but it is most preferred

that, and security is improved when, said frame members define both side walls of said outwardly facing channel.

In some embodiments of the invention, the frame members are square ended for forming a rectangular frame. This facilitates the insertion of the  
5 fourth frame member into the opening of the door or other structure, but for aesthetic reasons, it is preferred that said frame members are mitred at their ends for forming a polygonal frame.

This can present a problem in fitting the last frame member into the opening, but, provided the length and flexibility of the frame member  
10 allow it, this is easily solved by arching the last frame member inwardly in order to slip the mitre at its end into jointing engagement with the mitre at the end of the adjoining frame member.

In the most preferred embodiments of the invention, at least one frame member is longitudinally split at least at one end between the outwardly  
15 facing channel side walls whereby such side walls can be spread so that their mitred ends can ride over an adjacent frame member in order to complete the frame. This permits the mitred end of the last-fitted frame member to come into a proper jointing relationship with the adjacent mitred frame member end.

20 This feature is itself believed to be new, and accordingly the present invention in its second aspect provides a panel frame assembly for mounting a panel in an opening in a structure such as a door, the assembly comprising, at each side of the opening, a frame member which defines side walls of a peripherally outwardly facing channel for  
25 accommodating a margin of said structure surrounding the opening, the frame members being mitred at their ends for forming a polygonal frame, and at least one frame member being longitudinally split at least at one

end between the outwardly facing channel side walls whereby such side walls can be spread so that their mitred ends can ride over an adjacent frame member in order to complete the frame.

5 A panel frame assembly according to the second aspect of the invention most preferably further comprises a beading member for assembly to each frame member in a direction substantially normal to the plane of the opening to define a peripherally inwardly facing channel for accommodating margins of the panel, said frame and beading members respectively being provided with co-operating formations so that they can  
10 be pressed together to form the retaining, preferably snap-fit, connection.

In accordance with either aspect of the invention, the frame members and the beading members are most preferably each formed as extrusions. This is a very simple and inexpensive way of manufacturing the required frame components.

15 The frame components could be made of a suitable metal or alloy such as an aluminium alloy, but in the most preferred embodiments of the invention, the frame members and the beading members are each formed of a synthetic resin material. The synthetic resin material may be polyvinyl chloride, for example unplasticised polyvinyl chloride.

20 The co-operating formations are suitably formed as longitudinally extending barbs and recesses which provide a snap-fit connection.

Preferred embodiment of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is a view of a corner of a panel assembly mounted in a structure;

Figure 2 is a detailed elevational view of the corner of the panel frame of Figure 1;

Figure 3 is a cross section on the line E-E of Figure 1;

Figure 4 is a cross section through the frame and beading members of the frame assembly of Figures 1 to 3, and

Figure 5 shows a detailed perspective view of an end of a frame member in accordance with the second aspect of the invention.

In the drawings, a panel frame assembly 1 for mounting a panel 2 in an opening 3 in a structure 4 such as a door comprises, at each side of the opening, a frame member 5 and a beading member 6 which, when assembled together, define a peripherally outwardly facing channel 7 for accommodating a margin of the structure 4 surrounding the opening 3, and a peripherally inwardly facing channel 8 for accommodating margins of the panel 2. The frame 5 and beading 6 members are respectively provided with co-operating formations 9, 10 (Figure 4) so that they can be pressed together in a direction substantially normal to the plane of the opening to form a snap-fit connection.

The outwardly facing channels 7 are formed by side walls 11, 12 which are integral parts of the frame members 5. The side walls 11, 12 may be inclined inwardly of the channels 7 towards the mouths of the channels. As the frame members are fitted to the margin of the structure 4 the side walls 11, 12 may be flexed away from one another so as to allow for tolerance in the thickness of the margin and, by being flexed, to apply a gripping action on the margin received into the channels.

The frame members 5 are mitred 13 at 45° at their ends for forming a rectangular frame.



In order to avoid problems in fitting the last frame member into the opening in case the length and flexibility of the frame member do not allow arching the last frame member inwardly in order to slip the mitre at its end up under the mitre at the end of the adjoining frame member, the  
5 frame member 5 is longitudinally split 14 at one end between the side walls 11, 12 of the outwardly facing channel 7, as shown in Figure 5, whereby such side walls 11, 12 can be spread so that their mitred 13 ends can ride over an adjacent frame member in order to complete the frame. This permits the mitred end of the last-fitted frame member to come into a  
10 proper relationship with the adjacent mitred frame member end as shown in Figure 2.

The frame members and the beading members are all formed as extrusions of a synthetic resin material. The synthetic resin material may be polyvinyl chloride for example unplasticised polyvinyl chloride.

15 The co-operating snap-fit formations are suitably formed as longitudinally extending barbs 10 and recesses 9.

## CLAIMS

1. A panel frame assembly for mounting a panel in an opening in a structure such as a door, the assembly comprising, at each side of the opening, frame and beading members which, at least when assembled  
5 together, define a peripherally outwardly facing channel for accommodating a margin of said structure surrounding the opening, and a peripherally inwardly facing channel for accommodating margins of said panel, said frame and beading members respectively being provided with co-operating formations so that they can be pressed together in a direction  
10 substantially normal to the plane of the opening to form a retaining connection.
2. A panel frame assembly according to claim 1 wherein the co-operating formations provide a snap-fit connection to retain the frame and beading members together.
- 15 3. A panel frame assembly according to claim 1 or claim 2, wherein the frame members define opposed side walls of the outwardly facing channel.
4. A panel frame assembly according claim 1 or claim 2 wherein the outwardly facing channel has one side wall formed by the frame members  
20 and an opposed side wall formed by the beading members.
5. A panel frame assembly according to any preceding claim wherein the frame members are square-ended for forming a rectangular frame.
6. A panel frame assembly according to any of claims 1 to 4 wherein the frame members are mitred at their ends for forming a polygonal  
25 frame.

7. A panel frame assembly according to claim 6 wherein at least one frame member is longitudinally split at least at one end between the outwardly facing channel side walls whereby such side walls can be spread so that their mitred ends can ride over an adjacent frame member in order to complete the frame.
8. A panel frame assembly for mounting a panel in an opening in a structure such as a door, the assembly comprising, at each side of the opening, a frame member which defines side walls of a peripherally outwardly facing channel for accommodating a margin of said structure surrounding the opening, the frame members being mitred at their ends for forming a polygonal frame, and at least one frame member being longitudinally split at least at one end between the outwardly facing channel side walls whereby such side walls can be spread so that their mitred ends can ride over an adjacent frame member in order to complete the frame.
9. A panel frame assembly according to claim 8 further comprising a beading member for assembly to each frame member in a direction substantially normal to the plane of the opening to define a peripherally inwardly facing channel for accommodating margins of the panel, said frame and beading members respectively being provided with co-operating formations so that they can be pressed together to form a retaining connection.
10. A panel frame according to claim 9 wherein the co-operating formations provide a snap-fit connection.
11. A panel frame assembly according to any of claims 1 to 7, 9 or 10 wherein the frame members and beading members are each formed as extrusions.

12. A panel frame assembly according to any of claims 1 to 7, 9, 10 or 11 wherein the frame members and beading members are each made of metal or alloy.
13. A panel frame assembly according to any of claims 1 to 7, 9, 10  
5 or 11 wherein the frame members and beading members are formed of a synthetic resin material.
14. A panel frame assembly according to claim 13 wherein the synthetic resin material is polyvinyl chloride.
15. A panel frame assembly according to claim 14 wherein the  
10 synthetic resin material is unplasticised polyvinyl chloride.
16. A panel frame assembly according to any of claims 1 to 7 or 9 to 15 wherein the co-operating formations are formed as longitudinally extending barbs and recesses, which provide a or the snap-fit connection.
17. A panel frame assembly according to any preceding claim wherein  
15 the outwardly facing channel has opposed side walls which are inclined inwardly of the channel towards the mouth of the channel and are able to be flexed away from one another to accommodate margins of said panel in the channel and apply a gripping action on the margins received into the channel.
- 20 18. A panel frame assembly substantially as described herein with reference to Figures 1 to 4 of the accompanying drawings.
19. A panel frame assembly substantially as described herein with reference to Figure 5 of the accompanying drawings.



INVESTOR IN PEOPLE

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Examiner: Dr Michael Gooch

Claims searched: 1-7, 11-19

Date of search: 11 May 2004

### 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 reference
X	1-6, 11-15, 17	GB 1548915 A (ALCAN) See fig 2
X	1-6, 10-17	US 3995405 A (PETERSON) See col 4 line 22
X	1-6, 10-17	US 3455080 A (MEADOWS) See fig 2
X	1-6, 10-17	US 2304423 A (SCHILLER) See fig 3

#### 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<sup>W</sup> :

E1J; E1R

Worldwide search of patent documents classified in the following areas of the IPC<sup>07</sup>

E06B

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

Online: EPODOC, JAPIO, WPI