(12) UK Patent Application (19) GB (11) 2 296 733 (13) A

(43) Date of A Publication 10.07.1996

(21) Application No 9523235.1

(22) Date of Filing 14.11.1995

(30) Priority Data
(31) 9423902 (32) 26.11.1994 (33) GB

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(51) INT CL^6
E06B 1/34 3/30 3/54 3/96

(52) UK CL (Edition O)
E1J JGA JGD
E1R RRC RR26

(56) Documents Cited

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GB 2081790 A	GB 1508582 A	GB 1508581 A
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(58) Field of Search
UK CL (Edition O) E1J JGA JGD JGE JGK , E1R RF RRC RRK RRL RRQ RRV
INT CL^6 E06B 1/04 1/06 1/34 1/36 1/52 3/06 3/10 3/30 3/54 3/68 3/96
Online: World Patents Index, EDOC.

(54) Door or window frame with an overlapping cladding jointing system

(57) A frame 1 to form part of a window or door, has external faces 5 of the elements 2, 8 of the flame 1 provided with weatherproof cladding 12, 13, the latter comprising an overlapping jointing system in which a upper element of cladding 13 overlays a portion of a lower element of cladding 12 in a vertical plane. Also disclosed (figure 2) is a glazing unit 16, comprising a inner timber flame component 2, a outer cladding component 12, and an interposed glass unit 27, with the inner and outer components 2, 12 clipped together to trap the glass unit 27 therebetween, without the use of separate glazing beads. There is also disclosed (figures 3 and 4) a window or door construction comprising a plurality of elongate, structural flame elements 2, 8 which in the region of a joint 7, one element is cut away at 29 so that a one-piece, continuous, elongate, outer cladding component 12 may be clipped to at least one of the frame elements.

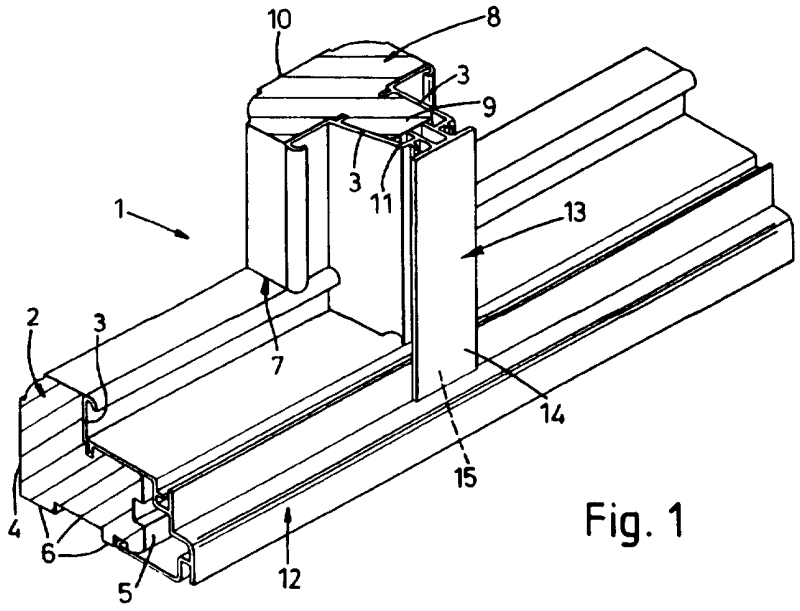

Fig. 1

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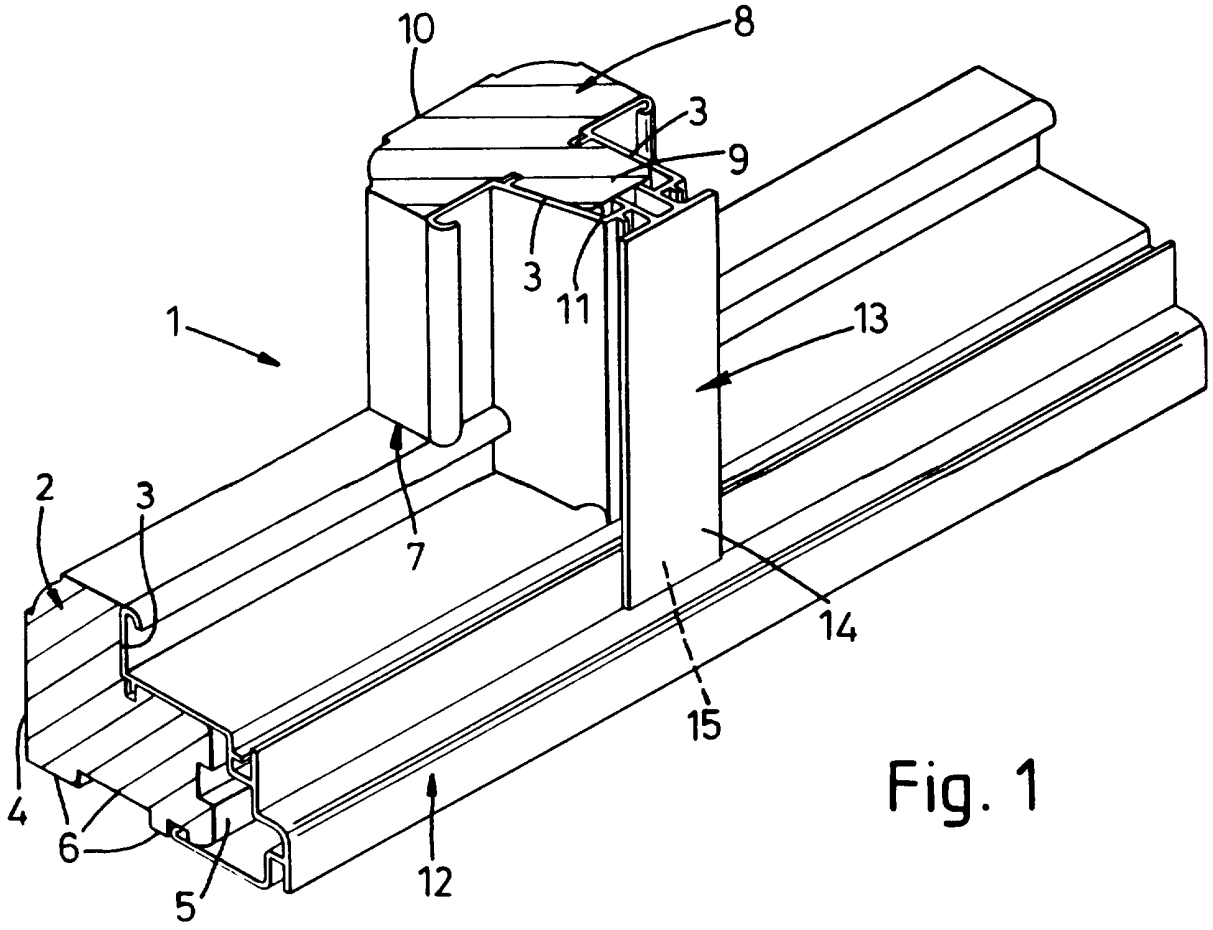
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Fig. 1

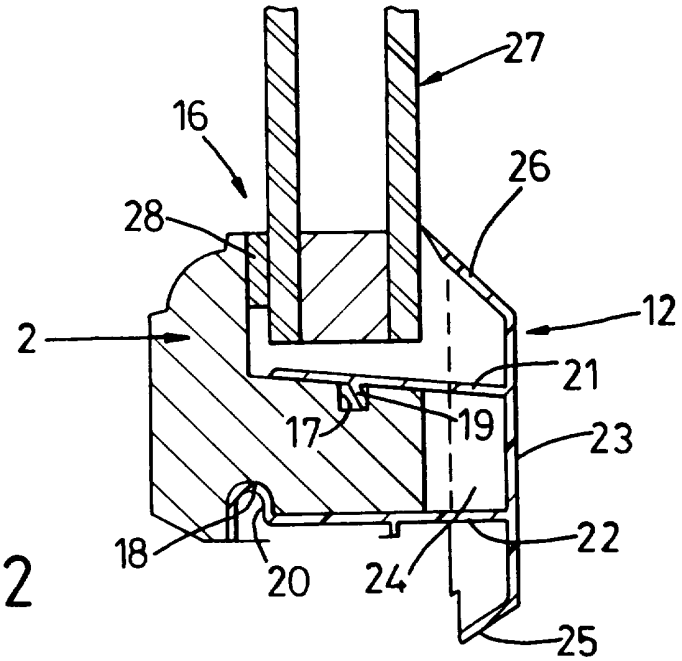
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Fig. 2

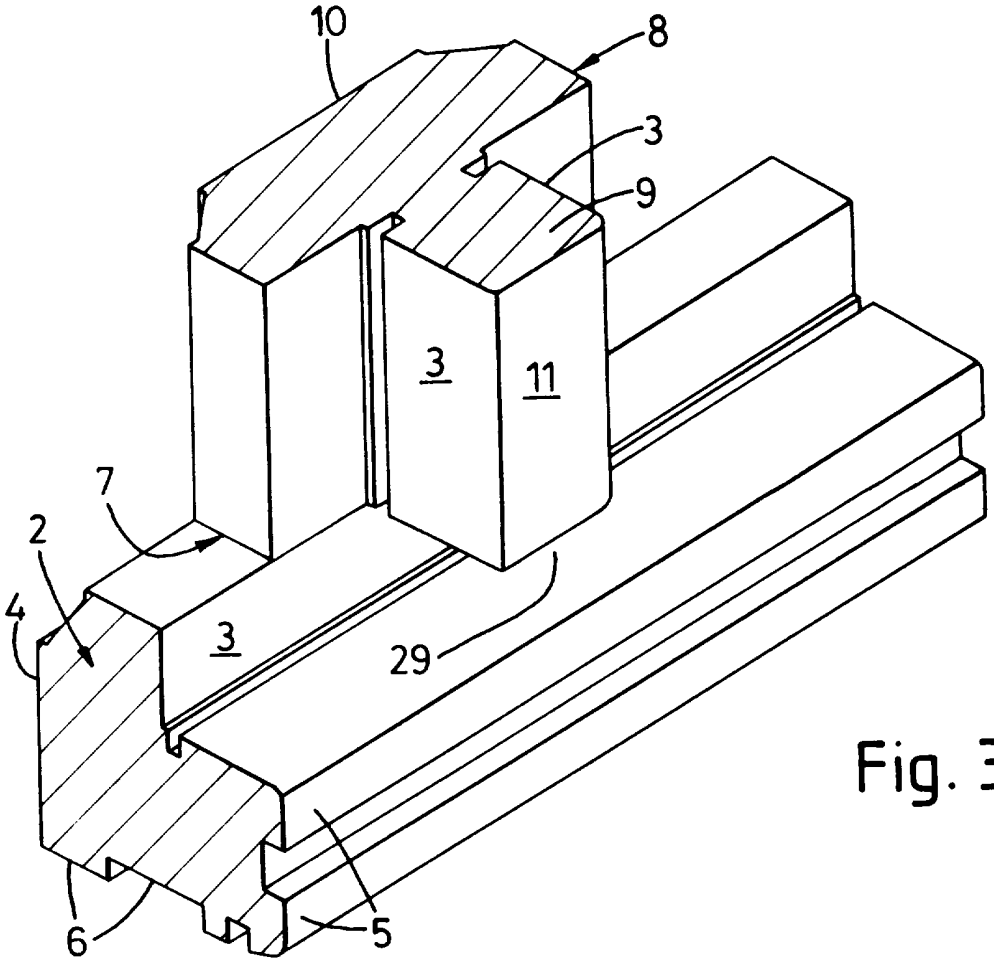

Fig. 3

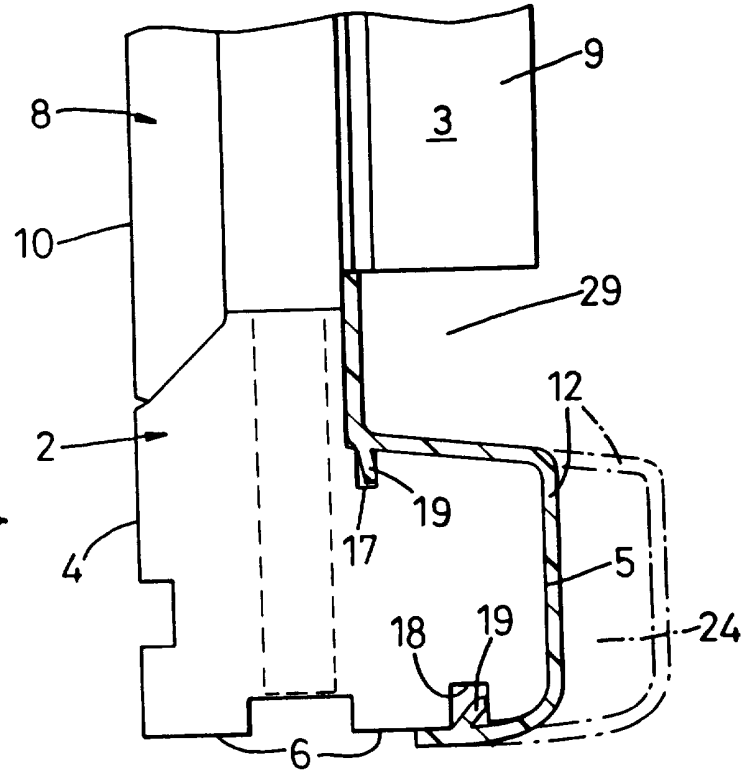

Fig. 4

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WINDOW FRAME ETC.

This invention relates to a frame e.g. to form part of a window or door; to a glazing unit; and to a window or door construction.

Such frames require mitred or other mechanical joints and ideally require weatherproofing to avoid the ingress of rain etc into these joints. In detail, aluminium or PVC clad windows have mitred corner joints and have butt or "V" welded joints at the intermediate frame components. In the case of PVC, the mitred or "V" joints are welded, but alternatively and particularly with aluminium, these joints are mechanically fixed either with dry joints or sealed with some flexible compound. Despite weatherproofing efforts the joints are vulnerable to water ingress due to the cyclical effects of expansion and contraction upon temperature changes.

According to a first aspect of the present invention, there is provided a frame to form part of a window or door, with external faces of the elements of the frame provided with weatherproof cladding, the latter comprising an overlapping jointing system in which an upper element of cladding overlays a portion of a lower element of cladding in a vertical plane.

In accordance with this aspect of the invention, firstly on the exposed exterior faces of the cladding, substantial expansion and contraction can be accommodated without the joint becoming open to weathering on these exposed faces with rain water able to run down the cladding and over the joint, and secondly the upper element overlap of the lower

element ensures that rainwater is directed beyond the joint.

Preferably, a ventilation cavity is provided between frame and cladding to prevent moisture ingress through capilliary action.

With traditionally constructed glazing units having a timber frame, four lengths of glazing bead, secured by panel pins, are required for the four structural elements making up the frame, with a substantial number of additional beads if the frame incorporates mullions and/or transoms, as is frequently the case.

According to a second aspect of the invention of independent significance, there is provided a glazing unit e.g. for forming an opening or fixed sash, comprising an inner timber frame component, an outer cladding component, and a glass unit interposed between the outer and inner components, with the inner and outer components clipped together to trap the glass unit therebetween, without the use of separate glazing beads.

This second aspect provides a glazing unit that is not only inexpensive to manufacture, but which is also capable of accommodating thermal expansion and contraction without stressing other parts of the glazing unit, particularly its joints.

The outer component may be of synthetic plastics material or of aluminium, and in the latter case a weather seal, e.g. of rubber or other resilient or elastomeric material, would be provided between the outer component and the external face of the glass unit.

Preferably, the inner and outer components are clipped together by providing, on each component, inter-engageable members. Thus, the inner component may be provided with parallel grooves on opposed surfaces e.g. upper and lower surfaces, whilst the outer component may be provided with beads, barbs or legs, which may be continuous or interrupted, and which are adapted to be a snap-fit engagement into the respective grooves, e.g. as result of the natural resilience of the material of the outer component. Furthermore, an outer component of plastics may be provided with a flange terminating in a relatively soft sealing strip adapted to engage an external face of the glazing unit, which is preferably a double-glazing unit, the resilience of the flange urging the glazing unit into engagement with the timber frame component, typically against a rebate, possibly with an interposed, resilient spacer strip. If the outer component is of plastics material, this may advantageously be PVC-U, e.g. produced as an extrusion. Further, if the beads, bars or legs of outer components of plastics are free to flex, expansion of the whole plastics assembly can occur independently of any differential expansion of the timber component assembly. This therefore allows the plastics component to "float" independently of either the glass or the timber elements.

With window or door constructions having a (usually rectangular) structural frame, the frequent presence of mullions and/or transoms results in joints between the mullions and/or transoms and the structural elements of the

frame that necessitate the cutting of cladding etc. either with joint holes or into two or more lengths which together make up the total length to be clad, and the fitting of these cut components of shortened lengths which introduce additional joints requiring sealing or weatherpoofing and providing additional points of weather ingress to a timber frame.

According to a third aspect of the present invention, also of independent significance, there is provided a window or door construction comprising a plurality of elongate, structural frame elements, typically two spaced-apart, parallel jambs interconnected by parallel upper and lower lengths, secured together at joints to define a rectangular frame, with joints between at least some of the frame elements, with or without at least one mullion or transom spanning and abutting structural elements of the frame and forming additional joints, and with portions of the jambs, and any mullion or transom in the region of a joint, being cut away so that a one-piece, continuous, elongate, outer cladding component may be clipped to at least one of the frame elements with the outer cladding component approximating in length to its frame element.

This aspect of the invention provides the advantage that, due to an end portion(s) of the jamb and any mullion and/or transom being cut back, clearance is provided for the fitting of a one-piece, continuous length of (e.g. plastics) cladding by clipping the latter to the frame element(s) involved so that the length of cladding passes through a joint at a mullion, and/or passes into a corner joint at a jamb.

The outer, cladding component may be clipped to its frame element by providing on each, inter-engageable members. The frame element may be provided with parallel grooves on opposed surfaces, e.g. upper and lower surfaces, whilst the outer component may be provided with beads, barbs or legs, which may be continuous or interrupted, and which are adapted to be a snap-fit engagement into the respective grooves. The outer component may be of synthetic plastics material, or of aluminium, whilst an air gap may be provided.

The various aspects of the invention will now be described in greater detail by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a diagrammatic perspective view of part of a frame in accordance with the first aspect;

Figure 2 is a sectional side elevation of glazing unit in accordance with the second aspect; and

Figures 3 and 4 are respectively a perspective view and a side elevation of a window construction in accordance with the third aspect.

In all Figures, like components are accorded like reference numerals.

In Figure 1, is illustrated a portion of a rectangular window frame 1 comprising two parallel, horizontal, and two parallel vertical, structural members. A portion of a horizontally extending structural member, such as a cill 2, is illustrated, in which it is rebated at 3 so as to be generally of "L"-section with opposed internal and external faces 4 and 5 adapted to be located respectively internally

and externally of a room and an underside 6 adapted to seat and be keyed onto supporting brickwork or blockwork (not shown).

An orthogonal joint 7 is formed between a vertically extending mullion 8 generally of 'T'-section and the cill 2, the mullion 8 having two opposed rebates 3 which define a rail 9, and internal and external faces 10 and 11 adapted, respectively, to be located internally and externally of a room.

The faces 5 and 11 of both the cill 2 and mullion 8 that are adapted to be located externally require weather protection and are therefore clad respectively with a horizontally extending lower extrusion 12 of synthetic plastics material, aluminium or other material, and with a vertically extending upper extrusion 13 of synthetic plastics material, aluminium or other material. In accordance with the first aspect of the invention, at the joint 7 between the mullion 8 and cill 2, an end portion 14 of the upper extrusion 13 overlays a portion 15 of the lower extrusion 12, not only avoiding the need for a butt or other joint between the two items of cladding, but also ensuring that rainwater running down the vertical extrusion 13 is directed beyond the joint 7.

In Figure 2, is illustrated a glazing unit 16. Here the cill 2 is provided with opposed, upper and lower grooves 17, 18 respectively, whilst the extrusion 12 is provided with continuous or intermittent, inwardly directed barbs 19 or projection 20 adapted respectively to engage the grooves 17, 18, so that the extrusion 12 may be applied to the cill 2 as a

snap-fit and be positively retained thereon. The barb 19 and projection 20 are provided on a pair of slightly splayed apart webs 21, 22 extending beyond the external face 5 of the cill 2 to a common strip 23, with an air gap 24 defined between the external face 5 and portions of the webs 21, 22 and the strip 23. Below the web 22, the strip 23 terminates in an inwardly angled drip edge 25, whilst above the web 21, an inwardly angled edge 26 urges a glass unit 27 against the rebate 3 of the cill 2 via an interposed, resilient strip 28, whereby the glass unit 27 is trapped in position upon the extrusion 12 being snapped or clipped into place on the cill 2 so as to form the glazing unit 16, without the need for conventional glazing beads, and with the material of the extrusion 12 of plastics for instance, providing the necessary resilience to accommodate differential thermal expansion and contraction.

It will be appreciated that if the glazing unit 16 is rectangular it comprises two horizontal and two vertical structural members with four right angle corners, and consequently it is necessary to construct four right angle corners for the extrusion 12. This may be effected by forming of mitred or other joints at the four corners of the edge 26 and, if the extrusion 12 is of plastics, welding the horizontal and vertical extrusions together at the mitres, but leaving the webs 21, 22 unwelded both for initial assembly and for in-service flexing due to differential thermal expansion and contraction.

With the door or window construction in accordance with the third aspect of the invention, as illustrated in

Figures 3 and 4, the lower portion of the rail 9 of the mullion 8 does not extend to the cill 2, but is cut back to provide a clearance 29 for the snap-fitting of an extrusion 12 (illustrated in Figure 4 only) of plastics, aluminium or other material either abutting face 5, or as indicated in chain-dotted line, spaced from face 5 to define the air gap 24. The provision of the clearance 29 permits the use of a one-piece, continuous length extrusion 12 approximating to the width of the window thereby avoiding the use of multiple shorter lengths or cut extrusions (joints) of extrusion 12 which with a traditional mullion-to-cill joint would be unavoidable. Similar clearances may be provided not only at the ends of the transoms, to allow one-piece vertical extrusions 13 approximating to the height of the window to be employed, but also at the ends of the jambs where the four right angle corners of the window are defined.

CLAIMS

1. A frame to form part of a window or door, with external faces of the elements of the frame provided with weatherproof cladding, the latter comprising an overlapping jointing system in which an upper element of cladding overlays a portion of a lower element of cladding in a vertical plane.

2. A frame as claimed in Claim 1, wherein a ventilation cavity is provided between frame and cladding to prevent moisture ingress through capilliary action.

3. A frame substantially as hereinbefore described with reference to Figure 1 of the accompanying drawings.

4. A glazing unit, e.g. for forming an opening or fixed sash, comprising an inner timber frame component, an outer cladding component, and a glass unit interposed between the outer and inner components, with the inner and outer components clipped together to trap the glass unit therebetween, without the use of separate glazing beads.

5. A glazing unit as claimed in Claim 4, wherein the outer component is of synthetic plastics material.

6. A glazing unit as claimed in Claim 4, wherein the outer component is of aluminium, with a weather seal between the outer component and the glassing unit.

7. A glazing unit as claimed in any one of Claims 4 to 6, wherein the inner and outer components are clipped together by providing, on each component, inter-engageable members.

8. A glazing unit as claimed in Claim 7, wherein the inner component is provided with parallel grooves on

opposed surfaces, e.g. upper and lower surfaces, whilst the outer component is provided with beads, barbs or legs, which may be continuous or interrupted, and which are adapted to be a snap-fit engagement into the respective grooves.

9. A glazing unit as claimed in Claim 5 and any Claim appendant thereto, wherein the plastics component is provided with a flange terminating in a relatively soft sealing strip adapted to engage an external face of the glassing unit, the resilience of the flange urging the glassing unit into engagement with the timber frame component.

10. A glazing unit as claimed in Claim 5 and any Claim appendant thereto, wherein the plastics material of the outer component is PVC-U, e.g. produced as an extrusion.

11. A glazing unit as claimed in Claim 8 and any Claim appendant thereto, wherein the beads, barbs or legs of the outer component are free to flex.

12. A glazing unit substantially as hereinbefore described with reference to Figure 2 of the accompanying drawings.

13. A window or door construction comprising a plurality of elongate, structural frame elements at least two of which are jambs, (typically) two spaced-apart, parallel jambs inter-connected by parallel upper and lower lengths secured together at joints to define a rectangular frame with joints between at least some of the frame elements, with or without at least one mullion or transom spanning and abutting structural elements of the frame and forming additional joints with portions of the jambs, and any mullion or transom in the

region of a joint, being cut away so that a one-piece, continuous, elongate, outer cladding component may be clipped to at least one of the frame elements, with the outer cladding component approximating in length to its frame element.

14. A construction as claimed in Claim 13, wherein the outer, cladding component is clipped to its frame element by providing on each, inter-engageable members.

15. A construction as claimed in Claim 14, wherein the frame element(s) is provided with parallel grooves on opposed surfaces, e.g. upper and lower surfaces, whilst the outer component is provided with beads, barbs or legs, which may be continuous or interrupted, and which are adapted to be a snap-fit engagement into the respective grooves.

16. A construction as clained in any one of Claims 13 to 15, wherein the outer component is of synthetic plastics material.

17. A construction as claimed in any one of Claims 13 to 15, wherein the outer component is of aluminium.

18. A construction as claimed in any one of Claims 13 to 17, wherein an air gap is provided between a portion of the outer component and a portion of its frame element.

19. A window or door construction substantially as hereinbefore described with reference to Figures 3 and 4 of the accompanying drawings.

The Patent Office

12

Application No: GB 9523235.1
Claims searched: 13-19

Examiner: John Rowlatt
Date of search: 25 January 1996

Patents Act 1977
Further Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E1J: JGA, JGD, JGE, JGK.

Int Cl (Ed.6): E06B: 1/04, 1/06, 1/36, 1/52, 3/06, 3/10, 3/68, 3/96.

Other: Online: World Patents Index, EDOC.

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	GB2135375A	(COX) - see figure 2.	
A	GB1508582A	(BRIDGEWATER) - see figure 9.	
A	GB1508581A	(BRIDGEWATER) - see figure 8.	

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.

The Patent Office

13

Application No: GB 9523235.1
Claims searched: 4-12

Examiner: John Rowlatt
Date of search: 24 January 1996

Patents Act 1977
Further Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E1R: RF, RRC, RRK, RRL, RRQ, RRV.
E1J: JGA, JGD, JGE, JGK.

Int Cl (Ed.6): E06B: 1/34, 3/30, 3/54.

Other: Online: World Patents Index, EDOC.

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB2115050A	(LENHOVDA SNICKERIFABRICK AB) - whole document relevant, particularly figure 1, cladding member 8,10.	4, 6-8, 11 & 12
X	GB1370357A	(ALCO BAUZUBEHÖR GmbH) - see cladding member 12.	4-12
X	GB1085721A	(HEINZ SCHURMANN GmbH) - see cladding members 2.	4-12
X	EP0471193A1	(ELTREVA AG) - see figure 1, cladding member 3.	4, 6-8, 11 & 12
X	EP0392341A2	(LANCO LANGE FENSTER- UND FASSADENBAU GmbH) - whole document relevant, see particularly cladding member 2.	4, 6-8, 11 & 12

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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.

The Patent Office

14

Application No: GB 9523235.1
Claims searched: 4-12

Examiner: John Rowlatt
Date of search: 24 January 1996

Category	Identity of document and relevant passage		Relevant to claims
X	DE3844195A1	(GUTMANN WERKE GmbH) - whole document relevant, see particularly cladding member 10.	4, 6-8, 11 & 12
X	DE2426321A	(TUBINGER) - whole document relevant, see particularly cladding member 1.	4, 6-8, 11 & 12

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.

The Patent Office

15

Application No: GB 9523235.1
Claims searched: 1-3

Examiner: John Rowlatt
Date of search: 18 January 1996

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E1J: JGA, JGD, JGE, JGK.

Int Cl (Ed.6): E06B: 1/34, 3/30.

Other: Online: World Patents Index, EDOC.

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
A	GB2197015A	(LEADERFLUSH DOORS LIMITED)	
A	GB2081790A	(DOBEL FONSTERPROFILER AB)	
A	GB1485890A	(BRAAS & CO GmbH)	
A	EP0149991A1	(SILBER)	
A	US4479331A	(J.B. SASH & DOOR CO)	
A	US4207707A	(LANCER CORP)	

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.