(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 3 882 432 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
22.09.2021 Bulletin 2021/38

(51) Int Cl.:
E06B 3/54 *(2006.01)* *E06B 3/62* *(2006.01)*

(21) Application number: **21162857.3**

(22) Date of filing: **16.03.2021**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **17.03.2020 GB 202003862**

(71) Applicant: **Garner Aluminium Extrusions Limited**
Ormonde Drive, Denby Hall Business Park
Derby
Derbyshire DE5 8LE (GB)

(72) Inventor: **PARRY, Philip Dayton**
Derby, Derbyshire DE5 8LE (GB)

(74) Representative: **Foot, Paul Matthew James**
Withers & Rogers LLP
4 More London Riverside
London
Greater London SE1 2AU (GB)

(54) **PACKER**

(57) A packer for supporting a glazing unit within a groove of a frame of a fenestration unit, the groove defining opposing side walls and a base wall, the packer comprising; a body configured to sit within the groove; and a plurality of centralising formations wherein the centralising formations are configured to create a first void between the first sidewall of the groove and a first side of the glazing unit for receiving a first gasket, and a second void between the second sidewall of the groove and a second side of the glazing unit for receiving a second gasket, wherein the centralising formations are formed from a sheet having a thickness less than a lateral spacing between the body and a lateral tip of the centralising formations in a relaxed state thereof, and the centralising formations are configured to flex so as to centralise the glazing unit within the groove.

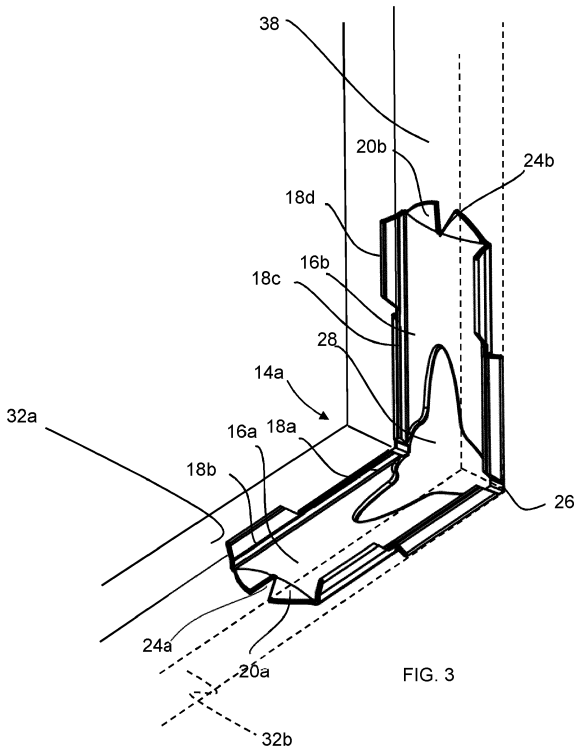

FIG. 3

EP 3 882 432 A1

Description

FIELD

[0001] The present teachings relate to a packer for supporting a glazing unit within a frame of a fenestration unit, and a method of installing a glazing unit within an outer frame.

BACKGROUND

[0002] Modern fenestration units typically comprise a frame assembly, into which a panel, such as a glass pane, or a sealed double glazing unit, is inserted in a direction generally normal to the plane of the panel and seat on one side against a gasket pre-secured to an abutment of the frame assembly. Typically, such frame assemblies are pre-assembled prior to the panel being inserted. A glazing bead is then secured to the frame assembly after the panel has been inserted into the frame assembly, along with a gasket, for securing and sealing said panel within the frame assembly on the other side.

[0003] Glazing beads together with associated gaskets are designed to aid the correct alignment of the glazing unit within the frame assembly. This helps to ensure the glazing unit is securely positioned within the frame assembly and that there is a durable seal to prevent the ingress of moisture.

[0004] However, in alternative beadless designs of fenestration units, the frame assembly and the glazing unit are assembled without the use of a glazing bead. Instead, the frame members have a U-shaped cross-section and connectors are used to join adjacent frame members around the glazing unit. The glazing unit of the beadless design is susceptible to misalignment, which may make the fitment of gaskets after assembly of the frame members more difficult, as well as achieving an effective seal upon installation of gaskets. It may also lead to poor insulation performance of the fenestration unit as a whole.

[0005] Therefore, the present teachings seek to provide a way of alleviating at least some of the aforementioned issues.

SUMMARY

[0006] A first aspect of the present teachings provides a packer for supporting a glazing unit within a groove of a frame of a fenestration unit, the groove defining opposing side walls and a base wall. The packer comprises a body configured to sit within the groove and a plurality of centralising formations wherein the centralising formations are configured to create a first void between the first sidewall of the groove and a first side of the glazing unit for receiving a first gasket, and a second void between the second sidewall of the groove and a second side of the glazing unit for receiving a second gasket.
The centralising formations may be formed from a sheet having a thickness less than a lateral spacing between the body and a lateral tip of the centralising formations in a relaxed state thereof, and the centralising formations are configured to flex so as to centralise the glazing unit within the groove.

[0007] The centralising formations centralise the packer within the groove. Additionally, the arrangement provides a space into which a separate gasket may be fitted, which helps create an effective seal and inhibits the ingress of moisture. The flexibility of the centralising formations ensures the centralisation can occur despite tolerances in the dimensions of the frame and glazing unit. The centralising formations being thinner than the first and second void facilitate drainage of water in the groove.

[0008] The body may comprise a first section configured to define a void between the glazing unit and the base wall.

[0009] Having a void between the glazing unit and the base wall of the frame further facilitates drainage of water in the groove.

[0010] The body may comprise a non-linear cross section.

[0011] The cross section of the first section of the body may comprise an arcuate profile.

[0012] This arcuate profile means that once the glazing unit is installed in the packer, the 'leaf-spring' effect will cause damping and cushion the glazing unit during assembly. As the glazing unit sits on the packer, deflection of the body may cause the centralising formations to grip the glazing unit and assist in centralising the glazing unit. Additionally, having an arcuate profile at the base wall of the frame again aids water drainage underneath the glazing unit.

[0013] The first section of the body and the centralising formations may be formed from a sheet having a thickness less than the lateral spacing between the body and a lateral tip of the centralising formations in a relaxed state thereof.

[0014] The centralising formations may be arranged in pairs and each member of the pair may extend from opposite sides of the body.

[0015] Having a centralising formation extending from each side of the body fully restricts the movement of the glazing unit in the axis running between the pair of formations.

[0016] The centralising formations may be cantilevered centralising legs configured to engage with the glazing unit and/or the frame.

[0017] The centralising formations being cantilevered legs as opposed to a solid formation enables flexibility. The legs enable the centralisation of the glazing unit in multiple directions whilst remaining space efficient. Additionally, the centralising legs are simple shapes to manufacture cost effectively and with minimal materials, and can be easily adapted based on the size of the window.

[0018] The centralising formations may comprise a first pair of legs to centralise the body within the groove and a second pair of legs to centralise the glazing unit with

respect to the body.

[0019] This arrangement may ensure the glazing unit is securely centralised because it centralises the glazing unit within the packer, and additionally the packer within the frame.

[0020] The first section of the body may comprise a ramp at an end of the body to assist in fitting of the glazing unit.

[0021] The ramp of this arrangement guides the glazing unit into the correct position upon installation.

[0022] The ramp may comprise a first and second ramped portion and a central notch.

[0023] The notch facilitates drainage as well as allowing the body to flex.

[0024] The body may comprise a second section configured to engage a second surface of the frame adjacent and arranged at an angle to the first surface.

[0025] Engaging the glazing unit on adjacent sides at a corner thereof restricts the movement of the glazing unit in an additional direction.

[0026] The second section of the body may comprise a non-linear cross section.

[0027] The cross section of the second section of the body may comprise an arcuate profile.

[0028] Having an arcuate profile on the second section of the body enables the 'leaf-spring' effect to occur in a second direction, and cushions the glazing unit on an additional side during assembly. Deflection of the body in the second section may cause the centralising legs to grip the glazing unit and assist the centralising to provide further stability.

[0029] The first section of the body may comprise a first pair of centralising legs to centralise the first section of the body within the groove and a second pair of centralising legs to centralise the glazing unit with respect to the body.

[0030] The second section of the body may comprise a first pair of centralising legs to centralise the second section of the body within the groove and a second pair of centralising legs to centralise the glazing unit with respect to the body.

[0031] This arrangement ensure that the glazing unit is centralised within the packer, and additionally that the packer is centralised with the frame in two transverse directions.

[0032] The second section of the body may comprise a ramp at an end of the body to assist in fitting of the glazing unit.

[0033] The ramp of this arrangement guides the glazing unit into the correct position upon installation in a second direction.

[0034] The first and second sections of the body may be connected by a hinge.

[0035] The hinge is a simple means of enabling the packer to be bent into an appropriate shape for installation in the corner of the frame.

[0036] The hinge may not extend across the full width of the packer.

[0037] The first and the second section of the body may be connected by a living hinge.

[0038] This allows the body to be bent into the desired shape whilst remaining an integral part. Additionally, this allows the part to be injection moulded flat, which is a simpler geometry to injection mould as opposed to an L-shape because there will be a more even flow distribution and more even shrinkage pattern. Additionally, a smaller and less complex mould is necessary.

[0039] The body may comprise an opening.

[0040] The opening may extend along the first section and the second section of the body.

[0041] The opening allows the leaf-spring effect to occur independently in each section of the body, which is advantageous if the packer is fitted at a corner of the frame.

[0042] The parts of the packer may be integrally and monolithically formed.

[0043] The packer being integral simplifies the manufacturing and assembly processes, and minimises the number of parts and post-processing necessary.

[0044] The packer may be injection moulded.

[0045] Injection moulding is a cost effective manufacturing process for producing high volumes of identical parts.

[0046] A second aspect of the present teachings provides a fenestration unit for installation within an opening. The fenestration unit comprising a frame comprising a groove, a glazing unit positioned within a portion thereof the groove of the frame, a packer of the first aspect, a first void between a first sidewall of the groove and a first side of the glazing unit, wherein a first gasket is located at least partially within the first void between the packer and an opening of the groove, and a second void between a second sidewall of the groove and a second side of the glazing unit, wherein a second gasket is at least partially within the second void between the packer and the opening of the groove.

[0047] Advantageously, having a first and second void in this arrangement enables a separate gasket to be installed at either side of the glazing unit to create an effective seal and inhibit ingress of moisture.

[0048] The fenestration unit may comprise a plurality of packers configured to each sit in a corner of the frame and to each receive a corner of the glazing unit.

[0049] Advantageously, this restricts the movement of the glazing unit both upwards and downwards and side to side, whilst centralising the glazing unit in the direction perpendicular to the glass pane.

[0050] The frame may be a beadless frame.

BRIEF DESCRIPTION OF THE DRAWINGS

[0051]

Figure 1 is a front view of a fenestration unit having a packer according to an embodiment of the present teachings;

Figure 2 is an isometric view of the packer of Figure 1;

Figure 3 shows an isometric view of a section of the fenestration unit of Figure 1, showing the packer in an assembled position with a portion of the fenestration unit shown in dotted lines;

Figure 4 shows a cross sectional view of a fenestration unit on the plane 4-4 of Figure 1;

Figures 5A-B illustrate a method of assembling a fenestration unit according to an embodiment of the present teachings; and

Figure 6 shows an isometric view of an alternative embodiment of the packer.

DETAILED DESCRIPTION OF EMBODIMENT(S)

[0052] Figure 1 shows a fenestration unit generally indicated at 1, having a frame assembly 12 made up of a plurality of frame members 12a-d and packers 14a-d. The fenestration unit 1 of this embodiment is suitable for a window, door or other type of fenestration, such as a vent or cladding panel. The frame assembly 12 is configured to receive and support a pane or panel, such as a pane of glass, a double or triple glazed sealed unit, or a panel of wood, aluminium or other suitable material. The frame assembly 12 of the present teachings is a beadless frame assembly meaning that the glazing unit 3 is secured within the frame assembly without the use of a glazing bead. This is achieved by providing the frame members 12a-d with a groove 38, or channel (see Figures 3 and 4) - i.e. the frame members have a 'U'-shaped cross-sectional profile to receive the pane or glazing unit 3 securely as discussed in more detail below. The packers 14a-d are in this embodiment identical and installed in each corner 4a-d of the frame assembly 12 to aid the correct alignment of the glazing unit 3.

[0053] Each frame member 12a-d (of which there are four in this embodiment) comprises a pair of angled or bevelled edges 13a-h. The bevelled edges 13a-h of each frame member 12a-d are configured to interface with a corresponding bevelled edge 13 of a neighbouring frame member 12a-d so as to form a mitre joint 10a-d respectively.

[0054] However, it shall be appreciated that in other embodiments the frame assembly may comprise frame members that abut each other with square joints or part square and part bevelled joints.

[0055] The frame assembly 12 is a metallic frame assembly, i.e. a frame assembly 12 having frame members 12a-d that are at least in part metallic. A metallic frame assembly as described here may include features or components of some non-metallic or composite material, such as plastics material or wood. However, the majority of the structural strength is provided by the metallic parts.

[0056] Typically, the frame assembly is an aluminium frame assembly, i.e. a frame assembly 12 having frame members 12a-d comprising at least part aluminium. The frame members 12a-d of this embodiment comprise a 6063T6 aluminium alloy. However, it shall be appreciated that any other suitable material may be used. In one alternative embodiment, the frame members are of some other suitable material, such as some other 6063 series aluminium alloy, or a 6060 series aluminium alloy.

[0057] In other embodiments the frame assembly may be a predominantly plastics (e.g. uPVC) or wooden frame assembly.

[0058] The frame members 12a-d of this embodiment are typically manufactured by extrusion. However, it shall be appreciated that other suitable manufacturing methods may be used.

[0059] The frame members 12a-d each comprise an internal profile section, an external profile section and a thermal break sandwiched therebetween comprising a low thermal conductivity material such as a plastics or foam. Such thermal breaks are used in order that aluminium fenestration units have suitable thermal insulation properties for use in exterior openings of domestic dwellings and commercial buildings. However, it shall be appreciated that other suitable thermal breaks may be used, or alternatively, the thermal break may be omitted.

[0060] Figure 2 is an isometric view of the packer 14a in a relaxed state. Packers 14b, c, and d are in this embodiment substantially identical to packer 14a and will therefore not be discussed in more detail.

[0061] The packer 14a comprises a body 16 having a first section 16a and second section 16b which are coaxially aligned along a longitudinal axis A-A, a plurality of centralising formations 18a-d, a first ramp section 20a and a second ramp section 20b extending from the body 16 as discussed in more detail below.

[0062] In this embodiment, the body 16, the plurality of centralising formations 18a-d and the first and second ramp formations 20a, 20b are integrally and monolithically formed. This reduces the number of parts for assembly.

[0063] The packer 14a is manufactured from a plastics material, such as polyamide (Nylon 6), ABS or polypropylene. Such materials are not elastomeric, but when formed in thin sheets are resilient in bending.

[0064] In this embodiment the packer 14a is manufactured using an injection moulding process, however any suitable manufacturing technique may be used, e.g. an extrusion and stamping process.

[0065] The body 16 of the packer 14a and the centralising formations 18a-d are manufactured in the substantially flat configuration of Figure 2 and subsequently bent into the L-shape of Figure 3 for installation in the corners 4a-d. A moulding of this substantially flat configuration requires a simpler injection mould tool compared to an L-shape. Additionally, a more even flow distribution and shrinkage pattern is possible meaning the properties of the packer 14a may be more uniform.

[0066] The first section 16a of the body 16 has a non-

linear profile transverse the axis A-A. In this embodiment the profile is an arcuate profile, wherein the peak of the arc is arranged to face towards the glazing unit 3 in use. The arcuate profile enables the 'leaf-spring' effect to cushion the glazing unit 3 during assembly and helps inhibit damage.

[0067] In other embodiments alternative non-linear profiles may be employed, for example multiple adjoining arcs, which curve in the same or differing directions, or zigzag/saw tooth profiles, which can flex to provide cushioning to the glazing unit.

[0068] The centralising formations 18a, 18b are cantilevered legs which extend from opposing transverse edges of the first section 16a in pairs. In this embodiment, the centralising formations 18a, 18b and the first section 16a of the body 16 are formed from a sheet having a thickness T that is less than the lateral spacing between the body 16 and a lateral tip of the centralising formations 18a-d in a relaxed position. The thickness T is also less than the nominal spacing L between the faces of the glazing unit and sidewalls 32a and 32b of the groove.

[0069] The first pair of centralising legs 18a are arranged to centralise the first section 16a within the groove 38. To this end each leg 18a extends generally upwardly, parallel to the plane of the glazing unit 3 and then deviates outwardly transverse axis A-A and downwardly to terminate on substantially the same level as the bottom of the first section 16a. In this embodiment the downward angle is approx. 45°, but may be steeper or shallower as required. To accommodate variations in the overall width of the groove 38, this shape allows some flexing of the legs 18a.

[0070] Additionally, the legs 18a coincide with a region of the first section 16a where there is an opening or void 28. This enables the centralising legs 18a to be more easily compressed together, which may aid the fitting of the packer 14 into the groove 38 if the tips of the legs 18a are laterally spaced wider than the groove 38 when relaxed.

[0071] The first section 16a comprises an additional second pair of centralising legs 18b arranged axially end-to-end with the first pair 18a. The second pair of centralising legs 18b extend generally upwardly, parallel to the plane of the glazing unit 3 (similar to the first pair 18a), but then deviate outwardly transverse axis A-A and upwardly in a direction generally towards the first and second sidewall 32a and 32b respectively of the groove 38. As can be seen in Figure 4, the second pair of legs 18b form a mouth that receives and centralises the glazing unit with respect to the packer.

[0072] As such the first pair of centralising legs 18a and the second pair of centralising legs together centralise the glazing unit 3 in the groove 38.

[0073] It shall be appreciated that in alternative embodiments, the first and second pair of centralising legs may extend from any location on the first section 16a of the body 16. For example there may be multiple alternating first and second pairs of legs along the first section 16a, the legs of the first pair 18a and second pair 18b may be longitudinally offset on either side, i.e. a first leg 18a may partially or fully oppose a second leg 18b.

[0074] The first ramp section 20a extends from the longitudinal free edge of the first section 16a. In this embodiment, the first ramp section 20a is divided in two by a central notch 24a. The first ramp section 20a may assist in guiding the glazing unit 3 during its fitting as discussed below. The central notch 24a ensures that the ramp section does not unduly inhibit the flexing of the first section 16a and ensures that the drainage of water past the ramp can occur.

[0075] The second section 16b of the body 16, as illustrated in Figure 2, is essentially identical to the first section 16a. The second section 16b comprises a third pair of centralising legs 18c located towards the centre of the body 16 and adjacent to the first pair of centralising legs 18a, and a fourth pair of centralising legs 18d located towards an end of the second section 16b. The third pair of centralising legs 18c engage with the groove 38 of the frame assembly 12 in the same way as the first pair 18a, and the fourth pair engage with the glazing unit 3 in the same way as the second pair 18b. The second ramp section 20b and notch 24b function similarly to the first 20a and 24a

[0076] The first section 16a and the second section 16b are symmetrical about a connecting hinge 26. Advantageously, this means the same packer 14a can be orientated for use in each corner 4a-d of the frame assembly 12. In this embodiment, the hinge 26 is a living hinge that connects the first section 16a of the body 16 and the second section 16b of the body 16. Upon installation at a corner 4d into the groove 38 of the frame as shown in Figure 3, the packer 14a is bent about the living hinge 26 so that the first section 16a is perpendicular to the second section 16b. This enables the hinge 26 of the packer 14 to support adjacent edges of the glazing unit 3.

[0077] It will be noted that the opening 28 extends across the centre of the width of the living hinge 26, and the width of the opening 28 is greater than the total width of the living hinge 26. This arrangement enables the arcuate profiles of the first and second sections 16a, 16b to flex independently from each other, and for the 'leaf-spring' effect to occur independently in two directions. It also minimises a memory effect of the living hinge 26 so it readily adopts the angled shape of Figure 3.

[0078] From Figure 4 it can be seen that the arcuate profile of the first section 16a of the body 16, along with the angle at which the centralising legs 18a extend, creates a void between the glazing unit 3 and the base surface of the groove 38 to facilitate drainage of any accumulated water.

[0079] The height of the centralising formation 18b is less than the height of the groove 38, which provides the space vertically for receiving a first and second gasket 34a and 34b.

[0080] Typically, the first gasket 34a is an internal gasket configured to abut and seal against an interior side

of the glazing unit 3 and the second gasket is an external gasket 34b configured to abut and seal against an exterior side of the glazing unit 3. The gaskets 34a, 34b are formed as a separate component to the packer 14a. Each gasket 34a, 34b is typically made up of a resilient material to provide a seal around the perimeter of the glazing unit 3. Typically, the gaskets 34a, 34b comprise a synthetic rubber material, such as EDPM.

[0081] To assemble the fenestration unit 1, first and second connectors (not shown) are applied to the hollow profile of the second frame member 12b at respective openings located at the bevelled edge 13d. Further connectors are also applied to the hollow profile of the fourth frame member 12d at respective openings located at the bevelled edge 13g.

[0082] The second, third and fourth frame members 12b, 12c, 12d are then abutted with each other, as shown in Figure 5A, such that the bevelled edge 13d of the second frame member 12b interfaces with the bevelled edge 13e of the third frame member 12c to form the mitre joint 10b, and the bevelled edge 13g of the fourth frame member 12d interfaces with the bevelled edge 13f of the third frame member 12c to form the mitre joint 10c. As the frame members 12b, 12c, 12d are abutted, the second arms of the respective connectors become located within the respective hollow profiles of the third frame member 12c located at the bevelled edges 13e and 13f respectively. The connectors are then secured at the respective mitre joints 10b, 10c so as to secure the second, third and fourth frame members 12b, 12c, 12d thereby forming a U-shaped member 54.

[0083] Once the U-shaped member 54 has been provided, the packers 14a-d may be applied to the respective corners of the glazing unit 3. Alternatively, as depicted in Figure 5A, packers 14b and 14c may instead be located within the groove 38 formed at each mitre joint 10b, 10c of the U-shaped member 54.

[0084] The U-shaped member 54 is then located about the glazing unit 3 via sliding the glazing unit 3 into the respective grooves 38 of the U-shaped member 54 to rest as shown in Figure 5B. The ramp sections 20a and 20b aid the location of the glazing unit 3 in a direction parallel to the plane thereof as the corners of the glazing unit 3 encounter the packers 14c and 14d.

[0085] When the glazing unit 3 exerts a force on the body 16 of the packers 14a-d due to its mass and the arcuate profile of the first section 16a and/or second section 16b flexes, the deflection of the first section 16a causes the angle at which the second pair of centralising legs 18b extend relative to the glazing unit 3 to change. This enables the second pair of centralising legs 18b to grip the glazing unit 3 and centralise the glazing unit 3 within the packer 14. The second pair of centralising legs 18b each further comprise a ramped edge for guiding the glazing unit 3 into the correct position upon assembly.

[0086] Additionally, the centralising formations 18a engage with the side walls 32a and 32b of the groove 38 to centralise the packers 14a-d with the groove. Consequently, the glazing unit is constrained within the groove 38 in a direction perpendicular to a pane of the glazing unit 3. This centralising occurs despite any possible minor tolerances in the dimensions of the glazing unit or the frame assembly.

[0087] The packers 14a-d are configured such that the arcuate body portions 16a, 16b are not fully flattened when the glazing unit is installed, so as to allow for drainage of water past the packers in use.

[0088] Further connectors are then applied to the hollow profile 22a of the first frame member 12a, located at bevelled edges 13a and 13b respectively.

[0089] The first frame member 12a is then located about the glazing unit 3, such that the glazing unit 3 is received within the groove 38a of the first frame member 12a and the frame assembly secured together. The gaskets 34a and 34b may then be fitted as shown in Figure 4 to complete the fenestration unit as shown in Figure 1.

[0090] It shall be appreciated that in alternative embodiments the centralising formations 18a-d may be any suitable shape, for example a single pair of centralising formation may be provided that are similar to the second pair of formations 18b, but have a wider mouth defined by the tips so as to contact the side walls 32a, 32b as well as to receive the glazing unit.

[0091] In some installations as illustrated in Figure 6, the packer 14a is cut transversely at the living hinge 26 so that the first section 16a and second section 16b of the body are separated. These may be used individually to support large and heavy glazing units intermediate the corners as required.

[0092] In some embodiments the packer may only comprise the first section of the body and as such separate packers would be required to be fitted either side of each mitre joint.

[0093] In alternative embodiments, the opening may extend across one of the first section or the second section of the body. The opening may be any suitable shape, for example an oval shape, or alternatively the opening may be omitted.

Claims

1. A packer for supporting a glazing unit within a groove of a frame of a fenestration unit, the groove defining opposing side walls and a base wall, the packer comprising;

   a body configured to sit within the groove; and
   a plurality of centralising formations wherein the centralising formations are configured to create a first void between the first sidewall of the groove and a first side of the glazing unit for receiving a first gasket, and a second void between the second sidewall of the groove and a second side of the glazing unit for receiving a second gasket,

wherein the centralising formations are formed from a sheet having a thickness less than a lateral spacing between the body and a lateral tip of the centralising formations in a relaxed state thereof, and the centralising formations are configured to flex so as to centralise the glazing unit within the groove.

2. The packer of claim 1 wherein the body comprises a first section configured to define a void between the glazing unit and the base wall.

3. The packer of claim 2 wherein a cross section of the first section of the body is non-linear, optionally wherein the cross section of the first section of the body comprises an arcuate profile.

4. The packer of any preceding claim wherein the first section of the body and the centralising formations are formed from a sheet having a thickness that is less than the lateral spacing between the body and a lateral tip of the centralising formations in the relaxed state thereof.

5. The packer of any preceding claim wherein the centralising formations are arranged in pairs and each member of the pair extends from opposite sides of the body, optionally wherein the centralising formations are cantilevered centralising legs configured to engage with the glazing unit and/or the frame, and optionally wherein the centralising formations comprise a first pair of legs to centralise the body within the groove and a second pair of legs to centralise the glazing unit with respect to the body.

6. The packer of claim 2 wherein the first section of the body comprises a ramp at an end of the body to assist in fitting of the glazing unit, optionally wherein the ramp comprises a first ramped portion, a second ramped portion and a central notch.

7. The packer of any preceding claim wherein the body comprises a second section configured to engage a second surface of the frame adjacent and arranged at an angle to the first surface.

8. The packer of claim 7 wherein a cross section of the second section of the body is non-linear, optionally wherein the second section of the body comprises an arcuate profile, and optionally wherein the second section of the body comprises a ramp at an end of the body to assist in fitting of the glazing unit.

9. The packer of any one of claim 5 to 8 wherein the first section of the body comprises a first pair of centralising legs to centralise the first section of the body within the groove and a second pair of centralising legs to centralise the glazing unit with respect to the body.

10. The packer of any one of claim 7 to 9 wherein the second section of the body comprises a first pair of centralising legs to centralise the second section of the body within the groove and a second pair of centralising legs to centralise the glazing unit with respect to the body.

11. The packer of any one of claim 7 to 10 wherein the first and second sections of the body are connected by a hinge, optionally wherein the hinge does not extend across the full width of the packer, optionally wherein the first and second sections of the body are connected by a living hinge.

12. The packer of any one of claim 7 to 11 wherein the body comprises an opening, optionally wherein the opening extends along the first section and the second section of the body.

13. The packer of any preceding claim wherein the parts of the packer are integrally and monolithically formed, optionally wherein the packer is injection moulded.

14. A fenestration unit for installation within an opening, the fenestration unit comprising:

a frame comprising a groove;
a glazing unit positioned within a portion thereof the groove of the frame;
a packer;
a first void between a first sidewall of the groove and a first side of the glazing unit, wherein a first gasket is located at least partially within the first void between the packer and an opening of the groove; and
a second void between a second sidewall of the groove and a second side of the glazing unit, wherein a second gasket is at least partially within the second void between the packer and the opening of the groove.

15. The fenestration unit of claim 14 comprising a plurality of packers configured to each sit in a corner of the frame and to each receive a corner of the glazing unit, optionally wherein the frame is a beadless frame.

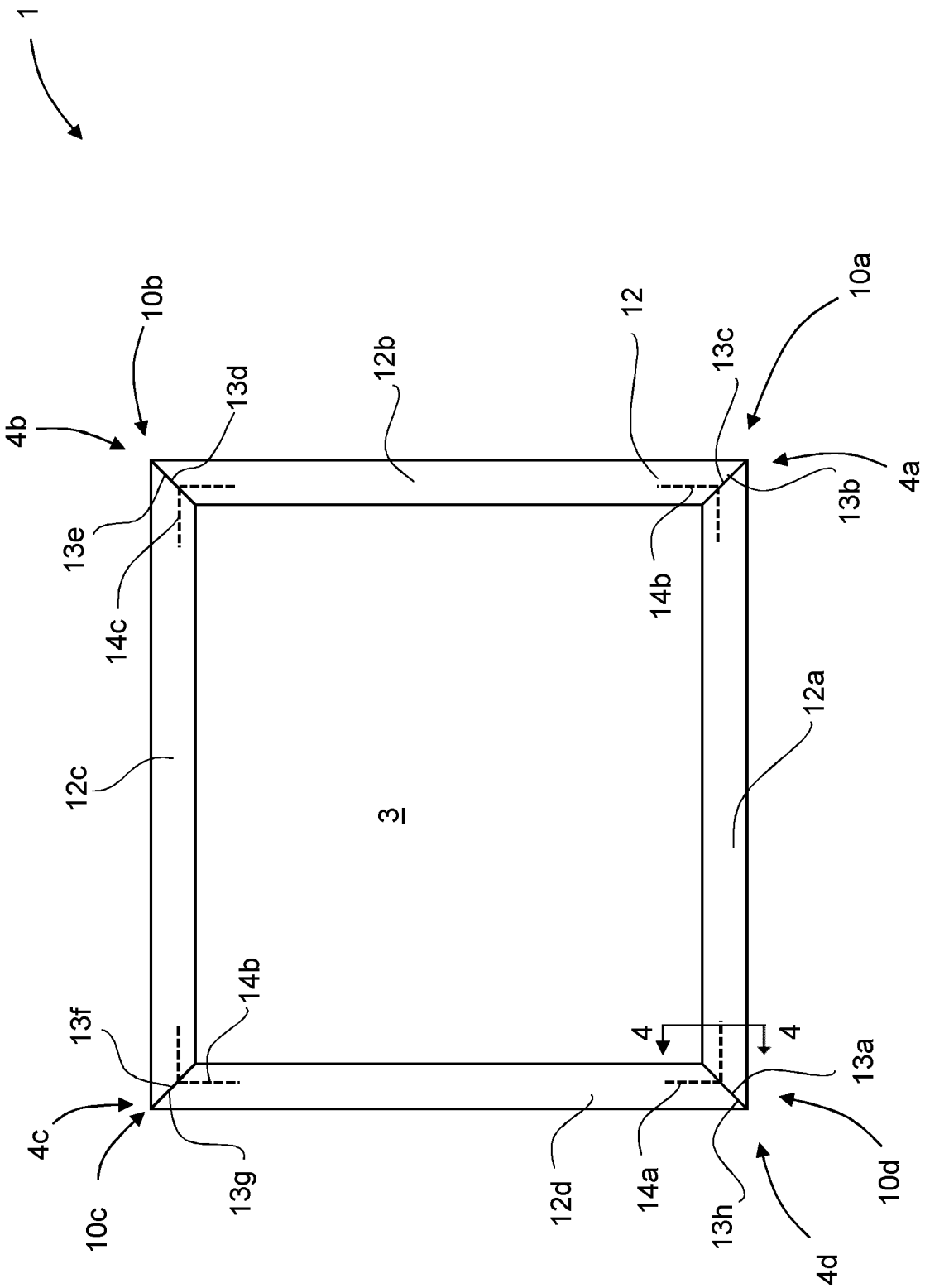
1
10b
4b
13d
12b
12
13c
10a
4a
13b
13e
14c
14b
12c
3
12a
14b
13f
4
4
13a
4c
10c
13g
12d
14a
13h
10d
4d

FIG. 1

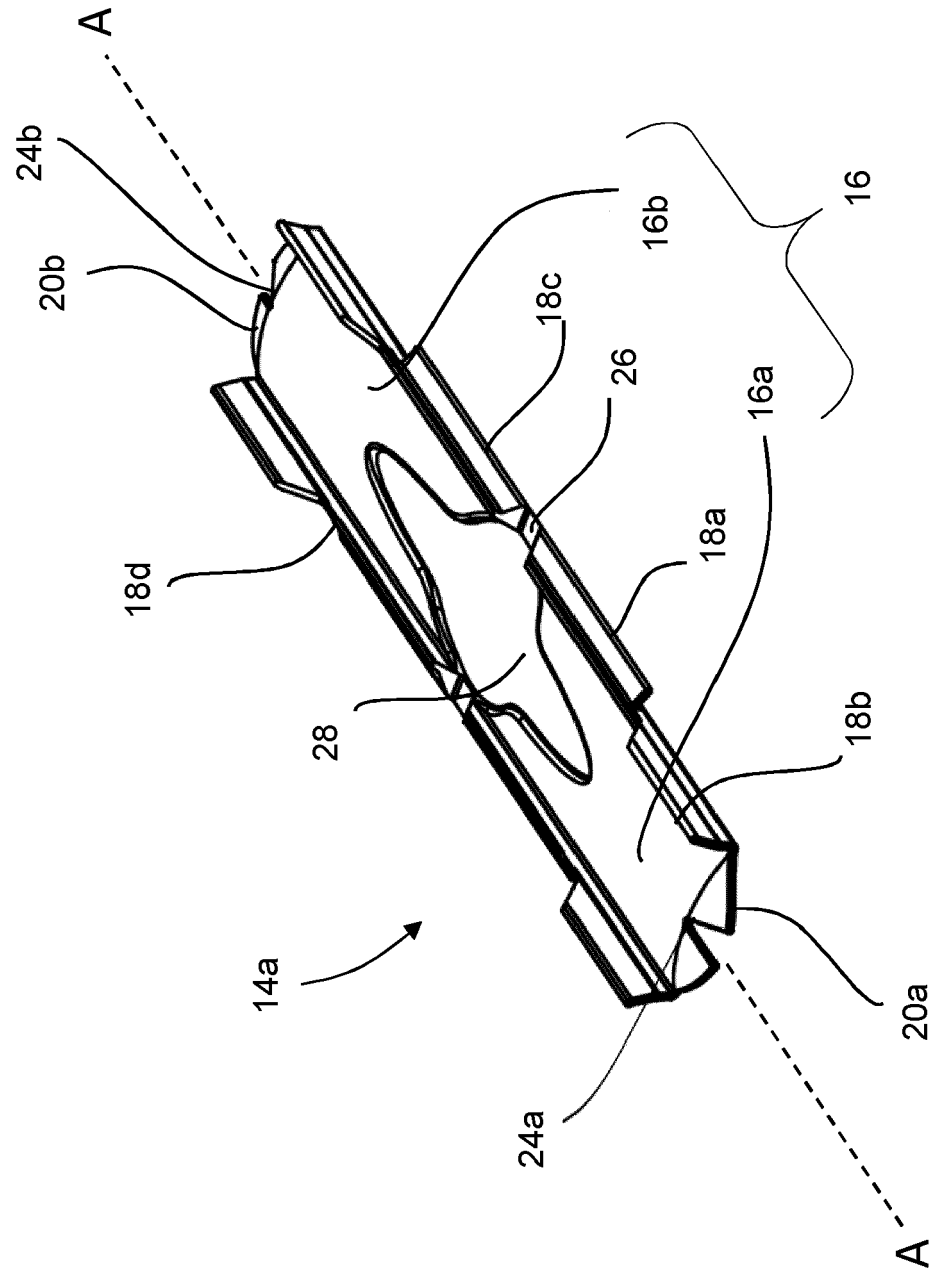

FIG. 2

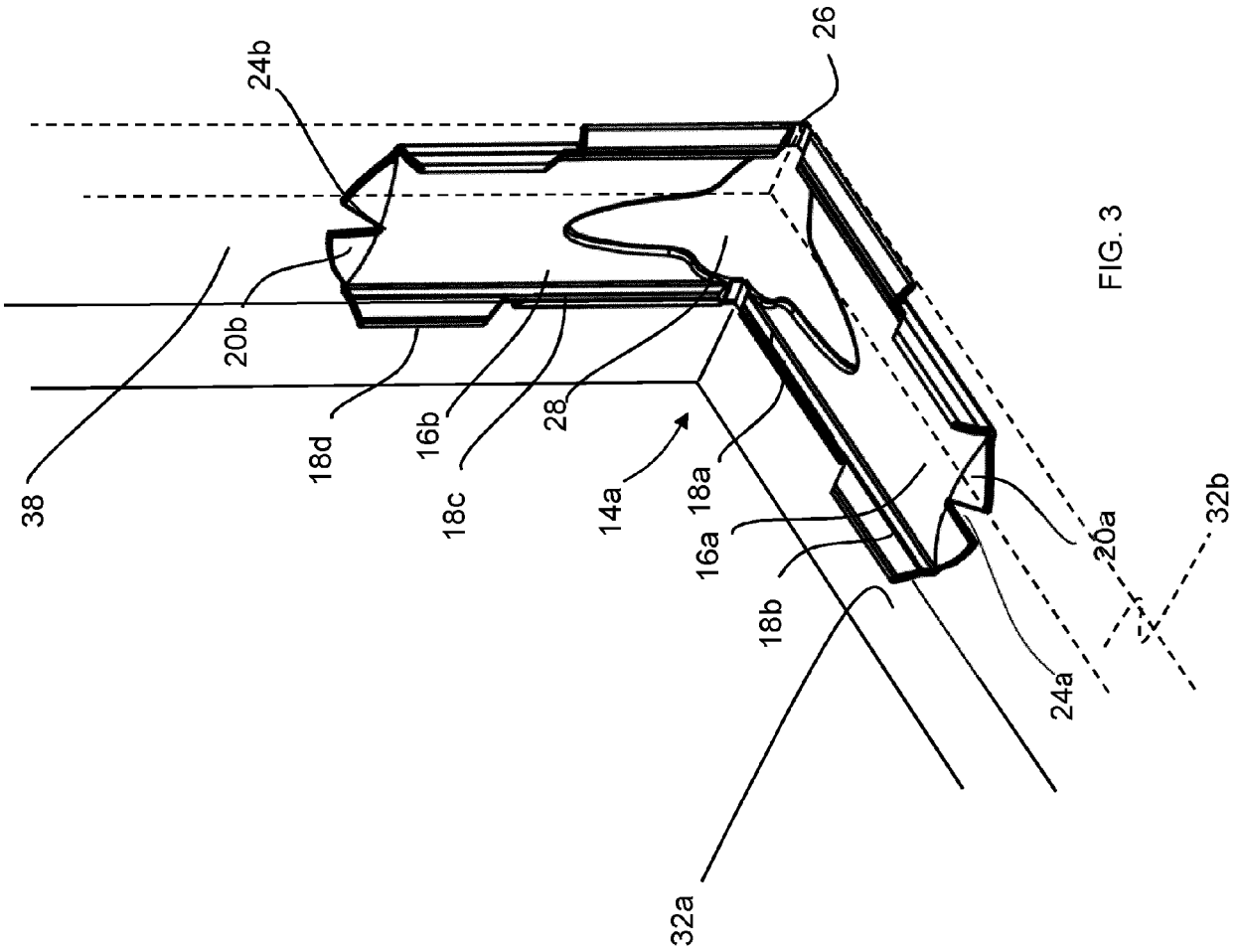

FIG. 3

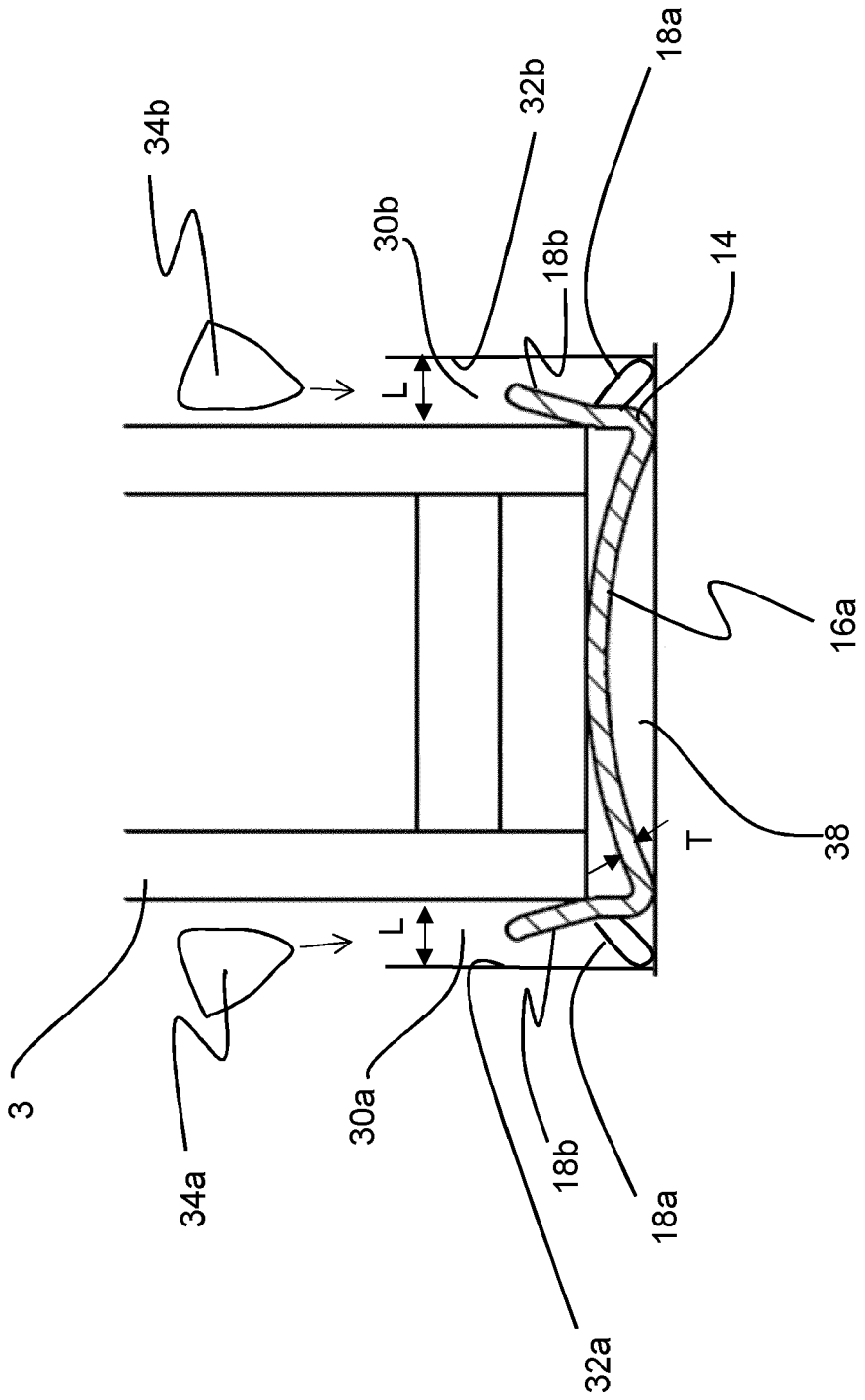

FIG. 4

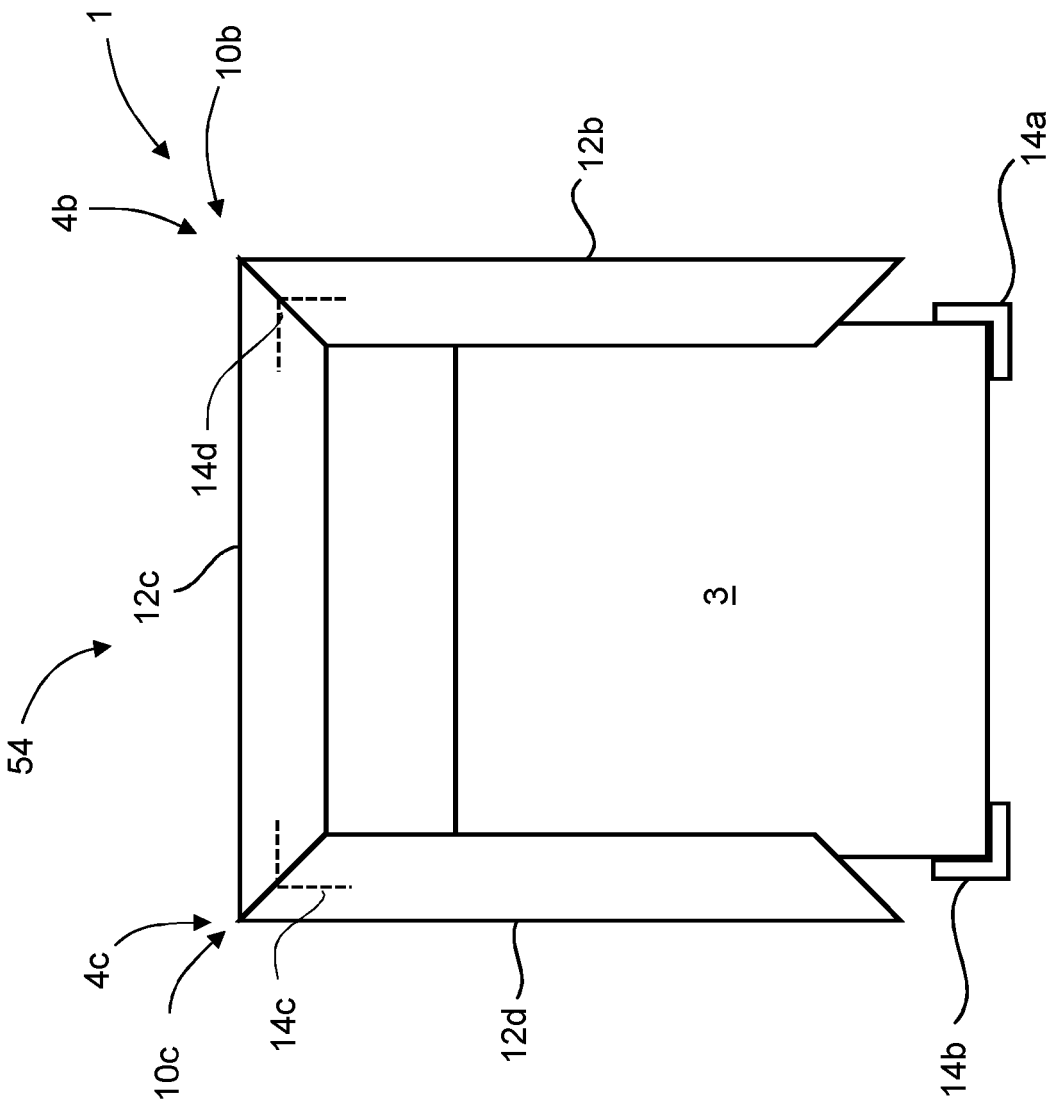

FIG. 5A

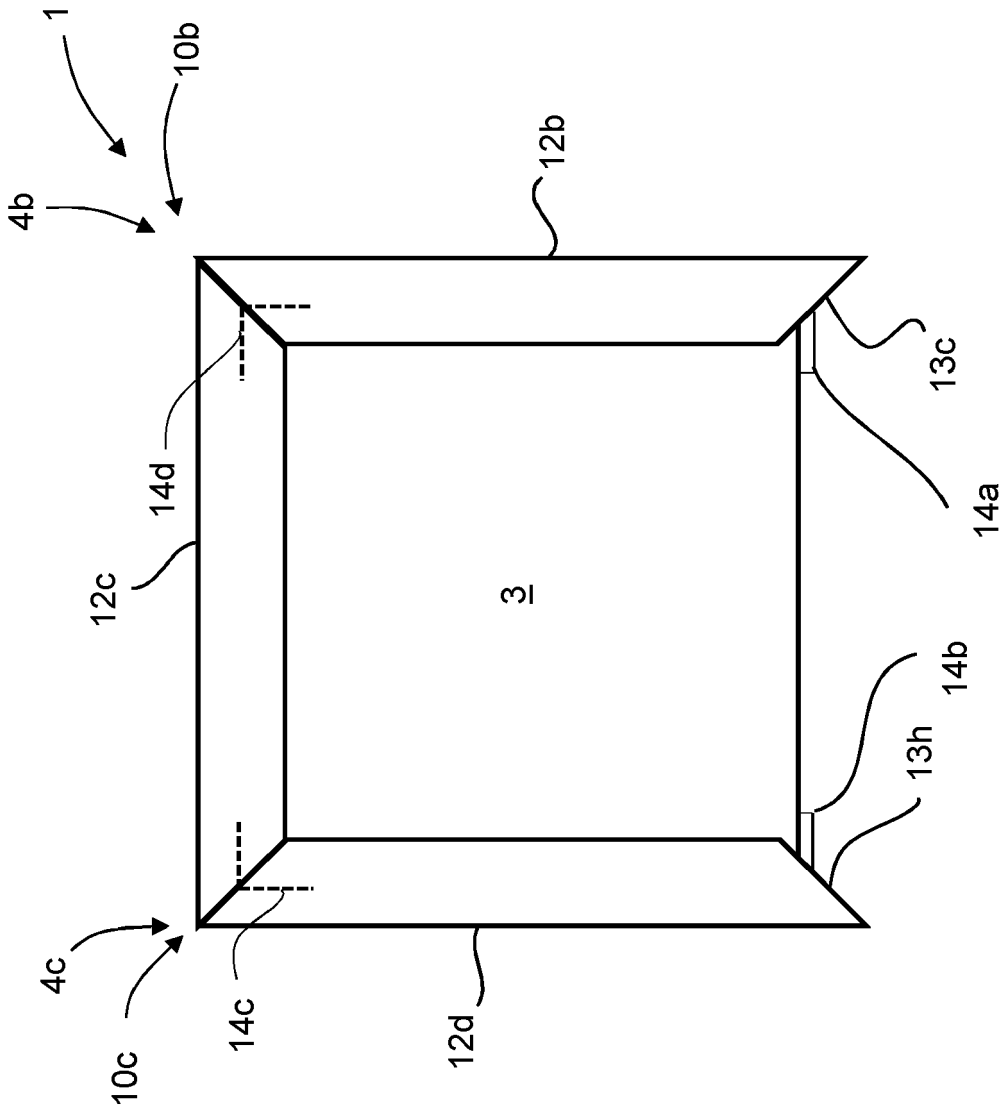

FIG. 5B

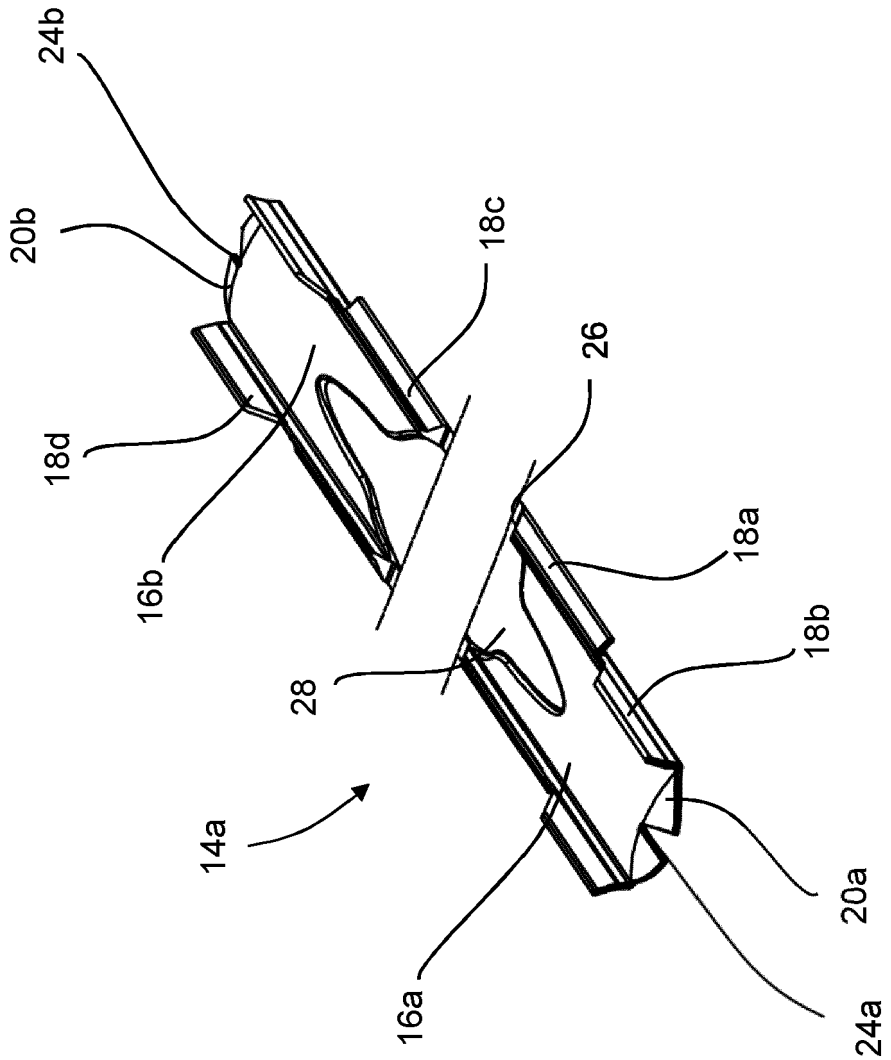

FIG. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 21 16 2857

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2017/254139 A1 (BRAID SIMON CHRISTOPHER [GB]) 7 September 2017 (2017-09-07) * figures 1-10 * * paragraph [0050] - paragraph [0051] * * paragraph [0100] - paragraph [0165] *	1-15	INV. E06B3/54 ADD. E06B3/62
X	EP 1 687 503 A1 (BYSTRONIC SOLUTION CT INC [CA]) 9 August 2006 (2006-08-09) * figures 5-9 * * page 17, line 17 - page 24, line 28 *	1-8,11, 13,14	
X	EP 1 164 248 A2 (SFS HANDELS HOLDING AG [CH]) 19 December 2001 (2001-12-19) * figures 1-2 * * paragraph [0016] - paragraph [0027] *	1-5,7-9, 11,14	
X	SE 522 001 C2 (OEHNS SNICKERI I UMEAA AB [SE]) 7 January 2004 (2004-01-07) * figures 1-4 *	1-5,7, 11,13	

TECHNICAL FIELDS SEARCHED (IPC)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 July 2021	Blancquaert, Katleen

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 21 16 2857

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

20-07-2021

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2017254139 A1	07-09-2017	EP 3214251 A1	06-09-2017
		GB 2547911 A	06-09-2017
		US 2017254139 A1	07-09-2017
EP 1687503 A1	09-08-2006	CA 2544872 A1	12-05-2005
		EP 1687503 A1	09-08-2006
		RU 2324800 C2	20-05-2008
		US 2007032972 A1	08-02-2007
		WO 2005042901 A1	12-05-2005
EP 1164248 A2	19-12-2001	AT 285017 T	15-01-2005
		DE 10029391 C1	25-10-2001
		EP 1164248 A2	19-12-2001
SE 522001 C2	07-01-2004	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82