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

(11) EP 2 628 883 A2

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
21.08.2013 Bulletin 2013/34

(51) Int Cl.:
E06B 3/66 *(2006.01)*

(21) Application number: **13155223.4**

(22) Date of filing: **14.02.2013**

(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

(30) Priority: **16.02.2012 IL 21817712**

(71) Applicant: **KLIL INDUSTRIES LTD.**
20100 Karmiel (IL)

(72) Inventors:
- **Buryanov, Oxana**
  20100 Karmiel (IL)
- **Blayer, Guy**
  32882 Haifa (IL)

(74) Representative: **Pearl Cohen Zedek Latzer UK LLP**
15 Old Bailey
London EC4M 7EF (GB)

(54) Device system and method for fixing a frame to a glaze

(57) Embodiments of the present invention provide a glazed closure for an opening, said glazed closure may resist movements of frame elements of glazed closure relative to a glaze assembly in some directions while allowing movements of frame elements relative to glaze assembly in other directions. Glazed closure according to embodiments of the present invention may comprise at least one frame element; at least one glaze assembly comprising at least one glaze, and at least one support element; at least one insert; and at least one fastening element to fasten frame elements to inserts affixed to glaze assembly, to prevent detachment movement of frame elements relative to glaze assembly. The insert may comprise a cavity to receive an end of the fastening element.

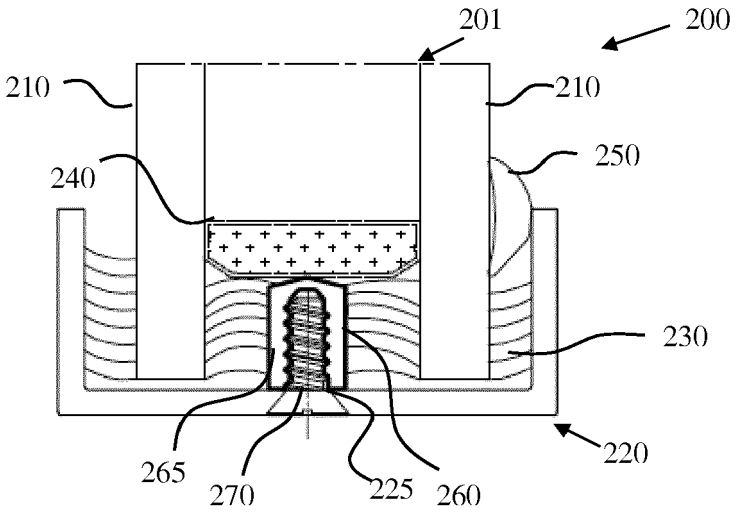

Fig. 2B

EP 2 628 883 A2

Description

BACKGROUND OF THE INVENTION

[0001] Glazed closures for openings such as windows and doors are in common use in industrial, commercial and residential construction. An illustration of a prior art glazed closure 100 is depicted in Figs. 1A, 1B and 1C.

[0002] As may be seen in Figs. 1A - 1C, a prior art glazed closure 100 such as a window or a door, comprises a glaze assembly 101, and frame elements 120. Glaze assembly 101 usually comprises one or more glazes 110 and a support element 140, such as a spacer 141.

[0003] The hollow space between glaze assembly 101 and frame element 120 is typically filled with a filling material 130. In order to retain glaze assembly 101 within frame element 120, pressure seal elements 150 may be used to seal a gap between edges 121 and 121' of frame element 120 and glaze assembly 101. In different solutions sealing adhesive material, such as silicon, is applied between glaze assembly 101 and frame element 120 to provide both attachment and sealing to glaze assembly 101. Adhesives means 130A and pressure seal elements 150 may typically provide either strong but permanent fixing of frame element 120 to glaze assembly 101, such as the case with silicon adhesive, or weak fixing that allows re-aligning of frame element 120 to glaze assembly 101, such as the case with rubber stripe means.

[0004] The use of filling materials 130 and adhesives and/or pressure seal elements 150 may be insufficient in order to prevent disengagement of glaze assembly 101 from frame element 120, for example when closure 100 is pulled along a slide rail (not shown) e.g. in the direction of arrow A, typically in a substantially horizontal direction, by applying pulling force on frame element 120, especially when closure 100 comprises heavy glaze assembly 101.

[0005] In many cases, filling materials 130, adhesive materials 130A and pressure seal elements 150 do not provide sufficient resistance to the force applied to frame element 120 and frame element 120 departs from glaze assembly 101. This phenomenon is especially common in large and heavy glaze assemblies due to higher friction forces.

[0006] Another disadvantage of prior art glazed closures is the difficulty of assembly of frame elements to large glaze assemblies when high precision of the constructed frame is required. The attachment of a frame element 120 to glaze assembly 101 is achieved by filling materials 130 and adhesives and/or pressure seal elements 150. Such assembling method sometimes results in inaccurate positioning of the frame elements with respect to the glaze assembly and/or with respect to eachother, which requires dismantling the frame and re-assembling it. However, frame element 120 can not be removed and repositioned if not accurately located at the first attempt. Furthermore, inaccuracies in the cut of the glaze, glaze curvature and other inaccuracies, which may disturb accurate assembling of the frame elements, can not be corrected or fine-tuned after frame element 120 has been attached to glaze assembly 101.

[0007] One object of the present invention is to obviate the disadvantages of prior art systems and methods for attaching a frame element to a glaze assembly.

SUMMARY OF THE INVENTION

[0008] The present invention provides a glazed closure for an opening, said glazed closure may resist movements of frame elements of glazed closure relative to a glaze assembly in some directions while allowing movements of frame elements relative to glaze assembly in other directions.

[0009] Glazed closure according to embodiments of the present invention may comprise at least one frame element; at least one glaze assembly comprising at least one glaze, and at least one support element; at least one insert; and at least one fastening element to fasten frame elements to inserts affixed to glaze assembly, to prevent detachment movement of frame elements relative to glaze assembly. The insert may comprise a cavity to receive an end of the fastening element.

[0010] According to some embodiments of the present invention the insert may allow sliding movement of fastening element within the cavity in the insert, to allow sliding movement of the frame element relative to glaze assembly.

[0011] The present invention further provides a method for manufacturing and/or assembling a glazed closure according to embodiments of the present invention. According to one embodiment of the present invention, the method may comprise: receiving a glaze assembly comprising at least one glaze and at least one support element; inserting at least one insert into filling material in glaze assembly; placing at least one frame element on at least one edge of the glaze assembly; and fastening the frame element(s) to the insert(s) with fastening elements to resist detachment movement of the frame element(s) relative to glaze assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] The subject matter regarded as the invention is particularly pointed out and distinctly claimed in the concluding portion of the specification. The invention, however, both as to organization and method of operation, together with objects, features, and advantages thereof, may best be understood by reference to the following detailed description when read with the accompanying drawings in which:

[0013] Fig. 1A is a front view illustration of a prior art glazed closure;

[0014] Figs. 1B and 1C are illustrative cross sections of different prior art glazed closures;

[0015] Fig 2A is a front view illustration of a glazed closure according to one embodiment of the present in-

vention;

[0016] Fig. 2B is an illustration of a cross section of glazed closure according to one embodiment of the present invention;

[0017] Figs. 3A - 3F are illustrations of inserts and fastening elements according to some embodiments of the present invention;

[0018] Fig. 4 is an illustration of a cross section of inserts and fastening elements in a single glazed closure according to one embodiment of the present invention;

[0019] Fig. 5 is a flowchart of a method according to one embodiment of the present invention.

[0020] It will be appreciated that for simplicity and clarity of illustration, elements shown in the figures have not necessarily been drawn to scale. For example, the dimensions of some of the elements may be exaggerated relative to other elements for clarity. Further, where considered appropriate, reference numerals may be repeated among the figures to indicate corresponding or analogous elements.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

[0021] In the following detailed description, numerous specific details are set forth in order to provide a thorough understanding of the invention. However, it will be understood by those skilled in the art that the present invention may be practiced without these specific details. In other instances, well-known methods, procedures, and components have not been described in detail so as not to obscure the present invention.

[0022] Reference is now made to Figs. 2A and 2B. Glazed closure 200 may comprise at least one frame element 220 and at least one glaze assembly 201. Glaze assembly 201 may comprise at least one glaze (210 in Fig. 2B) and a support element 240. According to some embodiments of the present invention, glaze assembly 201 may comprise two glazes 210 spaced apart by support element 240. It would be appreciated by those skilled in the art that different number of glazes 210 and support elements 240 may be used.

[0023] As may be seen in Fig. 2B, closure 200 further comprises at least one insert 260. Insert 260 may comprise connection means that provide counter-force to forces acting parallel to the plane of glaze 210 and away from glaze 210 proximal edges. According to some embodiments of the present invention insert 260 may allow movement of the counter-fixing element within insert 260 in a direction parallel to a plane tangential to the proximal edge of glaze 210 and to the plane of glaze 210.

[0024] According to some embodiments of the present invention, insert 260 may be embedded within filling material 230 and may be further affixed using adhesives. It would be appreciated by those skilled in the art that additional affixing may not be required. It would be further appreciated that embedding insert 260 in filling material may not be required and that the use of adhesives may be sufficient in order to retain insert 260 in place even when under pulling-out forces typical to sliding glazed closure 200, as described above.

[0025] According to one embodiment of the present invention, insert 260 may be affixed to support element 240. According to another embodiment, insert 260 may be integrated in support element 240.

[0026] Insert 260 may have a cavity 265 to receive a fastening element 270 and to provide holding force against pulling-out forces acting on fastening element 270. Fastening element 270 may be a rivet, a screw, a nail or any other fastening element known in the art.

[0027] As may be further seen in Fig. 2B frame element 220 may have at least one aperture 225 to allow fastening element 270 to be inserted through frame element 220 and into cavity 265 in insert 260 and to fasten frame element 220 to glaze assembly 210 in a direction parallel to the plane of glaze 210 (Fig. 2A) and perpendicular to a plane tangential to the edge of glaze 210 proximal to fastening element 270.

[0028] According to some embodiments of the present invention, insert 260 may be shaped as a elongated conduit having its longitudinal axis parallel to the edge of glaze 210 proximal to it and having fastening formation in its internal profile adapted to provide fastening holding to fastening element 270, to allow sliding movement (i.e. movement of glaze assembly 201 relative to frame element 220, in a direction parallel to the plane of glaze 210 (Fig. 2A) and to a plane tangential to the edge of glaze 210 proximal to fastening element 270) of fastening element 270 along its longitudinal axis without diminishing its resistance to detachment movement, (i.e. movement of glaze assembly 201 relative to frame element 220, in a direction parallel to the plane of glaze 210 (Fig. 2A) and perpendicular to a plane tangential to the edge of glaze 210 proximal to fastening element 270) caused by pulling-out forces. This enabled sliding movement may ease or completely cancel longitudinal stress developing between glaze 210 and frame 220 due to, for example, differences in longitudinal thermal extension factor of glaze 210 and frame 220.

[0029] . It would be appreciated by those skilled in the art that changes to frame element 220 and to glaze assembly 201 due to for example, changes in environment temperature, may be compensated by relative sliding movement of fastening element 270 within cavity 265 along conduit shaped insert 260, and thus sliding movement of frame element 220 relative to glaze assembly 201.

[0030] Reference is now made to Figs. 3A, 3B, 3C, 3D, 3E and 3F which are illustrations of different inserts 260A-260D and different fastening elements 270A-270C according to some embodiments of the present invention. According to some embodiments of the present invention, insert 260A may have at least two centralizing elements 266 such as flanges or fins. Centralizing elements 266A may extend outwardly from insert 260A and may be substantially perpendicular to walls 264 of insert 260A.

As may be seen in Fig. 3B centralizing elements 266B may have an angle with respect to walls 264 of insert 260B different from that of centralizing element 266A. Centralizing elements 266A and 266B may be designed to adapt the breadth of insert 260A or insert 260B to the distance between the internal planes of glazes 210. It would be appreciated by those skilled in the art that centralizing elements 266A and 266B may center cavity 265 in insert 260A and in insert 260B with respect to at least a cross section of glaze assembly 201.

[0031] According to some embodiments of the present invention, four fins may be used as centralizing elements 266B, other number of centralizing elements 266 may be used. According to some embodiments of the present invention centralizing elements may not be required.

[0032] Reference is now made to Fig. 3C which illustrates another embodiment of insert 260C according to the present invention. Insert 260C may be formed as a longitudinal conduit and may comprise at least two longitudinal base elements 268. Base elements 268 may be coplanar separated by cavity 265 in insert 260C. At least one of said base elements 268 may further comprise a flange 269. Flange 269 may be substantially perpendicular to base elements 268. According to one embodiment of the present invention, base elements 268 may be substantially parallel to a plane tangential to the edge of glaze 210. It would be appreciated by those skilled in the art that base elements 268 may counteract glazes 210 and support insert 260C against normal forces applied by frame element 220 and fastening element 270.

[0033] Flange 269 may be designed to assist in aligning insert 260C in a required location with respect to a cross section of glaze assembly 201, such as in the center of a cross section of glaze assembly 201 According to some embodiments of the present invention, flange 269 may project from one end of base element 268 in substantially right angle to engage an external surface of glaze 210. It would be appreciated that during installation of insert 260, flange 269 may be placed tangential to an external surface of glaze 210. Since cavity 265 is located in a fixed location relative to flange 269, placing flange 269 as described above, determines the location of cavity 265 with respect to the external surface of glaze 210. It would be further appreciated by those skilled in the art that an additional flange 269 may be placed on another base element 268 to secure insert 260 to glaze assembly 201. According to some embodiments of the present invention flange 269 may not be required and other techniques for aligning insert 260 may be used, such as using a dedicated device or tool for proper installation of insert 260.

[0034] With reference to Fig. 3D another embodiment of an insert 260D is illustrated. Insert 260D may have clamping elements 262 to clamp around support element 240 to secure insert 260D to glaze assembly 201 and properly align insert 260D with respect to glaze assembly 201.

[0035] As may be seen in Figs. 3A-3F, fastening elements 270 may be of different types such as rivets, screws, pins and the like. With reference to Figs. 3A - 3D, a screw is used as fastening element 270. According to other embodiments of the present invention, illustrated in Figs. 3E and 3F, fastening element 270 may be a rivet or pin with an extended end 271. Extended end 271 may be snapped into cavity 265 in insert 260, and retained within cavity 265 due to projections 261 preventing release of extended end 271 of fastening element 270 from insert 260.

[0036] It would be appreciated by those skilled in the art that when fastening element has an extended end 271 for snapping into insert 260, fastening element 270 may be an integral part of frame element 220A, as illustrated in Fig. 3F. It would be further appreciated that extended end 271 may be designed in different shapes such as spherical, triangular, pyramidal or the like.

[0037] Reference is now made to Fig. 4 which is a cross section of glazed closure 200 according to yet another embodiment of the present invention having a single glaze 210. When glaze assembly 201 comprises a single glaze 210, support element 240 may also serve to adapt between frame element 220 and glaze 210. According to some embodiments of the present invention, cavity 265 may be contained in support element 240, thus eliminating the need for a separate insert. It would be appreciated by those skilled in the art that according to some embodiments an insert may be used together with support element 240, while according to other embodiments, insert 260 may be integrated in support element 240.

[0038] Reference is now made to Fig. 5 which is a flowchart of a method of assembling a glazed closure according to embodiments of the present invention. The method may comprise the following steps:

[0039] Receiving a glaze assembly comprising at least one glaze 210 and at least one support element 240 [block 510].

[0040] Affixing at least one insert 260 to glaze assembly 201 [block 520]. The affixing of insert 260 to glaze assembly may be achieved by adhering insert 260 to support element 240. According to other embodiments of the present invention, insert 260 may be embedded within filling material 230, filling a gap between glaze assembly 201 and frame element 220. Insert 260 may be centralized and properly aligned within glaze assembly by means of centralizing elements 266, by means of flanges 269 or by any other means known in the art.

[0041] Placing at least one frame element 220 on at least one edge of glaze assembly 201 [block 530].

[0042] Fastening frame element 220 to inserts 260 with fastening elements 270 [block 540]. As detailed with reference to Figs. 3A-3F, fastening elements may be rivets, pins, screws or any other fastening means known in the art. According to some embodiments of the present invention, when using an extended end fastening element, frame element 220 may be snapped in place.

[0043] While certain features of the invention have been illustrated and described herein, many modifica-

tions, substitutions, changes, and equivalents will now occur to those of ordinary skill in the art. It is, therefore, to be understood that the appended claims are intended to cover all such modifications and changes as fall within the true spirit of the invention.

Claims

1. A glazed closure for an opening comprising:

at least one frame element;
at least one glaze assembly comprising at least one glaze, and at least one support element;
at least one insert; and
at least one fastening element to fasten said at least one frame element to said at least one insert to prevent detachment movement of said at least one frame element relative to said glaze assembly;
wherein said insert comprises a cavity to receive an end of said at least one fastening element.

2. The glazed closure according to claim 1 wherein said at least one insert allows sliding movement of said at least one fastening element within said cavity, to allow sliding movement of said at least one frame element relative to said glaze assembly.

3. The glazed closure according to claim 2 wherein said at least one insert is shaped as a conduit.

4. The glazed closure according to any one of claims 1 to 3 wherein said insert is embedded within a filling material in said glaze assembly.

5. The glazed closure according to any one of claims 1 to 4 wherein said fastening element is a pin having an extended end to snap into said cavity in said at least one insert.

6. The glazed closure according to any one of the preceding claims wherein said at least one frame element have an aperture to allow fastening element to pass therethrough.

7. The glazed closure according to any one of the preceding claims wherein said fastening element is integral to said at least one frame element.

8. The glazed closure according to any one of the preceding claims wherein said at least one insert further comprises centralizing elements to centralize said insert with respect to a cross section of said glaze assembly.

9. A method for assembling a glazed closure comprising:

receiving a glaze assembly comprising at least one glaze and at least one support element;
inserting at least one insert into filling material in said glaze assembly;
placing at least one frame element on at least one edge of said glaze assembly; and
fastening said at least one frame element to said at least one inserts with a at least one fastening element to resist detachment movement of said at least one frame element relative to said glaze assembly.

10. The method according to claim 9 wherein said at least one insert allows sliding movement of said at least one fastening element within said cavity, to allow sliding movement of said at least one frame element relative to said glaze assembly.

11. The method according to claim 9 or claim 10 wherein said at least one insert is shaped as a conduit.

12. The method according to any one of claims 9 to 11 wherein said insert is embedded within a filling material in said glaze assembly.

13. The method according to any one of claims 9 to 12 wherein said fastening is by snapping said at least one fastening element into said at least one insert.

14. The method according to any one of claims 9 to 13 wherein said at least one frame element have an aperture to allow fastening element to pass therethrough.

15. The method according to any one of claims 9 to 14 wherein said insert is centralized relative to a cross section of said glaze assembly by means of centralizing elements.

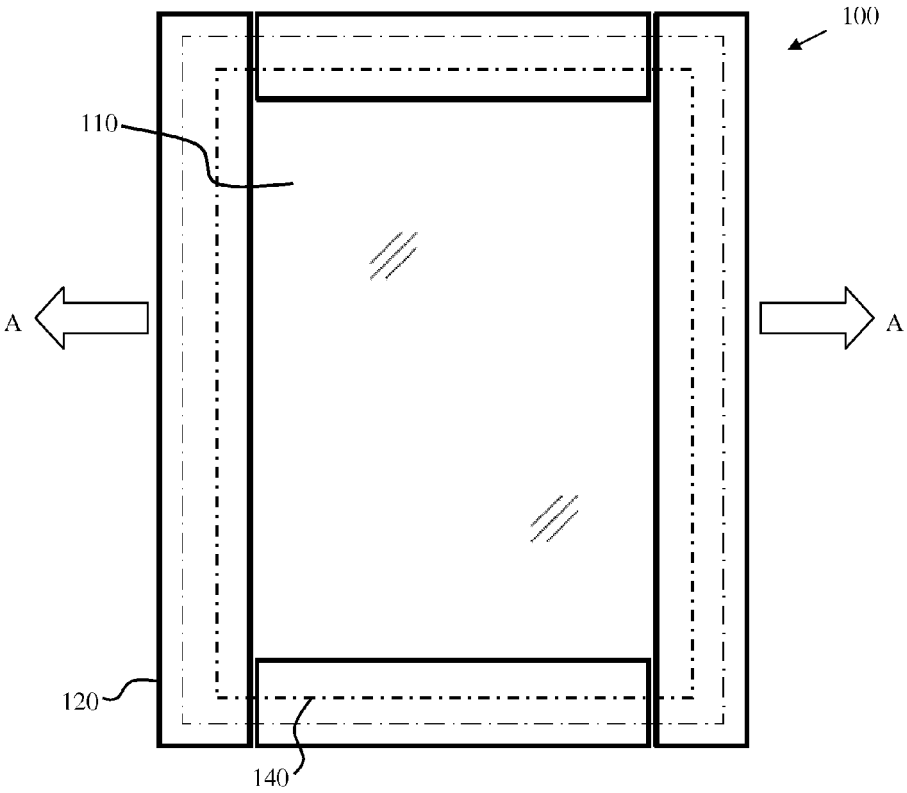

Fig. 1A
Prior Art

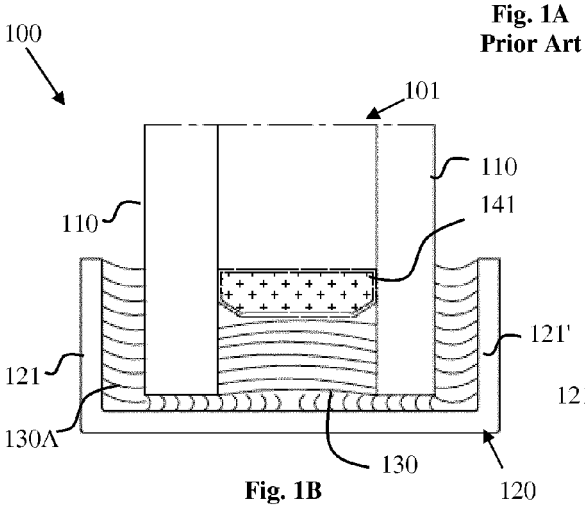

Fig. 1B
Prior Art

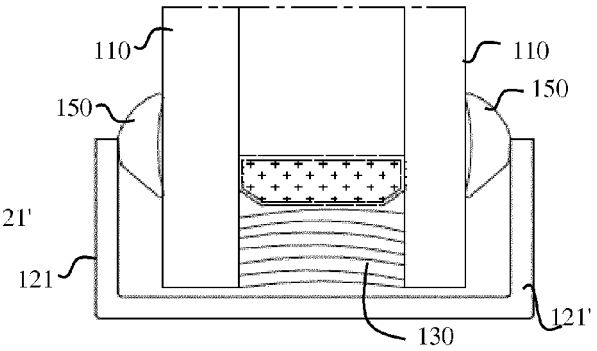

Fig. 1C
Prior Art

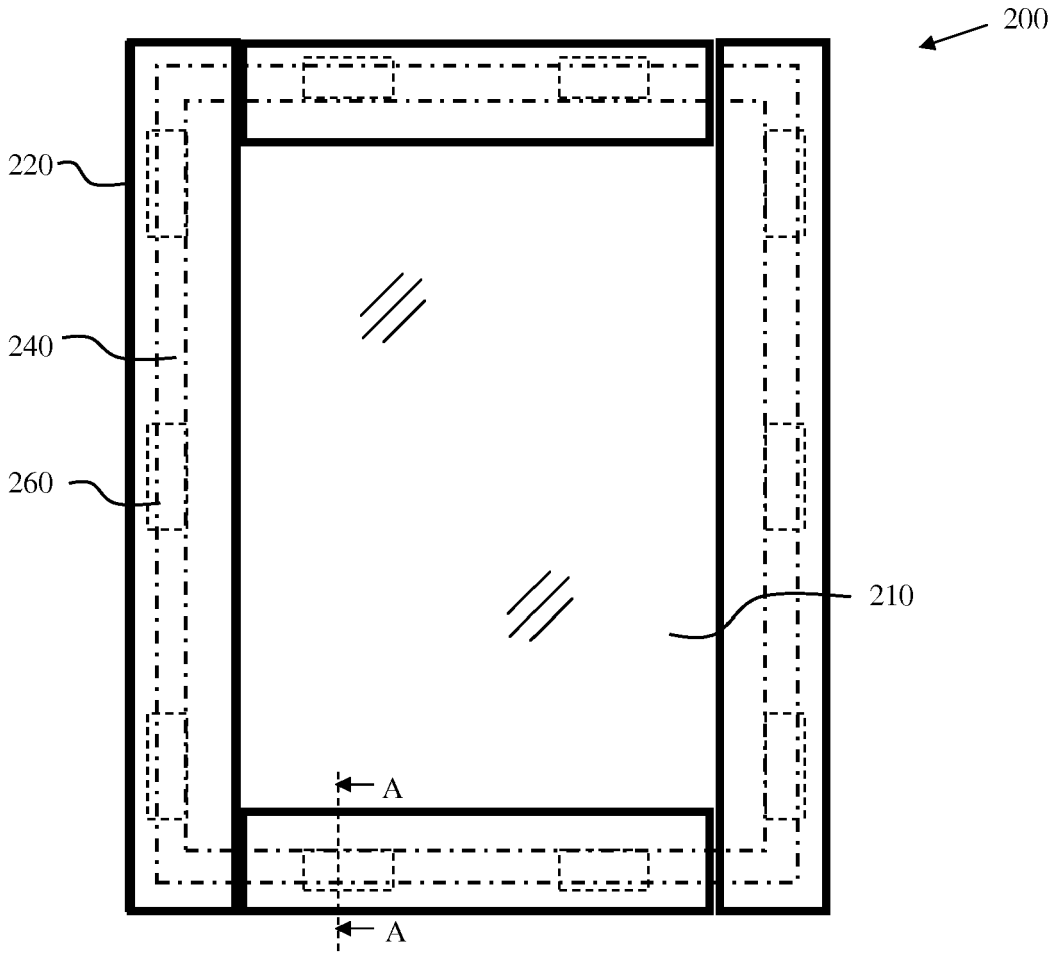
200
220
240
260
210
A
A

Fig. 2A

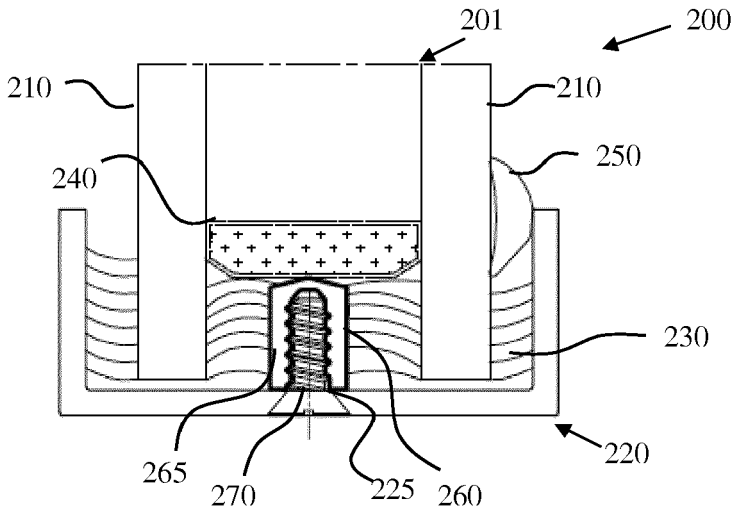
201
200
210
210
250
240
230
220
265
270
225
260

Fig. 2B

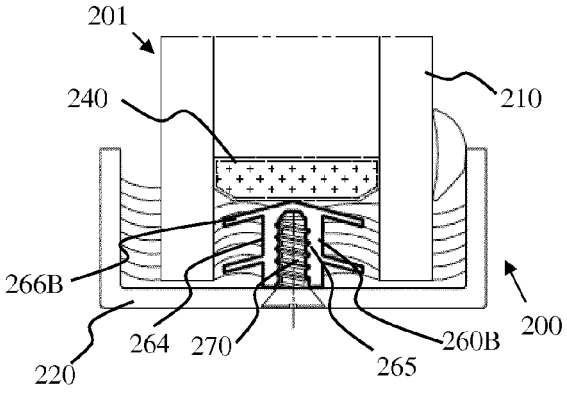

Fig. 3B

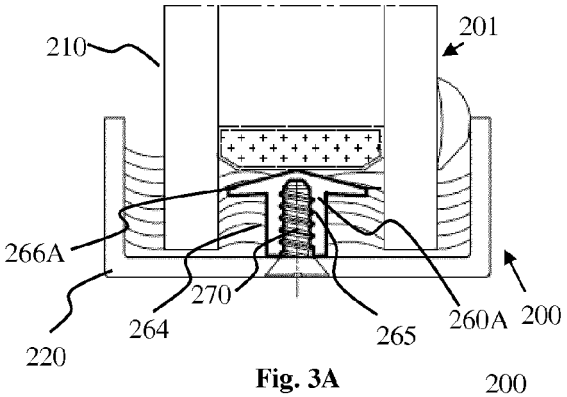

Fig. 3A

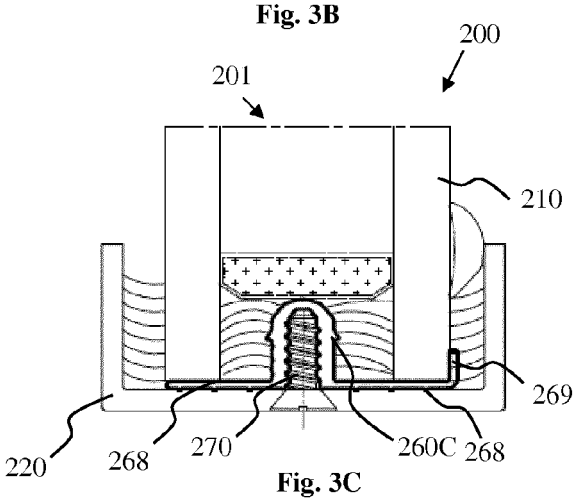

Fig. 3C

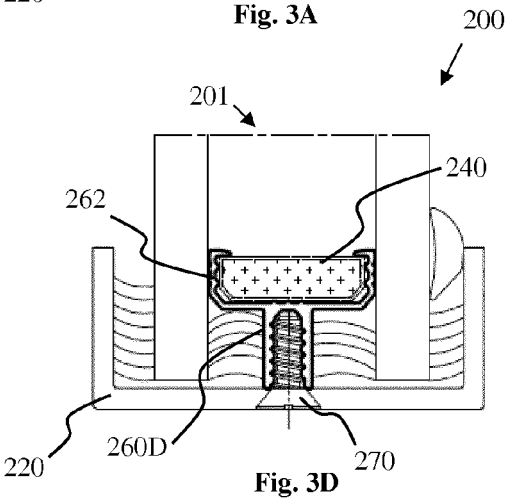

Fig. 3D

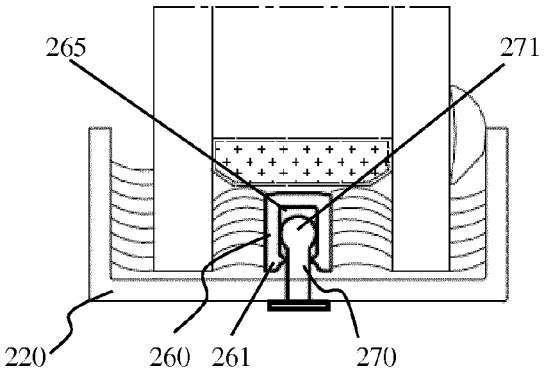

Fig. 3E

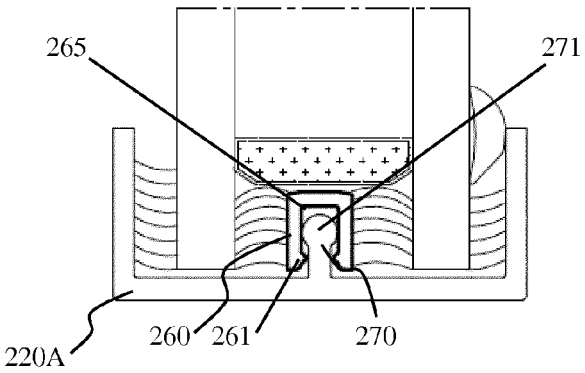

Fig. 3F

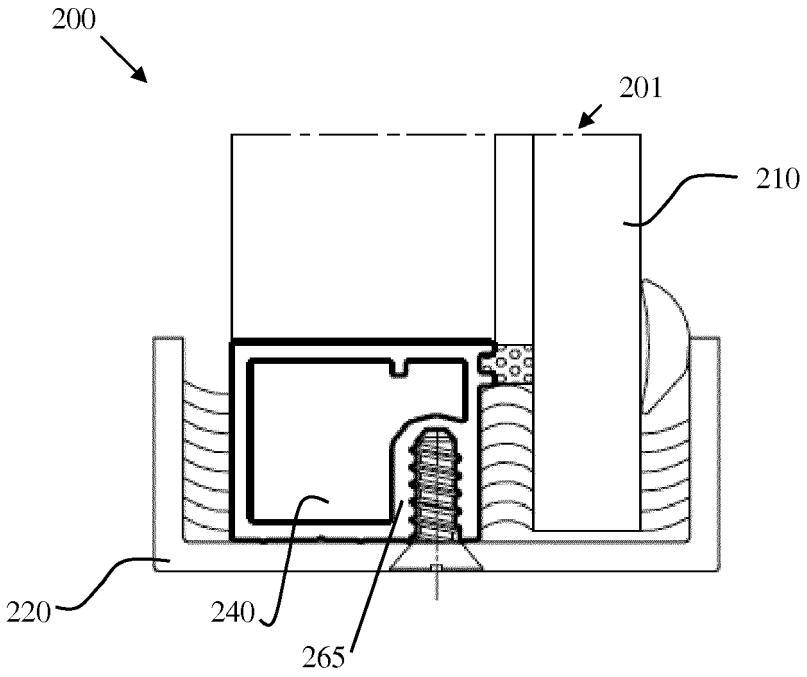

Fig. 4

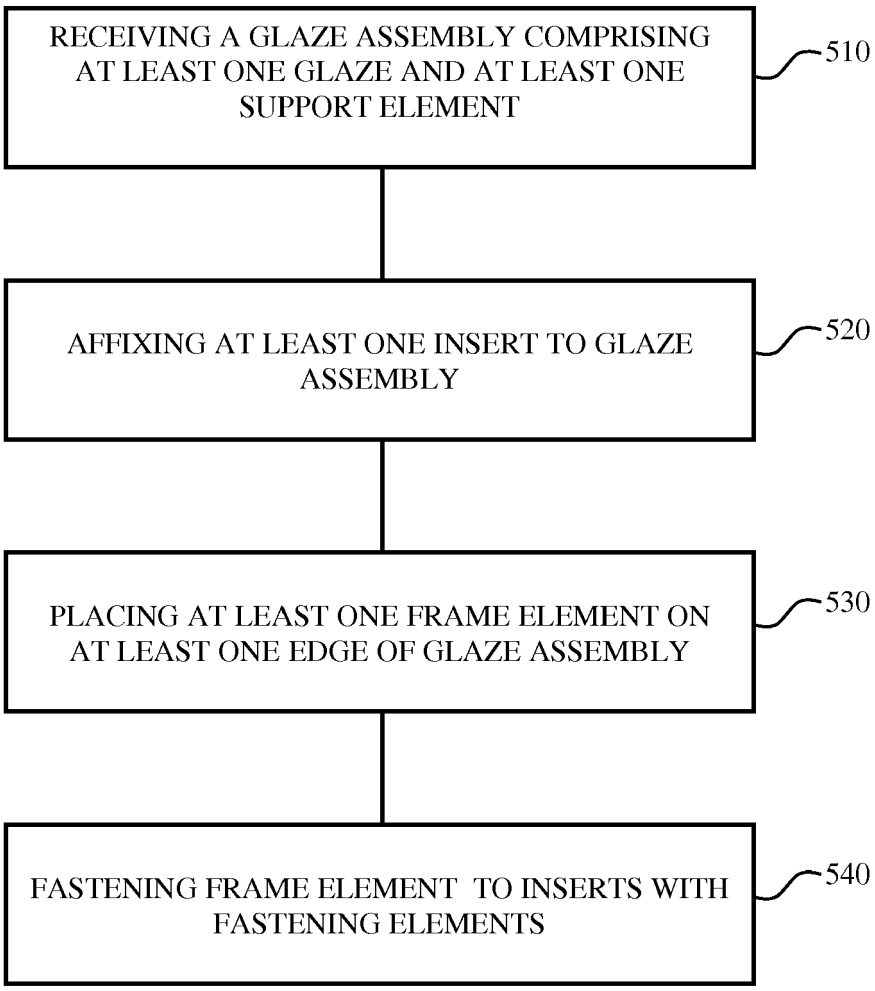
RECEIVING A GLAZE ASSEMBLY COMPRISING AT LEAST ONE GLAZE AND AT LEAST ONE SUPPORT ELEMENT
510
AFFIXING AT LEAST ONE INSERT TO GLAZE ASSEMBLY
520
PLACING AT LEAST ONE FRAME ELEMENT ON AT LEAST ONE EDGE OF GLAZE ASSEMBLY
530
FASTENING FRAME ELEMENT TO INSERTS WITH FASTENING ELEMENTS
540

Fig. 5