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

(11) **EP 2 985 403 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
17.02.2016 Bulletin 2016/07

(51) Int Cl.:
E06B 1/60 *(2006.01)*

(21) Application number: **15180865.6**

(22) Date of filing: **13.08.2015**

(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:
MA

(30) Priority: **15.08.2014 DK 201470488**

(71) Applicant: **Nielsen, Villy**
4682 Tureby (DK)

(72) Inventor: **Nielsen, Villy**
4682 Tureby (DK)

(74) Representative: **Chas. Hude A/S**
H.C. Andersens Boulevard 33
1780 Copenhagen V (DK)

(54) FRAME FOR BEING MOUNTED ON A BUILDING STRUCTURE

(57) The present invention relates to a method of mounting a frame (1) on a building structure, the method comprising the steps of providing a frame (1) that is provided with a frame element (2) having a first longitudinal axis A, providing an attachment member (22,23,24,25) in the building structure where the attachment member (22,23,24,25) comprises a first end (22',23',24',25') attached to the building structure and a second free end (22",23",24",25"), providing a coupling member (3) on an outer periphery (4) of the frame element (2), where the coupling member (3) is slidably arranged on the outer periphery (4) in a direction parallel to the first longitudinal axis A of the frame element (2), and where the coupling member (3) comprises a receiving portion (17) adapted to receive the attachment member (22,23,24,25), arranging the frame element (2) adjacent to the attachment member (22,23,24,25), and sliding the coupling member (3) in the direction parallel to the first longitudinal axis A of the frame element (2) so that the receiving portion (17) of the coupling member (3) surrounds the attachment member (22,23,24,25) at least partly and fixes the frame (2) and coupling member (3) relative to the attachment member (22,23,24,25). The present invention further relates to a frame (1) to be mounted on a building structure.

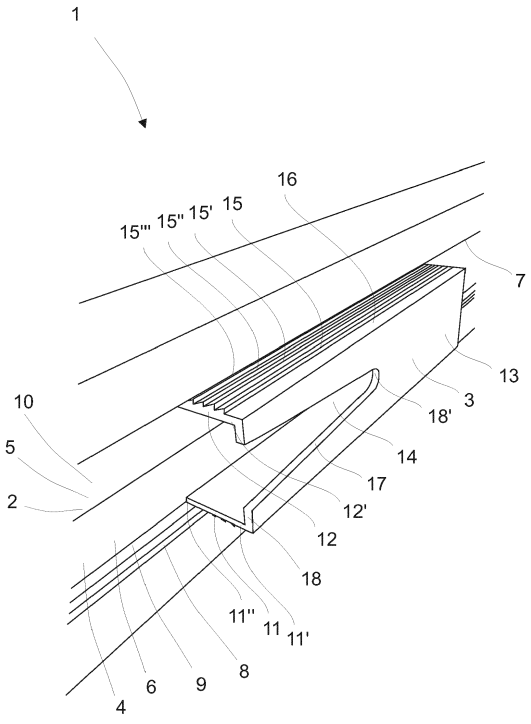

Fig. 1

EP 2 985 403 A1

Description

[0001] The present invention relates to a method of mounting a frame on a building structure, as well as a frame for a building structure.

[0002] Mounting a frame e.g. for a window or for a door on a building structure, such as in an opening in the building structure, has been carried out for several years. However, the method of mounting a frame on a building structure may be time consuming and difficult when a high quality is to be maintained. An increased difficulty and thus an increased time consumption may arise when e.g. frames of one size is to be mounted in openings of varying size. Thus, the user needs to consider e.g. which types of attachment means, such as bolts or similar, to use, and in what distance from the frame they are to be provided in the building structure. Moreover, when the user wants to dismount the frame from the building structure, and e.g. mount it on another building structure, the frame may be at least partly destroyed during the dismounting so that one or more parts of the frame have to be replaced.

[0003] To remedy the above disadvantages, various ways of mounting the frame on the building structure have been attempted. Examples include EP0756044 A1 and WO2013157994 A2.

[0004] EP0756044 A1 relates to a carrying structure comprising two uprights formed by structure parts. On their faces, the structure parts have a channel or a C-shaped groove. A panel is fitted on the uprights by two invisible fasteners. Each fastener comprises a panel button with a cylindrical body extended by a projecting head and a screw fastening hole. A button support, which engages in the upright channel, has a passage for the button head and a cradle against which the button abuts. A head holder ensures, after engagement of the button body, anchoring of the button in its support. The button support has a support fixing. The button support has a wedging ramp which guides the button head and ensures the bringing together of the panel and the structure during engagement of the button.

[0005] WO2013157994 A2 relates to a device installation of windows and doors in wall openings in timber structures. The mounting assembly comprises a mounting plate provided with a hollow bracket for receiving the head of a fastening member and with a groove for receiving a threaded rod. Additionally, the mounting assembly comprises a vertical guide, and the mounting plate is installed on the guide in such a way as to be capable of vertical movement. The rear side of the mounting plate is provided with fastening brackets, with the aid of which the mounting plate is installed on the guide. The hollow bracket for receiving the head of a fastening member and the groove for receiving a threaded rod are both open at two opposite ends. The cavity for receiving the head of the fastening member is formed by a pair of walls extending from the mounting plate. The longitudinal edges of said walls form the groove for receiving the threaded rod. Bendable locking tabs in the form of strips are situated on the mounting plate, in the plane thereof, in front of the open ends of the hollow bracket for receiving the head of a fastening member.

[0006] Thus, known methods of mounting a frame to a building structure are complicated and time-consuming.

[0007] In accordance with the invention, there is provided a method of mounting a frame on a building structure, the method comprising the steps of

- providing a frame that is provided with a frame element having a first longitudinal axis A,
- providing an attachment member in the building structure where the attachment member comprises a first end attached to the building structure and a second free end,
- providing a coupling member on an outer periphery of the frame element, where the coupling member is slidably arranged on the outer periphery in a direction parallel to the first longitudinal axis A of the frame element, and where the coupling member comprises a receiving portion adapted to receive the attachment member,
- arranging the frame element adjacent to the attachment member, and
- sliding the coupling member in the direction parallel to the first longitudinal axis A of the frame element so that the receiving portion of the coupling member surrounds the attachment member at least partly and fixes the frame and coupling member relative to the attachment member.

[0008] Mounting a frame on a building structure may comprise installing e.g. a door frame on the building structure in an opening of the building structure. The opening may have been adapted to fit in size with the door frame. Thus, little room may be available for installing the door frame in the opening which may result in a complicated and time-consuming working process. Thus, providing a method of mounting/installing a frame in a simple and fast manner is advantageous.

[0009] Providing a method, in which a frame, which comprises a frame element and a coupling member, and an attachment member are the elements to consider, results in a minimum number of features for the user to consider.

[0010] Furthermore, a frame, which comprises a frame element and a coupling member, and an attachment member may not be directed towards a specific use, i.e. whether the frame is used for a door, window, wall etc. Thus, the method provided in the present invention may be carried out independently of what the frame is used for. Thus, the user may only need to know one method of mounting a frame to install different types of frames.

[0011] Arranging a coupling member slidably on the outer periphery of the frame element facilitates that the user does not initially need to determine and consider

the exact position of the coupling member relative to the frame element. This is because the coupling member may be slid in a direction parallel to the first longitudinal axis A of the frame element and thus may subsequently be adjusted to the correct final position relative to the attachment member. The subsequent adjustment may be carried out either before or after arrangement of the frame relative to the building structure. However, advantageously the adjustment may be carried out after said arrangement e.g. if the frame is to be installed in an opening in a building structure, and the clearance between the frame and the opening is minimal. Thus, initially, the user only has to consider providing attachment member(s) vertically on top of each other in the building structure. The adjustment of the frame follows subsequently.

[0012] Furthermore, providing a coupling member comprising a receiving portion, which is adapted to receive an attachment member, may be advantageous. The receiving portion may surround the attachment member at least partly which may result in that the frame and coupling member being fixed relative to the attachment member. The user wants the frame to be fixed (at least temporarily or in a releasable manner) relative to the attachment member(s) and thus to the building structure so that the frame does not move, unless if intended, and e.g. keep its vertical orientation.

[0013] The receiving portion provided in the present invention may have the form of an indentation, opening, recess or similar in the coupling member. Thus, the receiving portion may e.g. be formed as an indentation starting from an edge of the coupling member. The two sides of the receiving portion may converge from the edge and meet a certain distance from the edge, i.e. the receiving portion may have the shape of a triangle. For example, when sliding the coupling member in a direction parallel to the first longitudinal axis A of the frame element after arranging the frame element adjacent to the attachment member, the user does not have to arrange the frame element precisely relative to the attachment member in the direction orthogonal to the extension of the frame element, only within the vicinity of the attachment member. After the attachment member has entered the opening defined by the receiving portion, the two converging sides of the receiving portion may guide the attachment member towards the point at which said sides meet, and the receiving portion surrounds the attachment member at least partly and fixes the frame and coupling member relative to the attachment member. However, other shapes of receiving portions and other methods of how the receiving portion receives the attachment member and fixes the frame and coupling member to the attachment member are foreseen within the present invention.

[0014] Providing an attachment member comprising a first end attached to a building structure and a second free end does not limit the attachment member to e.g. a linear extension. The attachment member may also initially have a linear extension, but has been bent on the middle, so that the two open ends of the attachment member are attached to the building structure, while the bent end protrudes from the building structure and thus is the second free end of the attachment member. However, other shapes of attachment members, such as non-linear, substantially circular, multiple bent-shaped, etc. are foreseen within the present invention.

[0015] Thus, the present invention provides an easy, simple and thus time-efficient method of mounting a frame on a building structure.

[0016] In an embodiment, the receiving portion can be adapted to receive the attachment member in a releasable manner. The user may then easily release the frame from its attachment/installation/mount on the building structure if wanted which may be desirable if another type of e.g. window or wall is to be installed without destroying the frame or coupling member. Thus, the frame and coupling member may be used again. In an embodiment, the provision of a coupling member on an outer periphery of the frame element can comprise applying a force on the coupling member in a direction orthogonal to the first longitudinal axis A of the frame element until the coupling member and the frame element engage. Thus, when providing the coupling member on said outer periphery, the user simply has to apply a pressure on the coupling member in a direction orthogonal to the first longitudinal axis A of the frame element until the coupling member and the frame element engage. Thus, the step of providing the coupling member on said outer periphery is simple and fast. The engagement may be provided in steps where the coupling member and the frame element move closer for each step which means that the user may have to apply a pressure on the coupling member for reaching each step of engagement. However, it is foreseen that the coupling member may also be provided on the outer periphery of the frame element by the user applying a pressure in a direction e.g. parallel to the first longitudinal axis A or in any other direction.

[0017] The size and shape of the frame element and of the coupling members may be constant no matter what the frame is meant to be used for, e.g. for a window, a door, or something else. Thus, one size and type of coupling member and frame element may fit any type of frame.

[0018] In an embodiment, a coupling member and a frame element can engage in a releasable manner, when providing the coupling member on the outer periphery of the frame element. If e.g. the user changes his mind about providing the coupling member on said outer periphery of the frame element, or if the frame has to be removed from the building structure, the coupling member may advantageously engage with the frame element in a releasable manner, so that the coupling member may be removed from or manipulated relative to the frame element. Removing the frame from the building structure may comprise sliding the coupling member in a direction parallel to the first longitudinal axis A of the frame element so that the coupling member and the attachment member

do no engage anymore. The coupling member may also have been worn down or may even have been destroyed for which reason engagement in a releasable manner is advantageous.

[0019] Thus, a method of easily removing the frame from the building structure is provided.

[0020] In an embodiment, the provision of a coupling member on an outer periphery of the frame element can comprise arranging the coupling member relative to the frame element so that a first longitudinal axis B of the coupling member is parallel to the first longitudinal axis A of the frame element. Thus, arranging the coupling member relative to the frame element so that a first longitudinal axis B of the coupling member is parallel to the first longitudinal axis A of the frame element may be a simple and easy way to arrange a coupling member on an outer periphery of the frame element without the need for a manual or such.

[0021] In an embodiment, the sliding of the coupling member in a direction that is parallel to the first longitudinal axis A of the frame element can comprise applying a force on the coupling member in the direction that is parallel to the first longitudinal axis A of the frame element, where the force exceeds a frictional resistance between the coupling member and the frame element. The coupling member may be easily adjusted relative to the frame element by arranging the coupling member slidably and moreover, may easily be readjusted if necessary.

[0022] The sliding may be resisted by a frictional resistance between the coupling member and the frame element. When a frame is mounted on a building structure, the receiving portion of the coupling member may receive the attachment member. Thus, the frame may be fixed relative to the attachment member and may therefore hang/suspend stationary on the attachment member as long as the stationary frictional force between the coupling member and the frame element exceeds the gravitational force on the frame. When more than one coupling member is used to mount the frame, the total stationary frictional force between the coupling members and the frame element(s) is taken into account. When sliding the coupling member(s) to adjust the coupling member(s) relative to the attachment member(s), said stationary frictional force obviously has to be exceeded for example by use of a hammer or similar type of tool.

[0023] The point of contact between the coupling member and the frame element may e.g. be sides of the coupling member and of the frame element. The sides may be either mutually parallel or not, and/or the sides of the coupling member may be elastically mounted on the body of the coupling member so that the sides of the coupling member and of the frame element are not mutually parallel before engagement, but may be arranged parallel after engagement. Thus, the frictional force to be exceeded for the coupling member to be able to slide may be the frictional force between the contacting/engaging sides of the coupling member and the frame element.

[0024] Thus, a method of easily adjusting the coupling member relative to the frame element is provided.

[0025] In accordance with the invention, there is further provided a frame for being mounted on a building structure, said frame comprising a frame element with a first longitudinal axis A and a coupling member, the coupling member being adapted to be slidably arranged on an outer periphery of the frame element in a direction parallel to the first longitudinal axis A of the frame element, and where the coupling member comprises a receiving portion adapted to receive an attachment member, such as a bolt, and adapted to surround the attachment member at least partly and to fix the frame and coupling member relative to the attachment member.

[0026] Having a frame, which comprises a frame element and a coupling member for mounting the frame, results in a minimum number of elements for the user to consider.

[0027] The frame element and coupling member may have constant sizes independent of the specific use of the frame, i.e. whether the frame is applied for a door, window, wall etc. Thus, if a coupling member has to be replaced, the user does not have to consider what the specific use of the frame is. However, it is foreseen within the present invention that the frame elements and the coupling members may have varying sizes and shapes.

[0028] Having a coupling member adapted to be slidably arranged on the periphery of the frame element results in that the coupling member may be adjusted relative to the frame element at any time during mounting of the frame. For example, the adjustment may be carried out either before or after the frame has been arranged relative to the building structure. However, advantageously the adjustment may be carried out after the arrangement e.g. if the frame is to be installed in an opening in the building structure, and the clearance between the frame and the building structure is minimal.

[0029] Having a coupling member comprising a receiving portion, which may surround an attachment member at least partly and which may facilitate fixing the frame and coupling member relative to the attachment member, results in that the frame does not move unless intended.

[0030] The receiving portion provided in the present invention may have the form of an indentation, opening, recess or a combination thereof in the coupling member. Thus, the receiving portion may e.g. be formed as an indentation starting from an edge of the coupling member. The two sides of the receiving portion may converge from the edge and meet a certain distance from the edge by bending towards each other in a circular path. For example, when sliding the coupling member in a direction parallel to the first longitudinal axis A of the frame element after arranging the frame element adjacent to the attachment member, the user does not have to arrange the frame element precisely relative to the attachment member in the direction orthogonal to the extension of the frame element, only within the vicinity of the attachment member. After the attachment member has entered the opening defined by the receiving portion, the two con-

verging sides of the receiving portion may guide the attachment member towards the point at which said sides meet, and the receiving portion surrounds the attachment member at least partly and fixes the frame and coupling member relative to the attachment member. However, other shapes of receiving portions and thus other methods of the receiving portion receiving the attachment member and fixing the frame and coupling member to the attachment member are foreseen within the present invention.

[0031] In an embodiment, the receiving portion of the coupling member can be adapted to receive an attachment member, such as a bolt, in a releasable manner. Having the receiving portion receive the attachment member in a releasable manner ensures that the user may remove the frame from its mount, if desired, or may alter the position of the frame relative to the attachment members, if wanted, without destroying the frame, the frame element, the coupling member, the receiving portion or the attachment member(s).

[0032] In an embodiment, the coupling member can be adapted to engage with the frame element by use of an engagement means. Providing an engagement between the coupling member and the frame element ensures that the coupling member and the frame element do not disconnect from each other by accident. Disengagement should not take place accidentally as the user does not want the frame to relocate relative to the attachment member(s) by accident, the frame should only relocate/disengage if intended. Making use of an engagement means for providing a connection between the coupling member and the frame element is known to be reliable.

[0033] The engagement means may e.g. be arranged at the point of contact between the coupling member and the frame element. Thus, the coupling member may comprise a first part of the engagement means and the frame element may comprise the corresponding second part of the engagement means, or vice versa. Alternatively, the coupling member or the frame element may comprise the engagement means. Furthermore, the engagement means may be accountable for at least part of a frictional resistance between the coupling member and the frame element so that the coupling member will not slide freely on an outer periphery of the frame element in a direction parallel to the first longitudinal axis A, and so that the complexity of the frame structure is minimal.

[0034] In an embodiment, the coupling member can be adapted to engage with the frame element in a releasable manner. At some time, the user may want to rearrange or even entirely remove the coupling member relative to the frame element, if e.g. the frame is to be mounted on another building structure in which the attachment member is arranged differently, or the coupling member needs to be replaced due to wear.

[0035] In an embodiment, the engagement means can comprise at least one protrusion arranged on the coupling member and/or on the frame element. Engagement means may comprise various different shapes and sizes and may be arranged on either the coupling member or the frame element or on both. Providing an engagement means comprising at least one protrusion arranged on the coupling member and/or on the frame element results in a reliable, easy-functioning and simple to produce engagement means. The at least one protrusion may take the shape of e.g. a tap or a ridge. If arranged on both the coupling member and the frame element, the protrusions may have corresponding shapes. If e.g. arranged only on the coupling member, the frame element may comprise a corresponding hole/recess or edge for facilitating the engagement.

[0036] The engagement means may e.g. be arranged on the coupling member such that at least part of the protrusions is protruding in a direction opposite the direction of the provision of the coupling member on an outer periphery of the frame element. The engagement means may e.g. be arranged on the frame element such that at least part of the protrusions is protruding in the same direction as the provision of the coupling member on an outer periphery of the frame element. Thus, when providing the protrusions this way, the coupling member cannot be removed from the frame element by pulling the coupling member in a direction opposite said direction of the provision of the coupling member without applying a force. If providing protrusions with the shape of taps, the taps may be arranged such that at least two taps are arranged on a line being parallel with a longitudinal axis of the coupling member or of the frame element to facilitate easy sliding of the coupling member relative to the frame element.

[0037] In an embodiment, the at least one protrusion can extend at least part of the length of the coupling member and/or of the frame element in a direction parallel with a longitudinal axis B of the coupling member and/or with the longitudinal axis A of the frame element, respectively. Protrusions, which extend at least part of the length of the coupling member and/or of the frame element, such as ridges or several protrusions on a line, may facilitate the sliding of the coupling member relative to the frame element. Such protrusions may be used to slide the coupling member relative to the frame element. Furthermore, the protrusions provide stability to the engagement/connection between the coupling member and the frame element when the at least one protrusion extends at least part of the length of the coupling member and/or the frame element, compared to if the protrusions take the shape of e.g. single taps or similar. When sliding the coupling member by applying a force on the coupling member, the majority of the force is then converted to sliding the coupling member, and the user does not have to consider wobble/play in the engagement/connection between the coupling member and the frame element. Moreover, said protrusions may be used as a guiding means for the user to provide the coupling member on an outer periphery of the frame element if said protrusions are arranged on both the coupling member and the frame

element as the user merely has to orient said protrusions parallel to each other.

[0038] In an embodiment, the engagement means can comprise two or more protrusions arranged on the coupling member and/or on the frame element, where the two or more protrusions are spaced apart with a predefined value. When mounting a frame on a building structure, the user cannot always be certain that the clearing/space between the frame and the building structure is a predefined value. Sometimes, it will be more and sometimes it will be less than what is expected. Thus, providing two or more protrusions on the coupling member and/or the frame element is advantageous as the user has the possibility of adjusting the distance between the coupling member and the attachment member if e.g. the two or more protrusions are spaced apart and arranged with varying distance from the receiving part of the coupling member. Thus, the two or more protrusions may take the shape of protrusions, such as ridges, extending at least part of the length of the coupling member and/or the frame element in a direction parallel to their respective longitudinal axes B and A. When spacing apart said protrusions with a predefined value, e.g. with steps of 1 or 2 mm, the user may adjust the distance between the coupling member and the attachment member by rearranging the engagement between the coupling member and the frame element. Furthermore, providing two or more protrusions may lead to increased stability of the engagement.

[0039] In an embodiment, the extension of the frame element can be longer than the extension of the coupling member, and/or the width of the frame element can be equal to or larger than the width of the coupling member. If the extension of the frame element is longer than the extension of the coupling member, the coupling member may be slid along the frame element. Thus, the orientation of the coupling member(s) may be adjusted relative to the orientation of the attachment member(s). Furthermore, when the width of the frame element is equal to or larger than the width of the coupling member, the coupling member may be provided at least partly within the frame element. Thus, when the frame has been mounted on the building structure, the coupling member(s) is not visible. Only the frame is visible which may improve the visual presentation of the frame.

[0040] In an embodiment, said frame element can be mounted on or produced as part of the frame. Thus, the frame element may advantageously be mounted on already existing frames for windows, doors etc. On the other hand, if the frame element is produced as part of the frame, then the frame element does not have to be mounted on the frame after production of the frame. The frame element may be incorporated as part of the production process of the frame, which may reduce production expenses.

[0041] In accordance with the invention, there is further provided a frame element for a frame, the frame element comprising a first longitudinal axis A, wherein the frame element is adapted to receive a coupling member being adapted to be slidably arranged on an outer periphery of the frame element in a direction that is parallel to the first longitudinal axis A.

[0042] In accordance with the invention, there is further provided a coupling member for a frame, the coupling member being adapted to be slidably arranged on an outer periphery of a frame element of the frame in a direction parallel to a first longitudinal axis A of the frame element, and where the coupling member comprises a receiving portion adapted to receive an attachment member, such as a bolt, and adapted to fix the frame and the coupling member relative to the attachment member.

[0043] The structure and function of the frame, the frame element and the coupling member and the method of mounting the frame will be described in more detail below with references to exemplary embodiments shown in the drawings wherein,

Fig. 1 shows in a perspective view part of a frame comprising a frame element and a coupling member.

Fig. 2a shows in a cross-sectional view an exemplary embodiment of a coupling member.

Fig. 2b shows in a cross-sectional view an exemplary embodiment of a frame element.

Fig. 2c shows in a cross-sectional view an exemplary embodiment of a coupling member slidably arranged on an outer periphery of the frame element.

Fig. 3 shows an exemplary embodiment of a frame comprising a window, where the frame is mounted on a building structure.

[0044] In the figures, the frame, the frame element and the coupling member are shown having a rectangular cross-section and comprising planar sides. However, it should be understood that other cross sections and side shapes, such as circular, triangular, bent...are also intended within the scope of the present invention.

[0045] In the figures, an embodiment of the frame is illustrated as containing a window. The person skilled in the art will understand that the illustrated combination is not to be understood as exhaustive and that the frame may comprise one of various kinds of content.

[0046] Fig. 1 shows in a perspective view part of a frame comprising a frame element and a coupling member. Fig. 1 illustrates that the frame 1 comprises a frame element 2 and a coupling member 3 and that the coupling member 3 is provided on an outer periphery 4 of the frame element 2.

[0047] The frame 1 and thus the frame element 2 and the coupling member 3 may be produced in a metal, such as aluminium, and may be anodised before use; but other materials such as plastic or wood are also foreseen within the present invention.

[0048] The frame element 2 may define an open structure and comprise a bottom surface 5 and a first 6 and second side surface 7. The bottom surface 5 and first 6 and second side surfaces 7 may each be substantially planar and define a first longitudinal axis A of the frame element 2; but other surface shapes such as slightly bent surfaces are foreseen within the present invention. Thus, the first 6 and second side surface 7 may be parallel and may both be orthogonal to the bottom surface 5.

[0049] Furthermore, the frame element 2 may comprise at least one protrusion arranged on the frame element 2, which is illustrated in the embodiment of Fig. 1 by a first 8 and second protrusion 9, such as a ridge or similar, arranged on the first 6 and second side surface 7 of the frame element 2 and protruding into an inner opening 10 of the frame element 2 defined by the bottom surface 5 and first 6 and second side surfaces 7 of the frame element 2. The first 8 and second protrusion 9 of the frame element 2 may extend in a direction parallel to the longitudinal axis A of the frame element 2 and be spaced apart by a predefined value.

[0050] In Fig. 1, the frame element 2 is shown as having been produced as part of the frame 1. However, it is foreseen within the present invention that the frame element 2 may be mounted on or formed as part of an already existing frame 1.

[0051] The coupling member 3 may define an open structure comprising a first 11 and a second side 12 and a front side 13, said sides 11,12,13 together defining and inner opening 14 of the coupling member 3 and extending in a direction parallel to a first longitudinal axis B and the coupling member 3. The first 11 and second side 12 of the coupling member 3 are illustrated as being connected to the front side 13 at a first end 11',12' and being open at a second end 11",12", but it is foreseen that the first 11 and second side 12 may be closed at both the first 11',12' and second ends 11",12", such as connected to each other or that the first 11 and second side 12 and the front side 13 form one side together.

[0052] The first 11 and second side 12 and the front side 13 may be planar, and the first 11 and second side 12 may be parallel and orthogonal to the front surface 13 as illustrated in Fig. 1.

[0053] Two or more protrusions 15,15',15",15"' may be arranged on an outer surface 16 of the first side 11 and on an outer surface 16' (not shown) of the second side 12 and may be arranged at the same distance from the front side 13. The two or more protrusions 15,15',15",15'" may together with the first 8 and second protrusion 9 of the frame element 2 form the engagement means, by use of which the coupling means 3 and the frame element 2 engage.

[0054] The two or more protrusions 15,15',15",15'" may each extend linearly in a direction parallel to the first longitudinal axis B of the coupling member 3 and take the shape of a ridge or similar. The two or more protrusions 15,15',15",15"' may protrude away from the outer surfaces 16,16' of the first 11 and second side 12 in a direction defined by an angle being less than 90° relative to the respective outer surfaces 16,16' and directed away from the open second ends 11 ",12" of the respective first 11 and second side 12 of the coupling means 3. However, it is foreseen within the present invention that said angle may be 90° or more or less for each of the two or more protrusions 15,15',15",15"'.

[0055] The two or more protrusions 15,15',15",15'" may be spaced apart with a predefined value thereby providing the user with the possibility of adjusting the distance between the coupling member 3 and an attachment member/the building structure. Thus, when spacing apart said protrusions 15,15',15",15'" with a predefined value, e.g. with steps of 1 or 2 mm, the user may adjust the distance between the coupling member 3 and an attachment member by rearranging the engagement between the coupling member 3 and the frame element 2. In the embodiment of Fig. 1, where the coupling member 3 has been provided on the frame element 2 by applying a pressure on the coupling member 3 in a direction orthogonal to the longitudinal axis A of the frame element 2, the protrusions 15'" of the coupling member 3 closest to the open second ends 11 ",12" of the first 11 and second sides 12 engage initially with the first protrusions 8 of the frame element 2. When applying a pressure on the coupling member 3 again, the protrusions 15" of the coupling member 3 second closest to the open second ends 11 ",12" of the first 11 and second sides 12 engage and so forth. Thus, the two or more protrusions 15,15',15",15"' may engage in steps, where the coupling member 3 and the frame element 2 move closer for each step. The first 11 and second side 12 may bend elastically towards each other during each step.

[0056] The outer surfaces 16,16' of the respective first 11 and second side 12 of the coupling member 3 are illustrated as being substantially parallel with the first 6 and second side surface 7 of the frame element 2. However, they may also not be parallel.

[0057] The length of the coupling member 3 may be shorter than the length of the frame element 2 so that the coupling member 3 may slide relative to the frame element 2, and the distance between the outer surfaces 16,16' of the respective first 11 and second side 12 of the coupling member 3 may be equal to or shorter than the distance between the first 6 and second side surface 7 of the frame element 2, as illustrated in Fig. 1, so that the coupling member 3 e.g. including the two or more protrusions 15,15',15",15'" may fit inside the frame element.

[0058] A receiving portion 17, such as an opening or an indentation, may be made in the front side 13 of the coupling member 3. The receiving portion 17 may extend and converge from an edge 18 of the front side 13 towards the centre of the front side 13, such that it is wider at the edge 18 than at the converging point 18'. Thus, the receiving portion 17 may be adapted to receive an attachment member and guide it towards the converging point 18', where the attachment member may rest.

[0059] Thus, a frame 1 may be mounted on a building structure, such as in an opening in a wall, by providing one or more attachment members, such as four bolts, in the building structure. Two attachment members may be attached e.g. on each vertical side in the opening of the building structure, where the attachment members comprise a first end that is attached to the building structure and a second free end. Then, four coupling members 3 may be arranged with their first longitudinal axis B being parallel with the first longitudinal axis A of the frame element 2, and with the open first ends 11',12' directed towards the frame element 2 so that the outer surfaces 16,16' of the respective first 11 and second side 12 of the coupling members 3 are substantially parallel to the first 6 and second side surface 7 of the frame element 2. The user may then apply a force on each of the coupling members 3 in a direction orthogonal to the first longitudinal axes A and B until the coupling members 3 and the frame element 2 engage. Depending on the distance between the coupling members 3 and the attachment members, the user may once more apply a force on the coupling members 3 so that another pair of protrusions 15" of the coupling members 3 engage with the first protrusion 8 of the frame element 2. Thus, the coupling members 3 have moved closer to the frame element 2. Thus, the coupling members 3 are slidably arranged on the outer periphery 4 of the frame element 2 in a direction parallel to the first longitudinal axis A of the frame element 2. Then the frame element 2 may be arranged adjacent to the attachment members, i.e. placing the frame 1 in the opening of the wall adjacent to the attachment members, and the coupling members 3 may be slid in a direction parallel to the first longitudinal axis A of the frame element 2 so that the receiving portions 17 of the coupling members 3 surround the attachment members at least partly and fix the frame 1 and coupling members 3 relative to the attachment members. Thus, the frame 1 is mounted on the building structure.

[0060] Figs. 2a-c show in a cross-sectional view exemplary embodiments of a coupling member 3, a frame element 2, and a coupling member 3 slidably arranged on an outer periphery 4 of the frame element 2. For similar features, similar reference numbers have been used as in Fig. 1.

[0061] Fig. 2a illustrates that the coupling member 3 may comprise a front side 13 and a first 11 and second side 12, where said first 11 and second side 12 may be connected to the front side 13 at their respective first ends 11',12' and may be open at their respective second ends 11",12" and furthermore be mutually parallel and orthogonal to the front side 13.

[0062] Two or more protrusions 15,15',15",15"',15"" may be arranged on an outer surface 16 of the first side 11 and on an outer surface 16' of the second side 12 at similar distance from the front side 13. The distal points/edges of said two or more protrusions 15,15',15",15"',15"" may protrude away from said outer surfaces 16,16' in a direction defined by an angle being less than 90° relative to said outer surfaces 16,16' and directed away from the open second ends 11 ",12" of the respective first 11 and second side 12 of the coupling means 3. The two or more protrusions 15,15',15",15"',15"" may be spaced apart with a predefined value.

[0063] Fig. 2b illustrates that the frame element 2 may comprise a bottom surface 5 and a first 6 and second side surface 7 together defining at least part of an outer periphery 4 of the frame element 2. The first 6 and second side surface 7 may be mutually parallel and may both be orthogonal to the bottom surface 5. The frame element 2 may comprise at least one protrusion arranged on the frame element 2, which is illustrated in the embodiment of Fig. 2b by a first 8 and second protrusion 9 arranged on the first 6 and second side surface 7 of the frame element 2 and protruding into an inner opening 10 of the frame element 2 defined by the bottom surface 5 and first 6 and second side surfaces 7 of the frame element 2.

[0064] Fig. 2c illustrates that the coupling member 3 may be provided on the outer periphery 4 of the frame element 2 by applying a force F illustrated by the arrow on the coupling member 3 in a direction that is orthogonal to the first longitudinal axis A of the frame element 2. Thus, the coupling member 3 and the frame element 2 engage by use of an engagement means which may comprise the two or more protrusions 15,15',15",15"',15"" of the coupling member 3 and the first 8 and second protrusion 9 of the frame element 2. Depending on the distance between the frame element 2 and an attachment member on which the frame 1 is to be mounted, the distance between the front side 13 and the bottom surface 5 may be varied. For example, the distance between the front side 13 and the bottom surface 5 may be decreased by applying a further force F on the coupling member 3 so that a pair of protrusions 15,15' further away from the open second ends 11 ",12" engage with the first 8 and second protrusion 9 of the frame element 2.

[0065] Fig. 3 shows an exemplary embodiment of a frame 1 comprising a window 19, where the frame 1 is mounted on a building structure 20 within an opening 21 of the building structure 20. For similar features, similar reference numbers have been used as in the previous Figs. A first 22, second 23, third 24 and fourth attachment member 25 is provided in the building structure 20, said attachment members 22,23,24,25 comprising first ends 22',23',24',25', which are attached to the building structure 20, and second free ends 22",23",24",25". In Fig. 3, the frame 1 has been arranged in the opening 21 of the building structure 20 at the desired position relative to the building structure 20 adjacent the attachment members 22,23,24,25. A first 3, second 3', third 3" and fourth coupling member 3'" may initially each be arranged above an attachment member 22,23,24,25. Then, each of the coupling members 3,3',3",3'" may have been slid in a direction (i.e. vertically down) parallel to the first longitudinal axis A of the frame element 2 e.g. by use of a hammer to exceed a frictional resistance between the

coupling members 3,3',3",3"' and the frame element 2 until the receiving parts 17 of the coupling members 3,3',3",3"' surround the attachment members 22,23, 24,25 at least partly and fix the frame 1 and coupling members 3,3',3",3"' relative to the attachment members 22,23,24,25. Thus, the frame 1 is mounted on the building structure 20.

[0066] Modifications and combinations of the above principles and designs are foreseen within the scope of the present invention

Claims

1. A method of mounting a frame (1) on a building structure, the method comprising the steps of

   - providing a frame (1) that is provided with a frame element (2) having a first longitudinal axis A,
   - providing an attachment member (22,23, 24,25) in the building structure, where the attachment member (22,23,24,25) comprises a first end (22',23',24',25') attached to the building structure and a second free end (22",23", 24",25"),
   - providing a coupling member (3) on an outer periphery (4) of the frame element (2), where the coupling member (3) is slidably arranged on the outer periphery (4) in a direction parallel to the first longitudinal axis A of the frame element (2), and where the coupling member (3) comprises a receiving portion (17) adapted to receive the attachment member (22,23,24,25),
   - arranging the frame element (2) adjacent to the attachment member (22,23,24,25), and
   - sliding the coupling member (3) in the direction parallel to the first longitudinal axis A of the frame element (2) so that the receiving portion (17) of the coupling member (3) surrounds the attachment member (22,23,24,25) at least partly and fixes the frame (1) and coupling member (3) relative to the attachment member (22,23,24,25).

2. A method according to claim 1 **characterised in that** the provision of a coupling member (3) on an outer periphery (4) of the frame element (2) comprises applying a force (F) on the coupling member (3) in a direction orthogonal to the first longitudinal axis A of the frame element (2) until the coupling member (3) and the frame element (2) engage.

3. A method according to claim 1 or 2 **characterised in that** the sliding of the coupling member (3) in a direction parallel to the first longitudinal axis A of the frame element (2) comprises applying a force on the coupling member (3) in the direction parallel to the first longitudinal axis A of the frame element (2), where the force exceeds a frictional resistance between the coupling member (3) and the frame element (2).

4. A frame (1) for being mounted on a building structure, said frame (1) comprising a frame element (2) with a first longitudinal axis A and a coupling member (3) **characterised in that** the coupling member (3) is adapted to be slidably arranged on an outer periphery (4) of the frame element (2) in a direction parallel to the first longitudinal axis A of the frame element (2), and where the coupling member (3) comprises a receiving portion (17) adapted to receive an attachment member (22,23,24,25), such as a bolt, and adapted to surround the attachment member (22,23,24,25) at least partly and to fix the frame (1) and coupling member (3) relative to the attachment member (22,23,24,25).

5. A frame (1) according to claim 4 **characterised in that** the coupling member (3) is adapted to engage with the frame element (2) by use of an engagement means.

6. A frame (1) according to claim 5 **characterised in that** the engagement means comprises at least one protrusion (15,15',15",15"',15"";8,9) arranged on the coupling member (3) and/or on the frame element (2).

7. A frame (1) according to claim 6 **characterised in that** the at least one protrusion (15,15',15", 15"', 15"";8,9) extents at least part of the length of the coupling member (3) and/or of the frame element (2) in a direction parallel with a longitudinal axis B of the coupling member (3) and/or with the longitudinal axis A of the frame element (2), respectively.

8. A frame (1) according to claims 5-7 **characterised in that** the engagement means comprises two or more protrusions (15,15',15",15"',15"";8,9) arranged on the coupling member (3) and/or on the frame element (2), where the two or more protrusions (15,15',15",15"',15"";8,9) are spaced apart with a predefined value.

9. A frame element (2) for a frame (1) according to any one of the claims 4-8 **characterised in that** the frame element (2) comprises a first longitudinal axis A, wherein the frame element (2) is adapted to receive a coupling member (3) being adapted to be slidably arranged on an outer periphery (4) of the frame element (2) in a direction that is parallel to the first longitudinal axis A.

10. A coupling member (3) for a frame (1) according to any one of the claims 4-9 **characterised in that** the coupling member (3) is adapted to be slidably ar-

ranged on an outer periphery (4) of a frame element (2) of the frame (1) in a direction parallel to a first longitudinal axis A of the frame element (2), and where the coupling member (3) comprises a receiving portion (17) adapted to receive an attachment member (22,23,24,25), such as a bolt, and adapted to fix the frame (1) and the coupling member (3) relative to the attachment member (22,23,24,25).

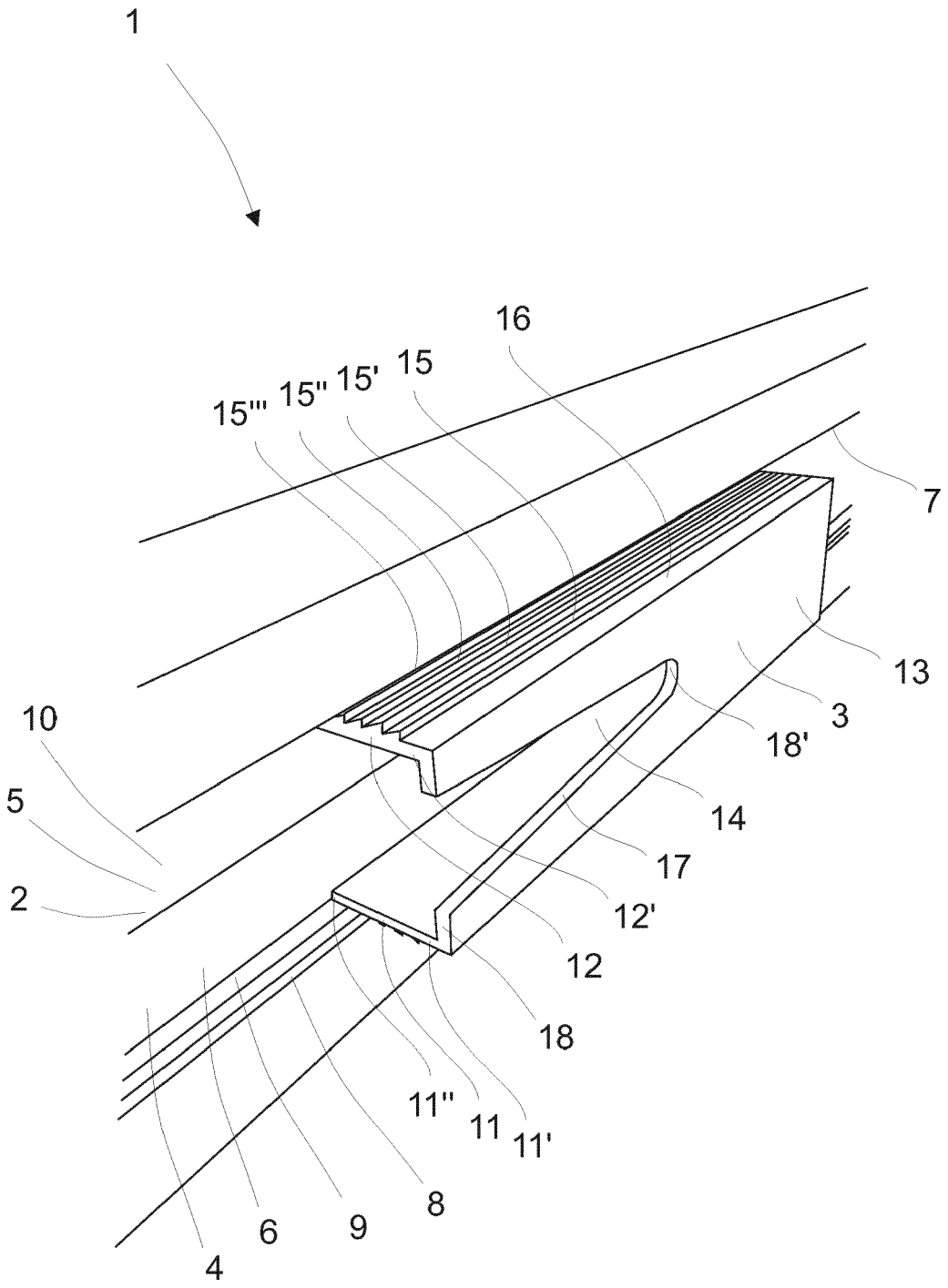

Fig. 1

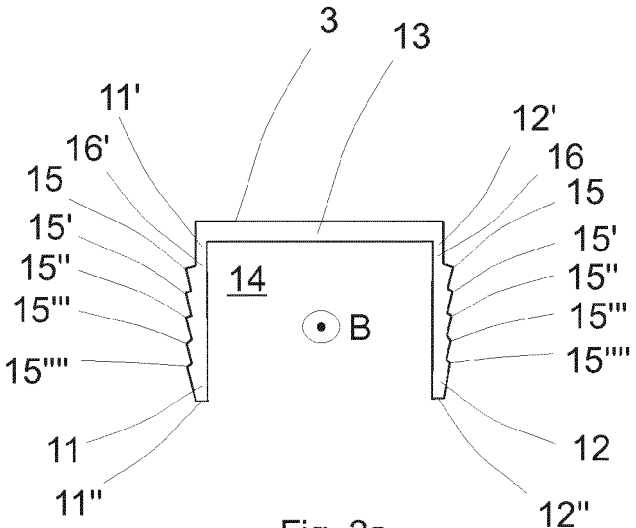

Fig. 2a

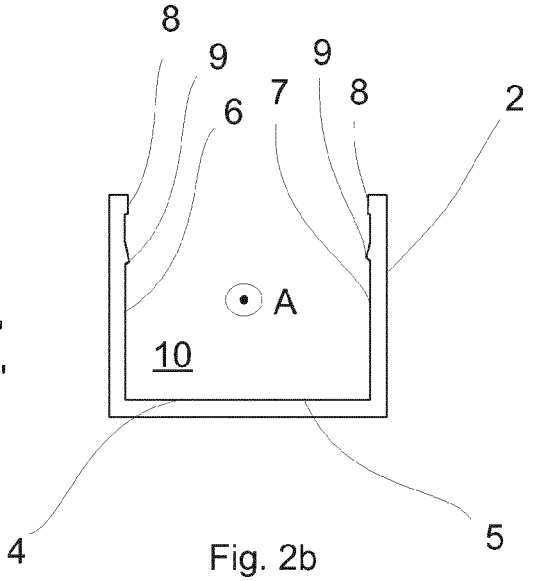

Fig. 2b

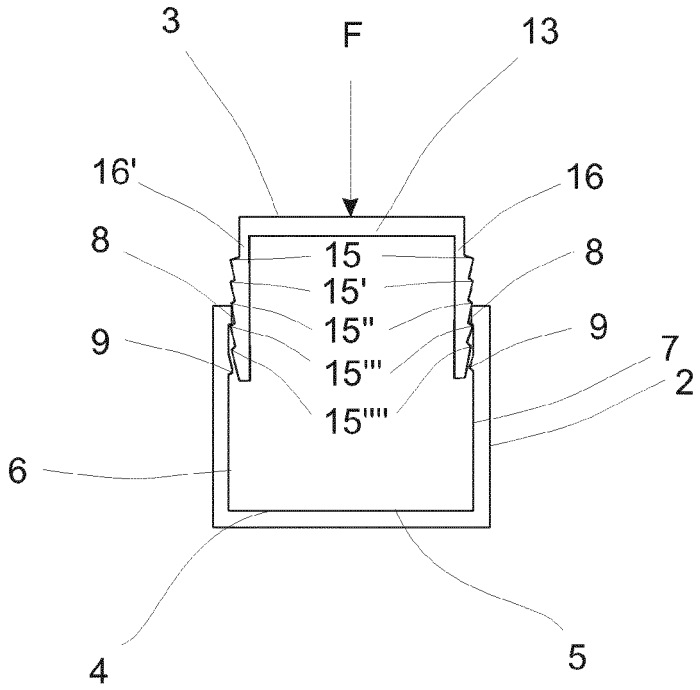

Fig. 2c

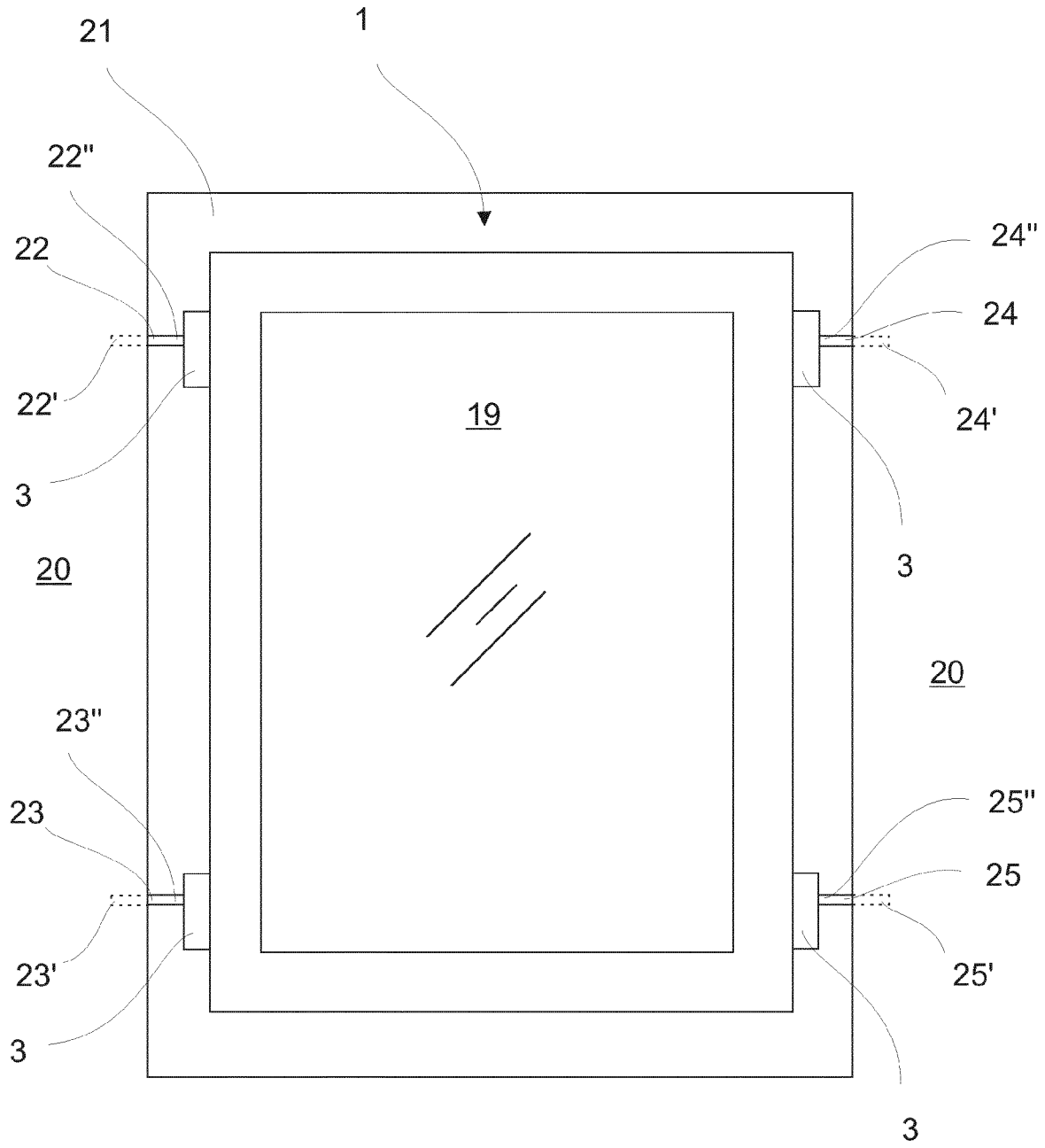

Fig. 3

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 15 18 0865

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	NL 7 317 354 A (HEKEZEN & VAN ERP B V) 20 June 1975 (1975-06-20)	4-10	INV. E06B1/60
A	* page 3, line 26 - page 4, line 19; figures *	1-3	

X	DE 16 92 484 U (MARCUS METALLBAU [DE]) 3 February 1955 (1955-02-03) * page 3, line 18 - page 4, line 4; figures *	4-7,9,10	

A	DE 20 2007 013420 U1 (PARAT AUTOMOTIVE SCHOENENBACH [DE]) 27 December 2007 (2007-12-27) * paragraph [0018]; figures *	1	

X	DE 41 35 126 A1 (WERU AG [DE]) 29 April 1993 (1993-04-29)	9,10	
A	* column 3, lines 37-45; figures *	1	

A	US 3 722 157 A (PROKOP B) 27 March 1973 (1973-03-27) * figures 4,5 *	1	

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	11 December 2015	Gallego, Adoración

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 15 18 0865

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.

11-12-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
NL 7317354 A	20-06-1975	NONE	
DE 1692484 U	03-02-1955	NONE	
DE 202007013420 U1	27-12-2007	NONE	
DE 4135126 A1	29-04-1993	NONE	
US 3722157 A	27-03-1973	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- EP 0756044 A1 **[0003] [0004]**
- WO 2013157994 A2 **[0003] [0005]**