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(54) **Set of fittings adapted for mounting a fixed frame of a window or door structure and method of mounting**

(57) The set of fittings comprises a number of mounting brackets (1) having a first area (6) to be mounted on a face (7) of a window or door opening (4) in an inner wall (5) and a second area (8) to be mounted on a face (9) of the fixed frame (3). At least one support structure (2,34) is adapted for engagement with a corresponding mounting bracket (1) and is provided with a wall abutment (18,40) adapted to abut the inner wall (5) at a distance from the window or door opening. The position of the wall abutment (18,40) is adjustable relative to the corresponding mounting bracket (1) in a longitudinal direction of the mounting bracket (1).

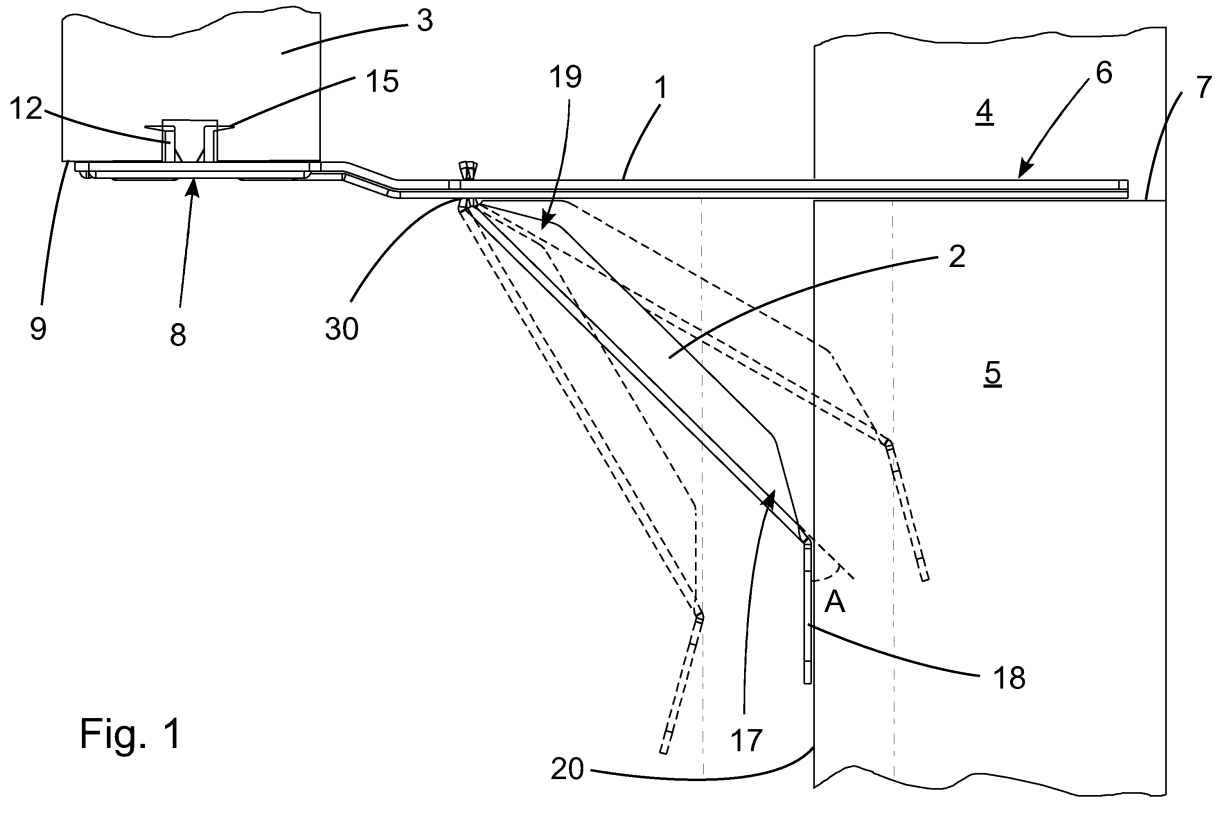

Fig. 1

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Description

[0001] The present invention relates to a set of fittings adapted for mounting a fixed frame of a window or door structure at a distance from a window or door opening of an inner wall of a building, the set of fittings comprising a number of elongated mounting brackets and at least one support structure adapted to support one of the mounting brackets, each mounting bracket having a first area adapted to be mounted on a face of the window or door opening and a second area adapted to be mounted on a peripheral face of the fixed frame, the at least one support structure being adapted for engagement with the corresponding mounting bracket and being provided with a wall abutment adapted to abut an outer face of the inner wall at a distance from the window or door opening.

[0002] DK 176245 B1 discloses a system of brackets for mounting a window frame at a distance from an opening in a wall. The system comprises simple side brackets connected at a first area to the wall and at a second area to the window frame and dedicated bottom brackets supporting the lower frame element of the window frame. The bottom brackets are composes by a flat member connecting a face of the opening to the window frame and a support member in the form of a triangular plate having lugs engaging holes of the flat member at both ends of its upper edge and having a vertical edge abutting the wall. By rotation of an adjustment disc, a mounting screw holding the flat member against the opening of the wall may be displaced slightly in its radial direction in order to adapt to tolerances during mounting. However, the mounting distance between the window frame and the wall is fixed, as it is determined by the size of the triangular plate.

[0003] DK 176333 B1 discloses a system of brackets for mounting a window frame at a distance from a window opening in a wall. The system comprises primary brackets connected at a first area to a face of the window opening in the wall and at a second area to the window frame so that the bracket is at right angles to the general plane of the window. Furthermore, some of these brackets are supplemented by means of a support bracket mounted inclined to the general plane of the window so that a first area is connected to the face of the window opening in the wall, and a second area is connected to the window frame in the same point where the second area of the primary bracket is connected to the window frame.

[0004] The object of the present invention is to provide a simple set of fittings adapted for easy mounting of a fixed frame of a window or door structure at an optional distance from a window or door opening of an inner wall of a building.

[0005] In view of this object, the position of the wall abutment is adjustable relative to the corresponding mounting bracket in a longitudinal direction of the mounting bracket.

[0006] Thereby, the mounting bracket may be mounted on the face of the window or door opening so that it extends appropriately from the wall in order to mount the fixed frame of the window or door structure at a desired distance from the wall, and the at least one support structure may be mounted so that the wall abutment abuts the outer face of the inner wall.

[0007] In an embodiment, the at least one support structure is adapted for engagement with the corresponding mounting bracket at a number of different positions along the longitudinal direction of the mounting bracket.

[0008] In an embodiment, the at least one support structure is adapted for slidable engagement with the corresponding mounting bracket in the longitudinal direction of the mounting bracket.

[0009] In an embodiment, the at least one support structure has the form of a support arm with a first area comprising the wall abutment and a second area being adapted for tiltable engagement with the corresponding mounting bracket. Thereby, the support arm may be mounted to support the mounting bracket, whereby the support arm may adapt to the position of the mounting bracket by adapting the angle between the support arm and the mounting bracket appropriately.

[0010] In an embodiment, the wall abutment has the form of at least one flat section of a plate bent about a line so that the flat section is angled relative to a longitudinal axis of the support arm. Thereby, the support arm may further adapt to the position of the mounting bracket by bending the wall abutment of the support arm relatively to the longitudinal axis of the support arm. As the flat section of the plate is bent about a line, relative to the support arm, before mounting the support arm, the flat section may easily bend about that line in order to adapt its position during fastening of the flat section against the wall.

[0011] In a structurally advantageous embodiment, the at least one flat section of a plate is formed integrally with the support arm itself.

[0012] In an embodiment, the second area of the support arm has a lug adapted for insertion into an opening in the second area of the corresponding mounting bracket. Thereby, an easy connection procedure may be provided for, whereby a flexible engagement may be obtained for instance by bending of the lug.

[0013] In an embodiment, the lug of the second area of the support arm and the opening in the second area of the corresponding mounting bracket are mutually so dimensioned that the lug may tilt in the opening during the operation of mounting the support arm, thereby providing the flexible engagement between the second area of the support arm and the second area of the mounting bracket. Thereby, an easier mounting and adaptation of the position of the support arm may be provided for.

[0014] In an embodiment, the lug has a neck portion and a head portion that is wider than the neck portion, the opening in the second area of the mounting bracket has an insertion section and a mounting section, and the insertion section is wide enough for the head portion of the lug to pass through the opening, and the mounting

section is narrower than the head portion. Thereby, the lug may easily be inserted into the opening and locked so that the arm may support the mounting bracket by means compressive as well as tensile force, respectively.

[0015] In an embodiment, the mounting section is a substantially rectangular opening, and the insertion section is a substantially rectangular opening angled at about 30 to 60 degrees to the mounting section, and the mounting section and the insertion section are mutually connected by means of a channel broad enough for the neck portion of the lug to pass from the insertion section to the mounting section. Thereby, the support arm may be mounted to the mounting bracket by inserting the lug into the opening, and subsequently rotating the support arm, whereby the lug may be locked in the mounting section of the opening.

[0016] In an embodiment, the second area of the mounting bracket is provided with a flap bent away from a general plane of the mounting bracket, and the flap is adapted to, in the mounted position of the support arm, support a part of the lug of the second area of the support arm other than the neck portion. The flap may provide further support for the support arm and may provide a stop for the lug, when the support arm is rotated in order to bring the neck portion of the lug from the insertion section to the mounting section.

[0017] In an embodiment, the second area of the support arm is provided with an edge adapted to, in the mounted position of the support arm, abut the second area of the mounting bracket and extend in a direction parallel to a general plane of the fixed frame. Thereby, appropriate abutment between the support arm and the mounting bracket may be provided at different angles of the support arm relative to the mounting bracket.

[0018] In an embodiment, the flat section is angled at least 20 degrees, preferably at least 30 degrees, more preferred at least 40 degrees, and even more preferred approximately 45 degrees, relative to the longitudinal axis of the support arm. Thereby, a support arm having a specific length may be adapted to a suitable large number of different positions of the window or door frame in relation to the wall.

[0019] In an embodiment, the support arm is formed from a sheet material that is bent so that a body is formed having a form substantially of a U-profile having a bottom flange and opposed side flanges, and the flat section forming the wall abutment is formed integrally with the bottom flange of the U-profile. Thereby, good stiffness of the support arm may be provided and the flat section may easily bend during mounting of the support arm in order to adapt the position of the support arm accordingly.

[0020] In an embodiment, the second area of the mounting brackets is provided with bent-up flanges adapted to engage opposed side faces of a groove in the peripheral face of the fixed frame. Thereby, the connection of the mounting brackets to the fixed frame may be facilitated.

[0021] The present invention further relates to a window or door structure mounted at a distance from a window or door opening of an inner wall of a building by means of a set of fittings according to any one of the preceding claims.

[0022] The window or door structure is **characterized in that** the longitudinal axis of the support arm forms an angle with a longitudinal axis of the mounting bracket of between approximately 25 degrees and approximately 65 degrees, and preferably between approximately 30 degrees and approximately 60 degrees.

[0023] The present invention further relates to a method of mounting a fixed frame of a window or door structure at a distance from a window or door opening of an inner wall of a building, whereby a number of mounting brackets are mounted with a first area on a face of the window or door opening and with a second area on a peripheral face of the fixed frame, and whereby at least one support structure is mounted to support one of the mounting brackets by engagement with the corresponding mounting bracket and by abutment of a wall abutment on an outer face of the inner wall at a distance from the window or door opening.

[0024] The method is characterized by that the position of the wall abutment is adjusted relative to the corresponding mounting bracket in a longitudinal direction of the mounting bracket so that the wall abutment abuts the outer face of the inner wall. Thereby, the above-mentioned features may be obtained.

[0025] In an embodiment, the position of the wall abutment is adjusted by engaging the at least one support structure with the corresponding mounting bracket at one of a number of different positions along the longitudinal direction of the mounting bracket. Thereby, the above-mentioned features may be obtained.

[0026] In an embodiment, the position of the wall abutment is adjusted by sliding the at least one support structure along the corresponding mounting bracket in the longitudinal direction of the mounting bracket. Thereby, the above-mentioned features may be obtained.

[0027] In an embodiment, the at least one support structure has the form of a support arm that is mounted by engaging a second area of the support arm with the corresponding mounting bracket and bringing the wall abutment into contact with the outer face of the inner wall, whereby the support arm (2) tilts in relation to the corresponding mounting bracket (1). Thereby, the above-mentioned features may be obtained.

[0028] In an embodiment, the wall abutment has the form of at least one flat section of a plate, and, during fastening on the wall, the at least one flat section of the plate bends about a line, so that an angle formed between the at least one flat section and a longitudinal axis of the support arm is changed, whereby the at least one flat section of the plate is caused to lie flat against the outer face of the wall. Thereby, the above-mentioned features may be obtained.

[0029] In an embodiment, the at least one flat section of a plate is formed integrally with the support arm itself.

Thereby, the above-mentioned features may be obtained.

[0030] In an embodiment, the fixed frame of the window or door structure is mounted at the window or door opening by means of the mounting brackets before connecting the at least one support structure to the corresponding mounting bracket and fastening the support structure to the wall. Thereby, the mounting bracket may conveniently be mounted at the desired position, and the support structure will automatically adapt itself to the position of the mounting bracket when it is mounted between the mounting bracket and the inner wall.

[0031] The invention will now be explained in more detail below by means of examples of embodiments with reference to the very schematic drawing, in which

Fig. 1 is a partly cross-sectional view through a window structure mounted at a distance from a window opening by means of a set of fittings according to the invention, indicating different positions of mounting,

Fig. 2 and 3 show different embodiments of the fitting in Fig. 1,

Fig. 4 and 5 show different perspective views of the fitting in Fig. 1,

Fig. 6 shows an exploded view of the fitting in Fig. 1,

Fig. 7 shows a side view of the support arm of the fitting in Fig. 1,

Fig. 8 shows a perspective view of the support arm in Fig. 7,

Fig. 9 shows a side view of the mounting bracket of the fitting in Fig. 1,

Fig. 10 shows a perspective view of the mounting bracket in Fig. 9,

Fig. 11 shows a detail of Fig. 9,

Fig. 12 is a perspective view of the fixed frame of the window structure of Fig. 1 and part of the fittings according to the invention, and

Fig. 13 shows a side view of part of the fixed frame and fitting in Fig. 12,

Fig. 14 shows an exploded view corresponding to that of Fig. 6 of another embodiment of the fitting in Fig. 1,

Figs. 15 and 16 show a perspective view and a side view, respectively, of yet another embodiment of the fitting in Fig. 1, and

Figs. 17 and 18 show a perspective view and a side view, respectively, of the support structure in Figs. 15 and 16.

[0032] Fig. 2 and 4 to 6 show a combination of a mounting bracket 1 and a support structure in the form of a support arm 2 forming part of the set of fittings according to the invention. The set of fittings is adapted for mounting a fixed frame 3 of a window or door structure at a distance from a window or door opening 4 of an inner wall 5 of a building, as indicated in Figs. 1 and 12. Fig. 12, however, shows two mounting brackets 1, but does not show the support arm 2. According to the invention, any suitable number of mounting brackets 1 may be employed, and any suitable number of the mounting brackets 1 may be provided with a support structure, for instance in the form of a support arm 2 as shown in Fig. 1. For instance, mounting brackets 1 at the lower horizontal member of the fixed frame 3 may be provided with a support structure in order to support the downward load of the window arrangement. On the other hand, mounting brackets 1 at a vertical side member of the fixed frame 3 may be provided with a support structure in order to support sideward load of the window or door arrangement, for instance the load from a closing door. For instance, an upper mounting bracket 1 at a first side member of a fixed frame may be provided with a support structure and a lower mounting bracket 1 at a second side member of the fixed frame may be provided with a support structure. Many other combinations are possible in order to suit the actual conditions.

[0033] The set of fittings comprises a number of mounting brackets 1 that are elongated and formed from a piece of flat metal. Each mounting brackets 1 has a first area 6 adapted to be mounted on a face 7 of the window or door opening 4 and a second area 8 adapted to be mounted on a peripheral face 9 of the fixed frame 3. The first area 6 is mounted on the face 7 of the window or door opening 4 by means of a number of not shown bolts that are inserted through one or more mounting holes 10 of different radii formed through the first area 6 of the mounting bracket 1. The mounting bracket 1 is provided with longitudinal reinforcing ribs 11 that have been press-formed in the metal. In the embodiment shown, the second area 8 of the mounting bracket 1 is provided with bent-up flanges 12 adapted to engage opposed side faces 13 of a groove 14 in the peripheral face 9 of the fixed frame 3. As it may be seen for instance in Figs. 2, 3 and 9, 10, the bent-up flanges 12 may be provided with spikes 15 that penetrate the side faces 13 of the groove 14 during mounting. The mounting procedure of the mounting bracket 1 on the fixed frame 3 is illustrated in Fig. 13, whereby the mounting bracket 1 is tilted in relation to the groove 14, so that the flanges 12 that are separated in the lateral direction of the mounting bracket 1 may enter the groove 14. Subsequently, the mounting bracket 1 will be turned anti-clockwise from the position in Fig. 13, so that it reaches the position shown to the left in Fig. 12,

whereby the mounting bracket 1 is oriented with its longitudinal axis at right angles to the general plane of the fixed frame 3. During this procedure, the spikes 15 penetrate the respective walls 13 of the groove 14 and thereby fix the mounting bracket 1 in the fixed frame without the use of any tools. However, subsequently, one or more not shown bolts or screws may be inserted through mounting holes 16 in the second area 8 and screwed into the material of the fixed frame 3. Alternatively, the mounting bracket 1 may also be fixed to the fixed frame 3 solely by means of bolts or screws or it may be fixed by any other suitable means.

[0034] The support arm 2 has a first area 17 comprising a wall abutment and a second area 19 being adapted for flexible engagement with the second area 8 of the mounting bracket 1. The wall abutment has the form of a flat section 18 of a plate that is formed integrally with the support arm 2 itself and that is bent about a line L so that the flat section 18 is angled by an angle A relative to a longitudinal axis of the support arm 2, see Fig. 2. The wall abutment in the form of the flat section 18 is adapted to abut an outer face 20 of the inner wall 5 at a distance from the window or door opening 4, as shown in Fig. 1. Naturally, the flat section 18 could be formed by two or even more sections, for instance one flat section on either side of the support arm 2.

[0035] Referring to Figs. 7, 8 and 9 to 11, the second area 19 of the support arm 2 has a lug 21 adapted for insertion into an opening 22 in the second area 8 of the corresponding mounting bracket 1. The lug 21 and the opening 22 are mutually so dimensioned that the lug 21 may tilt in the opening 22 during the operation of mounting the support arm. Thereby, a flexible engagement between the second area 19 of the support arm 2 and the second area 8 of the mounting bracket 1 is provided, so that the support arm 2 may be positioned in different positions, as indicated in Fig. 1 by means of broken lines. The lug 21 has a neck portion 23 and a head portion 24 that is wider than the neck portion 23. The neck portion 23 is suitably long so that the lug 21 may tilt in the opening 22 during the operation of mounting the support arm. The opening 22 in the second area 8 of the mounting bracket 1 has an insertion section 25 and a mounting section 26, whereby the insertion section 25 has a width W wide enough for the head portion 24 of the lug 21 to pass through the opening 22, that is the width W of the insertion section 25 is approximately equal to or larger than a width H of the head portion 24, and the mounting section 26 has a width w narrower than the width H of the head portion 24, so that the head portion 24 may be retained in the mounting section 26. Suitably, the width w of the mounting section 26 is approximately equal to or just a little larger than a width h of the neck portion 23.

[0036] In the embodiment shown for instance in Figs. 6 and 9 to 11, the mounting section 26 is a substantially rectangular opening, and the insertion section 25 is a substantially rectangular opening angled at approximately 45 degrees to the mounting section 26. The mounting section 26 and the insertion section 25 are mutually connected by means of a channel 27 broad enough for the neck portion 23 of the lug 21 to pass from the insertion section 25 to the mounting section 26. However, the insertion section 25 may be angled at any suitable angle to the mounting section 26, such as for instance at about 30 to 60 degrees. In another embodiment not shown in the figures, the insertion section 25 and the mounting section 26 may be arranged parallel to each other, and the channel 27 connecting these sections may have a tapered form. In the embodiments shown, the insertion section 25 is arranged nearer to the second area 8 of the mounting bracket 1 in relation to the mounting section 26; however, these sections may be arranged oppositely in this regard.

[0037] In the embodiments shown for instance in Figs. 6 and 9 to 11, the second area 8 of the mounting bracket 1 is provided with a flap 28 bent away from a general plane of the mounting bracket 1. The flap 28 has a free edge 29 that is adapted to, in the mounted position of the support arm 2, support a part of the lug 21 of the second area 19 of the support arm 2 other than the neck portion 23; see Fig. 11. Thereby, in the embodiment shown in Fig. 11, the flap 28 may indicate the correct position during mounting of the support arm 2 on the mounting bracket 1 by rotation of the lug 21 in the opening 22, and it may support the lug 21 so that, once in its mounted position, it does not move back from the mounting section 26 to the insertion section 25. However, depending on the configuration of the opening 22, the flap 28 may be omitted.

[0038] The second area 19 of the support arm 2 is provided with an edge 30 adapted to, in the mounted position of the support arm 2, abut the second area 8 of the mounting bracket 1 and extend in a direction parallel to a general plane of the fixed frame 3. As it may be seen in Fig. 1, the support arm 2 may tilt between different positions about the edge 30.

[0039] In the embodiments shown in Figs. 1 to 11, the flat section 18 is angled at an angle A approximately equal 45 degrees relative to the longitudinal axis of the support arm 2. Thereby, a suitable number of mounting positions may be obtained as indicated in Fig. 1, whereby the flat section 18 is bent only a little during mounting on the inner wall 5. In the middle position, whereby the support arm 2 and the inner wall 5 are indicated with continuous lines, the flat section 18 may be mounted directly on the outer face 20 of the inner wall without bending the flat section 18 away from its original position at approximately 45 degrees to the longitudinal axis of the support arm 2. In the position shown to the left in Fig. 1, whereby the support arm 2 and the outer face 20 of the inner wall 5 are indicated with broken lines, the flat section 18 may be mounted on the outer face 20 of the inner wall by bending the flat section 18 approximately 15 degrees about the line L indicated in Fig. 7 away from its original position at approximately 45 degrees to the longitudinal axis of the support arm 2. Thereby, the flat section 18 will be brought to a position in which it lies flat against

the outer surface 20. In the figure, the flat section 18 is indicated before this bending operation. The flat section 18 may be mounted on the inner wall 5 by means of a number of not shown bolts or the like inserted through mounting holes 31 in the flat section 18 and fastened in the inner wall by means of raw plugs, for instance. By fastening the bolt or bolts, the flat section 18 will easily bend about the line L, because in its original position, it is already bent about the line L. As it may be seen in Fig. 1, in the mounting position indicated to the left, the flat section 18 is, during its mounting, bent to an angle smaller than the original 45 degrees to the longitudinal axis of the support arm 2. Furthermore, a third mounting position is indicated to the right in Fig. 1, whereby the support arm 2 and the outer face 20 of the inner wall 5 are also indicated with broken lines. In this mounting position, it will be understood that the flat section 18, during its mounting, is bent to an angle larger than the original 45 degrees to the longitudinal axis of the support arm 2.

[0040] As explained above, Fig. 1 shows three different mounting positions for the support arm 2, whereby the fixed frame 3 may be mounted at different distances from the inner wall 5. As the support arm adapts itself to the actual distance between the fixed frame 3 and the inner wall 5, any position of the support arm 2 between or further from the shown three positions is possible. The different mounting positions of the support arm 2 makes it possible to adjust the position of the wall abutment in the form of the flat section 18 relative to the corresponding mounting bracket in a longitudinal direction of the mounting bracket. Thereby, the possibility of mounting the fixed frame 3 at different distances from the inner wall 5 is obtained. The support arm 2 shown in Fig. 1 corresponds to the one shown in Fig. 2, and Fig. 3 shows a support arm 2 that is shorter than the support arm 2 in Figs. 1 and 2. Thereby, the interval of possible distances between the fixed frame 3 and the inner wall 5 may be even further increased by selecting between the two different support arms shown in Figs. 2 and 3. Naturally, even further support arms 2 of different length may be provided for selection.

[0041] Although as indicated above, the flat section 18 may, in its original position, suitably be angled at an angle A approximately equal 45 degrees relative to the longitudinal axis of the support arm 2, it may also in its original position be angled at other angles, for instance at least 20 degrees, preferably at least 30 degrees, and more preferred at least 40 degrees.

[0042] The support arm 2 is preferably formed from a sheet material that is bent so that a body is formed having a form substantially of a U-profile having a bottom flange 32 and opposed side flanges 33, and the flat section 18 forming the wall abutment is formed integrally with the bottom flange 32 of the U-profile. However, naturally, according to the invention, the support arm 2 could also have a form substantially of an L-profile, a V-profile, an I-profile, or any other suitable form.

[0043] Fig. 14 shows another embodiment of the combination of the mounting bracket 1 and the support structure in the form of the support arm 2 shown in Figs. 1 to 10. In this embodiment, the second area 8 of the mounting bracket 1 is provided with three openings 22 adapted to receive the lug 21 of the second area 19 of the support arm 2. When mounting the support arm 2, the lug 21 may be inserted into any one of these openings. Any suitable number of openings 22 may be provided for selection. Thereby, a further possibility of adjusting the position of the wall abutment in the form of the flat section 18 relative to the mounting bracket 1 in the longitudinal direction of the mounting bracket is obtained.

[0044] Figs. 15 and 16 show yet another embodiment of the combination of the mounting bracket 1 and the support structure forming part of the set of fittings according to the invention. In this embodiment, the mounting bracket 1 is assembled together with a supporting structure in the form of a plate-formed support bracket 34.

[0045] Figs. 17 and 18 show two detailed views of the support bracket 34. As can be seen from the figures, the support bracket 34 comprises a first rail portion 35 in which the second area 8 of the mounting bracket 1 can be arranged. The rail portion 35 is provided with flange elements 36, 37, 38 which guide and hold the second area 8 of the mounting bracket 1 attached to the rail portion 35. The rail portion is connected to a plate-formed flange 39 arranged perpendicularly to the rail portion and which provides the support force to the mounting bracket 1. The plate-formed flange 39 is attached to a mounting flange 40 forming the wall abutment which would be attached to the wall in which the window opening is arranged. As best seen in Fig. 17, the flange elements 36, 37 are bent to form a U-formed cross-section in order to grip around the edge of the second area 8 of the mounting bracket 1. As the flanges 36, 37 are offset in the longitudinal direction of the mounting bracket 1, the support bracket 34 may be mounted on the mounting bracket 1 after mounting of the mounting bracket itself, by twisting the support bracket 34 so that the flange elements 36, 37 are slid onto the edges of the mounting bracket 1. Subsequently, the element 38 may, by means of a pair of tongs, be bent to the position shown in Fig. 17 in order to lock the support bracket 34 to the mounting bracket 1. In this position, the support bracket 34 may slide in the longitudinal direction of the mounting bracket 1 in order to adjust the position of the wall abutment relative to the mounting bracket in the longitudinal direction of the mounting bracket. Thereby, the possibility of mounting the fixed frame 3 at different distances from the inner wall 5 is obtained. The mounting bracket 1 can subsequently, or alternatively, for instance, be attached to the support bracket 34 via self tapping screws screwed through the mounting bracket and the support bracket. Although the support bracket 34 is shown in the figures as having a plate-formed flange 39 with a certain configuration, the plate-formed flange 39 may also have the form of a support arm or the support bracket 34 itself may have the form of any other suitable arm. In fact, the support arm

2 shown in Figs. 1 to 10 and 14 may also be formed with flange elements 36, 37, 38 corresponding to or similar in function to those shown in Figs. 15 to 18, thereby enabling a stepless adjustment of the position of the wall abutment relative to the mounting bracket 1 in the longitudinal direction of the mounting bracket.

[0046] I should be noted that the embodiments as shown in Figs. 1 to 10, 14 and 15 to 18, respectively, and as described above, may be combined in any suitable way in order to form an adjustable wall abutment.

[0047] In a typical situation, the wall is comprised of an inner wall and an outer wall. The space between the inner and outer walls is filled with insulation. The wall abutment would be attached to the outwardly facing surface of the inner wall in the hollow between the inner wall and the outer wall. The person skilled in the art will understand this type of construction.

[0048] Preferably, the fixed frame 3 of the window or door structure is mounted at the window or door opening 4 by means of the mounting brackets 1 before connecting the at least one support structure to the corresponding mounting bracket 1 and fastening the support structure to the inner wall 5.

Claims

1. A set of fittings adapted for mounting a fixed frame (3) of a window or door structure at a distance from a window or door opening (4) of an inner wall (5) of a building, the set of fittings comprising a number of elongated mounting brackets (1) and at least one support structure adapted to support one of the mounting brackets, each mounting bracket (1) having a first area (6) adapted to be mounted on a face (7) of the window or door opening (4) and a second area (8) adapted to be mounted on a peripheral face (9) of the fixed frame (3), the at least one support structure being adapted for engagement with the corresponding mounting bracket (1) and being provided with a wall abutment adapted to abut an outer face (20) of the inner wall (5) at a distance from the window or door opening (4), **characterized in that** the position of the wall abutment is adjustable relative to the corresponding mounting bracket (1) in a longitudinal direction of the mounting bracket (1).

2. A set of fittings according to claim 1, **characterized in that** the at least one support structure is adapted for engagement with the corresponding mounting bracket (1) at a number of different positions along the longitudinal direction of the mounting bracket (1).

3. A set of fittings according to claim 1 or 2, **characterized in that** the at least one support structure is adapted for slidable engagement with the corresponding mounting bracket (1) in the longitudinal direction of the mounting bracket (1).

4. A set of fittings according to any one of the preceding claims, **characterized in that** the at least one support structure has the form of a support arm (2) with a first area (17) comprising the wall abutment and a second area (19) being adapted for tiltable engagement with the corresponding mounting bracket (1), **in that**, preferably, the wall abutment has the form of at least one flat section (18) of a plate bent about a line (L) so that the flat section (18) is angled relative to a longitudinal axis of the support arm (2), and **in that**, preferably, the at least one flat section (18) of a plate is formed integrally with the support arm (2) itself.

5. A set of fittings according to claim 4, **characterized in that** the second area (19) of the support arm (2) has a lug (21) adapted for insertion into an opening (22) in the second area (8) of the corresponding mounting bracket (1), and **in that**, preferably, the lug (21) of the second area (19) of the support arm (2) and the opening (22) in the second area (8) of the corresponding mounting bracket (1) are mutually so dimensioned that the lug (21) may tilt in the opening (22) during the operation of mounting the support arm (2), thereby providing the flexible engagement between the second area (19) of the support arm (2) and the second area (8) of the mounting bracket (1).

6. A set of fittings according to claim 5, **characterized in that** the lug (21) has a neck portion (23) and a head portion (24) that is wider than the neck portion (23), **in that** the opening (22) in the second area (8) of the mounting bracket (1) has an insertion section (25) and a mounting section (26), and **in that** the insertion section (25) is wide enough for the head portion (24) of the lug (21) to pass through the opening, and the mounting section (26) is narrower than the head portion (24).

7. A set of fittings according to claim 6, **characterized in that** the mounting section (26) is a substantially rectangular opening, and the insertion section (25) is a substantially rectangular opening angled at about 30 to 60 degrees to the mounting section (26), and **in that** the mounting section (26) and the insertion section (25) are mutually connected by means of a channel (27) broad enough for the neck portion (23) of the lug (21) to pass from the insertion section (25) to the mounting section (26).

8. A set of fittings according to claim 6 or 7, **characterized in that** the second area (8) of the mounting bracket (1) is provided with a flap (28) bent away from a general plane of the mounting bracket (1), and **in that** the flap (28) is adapted to, in the mounted position of the support arm (2), support a part of the lug (21) of the second area (8) of the support arm (2) other than the neck portion (23).

9. A set of fittings according to any one of the claims 4 to 8, **characterized in that** the second area (19) of the support arm (2) is provided with an edge (30) adapted to, in the mounted position of the support arm (2), abut the second area (8) of the mounting bracket (1) and extend in a direction parallel to a general plane of the fixed frame (3).

10. A set of fittings according to any one of the claims 4 to 9, **characterized in that** the support arm (2) is formed from a sheet material that is bent so that a body is formed having a form substantially of a U-profile having a bottom flange (32) and opposed side flanges (33), and **in that** the flat section (18) forming the wall abutment is formed integrally with the bottom flange (32) of the U-profile.

11. A set of fittings according to any one of the preceding claims, **characterized in that** the second area (8) of the mounting brackets (1) is provided with bent-up flanges (12) adapted to engage opposed side faces (13) of a groove (14) in the peripheral face (9) of the fixed frame (3).

12. A method of mounting a fixed frame (3) of a window or door structure at a distance from a window or door opening (4) of an inner wall (5) of a building, whereby a number of mounting brackets (1) are mounted with a first area (6) on a face (7) of the window or door opening (4) and with a second area (8) on a peripheral face (9) of the fixed frame (3), and whereby at least one support structure is mounted to support one of the mounting brackets (1) by engagement with the corresponding mounting bracket (1) and by abutment of a wall abutment on an outer face (20) of the inner wall (5) at a distance from the window or door opening (4), **characterized by** that the position of the wall abutment is adjusted relative to the corresponding mounting bracket (1) in a longitudinal direction of the mounting bracket (1) so that the wall abutment abuts the outer face (20) of the inner wall (5).

13. A method of mounting a fixed frame of a window or door structure according to claim 12, **characterized by** that the position of the wall abutment is adjusted by engaging the at least one support structure with the corresponding mounting bracket (1) at one of a number of different positions along the longitudinal direction of the mounting bracket (1).

14. A method of mounting a fixed frame of a window or door structure according to claim 12 or 13, **characterized by** that the position of the wall abutment is adjusted by sliding the at least one support structure along the corresponding mounting bracket (1) in the longitudinal direction of the mounting bracket (1).

15. A method of mounting a fixed frame of a window or door structure according to any one of the claims 12 to 14, **characterized by** that the at least one support structure has the form of a support arm (2) that is mounted by engaging a second area (19) of the support arm (2) with the corresponding mounting bracket (1) and bringing the wall abutment into contact with the outer face (20) of the inner wall (5), whereby the support arm (2) tilts in relation to the corresponding mounting bracket (1), by that, preferably, the wall abutment has the form of at least one flat section (18) of a plate, and by that, during fastening on the wall (5), the at least one flat section (18) of the plate bends about a line (L), so that an angle formed between the at least one flat section (18) and a longitudinal axis of the support arm (2) is changed, whereby the at least one flat section (18) of the plate is caused to lie flat against the outer face (20) of the wall (5), and by that, preferably, the at least one flat section (18) of a plate is formed integrally with the support arm (2) itself.

16. A method of mounting a fixed frame of a window or door structure according to any one of the claims 12 to 15, **characterized by** that the fixed frame (3) of the window or door structure is mounted at the window or door opening (4) by means of the mounting brackets (1) before connecting the at least one support structure to the corresponding mounting bracket (1) and fastening the support structure to the wall (5).

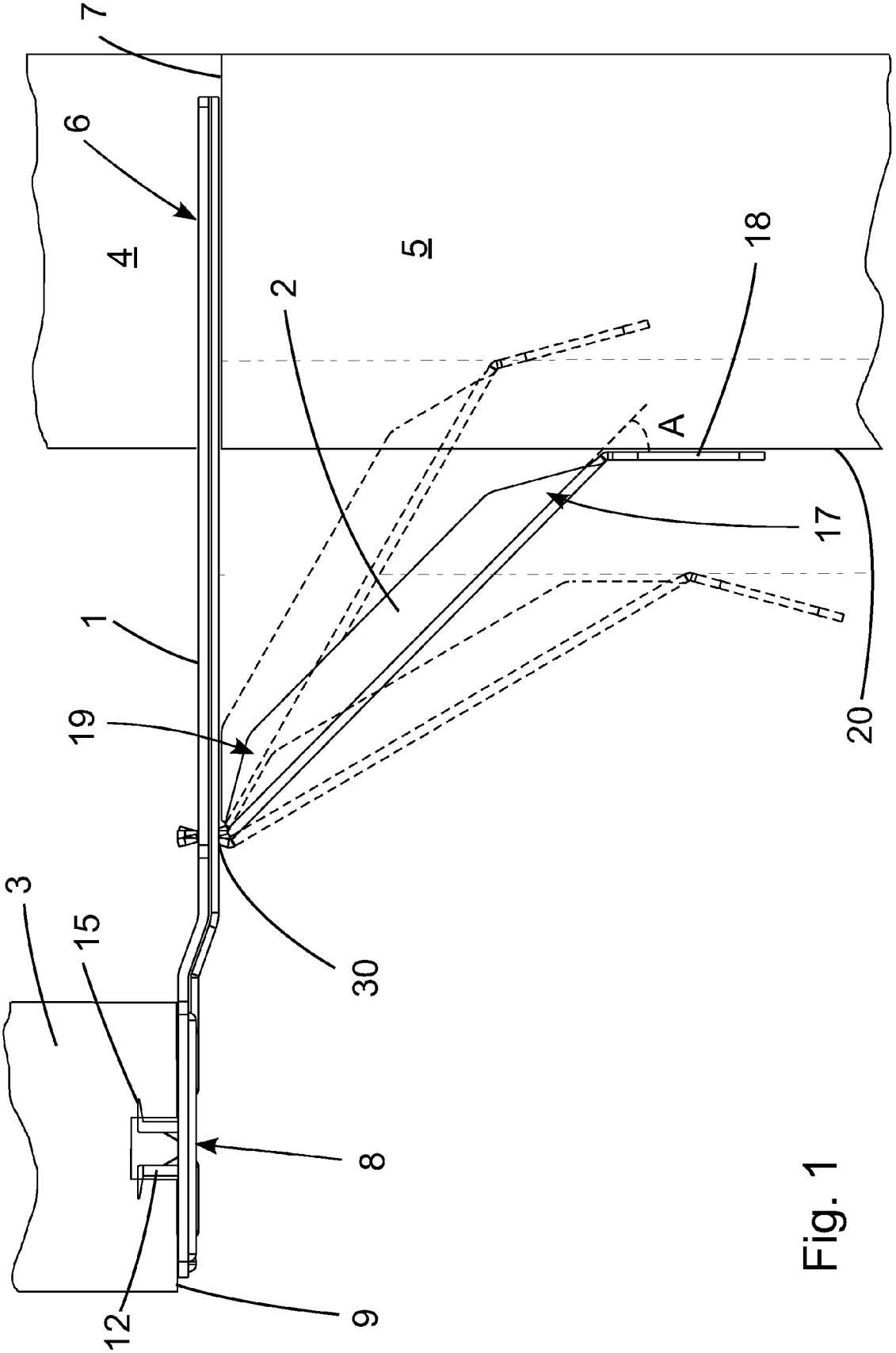

Fig. 1

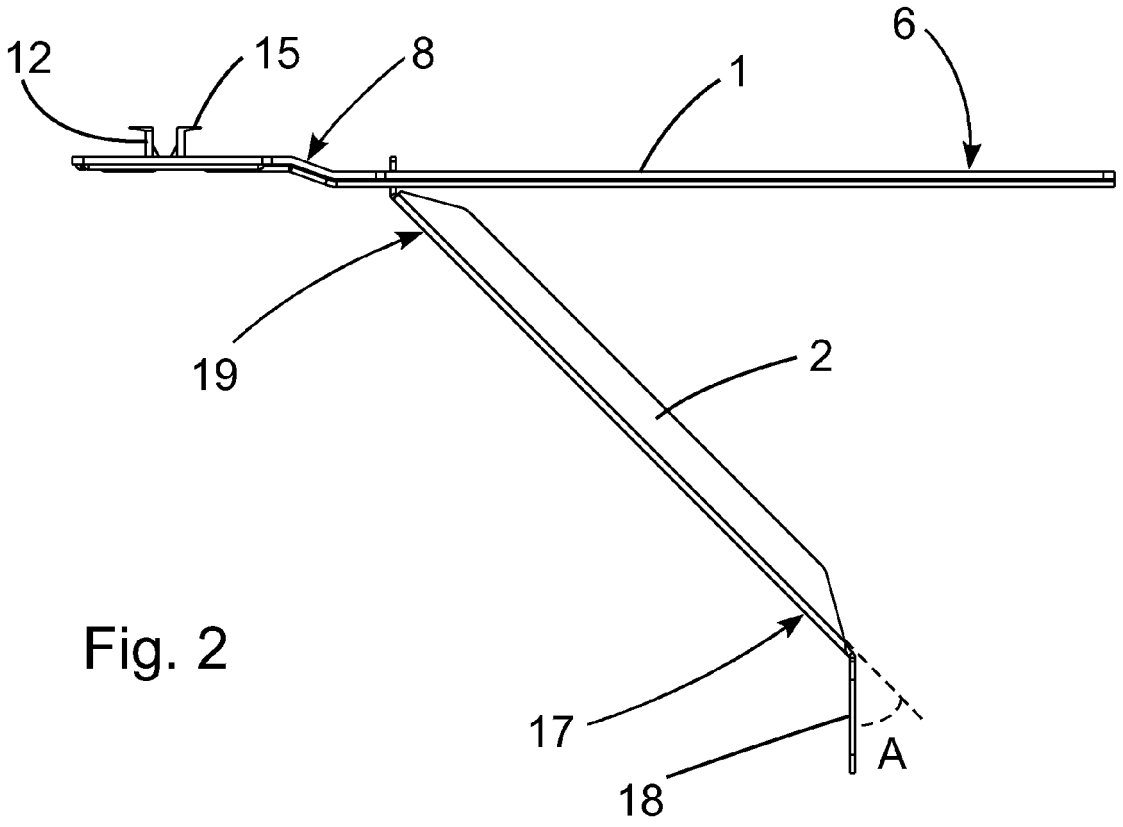

Fig. 2

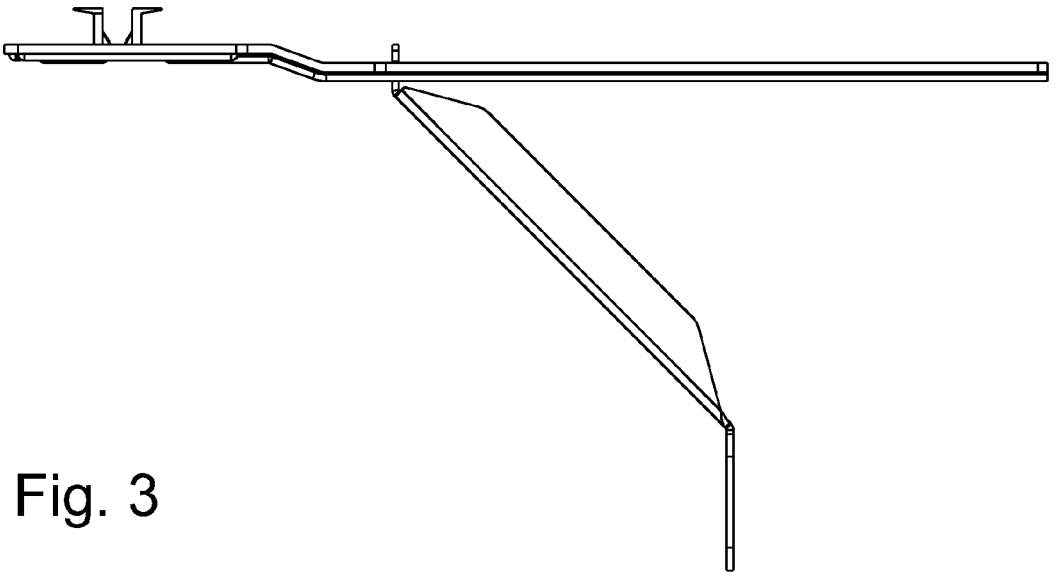

Fig. 3

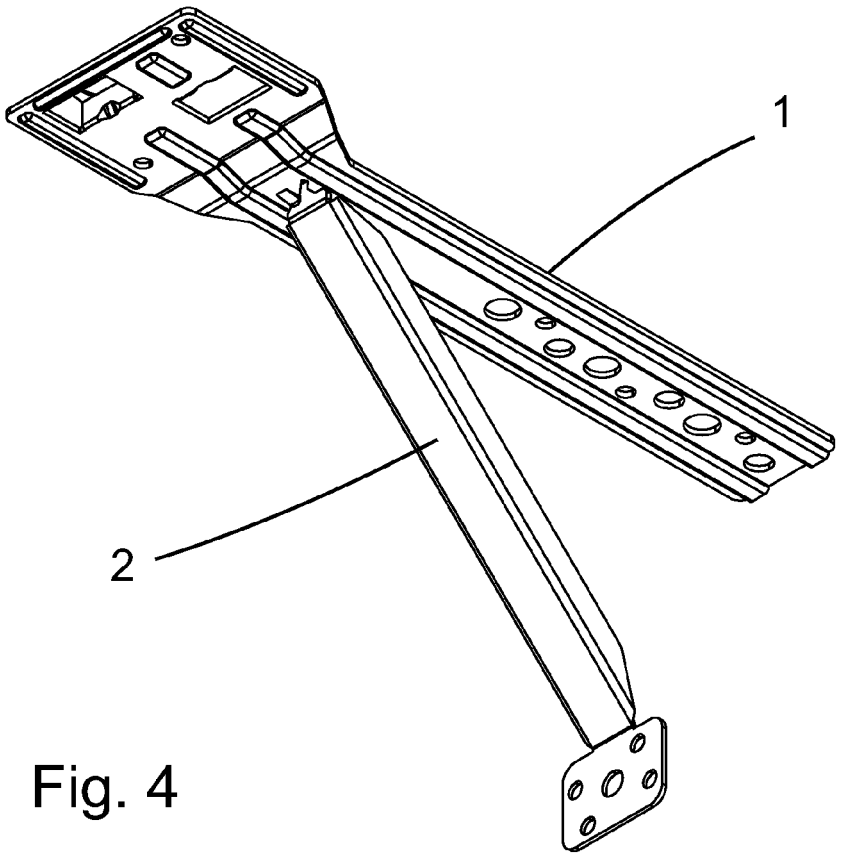

Fig. 4

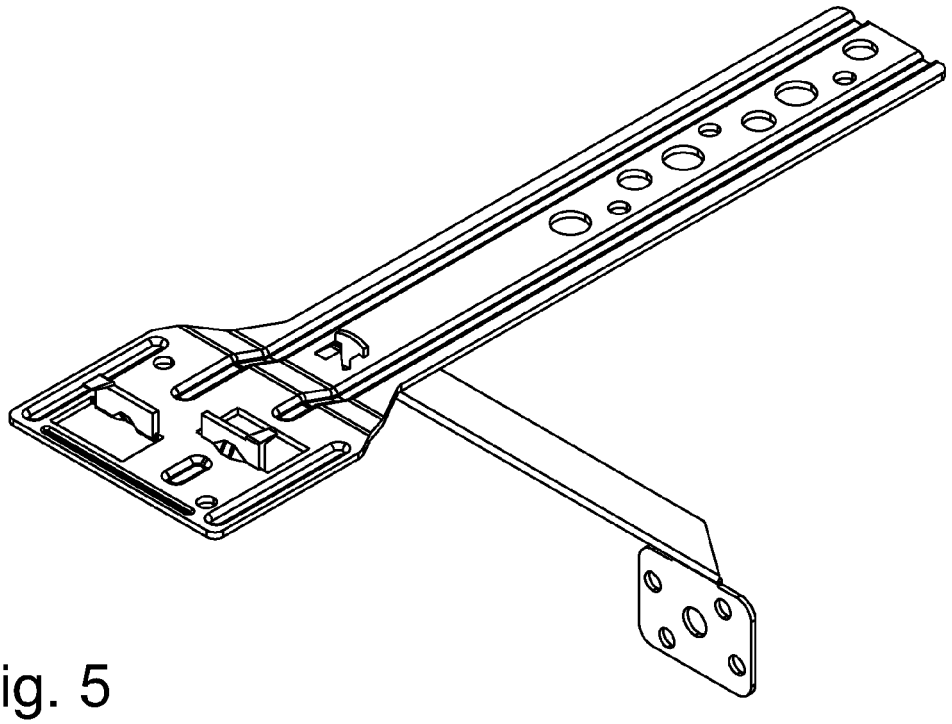

Fig. 5

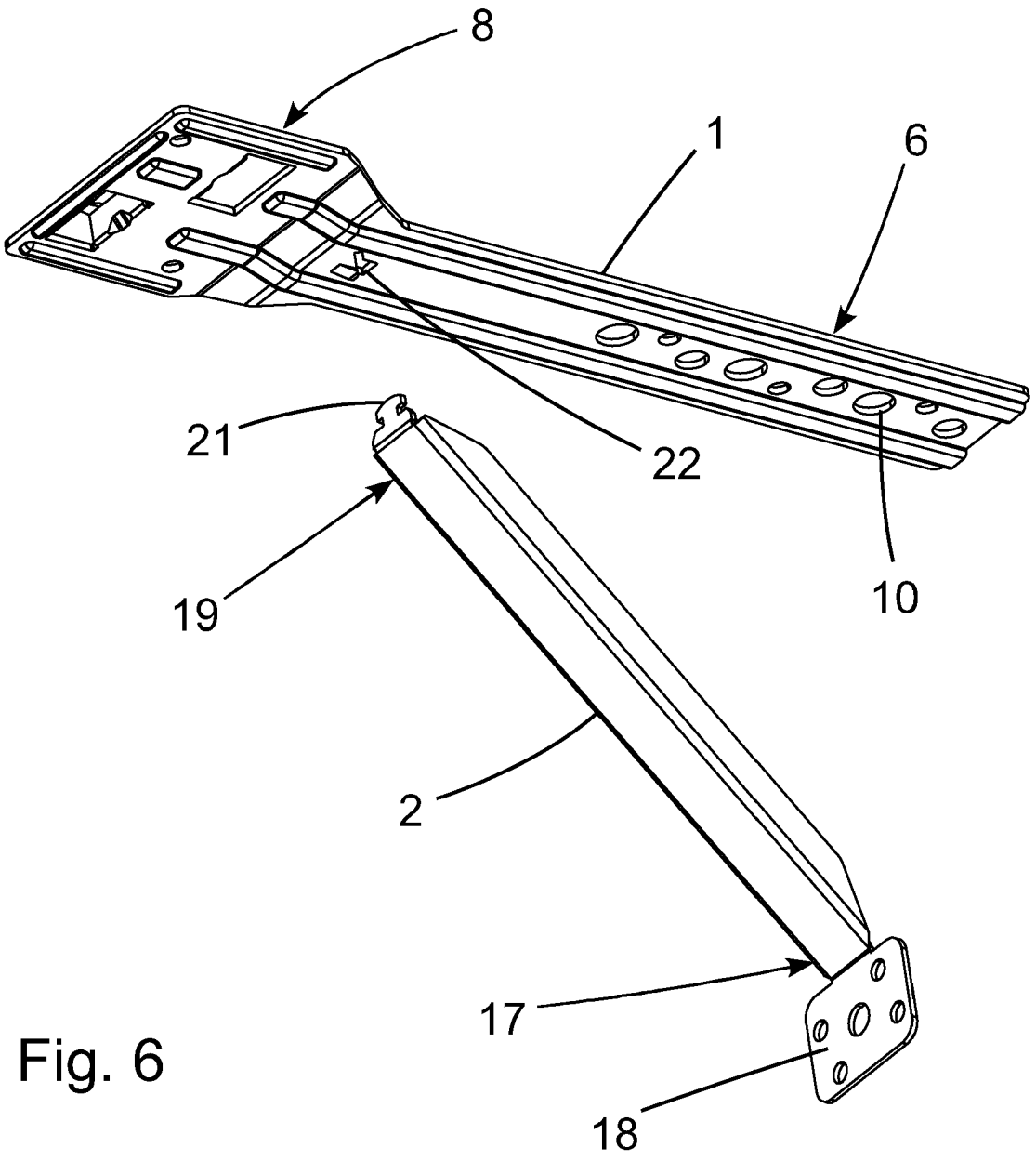

Fig. 6

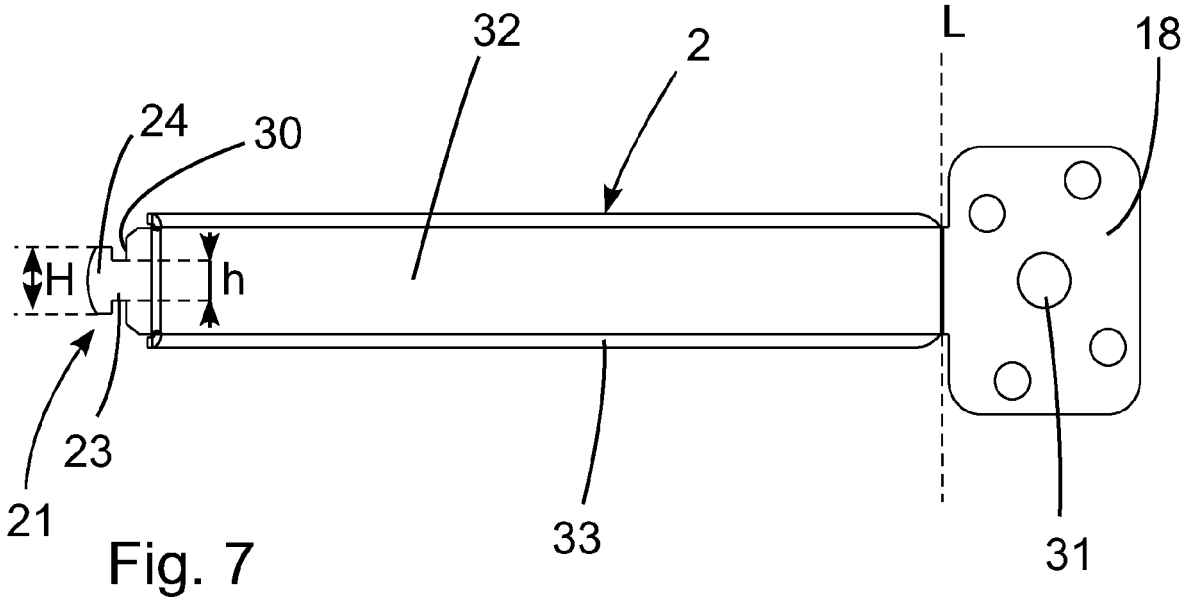

Fig. 7

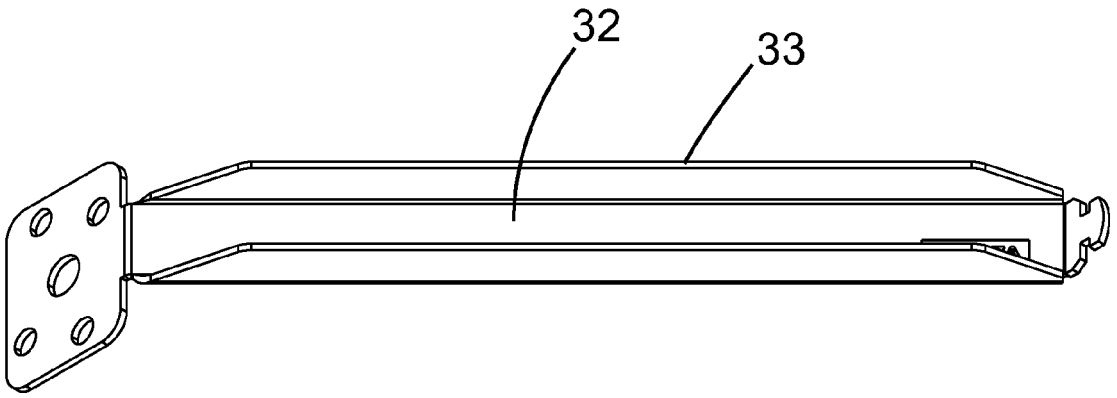

Fig. 8

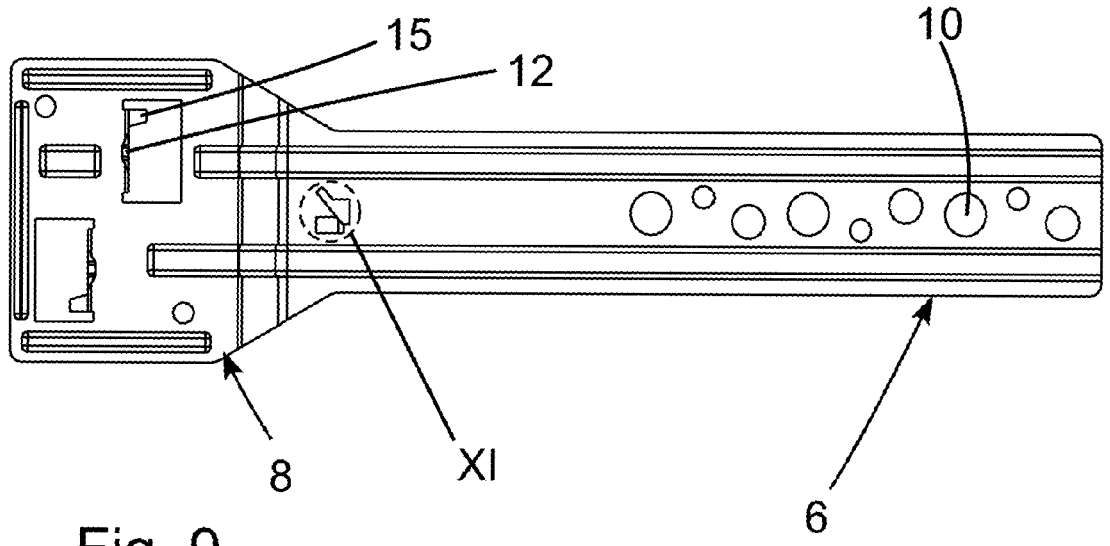

Fig. 9

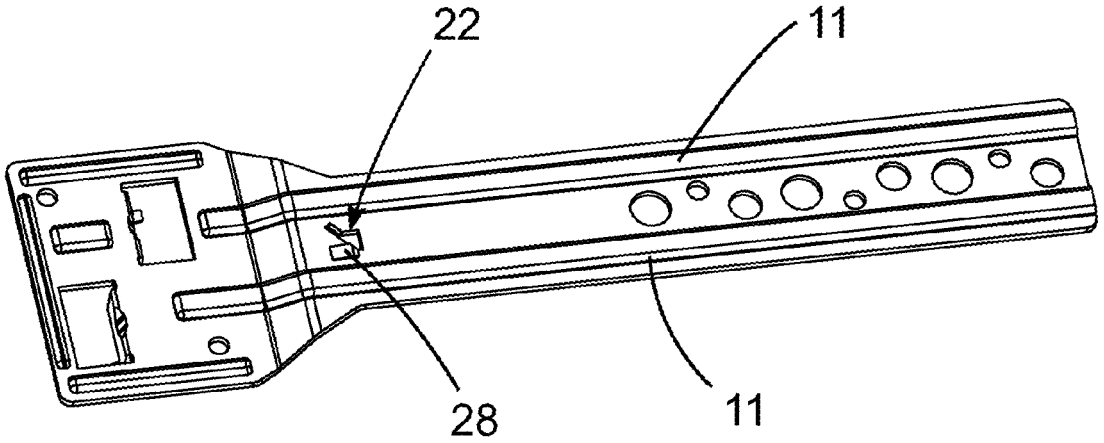

Fig. 10

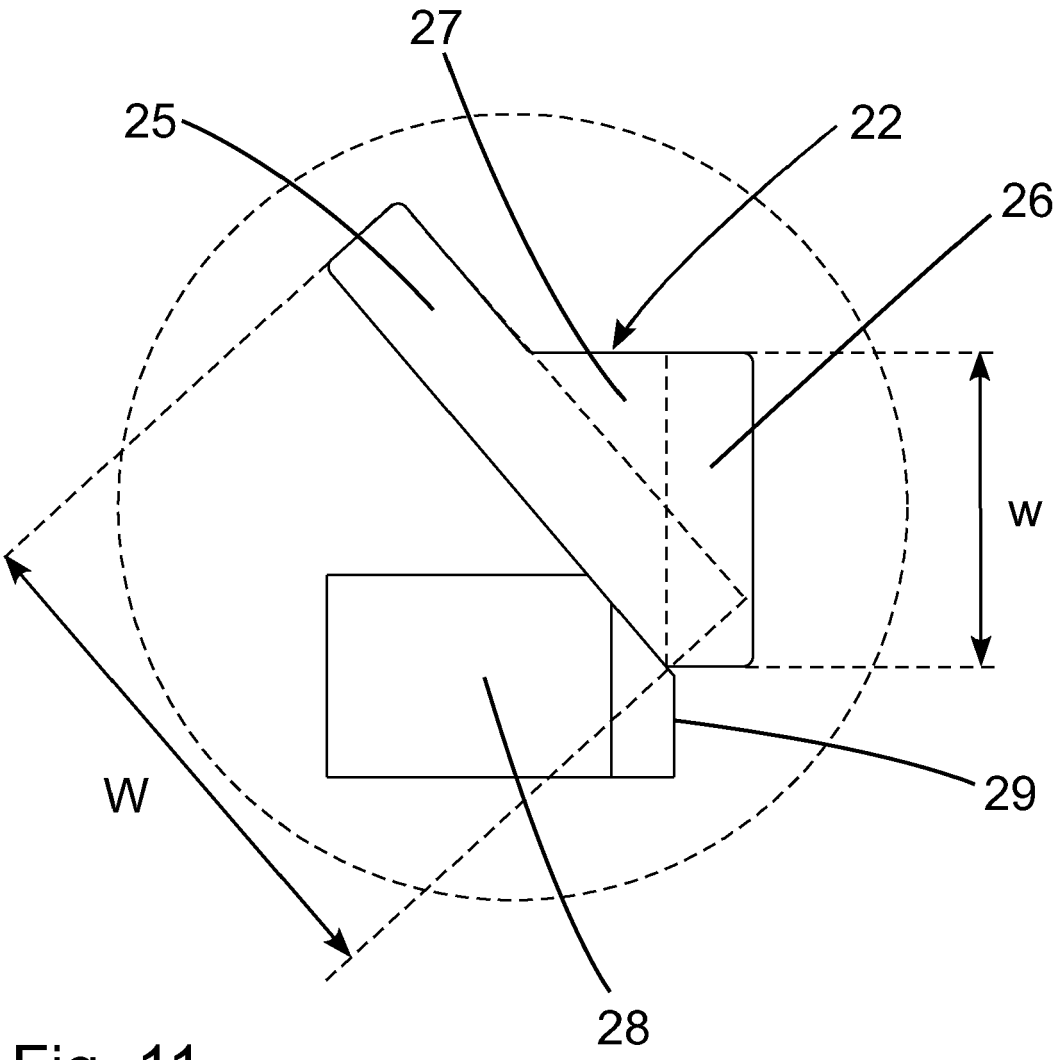

Fig. 11

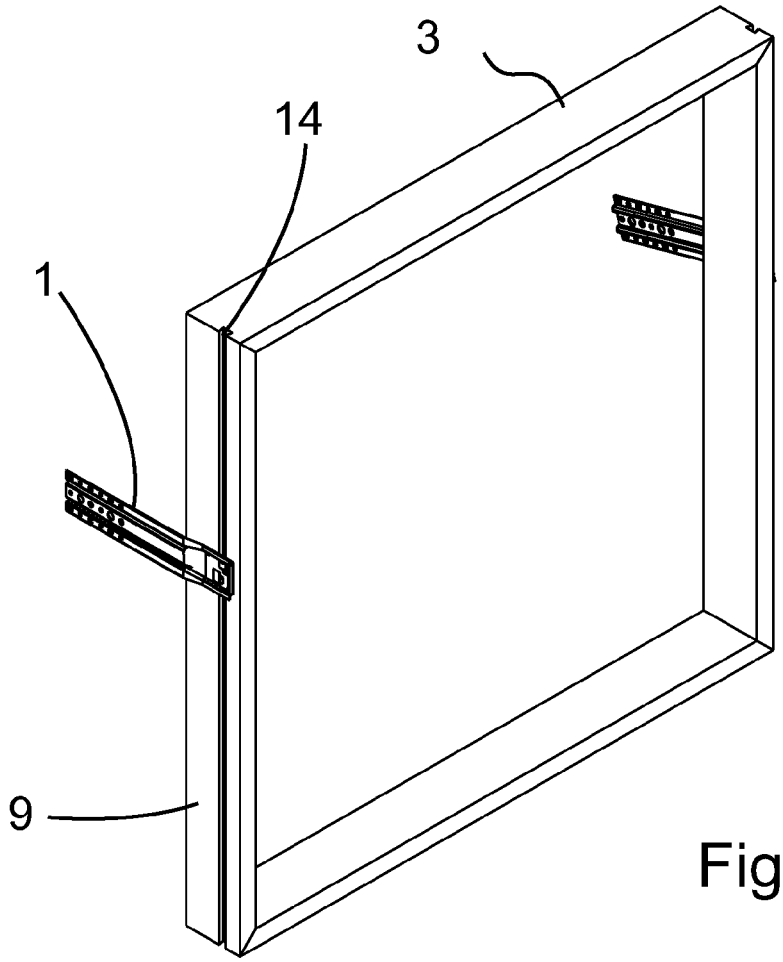

Fig. 12

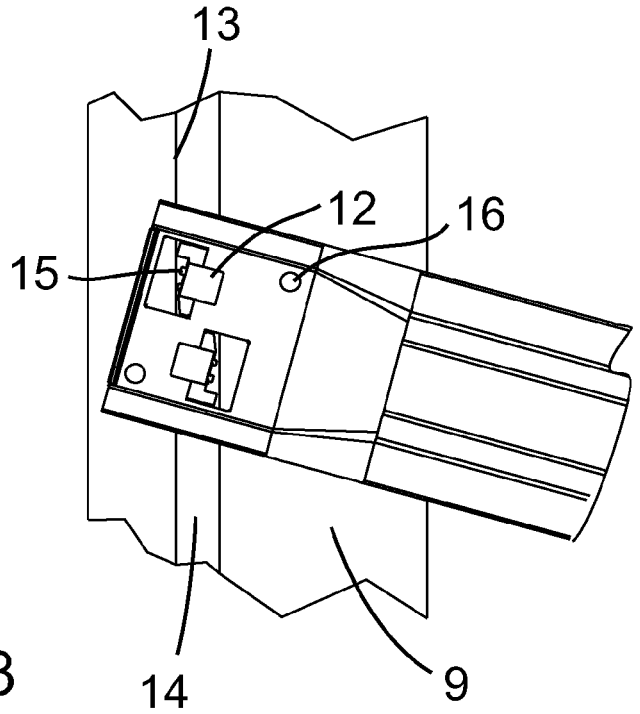

Fig. 13

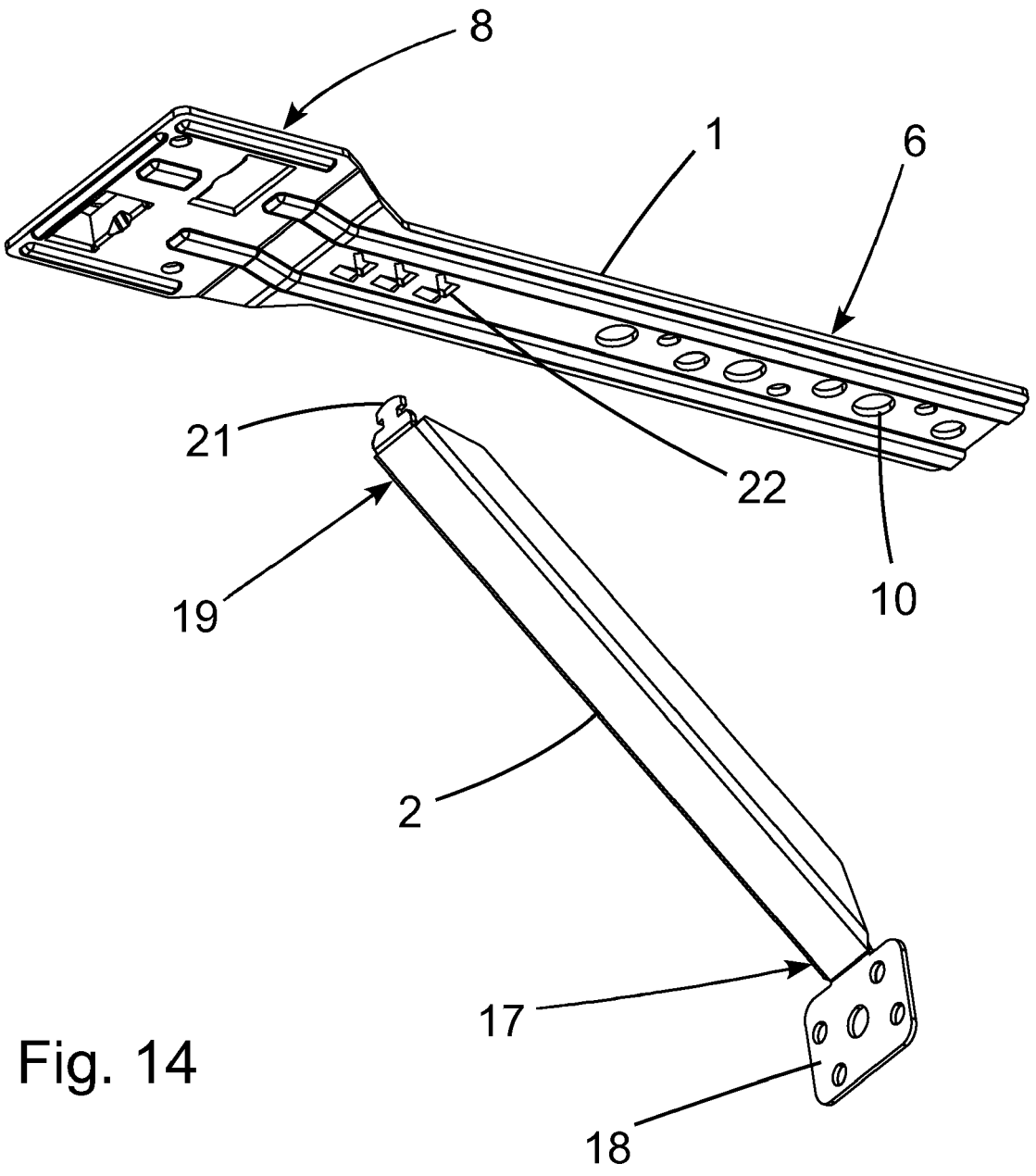

Fig. 14

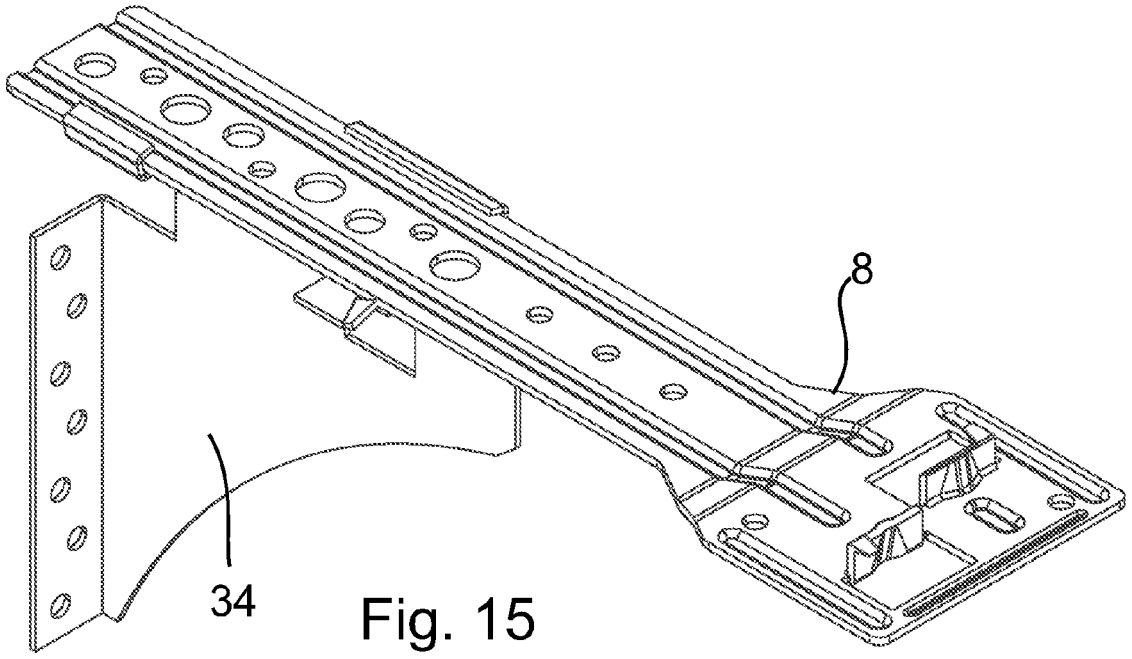

Fig. 15

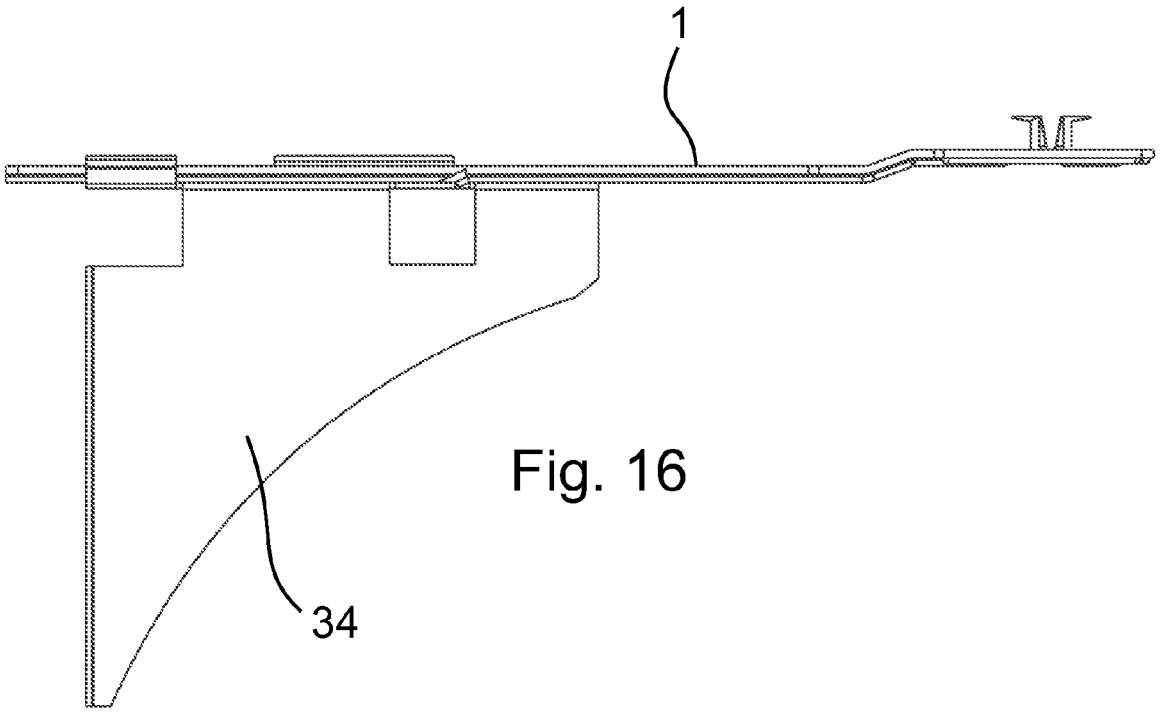

Fig. 16

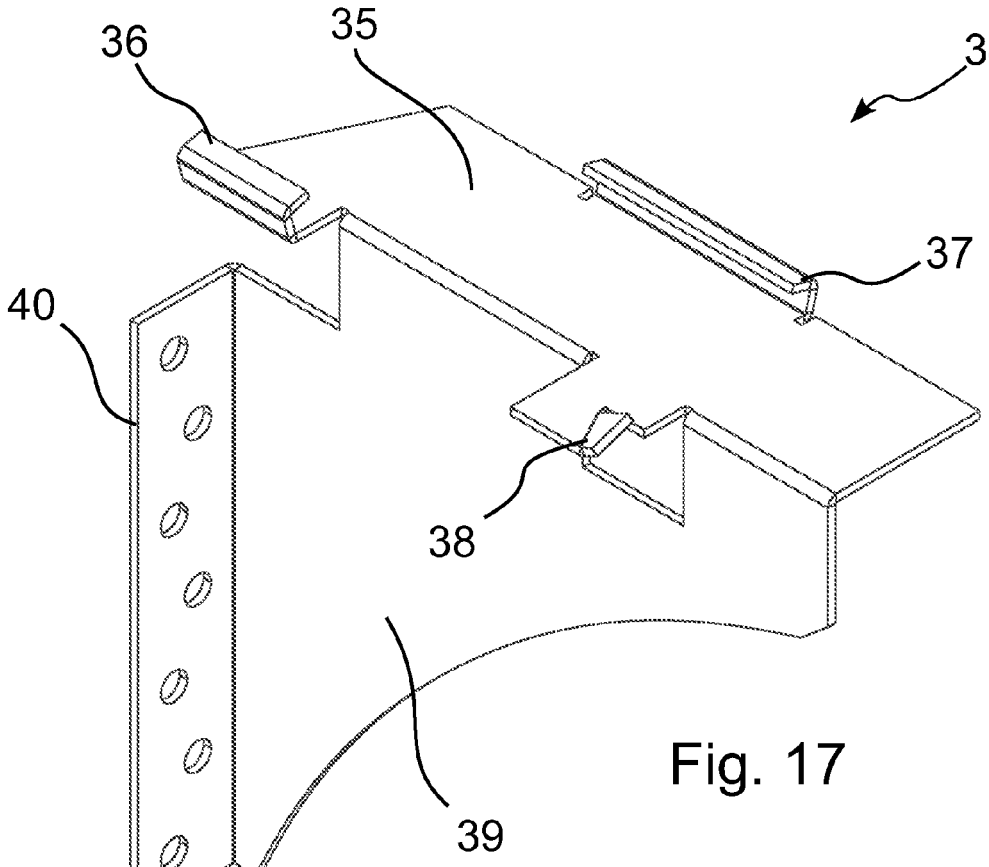

Fig. 17

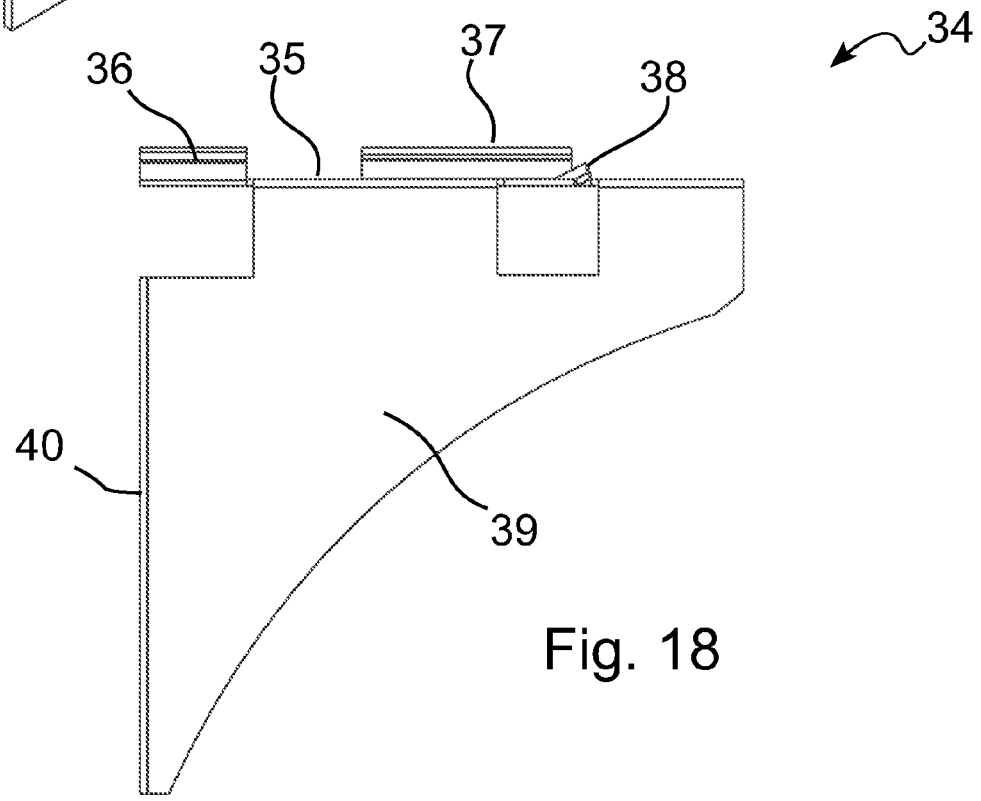

Fig. 18

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EUROPEAN SEARCH REPORT

Application Number
EP 09 17 0061

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 A	DE 20 2004 002331 U1 (BMF BYGNINGSBESLAG AS ODDER [DK]) 15 April 2004 (2004-04-15) * paragraphs [0013], [0015] * * figures 1,2 *	12,15 1-11,13, 14,16	INV. E06B1/60
X	EP 0 945 577 A2 (SFS IND HOLDING AG [CH] SFS INTEC HOLDING AG [CH]) 29 September 1999 (1999-09-29) * figures 1,2 * * paragraph [0006] * * paragraph [0008] * * paragraph [0012] - paragraph [0015] *	1-3, 12-14	
A	DE 22 45 156 A1 (FIAND F GMBH) 21 March 1974 (1974-03-21) * figures 5,6,8-10,12-14 *	6,11	
A	FR 2 762 040 A1 (MALERBA DUGELET [FR]) 16 October 1998 (1998-10-16) * figures 4,5,10 *	10	

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
Munich	11 June 2010	Tänzler, Ansgar

CATEGORY OF CITED DOCUMENTS

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11-06-2010

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

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