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(54) **TOOL AND MOUNTING BRACKET WITH IMPROVED ADJUSTMENT MEANS AND METHOD OF MOUNTING A ROOF WINDOW IN A ROOF STRUCTURE**

WERKZEUG UND MONTAGEKLAMMER MIT VERBESSERTEN EINSTELLMITTELN UND VERFAHREN ZUR MONTAGE EINES DACHFENSTERS IN EINER DACHSTRUKTUR

OUTIL ET SUPPORT DE MONTAGE DOTÉ DE MOYENS DE RÉGLAGE AMÉLIORÉS ET PROCÉDÉ DE MONTAGE D'UNE FENÊTRE DE TOIT DANS UNE STRUCTURE DE TOIT

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Description

Technical Field

[0001] The present invention relates to a mounting bracket for installation of a window frame in an inclined roof surface, wherein the mounting bracket comprises an angular bracket member having a first and a second leg connected integrally with each other, and a substantially plate-shaped base member having at least one opening for receiving locking means and being connected with an outer side wall of the window frame, the angular bracket member being connected to the base member in such a way that, the second leg protrudes outwards in relation to a plane perpendicular to the base member, in which locking means are provided for locking the first leg of the angular bracket member in relation to the base member in a locked condition. The invention furthermore relates to a method of mounting a roof window in a roof structure.

Background Art

[0002] From EP 1 512 806 B1 it is known to mount a window frame in a roof using a mounting bracket comprising an angular bracket member and a base member, wherein the angular bracket member has a first leg that abuts against the base member and a second leg mounted to the roof, and the base member is mounted to the window frame. Where the first leg of the angular bracket member has an elongated slot, which provides the angular bracket member and the base member to be adjustably displaced vertically relative to each other.

[0003] Applicant's patent no US 6,629,391 B1 discloses a mounting bracket comprising an angular bracket member having a first leg and a second leg integrally connected to each other. A substantially plate-shaped base member having an opening for receiving a fastening means and being connected to an outer side of the window frame. Adjusting means is provided for adjusting the position of the angular bracket member in a transverse direction perpendicular to the longitudinal direction of the window frame.

[0004] When installing a window frame in an inclined roof erroneous installation or irregular surfaces of the roof can cause obliquity between the window frame and window sash. To remove such obliquity, it may be necessary to uninstall and then reinstall the window frame.

[0005] After the window frame has been installed obliquity may occur between the window frame and window sash as a consequence of the roof construction settling. At this point uninstalling and reinstalling of the window frame is not convenient as it would involve removal of roof tiles.

Summary of Invention

[0006] It is an object of the invention to provide, togeth-

er with a cooperating tool, a mounting bracket, in which it is possible to remove obliquity between a window frame and window sash without uninstalling and reinstalling the window frame.

[0007] In a first aspect, this and further objects are met by a mounting bracket and cooperating tool according to claim 2.

[0008] Said mounting bracket comprises an angular bracket member, a base member and locking means. The locking means is comprised by a stud member having a head member and a screw thread member and an opening in the base member with screw threads for receiving the screw thread member. By tightening the stud to the base plate, the angular bracket member and the base member are interlocked.

[0009] The adjustment means of the mounting bracket is provided by introducing a slot into the first leg of the angular bracket member. The screw thread member of the stud has dimensions smaller than the slot and is therefore accommodated by the slot, while the head member is dimensionally larger than the slot and cannot pass through the slot. As the dimensions of the screw thread member are smaller than the dimensions of the slot, the angular bracket member can be displaced to alternate positions around the screw thread member. By abutting the head member against the side of the first leg of the angular bracket and tightening the stud in the receiving means of the base member, the displacement of the angular bracket member is prohibited.

[0010] The slot has two axes, a length axis and a height axis, where the angular bracket can be adjusted along both axes and any superposition of the axes. By superposition of the two axes is meant that the position of the base member relative to the angular bracket member can be perceived as some displacement along the length axis and concurrently some displacement along the height axis. By any superposition is meant that any displacement along either the length axis, the height axis or both is attainable, if accommodated by the dimensions of the slot.

[0011] As the base member may be attached to a window frame and the angular bracket member to a window frame, the adjustment of the two relative to each other results in a relative adjustment of window frame and sash.

[0012] The stud is provided with a pattern, e.g. a hex pattern, in the end of the screw thread member, such that the tightening and untightening of the stud can occur by placing a hex key in the pattern and thereby engaging the stud.

[0013] The mounting bracket may be provided with a fixation pin to enable mounting of the bracket in a window frame.

[0014] The slot of the adjustment means may be shaped as a rectangle with rounded corners, a rectangle with right angle corners, a circle or any other suitable shape, allowing adjustment in more than one direction at the same time.

[0015] In a second aspect, a method of mounting a

window frame in a roof window according to claim 1 is provided.

[0016] Other presently preferred embodiments and advantages will be apparent from the following detailed description.

Brief Description of Drawings

[0017] The invention will be described in more detail below by means of nonlimiting examples of embodiments and with reference to the schematic drawing, in which

Fig. 1 is a perspective view of the mounting bracket in an unlocked condition;

Fig. 2 is a profile view of the mounting bracket in the unlocked condition;

Fig. 3 is a sectional view of the mounting bracket in the locked condition;

Figs 4a and 4b show adjustment of the mounting bracket;

Fig. 5 is a sectional view of an installed mounting bracket in the locked condition;

Figs 6a to 6c show schematic illustrations of an installation procedure; and

Fig. 7 is a sectional view of the mounting bracket.

Description of Embodiments

[0018] A first embodiment of the invention is shown in Fig. 1. As indicated, each mounting bracket 1 comprises an angular bracket member 3, a base member 5 and locking means. The angular bracket member 3 comprises a first leg 31 integrally connected to a second leg 33 in a 90-degree angle.

[0019] Adjusting means are provided for adjusting the angular bracket member 3 relative to the base member 5. As will be described in further detail below, the adjustment can take place along at least both axis of the adjusting means and any superposition of the axes. In the embodiment shown, the adjusting means comprise a slot 9 formed in the first leg 31 of the angular bracket member 3.

[0020] Said locking means comprises a stud 7 having a head member 71 and screw thread member 73. The base member 5 has an opening 53 with internal screw threads adapted for receiving said screw thread member 73 of the stud 7.

[0021] In Fig. 2 an embodiment of the invention in the unlocked condition is shown. The mounting bracket 1 comprises, the angular bracket member 3, the base member 5 and the stud 7. The stud 7 is aligned with the slot 9 of the first leg 31 on a second side edge 37 opposite a first side edge 35 of the first leg 31. On the first side edge 35 the first leg can engage with the first side edge 55 of the base member 5 through serrations formed on both side edges 35, 55.

[0022] Fig. 3 shows an embodiment of the invention in a locked condition, the head member 71 of said stud 7

abuts against the second side edge 37 of the first leg 31 of the angular bracket 3, and said screw thread member 73 of said stud 7 is received in the base member 5.

[0023] The screw thread member 73 of the stud 7 is fully engaged with the screw threads of the opening 53 of the base member 5. In the locked condition the head member 71 of the stud 7 abuts against the second side edge 37 of the first leg 31, and the first side edge is interlocked with a first side edge 55 of the base member 5 through the serrations on both side edges 35, 55.

[0024] Fig. 4 shows adjustment of the mounting bracket 1. The mounting bracket 1 is changed from the locked condition to the unlock condition by untightening the stud 7. By untightening the stud 7, displacement of the angular bracket member 3 relative to the base member 5 through the adjustment means is permitted. Said adjustment means comprises the slot 9 in the first leg 31, where the dimensions of the slot 9 are substantially smaller than the dimensions of the head member 71 of the stud 7 and has dimensions substantially larger than said screw thread member 73. As a consequence of the dimensions of the slot 9, the screw thread member 73 is accommodated by the slot, while the head member cannot pass through the slot 9.

[0025] The slot 9 has a length axis 11 and a height axis 13, where said stud 7 can be displaced along both axis 11, 13 and any superposition 15 of the two axes 11, 13. As the base member 5 is displaced relative to the angular bracket member, the superposition 15 of the two axes are changed and a new position of the angular bracket member relative to the base member is achieved.

[0026] The alternative embodiment of the invention in Fig. 5 shows the mounting bracket 1 mounted on an outer side of a window frame 17. The base member 5 is attached to the outer side of the window frame 17 and the angular bracket member 3 is interlocked with the base member 5 through the locking means comprising the stud 7 and the receiving means of the base member 5.

[0027] An opening in the window frame allows a tool which in the embodiment shown is provided as a hex-key 18 to reach the stud 7 through the window frame. A pattern made in the end of the screw thread member 73 of the stud 7 is intended to cooperate with the tool, here a hexagon aperture, which allows the hex-key to engage with the stud 7 to tighten or untighten the locking means. Adjustment of the angular bracket member 3 relative to the base member 5 is therefore possible without uninstalling either window frame or sash or both.

[0028] The embodiment in Fig. 6 shows a method to enable adjustment of the mounting bracket 1 through the window frame side member 101. By applying a drill 102 to inside of the window frame, as seen in Fig. 6a, a hole 103 is drilled in the window frame side member 101 at the position of the mounting bracket, as seen in Fig. 6b. The mounting bracket can then be adjusted by applying a hex-key 118 to the stud, as seen in Fig. 6c. After adjustment the hole can be closed by inserting a cover plate in the hole 103. The cover plate may be made from a

material resembling the window frame side member 101.

[0029] The embodiment in Fig. 7 shows the mounting bracket 1, where the base member 5 has been provided with a fixation pin 105 for attaching the base member 5 to a window frame.

[0030] Finally, it is noted that though the embodiments described here is related to windows in roofs, the present invention can be applied to adjustment of other roof penetrating structures, e.g. roof-top hatch.

List of reference numerals

[0031]

1	mounting bracket	15
3	angular bracket member	
	31 first leg	
	33 second leg	
	35 first side edge	20
	37 second side edge	
5	base member	
	53 opening	
	55 first side edge	25
7	stud	
	71 head member	
	73 screw thread member	30
9	slot	
11	length axis	
13	height axis	35
15	superposition	
17	window frame	
	101 window frame side member	40
	102 drill	
	103 hole	
	105 fixation pin	
18,118	hex-key	45

Claims

1. Method of mounting a window frame in a roof window in a roof structure, said window frame comprising a mounting bracket (1) comprising an angular bracket member (3) having a first (31) and a second leg (33) connected integrally with each other, and
a substantially plate-shaped base member (5) having at least one opening (53) for receiving locking means (7) and being connected with an

outer side wall of the window frame (17), the angular bracket member (3) being connected to the base member (5) in such a way that, the second leg (33) protrudes outwards in relation to a plane perpendicular to the base member (5), in which

locking means are provided for locking the first leg (31) of the angular bracket member (3) in relation to the base member (5) in a locked condition, wherein the locking means comprise a stud (7) having a head member (71) and a screw thread member (73) to cooperate with an opening in the base member (5) with screw threads for receiving the screw thread member (73), wherein adjusting means comprising a closed slot (9) are provided, said slot (9) having pre-defined limited dimensions allowing adjustment of the angular bracket member (3) relative to the base member (5) in a plane parallel to the first leg along both a length axis (11) and a height axis (13) of the adjusting means and along any superposition of said two axes, if accommodated by the dimensions of the slot (9), and comprising the steps of:

supplying a roof window comprising a window frame and a window sash,
drilling a hole (103) through a window frame side member (101),
supplying the mounting bracket (1),
abutting the head member (71) of the stud (7) against the second side of the first leg, such that the screw thread member (73) is accommodated by the slot (9),
mounting the base member of the mounting bracket (1) on the window frame and mounting the angular bracket member on the window frame,
applying a cooperating tool with a tip matching a pattern of a head member (71) of the stud (7),
screwing a screw thread member (73) through the opening (53) of the base member (5), thereby either
untightening the stud (7) to perform position adjustments of the mounting bracket (1), and
tightening the stud (7) to lock the mounting bracket (1) in position,
wherein a cover plate is provided to cover the hole (103) after tightening the stud (7).

2. A mounting bracket (1) and a cooperating tool for use in the method of claim 1, wherein the mounting bracket (1) comprises an angular bracket member (3) having a first (31) and a second leg (32) connected integrally with each other, and a substantially plate-shaped base member having at least one

opening for receiving locking means and being connected with an outer side wall of the window frame (17), the angular bracket member (3) being connected to the base member (5) in such a way that the second leg (33) protrudes outwards in relation to a plane perpendicular to the base member (5), in which locking means are provided for locking the first leg (31) of the angular bracket member (3) in relation to the base member (5) in a locked condition, adjusting means being provided for adjusting the angular bracket member (3) relative to the base member (5), wherein the adjusting means comprise a closed slot (9) having pre-defined limited dimensions allowing adjustment of the angular bracket member (3) relative to the base member (5) in a plane parallel to the first leg along a length axis (11) and a height axis (13) of the adjusting means and along any superposition of said axes, wherein the locking means comprises a stud (7) having a head member (71) and a screw thread member (73) to cooperate with an opening in the base member (5) with screw threads for receiving the screw thread member (73), and wherein the head member (71) of the stud (7) is provided with a pattern corresponding to said cooperating tool.

3. A mounting bracket (1) and a tool according to claim 2, wherein the pattern is a hexagon aperture and the tool is a hex key (18, 118).

Patentansprüche

1. Verfahren zum Montieren eines Fensterrahmens in einem Dachfenster in einer Dachstruktur, wobei der Fensterrahmen eine Montagehalterung (1) umfasst, die ein winkelförmiges Halterungsglied (3) mit einem ersten (31) und einem zweiten Schenkel (33) umfasst, die integral miteinander verbunden sind, und

ein im Wesentlichen plattenförmiges Basisglied (5), das mindestens eine Öffnung (53) zur Aufnahme von Verriegelungsmitteln (7) hat und mit einer äußeren Seitenwand des Fensterrahmens (17) verbunden ist,

wobei das winkelförmige Halterungsglied (3) so mit dem Basisglied (5) verbunden ist, dass der zweite Schenkel (33) bezüglich einer senkrecht zu dem Basisglied (5) verlaufenden Ebene nach außen ragt, wobei

Verriegelungsmittel vorgesehen sind, um den ersten Schenkel (31) des winkelförmigen Halterungsglieds (3) bezüglich des Basisglieds (5) in einem verriegelten Zustand zu verriegeln, wobei die Verriegelungsmittel einen Bolzen (7) umfassen, der ein Kopfglied (71) und ein Schraubengewindeglied (73) hat, um mit einer Öffnung in dem Basisglied (5) mit einem Schraubengewin-

de zur Aufnahme des Schraubengewindeglieds (73) zusammenzuwirken,

wobei Verstellmittel vorgesehen sind, die einen geschlossenen Schlitz (9) umfassen, wobei der Schlitz (9) vordefinierte begrenzte Abmessungen hat, die ein Verstellen des winkelförmigen Halterungsglieds (3) bezüglich des Basisglieds (5) in einer parallel zu dem ersten Schenkel verlaufenden Ebene sowohl entlang einer Längsachse (11) als auch einer Höhenachse (13) der Verstellmittel und entlang einer etwaigen Überlagerung der beiden Achsen gestatten, wenn durch die Abmessungen des Schlitzes (9) gestattet, und umfassend die folgenden Schritte:

Bereitstellen eines Dachfensters, das einen Fensterrahmen und einen Fensterflügel umfasst,

Bohren eines Lochs (103) durch ein Fensterrahmenseitenglied (101),

Bereitstellen der Montagehalterung (1),

Anlegen des Kopfglieds (71) des Bolzens (7) an die zweite Seite des ersten Schenkels, so dass das Schraubengewindeglied (73) von dem Schlitz (9) aufgenommen wird,

Montieren des Basisglieds der Montagehalterung (1) an dem Fensterrahmen und Montieren des winkelförmigen Halterungsglieds an dem Fensterrahmen,

Anwenden eines zusammenwirkenden Werkzeugs mit einer Spitze, die zu einem Muster eines Kopfglieds (71) des Bolzens (7) passt,

Schrauben des Schraubengewindeglieds (73) durch die Öffnung (53) des Basisglieds (5), wodurch entweder der Bolzen (7) gelockert wird, um Positionsverstellungen der Montagehalterung (1) durchzuführen, oder

der Bolzen (7) angezogen wird, um die Montagehalterung (1) in Position zu verriegeln, wobei eine Abdeckplatte bereitgestellt wird, um das Loch (103) nach Anziehen des Bolzens (7) abzudecken.

2. Montagehalterung (1) und zusammenwirkendes Werkzeug zur Verwendung in dem Verfahren von Anspruch 1, wobei die Montagehalterung (1) ein winkelförmiges Halterungsglied (3) mit einem ersten (31) und einem zweiten Schenkel (33) umfasst, die integral miteinander verbunden sind, und ein im Wesentlichen plattenförmiges Basisglied, das mindestens eine Öffnung zur Aufnahme von Verriegelungsmitteln hat und mit einer äußeren Seitenwand des Fensterrahmens (17) verbunden ist, wobei das winkelförmige Halterungsglied (3) so mit dem Basisglied (5) verbunden ist, dass der zweite Schenkel (33) be-

zûglich einer senkrecht zu dem Basisglied (5) verlaufenden Ebene nach auûen ragt, wobei Verriegelungsmittel vorgesehen sind, um den ersten Schenkel (31) des winkelfôrmi-
gen Halterungsglieds (3) be-
zûglich des Basisglieds (5) in einem verriegelten Zu-
stand zu verriegeln,
wobei Verstellmittel zum Verstellen des winkelfôrmi-
gen Halterungsglieds (3) bezûglich des Basisglieds
(5) vorgesehen sind, wobei die Verstellmittel einen
geschlossenen Schlitz (9) mit vordefinierten be-
grenzten Abmessungen umfassen, die ein Verstellen
des winkelfôrmi-
gen Halterungsglieds (3) bezûglich des Basisglieds (5) in einer parallel zu dem ers-
ten Schenkel verlaufenden Ebene entlang einer Lân-
genachse (11) und einer Hôhenachse (13) der Ver-
stellmittel und entlang einer etwaigen Überlagerung
der Achsen gestatten, wobei die Verriegelungsmittel
einen Bolzen (7) umfassen, der ein Kopfglied (71)
und ein Schraubengewindeglied (73) hat, um mit einer
Öffnung in dem Basisglied (5) mit einem Schrau-
bengewinde zur Aufnahme des Schraubengewinde-
glieds (73) zusammenzuwirken, und wobei das
Kopfglied (71) des Bolzens (7) mit Muster versehen
ist, das dem zusammenwirkenden Werkzeugs ent-
spricht.

3. Montagehalterung (1) und Werkzeug nach Anspruch
2, wobei das Muster eine seckseckige Öffnung ist
und das Werkzeug ein Inbusschlüssel (18, 118) ist.

Revendications

1. Procédé de fixation d'un cadre de fenêtre dans une
fenêtre de toit dans une structure de toit, ledit cadre
de fenêtre comprenant un support de fixation (1)
comprenant un élément formant support angulaire
(3) comportant des première (31) et seconde (33)
pattes raccordées d'un seul tenant l'une à l'autre, et
un élément formant base (5) essentiellement en
forme de plaque comportant au moins une
ouverture (53) destinée à recevoir des moyens
de blocage (7) et étant raccordé à une paroi la-
térale extérieure du cadre de fenêtre (17),
l'élément formant support angulaire (3) étant
raccordé à l'élément formant base (5) de telle
sorte que la seconde patte (33) fasse saillie vers
l'extérieur par rapport à un plan perpendiculaire
à l'élément formant base (5), dans lequel
des moyens de blocage sont inclus pour bloquer
la première patte (31) de l'élément formant sup-
port angulaire (3) par rapport à l'élément formant
base (5) dans un état bloqué, les moyens de
blocage comprenant un boulon (7) comportant
un élément formant tête (71) et un élément à
filetage (73) destiné à coopérer avec une ouver-
ture dans l'élément formant base (5) comportant

des filets destinés à recevoir l'élément à filetage
(73),
des moyens de réglage comprenant une fente
fermée (9) sont inclus, ladite fente (9) présentant
des dimensions limitées prédéfinies permettant
un réglage de l'élément formant support angu-
laire (3) par rapport à l'élément formant base (5)
dans un plan parallèle à la première patte le long
à la fois d'un axe de longueur (11) et d'un axe
de hauteur (13) des moyens de réglage et le
long de toute superposition desdits deux axes,
si les dimensions de la fente (9) le permettent,
et comprenant les étapes suivantes :

- fournir une fenêtre de toit comprenant un
cadre de fenêtre et un châssis de fenêtre,
percer un trou (103) à travers un élément
latéral (101) du cadre de fenêtre,
fournir le support de fixation (1),
placer l'élément formant tête (71) du boulon
(7) en appui contre le second côté de la pre-
mière patte, de telle sorte que l'élément à
filetage (73) soit logé dans la fente (9),
fixer l'élément formant base du support de
fixation (1) sur le cadre de fenêtre et fixer
l'élément formant support angulaire sur le
cadre de fenêtre,
appliquer un outil associé comportant un
embout correspondant à une forme d'un
élément formant tête (71) du boulon (7),
visser un élément à filetage (73) à travers
l'ouverture (53) de l'élément formant base
(5), de façon à
soit desserrer le boulon (7) afin de réaliser
des réglages de position du support de fixa-
tion (1),
soit serrer le boulon (7) afin de bloquer le
support de fixation (1) en position,
une plaque de recouvrement étant incluse
pour couvrir le trou (103) après le serrage
du boulon (7).
2. Support de fixation (1) et outil associé destinés à
être utilisés dans le procédé selon la revendication
1, le support de fixation (1) comprenant un élément
formant support angulaire (3) comportant des pre-
mière (31) et seconde (32) pattes raccordées d'un
seul tenant l'une à l'autre, et un élément formant ba-
se essentiellement en forme de plaque comportant
au moins une ouverture destinée à recevoir des
moyens de blocage et étant raccordé à une paroi
latérale extérieure du cadre de fenêtre (17), l'élé-
ment formant support angulaire (3) étant raccordé à
l'élément formant base (5) de telle sorte que la se-
conde patte (33) fasse saillie vers l'extérieur par rap-
port à un plan perpendiculaire à l'élément formant
base (5), dans lequel des moyens de blocage sont
inclus pour bloquer la première patte (31) de l'élé-

ment formant support angulaire (3) par rapport à l'élément formant base (5) dans un état bloqué, des moyens de réglage étant inclus pour régler l'élément formant support angulaire (3) par rapport à l'élément formant base (5), les moyens de réglage comprenant une fente fermée (9) présentant des dimensions limitées prédéfinies permettant un réglage de l'élément formant support angulaire (3) par rapport à l'élément formant base (5) dans un plan parallèle à la première patte le long d'un axe de longueur (11) et d'un axe de hauteur (13) des moyens de réglage et le long de toute superposition desdits axes, les moyens de blocage comprenant un boulon (7) comportant un élément formant tête (71) et un élément à filetage (73) destiné à coopérer avec une ouverture dans l'élément formant base (5) comportant des filets destinés à recevoir l'élément à filetage (73), et l'élément formant tête (71) du boulon (7) étant doté d'une forme correspondant audit outil associé.

3. Support de fixation (1) et outil selon la revendication 2, la forme étant un orifice hexagonal et l'outil étant une clé hexagonale (18, 118).

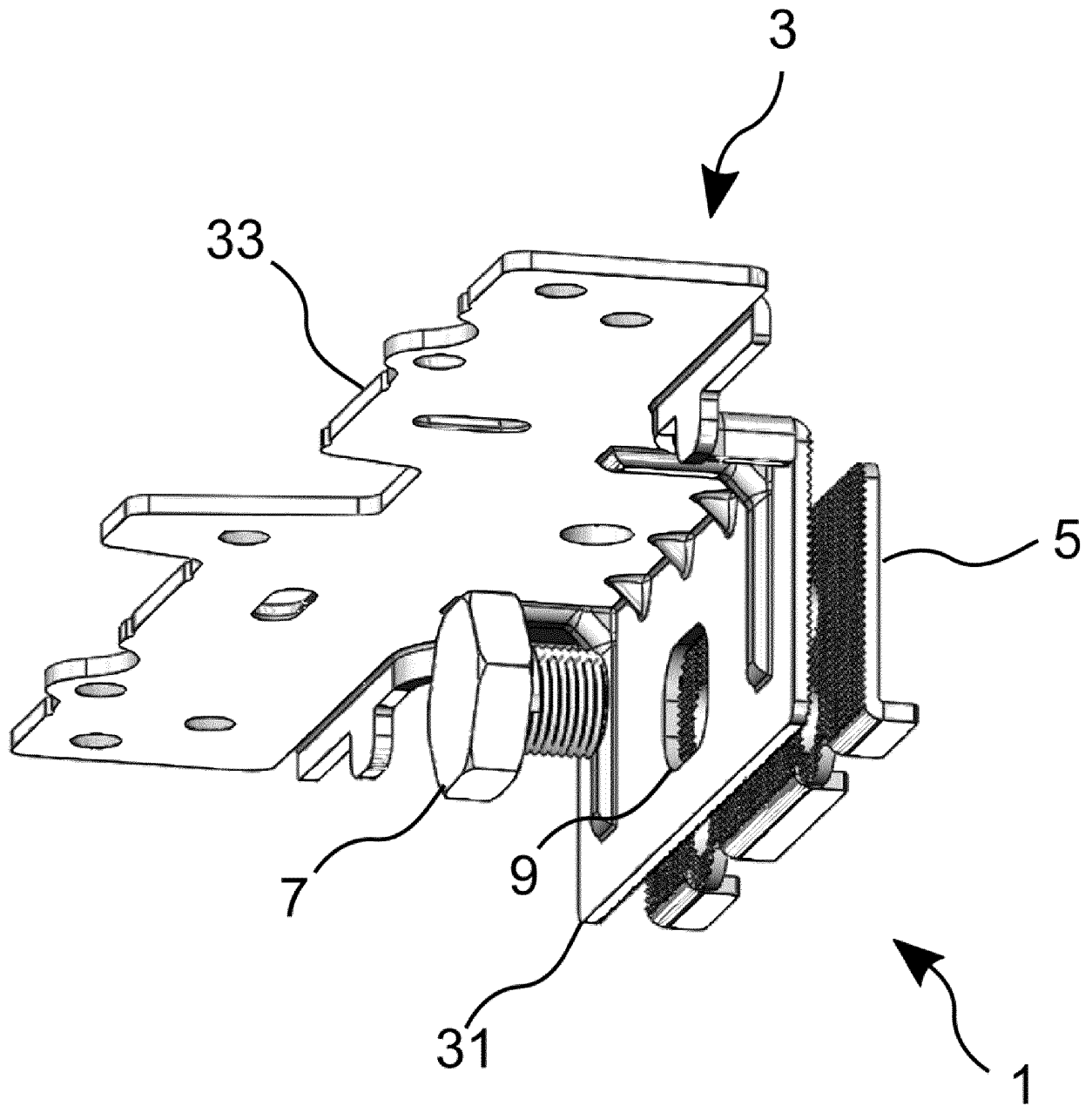
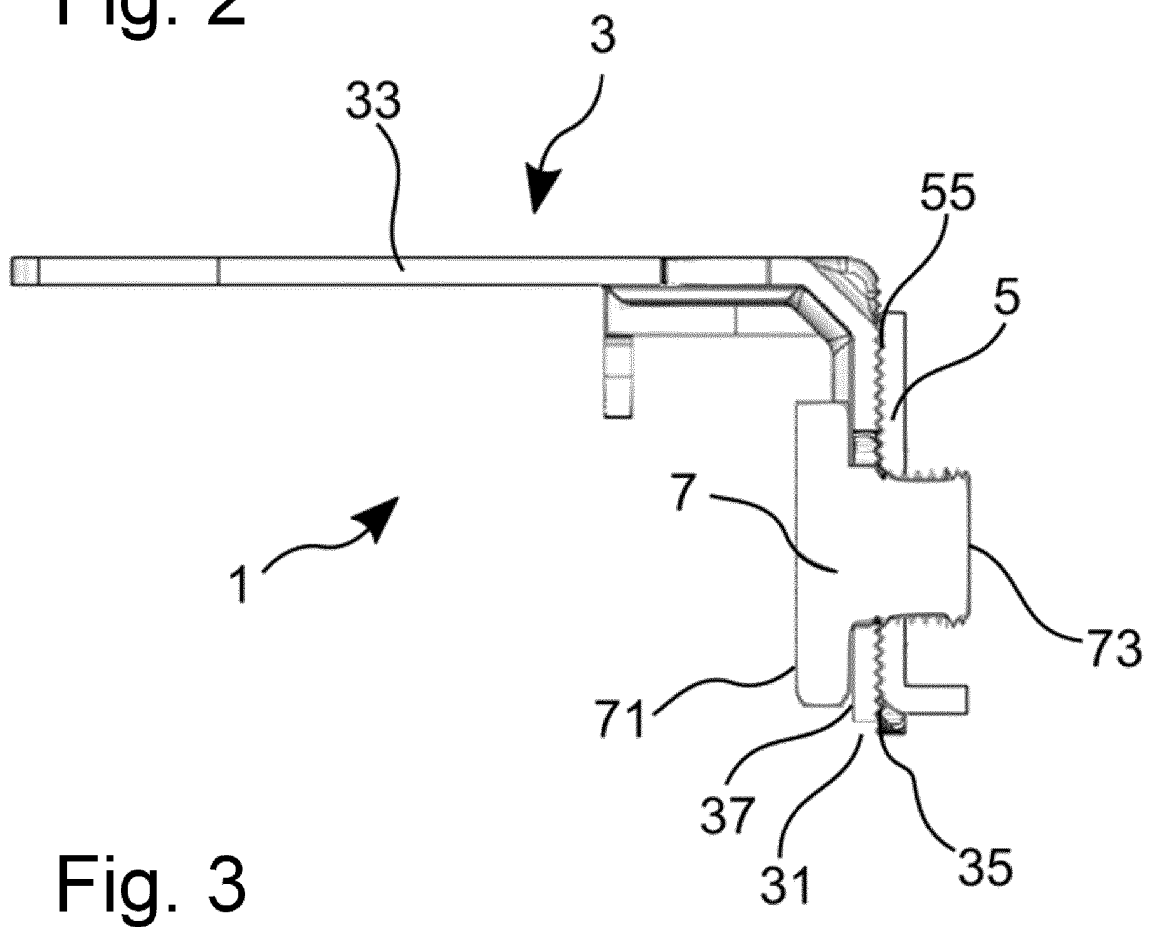
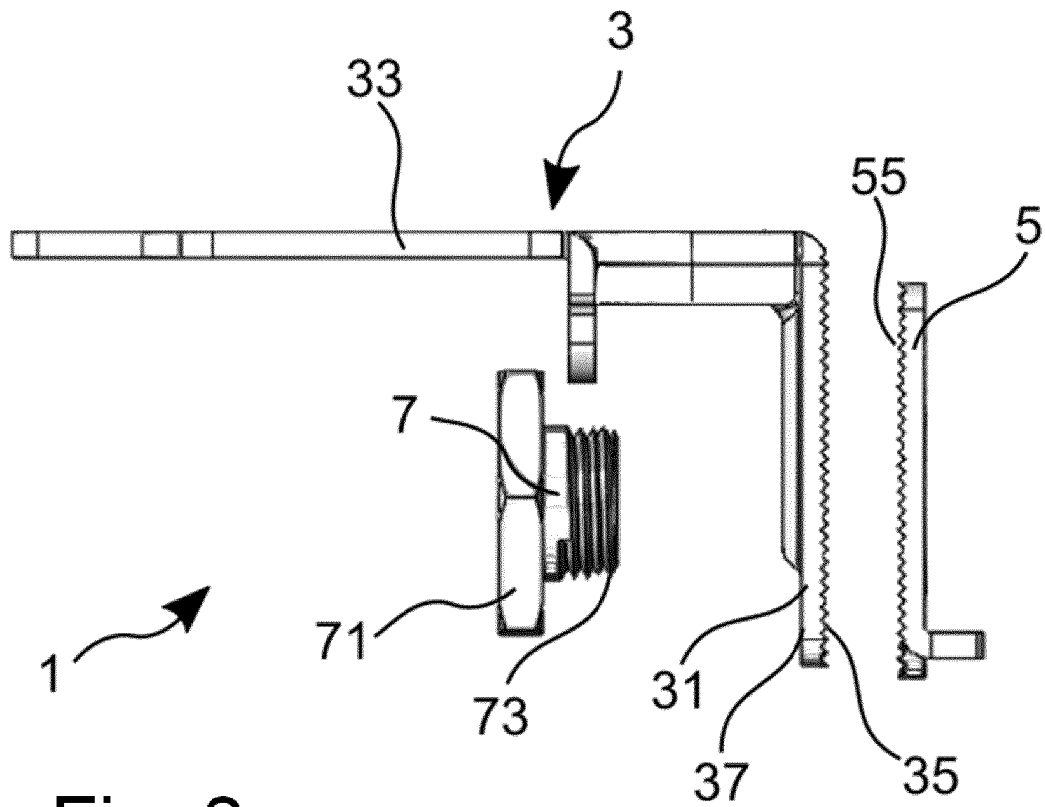


Fig. 1



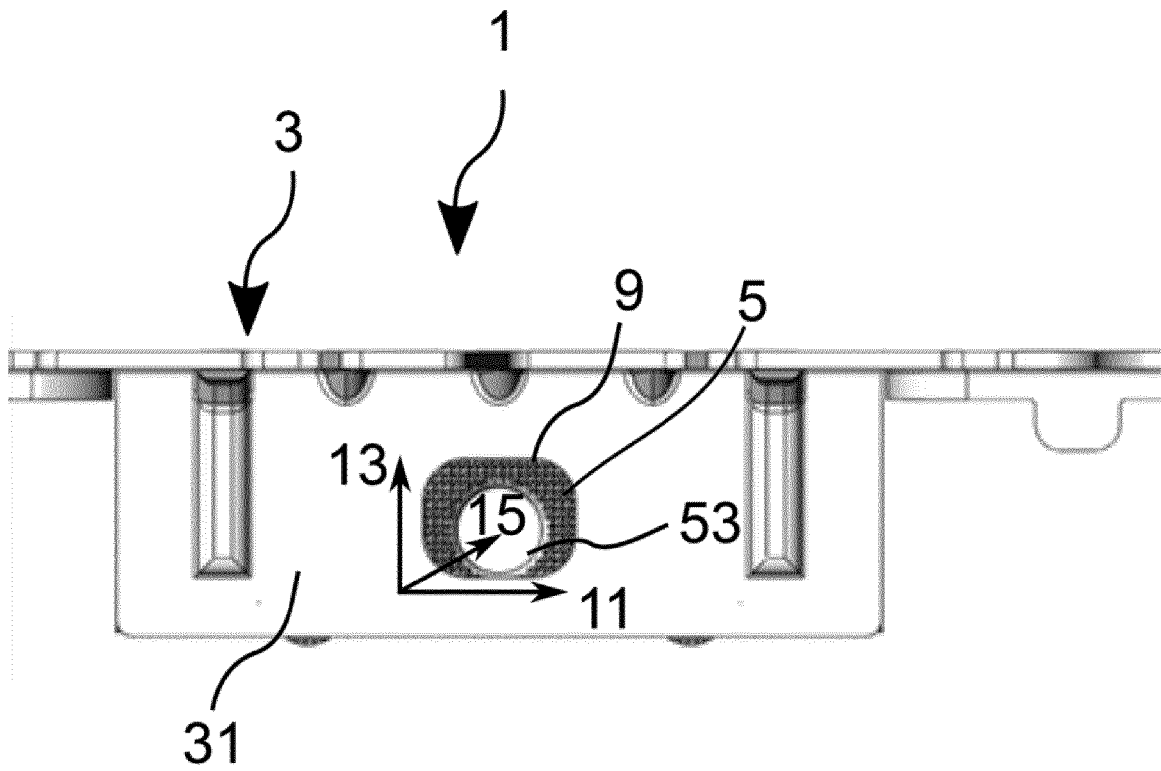


Fig. 4a

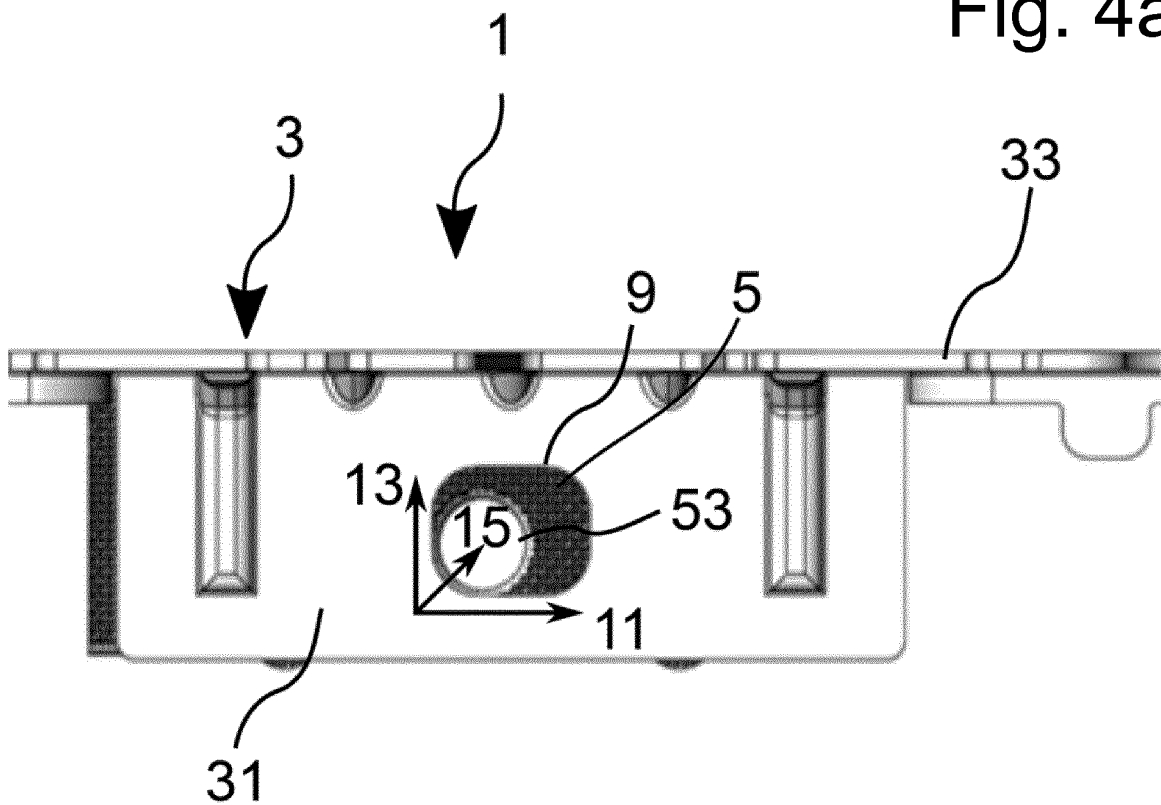


Fig. 4b

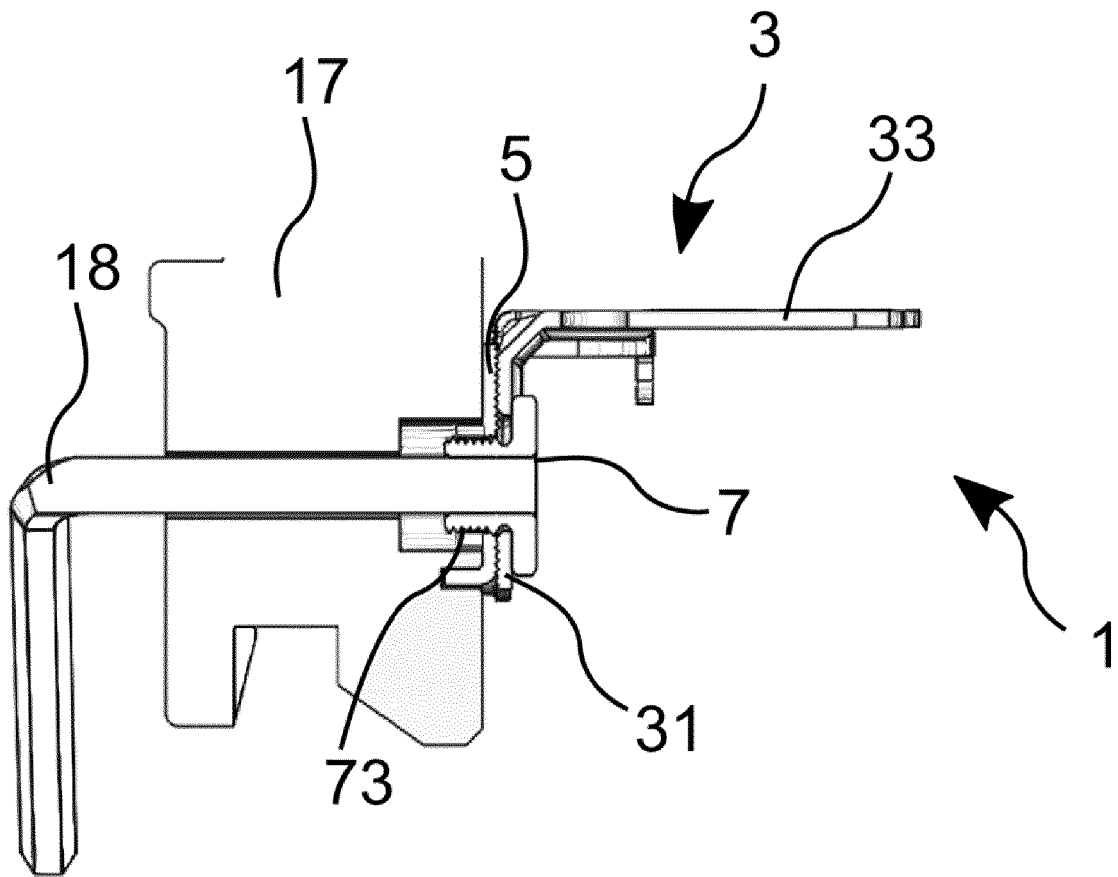
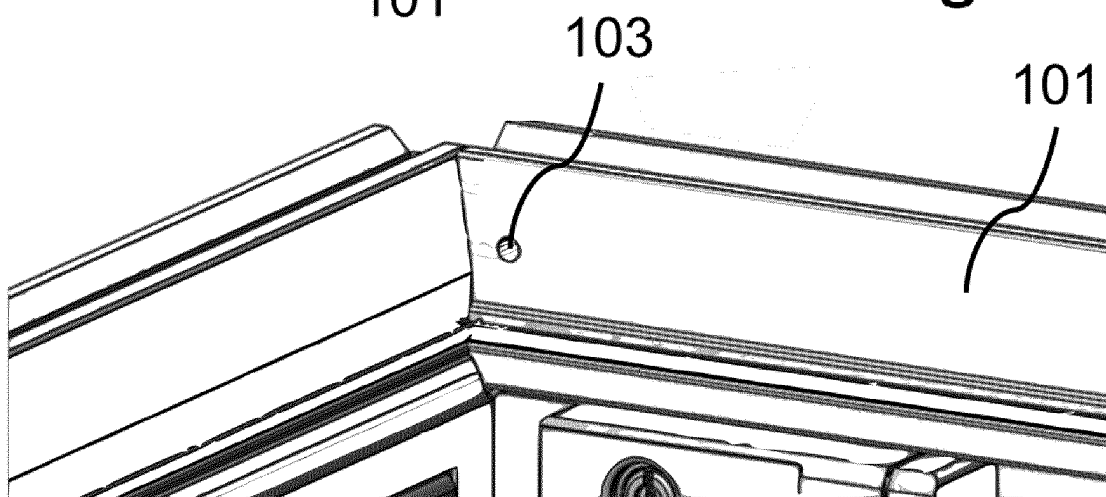
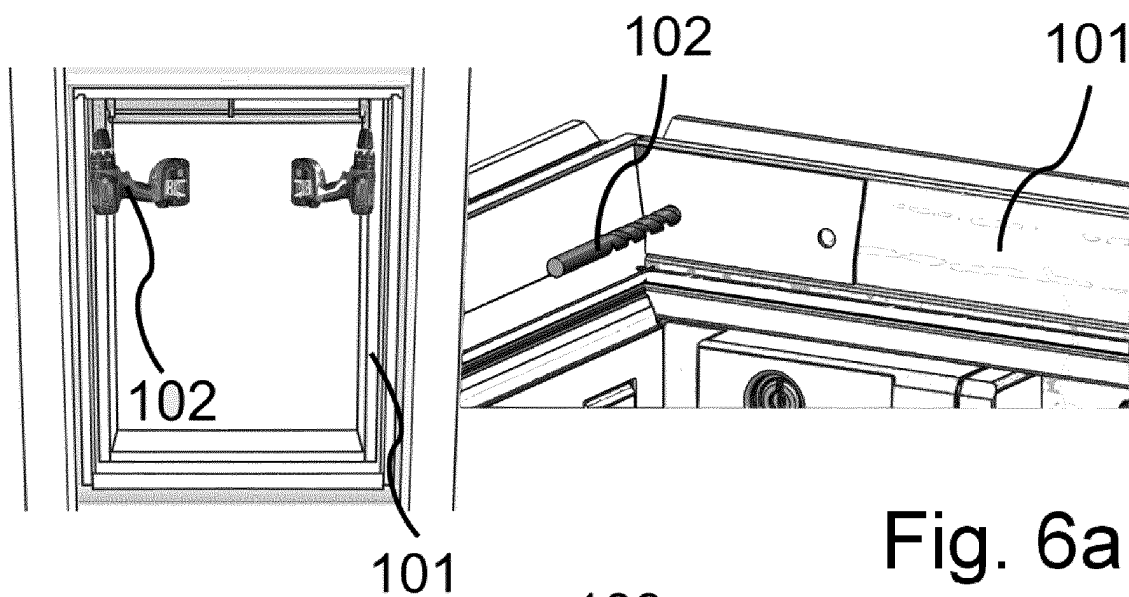


Fig. 5



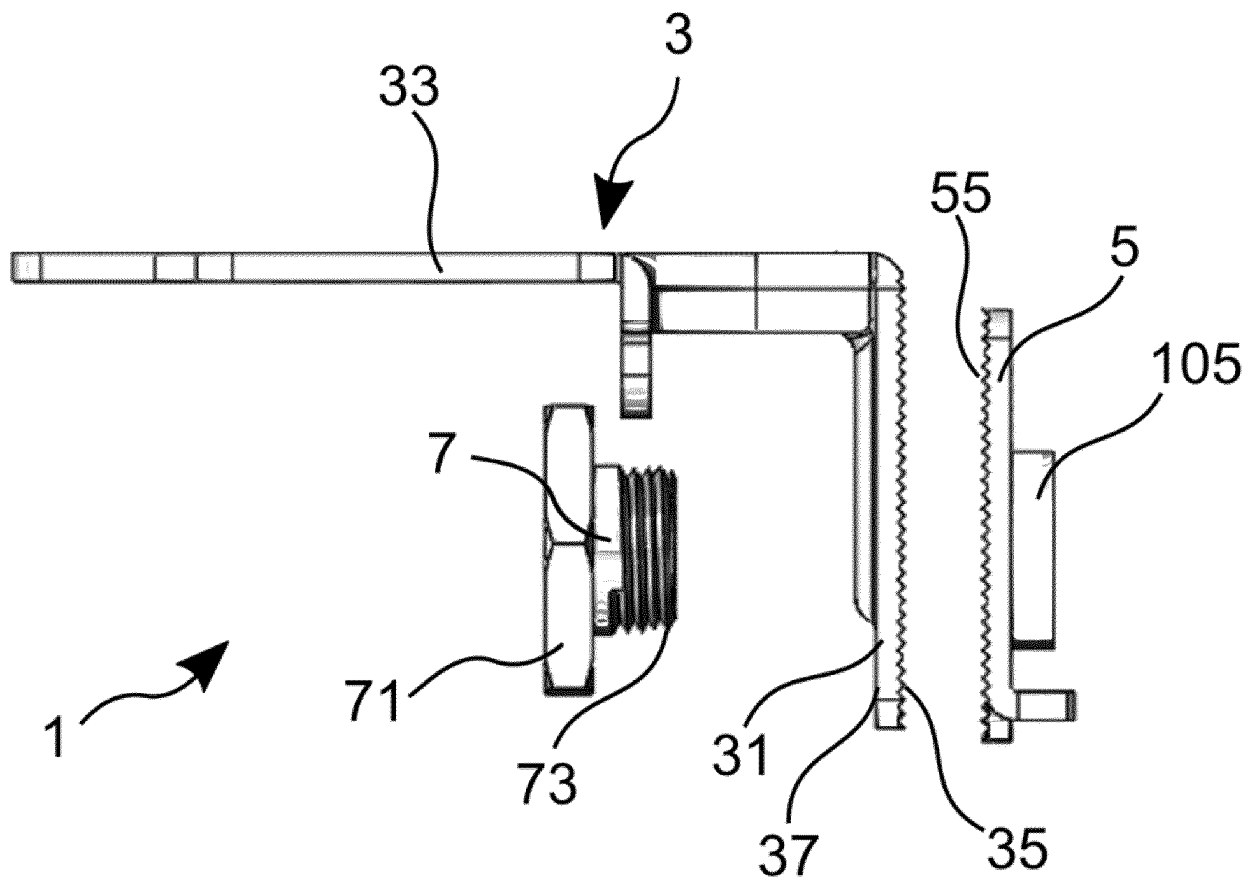


Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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