

(19)



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European Patent Office
Office européen des brevets



(11)

EP 1 211 364 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:
10.11.2004 Bulletin 2004/46

(51) Int Cl.7: **E04F 13/08**

(21) Application number: **01310002.9**

(22) Date of filing: **29.11.2001**

(54) **Brickwork support system**

Mauerwerk-Traganlage

Système de support pour maçonnerie

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE TR**

(30) Priority: **01.12.2000 GB 0029301**

(43) Date of publication of application:
05.06.2002 Bulletin 2002/23

(73) Proprietor: **Ancon CCL Limited
Sheffield S4 7UR (GB)**

(72) Inventor: **Law, Graham
Chesterfield S41 0DN (GB)**

(74) Representative: **Murnane, Graham John et al
Murgitroyd & Company,
165-169 Scotland Street
Glasgow G5 8PL (GB)**

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KEURINGEN , RIJSWIJK XP002235470 * page 1,
paragraph 1 - page 12, paragraph 6 ***

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Description

[0001] This invention relates to a support system, preferably but not exclusively for use in the support of cladding or facing for a structure.

[0002] It is standard practice in building construction and refurbishment to provide the building with a cladding or facing. Consequently there are a large number of known systems for supporting cladding or facings on the face of a structure.

[0003] It is known to provide an angle section member secured to the structure by bolts extending through slots in an upwardly extending leg in the angle section, to allow a small horizontal adjustment of the angle section. Normally, the angle section has an outwardly extending leg which projects into a bed joint between vertically adjacent bricks in the cladding. A disadvantage of such a system is that the bolts need to be located in the structure of the building with absolute accuracy in the vertical direction, or the additional cost of providing a cast-in serrated mounting means to provide a limited degree of vertical adjustment, must be incurred. Another disadvantage is that, in order to provide sufficient strength, the thickness of the angle section may be close to or greater than the joint thickness between vertically adjacent bricks. This requires the use of more expensive, so-called pistol bricks, if the original joint width is to be maintained at the position of the support.

[0004] To provide a more flexible system and in particular to improve adjustability, it is known to provide a horizontal locating bar on the structure, to which fabricated brackets are secured and are vertically adjustable by a screw system or the provision of serrations. An angle section support is located in seat portions provided in the bracket to provide support to the cladding. These supports may be screwed into the bracket, but they may also be simply hooked into the seats in the bracket, with the supports being secured by the seats when in operation.

[0005] Although the support hooked onto the bracket has a number of advantages over the screwed-in support, such as ease of manufacture and installation, the disadvantage of existing hooked supports is that they may easily be dislodged from their seats on the bracket. Furthermore, although less complicated than screw-in supports, the existing hooked-on supports are still relatively complicated to manufacture, with a resultant effect on manufacturing costs.

[0006] A support means of the type disclosed in the preamble of Claim 1 is known from US A 6128883 and the publication by Kiwa N. V. entitled "Metalen Met-selwerkondersteuning" (Certificatie en Keuringen, Nummer: K14391/01).

[0007] Both US A 6128883 and the publication by Kiwa N. V. disclose means for supporting cladding or facings consisting of a bracket and an angled section. As with the present invention, both arrangements only allow a small degree of limited rotation of the angled sec-

tion about its longitudinal axis when being installed on the bracket. However, unlike the present invention, relative rotation of the bracket and angled section about the longitudinal axis is not prevented, except by insertion of a wedge in US ' 883. Furthermore, in Kiwa N.V. the angled sections are simply hooked into the brackets, and they may be easily dislodged as a result.

[0008] It is therefore the aim of the present invention to provide a brickwork support system that is simple to produce and install, and which still retains a secure angle between the bracket and support without the need for additional components.

[0009] According to a first aspect of the present invention, there is provided a support means in accordance with Claim 1.

[0010] Preferred embodiments of this support means are defined in claims 2-18.

[0011] According to a second aspect of the present invention, there is provided a support means in accordance with claim 19. According to a third aspect of the present invention, there is provided a method of supporting cladding on a structure in accordance with claim 20.

[0012] A preferred embodiment of the present invention will now be described, by way of example only, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view of a bracket and support member;

Figures 2(a)-(c) are front, side and plan views of a bracket similar to that of Figure 1 but having a vertical slot;

Figure 3 is a side view of a brickwork support system;

Figure 4 is a side view of a second embodiment of the brickwork support system;

Figure 5 shows a side view of a third embodiment of the brickwork support system;

Figures 6(a)-(c) are front, side and plan views of a fourth embodiment of the brickwork support system; and

Figures 7(a) - (c) are front, side and plan views of a fifth embodiment of the brickwork support system.

[0013] Figure 1 shows a bracket 1 for attachment through a fixing aperture 4 to a bolt (not shown) extending from a cast-in channel member on a concrete wall (or an expanding bolt projecting from a hole drilled in the concrete). Figure 1 also shows a support member 2 for supporting a second structure in the form of a brick cladding, at a distance from the first structure. The support member 2 is movable relative to the bracket 1 along the

wall.

[0014] The fixing aperture 4 is a slot disposed at an angle so as to allow adjustment in directions having a vertical and/or horizontal component, and is formed in a web portion 5 of the bracket 1 which contacts the concrete wall when in use. Figure 2 shows an alternative arrangement of the fixing aperture 4 that is disposed in a substantially vertical direction. In addition, Figure 2 also shows an optional plurality of detent portions about the fixing aperture. The detent portions are shown here as a sawtooth arrangement 13. The bracket may be provided with the sawtooth arrangement 13 so as to provide a more secure fixing. By placing a washer or shim (not shown) with the same sawtooth pattern on the bolt before attaching the securing nut, the teeth of the washer will mate with the teeth of the sawtooth arrangement 13 when the nut is tightened on the bolt. This will then prevent any vertical slip by the bracket when in use.

[0015] The bracket 1 includes a pair of flanges 6 that project in a plane substantially perpendicular to the web portion 5. The flanges 6 each have a formation in the form of a substantially L-shaped slot 7 that has substantially vertical and horizontal portions 7a, 7b and is formed so as to receive a corresponding portion of the support member 2. The horizontal portion 7b is wider than the vertical portion 7a, to aid sliding, since in use the support member 2 does not bear against the upper edge of the horizontal portion 7b.

[0016] The profile of the support member 2 is such that it may fit into the slots 7 of the connecting sections 6. The support member 2 is made up of a first substantially vertical portion 8a and a substantially horizontal portion 8b that enter the slots 7, and a substantially vertical connecting web 10 which continues into a substantially horizontal second section 11 which has a load bearing projection 17 which extends in a plane perpendicular to the web portion 5 of the bracket 1 when in use.

[0017] The support member 2 is formed by pressing or bending from one piece of sheet metal, typically steel or stainless steel. The bracket 1 is also of unitary construction. The length of the support member can be determined depending on the requirements of the job. The advantage of producing the support member from one piece of metal is that no welding or complex folding is required. In some existing support systems, the support member is folded over such that two surfaces of the member are adjacent one another and then welded together. This leads to corrosion at the weld and where the two surfaces meet, and the area must be descaled to avoid such problems. No such problems occur with the arrangement of the present invention.

[0018] Figure 3 shows the bracket 1 and support member 2 arrangement when in use to support brick cladding 9 on the load bearing projection 17. A number of brackets 1 are secured to the bolts (not shown) extending from the concrete wall 12 and adjusted to be in horizontal alignment to receive the support member 2. The support member 2 is then slid through the slots 7

of each bracket 1 such that the flange 8a of the support member 2 is secured in the substantially vertical portions 7a of the slots 7, and the connecting web section 10 lies flush with front edges 6a of the flanges 6.

[0019] By providing the support member 2 in continuous lengths, it is no longer necessary to provide a plurality of support members and the clips that are usually required to fix adjacent support members together. The support member 2 of the present invention may be supplied loose and adjusted on site, or else it can be tack welded to set the bracket positions.

[0020] By providing slots 7 that are formed to mirror the profile of the support member 2, there is no need for additional adapters to be inserted into the slots 7 with the support member to obtain a secure fixing. For this reason, the installation of the present invention is much simpler than existing support systems that require the use of adjustable clamps, spacers and the like to secure the support member to the bracket. As a result, the manufacture of the present invention is also simpler and more cost effective than that of existing support systems.

[0021] Once the support member is installed, it cannot be moved laterally or vertically and cannot be rotated. However, the formation of the support member and slots in the bracket allow relative longitudinal sliding movement of the support member and brackets.

[0022] Thus, the main advantage of the present invention over existing support systems is that the horizontal position of the brackets may be adjusted thanks to the permitted relative longitudinal sliding movement of the support member and brackets. This accommodates errors in the drilling of the steelwork to which the brackets are mounted, and also allows the positioning of the brackets to avoid reinforcement bars in concrete structures where the brackets are mounted on such structures. Furthermore, corner sections can be used where the brackets are horizontally adjustable relative to the support member. Such corner sections are made up of two support members each usually having a 45 degree end face so that placing the two end faces together produces a 90 degree corner. For small returns, the two angled faces of the support members may be welded together. Alternatively, the end faces may be mitered with a gap, usually 10mm, between the faces. In addition, the brackets may be manufactured in differing sizes or widths to compensate for any uneven surfaces encountered, so that the support member may still slide through the slots of the brackets cleanly. Shims can be provided with the brackets for any fine adjustment required when installing.

[0023] Modifications and improvements may be incorporated without departing from the scope of the invention as defined in the appended claims. One modification to the present invention is shown in Figure 4. Here, the bracket 1 has a number of slots 7 so that a number of support members 2 may be accommodated at the same time. It should also be noted, however, that in

brackets having only one slot, that slot may be positioned at any position on the bracket, not just near the base as illustrated in the embodiments herein. A further modification would be to replace the vertical portion 7a of the slot with an upwardly sloping portion (not shown) which is inclined at a non-perpendicular angle to the horizontal portion 7b. The slot 7 may include a further non-vertical portion (not shown) at the end of the vertical portion 7a, distal from the horizontal portion 7b. The horizontal portion 7b may be made narrow, to provide a closer fit to the web 8b of the support member 2, while the vertical portion 7a may be longer to allow an increased clearance and tolerance to the height of the flange 8a of the support member 2.

[0024] A further adaptation is shown in Figure 5, where the front edge of the vertical portion 7a of the slots 7 and the front edges 6a of the flanges 6 are provided with nib portions 40. The nib portions 40 are protrusions which project from the respective aforementioned edges on the flanges 6 in order to ensure that load transfer from the support member 2 to the bracket 1 takes place at pre-selected points.

[0025] Although it is envisaged that the support system would be utilised with a number of brackets, it may also be used with only one bracket and a short length of support member, as shown in the embodiment of Figures 6(a)-(c). Figure 5 shows a bracket 21 substantially the same as described in the previous embodiments, with a fixing aperture 24 for receipt of a bolt (not shown) so that the bracket 21 may be fixed in the manner previously described. The bracket 21 has a web portion 25 which contacts the first structure when in use and a pair of flanges 26 that project in a plane substantially perpendicular to the web portion 25. The flanges 26 each have a slot 27 that has substantially vertical and horizontal portions 27a, 27b and which receives a support member 22, again substantially in the form previously described.

[0026] The support member 22 is made up of a first substantially vertical portion 28a and a substantially horizontal portion 28b whose shape corresponds to the slots 27 of the bracket 21. Also provided on the support member 22 is a substantially vertical connecting web 30 which continues into a substantially horizontal load bearing portion 31 which extends in a plane perpendicular to the web portion 25 of the bracket 21. If required, the load bearing portion 31 may be provided with a hook 32 with which to engage the cladding.

[0027] The difference between the embodiment of Figures 6(a)-(c) and the previously described embodiments is that here the support system is provided with a fixing arrangement to secure the support member 22 in position on the bracket 21. The fixing arrangement comprises a fastener 23 and bolt 29 which are provided in order to prevent the support member 22 moving in the longitudinal direction relative to the bracket 21 under dynamic loading. The fastener 23 is substantially U-shaped with an aperture in the centre for receiving the

bolt 29. In this embodiment, the support member 22 also has an aperture in the vertical portion 28a to allow the bolt 29 to pass through. As seen best in Figure 6(c), once in position, the fastener 23 fits over the edges of the two flanges 26 of the bracket 21. Thus, once the bolt 29 is fitted through the fastener 23 and the support member 22, and a nut (not shown) is fitted to the bolt 29, the combination of fastener 23 and bolt 29 holds the support member 22 securely in place.

[0028] Figures 7(a)-(c) show a further embodiment of the brickwork support system of the present invention. This embodiment is identical to that shown in Figures 6(a)-(c) save that a different type of fastener is used in the fixing arrangement. In the embodiment of Figures 7(a)-(c), the fastener 33 comprises a plate member having a bolt receiving portion 33a and a support member retaining portion 33b which is at an angle of more than 90 degrees to the bolt receiving portion 33a. Once the support member 22 is installed in the bracket 21, the fastener 33 is fixed in place as described in respect of the previous embodiment. With the fastener 33 provided with the angled retaining portion 33b, the support member 22 is held against the lower edge of the horizontal portion 27b of the slot 27, as best seen in Figure 7(b).

[0029] It is also envisaged that the system can be supplied with a number of brackets already held on the support member. In this case, folding tabs would be provided at opposite ends of the support member flange in order to prevent the brackets sliding off the support member when being installed. Once installed, the tabs can be folded back into the flange of the support member so as not to impede the positioning of the brackets.

Claims

1. A support means comprising:

at least one bracket (1,21) provided with a first fixing means for securing to a first structure and at least one longitudinally extending support member (2,22) for supporting a second structure at a distance from the first structure, the support member (2,22) having a substantially horizontal load-bearing projection (17,31) and a formation which is engageable with at least one corresponding slot (7,27) on the bracket to provide vertical support of the support member (2,22), the support member formation and slot (7,27) being shaped so as to permit relative longitudinal sliding movement of the support member (2,22) and bracket (1,21) and to prevent relative lateral horizontal movement, vertical movement and relative rotation about the longitudinal axis of the support member (2,22) and bracket (1,21),

characterised in that the support member formation includes:

a flange having a first substantially vertical portion (8a,28a) and a second substantially horizontal portion (8b,28b); and
the support member (2,22) includes a connecting web (10,30) connecting the second flange portion (8b,28b) and the load-bearing projection (17,31), wherein the connecting web (10,30) lies in a substantially vertical plane.

2. The support means of Claim 1, wherein the connecting web (10,30) of the support member contacts the bracket (1,21) when the support member (2,22) is in use.
3. The support means of either Claim 1 or Claim 2, wherein the first fixing means is interposed between the bracket (1,21) and the first structure to provide a connection for the bracket (1,21) to the structure.
4. The support means of any preceding claim, wherein the bracket (1,21) is provided with an aperture (4,24), and wherein the first fixing means comprises a bolt or stud adapted to be anchored to the first structure and extending through said aperture (4,24).
5. The support means of Claim 4, wherein the first fixing means further comprises a structural support channel adapted to be set into the first structure and securing said bolt or stud.
6. The support means of Claim 5, wherein the support channel is adapted to be cast into concrete of the first structure.
7. The support means of Claim 5, wherein the support channel is adapted to be installed after completion of the first structure.
8. The support means of any preceding claim, wherein the slot (7,27) comprises a first substantially horizontal portion (7b,27b) and a second substantially vertical portion (7a,27a).
9. The support means of any preceding claim, wherein the slot (7,27) is substantially L-shaped.
10. The support means of any preceding claim, wherein the support member flange portions fit within the slot of the bracket (1,21) such that the load bearing projection (17,31) can engage and support the second structure.
11. The support means of Claim 10, wherein the bracket (1,21) comprises a bracket web portion (5,25)

which contacts the first structure when in use, and wherein the load bearing projection (17,31) projects in a plane substantially perpendicular to the bracket web portion (5,25).

12. The support means of Claim 11, wherein the bracket (1,21) further comprises at least one bracket flange (6,26) which projects in a plane substantially perpendicular to the bracket web portion (5,25), the at least one slot (7,27) being provided in the at least one bracket flange (6,26) to receive the support member flange.
13. The support means of Claim 12, wherein the bracket (1,21) is a channel member having two bracket flanges (6,26), each bracket flange (6,26) having a slot (7,27) therein.
14. The support means of Claim 13, wherein each bracket flange (6,26) may have a number of slots (7,27) thereon for engaging a corresponding number of support members (2,22).
15. The support means of any preceding claim, wherein the first fixing means is adapted to allow adjustment of the bracket (1,21) in directions having a vertical and/or horizontal component.
16. The support means of any preceding claim, wherein the bracket (21) is provided with a second fixing means (23,29) adapted to secure the support member (22) to the bracket (21) so as to prevent relative longitudinal sliding movement of the support member (22) and bracket (21) once said support member (22) is in the desired position.
17. The support means of any preceding claim, wherein the support means comprises one bracket (1,21), the support member (2,22) engaging the bracket (1,21).
18. The support means of any of Claims 1 to 16, wherein said support means comprises a plurality of brackets (1,21), the support member (2,22) engaging each of the brackets (1,21).
19. A support means comprising:
 - a longitudinally extending support member (2,22) having a load-bearing projection (17,31) for supporting cladding for a building;
 - and a plurality of spaced-apart brackets (1,21) fixed to the wall of the building;
 - the support member (2,22) and the brackets (1,21) being mutually engageable to permit relative longitudinal sliding movement of the support member (2,22) and brackets (1,21) and to prevent relative lateral movement, vertical

movement and relative rotation about the longitudinal axis of the support member (2,22) and bracket (1,21)

characterised in that the support member is provided with a formation with which to engage the bracket (1,21), the formation including:

a flange having a first substantially vertical portion (8a,28a) and a second substantially horizontal portion (8b,28b), wherein the flange engages at least one corresponding slot on the bracket; and
the support member (2,22) includes a connecting web (10,30) connecting the second flange portion (8b,28b) and the load-bearing projection (17,31), wherein the connecting web (10,30) lies in a substantially vertical plane.

20. A method of supporting cladding on a structure comprising:

securing a plurality of brackets (1,21) to the structure, and
engaging a support member (2,22) with slots (7,27) provided in said plurality of brackets (1,21) by sliding the support member (2,22) in a direction parallel to its longitudinal axis, the slots (7,27) preventing relative lateral horizontal movement, vertical movement and relative rotation about the longitudinal axis of the support member (2,22) and brackets (1,21), and supporting one or more cladding members on a load-bearing projection (17,31) of said support member (2,22),

characterised in that the engagement of the support member (2,22) and brackets (1,21) is facilitated by a formation on the support member (2,22), the formation including:

a flange having a first substantially vertical portion (8a,28a) and a second substantially horizontal portion (8b,28b); and
the support member (2,22) including a connecting web (10,30) connecting the second flange portion (8b,28b) and the load-bearing projection (17,31), wherein the connecting web (10,30) lies in a substantially vertical plane.

Patentansprüche

1. Ein Stützmittel, das Folgendes beinhaltet:

mindestens einen Träger (1, 21), der mit einem ersten Fixiermittel zum Sichern an einer ersten Struktur versehen ist, und

mindestens ein sich längs erstreckendes Stützelement (2, 22) zum Stützen einer zweiten Struktur in einem Abstand von der ersten Struktur,

wobei das Stützelement (2, 22) einen im Wesentlichen horizontalen, Last tragenden Vorsprung (17, 31) und ein Gebilde, das in mindestens einen entsprechenden Schlitz (7, 27) auf dem Träger eingreifen kann, aufweist, um dem Stützelement (2, 22) vertikale Stützung bereitzustellen, wobei das Gebilde des Stützelements und der Schlitz (7, 27) geformt sind, um eine relative Längsgleitbewegung des Stützelements (2, 22) und des Trägers (1, 21) zu erlauben und um eine relative seitliche, horizontale Bewegung, vertikale Bewegung und relative Drehung um die Längsachse des Stützelements (2, 22) und Trägers (1, 21) zu verhindern,

dadurch gekennzeichnet, dass das Gebilde des Stützelements Folgendes umfasst:

einen Flansch, der einen ersten, im Wesentlichen vertikalen Abschnitt (8a, 28a) und einen zweiten, im Wesentlichen horizontalen Abschnitt (8b, 28b) aufweist; und
das Stützelement (2, 22) einen verbindenden Steg (10, 30) umfasst, der den zweiten Flanschabschnitt (8b, 28b) und den Last tragenden Vorsprung (17, 31) verbindet, wobei der verbindende Steg (10, 30) in einer im Wesentlichen vertikalen Ebene liegt.

2. Stützmittel gemäß Anspruch 1, wobei der verbindende Steg (10, 30) des Stützelements den Träger (1, 21) berührt, wenn das Stützelement (2, 22) in Gebrauch ist.

3. Stützmittel gemäß entweder Anspruch 1 oder Anspruch 2, wobei das erste Fixiermittel zwischen den Träger (1, 21) und die erste Struktur gesetzt ist, um dem Träger (1, 21) eine Verbindung an die Struktur bereitzustellen.

4. Stützmittel gemäß einem der vorhergehenden Ansprüche, wobei der Träger (1, 21) mit einer Öffnung (4, 24) versehen ist, und wobei das erste Fixiermittel einen Bolzen oder Stift beinhaltet, der angepasst ist, um an der ersten Struktur verankert zu werden und sich durch die Öffnung (4, 24) zu erstrecken.

5. Stützmittel gemäß Anspruch 4, wobei das erste Fixiermittel ferner einen strukturellen Stützkanal beinhaltet, der angepasst ist, in die erste Struktur gesetzt zu werden, und den Bolzen oder Stift sichert.

6. Stützmittel gemäß Anspruch 5, wobei der Stützkanal angepasst ist, in den Beton der ersten Struktur

gegossen zu werden.

7. Stützmittel gemäß Anspruch 5, wobei der Stützkana-
l angepasst ist, nach Vervollständigung der er-
sten Struktur installiert zu werden. 5
8. Stützmittel gemäß einem der vorhergehenden An-
sprüche, wobei der Schlitz (7, 27) einen ersten, im
Wesentlichen horizontalen Abschnitt (7b, 27b) und
einen zweiten, im Wesentlichen vertikalen Ab- 10
schnitt (7a, 27a) beinhaltet.
9. Stützmittel gemäß einem der vorhergehenden An-
sprüche, wobei der Schlitz (7, 27) im Wesentlichen
L-förmig ist. 15
10. Stützmittel gemäß einem der vorhergehenden An-
sprüche, wobei die Flanschabschnitte des Stütze-
lements in den Schlitz des Trägers (1, 21) passen,
so dass der Last tragende Vorsprung (17, 31) in die 20
zweite Struktur eingreifen und sie stützen kann.
11. Stützmittel gemäß Anspruch 10, wobei der Träger
(1, 21) einen Trägerstegabschnitt (5, 25) beinhaltet,
der die erste Struktur bei Gebrauch berührt, und
wobei der Last tragende Vorsprung (17, 31) in einer 25
Ebene, die im Wesentlichen senkrecht zum Träger-
stegabschnitt (5, 25) liegt, vorsteht.
12. Stützmittel gemäß Anspruch 11, wobei der Träger 30
(1, 21) ferner mindestens einen Trägerflansch (6,
26) beinhaltet, der in einer Ebene, die im Wesentli-
chen senkrecht zum Trägerstegabschnitt (5, 25)
liegt, vorsteht, wobei der mindestens eine Schlitz 35
(7, 27) in dem mindestens einen Trägerflansch (6,
26) bereitgestellt ist, um den Stützelementflansch
aufzunehmen.
13. Stützmittel gemäß Anspruch 12, wobei der Träger 40
(1, 21) ein Kanalelement ist, das zwei Trägerflan-
sche (6, 26) aufweist, wobei jeder Trägerflansch (6,
26) darin einen Schlitz (7, 27) aufweist.
14. Stützelement gemäß Anspruch 13, wobei jeder Trä- 45
gerflansch (6, 26) darauf eine Anzahl Schlitz (7,
27) zum Eingreifen einer entsprechenden Anzahl
Stützelemente (2, 22) aufweisen kann.
15. Stützmittel gemäß einem der vorhergehenden An- 50
sprüche, wobei das erste Fixiermittel angepasst ist,
um eine Einstellung des Trägers (1, 21) in Richtun-
gen mit einer vertikalen und/oder einer horizontalen
Komponente zu ermöglichen.
16. Stützmittel gemäß einem der vorhergehenden An- 55
sprüche, wobei der Träger (21) mit einem zweiten
Fixiermittel (23, 29) versehen ist, das angepasst ist,
um das Stützelement (22) am Träger (21) zu si-

chern, um eine relative Längsgleitbewegung des
Stützelements (22) und des Trägers (21) zu verhin-
dern, sobald das Stützelement (22) in der er-
wünschten Position ist.

17. Stützmittel gemäß einem der vorhergehenden An-
sprüche, wobei das Stützmittel einen Träger (1, 21)
beinhaltet und das Stützelement (2, 22) in den Trä-
ger (1, 21) eingreift.

18. Stützmittel gemäß einem der Ansprüche 1 bis 16,
wobei das Stützmittel eine Vielzahl von Trägern (1,
21) beinhaltet und das Stützelement (2, 22) in jeden
der Träger (1, 21) eingreift.

19. Ein Stützmittel, das Folgendes beinhaltet:

ein sich längs erstreckendes Stützelement (2,
22), das einen Last tragenden Vorsprung (17,
31) zum Stützen der Fassade für ein Gebäude
aufweist;

und eine Vielzahl von mit Abstand angeordne-
ten Trägern (1, 21), die an der Wand des Ge-
bäudes fixiert sind;

wobei das Stützelement (2, 22) und die Träger (1,
21) ineinander eingreifen können, um eine relative
Längsgleitbewegung des Stützelements (2, 22) und
der Träger (1, 21) zu erlauben und um eine relative
seitliche Bewegung, vertikale Bewegung und rela-
tive Drehung um die Längsachse des Stützele-
ments (2, 22) und des Trägers (1, 21) zu verhindern.
dadurch gekennzeichnet, dass das Stützelement
mit einem Gebilde versehen ist, um damit in den
Träger (1,21) einzugreifen, wobei das Gebilde Fol-
gendes beinhaltet:

einen Flansch, der einen ersten, im Wesentli-
chen vertikalen Abschnitt (8a, 28a) und einen
zweiten, im Wesentlichen horizontalen Ab-
schnitt (8b, 28b) aufweist, wobei der Flansch in
mindestens einen entsprechenden Schlitz auf
dem Träger eingreift; und

das Stützelement (2, 22) einen verbindenden
Steg (10, 30) umfasst, der den zweiten
Flanschabschnitt (8b, 28b) und den Last tra-
genden Vorsprung (17, 31) verbindet, wobei
der verbindende Steg (10, 30) in einer im We-
sentlichen vertikalen Ebene liegt.

20. Ein Verfahren zum Stützen der Fassade auf einer
Struktur, das Folgendes beinhaltet:

Sichern einer Vielzahl von Trägern (1, 21) an
der Struktur, und

Eingreifen eines Stützelements (2, 22) in Schlitzze (7, 27), die in der Vielzahl von Trägern (1, 21) bereitgestellt sind, indem das Stützelement (2, 22) in eine zu seiner Längsachse parallele Richtung verschoben wird, wobei die Schlitzze (7, 27) eine relative seitliche, horizontale Bewegung, vertikale Bewegung und relative Drehung um die Längsachse des Stützelements (2, 22) und der Träger (1, 21) verhindern, und

Stützen eines oder mehrerer Fassadenelemente auf einem Last tragenden Vorsprung (17, 31) des Stützelements (2, 22),

dadurch gekennzeichnet, dass der Eingriff des Stützelements (2, 22) und der Träger (1, 21) durch ein Gebilde auf dem Stützelement (2, 22) erleichtert wird, wobei das Gebilde Folgendes umfasst:

einen Flansch, der einen ersten, im Wesentlichen vertikalen Abschnitt (8a, 28a) und einen zweiten, im Wesentlichen horizontalen Abschnitt (8b, 28b) aufweist; und

wobei das Stützelement (2, 22) einen verbindenden Steg (10, 30) umfasst, der den zweiten Flanschabschnitt (8b, 28b) und den Last tragenden Vorsprung (17, 31) verbindet, wobei der verbindende Steg (10, 30) in einer im Wesentlichen vertikalen Ebene liegt.

Revendications

1. Un moyen support comportant:

au moins une applique (1, 21) munie d'un premier moyen de fixation destinée à être assujettie à une première structure et

au moins un élément support s'étendant longitudinalement (2, 22) destiné à soutenir une deuxième structure à une distance de la première structure,

l'élément support (2, 22) ayant une saillie porteuse substantiellement horizontale (17, 31) et une formation qui peut être engagée dans au moins une fente correspondante (7, 27) sur l'applique pour fournir le support vertical de l'élément support (2, 22),

la fente et la formation d'élément support (7, 27) étant configurées de sorte à permettre le déplacement coulissant longitudinal relatif de l'élément support (2, 22) et de l'applique (1, 21) et à empêcher le déplacement horizontal latéral relatif, le déplacement vertical et la rotation relative autour de l'axe longitudinal de l'élément

support (2, 22) et de l'applique (1, 21),

caractérisé en ce que la formation d'élément support comprend :

un rebord ayant une première portion substantiellement verticale (8a, 28a) et une deuxième portion substantiellement horizontale (8b, 28b) ; et

l'élément support (2, 22) comprend une âme de raccordement (10, 30) raccordant la deuxième portion de rebord (8b, 28b) et la saillie porteuse (17, 31), dans lequel l'âme de raccordement (10, 30) se trouve dans un plan substantiellement vertical.

2. Le moyen support de la revendication 1, dans lequel l'âme de raccordement (10, 30) de l'élément support est en contact avec l'applique (1, 21) lorsque l'élément support (2, 22) est en utilisation.

3. Le moyen support de soit la revendication 1, soit la revendication 2, dans lequel le premier moyen de fixation est interposé entre l'applique (1, 21) et la première structure pour fournir un raccordement entre l'applique (1, 21) et la structure.

4. Le moyen support de n'importe quelle revendication précédente, dans lequel l'applique (1, 21) est munie d'une ouverture (4, 24), et dans lequel le premier moyen de fixation comporte un boulon ou un goujon adapté pour être ancré à la première structure et s'étendant à travers ladite ouverture (4, 24).

5. Le moyen support de la revendication 4, dans lequel le premier moyen de fixation comporte de plus un canal de support structurel adapté pour être établi dans la première structure et assujettissant ledit boulon ou ledit goujon.

6. Le moyen support de la revendication 5, dans lequel le canal de support est adapté pour être coulé dans du béton de la première structure.

7. Le moyen support de la revendication 5, dans lequel le canal de support est adapté pour être installé une fois la première structure achevée.

8. Le moyen support de n'importe quelle revendication précédente, dans lequel la fente (7, 27) comporte une première portion substantiellement horizontale (7b, 27b) et une deuxième portion substantiellement verticale (7a, 27a).

9. Le moyen support de n'importe quelle revendication précédente, dans lequel la fente (7, 27) est configurée substantiellement en L.

10. Le moyen support de n'importe quelle revendication précédente, dans lequel les portions de rebord d'élément support s'emboîtent dans la fente de l'applique (1, 21) de sorte que la saillie porteuse (17, 31) puisse s'engager dans et soutenir la deuxième structure. 5
11. Le moyen support de la revendication 10, dans lequel l'applique (1, 21) comporte une portion d'âme d'applique (5, 25) qui est en contact avec la première structure lorsqu'elle est en utilisation, et dans lequel la saillie porteuse (17, 31) fait saillie dans un plan qui est substantiellement perpendiculaire à la portion d'âme d'applique (5, 25). 10
12. Le moyen support de la revendication 11, dans lequel l'applique (1, 21) comporte de plus au moins un rebord d'applique (6, 26) qui fait saillie dans un plan qui est substantiellement perpendiculaire à la portion d'âme d'applique (5, 25), cette au moins une fente (7, 27) étant prévue dans cet au moins un rebord d'applique (6, 26) pour recevoir le rebord d'élément support. 15
13. Le moyen support de la revendication 12, dans lequel l'applique (1, 21) est un élément canal ayant deux rebords d'applications (6, 26), une fente (7, 27) se trouvant dans chaque rebord d'applique (6, 26). 20
14. Le moyen support de la revendication 13, dans lequel il peut se trouver un certain nombre de fentes (7, 27) sur chaque rebord d'applique (6, 26), lesquelles sont destinées à ce qu'un nombre correspondant d'éléments supports (2, 22) s'y engagent. 25
15. Le moyen support de n'importe quelle revendication précédente, dans lequel le premier moyen de fixation est adapté pour permettre l'ajustement de l'applique (1, 21) dans des sens ayant un composant vertical et/ou horizontal. 30
16. Le moyen support de n'importe quelle revendication précédente, dans lequel l'applique (21) est munie d'un deuxième moyen de fixation (23, 29) adapté pour assujettir l'élément support (22) à l'applique (21) de sorte à empêcher le déplacement coulissant longitudinal relatif de l'élément support (22) et de l'applique (21) une fois que ledit élément support (22) est dans la position souhaitée. 35
17. Le moyen support de n'importe quelle revendication précédente, dans lequel le moyen support comporte une applique (1, 21), l'élément support (2, 22) s'engageant dans l'applique (1, 21). 40
18. Le moyen support de n'importe lesquelles des revendications 1 à 16, dans lequel ledit moyen support comporte une pluralité d'applications (1, 21), l'élé- 45

ment support (2, 22) s'engageant dans chacune des applications (1, 21).

19. Un moyen support comportant :

un élément support s'étendant longitudinalement (2, 22) ayant une saillie porteuse (17, 31) destinée à soutenir du bardage pour un bâtiment ;

et une pluralité d'applications espacées les unes des autres (1, 21) fixées au mur du bâtiment ;

l'élément support (2, 22) et les applications (1, 21) pouvant s'engager mutuellement pour permettre le déplacement coulissant longitudinal relatif de l'élément support (2, 22) et des applications (1, 21) et empêcher le déplacement latéral relatif, le déplacement vertical et la rotation relative autour de l'axe longitudinal de l'élément support (2, 22) et de l'applique (1, 21),

caractérisé en ce que l'élément support est muni d'une formation dans laquelle engager l'applique (1, 21), la formation comprenant :

un rebord ayant une première portion substantiellement verticale (8a, 28a) et une deuxième portion substantiellement horizontale (8b, 28b), dans lequel le rebord s'engage dans au moins une fente correspondante sur l'applique ; et

l'élément support (2, 22) comprend une âme de raccordement (10, 30) raccordant la deuxième portion de rebord (8b, 28b) et la saillie porteuse (17, 31), dans lequel l'âme de raccordement (10, 30) se trouve dans un plan substantiellement vertical.

20. Une méthode pour soutenir du bardage sur une structure comportant :

l'assujettissement d'une pluralité d'applications (1, 21) à la structure, et

l'engagement d'un élément support (2, 22) dans des fentes (7, 27) prévues dans ladite pluralité d'applications (1, 21) en faisant coulisser l'élément support (2, 22) dans un sens parallèle à son axe longitudinal, les fentes (7, 27) empêchant le déplacement horizontal latéral relatif, le déplacement vertical et la rotation relative autour de l'axe longitudinal de l'élément support (2, 22) et de l'applique (1, 21), et

la mise en appui d'un ou de plusieurs éléments de bardage sur une saillie porteuse (17, 31) dudit élément support (2, 22),

caractérisée en ce que l'engagement de l'élément support (2, 22) et des appliques (1, 21) est facilité par une formation sur l'élément support (2, 22), la formation comprenant :

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un rebord ayant une première portion substantiellement verticale (8a, 28a) et une deuxième portion substantiellement horizontale (8b, 28b) ; et

10

l'élément support (2, 22) comprenant une âme de raccordement (10, 30) raccordant la deuxième portion de rebord (8b, 28b) et la saillie porteuse (17, 31), dans laquelle l'âme de raccordement (10, 30) se trouve dans un plan substantiellement vertical.

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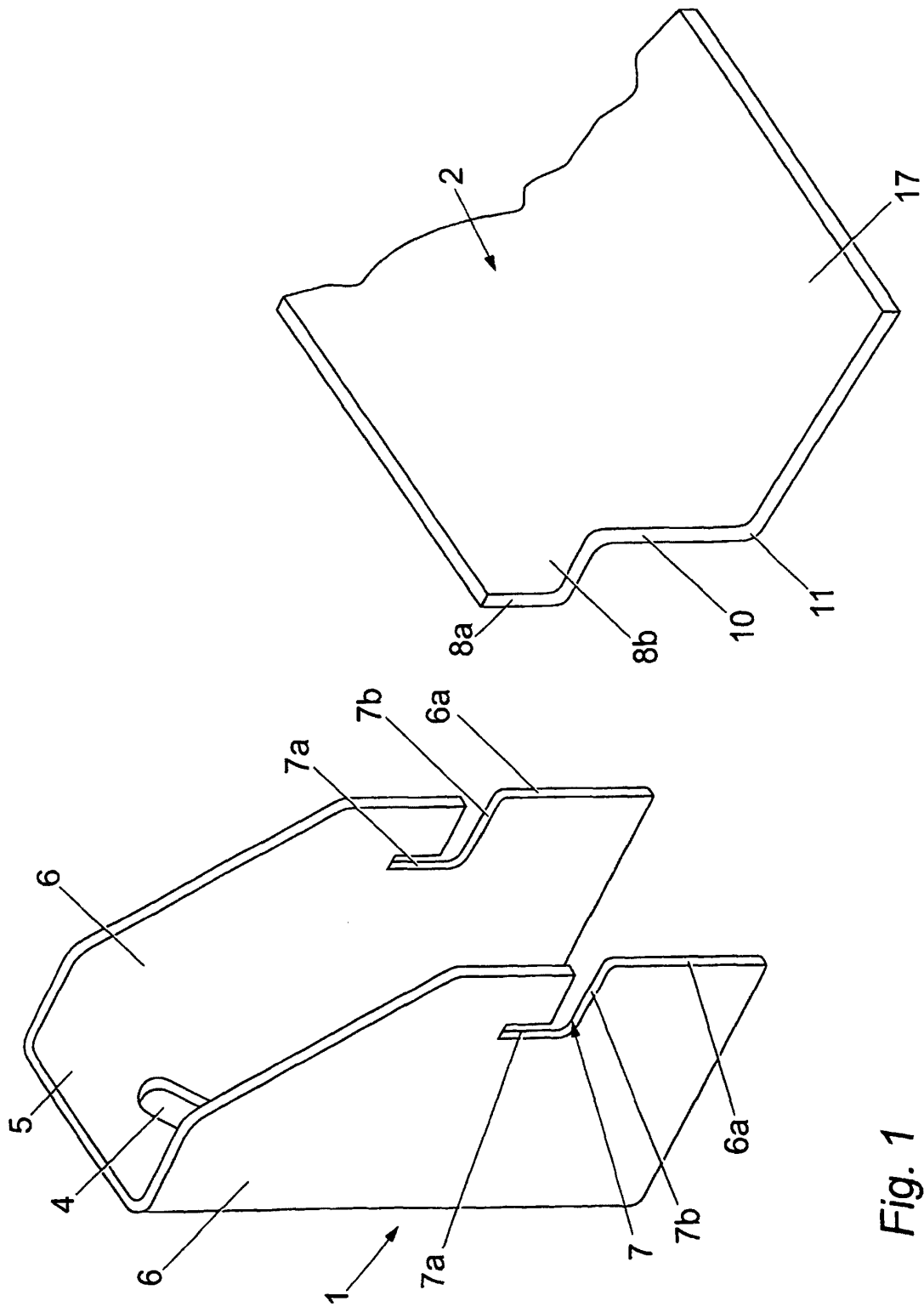
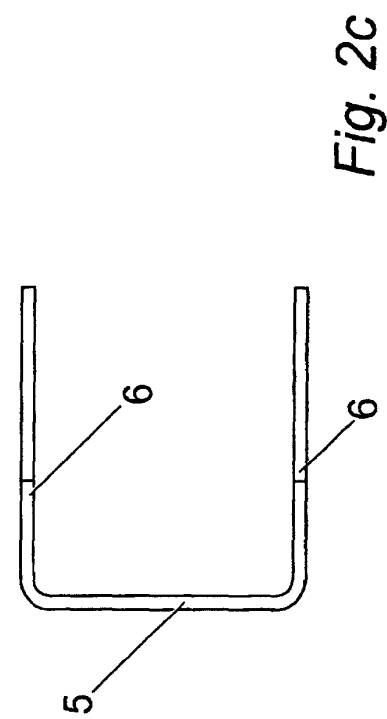
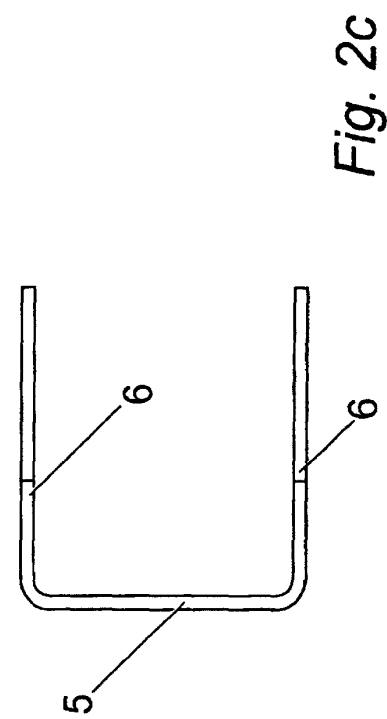
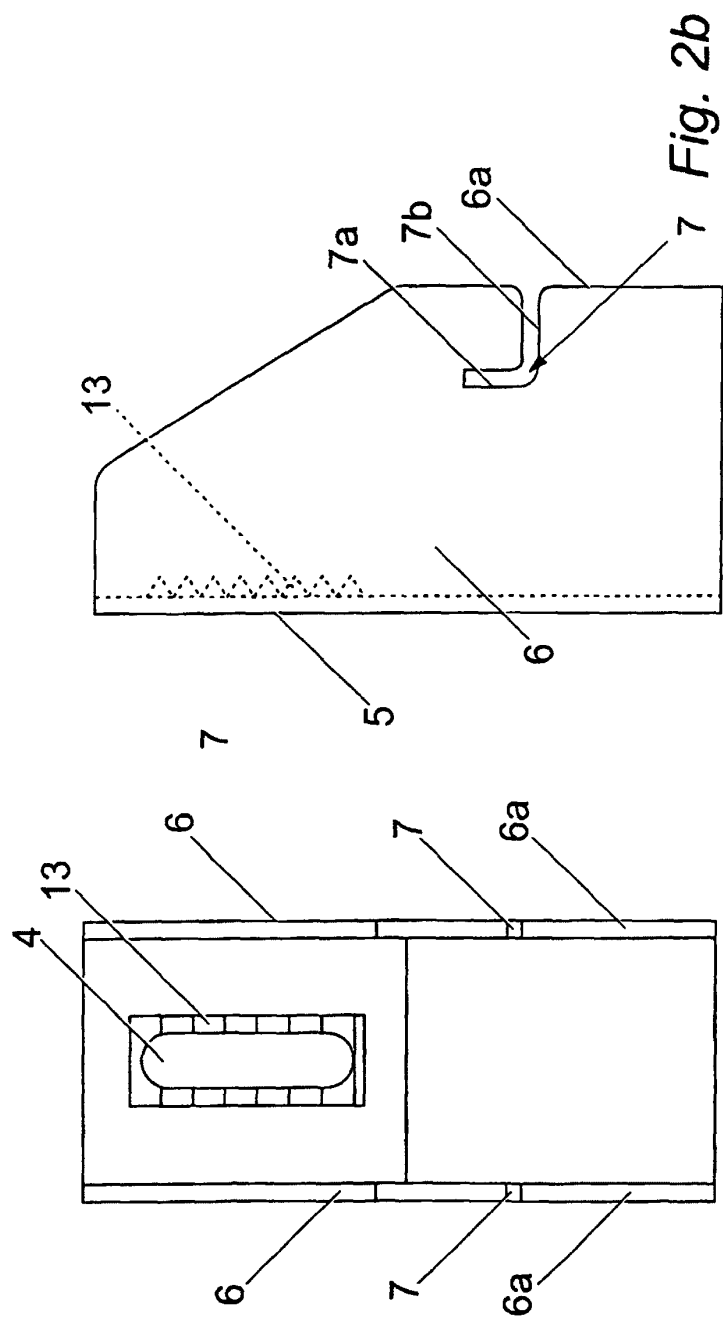


Fig. 1



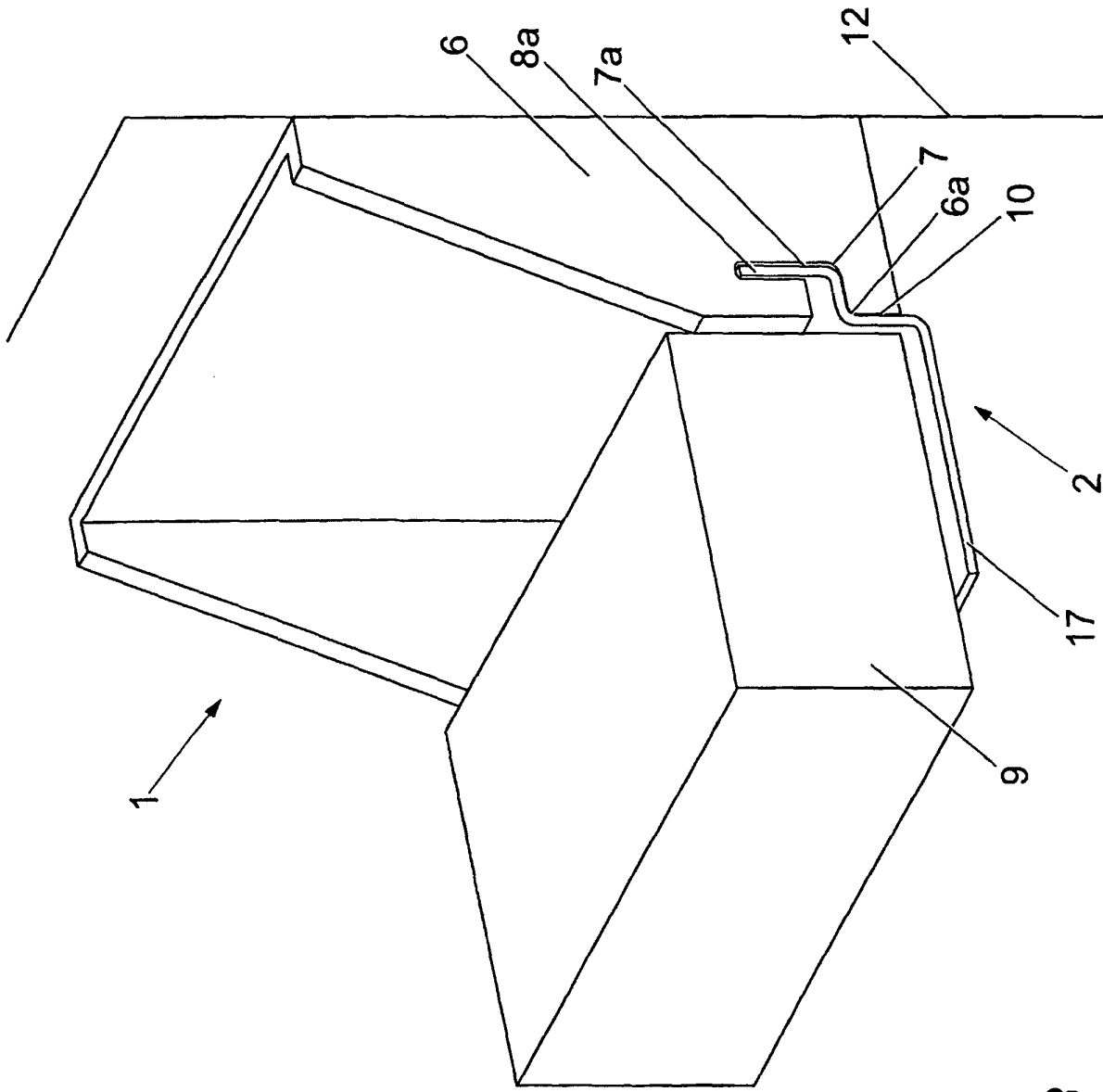


Fig. 3

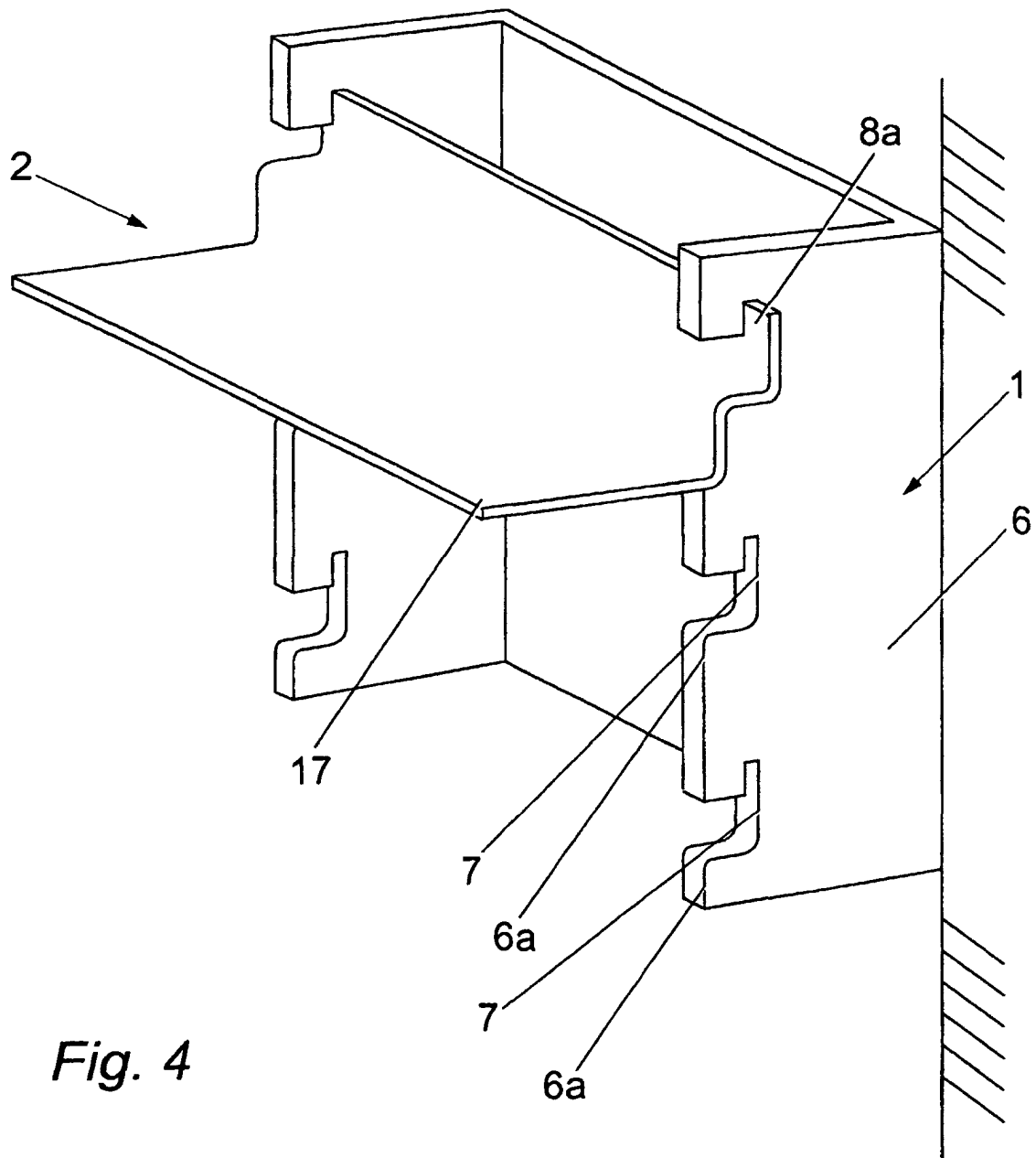


Fig. 4

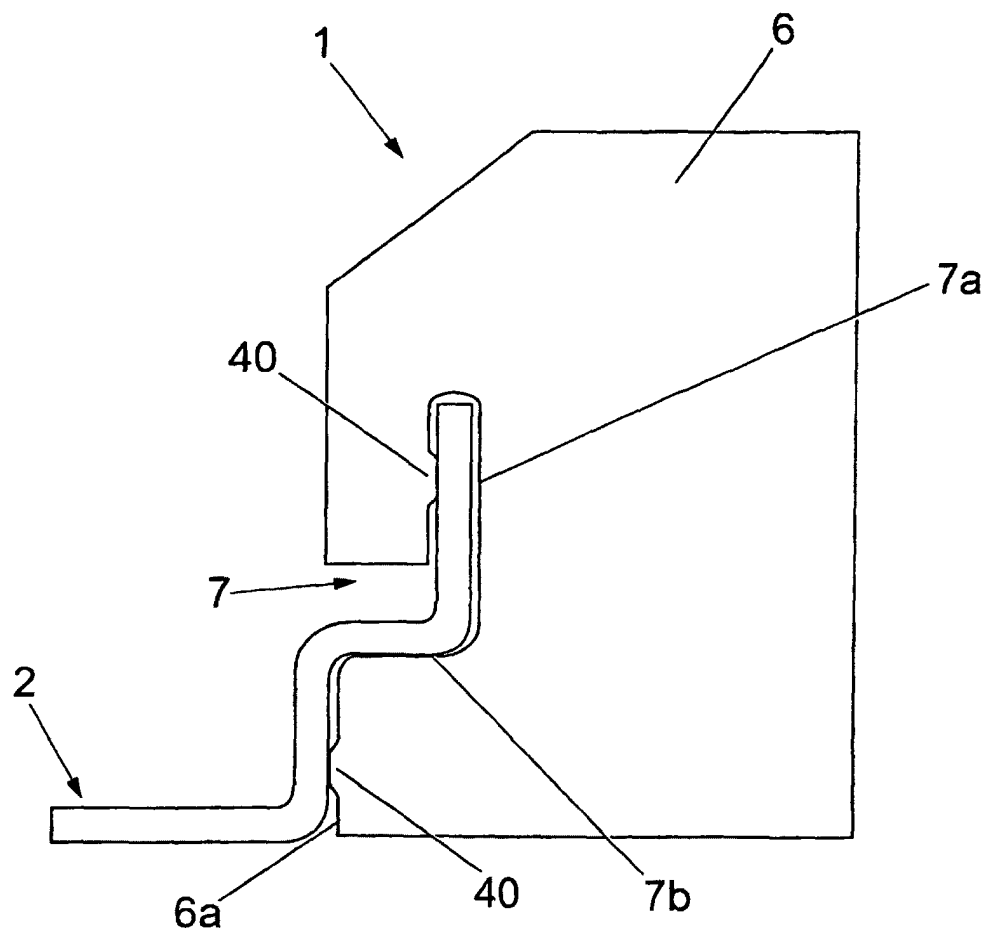


Fig. 5

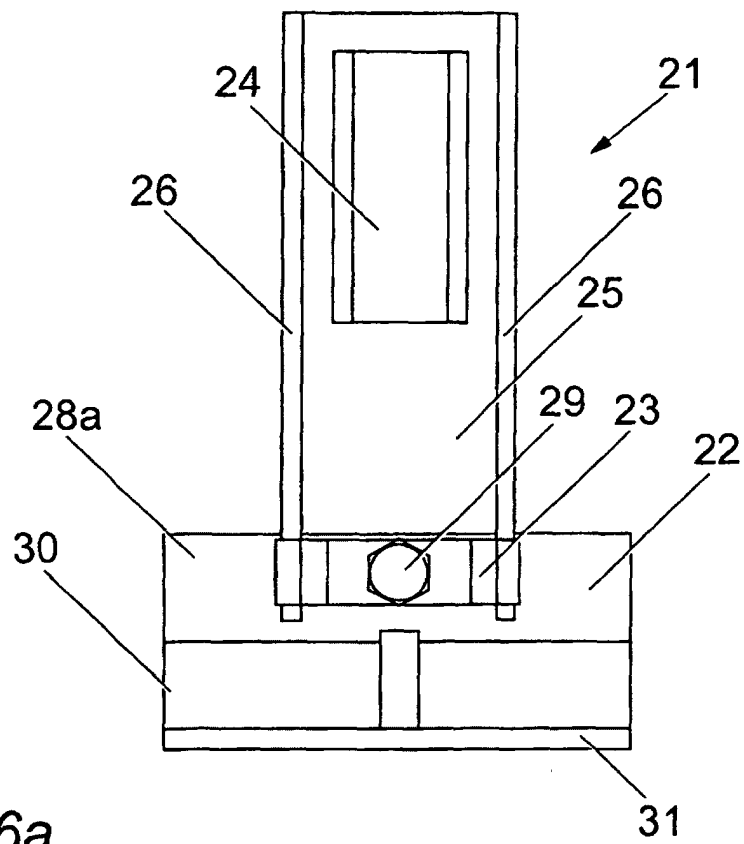


Fig. 6a

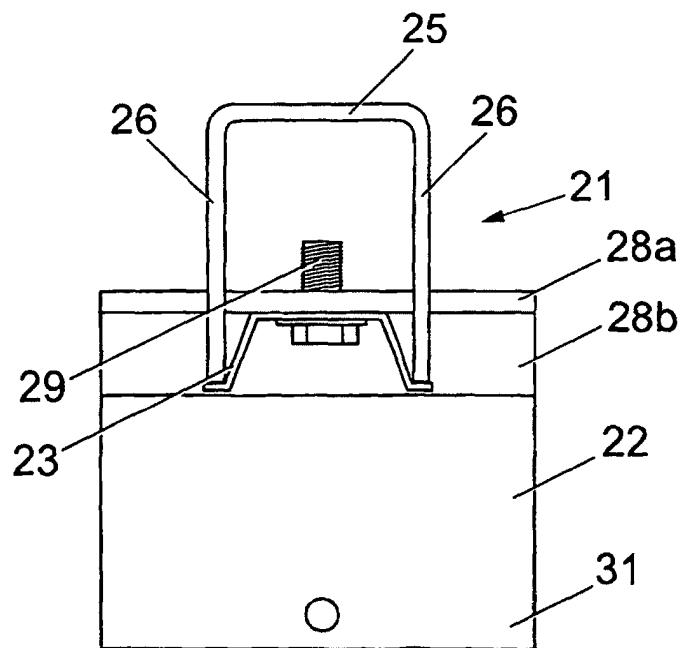


Fig. 6c

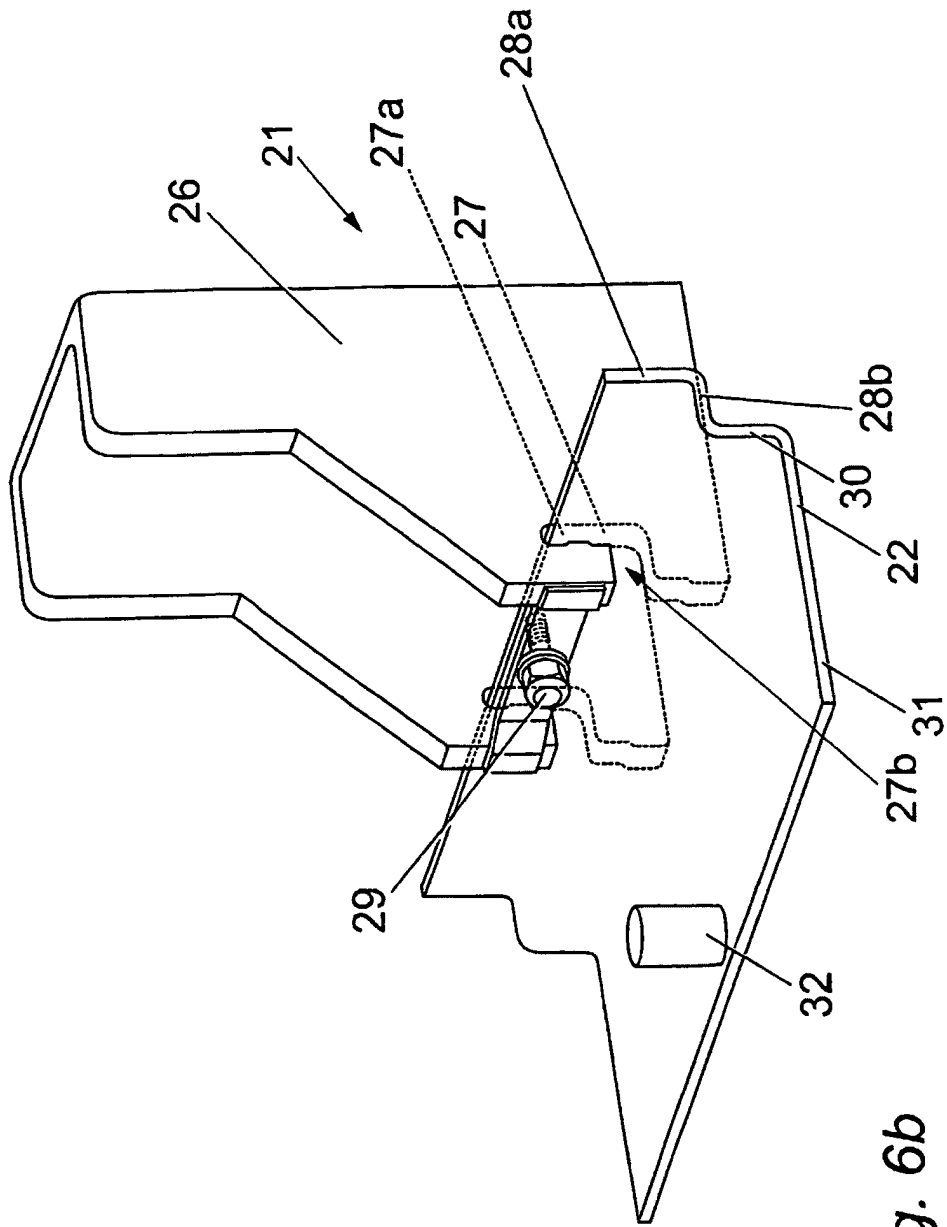


Fig. 6b

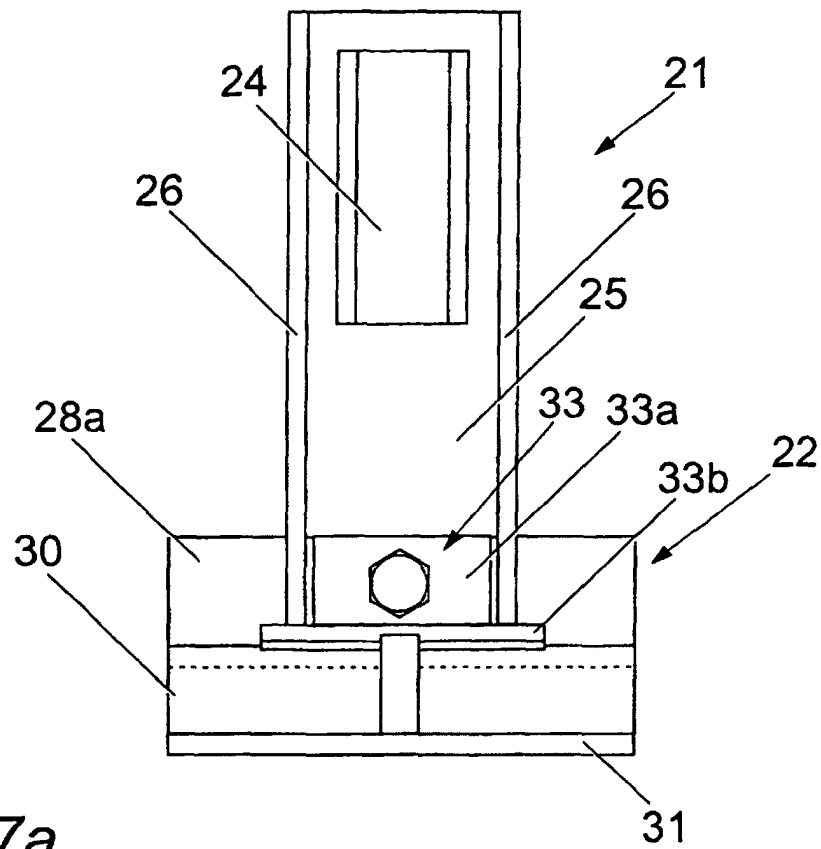


Fig. 7a

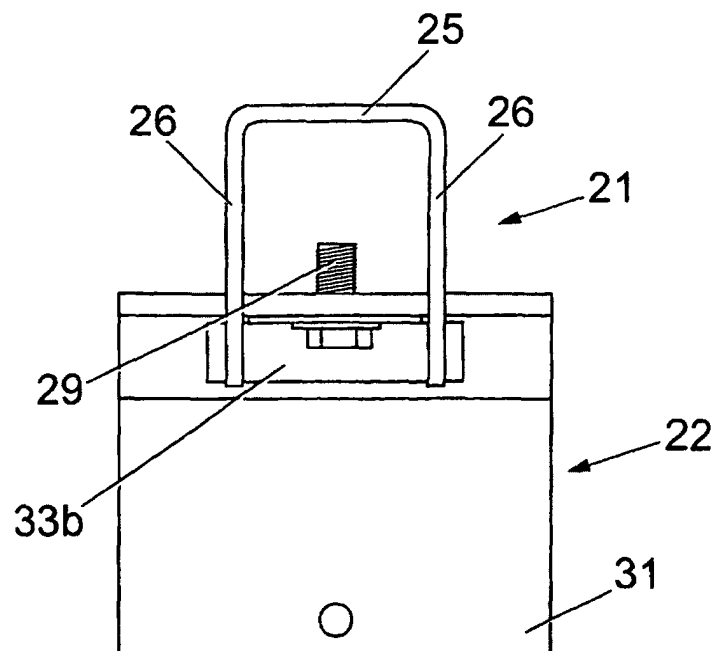


Fig. 7c

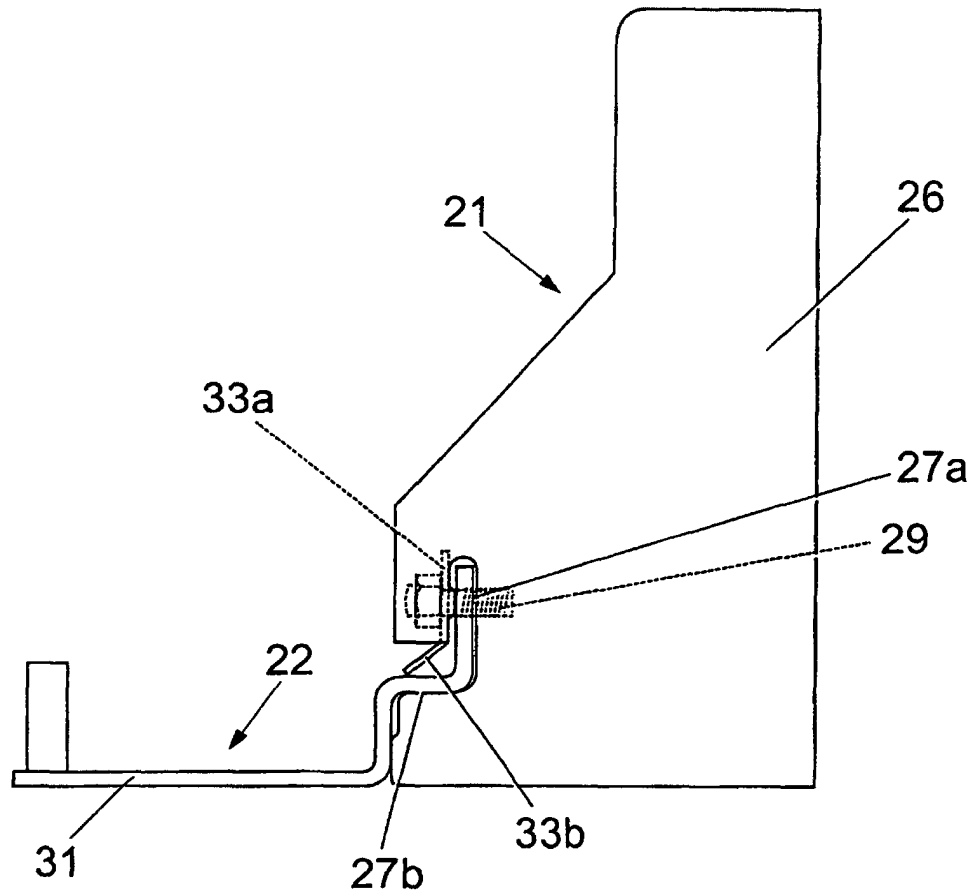


Fig. 7b