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

(11) **EP 2 397 622 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.12.2011 Bulletin 2011/51

(51) Int Cl.:
E04F 13/08 *(2006.01)*

(21) Application number: **11157350.7**

(22) Date of filing: **08.03.2011**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME

(30) Priority: **09.03.2010 NL 2004364**

(71) Applicant: **H.J.J. Evers Beheer B.V.**
7559 HH Hengelo (NL)

(72) Inventors:
- **Giesen, Leonardus Henricus Wilhelmus**
  7542 LT, Enschede (NL)
- **Wijlens, Jeroen Hermanus Johannes**
  7483 BH, Haaksbergen (NL)

(74) Representative: **Verdijck, Gerardus et al**
Arnold & Siedsma
Sweelinckplein 1
2517 GK Den Haag (NL)

(54) **Bracket assembly for a facade support, facade support, facade and method for placing thereof**

(57) The invention relates to a bracket assembly, a facade support, a facade and a method for placing thereof. The bracket assembly comprises:
- a wall part for mounting the bracket assembly on a wall;
- a connecting part connected to the wall part;
- coupling means provided on the connecting part for receiving a support element on which a support profile can be mounted;
- height adjusting means for adjusting the height of the support element relative to the wall; and
- depth adjusting means for adjusting the distance of the support element from the wall.

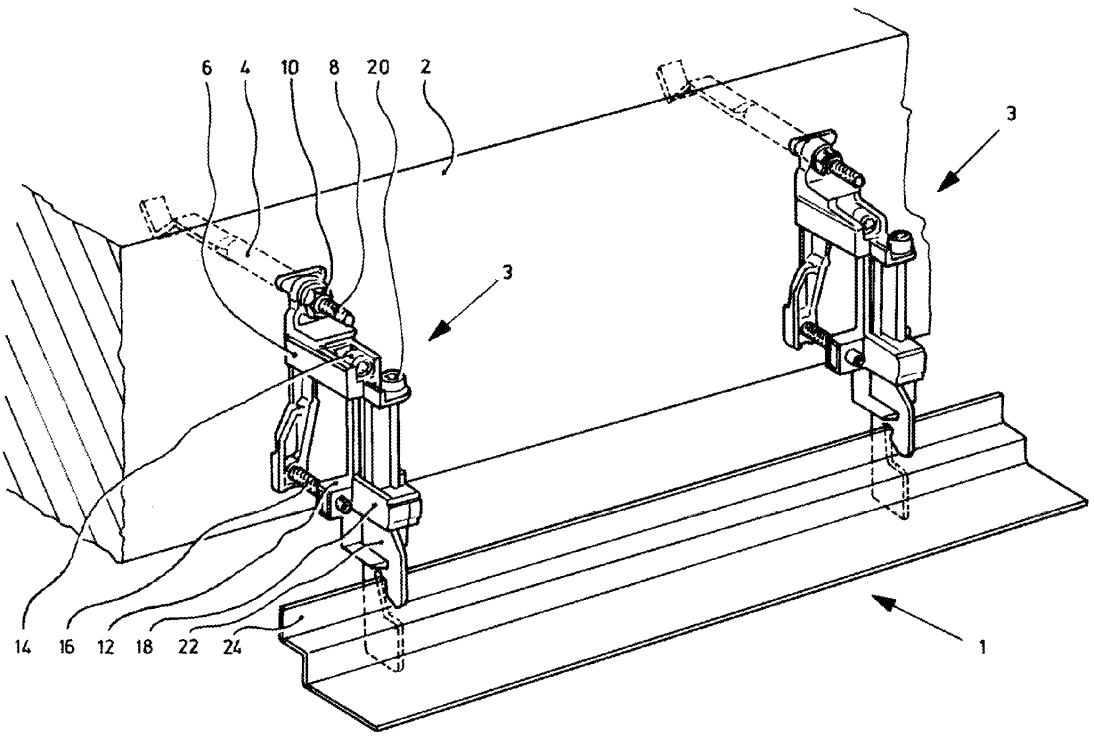

fig.1

EP 2 397 622 A1

Description

[0001] The present invention relates to a bracket assembly for a facade support which can be mounted on a wall. A support profile on which a wall part can be arranged can be mounted on such a bracket assembly. A brick frontage of a building can for instance be formed by providing a number of bracket assemblies on a wall, such as an inner wall or concrete constructions of a shell.

[0002] In the prior art as described for instance in NL 1006592 bracket assemblies for facade supports are known which can be mounted on a wall and on which a support profile can be mounted. Such bracket assemblies are used for instance to place a facade support in concrete constructions. It is desirable here to arrange facade elements. The facade elements are supported here by bracket assemblies provided at regular height distances on the wall, wherein a plurality of bracket assemblies are placed adjacently of each other. A problem occurring in practice is that the bracket assemblies do not take sufficient account of dimensioning occurring in the construction and/or inaccuracies in the manufacture thereof.

[0003] The present invention has for its object to provide a more efficient and more effective bracket assembly for facade supports.

[0004] This object is achieved with a bracket assembly for a facade support comprising:

- a wall part for mounting the bracket assembly on a wall;
- a connecting part connected to the wall part;
- coupling means provided on the connecting part for receiving a support element on which a support profile can be mounted;
- height adjusting means for adjusting the height of the support element relative to the wall; and
- depth adjusting means for adjusting the distance of the support element from the wall.

[0005] The bracket assembly comprises a wall part which can be fixed to for instance a wall or floor. The fixing of the wall part to a wall can for instance be realized with a cast-in threaded sleeve, threaded end or a chemical anchor. In addition, it is for instance possible to fix the wall part by means of clamping this wall part to a floor.

[0006] A connecting part is connected to the wall part. Provided on this connecting part are coupling means for receiving a support element, for instance a support plate or a support bracket. A support profile can be mounted on this support element. The support profile comprises for instance a long horizontal surface on which facade elements can be arranged. Such a support profile can be supported by more than one bracket assembly. In the example of a brick facade on a concrete construction, the brick facade is thus arranged on the support profile.

[0007] The height of the support element can be adjusted by means of the height adjusting means. This achieves that the height position of the support element is adjustable. Depth adjusting means are also provided. Thus achieved is that the distance between the support element and the wall is adjustable. These adjusting means make it possible to adapt the facade support formed by the bracket assemblies according to the invention to for instance the dimensioning of the construction. The bracket assembly can hereby be used in many different constructions. The dimensioning of the construction must after all be taken into account in the placing of bracket assemblies for the purpose of forming a facade support. It is possible here to envisage for instance the cavity dimension and the variable window frame depth. This means in practice that different bracket assemblies are usually required per (building) project.

[0008] A further advantage of the bracket assembly according to the invention is that the height and depth adjusting means can be adjusted after placing of the bracket assembly on a wall. Possible inaccuracies can hereby be compensated for during construction.

[0009] The height and depth adjusting means and preferably also the angle adjusting means can be adjusted independently of each other. The bracket assembly according to the present invention is thereby highly effective.

[0010] A further advantage of the bracket assembly according to the present invention is that very precise positioning of the bracket assembly on the wall is not required, since the bracket assemblies comprise height and depth adjusting means which can compensate for possible inaccuracies.

[0011] In an advantageous preferred embodiment according to the present invention the connecting part can be coupled to and uncoupled from the support element on which a support profile can be mounted.

[0012] A support element, for instance a support bracket or support plate, can be coupled to the connecting part by means of the coupling means provided on the connecting part. The support element can also be uncoupled again. This achieves that a facade support can be assembled from modular elements. This has the advantage that there is a further degree of freedom in respect of dimensioning. If in a determined case the adjusting means of the bracket assembly are not sufficient for the adjustment of the height and depth of a facade support for a given wall, an appropriate facade support can then be provided by coupling a support element of the correct dimensions. The bracket assemblies here do not need to be placed on the wall again.

[0013] A further advantage is that the bracket assembly can be embodied as a uniform part which is the same for every construction, while the support element can be selected per project. This produces a cost-saving.

[0014] Another additional advantage is that the support elements can be replaced even when the bracket assembly has already been mounted on a wall. This has the advantage, among others, that if the chosen size of the support element is found to be incorrect, the support

element can easily be replaced by another support element of a suitable size. It is advantageous here that the depth and height, and preferably also the angle, can be adjusted independently of each other. The replacement of a support element can hereby be realized in very effective and simple manner.

[0015] The support element is preferably a support plate. This has the advantage, among others, that the support element can be produced more simply, for instance by means of laser cutting.

[0016] In an advantageous preferred embodiment according to the present invention the coupling means comprise a snap system.

[0017] The snap system for instance comprises a tongue such that a support element is automatically coupled when it is inserted. The support element hereby remains coupled even when no load is being applied to the support element. In order to uncouple the support element the tongue must be actively retracted.

[0018] Due to the snap system the support element is easy to couple to and uncouple from the connecting part of the bracket assembly. Hereby realized is that the support element is easy to place, this being less labour-intensive.

[0019] In an advantageous preferred embodiment according to the present invention the height adjusting means and/or the depth adjusting means are connected to the coupling means.

[0020] Said connection achieves that the coupling means is displaceable relative to the wall.

[0021] The bracket assembly preferably comprises a guide for the height adjusting means and/or depth adjusting means. The guide can for instance be provided as a rail, channel or guide track. The coupling means can for instance slide in the height relative to the connecting part by means of a vertical guide provided in the connecting part. In a further example the connecting part is slidable by means of a horizontal guide provided in the wall part.

[0022] Providing a guide achieves that rapid and simple height and depth adjustment can be realized.

[0023] In an advantageous preferred embodiment according to the present invention the bracket assembly comprises angle adjusting means for adjusting the angle of the support element relative to the wall.

[0024] The depth adjusting means preferably comprise the angle adjusting means. It is hereby possible to adjust both the depth and the angle using the same adjusting means.

[0025] Providing angle adjusting means is for instance advantageous in the case of an inclining wall. The angle adjusting means provide additional adjustment options for adapting the facade support to the construction.

[0026] Providing depth adjusting means which comprise the angle adjusting means achieves that the bracket assembly is less complex. Furthermore, less material need be used for the manufacture of the bracket assembly, which saves costs.

[0027] In a further advantageous preferred embodiment according to the present invention the support element comprises a recess such that the support profile can be received in the recess by tilting, wherein the shape of the recess substantially corresponds to the shape of a part of the support profile. The recess is preferably substantially L-shaped. The recess can for instance be form-fitting with a received support profile, although the recess is preferably larger.

[0028] Providing a recess with a shape substantially corresponding to the shape of a part of the support profile achieves that the support profile can be carried into the recess with a titling movement. This has the advantage that no fixed connections, such as welded connections, are necessary. Nor is lateral insertion of the support profile necessary.

[0029] A further advantage is that the support profile can be positioned horizontally along the wall before a facade element is placed. It is possible to slide the support profile over the support element and vice versa. In addition, the support profile is easy to connect to the support element or to uncouple from the support element. This results in a time-saving.

[0030] The fact that the support profile can slide over the support element has the additional advantage that, instead of an anchor rail, a threaded sleeve can for instance also be cast-in for mounting of the bracket assembly on a wall.

[0031] A further additional advantage is that, if use is made of drilled anchorings, the position thereof can be determined in situ. Because the position of the support profile is adjustable in height, depth and horizontal position, the position of the wall part does not determine the position of the support profile. This is advantageous for instance in the situation where the bracket assembly is found to have been placed too low on a wall. If a bracket assembly exerts pressure on a point below the reinforcement in the wall because it has been placed too low, there is the risk of spalling/crumbling or collapse of the wall. With the bracket assembly according to the invention this risk can be avoided by placing the wall part of the bracket assembly at a higher position.

[0032] A further advantage is that, because of the height adjusting means and the fact that the support profile can slide over the support elements, the position of the optional drilled anchorings need be less precisely determined.

[0033] According to an advantageous embodiment according to the present invention, the support element comprises high-grade steel, for instance CrMo12 steel.

[0034] The tensile strength of this material is greater than that of steel used in bracket assemblies known in the prior art. The facade support according to the invention can hereby be loaded more heavily. Fewer bracket assemblies and support elements are hereby necessary per metre of wall. A cost-effective and less labour-intensive construction is hereby obtained.

[0035] In an advantageous embodiment according to

the invention the support element comprises a contact surface.

[0036] Providing a contact surface achieves that support profiles of different forms can be coupled to the support element. This ensures that the support profile supports on the support element by means of the contact surface. This has the advantage that the tolerances in the production process of support profiles are taken into account. The tolerance requirements in the production of the support profiles are hereby less strict. Support profiles of different form and dimensions can be applied with the support elements according to the invention.

[0037] The invention further relates to a facade support, comprising:

- a number of bracket assemblies as described above, each provided with a support element; and
- a support profile connected to the support elements for the purpose of supporting a facade element.

[0038] Such a facade support provides the same effects and advantages as described for the bracket assembly.

[0039] The invention moreover relates to a facade, comprising:

- the facade support as described above; and
- a facade element provided on the support profile.

[0040] Such a facade provides the same effects and advantages as described for the facade support and/or the bracket assembly.

[0041] By arranging a facade according to the present invention on a wall expansion of the wall is possible and facade elements, for instance bricks, are moreover prevented from being loaded too much by the weight of the layers lying above.

[0042] The invention further relates to a method for placing a facade, comprising the steps of:

- mounting a number of bracket assemblies as described above on a wall;
- coupling a support element to each bracket assembly by means of the coupling means;
- coupling a support profile to the support elements; and
- providing a facade on the support profile.

[0043] Such a method provides the same effects and advantages as described for the facade and/or facade support and/or bracket assembly.

[0044] The different steps of the method are performed in a suitable sequence.

[0045] In an advantageous embodiment according to the present invention the method further comprises the step of adjusting the bracket assemblies by means of the adjusting means of the bracket assemblies.

[0046] At least one of the bracket assemblies is preferably adjusted once the profile has been provided. This has the advantage that the at least one of the bracket assemblies can be adjusted quickly and easily. Two bracket assemblies can for instance be provided, after which these are adjusted on the basis of the dimensioning of the construction. The profile and the other bracket assemblies are then placed. The other bracket assemblies need now only be fixed. The adjustment is hereby very quick and easy.

[0047] The invention will be further elucidated hereinbelow on the basis of the exemplary embodiments shown in the drawing. Herein:

- fig. 1 is a perspective view of two bracket assemblies according to the invention which, together with two support elements and a support profile, form a facade support;
- fig. 2 shows a cross-sectional drawing of an application of a facade support according to the invention;
- fig. 3 is a perspective view of the right-hand side of a bracket assembly according to the invention;
- fig. 4 is a perspective view of the left-hand side of a bracket assembly according to the invention;
- fig. 5 is an exploded view of a bracket assembly according to the invention;
- fig. 6 is a cross-sectional drawing illustrating the angle correction option of the bracket assembly according to the invention;
- fig. 7 is a cross-sectional drawing of the bracket assembly in which the possibility of coupling different support elements is illustrated;
- fig. 8 is a perspective view of a second embodiment of a bracket assembly according to the invention;
- fig. 9 is an exploded view of the bracket assembly of figure 8;
- fig. 10 shows a detail in cross-section of the bracket assembly according to the second embodiment of figures 8 and 9;
- fig. 11 shows mounting of the bracket assembly of figures 8-10 on a wall;
- fig. 12 shows a possible method of mounting a support profile on the bracket assembly of figures 8-11; and
- fig. 13 shows the bracket assembly of figure 12 with coupled support profile.

[0048] Fig. 1 shows a facade support 1 according to an embodiment of the invention. The facade support comprises two bracket assemblies 3 according to the invention which are each provided with a support plate 22. Support plates 22 have each received a support profile 24.

[0049] Bracket assemblies 3 each comprise a wall part 6 which is connected to a concrete floor 2. Situated in concrete floor 2 is a threaded sleeve anchor 4 into which a bolt 8 is screwed. Wall part 6 of bracket assembly 3 is secured by means of nut 10 over bolt 8. Wall part 6 is connected to a connecting part 12. Connecting part 12

is depth-adjustable relative to wall part 6 by means of depth adjustment bolts 16 and 14.

[0050] Fig. 2 shows an exemplary application of a facade support according to the invention. An outer leaf 32 of a cavity wall is arranged on the facade support. Outer leaf 32 is supported by support profile 24. In addition the outer leaf 32 is connected to the inner leaf 26 of the cavity wall and insulation 28 by means of wall tie 30. The loads acting on the outer leaf are therefore transmitted to the bearing construction lying behind.

[0051] Support plates 22 are coupled to snap system 18 which is connected to connecting part 12 (figure 1, 2). Coupling means 18 is adjustable in height by means of height adjustment bolt 20. This is shown in more detail in fig. 3. Snap system 18 is held at the desired height by means of square nut 39.

[0052] Support plate 22 of bracket assembly 3 comprises a recess 37 (fig. 3, 4). The recess is L-shaped and forms contact surfaces 34 and 36 and space 38.

[0053] The depth adjusting means are shown in more detail in fig. 5. Connecting part 12 is connected to wall part 6 by means of guide 42. Connecting part 12 is herein situated partially in wall part 6. A square nut 40 is situated between wall with hole 41 and wall 43 of connecting part 12. A bolt 14 is screwed herethrough.

[0054] The lower depth adjustment bolt 16 passes through the nut chamber 19, square nut 45 and wall part 6 and can rotate freely in hole 15. The position of the connecting part 12 relative to wall part 6 can be adjusted with both bolt 14 and bolt 16.

[0055] Figure 5 also shows snap system 18 in more detail. The snap system comprises a securing clip 48. A support plate 22 is suspended in part 46 of the snap system. Recess 49 on the inner side of part 46 engages for this purpose into an element (not shown) corresponding to the form of recess 49. Support plate 22 is held in place by securing clip 48.

[0056] Fig. 6 shows an exemplary embodiment in which bracket assembly 3 is mounted on an inclining wall 2. The angle is corrected by adjusting the depth adjustment bolt 16 relative to the depth adjustment bolt 14. The distance 50 between the underside of support plate 22 and the wall is smaller than the distance between the upper side of the bracket assembly and the wall. Support plate 22 is hereby placed at an angle relative to the wall.

[0057] Fig. 6 further shows that support profile 24 rests against contact surfaces 34 and 36 of support plate 22.

[0058] Fig. 7 shows the possibility of coupling support plates of different dimensions to the bracket assembly. A short support plate 56 and a long support plate 58 are shown in the figure. Because the height adjusting options 52 of bracket assembly 3 in the shown embodiments are limited to a maximum of 60 mm, the vertical distance of a support profile can be further increased by applying a larger support plate. Fig. 7 also shows that the support plate used determines the position of the support profile relative to the wall. In the shown embodiments the depth adjusting options 54 of bracket assembly 3 are a maximum of 40 mm.

[0059] The placing of a facade is described hereinbelow with reference to figure 1. Rows of threaded sleeve anchors 4 are provided at regular distances above each other in wall 2. Wall part 6 of a bracket assembly 3 is mounted in each threaded sleeve anchor by means of bolt 8 and nut 10. Wall part 6 is connected beforehand to connecting part 12.

[0060] A suitable support plate 22 is subsequently coupled in each bracket assembly 3 by means of coupling means 18. The desired height and depth are subsequently adjusted using respectively the height adjustment bolt 20 and depth adjustment bolts 14, 16. In the case of an inclining wall the angle is then adjusted by means of the depth adjusting bolts 14, 16.

[0061] Following adjustment a support profile 24 is placed, whereby a facade support 1 is formed. Facade elements can then be arranged on this facade support as shown for instance in figure 2.

[0062] Preferably not all support plates 22 are placed before support profile 24 is placed. Only two support plates 22 are for instance placed in the first instance. Once these have been adjusted using the height and depth adjusting means, the support profile 24 is arranged. Only then are the other support plates 22 arranged. The other support plates 22 can hereby be adjusted on the basis of the already properly adjusted support profile 24.

[0063] Figures 8-13 show a second embodiment of the bracket assembly according to the invention. Bracket assembly 80 (figure 8) is mounted by means of a cast-in threaded sleeve 82. Bracket assembly 80 comprises housing 84 and support plate 86 with recess 88.

[0064] In the second embodiment the connecting part and the wall part are integrated into one element, i.e. housing 84, instead of a separate connecting part and wall part as in the first embodiment. In this sense the second embodiment forms a simplified version of the first embodiment.

[0065] Housing 84 is mounted on a wall by means of threaded sleeve 82, bolt 90, nut 92 (figure 9) and centring plate 94.

[0066] Adjustment bolt 96 rests on bolt 90 during use and thus provides a height adjustment.

[0067] Housing 84 is provided with recesses 98, 100 for placing therein of a wedge for the purpose of adjusting the distance to the wall, i.e. realizing a depth adjustment.

[0068] Bracket assembly 80 moreover comprises a plastic locking 102 with which the plate-like support element 86 can be locked.

[0069] Housing 84 is further provided with an opening 104 with an adjustment bolt 106 therein for obtaining further depth adjustment option.

[0070] Support plate 86 is provided with protruding parts 108, 110 which serve to couple support plate 86 to housing 84 (figure 10). For this purpose the protruding parts 108, 110 are hooked behind bridges 114, 116 arranged in housing 84. Shown with broken lines in figure

10 is a position of support plate 86 prior to being coupled to housing 84. Support plate 86 is coupled to housing 84 by moving support plate 84 as according to arrow A, followed by a movement as according to arrow B.

[0071] Figure 10 also elucidates the method of locking. Plastic locking 102 is pushed over support plate 86 on the upper zone 112. The whole is locked through coaction with the ridge 118 present in housing 84.

[0072] Figures 11-13 show the mounting of a bracket assembly according to the second embodiment on a wall 120. Further shown is the coupling of a support profile 122 to support element 86. In this case support profile 122 is arranged in recess 88 of support plate 86 by tilting as according to arrow C.

[0073] Support profile 122 comprises a support surface 124 on which a facade part can be placed during use. This support surface is horizontal during use. Profile 122 further comprises a first vertical part 126 connecting to the horizontal support surface 124, a second horizontal part 128 connecting to the first vertical part 126 and a second vertical part 130 connecting to the second horizontal part 128.

[0074] Figure 13 shows the coupling of support profile 122 to only one bracket assembly 80. A plurality of bracket assemblies 80 can of course also be provided.

[0075] The present invention is by no means limited to the above described preferred embodiments. The rights sought are defined by the following claims, within the scope of which many modifications can be envisaged. It is for instance possible to have the coupling means move in the horizontal plane relative to the connecting part, while the connecting part moves in the vertical plane relative to the wall part.

Claims

1. Bracket assembly (3; 80) for a facade support (1), comprising:

   - a wall part (6; 84) for mounting the bracket assembly (3; 80) on a wall (2; 120);
   - a connecting part (12; 84) connected to the wall part (6; 84);
   - coupling means (18, 46, 48; 114, 116) provided on the connecting part (12; 84) for receiving a support element (22; 86) on which a support profile (24; 122) can be mounted;
   - height adjusting means (13, 18, 20, 40; 96) for adjusting the height of the support element (22; 86) relative to the wall (2; 120); and
   - depth adjusting means (14, 16, 40, 42; 98, 100, 106) for adjusting the distance of the support element (22; 86) from the wall (2; 120).

2. Bracket assembly as claimed in claim 1, wherein the connecting part can be coupled to and uncoupled from the support element on which a support profile can be mounted.

3. Bracket assembly as claimed in claim 1 or 2, wherein the coupling means comprise a snap system (18, 46, 48).

4. Bracket assembly as claimed in claim 1, 2 or 3, wherein the height adjusting means and/or depth adjusting means are connected to the coupling means.

5. Bracket assembly as claimed in one or more of the claims 1-4, wherein the bracket assembly comprises a guide (13, 42, 44) for the height adjusting means and/or depth adjusting means.

6. Bracket assembly as claimed in one or more of the claims 1-5, further comprising angle adjusting means (16) for adjusting the angle of the support element relative to the wall.

7. Bracket assembly as claimed in claim 6, wherein the depth adjusting means comprise the angle adjusting means.

8. Bracket assembly as claimed in one or more of the claims 1-7, wherein the support element comprises a recess (37) such that the support profile can be received in the recess by tilting, wherein the shape of the recess substantially corresponds to the shape of a part of the support profile.

9. Bracket assembly as claimed in claim 8, wherein the recess is substantially L-shaped.

10. Bracket assembly as claimed in one or more of the claims 1-9, wherein the support element comprises a contact surface (34, 36).

11. Bracket assembly as claimed in one or more of the claims 1-10, wherein the support element comprises high-grade steel.

12. Facade support, comprising:

    - a number of bracket assemblies as claimed in one or more of the claims 1-11, each provided with a support element; and
    - a support profile connected to the support elements for the purpose of supporting a facade element.

13. Facade, comprising:

    - the facade support as claimed in claim 12; and
    - a facade element provided on the support profile.

14. Method for placing a facade, comprising the steps of:

- mounting a number of bracket assemblies as claimed in one or more of the claims 1-11 on a wall;
- coupling a support element to each bracket assembly by means of the coupling means;
- coupling a support profile to the support elements;
and
- providing a facade on the support profile.

15. Method as claimed in claim 14, further comprising the step of adjusting the bracket assemblies by means of the adjusting means of the bracket assemblies.

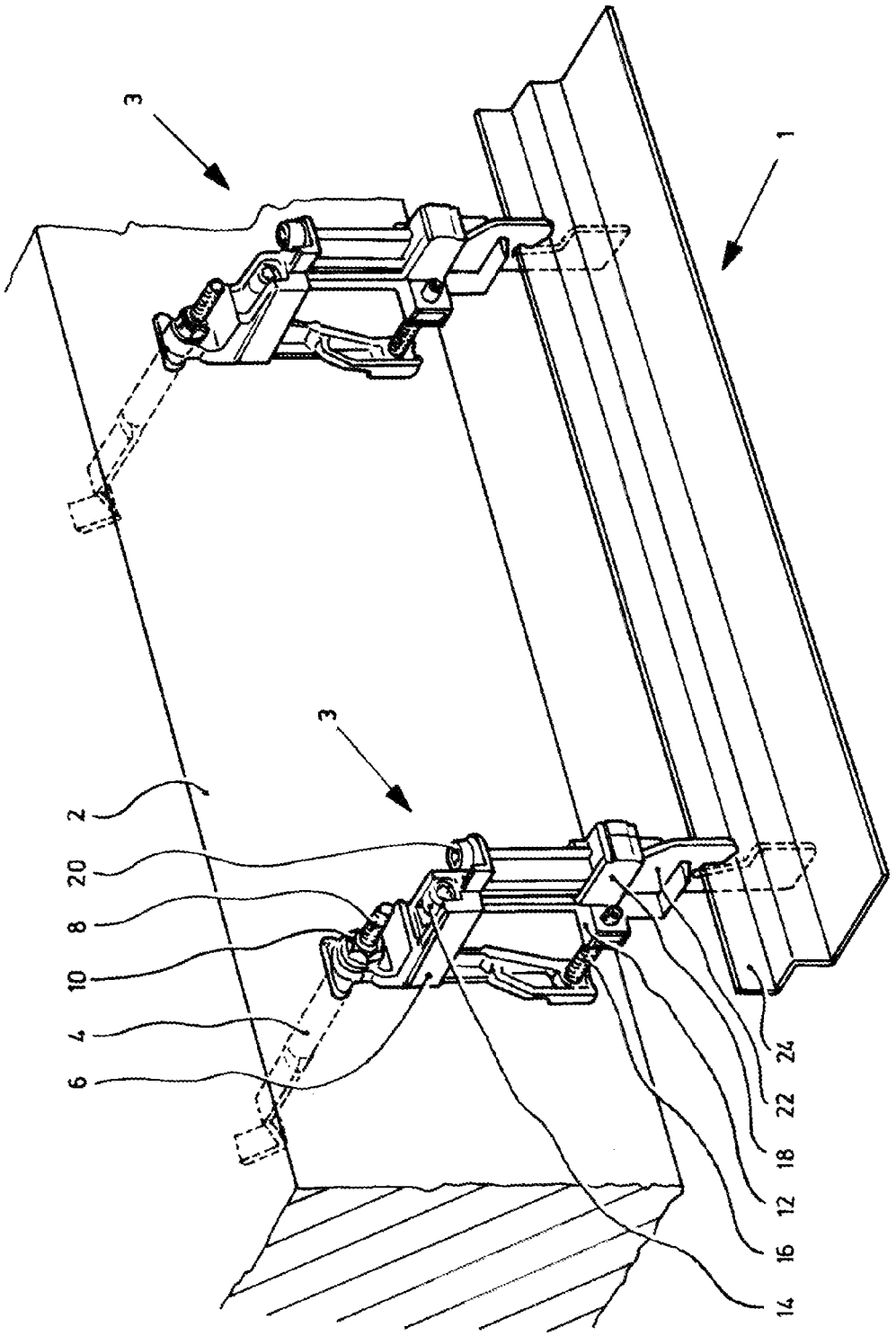

fig.1

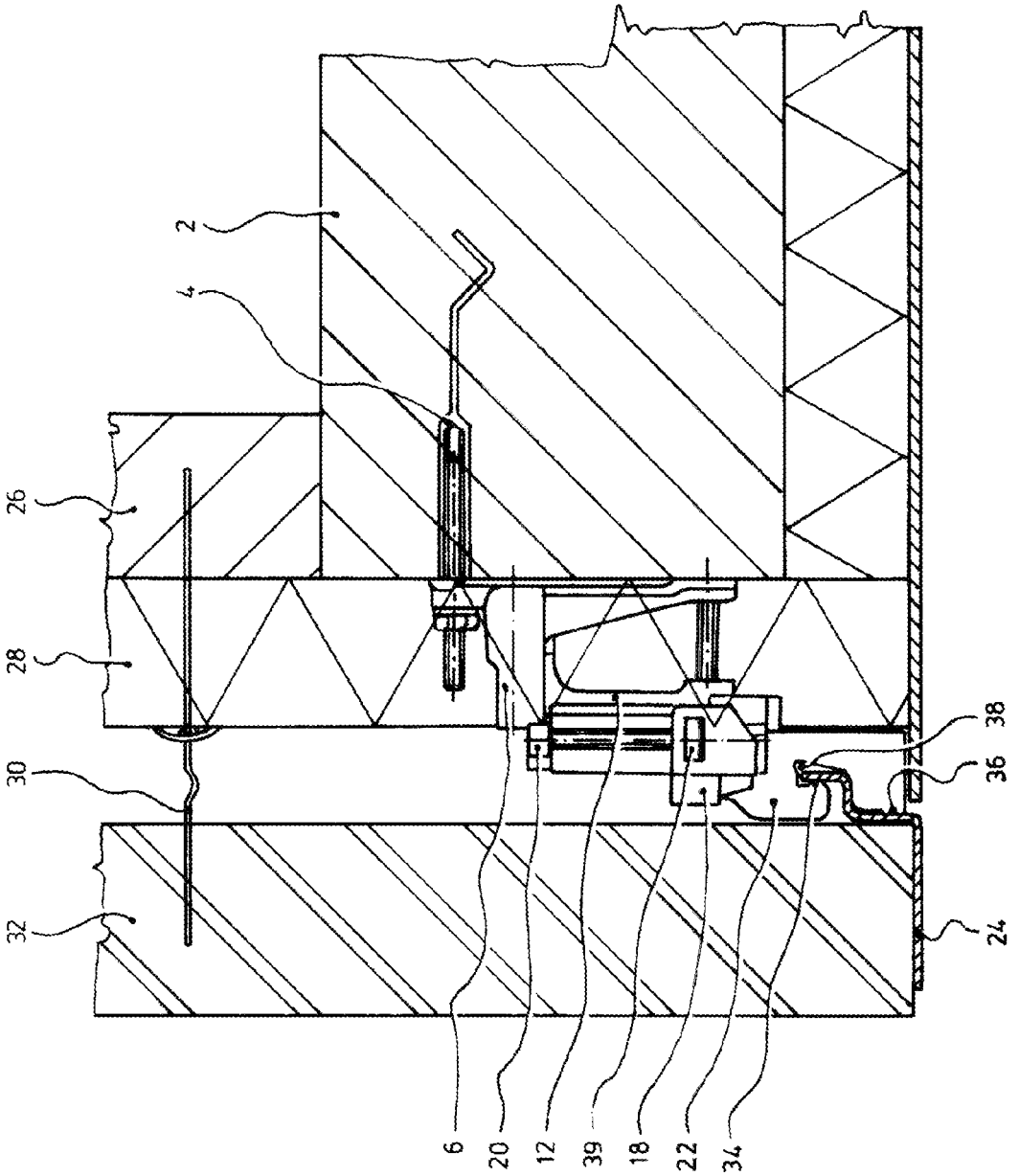

fig.2

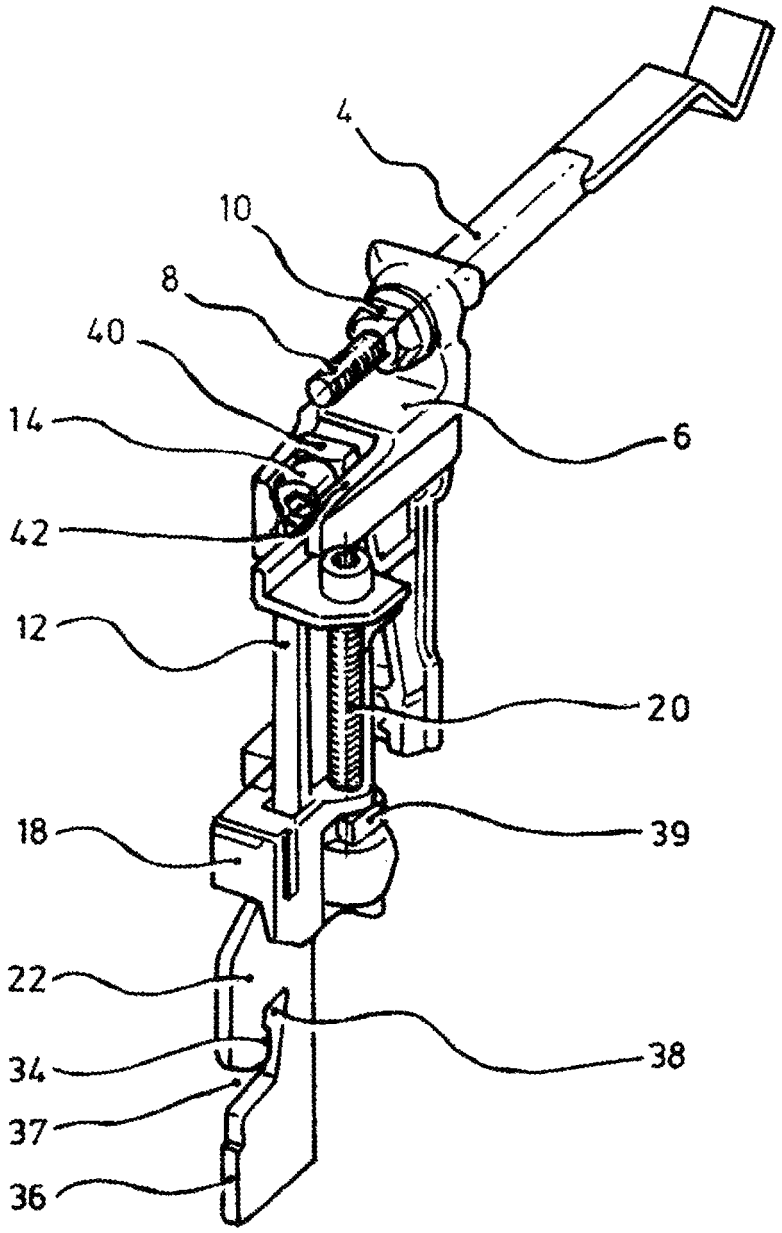

fig.3

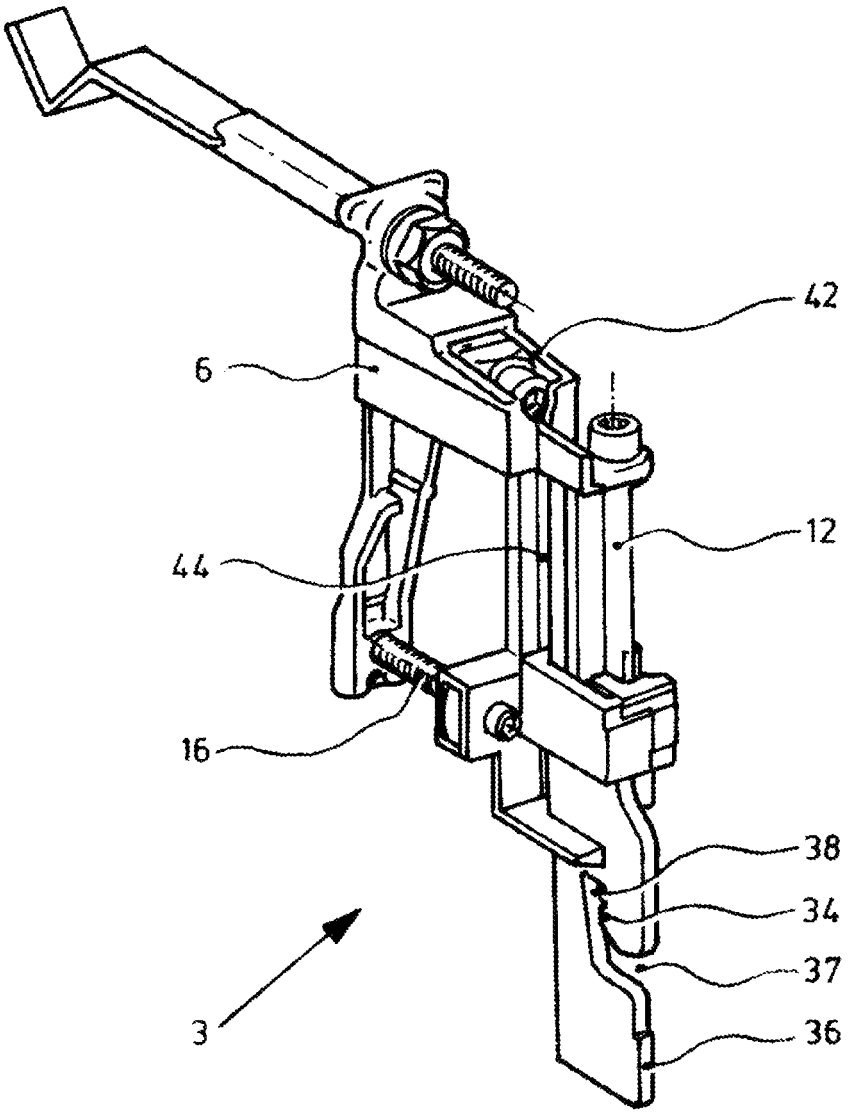

fig. 4

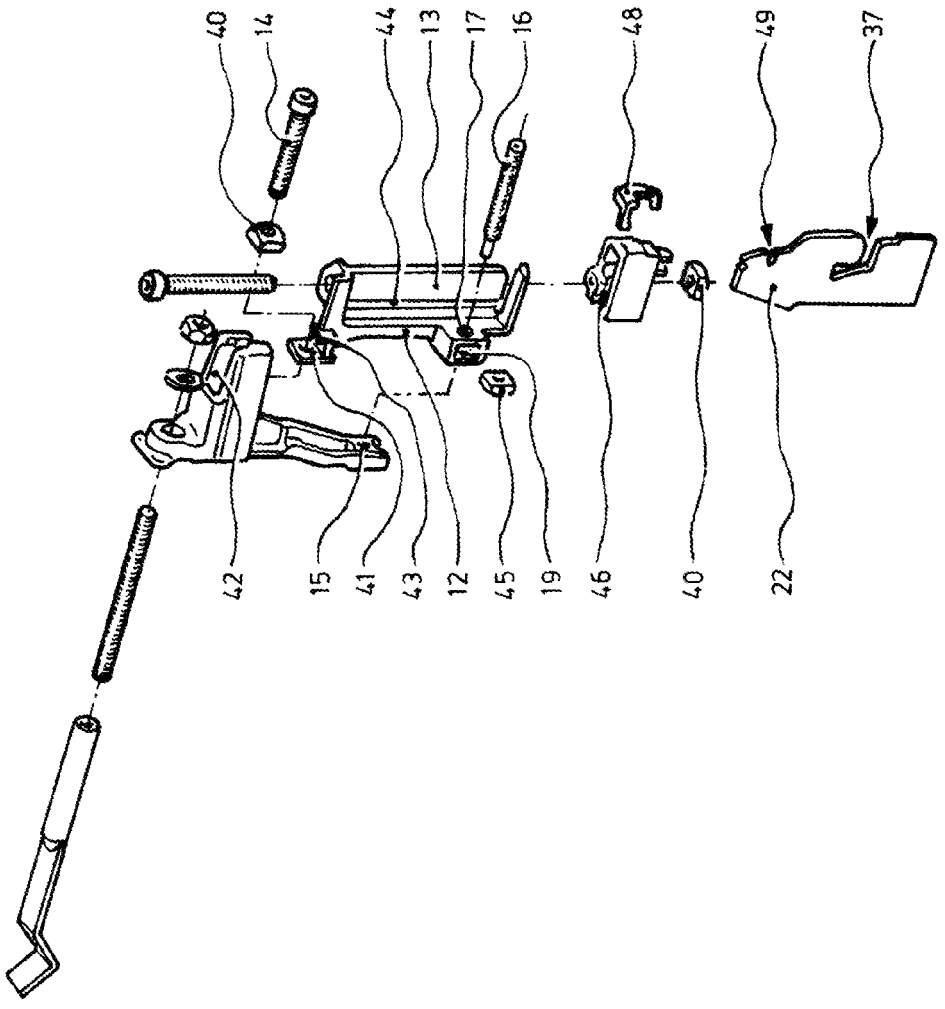

fig.5

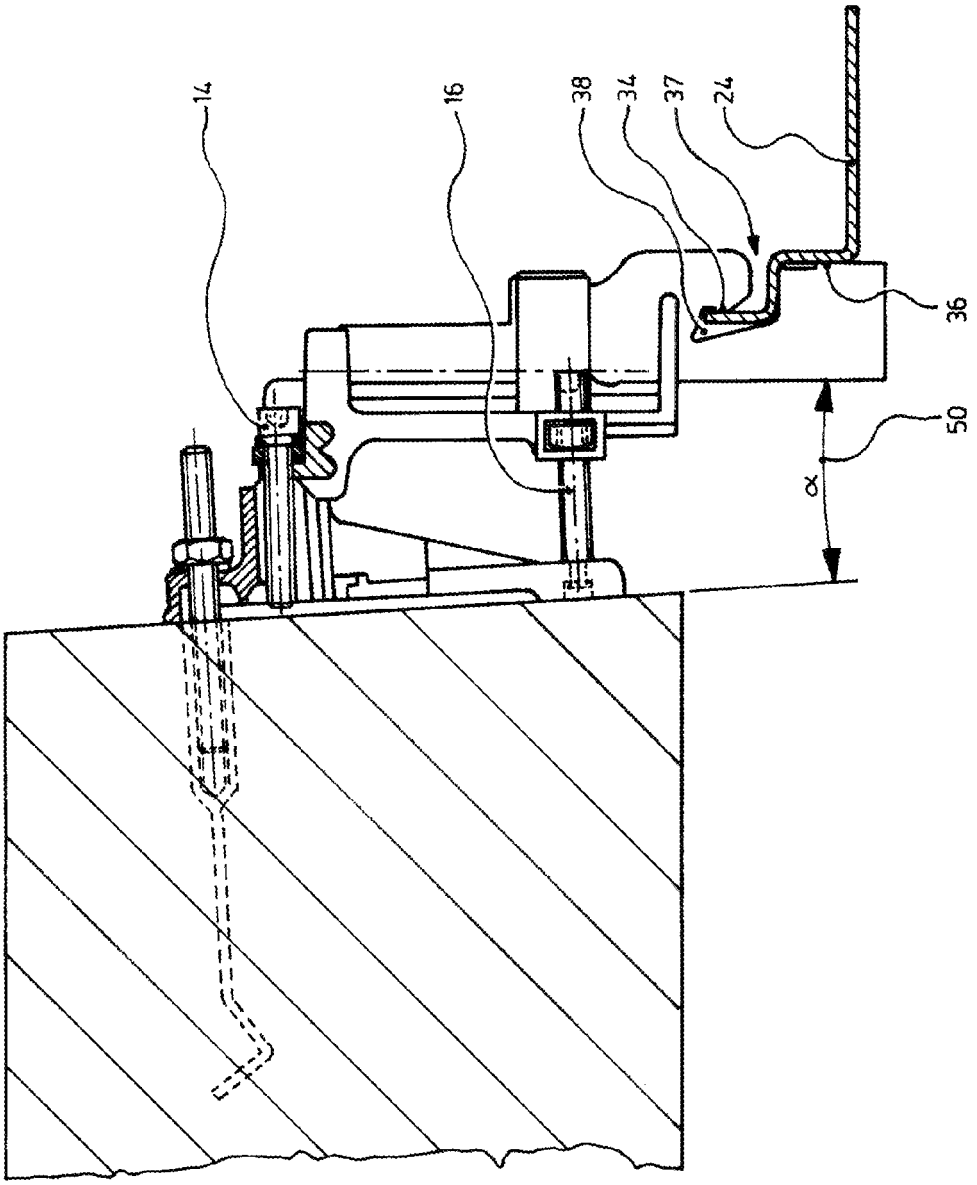

fig.6

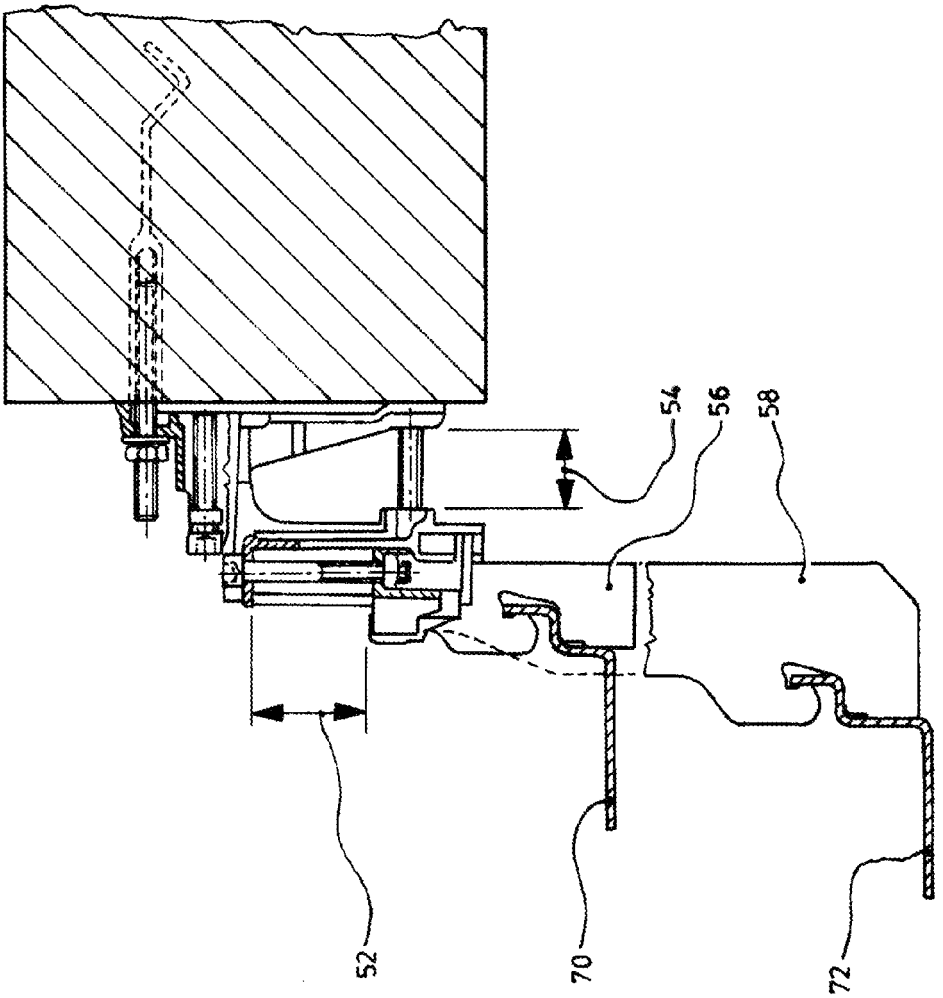

fig.7

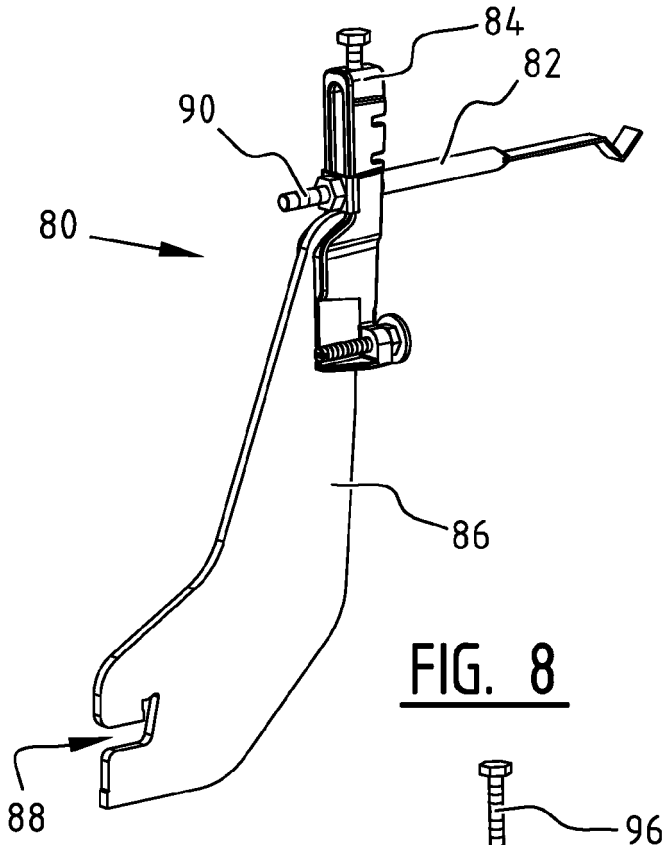

FIG. 8

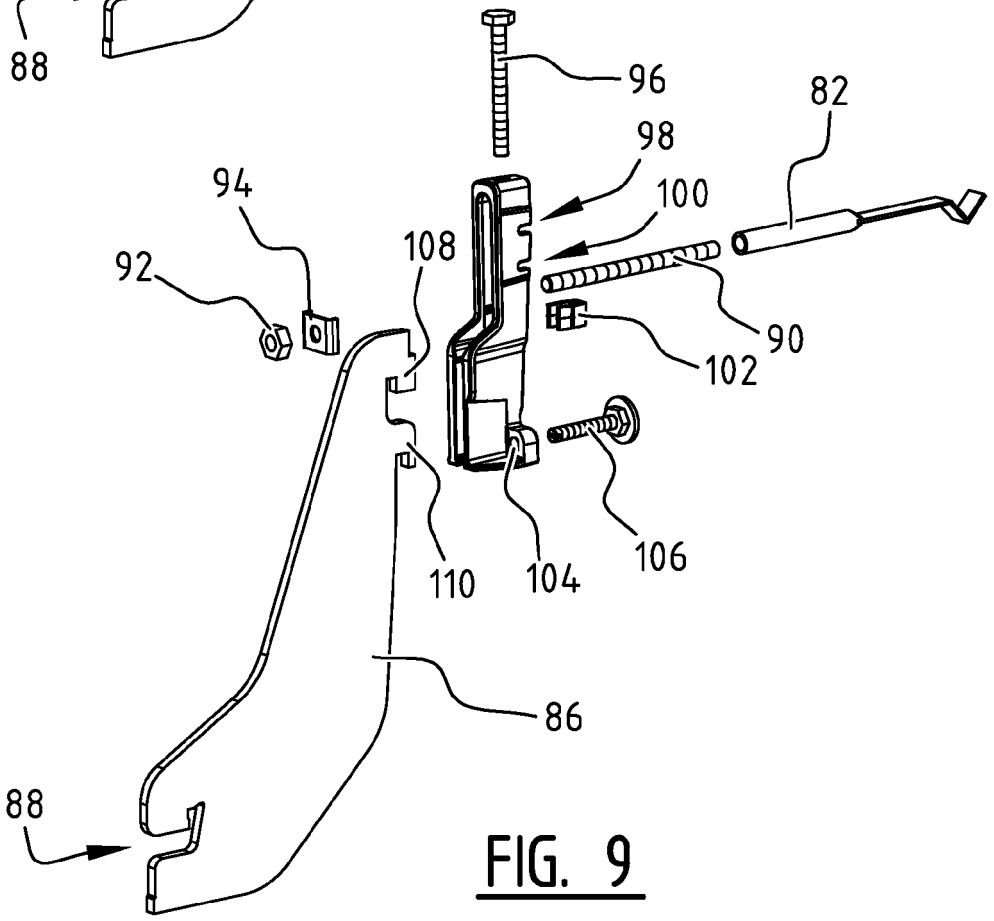

FIG. 9

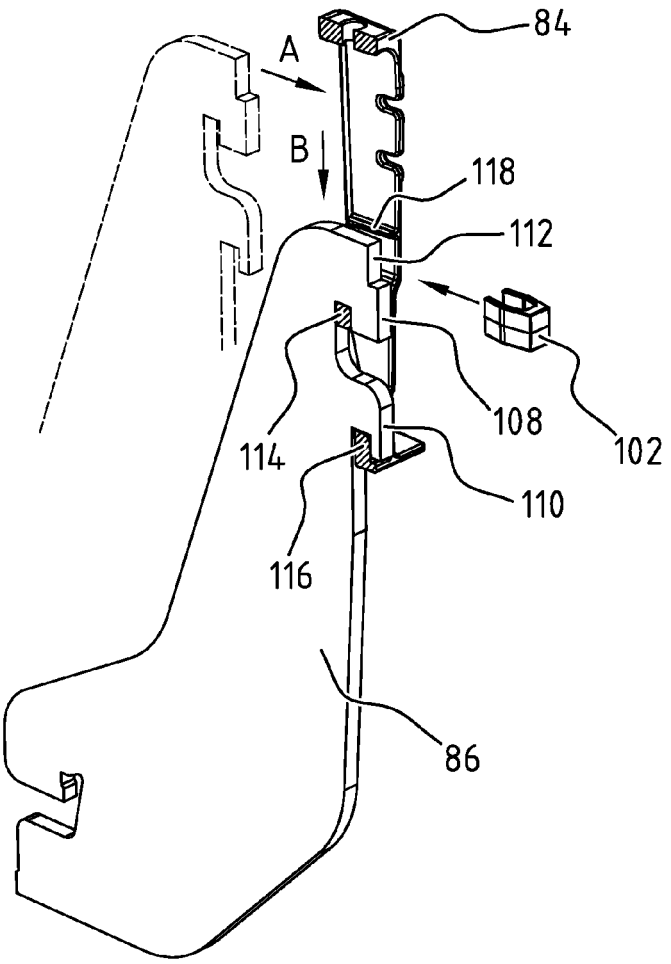

FIG. 10

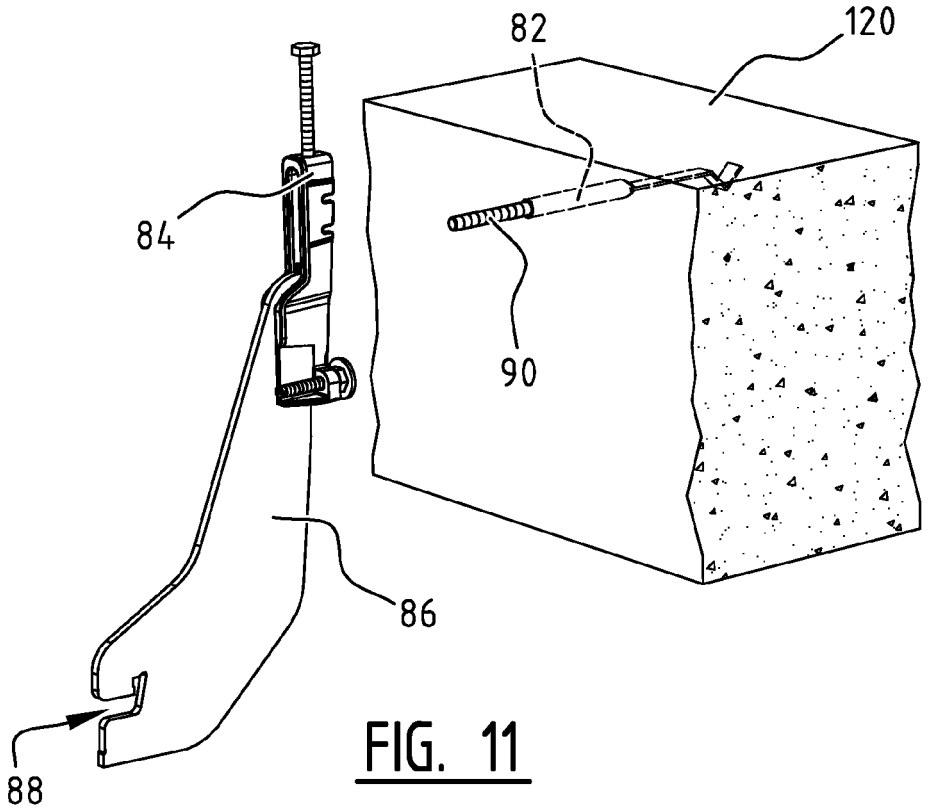

FIG. 11

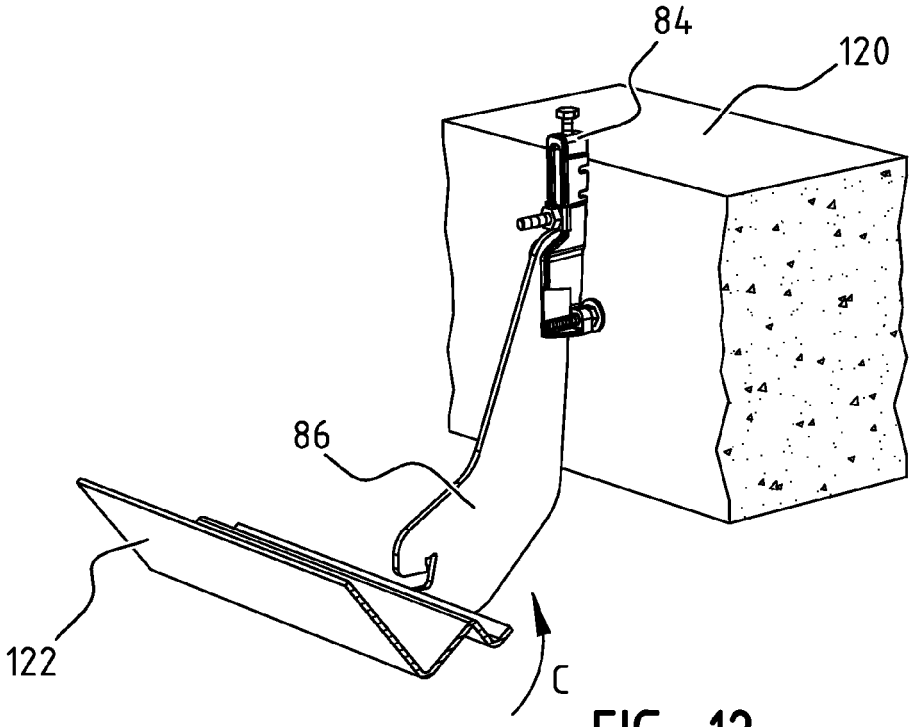

FIG. 12

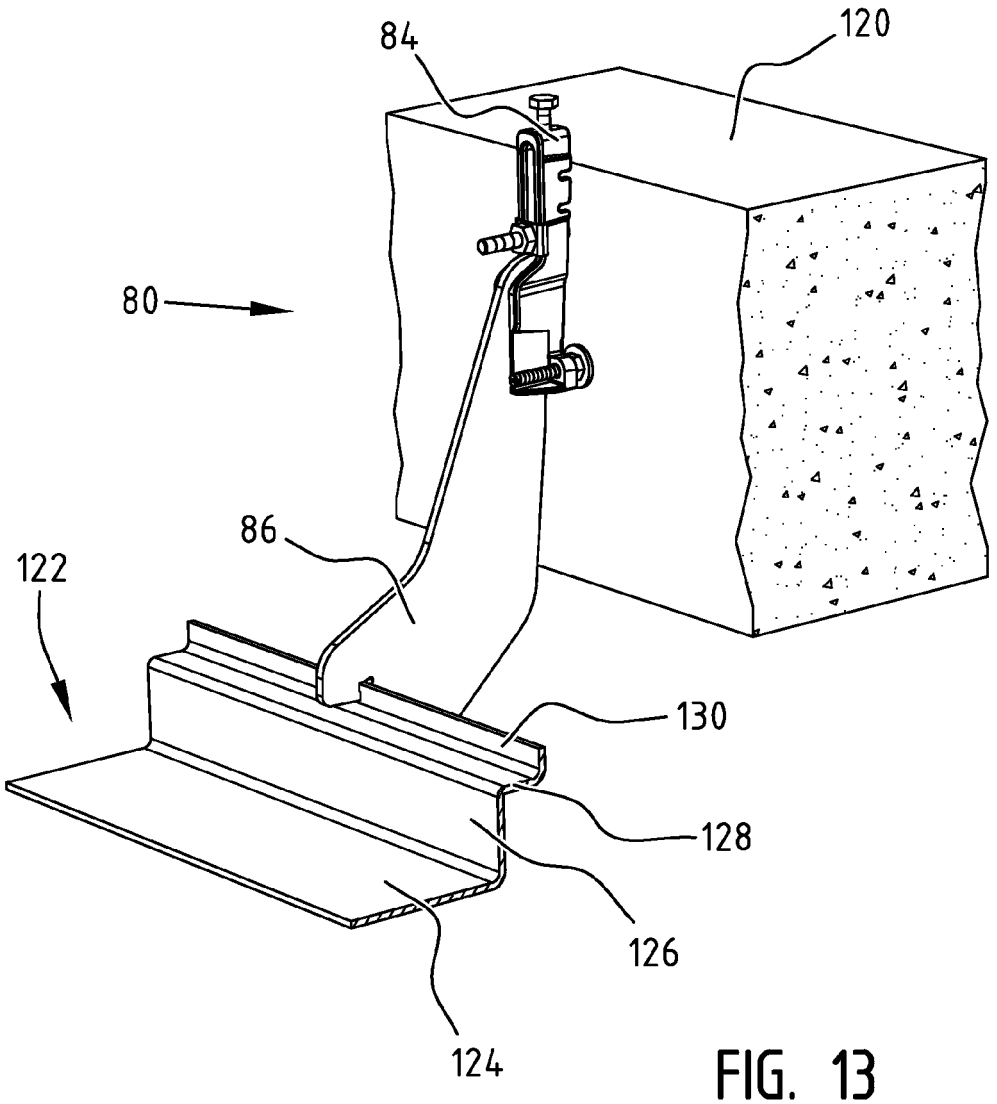

FIG. 13

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 11 15 7350

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	DE 101 55 638 A1 (MURJAHN AMPHIBOLIN WERKE [DE]) 22 May 2003 (2003-05-22) * paragraph [0039] - paragraph [0059]; figures 1-4 *	1-5,8, 10-15	INV. E04F13/08
X,D	NL 1 005 692 C2 (HAKRON VERANKERINGSTECHNIEK B [NL]) 12 October 1998 (1998-10-12) * page 5, line 17 - page 7, line 35; figures 1-3 * * figures 1-3 *	1,6,7	
X	EP 0 659 954 A1 (BOSSONG SRL [IT]) 28 June 1995 (1995-06-28) * column 2, line 41 - line 46; figures 1-3 * * column 4, line 51 - column 5, line 18 * * figures 1-5 *	1-4	
X	FR 2 546 214 A1 (BARTHELEMY FRANCOIS [FR]) 23 November 1984 (1984-11-23) * figure 1 *	1,5,10, 11	TECHNICAL FIELDS SEARCHED (IPC) E04F
X	EP 0 342 991 A1 (FINEAN ANDREW MICHAEL) 23 November 1989 (1989-11-23) * figure 4 *	1	
X	DE 89 06 426 U1 (KREMO WERKE HERMANS GMBH) 31 August 1989 (1989-08-31) * page 4, line 20 - page 6, line 19; figures 1, 2 *	1,2,5,11	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	2 November 2011	Severens, Gert

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

1

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 15 7350

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

02-11-2011

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 10155638 A1	22-05-2003	NONE	
NL 1005692 C2	12-10-1998	NONE	
EP 0659954 A1	28-06-1995	AT 194679 T	15-07-2000
		DE 69425233 D1	17-08-2000
		ES 2148271 T3	16-10-2000
		IT 1265315 B1	31-10-1996
FR 2546214 A1	23-11-1984	NONE	
EP 0342991 A1	23-11-1989	US 5067292 A	26-11-1991
DE 8906426 U1	31-08-1989	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

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

Patent documents cited in the description

- NL 1006592 **[0002]**