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

(11) **EP 2 110 491 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
**21.10.2009 Bulletin 2009/43**

(51) Int Cl.:
***E04F 13/08*** *(2006.01)* ***B44F 9/02*** *(2006.01)*

(21) Application number: **08380119.1**

(22) Date of filing: **18.04.2008**

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

(71) Applicant: **Trenzametal, S.L.**
**49012 Zamora (ES)**

(72) Inventor: **Bermejo Sotillo, Miguel Angel**
**49003 Zamora (ES)**

(74) Representative: **Manzano Cantos, Gregorio**
**Cabinet Manzano**
**Embajadores, 55**
**28012 Madrid (ES)**

Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) **Structure and achoring system for ventilated façade plates and assembly thereof**

(57) The invention relates to a structure and anchoring system for ventilated façade plates and assembly thereof based on a structure formed by a U-shaped anchoring base which is fixed directly on the work either by screws or by extendable wings which are inserted in grooves existing in the brick, two latches for the provisional positioning of the vertical load-bearing structure which latches are clipped on the anchoring base and, once the load-bearing structure is plumbed, are definitively fixed by screws and the vertical load-bearing structure made in a metal profile provided with three longitudinal tracks and with a rear channel in which an insulating material is coupled. The securing assembly for securing the cladding plate by clipping for the standard or three-dimensional installation of.the façade is carried out with two types of clamps, one for composite plates and the other for mineral plates, assembled in a standard or three-dimensional clamp holder, all secured to the structure by means of the clamp holder base. Both the structure and the assembly for clipping the cladding plate generate a four (planar façade) or five (three-dimensional façade) axes mobility, perfectly adjusting to the cladding plates.

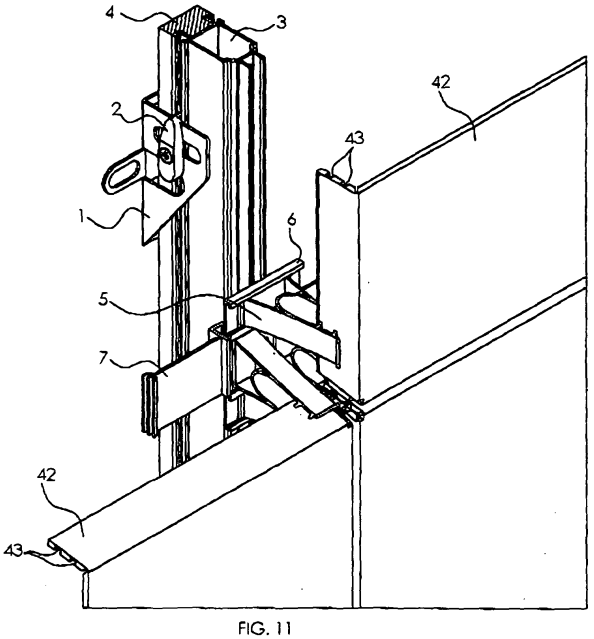



FIG. 11

EP 2 110 491 A1

## Description

### Object of the Invention

**[0001]** The invention, as the title indicates, relates to a metal structure, an anchoring system for cladding plates made of different materials and a way of installing both for making lightweight ventilated façades. The metal structure is basically formed by vertical tubular load-bearing structures which are fixed to the building by means of specific anchoring elements and cramps in the shape of a clamp which allows adjusting the point for securing the plates along three axes in their standard installation and along five axes in their particular installation. The plates, which can be made of different materials, have a profile which is pressure housed inside the clamps, being firmly secured without needing screws, rivets or adhesives.

### Background of the Invention

**[0002]** There are currently structure systems for lightweight ventilated façades characterized by a horizontal and vertical framework needing a precise layout and installation which absolutely conditions the subsequent assembly of the cladding plates. There are no systems or ventilated façade structures in which each point for securing the plates can be independently adjusted along three and five axes.

### Inventive Step

**[0003]** The advantageous usefulness of the invention, as the preliminary paragraphs of this specification has summarized, is that of providing an adjustable structure along three or five axes, formed only by vertical load-bearing structures with a system for adjustably fixing the load-bearing structure to the building and a system of adjustable clamps for securing the cladding plates which are assembled under pressure without needing adhesives, rivets or screws allowing to easily put the plates on again.

### Description of the Invention

**[0004]** The invention is therefore essentially based on a structure made with vertical profiles adjustable along two axes and on a system of clamps adjustable along two or four axes for pressure clipping the cladding plates. The structure object of the invention is formed by a U-shaped steel work anchoring base which is fixed directly on the work either by screws housed at the bottom of the U in the perforations existing for the purpose, by screws located in laterally extendable tabs or by equally extendable wings also located at the bottom of the U which are inserted in grooves existing in the brick. A second element is two latches, one on each side of the work anchoring base for the provisional positioning of the vertical load-bearing structure which are clipped on the anchoring base and which are used for securing during the process of laying out the vertical load-bearing structure and once it is plumbed it is definitively fixed by screws. Another element of the structure is the vertical load-bearing structure made in a metal profile provided with three longitudinal tracks, two side tracks in its rear part for their fixing on the anchoring base by means of the positioning latches and another front track for placing the clamp holder base as well as a rear channel in which an insulating material is coupled. This system for installing the vertical load-bearing structure offers the possibility of adding anchoring bases according to the needs of the work without having to disassemble the already installed elements. There are two variants of the securing assembly of the plate which are the securing assembly for a standard installation of a planar façade and the securing assembly for a three-dimensional installation with their respective clamp models for composite plates and mineral plates. In its first variant (planar façade), the standard securing assembly of the plate is formed by three elements: the clamp for the composite plate or the clamp for the mineral plate, the standard clamp holders and the clamp holder base, in which the clamps, with a maximum of four and a minimum of two according to the needs, are introduced into the channels of the standard clamp holder, individually moving horizontally in order to adjust to the position of the plate. In its second variant (three-dimensional façade), the three-dimensional clamps for a composite plate or mineral plate, the clamp holder ball joint and the clamp holder base are used, achieving, with a maximum of four and a minimum of two clamps according to the needs, together with the clamp holder ball joint, a total of four movement axes. Both variants have the clamp holder base in common, which is provided with clipping teeth for inserting the complete clamping assembly in the front track of the vertical load-bearing structure, being able to move vertically in its two variants, adjusting to the height of the plate, and definitively being fixed to the vertical load-bearing structure with a screw.

**[0005]** A broader idea of the features of the invention will be provided below making reference to the sheet of drawings etc.

### Drawings

**[0006]**

Figure 1 is a rear perspective view of the work anchoring base (1).

Figure 2 is a front perspective view of the positioning latch (2).

Figure 3 is a front perspective view of the vertical load-bearing structure (3).

Figure 4 is a front perspective view of the assembly

of the structure formed by Figures 1, 2 and 3.

Figure 5 is a front perspective view of the standard clamp (5) for a composite material cladding plate (42).

Figure 6 is a front perspective view of the standard clamp (41) for a mineral material cladding plate (50).

Figure 7 is a front perspective view of the standard clamp holder (6).

Figure 8 is a front perspective view of the clamp holder base (7).

Figure 9 is a front perspective view of the assembly of the complete standard clamping assembly of the composite material cladding plates (42) formed by Figures 5, 7 and 8.

Figure 10 is a front perspective view of the assembly of the complete standard clamping assembly of the mineral material cladding plates (50) formed by Figures 6, 7 and 8.

Figure 11 is a front perspective view of the assembly of the structure of Figure 4 and of the securing system of Figure 9 of the composite material cladding plates (42).

Figure 12 is a front perspective view of the assembly of the structure of Figure 4 and of the securing system of Figure 10 of the mineral material cladding plates (50).

Figure 13 is a front perspective view of the assembly of the complete three-dimensional clamping assembly for composite plates (42) formed by the three-dimensional clamp holder (44), the three-dimensional clamp (45) for composite plates (42) and the clamp holder base (7).

Figure 14 is a front perspective view of the assembly of the complete three-dimensional clamping assembly for mineral plates (50) formed by the three-dimensional clamp holder (44), the three-dimensional clamp (46) for mineral plates (50) and the clamp holder base (7).

Description of a Preferred Embodiment of the Invention

**[0007]** The description is focused on the corresponding illustration of the representations of the invention, based on the following:

**[0008]** The U-shaped work anchoring base (1) (Figure 1) is installed directly on the work and can be assembled in three different ways according to the requirements of the work, either it is assembled by means of two screws or plugs which are housed in the boreholes (8) located in the vertical plane (13) of the bottom of the U, or two extended tabs (9) are used, which tabs are coplanar with the wall of the work, for fixing it with screws or plugs by means of the boreholes (12) provided for such purpose, or extending the two flanges (10) located in the vertical plane (13) of the bottom of the U in order to be able to install it by inserting it in grooved bricks.

**[0009]** The positioning latch (2) of Figure 2, which is used for a pre-installation of the vertical load-bearing structure (3) on the already installed anchoring base (1), has a T-shaped catch (15) which enters, by rotating it 90°, in the vertical tracks (21) of the load-bearing structure (3) (Figure 3) and which is slid to the anchoring base (1) in which, by pressing on the plane (18), its tenon (20) provided with teeth (16) is inserted in the lips (23) of the track (21) through the eyelet (11) of the anchoring base (1), placing the plane (19) against the side wings (14) of the anchoring base (1) and leaving the pre-installed load-bearing structure (3). The eyelet (11) of the anchoring base (1) allows the load-bearing structure (3) to move perpendicularly to the vertical plane of the work in order to achieve the plumbing of the latter, finally being firmly fixed by a screw (47) (Figure 4) which is housed and guided in the borehole (17) of the latch (2) shown in Figure 2. The load-bearing structure (3) has an insulating material (4) between the two tracks (21) in its rear part. This system for fixing the load-bearing structure (3) allows installing more anchoring bases (1) as the work progresses.

**[0010]** The standard clamp (5) (Figure 5) for a composite material cladding plate (42) (Figure 11) has a plane (24) with two lips (38) projecting above the tongues (26) in order to be introduced in a vertical position in the groove (37) and in a horizontal position in the two grooves (29) of the standard clamp holder (6) (Figure 7) allowing horizontal movement in both cases in order to find the perfect coupling of the composite material cladding plate (42) provided with grooves (43) which are clipped in the teeth (27) (Figure 11). The elliptical segment (25) joining the two tongues (26) together acts as a spring and keeps the composite material cladding plate (42) pressed between the two tongues (26).

**[0011]** The standard clamp (41) (Figure 6) for a mineral material cladding plate (50) (Figure 12) has a plane (24) with two lips (38) projecting above the tongues (48) in order to be introduced in a vertical position in the groove (37) of the standard clamp holder (6) (Figure 7) allowing horizontal movement in order to find the perfect coupling of the mineral material cladding plate (50) provided with grooves (51) which are clipped in the teeth (40) (Figure 12). The rib (57) joining the two tongues (48) together acts as a spring and keeps the mineral material cladding plate (50) pressed between the two tongues (48).

**[0012]** The assembly of the standard clamp holder (6) with the standard clamps (5) or with the standard clamps (41) are inserted in the clamp holder base (7) (Figure 8), as shown respectively in Figures 9 and 10, placing the

plane (32) of the clamp holder base (7) against plane (28) and between the stops (39) of the standard clamp holder (6) with the clipping of the teeth (49), leaving the through boreholes (34) of the standard clamp holder (6) and (33) of the clamp holder base (7) aligned. The complete system of standard clamp (5) or standard clamp (41), clamp holder (6) and clamp holder base (7) of Figures 9 and 10 respectively is clipped or inserted in the assembled load-bearing structure (3) as shown in Figure 11, snapping the central rib (30) provided with two teeth (31) of the clamp holder base (7) into the track (22) of the load-bearing structure (3) which is inserted in addition to guided between the edges (35) of the clamp holder base (7) allowing a longitudinal movement of the assembly of Figure 9 or 10 within the track (22) of the load-bearing structure (3) in order to adjust to the height of the cladding plate. Once in position, a screw inserted into the aligned boreholes (34) of the standard clamp holder and (33) of the clamp holder base (7) leaves the system firmly joined.

**[0013]** The clamp holder base (7) is provided with two wings (55), which may or may not bend, ending with a three-toothed part (56) in order to secure insulating panels within the ventilated façade.

**[0014]** The three-dimensional clamp (45) (Figure 13) for a composite material cladding plate (42) and the three-dimensional clamp (46) (Figure 14) for a mineral material cladding plate (50) have in their rear part a perpendicular arm (52) with a branch segment (53) at the other end in order to be introduced into the ball joint (54) of the three-dimensional clamp holder (44) (Figures 13 and 14) allowing movement along two axes for the perfect coupling of the cladding plates.

**[0015]** Having suitably described the nature of the invention, it is hereby stated for the purposes thereof that it is etc...

## Claims

**1.** A structure and anchoring system for ventilated façade plates and assembly thereof which is **characterized in that** it comprises: a U-shaped work anchoring base (1) and has an eyelet (11) for the transverse movement of the load-bearing structure (3) and of three types of work fixing; a load-bearing structure (3) which is a profile having two tracks (21) allowing the vertical movement on the anchoring base (1) in addition to a front track (22) for the vertical movement of the anchoring system of the plates; a positioning latch (2) allowing a provisional securing at the time of the installation before the definitive tightening of the load-bearing structure (3) on the anchoring base (1); a standard clamp (5) for a composite material cladding plate; a standard clamp (41) for a mineral material cladding plate; a standard clamp holder (6) for standard clamps (5) or for standard clamps (41), a three-dimensional clamp (45) for a composite material cladding plate (42) and the three-dimensional clamp (46) for a mineral material cladding plate (50); a three-dimensional clamp holder (44) and a clamp holder base (7) common for all clamp holders and clamps.

**2.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the anchoring base (1) is **characterized in that** it is assembled by means of screws housed in the boreholes (8) located in the vertical plane (13) of said anchoring (1) by means of extending the tabs (9) which are coplanar with the wall of the work and screws housed in the boreholes (12) or by means of extending the flanges (10) located in the vertical plane (13) and it has in its side wings (14) respective grooves or eyelets (11) perpendicular to the wall to house the latches (2) and the fixing screws (47) of the load-bearing structure (3).

**3.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the latch (2) for assembly to the structure is **characterized in that** it is installed by means of clipping the T-shaped catch (15) of the latch (2) which enters by rotating it 90° in the vertical tracks (21) of the load-bearing structure (3) and which is slid to the anchoring base (1) where, by pressing on the plane (18), its tenon (20) provided with teeth (16) is inserted in the lips (23) of the track (21) through the eyelet (11) of the base (1), placing the plane (19) against the side wings (14) of the anchoring base (1) and finally being firmly fixed by a screw which is housed in the borehole (17) and in the channel (21) of the load-bearing structure (3).

**4.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the load-bearing structure (3) of the structure is **characterized in that** it is a profile which has an insulating material (4) between the two tracks (21) in its rear part.

**5.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the assembly of the structure is **characterized in that** anchoring bases (1) can be added without needing to disassemble the load-bearing structure (3).

**6.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the standard clamps (5) and (41) for respective cladding plates are **characterized in that** standard clamp (5) has an elliptical segment (25) joining the two tongues (26) together, both tongues provided with two teeth (27), and standard clamp (41) has a rib (57) joining the two tongues (48)

together, each tongue having one tooth (40), actuating the spring segments keeping the cladding plate pressed between the two tongues (26) and (48) respectively.

**7.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, the standard clamps (5) and (41) for respective cladding plates are **characterized in that** standard clamps (5) are housed in grooves (29) and (37) of standard clamp holder (6) and standard clamps (41) are housed in grooves (29) of standard clamp holder (6) and can be horizontally slid in both grooves in order to adjust to the measurement of the cladding plate.

**8.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1 and 7, wherein the assembly of the standard clamp holder (6) with the standard clamps (5) and (41) for respective cladding plates is **characterized in that** with standard clamps (5) or with standard clamps (41) they are inserted in the clamp holder base (7) between the stops (39) of the standard clamp holder (6) with the clipping of the teeth (49), leaving the through boreholes (34) of the standard clamp holder (6) and (33) of the clamp holder base (7) aligned.

**9.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1, 6, 7 and 8, wherein the assembly of standard clamp (5) or standard clamp (41), standard clamp holder (6) and clamp holder base (7) is **characterized in that** it is clipped or inserted in the load-bearing structure (3) by snapping the central rib (30) provided with two teeth (31) in the track (22) of the load-bearing structure (3) which is inserted in addition to guided between the edges (35) of the clamp holder base (7), allowing a longitudinal movement within the track (22) of the load-bearing structure (3) in order to adjust to the height of the cladding plate before the definitive tightening of the fixing screw.

**10.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1 and 8, wherein the clamp holder base (7) is **characterized by** being provided with two wings (55), which may or may not bend, ending with a three-toothed part (56) in order to secure insulating panels within the ventilated façade.

**11.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the three-dimensional clamp holder (44) is **characterized by** comprising a ball joint (54) providing two movement axes to t the securing assembly for he three-dimensional clamps.

**12.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the three-dimensional clamps (45) and (46) for respective cladding plates are **characterized in that** they have in their rear part a perpendicular arm (52) with a branch segment (53) at the other end in order to be introduced into the ball joint (54) of the three-dimensional clamp holder (44) allowing movement along two axes for the perfect coupling of the cladding plates.

**13.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 12, wherein the composite cladding plate (42) is **characterized in that** it has a box-shaped grooving (43) for clipping the teeth (27) of the standard clamp (5) and of the three-dimensional clamp (45).

**14.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 12, wherein the mineral cladding plate (50) is **characterized in that** it has a box-shaped grooving (51) for clipping the teeth (40) of the standard clamp (41) and of the three-dimensional clamp (46).

**Amended claims in accordance with Rule 137(2) EPC.**

**1.** A structure and anchoring system for ventilated façade plates and assembly thereof which is **characterized in that** it comprises: at least one U-shaped anchoring base (1) which has an eyelet (11) for the transverse movement of the load-bearing structure (3), and three types of fixing means:

a) at least one load-bearing structure (3) supporting the load consisting of an inner tubular profile having two outer lateral tracks (21) allowing the vertical movement on the anchoring base (1), and an additional front track (22) for the vertical movement of the anchoring means for the façade plates;
b) at least one positioning latch (2) allowing a provisional securing of the load-bearing structure (3) at the time of installation, before the definitive tightening on the anchoring base (1); and
c) anchoring means for the façade plates, comprising:

- at least one first single clamp (5) for a compact material cladding plate (42) and/or;
- at least one second double clamp (41), for mineral material cladding plates (50) and;
- at least one single clamp holder (6) for the first and second double clamp (5, 41) or;
- at least one first three-dimensional clamp (45), for the compact material cladding

plates (42) and/or;
- at least one second three-dimensional clamp (46), for mineral material cladding plates (50) and;
- at least one three-dimensional clamp holder (44) for the first and second three-dimensional clamp (45,46);
- the anchoring means further comprising:
- at least one clamp holder base (7) for each clamp holder (6, 44), identical clamp holder bases (7) being common for all clamp holders (6, 44) and clamps (5, 41, 45, 46).

**2.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the anchoring base (1) is **characterized in that** it is assembled in the wall by means of screws housed in the boreholes (8) located in the rear plane (13) of said anchoring (1), and/or by means of extending the tabs (9) which are coplanar with the wall of the work and screws housed in the boreholes (12) or by means of extending the flanges (10) located in the rear plane (13) and it has in its side wings (14) respective grooves or eyelets (11) to house the latches (2) and the fixing screws (47) of the load-bearing structure (3).

**3.** A structure and anchoring system for ventilated façade plates and assembly thereof wherein the latch (2) for assembly to the load-bearing structure (3) is **characterized in that** it comprises a T-shaped catch (15) for clipping the latch (2) which enters by rotating it 90° in the vertical (outer lateral) tracks (21) of the load-bearing structure (3) and which is slid to the anchoring base (1) where, by pressing on the plane (18), it is inserted in the lips (23) of the track (21) by means of its tenon (20) provided with teeth (16) through the eyelet (11) of the base (1), placing the plane (19) against the side wings (14) of the anchoring base (1) and being firmly fixed by a screw which is housed in the borehole (17) and in the track (21) of the load-bearing structure (3).

**4.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the load-bearing structure (3) of the structure is a profile which is **characterized by** having an insulating material (4) between the two tracks (21) in its rear part, on the inside.

**5.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the assembly of the structure is **characterized in that** the anchoring bases (1) are fixed without needing to disassemble the load-bearing structure (3).

**6.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1 wherein the single and double clamps (5) and (41) for respective cladding plates are **characterized in that** the single clamp (5) has an elliptical segment (25) joining the two tongues (26) together, both tongues provided with two teeth (27), and the double clamp (41) has a rib (57) joining the two tongues (48) together, each tongue having one tooth (40), actuating the spring segments keeping the cladding plate pressed between the two tongues (26) and (48) respectively.

**7.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1 and 6, the single and double clamps (5) and (41) for respective cladding plates are **characterized in that** the single clamps (5) housed in grooves (29) and (37) of the single clamp holder (6) and the double clamps (41) are likewise housed in grooves (29) of the single clamp holder (6) and can be horizontally slid in both grooves in order to adjust to the measurement of the cladding plate.

**8.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1 and 7 wherein the assembly of the single clamp holder (6) with the single and double clamps (5) and (41) for respective cladding plates is **characterized in that** with single clamps (5) or with double clamps (41) they are inserted in the clamp holder base (7) between the stops (39) of the single clamp holder (6) with the clipping of the teeth (49), leaving the through boreholes (34) of the single and double clamp holder (6) and (33) of the clamp holder base (7) aligned.

**9.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1, 6, 7 and 8 wherein the assembly of single clamp (5) or double clamp (41), simple clamp holder (6) and clamp holder base (7) is **characterized in that** it is clipped or inserted in the load-bearing structure (3) by snapping the central rib (30) provided with two teeth (31) in the track (22) of the load-bearing structure (3) which is inserted in addition to guided between the edges (35) of the clamp holder base (7), allowing a longitudinal movement within the track (22) of the load-bearing structure (3) in order to adjust to the height of the cladding plate before the definitive tightening of the fixing screw.

**10.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 1 and 8, wherein the clamp holder base (7) is **characterized by** being provided with two wings (55), which may or may not bend, ending with a three-toothed part (56) in order to secure insulating panels within the ventilated façade.

**11.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the three-dimensional clamps (45) and (46) for respective cladding plates are **characterized in that** they have in their rear part a perpendicular arm (52) with a branch segment (53) at the other end in order to be introduced into the ball joint (54) of the three-dimensional clamp holder (44) allowing movement along two axes for the perfect coupling of the cladding plates

**12.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 1, wherein the three-dimensional clamp holder (44) is **characterized by** comprising a ball joint (54) provided with a semi-spherical head (53) adapted for the assembly of the three-dimensional clamps (45, 46) providing two positioning axes.

**13.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claim 12, wherein the compact cladding plate (42) is **characterized in that** it has a box-shaped grooving (43) for clipping the teeth (27) of the single clamp (5) and of the three-dimensional clamp (45).

**14.** A structure and anchoring system for ventilated façade plates and assembly thereof according to claims 11 and 12, wherein the mineral cladding plate (50) is **characterized in that** it has a box-shaped grooving (51) for clipping the teeth (40) of the double clamp (41) and of the three-dimensional clamp (46).

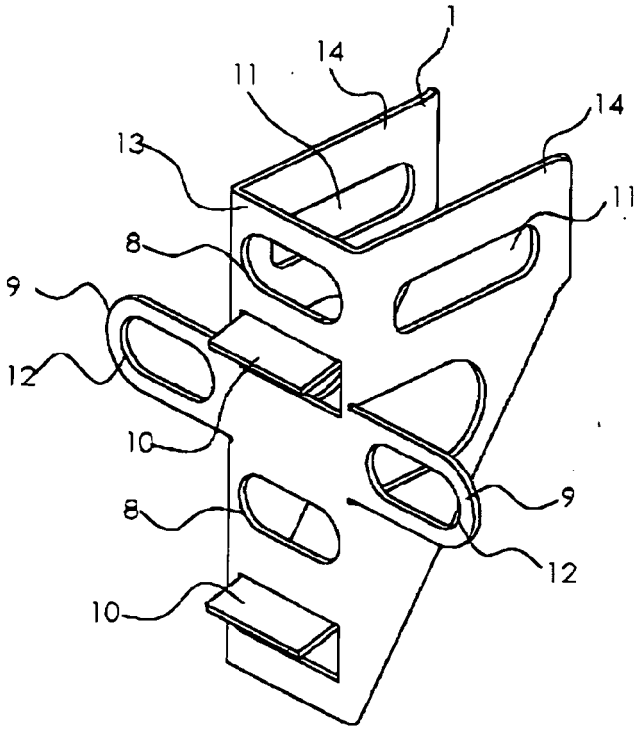



FIG. 1

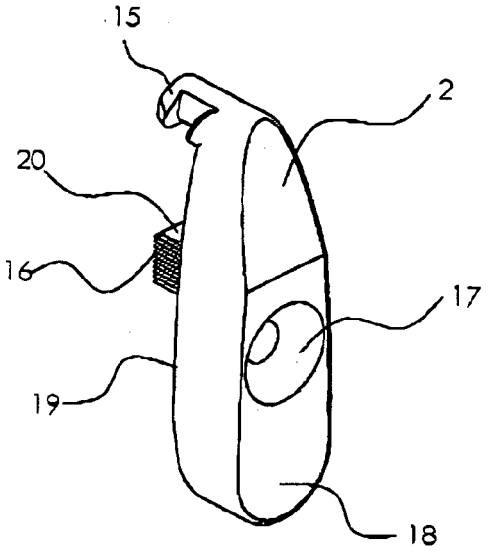



FIG. 2

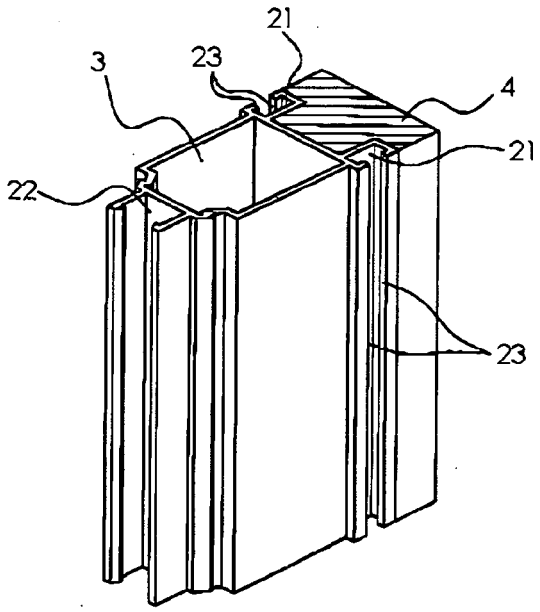



FIG. 3

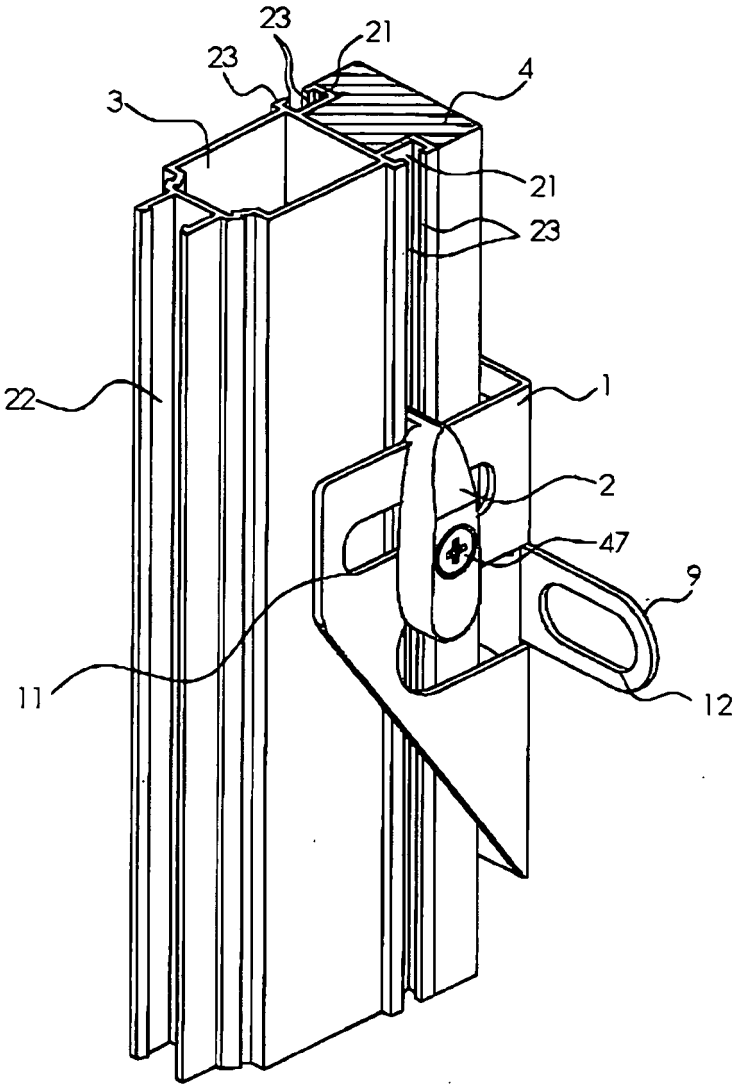



FIG. 4

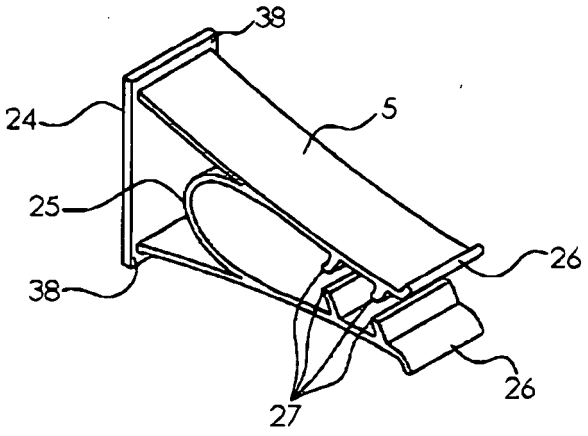



FIG. 5

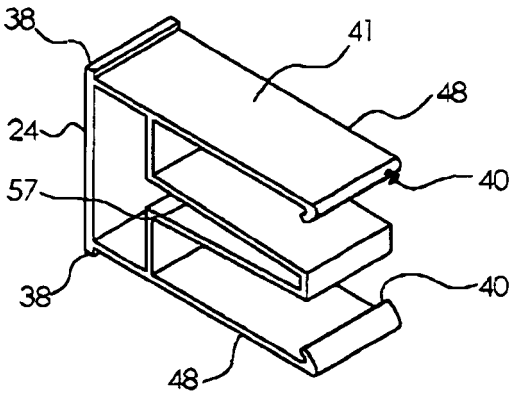



FIG. 6

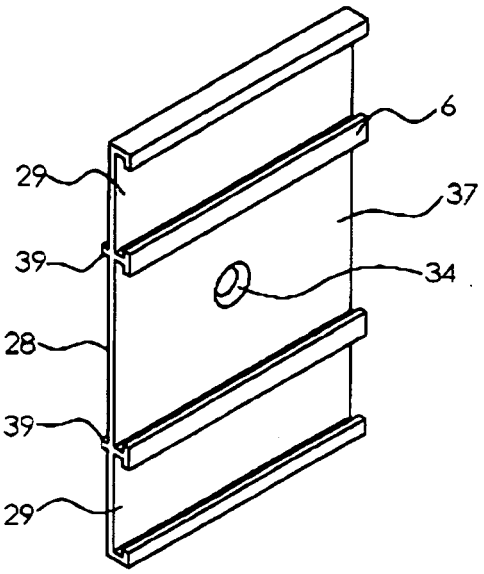



FIG. 7

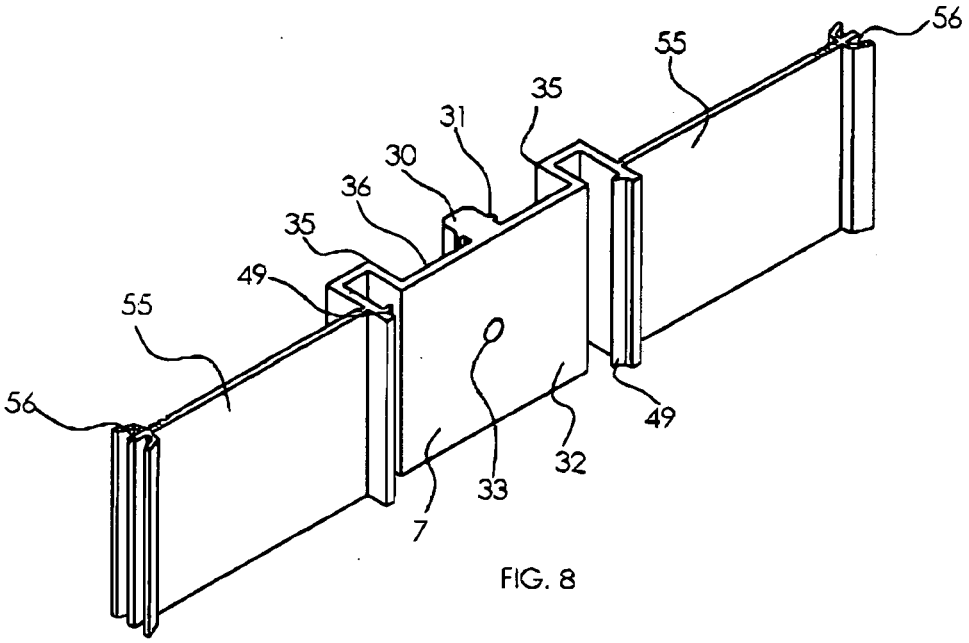



FIG. 8

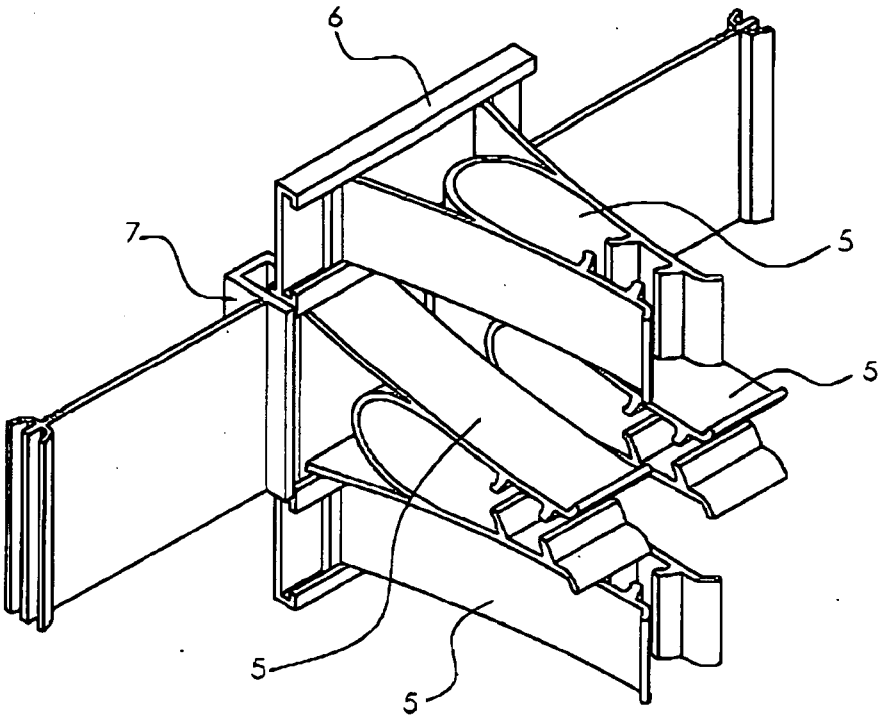



FIG. 9

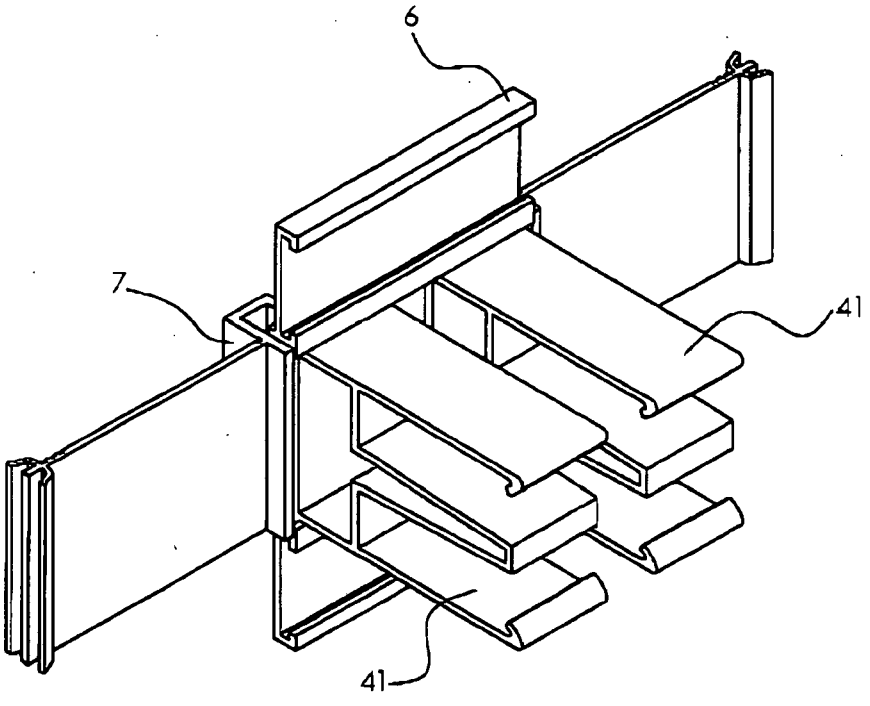



FIG. 10

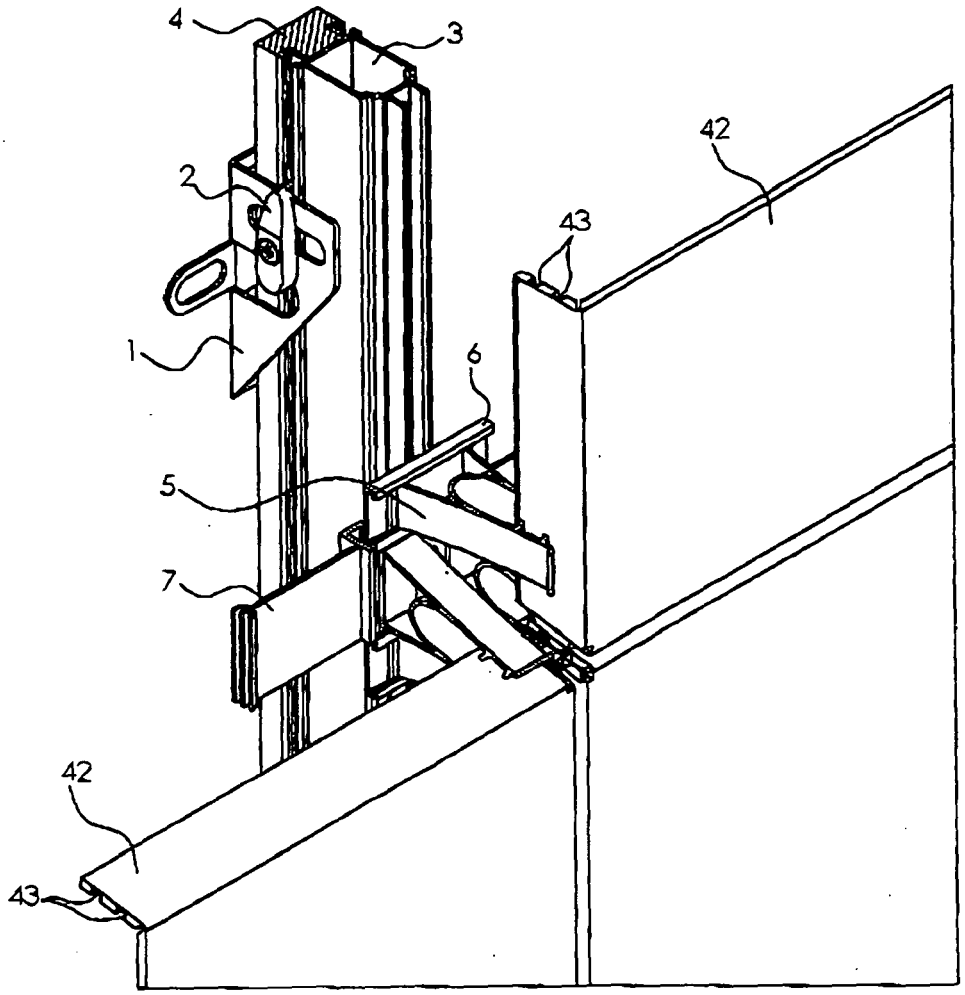



FIG. 11

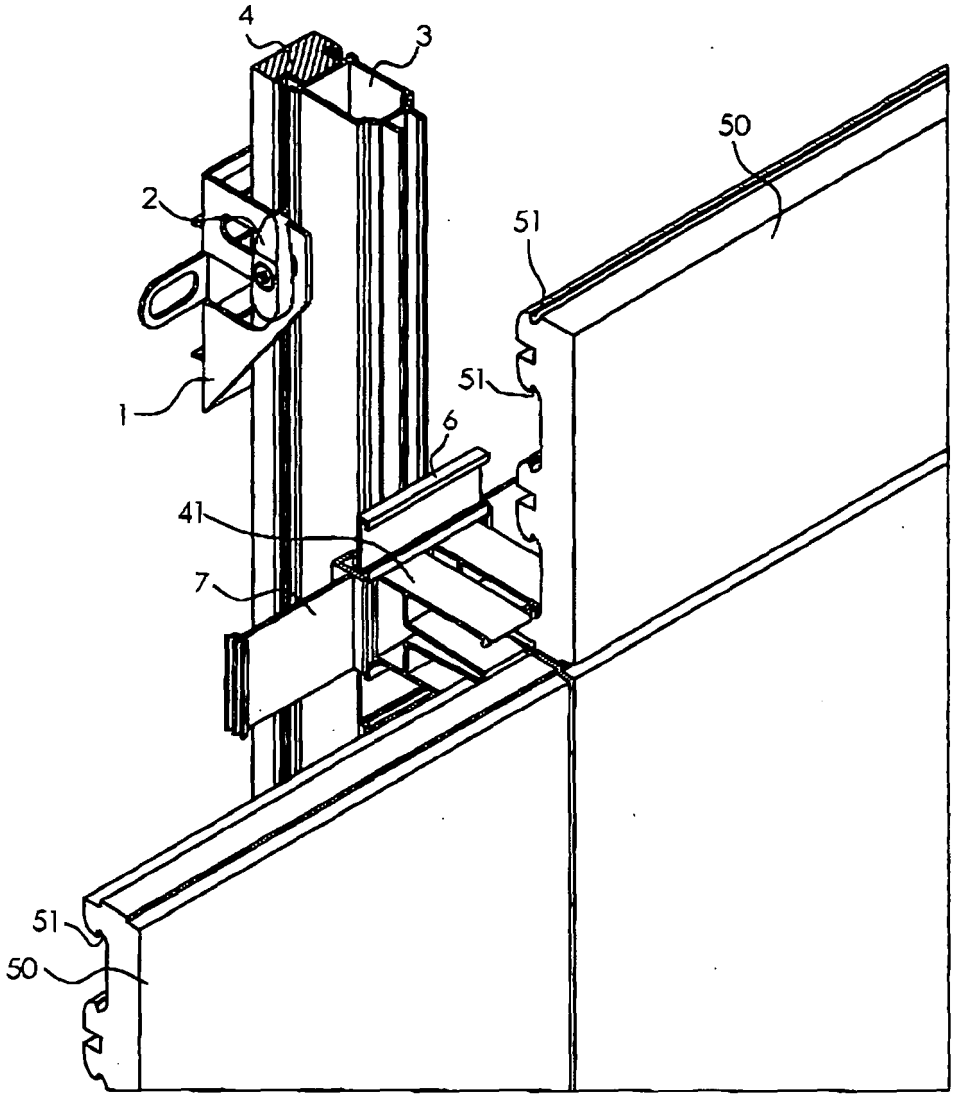



FIG. 12

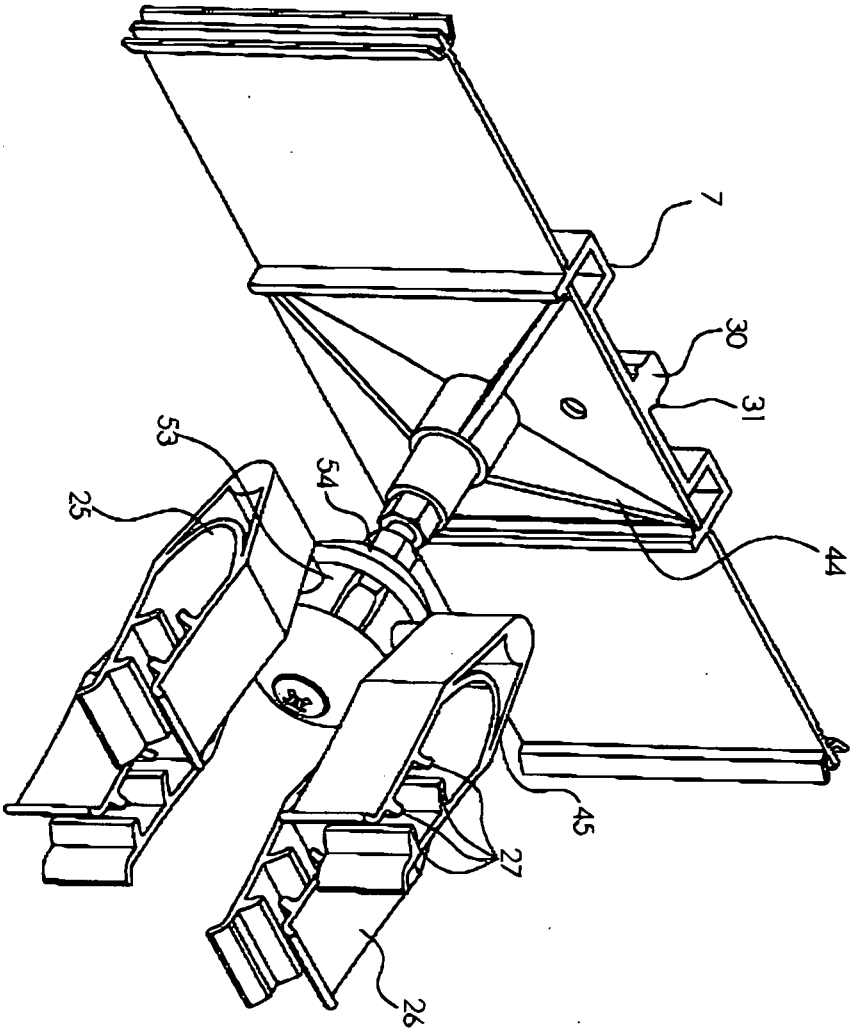
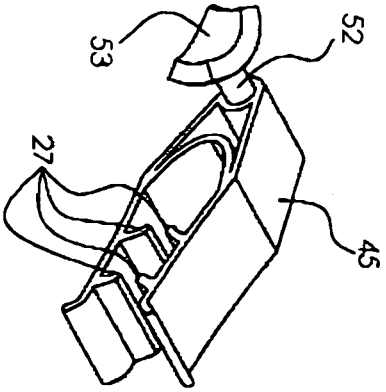



FIG. 13



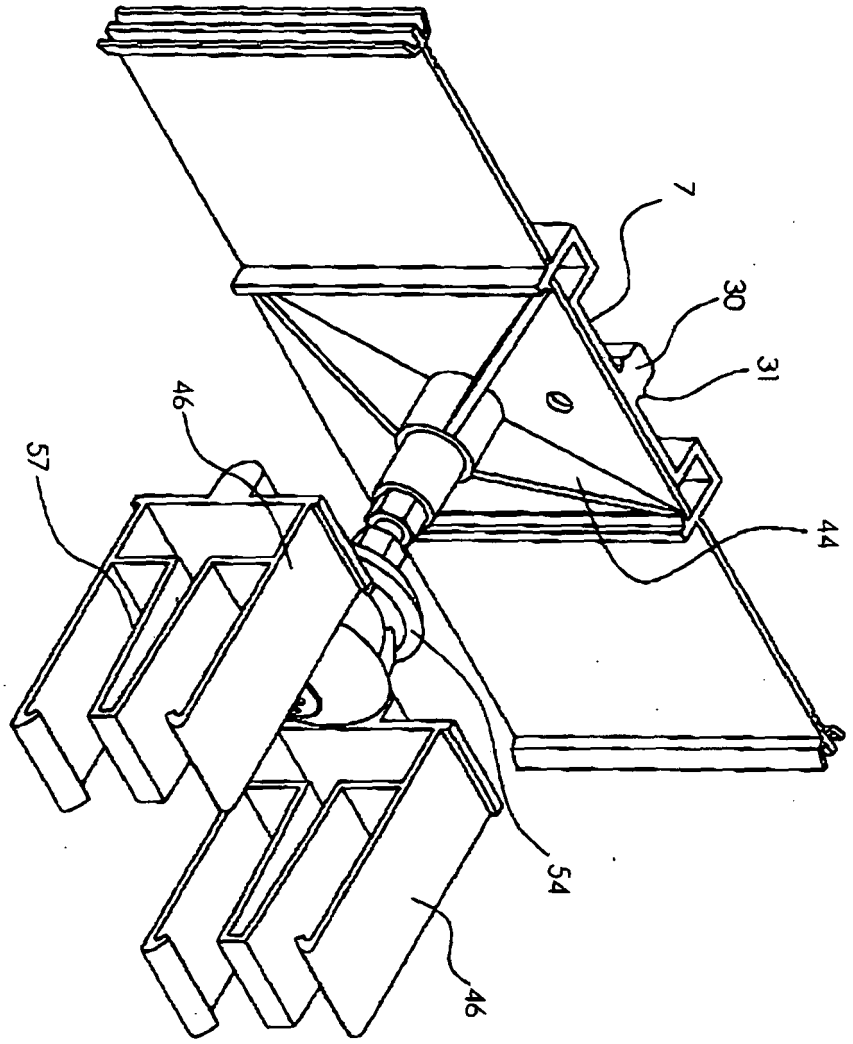
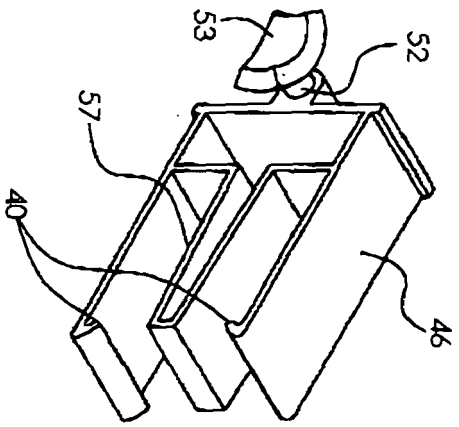



FIG. 14



European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 08 38 0119

## 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 | EP 0 605 988 A (HUNTER DOUGLAS IND BV [NL]) 13 July 1994 (1994-07-13) * page 4, column 6, line 17 - page 5, column 7, line 53; figures 7-10 * | 1,2 | INV. E04F13/08 B44F9/02 |
| Y | | 11 | |
| | ----- | | |
| Y | EP 0 374 970 A (AMANCO L & F AG [CH]) 27 June 1990 (1990-06-27) * page 2, column 1, lines 1-18,41-48 * * page 3, column 4, lines 13-15,35-57; figures 1,2 * | 11 | |
| A | | 1 | |
| | ----- | | |

TECHNICAL FIELDS SEARCHED (IPC)

E04F
E06B
B44F

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| The Hague | 30 September 2008 | Ayiter, Johan |

CATEGORY OF CITED DOCUMENTS

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

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

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

8

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 38 0119

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.

30-09-2008

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| EP 0605988 A | 13-07-1994 | JP 6229096 A | 16-08-1994 |
| | | SG 54093 A1 | 16-11-1998 |
| EP 0374970 A | 27-06-1990 | DD 290696 A5 | 06-06-1991 |
| | | DE 3843619 A1 | 28-06-1990 |

EPO FORM P0459

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