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

(11) **EP 2 017 399 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
21.01.2009 Bulletin 2009/04

(51) Int Cl.:
E04F 11/18 *(2006.01)*

(21) Application number: **08153283.0**

(22) Date of filing: **26.03.2008**

(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

(30) Priority: **16.07.2007 SE 0701722**

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(54) **A facing arrangement for a balcony and a method for accomplishing such an arrangement**

(57) A facing arrangement for a balcony comprises a panel (1) of glass or other material to be attached to a balcony railing (11, 13). Horizontal upper and lower mounting profiles (15, 16, 18; 30, 31) are attached to the balcony railing (11, 13) and upper and lower panel profiles (20, 21; 33, 34) are attached to the panel (1), the mounting profiles being constructed to receive the panel profiles for carrying the panel.

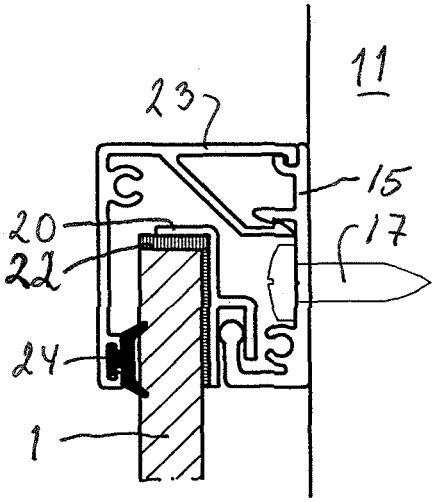
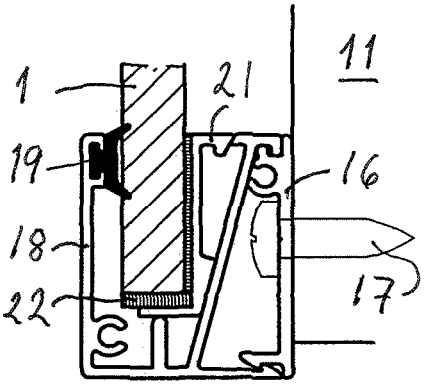


Fig 8



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Description

Technical Field

[0001] The present invention relates to a facing arrangement for a balcony, comprising a panel of glass or other material to be attached to a balcony railing. It also relates to a method of accomplishing such an arrangement.

Background of the Invention

[0002] In the 1960's production started of light-weight balcony railings of extruded aluminium and profiled aluminium sheets. Such railings had a weight of some 5 kg per running metre. The maximum profile length that could be surface treated was 6.5 metres. A railing with such a length thus had a weight of only 30-35 kg and could easily be handled and mounted by two persons without lifting equipment.

[0003] Lately, the architectural style has changed, and today the majority of balcony railings are executed with panels of glass or other materials. At the same time the requirements for strength and security have increased. Accordingly, thicker and thus heavier glass panels have to be used, and there are also more stringent requirements on the mounting means for the paneling or facing, so that the paneling cannot get loose from the railing.

[0004] Glass railing constructions today often weigh some 20-25 kg per running metre. If two persons without lifting equipment shall be able to handle such constructions, they can be no more than 2 m each, which is a drawback for different reasons, among other things that the horizontal aluminium profiles will have many joints. This is not acceptable neither from an aesthetic nor from a user viewpoint.

[0005] Balcony railings are today manufactured and mounted in one of the following ways with accompanying drawbacks:

a) The railings are manufactured to the desired length with the glass panels premounted in a factory. In this way the glass panels can be attached in a required way to the aluminium profiles by adhesive or tape, which requires a clean, dry and warm indoor environment. The drawback is then that the weight of a long railing can amount to 100-150 kg, which requires extensive lifting equipment both at manufacturing and mounting. Still, the risk for industrial injuries is great. Another drawback is that the glass panels easily break at the handling of such long railings, as the aluminium framework itself is rather weak or yielding. Great costs are involved in exchanging adhered or taped glass panels, which is true also for future maintenance.

b) The railing frameworks are manufactured in long lengths, and the glass panels are delivered separately to the building site. The railing framework is mounted to the balcony slab, and then each glass panel is mounted from the outside. For this purpose a costly scaffold or skylift is needed, but also sturdy aluminium profiles with separate glass strips or rubber strips are required, which gives a clumsy and unaestethical appearance. The aluminium profiles have to be rather large, because it is not possible to apply adhesive or tape outdoors, which means that deep glass grooves are needed. The mounting is expensive.

c) The railing frameworks are manufactured in long lengths, and the glass panels mounted in separate frames are delivered to the building site. The frames are usually manufactured of U-profiles at four sides, connected at the corners. The glass panels are mounted by means of rubber strips. This construction has the marked disadvantage that the U-profiles are weak and yielding and that the grooves are too shallow, so that vertical joint profiles are needed for accomplishing the desired end result with regard to strength. As under b) above, each balcony railing is mounted to the balcony slab, whereupon the glass elements are mounted from the outside with a number of visible screws or pop rivets. As these frames have profiles with a width of say 30 mm, the vertical joints where the frames meet will be 60 mm wide, which is disturbing from an aestethical viewpoint.

The mounting is also expensive.

What has been said above regarding glass panels is true also for other panel materials.

The Invention

The object of the invention is to provide the continued opportunity to manufacture and mount long aluminium balcony railings with heavy facing materials such as panels of glass and other materials without such drawbacks as wide horizontal profiles, disturbing vertical joint profiles between neighboring facing material sections, visible attachment means, heavy lifts, high mounting expenses, high maintenance costs, and unsatisfactory strength.

[0006] This is according to the invention attained by horizontal upper and lower mounting profiles attached to the balcony railing and upper and lower panel profiles attached to the panel, the mounting profiles being constructed to receive the panel profiles for carrying the panel.

[0007] Embodiments of the invention are covered by dependent claims.

[0008] A method for accomplishing a facing arrangement for a balcony is according to the invention characterized in that the balcony railing is provided with horizontal upper and lower mounting profiles, that the panel is provided with upper and lower panel profiles, and that the panel is hanged on the mounting profiles by means of the panel profiles.

[0009] By the invention it will be possible also in the

future to manufacture aluminium balcony railings in long sections with such heavy facing materials as glass with large thickness without such described drawbacks as wide horizontal profiles, marked vertical profiles between the facing sections, visible attachments, heavy lifts, expensive mounting, high repair costs etc.

[0010] Panels of glass or the like are provided at two opposite sides with special panel profiles by tape or adhesive indoors in a clean, dry and warm environment. The other two sides do not have any profiles. Other panel materials can be used, the requisite being that there are plane surfaces for attaching the panel profiles.

[0011] The length of the elements is determined by the weight of the facing material and by architectural desires and may preferably be 1.5-3 m.

[0012] The balcony railings are manufactured in long lengths, and the two mounting profiles, of which one is situated at the lower edge of the facing panel and the other one at the upper edge of the facing panel, are so constructed that the facing panels can be carried thereby via the panel profiles.

[0013] The balcony railings are first mounted to the balcony slab, whereupon one facing panel at a time is mounted. The panel mounting can easily be accomplished by two persons from the balcony slab, and no scaffold, crane or skylift is needed. When the panels are especially heavy, suction cups may be used, so that the risk for loosing panels is avoided.

[0014] As the mounting profiles are long and preferably extend over the entire length of the balcony, the mounting of the panels will be very stable in spite of the use of slender profiles, and there will be no visible attachment means.

Brief Description of the Drawings

[0015] The invention will be described in further detail below under reference to the accompanying drawings, in which

Fig 1 is a front view of a known facing arrangement for a balcony,

Fig 2 is sectional side view along the line II-II in Fig 2 to a larger scale,

Fig 3 is a front view of a facing arrangement according to the invention for a balcony,

Fig 4 is a simplified side view of a balcony with a facing arrangement according to the invention,

Figs 5 - 8 are sectional side views illustrating steps in mounting a first embodiment of a facing arrangement according to the invention, and

Fig 9 is a sectional side view of a second embodiment of a facing arrangement according to the invention.

Detailed Description of Embodiments

[0016] Figs 1 and 2 illustrate an example of a facing arrangement for a balcony according to the prior art. Glass panels 1 are mounted in respective frameworks 2, for example of aluminium profiles, to form facing elements. These elements are mounted to a balcony railing 3, for example in the way illustrated in Fig 2.

[0017] A glass panel 1 is in Fig 2 shown mounted in an aluminium profile framework 2 by means of rubber elements 4. The framework 2 is attached by means of rivets or screws 5 to mounting brackets 6 attached to the balcony railing 3.

[0018] Fig 3 is a view corresponding to Fig 1 of a facing arrangement for a balcony according to the invention. It appears that the glass panels 1 here are not individually mounted in any framework and accordingly that their vertical side edges can be in direct contact with each other.

[0019] Fig 4 shows a balcony slab 10 with a balcony post 11 (attached by an attachment element 12) and a handrail 13. The balcony railing thus consisting of several balcony posts 11 and a handrail 13 is preferably premounted in a factory.Very schematically illustrated, horizontal profiles 14 are attached to the balcony posts 11 and carry one or more glass panels 1.

[0020] Figs 5-8 show a first embodiment of the invention and illustrate consecutive steps in the mounting of glass panels 1. (It is to be understood that these panels 1 can be manufactured of different materials and that the continued use of the term glass panel has no limiting effect on the scope of this description.) For the sake of clarity, reference numerals are sparsely used in these Figures.

[0021] Preferably already at the factory, an upper mounting profile 15 and a lower mounting base profile 16 are mounted to the balcony posts 11 by means of screws 17 or the like. These profiles - like all other profiles mentioned below - are preferably made of aluminium. Alternatively, however, these profiles may be made of PVC, composite material or even stainless steel plate. These mounting profiles 15 and 16 may have the same length as the balcony railing or the handrail 13 up to a maximum length of say 7 m. The limiting factor for the length may be the possibility to paint or surface treat long profiles.

[0022] The positions of the mounting profiles heightwise may vary depending on the circumstances. The upper mounting profile 15 may be mounted up to the handrail 13 but probably not more than 800 mm over the balcony slab 10, whereas the lower one 16 can be placed higher up on the balcony posts 11, probably however not higher than at the upper surface of the balcony slab 10.

[0023] A bottom mounting profile 18 is snapped onto the lower mounting base profile 16. By the use of the bottom mounting profile over the lower mounting profiles 16, 18 it will be possible to conceal the mounting screw 17. The two lower mounting profiles 16, 18 can below be referred to collectively as the lower mounting profile 16, 18.

[0024] The bottom mounting profile 18 may preferably be provided as shown with an internal rubber strip 19 for sealing purposes.

[0025] Each glass panel 1 is at a factory provided with an upper panel profile 20 and a lower panel profile 21. These panel profiles 20, 21 are attached at room temperature by means of tape 22, adhesive or the like. If another panel material than glass is used, a mechanical attachment may be provided.

[0026] When glass or another heavy material is used for the panels, the length may be limited to 1-2 m, so that the weight of each panel does not exceed 50 kg, which is the maximum allowable weight for two persons to handle. Longer lengths are possible for lighter materials.

[0027] The prefabricated balcony railing is mounted on the edge of the balcony slab 10, as shown in Fig 4, or on top of the slab. As the facing elements are not mounted, it will be easy to mount the railing by the balcony posts, in spite of the fact that the lower mounting profile 16, 18 may be situated below the attachment element 12. Traditional balcony railings have their facings factory mounted. In this case the attachment element 12 must be premounted on the post 11, which means that three persons instead of two are needed, because two persons must carry the balcony railing, whereas the third person attaches the attachment element 12 to the balcony slab. Alternatively, distance elements for the facing must be used, but this gives the railing a clumsy and ugly appearance.

[0028] When the balcony railing 11, 13 thus is mounted to the balcony slab 10, glass panels 1 can be mounted one by one by being lifted over the handrail 13 and lowered down towards the lower mounting profile 16, 18.

[0029] As is shown in Fig 5, it is suitable to tilt the glass panel 1 somewhat outwardly and lower it down into the lower mounting profile 16, 18.

[0030] The premounted rubber strip 19 is designed so as not to be folded down during this insertion, and it can also be treated for providing as little friction as possible.

[0031] The lower panel profile 21 and the lower mounting profile 16, 18 may as shown be provided with cooperating beveled surfaces for guiding and for forcing the glass panel 1 towards the rubber strip 19, so that an adequate water sealing will be provided.

[0032] An expensive scaffold would be needed, if the rubber strip should be mounted afterwards, which is done traditionally.

[0033] As is shown in Fig 6, the upper edge of the glass panel 1 is now brought in against the upper mounting profile 15, so that the upper panel profile 20 may engage a ball shaped part thereof as shown and may be hooked on.

[0034] It is, however, important that the glass panel 1 comes to rest against the bottom of the mounting profile 16, 18, as shown in Fig 7, and does not hang on the upper mounting profile 15, because the tape 22 cannot withstand high shear forces. The upper mounting 15, 20 accordingly only holds the glass panel 1 to the balcony post 11 and negotiates horizontal forces.

[0035] By the shown and described design, the positive effects of the tape are utilized, whereas its drawback in the form of low shearing strength is avoided.

[0036] In Fig 7 the mounting of the glass panel 1 is completed in itself. However, the mounting is preferably supplemented with a cover profile 23. This cover profile 23 may or may not be provided with a sealing rubber strip 24. The cover profile 23 can be snap locked to the upper mounting profile 15 by the respective appearances, as is shown in Figs 7 and 8. The cover profile 23 has the double purpose of locking the construction and to provide a better appearance.

[0037] The balcony railing is now completely mounted.

[0038] Corners of the horizontal aluminium profiles can be mitered or be mounted together by means of special corner fittings. In their ends the horizontal aluminium profiles may be provided with end covers, that are connected by screws or snap locking.

[0039] Compensation for different thicknesses of the panels of glass or other material may be afforded by rubber strips.

[0040] Vertical joints between the facing elements may be open with a 2-3 mm distance between neighboring panels of stable materials, like glass, but it is also possible to use sealing strips of plastic or metal for obtaining a closed construction. Joints are normally placed at the balcony posts.

[0041] When thinner facing material is used, such as sheet metal or net, vertical joint profiles are preferably used.

[0042] The shown and described construction may also be used on the inside of the balcony posts. In such a case the lower edge of the balcony facing should preferably be 30-50 mm over the balcony slab.

[0043] The embodiment so far described may be regarded as preferred in many instances, but other embodiments are also possible. A second embodiment is shown in Fig 9. The background is the same as for the first embodiment.

[0044] In the second embodiment there is an upper mounting profile 30 and a lower mounting profile 31, both horizontal and both attached to balcony posts 11 by screws 32. The upper mounting profile 30 is preferably provided with a cap 30', both for giving a better appearance and for protecting the construction.

[0045] The glass panel 1 is provided at a factory with an upper panel profile 33 and a lower panel profile 34. These profiles 33, 34 are preferably attached by means of tape 35 or adhesive.

[0046] The mounting is easily performed in that the glass panel 1 with its panel profiles 33, 34 is brought towards and slightly above the mounting profiles 30, 31 on the balcony railing and is then lowered somewhat, so that the profiles come into engagement with each other to the position shown in Fig 9.

[0047] The person skilled in the art will understand that numerous other embodiments are possible within the scope of the appended claims. It can especially be mentioned that the profiles may be made of other materials than aluminium and that they can be attached in other

ways than described.

[0048] The shown and described constructions are not limited to the use at balconies but may equally well be used for the mounting of balcony glazings but also facing elements at different locations on or in buildings. Such uses are within the scope of the appended claims.

Claims

1. A facing arrangement for a balcony, comprising a panel (1) of glass or other material to be attached to a balcony railing (11, 13), **characterized by** horizontal upper and lower mounting profiles (15, 16, 18; 30, 31) attached to the balcony railing (11, 13) and upper and lower panel profiles (20, 21; 33, 34) attached to the panel (1), the mounting profiles being constructed to receive the panel profiles for carrying the panel.

2. An arrangement according to claim 1, wherein the mounting profiles (15, 16, 18; 30, 31) are attached to balcony posts (11) of the balcony railing (11, 13).

3. An arrangement according to claim 1, wherein the panel profiles (20, 21; 33, 34) are attached to the panel (1) by means of tape (22; 35) or adhesive.

4. An arrangement according to claim 1, wherein the lower mounting profile (16, 18) consists of a lower base mounting profile (16) to be attached to a balcony pole (11) by means of a screw (17) and a bottom mounting profile (18) snap locked to the base mounting profile (16) and concealing the screw, the bottom mounting profile (18) being arranged to receive the lower panel profile (21) on its bottom.

5. An arrangement according to claim 4, wherein the bottom mounting profile (18) and the lower panel profile (21) have corresponding beveled surfaces for guiding the lower panel profile into the bottom mounting profile.

6. An arrangement according to claim 4, wherein the bottom mounting profile (18) is provided with an internal rubber strip (19) for sealing engagement with the panel (1).

7. An arrangement according to claim 4, wherein a cover profile (23) may be snap locked on the upper mounting profile (15).

8. An arrangement according to claim 7, wherein the cover profile (23) is provided with an internal rubber strip (24) for sealing engagement with the panel (1).

9. An arrangement according to any of the preceding claims, wherein the profiles are made of aluminium.

10. A method for accomplishing a facing arrangement for a balcony, comprising a panel (1) of glass or other material to be attached to a balcony railing (11, 13), **characterized in that** the balcony railing (11, 13) is provided with horizontal upper and lower mounting profiles (15, 16, 18; 30, 31), that the panel (1) is provided with upper and lower panel profiles (20, 21; 33, 34), and that the panel is hanged on the mounting profiles by means of the panel profiles.

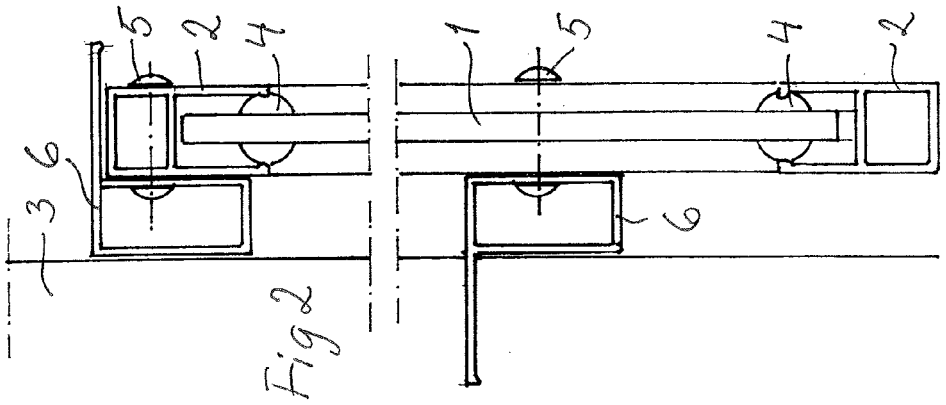


Fig 2

Fig 1

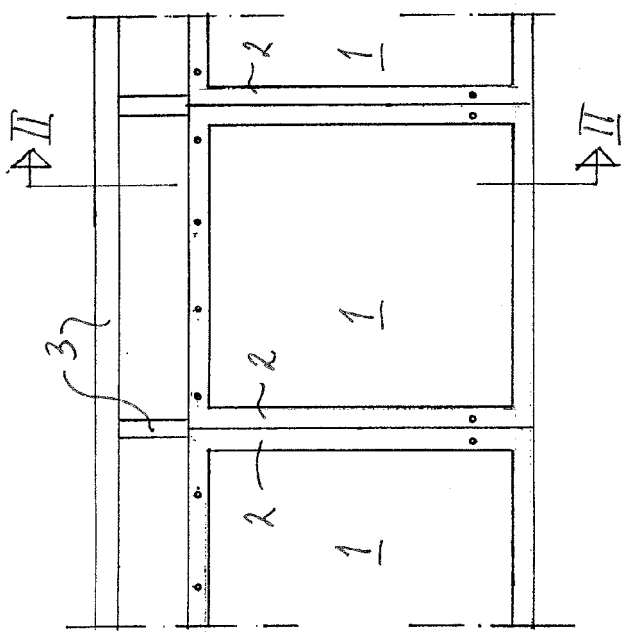
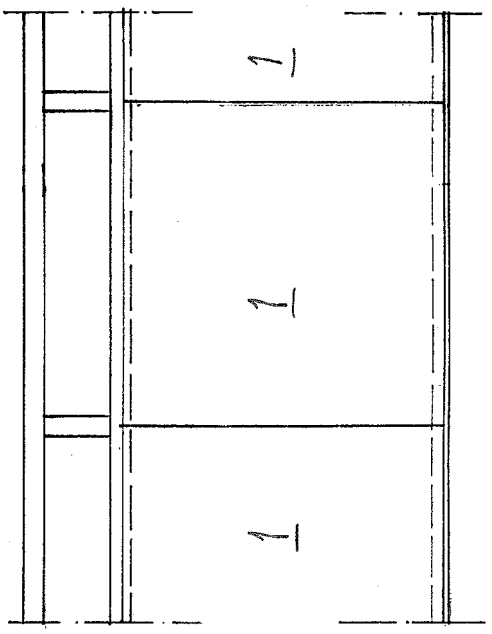


Fig 3



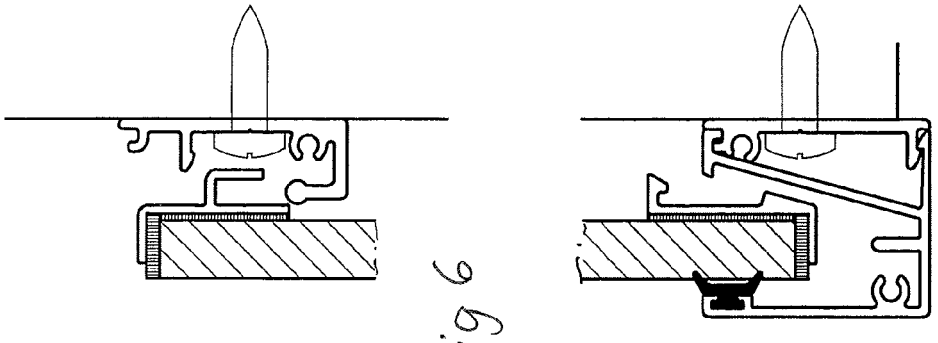


Fig 6

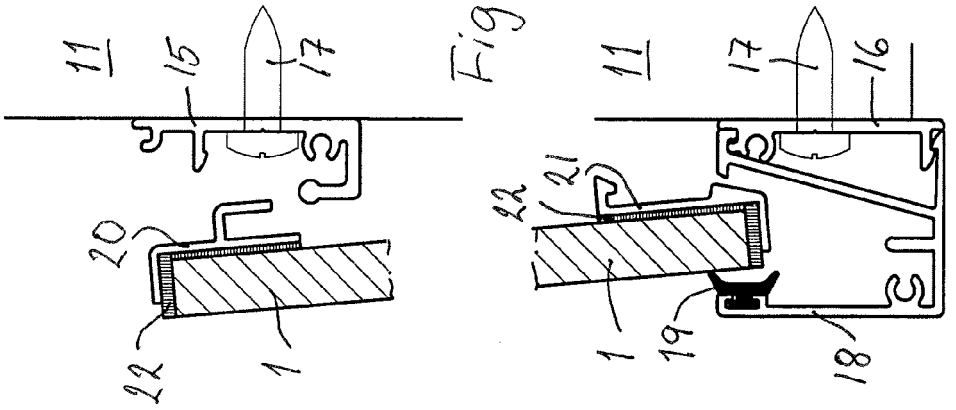


Fig 5

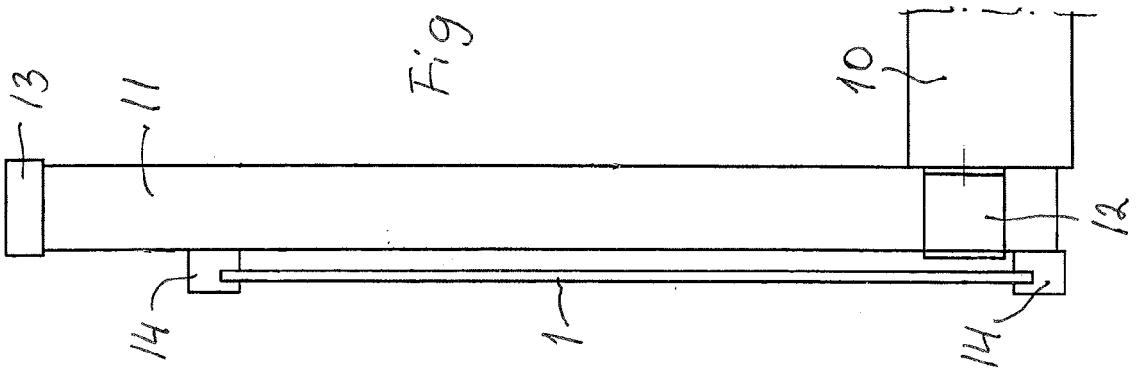


Fig 4

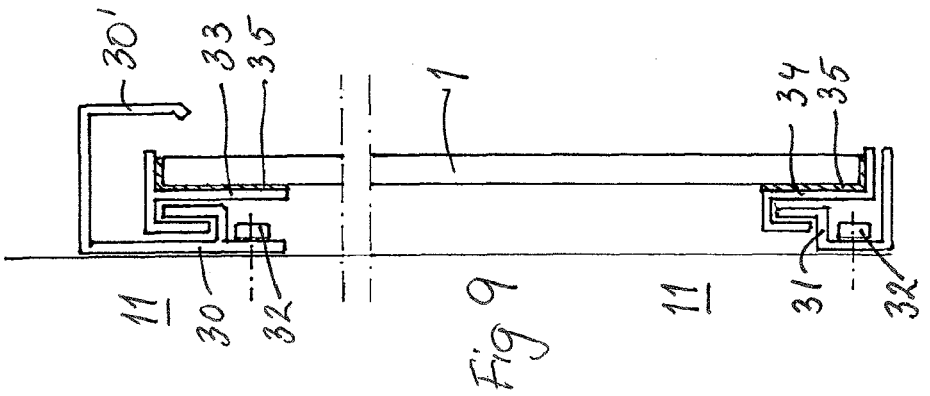
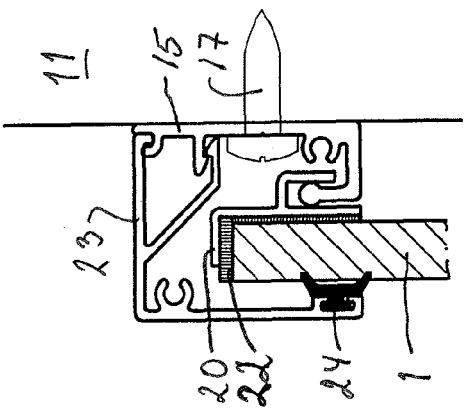


Fig 9



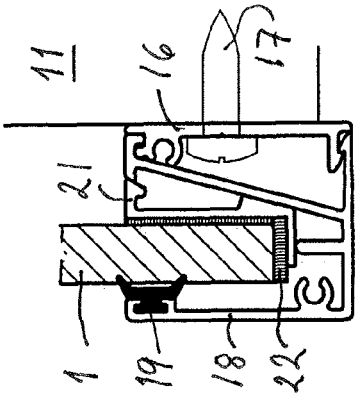
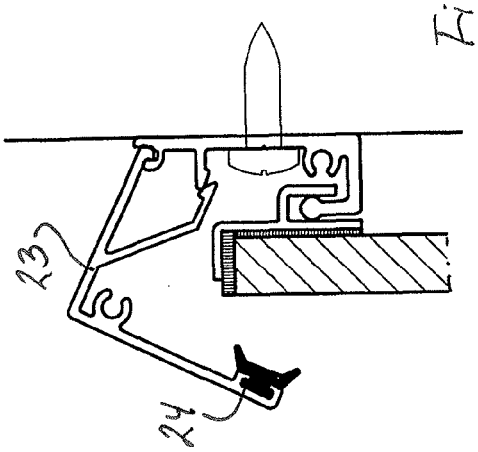


Fig 8



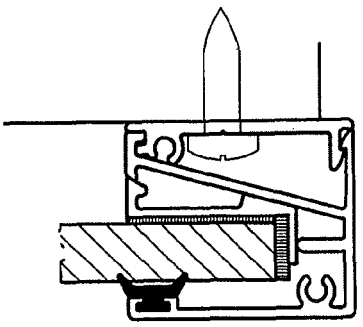


Fig 7

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EUROPEAN SEARCH REPORT

Application Number
EP 08 15 3283

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E04F
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 October 2008	Fournier, Thomas

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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