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

(11) EP 2 278 090 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
26.01.2011 Bulletin 2011/04

(21) Application number: **10170153.0**

(22) Date of filing: **20.07.2010**

(51) Int Cl.:
E04F 13/08 *(2006.01)* ***B23B 47/28*** *(2006.01)*
B25H 7/04 *(2006.01)*

(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 SE SI SK SM TR
Designated Extension States:
BA ME RS

(30) Priority: **21.07.2009 IT MI20091291**

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(54) Fastening system for one or more staves, in particular for covering external building walls, and related process for fastening staves

(57) The system of fastening one or more staves to building walls comprises one or more supporting profiles (2) adapted to be directly or indirectly fastened to the wall, and plaques (3...8) adapted to fasten the staves on the supporting profiles. The staves are oriented lengthwise in a direction which is substantially perpendicular to the profiles.

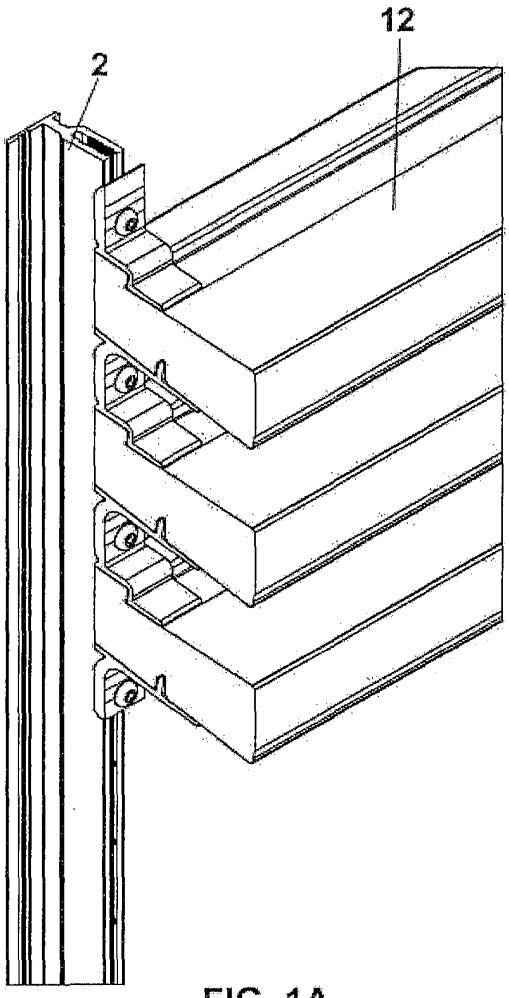

FIG. 1A

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Description

Field of the invention

[0001] The present invention relates to a fastening system for one or more staves, in particular for covering external building walls, and related process for fastening staves.

State of the art

[0002] The covering of the external building walls has always been of great interest for the architectural field. According to the climate of the country, covering may protect insulation materials from inclement weather, or may shield the building from solar radiation or also serve a mere aesthetic function.

[0003] A type of covering provides for using staves, typically made of wood, arranged parallel to one another on walls of diverse nature, whereon they are overlapped.

[0004] The operation of fastening staves is not particularly smooth, as care must be spent towards the parallelism between the staves, the evenness of the distance between the staves, the centering of the screws so as to give an even appearance. Risk factors which, to be reduced, require long assembly times.

[0005] Another vital issue is the duration of a wooden façade to inclement weather.

[0006] The "façade system" consisting of profiles and fastening systems should avoid water stagnation which could deteriorate the wood.

Summary of the invention

[0007] It is the object of the present invention to provide a fastening system for a stave, in particular for covering external building walls, and the related process for fastening staves in order to solve the above-described problems.

[0008] According to a main aspect of the present invention, the system for fastening one or more staves to building walls comprises one or more supporting profiles adapted to be directly or indirectly fastened to the wall, and plaques adapted to fasten the staves on the supporting profiles, said staves being fastened in a direction substantially perpendicular to the profiles.

[0009] Therefore, the present invention aims at achieving the above-discussed objects by providing a fastening system for staves, in particular for covering the external building walls, and the related process for fastening staves, as described in the claims which form an integral part of the present description.

Brief description of the drawings

[0010] Further features and advantages of the invention will become more apparent in the light of the detailed description of preferred, but not exclusive, embodiments thereof, disclosed by way of non-limiting example, with the aid of the accompanying drawings, in which:

figures 1A, 1B and 3 show the fastening system in the case of staves fastened in horizontal direction, in perspective, side and frontal views, respectively;
figures 2A, 2B and 4 show the fastening system in the case of staves fastened in vertical direction, in perspective, side and frontal views, respectively;
figures 1C and 2C show various possible shapes of plaques for fastening the staves on the profiles;
figure 5 shows the shape of the profiles in a perspective, side section view;
figures 6A and 6B show two variants of the systems for fastening the profiles to the walls;
figures 7A and 7B show two embodiments of templates for drilling holes on the profiles.

Detailed description of preferred embodiments of the invention

[0011] A system for fastening one or more staves to building walls in accordance with the invention substantially comprises one or more supporting profiles 2 directly or indirectly fastened to the wall, and plaques 3...8 adapted to fasten the staves on the profiles.

[0012] The profiles may be installed on the wall in succession and parallel to one another, and may take any orientation. In a preferred embodiment, which will be described hereinafter, they are installed in vertical direction, but any other orientation is possible.

[0013] Accordingly, the same considerations apply to the staves, which have a substantially perpendicular arrangement lengthwise with respect to the profiles.

[0014] In the specific case described below, the staves are substantially horizontally installed on the walls lengthwise, while they may take a cantilever orientation of the section (horizontal direction), preferably slightly forward inclined, (figures 1A, 1B, 3), or bonded to the profiles (vertical direction) (figures 2A, 2B, 4). In any case, the orientation taken should ensure the drainage of rainwater.

[0015] The plaques for fastening the staves may have different shapes, some examples of which are illustrated in figures 1C and 2C and numbered from 3 to 8.

[0016] They generally comprise a central part 3.3, ... 8.3 which, in use, will take a substantially vertical orientation, and one or two upper and/or lower fastening ends. The central part 3.3, ...3.8 is provided with a hole 10.3.... 10.8 for inserting a screw or the like for fastening it to the profile.

[0017] One fastening end is hook-shaped. In use, this end may be in an upper position 4.1, 5.1, 7.1, 8.1 and/or in a lower position 6.2, 7.2.

[0018] The other fastening end may also be hook-shaped on the same plaque (7.1 and 7.2) or clip-shaped, so as to have a tab 3.2, 4.2 adapted to keep the stave.

[0019] The central part 3.3, ...3.8 is adapted to mutu-

ally bind said fastening ends.

[0020] A suitable kind of stave to be used in said system may include two simple longitudinal slots, one for each fastening end to the profiles through the plaques.

[0021] Avoiding the use of slots in the upper surface of the stave is preferred in order to avoid the permanence of meteoric water and the consequential deterioration of the stave. Whereby, it is preferred that the stave has an upper expansion area 111, in the part which is closer to or in contact with profile 2, adapted to engage the lower fastening end of the plaques (3.2 ..... 7.2). At the bottom, where water stagnation risk does not occur, the stave has a longitudinal slot 112, adapted to be engaged with the upper fastening end of the plaques (4.1, 5.1, 7.1, 8.1).

[0022] With reference to figure 5, the supporting profile has a preferably flattened base 20 and a perpendicular rise 21 provided with a hollow space 22. The upper end of the rise has a series of holes 23 at a certain predetermined distance apart from one another, for screwing the fastening screws of the plaques. The profile is preferably made of aluminium and the screws may be of the self-tapping type.

[0023] With reference to figures 6A, 6B, the supporting profile may be fastened to the wall in a direct manner or through a spacer 31 having a certain fixed thickness, possibly comprising two side wings housing the profile base 20 (fig. 6A); or it may be fastened to the wall by means of spacers 32, 33 possibly depth-regulated squares with respect to the wall (fig. 2B) to which said profile base is fastened. Figures 7A, 7B show templates specifically arranged for the possibility that the distance between the holes 23 on the upper side are to be varied, forming additional holes during the installation step.

[0024] Figure 7A shows a first embodiment of the template consisting of a fixed part 41 provided with a central hole in which an element 42 adapted to drill the profile and to be fixed in a point may be inserted and glide. The fixed part comprises an extension 43 in which a second part 44 may glide, which is fixable at a varying distance on the extension itself. The second part has a tip 45 adapted to drill the profile in a second point: thereby, holes placed at different distances on the profile may be obtained, if a variation of the stave pitch is required.

[0025] Figure 7B shows a second embodiment of the template which, in comparison with the first embodiment, has a further tip 46 in the fixed part, instead of the hole to house the element adapted to drill the profile, which tip 46 is adapted to penetrate an existing hole in the profile and to form a reference for gliding then the fixable part at a varying distance substantially equal to the previous distance.

[0026] Referring to the process of fastening the staves to the walls, the following steps are included.

- The profiles are fastened to the walls at a certain distance from one another, possibly by means of spacers.
- The initial plaques are positioned and screwed to the profiles: these may be in the upper or lower position on the profiles. Plaques provided with a single fastening end are preferably used: the lower end (3.2, 6.2) if in the upper position, or the upper end (5.1, 8.1) if in the lower position. A plaque will be placed on each profile, in corresponding positions in the horizontal direction (see figures 3 and 4).
- The initial stave is laid by framing it in the fastening end of the plaques.
- Staves and intermediate plaques are positioned and screwed in sequence. The latter are of the type provided with two fastening ends (4, 7).
- The final plaques are positioned and screwed to the opposed end.
- If a variation of the stave pitch is needed, the appropriate templates are used as described above.

[0027] The advantages deriving from the present invention are apparent.

[0028] Using the fastening system allows the covering of the building façades to be quickly assembled, thus achieving:

- a long durability due to the elimination of damp stagnations;
- a quick and accurate installation;
- a fastening capable of absorbing the wind forces and the snow load;
- a predetermined stave spacing on the profile and not by means of a spacer between the staves;
- the absence of completely exposed fastening on the staves;
- a fastening which may be completely performed from the front side;
- the aeration between the staves.

[0029] In addition, pre-drilling the profiles makes the stave pitch completely independent from their thickness which, due to processing and shrinking tolerances, may vary by some tenth of mm from one another. No spacers between the staves are therefore needed which, summing the error, cause the staves to be not perfectly aligned.

[0030] The assembly simplicity and the possibility of using moderately specialized work-force lead to a significant reduction in time and cost of installation, thus providing instead a higher quality than that provided by known fastening systems.

[0031] The fastening is very firm and durable, and therefore it may also be used on buildings of a considerable height.

[0032] The system integrates with the fastening systems and the substructures currently used to build wooden façades.

[0033] The particular embodiments described herein do not limit the content of this application, which covers all the variants of the invention defined in the claims.

[0034] For example, the orientation of the series of

staves as installed may be other than horizontal and may take other angles, as correspondingly varying the orientation of the profile installation may suffice.

[0035] By applying light modifications achievable by a person skilled in the art, a series of staves installed in a non-parallel, mutual position but having a different mutual angulation may be obtained.

Claims

1. Fastening system of one or more staves to building walls, comprising one or more supporting profiles (2) to be directly or indirectly fastened to the wall, and plaques to fasten the staves on the supporting profiles, said staves being fastened in a direction substantially perpendicular to the profiles.

2. Fastening system of one or more staves to building walls, according to Claim 1, wherein said supporting profile comprises a base (20) and a rise (21) perpendicular to the base provided with a hollow space (22), the upper side of the rise showing one or more holes (23), placed at a certain predetermined distance, for fastening the plaques by fastening means.

3. Fastening system of one or more staves to building walls, according to Claim 2, wherein said plaques comprise:

   - a central part (3.3, ... 8.3) provided with a hole (10.3, ... 10.8) for inserting said fastening means for fastening it to the profile;
   - one or two upper and/or lower fastening ends for fastening said staves.

4. Fastening system of one or more staves to building walls, according to Claim 3, wherein in said plaques one fastening end is hook-shaped and can be installed in an upper position (4.1, 5.1, 7.1, 8.1) and/or in a lower position (6.2, 7.2); the other fastening end in hook-shaped on the same plaque (7.1 and 7.2), or clip-shaped, so that it has a tab (3.2, 4.2) to keep the stave.

5. Fastening system of one or more staves to building walls, according to Claim 2, comprising spacers (32, 33), possibly squares, depth-regulated with regard to the wall, for said indirect fastening of said supporting profile to the wall.

6. Fastening system of one or more staves to building walls, according to Claim 2, comprising a spacer (31) having a fixed thickness, possibly comprising two side wings housing the base 20 of the profile, for said direct fastening of said supporting profile to the wall.

7. Fastening system of one or more staves to building walls, according to Claim 2, further comprising at least a template to produce further holes on said upper side of the profile rise, in case it is necessary to change the distance between the holes (23) already formed on said upper side, in the installation step.

8. Fastening system of one or more staves to building walls, according to Claim 7, wherein said template comprises a fixed part (41) provided with a central hole wherein an element (42) can be inserted and glide, said element being able to drill the profile and to be fixed in a point, said fixed part comprising an extension (43) wherein a second part (44) can glide, said part (44) being fixable at a varying distance on said extension; said second part having a tip (45) to drill the profile in a second point.

9. Fastening system of one or more staves to building walls, according to Claim 7, wherein said template comprises a fixed part (41) , a further tip (46) to penetrate in a hole existing in the profile and to form a reference; said fixed part comprising an extension (43) wherein a second part (44) can glide, said part being fixable at a varying distance on said extension; said second part having a tip (45) to drill the profile in a second point.

10. Fastening system of one or more staves to building walls, according to Claim 1, wherein said one or more supporting profiles are fastened to the walls, parallelly to each other and in a substantially vertical direction.

11. Stave, particularly suitable to be used in a fastening system according to any one of the preceding Claims, said stave having an upper expansion area (111), in the part closer or in contact with the profile (2), to be engaged with the lower fastening end of the plaques (3.2, ... 7.2), said stave having, also at the bottom a longitudinal slot (112) to be engaged with the upper fastening end of the plaques (4.1, 5.1. 7.1, 8.1).

12. Process for fastening one or more staves to building walls, able to use a fastening system according to any one of the preceding Claims, comprising the following steps:

    - fastening the profiles on the walls at a determined distance from each other;
    - positioning and screwing the initial plaque profiles, a plaque on each profile, in corresponding positions in a horizontal direction, in the upper or in the lower position on the profiles;
    - lying the initial stave by framing it in the fastening end of the plaques;
    - positioning and screwing in succession staves and intermediate plaques; said intermediate

plaques being of the type provided with two fastening ends (4, 7);
- positioning and screwing the final plaques to the opposed end.

13. Process for fastening one or more staves to building walls according to Claim 12, wherein said initial plaques are provided with a single fastening end, the lower end (3.2, 6.2) if it is in the upper position, or the upper end (5.1, 8.1) if it is in the lower position on the profile.

14. Process for fastening one or more staves to building walls according to Claim 12 or 13, comprising the further step of use of said at least one template, in case a variation of the stave pitch is needed.

15. Process for fastening one or more staves to building walls according to Claim 12, wherein said profiles are fastened on the walls in a substantially vertical direction and parallelly to each other.

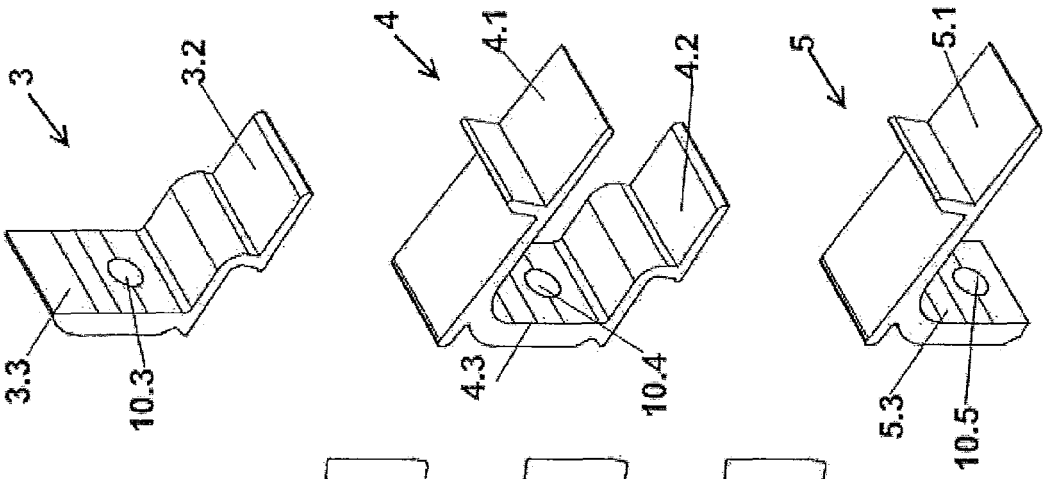

FIG. 1C

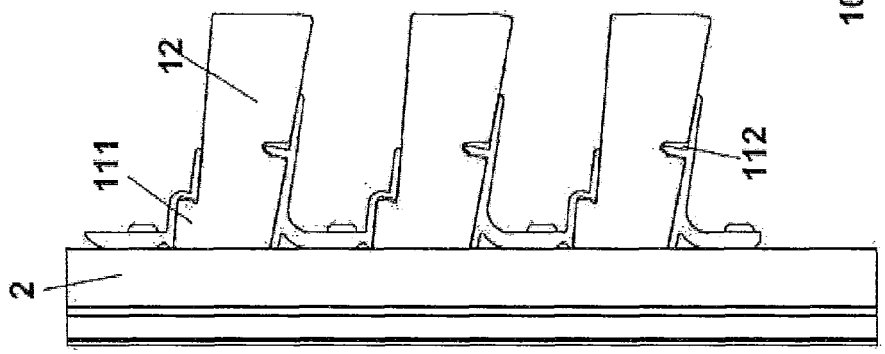

FIG. 1B

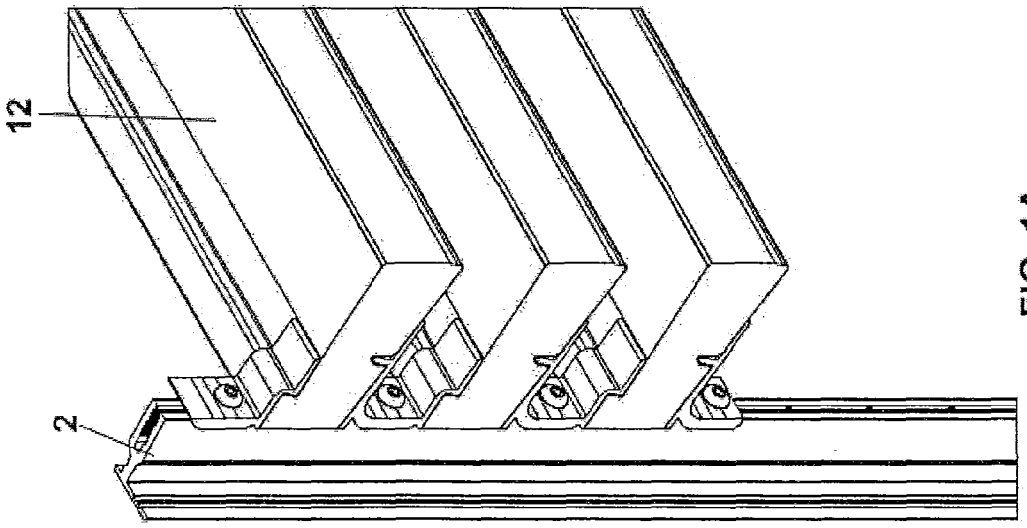

FIG. 1A

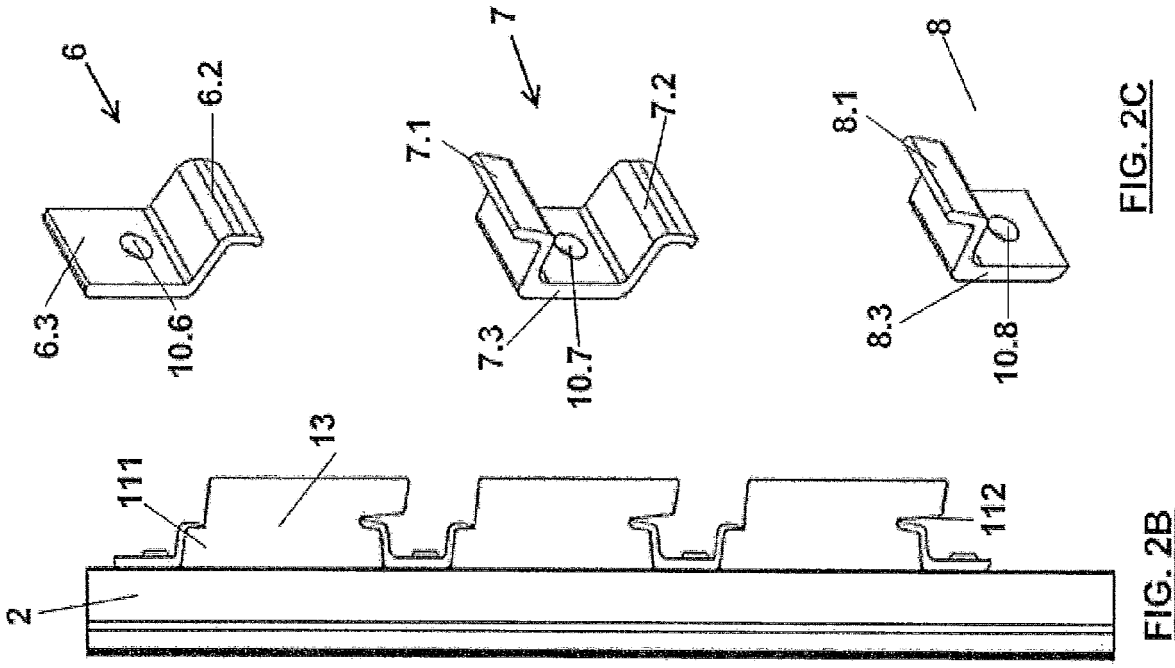

FIG. 2C

FIG. 2B

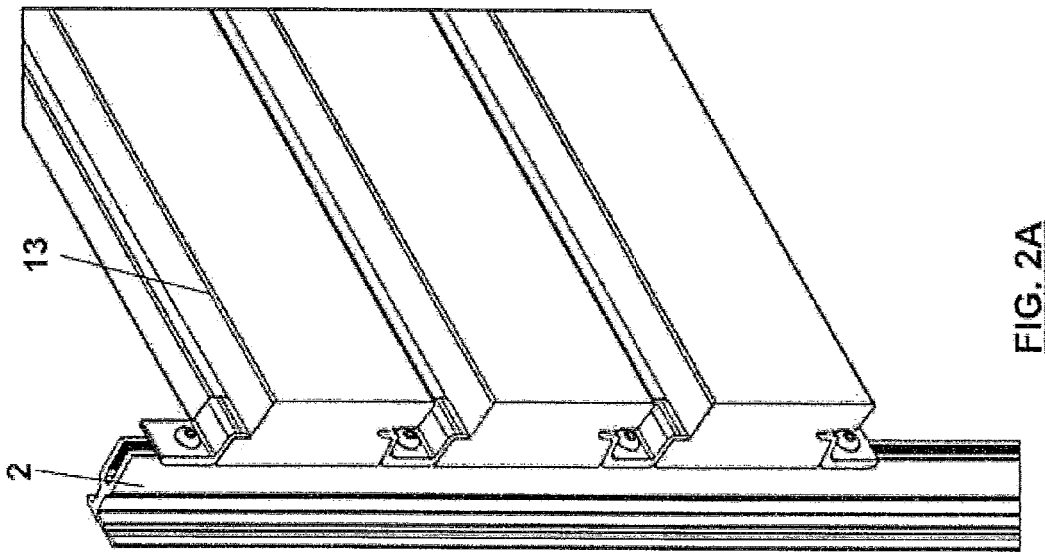

FIG. 2A

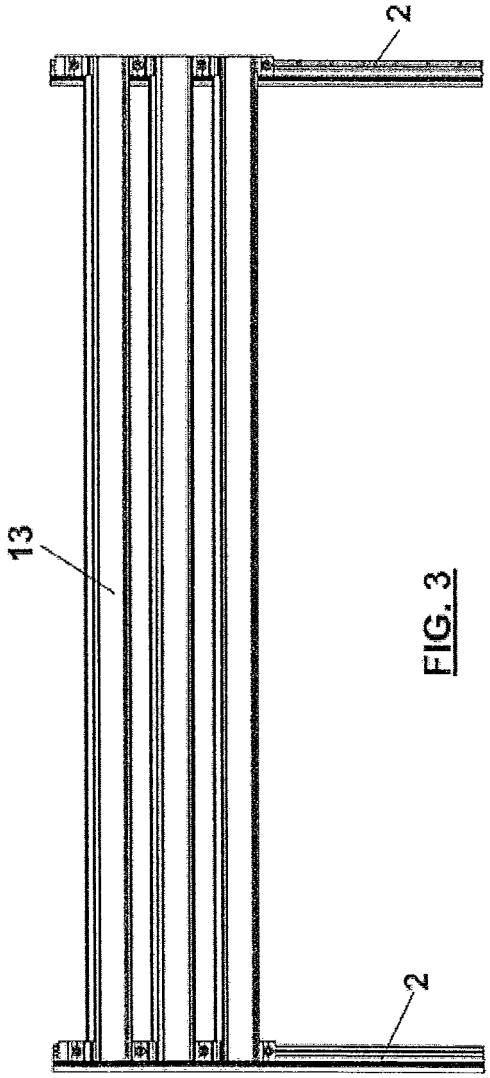

FIG. 3

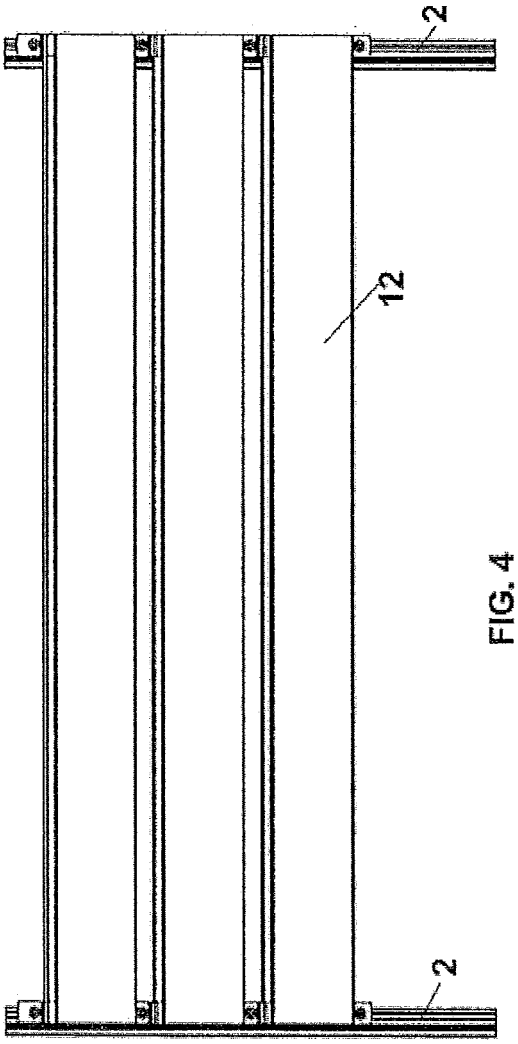

FIG. 4

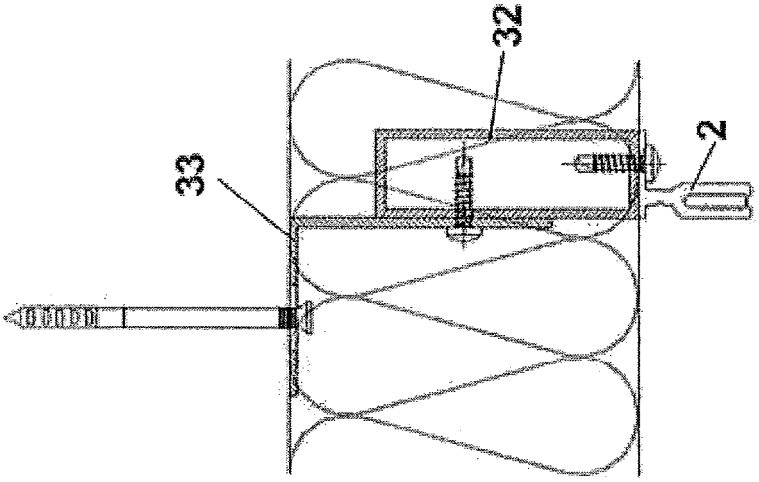

FIG. 6B

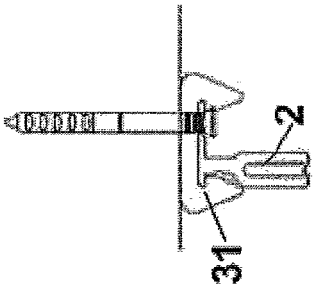

FIG. 6A

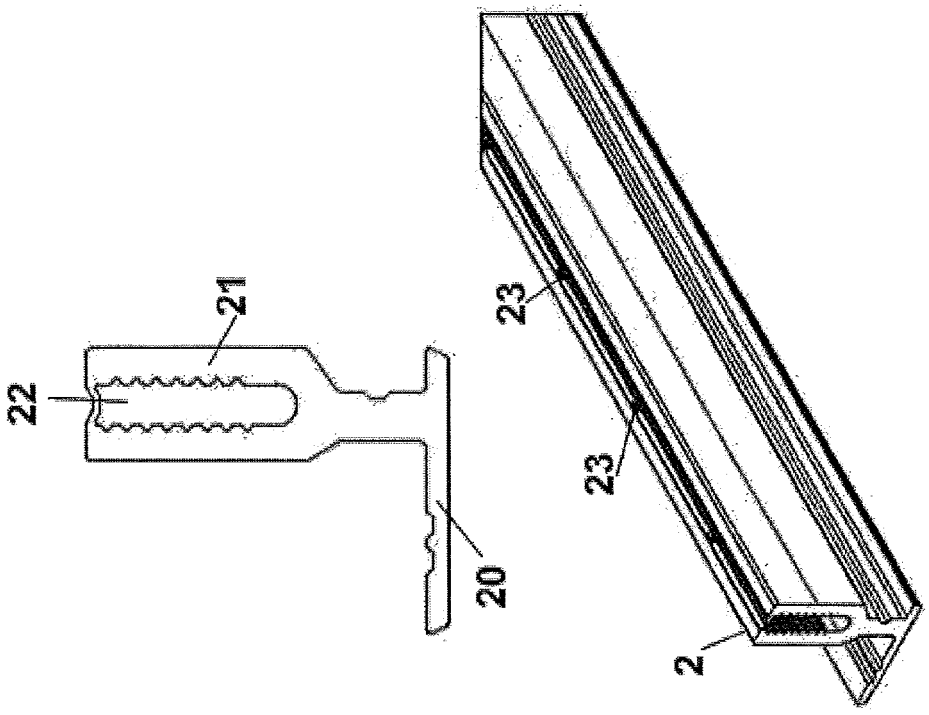

FIG. 5

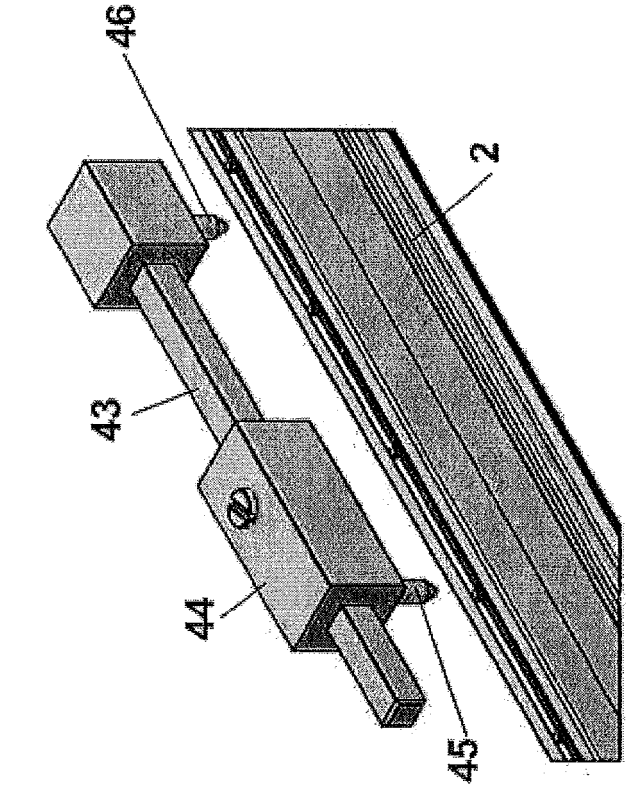

FIG. 7B

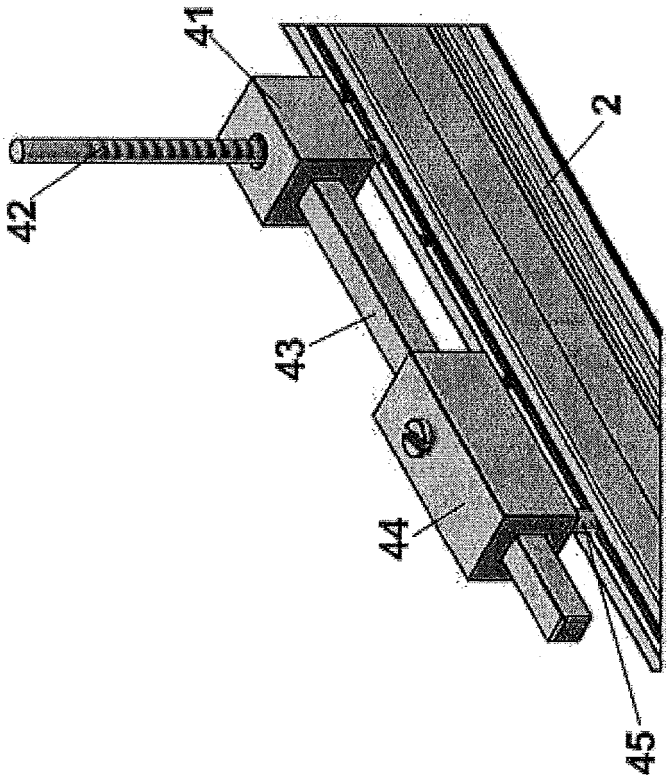

FIG. 7A

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EUROPEAN SEARCH REPORT

Application Number
EP 10 17 0153

DOCUMENTS CONSIDERED TO BE RELEVANT

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X Y	EP 1 621 697 A2 (TECNOIMAGE S R L [IT]) 1 February 2006 (2006-02-01) * figures 21,22 * -----	1-10,12,13,15 14	
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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
The Hague	7 December 2010	Severens, Gert

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