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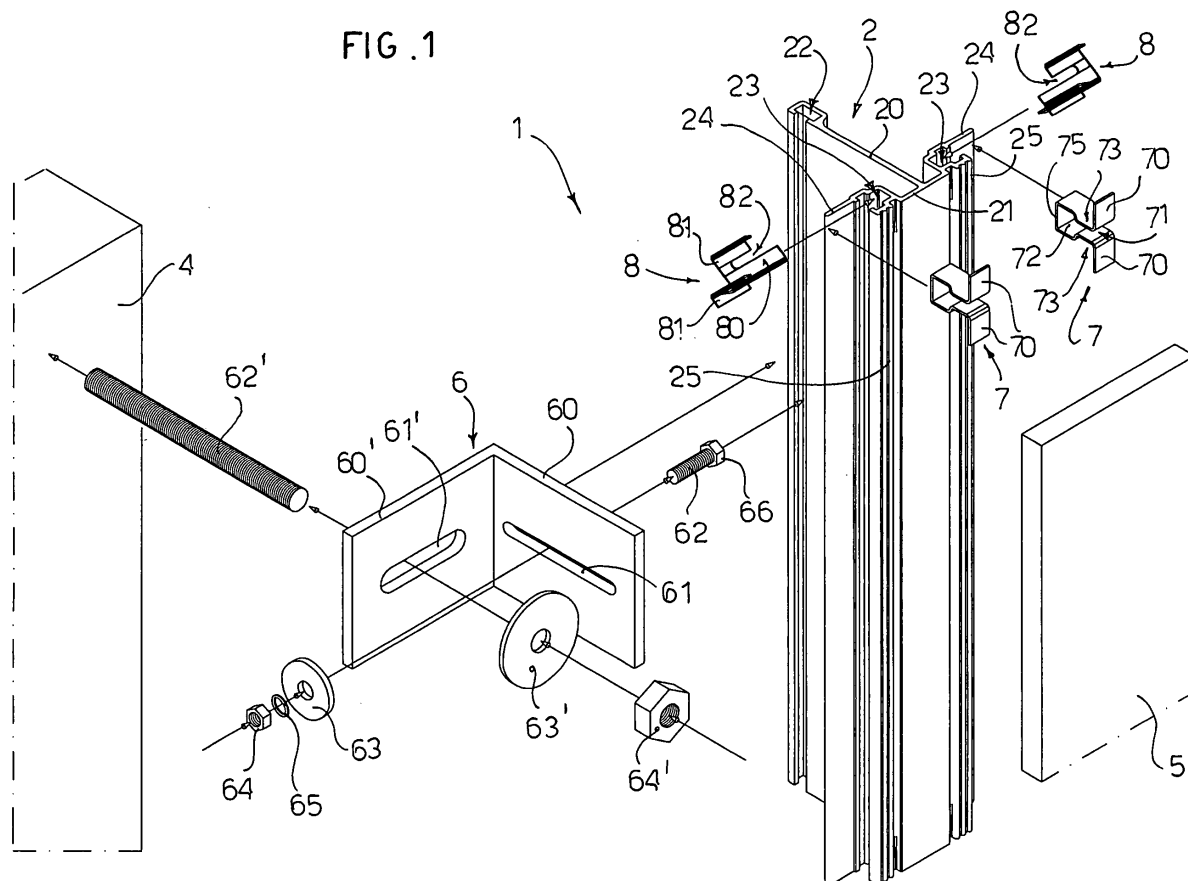
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(54) **Anchoring system for cladding panels and profiles, particularly for ventilated facades**

(57) An anchoring system (1) for panels (5) for cladding of walls (4) and particularly for ventilated facades comprising at least one upright profile (2) destined to be

fixed to the wall (4) to be clad and to support the cladding panels (5), and at least one leaf spring (8) adapted to lock on the upright profile (2) a respective hook (7) to anchor the panel (5).

FIG .1



Description

[0001] The present invention relates to a system for anchoring profiles and panels, such as mineral slabs of ceramic, semi-precious stone, marble, granite and the like, for cladding of walls and particularly for ventilated facades.

[0002] Ventilated facades are currently widely used in building. What is meant by a ventilated façade is cladding of a vertical wall, of masonry or other material, generally achieved with lightweight panels mounted at a certain distance from said wall, so as to create an air space between the wall and the cladding.

[0003] Ventilated walls are generally mounted by means of a framework which comprises upright profiles which are anchored by means of brackets to the masonry wall in a vertical arrangement. Hooks adapted to retain the panels are fixed to the profiles by means of bolts and rivets.

[0004] This system of fixing the panels by means of bolts and rivets proves complex and awkward for the installer and furthermore requires modification of the structure to adapt to the sizes and thicknesses of the panels.

[0005] Object of the present invention is to overcome the drawbacks of the prior art, providing an anchoring system for profiles and panels for cladding of walls, particularly ventilated facades, that is convenient, simple, fast and inexpensive for the installer.

[0006] Another object of the present invention is to provide such a system for anchoring profiles and panels for cladding of walls that is versatile and adapted to be applied to various types of panels for cladding of ventilated facades.

[0007] These objects are achieved in accordance with the invention with the characteristics listed in appended independent claim 1.

[0008] Advantageous embodiments of the invention are apparent from the dependent claims.

[0009] The system for anchoring panels for cladding of walls and particularly for ventilated facades according to the invention comprises at least one upright profile destined to be fixed to the wall to be clad and to support the cladding panels and at least one leaf spring adapted to lock a respective hook onto said profile to anchor the panel. Said hook can also be used to anchor another profile provided with seats adapted to receive an anchoring arm integral with the panel.

[0010] The advantages of the system according to the invention are evident in that it provides for use of an anchoring system with springs and hooks, without the use of bolts and rivets with the associated drawbacks.

[0011] Further characteristics of the invention will be made clearer by the detailed description that follows, referring to purely exemplifying and therefore non limiting embodiments thereof, illustrated in the appended drawings, in which:

Figure 1 is a perspective view, illustrating an anchor-

ing system for panels according to the invention, exploded;

Figure 2 is a sectional view, taken along a vertical plane of section, illustrating a ventilated façade created with the panel anchoring system of Figure 1;

Figure 2A is a perspective view illustrating a spring used in the ventilated façade of Figure 2;

Figure 3 is a sectional view, taken along a horizontal plane of section, illustrating the ventilated façade of Figure 2;

Figure 4 is a view like Fig. 2, but illustrating a terminal portion of the ventilated façade;

Figure 4A is a perspective view of a hook of Figure 4;

Figure 5 is a view like Figure 3, but illustrating a corner portion of the ventilated façade;

Figure 5A is a perspective view illustrating the profile used in the corner portion of the ventilated façade of Figure 5;

Figure 6 is a sectional view along a vertical plane, illustrating the anchoring system according to the invention for anchoring stringer profiles and upright profiles; and

Figure 6A is a perspective view illustrating a hook of Figure 6.

With the aid for now of Figures 1 - 3, a panel anchoring system according to the invention, designated as a whole with reference numeral 1, is described.

[0012] The anchoring system 1 comprises a plurality of upright profiles 2 destined to be fixed vertically to a masonry wall 4 to be clad with panels or slabs 5. The upright profiles 2 are fixed to the wall 4 by means of brackets 6. The panels 5, on the other hand, are anchored to the profiles 2 by means of hooks 7 blocked by springs 8.

[0013] The bracket 6 is substantially L-shaped in cross section and comprises a first portion 60 adapted to abut against the profile 2 and a second portion 60' adapted to abut against the masonry wall 4. Slots or holes 61, 61' are formed in portions 60 and 60' of the bracket to allow the passage of the shanks of bolts 62 and 62' destined respectively for fixing to the upright profile 2 and to the wall 4. A slot (Figure 1) or two parallel opposed slots (Figure 2) are preferably made in the portion 60 which abuts against the profile, so as to adjust the distance of the profile 2 from the wall 4 to form a ventilated façade.

[0014] The bolts 62 and 62' are fixed by means of respective nuts 64 and 64' with respective interposed washers 63 and 63' which abut on the portions 60, 60' of the bracket. A washer 65 is also interposed between the washer 63 and the nut 64 of the profile fixing bolt 62.

[0015] The upright profile 2 is substantially T-shaped in cross section and comprises an intermediate portion 20 destined to be disposed at right angle to the wall 4 and a head portion 21 destined to be disposed parallel to the wall 4.

[0016] At the end of the intermediate portion 20 is formed a seat 22, C-shaped in cross section, adapted to receive and retain the head 66 of the bolt 62 for fixing to

the bracket 6.

[0017] At the two lateral ends of the head portion 21 are formed two C-shaped seats 23 with an entry portion having a greater width. On the side of the C-shaped seats 23 distal to the head portion 21 a supporting extension 24 is provided. On the side of the C-shaped portion 23 proximal to the head portion 21 outwardly protruding longitudinal ribs 25 are provided.

[0018] The spring 8 used for fixing of the spring 7 to the upright profile 2 is a leaf spring obtained from a metal plate by shearing and bending. The spring 8 is substantially W-shaped in cross section and comprises a central portion 80 substantially V-shaped in cross section.

[0019] At the rear end of the central portion 80 are provided two lateral portions 81, also V-shaped, with the concavity opposite with respect to the central portion 80. The lateral portions 81 are smaller than the central portion 80. In this manner U-shaped seats open at the front are formed between the top edges of the central portion 80 and the bottom edges of the lateral portions 81.

[0020] The hook 7 consists of a leaf spring obtained from a rectangular plate which is bent in a U shape with a flat rear part 75. The end edges of the U are bent about 90° outwards. A narrowing 71 which defines a central C-shaped seat 72 and two lateral outward U-shaped seats is created in the hook 7.

[0021] In order to fix the hook 7 to the profile 2, the flat rear part 75 of the hook 7 is disposed in abutment against the supporting extension 24 of the upright profile 2. The central part 80 of the spring 8 is then inserted into the lateral seat 23 of the upright profile 2, so that the rear wall 75 of the hook 7 and the supporting extension 24 of the upright profile are compressed inside the U-shaped seat 82 of the spring. In this manner the hook 8 is locked firmly to the upright profile 1.

[0022] Furthermore, S-shaped springs 9, better illustrated in Figure 2A, are hooked to the supporting extension 24 of the profile. The spring 9 has at one of its ends a U-shaped seat 90 adapted to hook to the supporting extension 24 of the upright profile.

[0023] It should be noted that in Figures 1-3 joining hooks 7 for joining the edges of two adjacent panels, as shown in Figure 2, have been illustrated. In this case the joining hook 7 acts as an expansion joint. In fact the narrowing 73 of the hook forms a space which serves to compensate for any dilatations of the structure due to thermal shocks. In the absence of the expansion joint, in fact, the dilatations of the structure would cause high combined bending and compressive stresses on the panels 5, with the result of damage or breakage.

[0024] Furthermore, as shown in Figure 4, between the ribs 25 of the head portion 21 of the upright profile 2 and the panel 5 are interposed gaskets 50 to ensure a better grip and compensate for deformation of the structure.

[0025] Like and corresponding elements to those already described are designated hereunder with the same reference numerals and are not described in detail.

[0026] Figure 4 illustrates a bottom terminal portion of the ventilated facade, in which instead of the joining hook 7 a terminal hook 107, better illustrated in Figure 4A, is used. The terminal hook 107 is substantially L-shaped and has a first portion 107 adapted to abut against the supporting extension 24 of the upright profile 2 and a second portion 171 adapted to receive the outer edge of the terminal panel 5.

[0027] The portion 170 of the terminal hook placed next to the supporting extension 24 is inserted into the seat 82 of the spring 8, so as to lock the terminal hook 107 to the upright profile 2.

[0028] The two portions 170 and 171 of the terminal hook 7 comprise end edges 172 and 173 bent 90° inwards, so as to retain respectively the spring 8 and the edge of the panel 5.

[0029] Figure 5 shows a corner portion of the ventilated facade. In this case, instead of the upright profile 2, a corner upright profile 102, better illustrated in Figure 5A, is used, shaped substantially like an arrow "→" in cross section. In this case, the intermediate portion 20 of the profile is disposed along the bisector of the angle formed by the two sides of the facade 4.

[0030] The supporting extensions 24, on the other hand, are disposed at right angles to each other and parallel to the two faces of the wall 4. Thus the two seats 23 of the profile 102 are also at right angles to each other and parallel to the two faces of the wall 4. In this manner, by means of the coupling system 1 which comprises the spring 8 and the hook 7, two panels 5 disposed at right angles to each other can be anchored to the upright corner profile 102.

[0031] Figure 6 shows a second embodiment of a ventilated facade, in which the horizontally disposed stringer profiles 200 are constrained, by means of the anchoring system 1, to the upright profiles 2. The stringer profiles 200 have two opposed U-shaped lateral seats 201 and 202 adapted to receive an anchoring arm 250 made integral with the panel 5, by means of a special anchoring system 251. The U-shaped seats 201 and 202 of the stringer profile have respective coupling ribs 203 which extend parallel to the upright profile 2.

[0032] In this case a substantially Z-shaped hook 207, better illustrated in Figure 6A, is provided. The hook 207 is obtained from a plate which has a central portion 271 and two end portions 270 and 272 bent at right angles on one side and the other with respect to the central portion.

[0033] In this manner the end part 270 of the hook 207 is placed in abutment against the supporting extension 24 of the upright profile 2 and locked thereon by means of the spring 8. The other end portion 272 of the hook 207, on the other hand, is inserted into the respective seat 201 and 202 of the stringer profile and abuts against the respective rib 203 of the stringer profile 200 retaining it firmly and integrally to the upright profile 2.

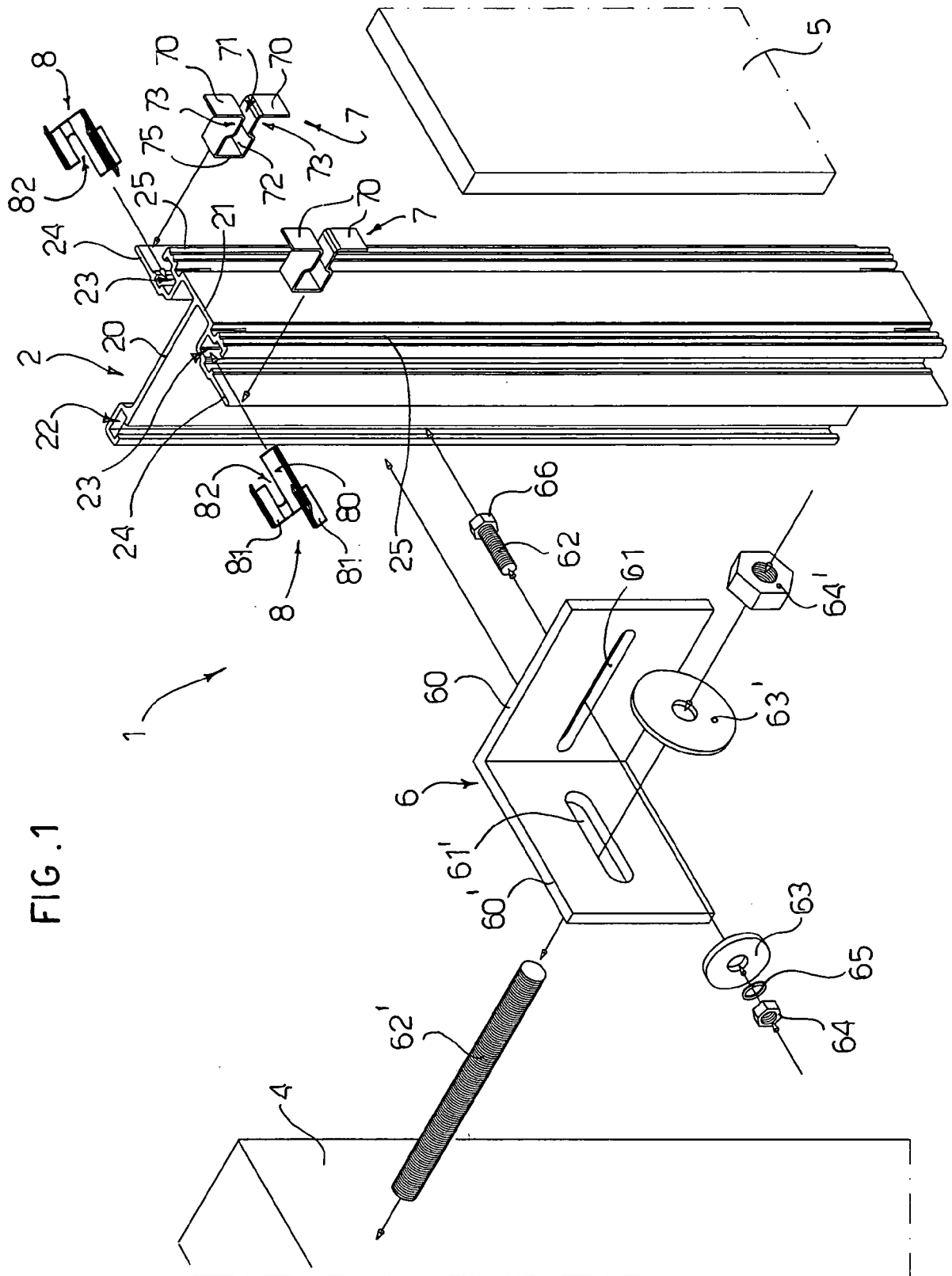
[0034] Numerous changes and modifications of detail within the reach of a person skilled in the art can be made

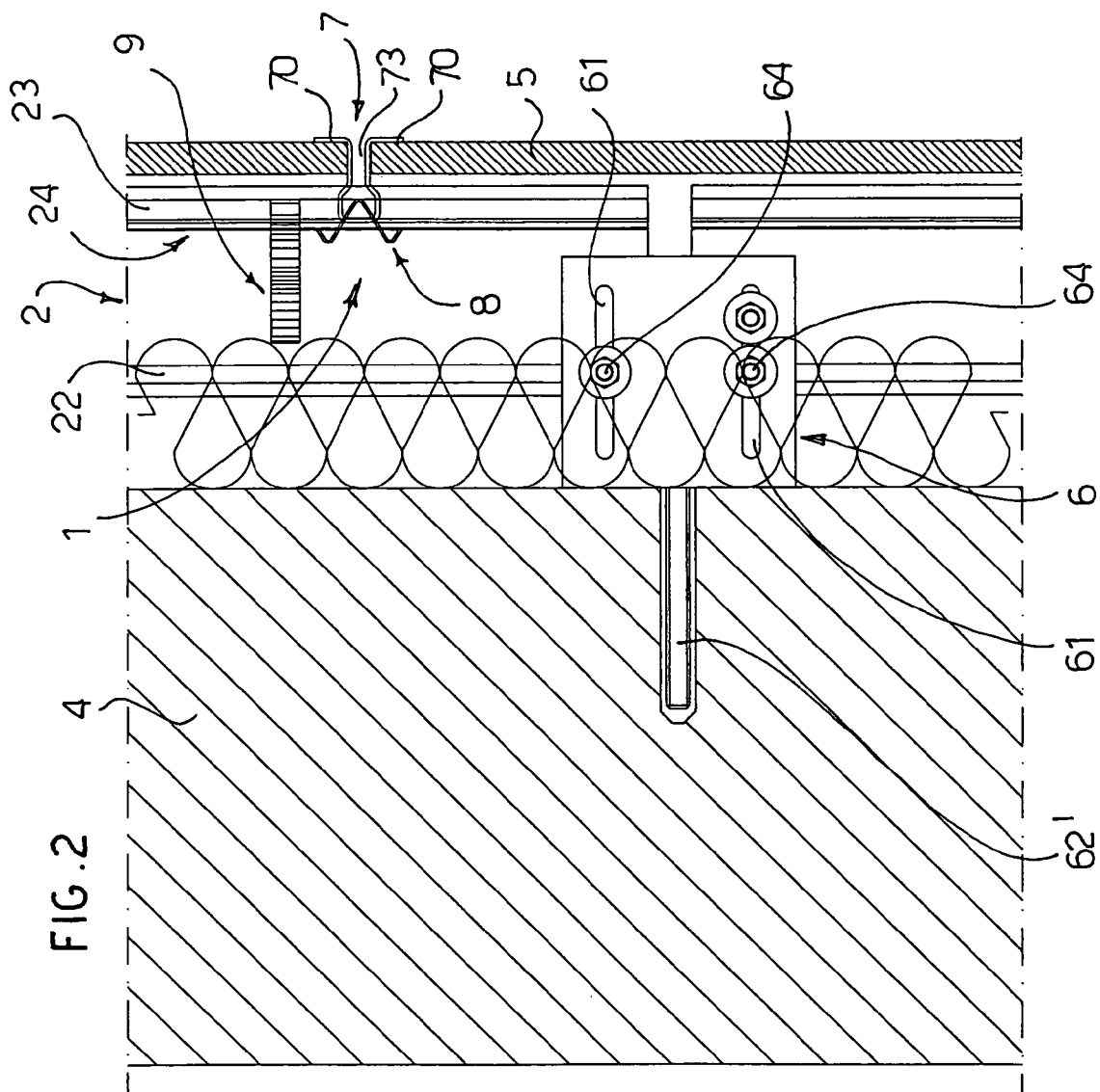
to the present embodiments of the invention without thereby departing from the scope of the invention as set forth in the appended claims.

Claims

1. An anchoring system (1) for panels (5) for cladding of walls (4) and particularly for ventilated facades, comprising at least one upright profile (2; 102) destined to be fixed to the wall (4) to be clad and to support said cladding panels (5), **characterised in that** it comprises at least one leaf spring (8) adapted to lock on said upright profile a respective hook (7; 107; 207) adapted to anchor the panel (5) to another profile (200) provided with seats (201, 202) to receive an anchoring arm (250) integral with the panel (5). 5
2. An anchoring system (1) according to claim 1, **characterised in that** said upright profile (2; 102), in the end thereof distal to the wall (4), comprises two lateral seats (23), substantially C-shaped in cross section, adapted to receive said leaf springs (8). 10
3. An anchoring system (1) according to claim 2, **characterised in that** said C-shaped lateral seats (23) of the upright profile (2, 102) are defined by a respective supporting extension (23) which runs parallel to the surface of the wall to be clad, said supporting extension (23) of the profile being able to act as a stop for said hook (7; 107; 207), so that said hook (8) can engage on said supporting extension (23) and on said hook (7; 107; 207). 15
4. An anchoring system (1) according to any one of the preceding claims, **characterised in that** said upright profile (2; 102), in the end thereof proximal to the wall (4), comprises a central seat (22), substantially C-shaped in cross section, adapted to receive the head (66) of a bolt (62) for fixing to a bracket (6) integral with the wall (4). 20
5. An anchoring system (1) according to any one of claims 2 to 4, **characterised in that** said upright profile (2) is substantially T-shaped and comprises an intermediate portion (20) destined to be disposed at right angles to the surface of the wall (4) and a head portion (21) destined to be disposed parallel to the surface of the wall and defining said two opposed lateral seats (23). 25
6. An anchoring system (1) according to any one of claims 2 to 4, **characterised in that** said upright profile (102) is applied in a corner portion of wall and is substantially shaped as an arrow "→", comprising an intermediate portion (20) destined to be placed along the bisector of the corner of the wall (4) and a right-angled head portion that defines said two seats (23) disposed parallel to the two faces of the wall. 30
7. An anchoring system (1) according to any one of the preceding claims, **characterised in that** said spring (8) is substantially W-shaped in cross section and comprises a central portion 80, V-shaped in cross section, and two V-shaped lateral portions (81) with opposite concavities with respect to the central portion (80). 35
8. An anchoring system (1) according to claim 7, **characterised in that** said lateral portions (81) of the spring are connected to the rear wall of the central portion (80) so as to form U-shaped seats (82) open at the front to receive the supporting extension (24) of the profile and the hook (7; 107; 207). 40
9. An anchoring system (1) according to any one of claims 2 to 8, **characterised in that** said hook comprises a flat portion (75; 170; 270) adapted to abut against said supporting extension (23) of the upright profile (2; 102). 45
10. An anchoring system (1) according to claim 9, **characterised in that** said hook (7) is substantially U-shaped in cross section with the end edges (70) bent about 90° outwards so as to form external lateral seats (73) for anchoring of the edges of said panels (5). 50
11. An anchoring system (1) according to claim 9, **characterised in that** said hook (107) is substantially L-shaped in cross section with the end edges (172, 173) bent about 90° inwards so as to retain said spring (8) and the edge of the panel (5). 55
12. An anchoring system (1) according to claim 9, **characterized in that** said hook (207) is substantially Z-shaped in cross section and has a central portion (271) and two lateral portions (270, 272) bent 90° on one side and the other with respect to the central portion, the first lateral portion abutting against said supporting extension (24) of the upright profile and the second lateral portion (270) engaging in a respective seat (201, 202) of another profile (200) in which is anchored an anchoring arm (250) integral with said panel (5) to be anchored.

FIG. 1





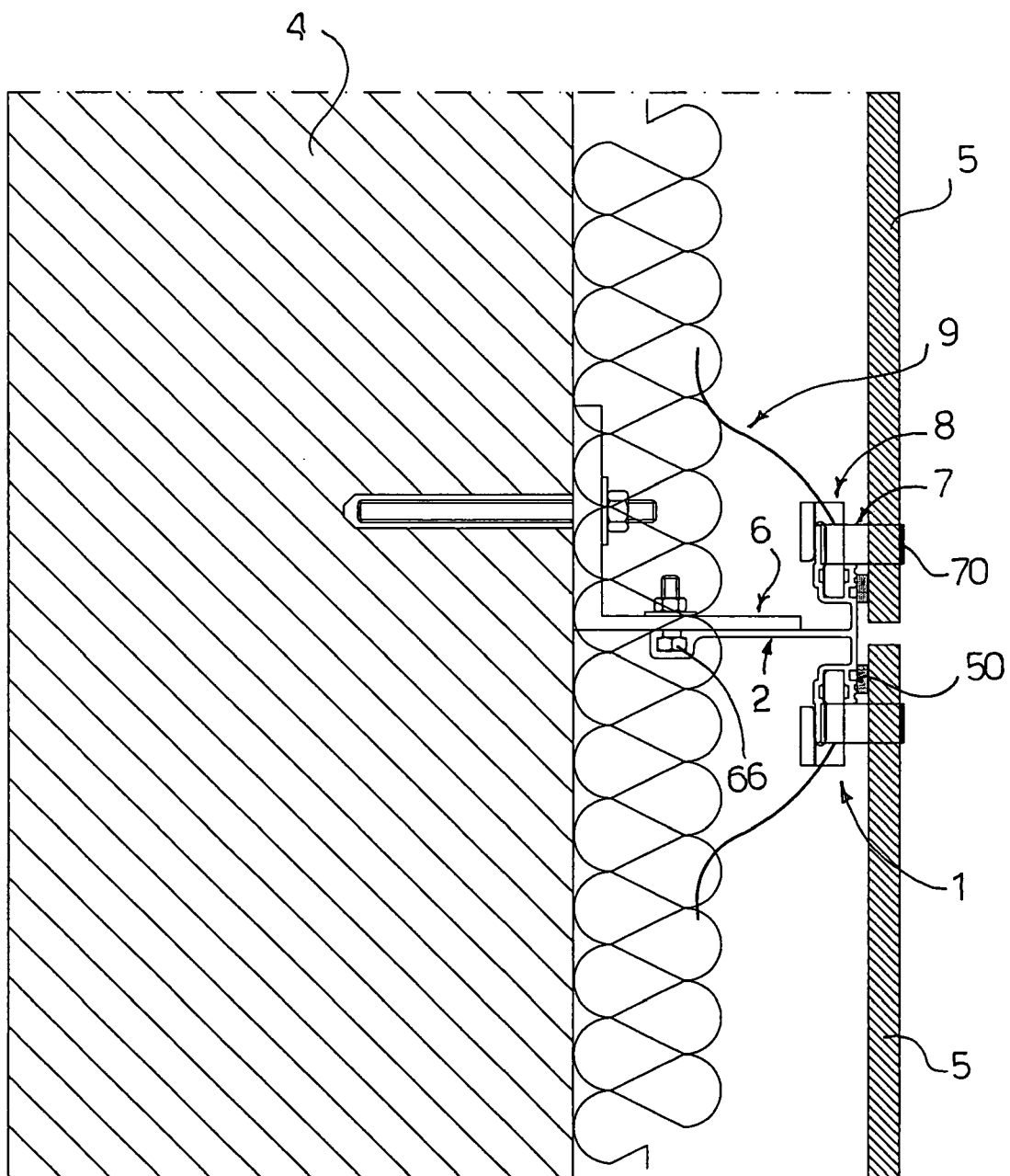


FIG. 3

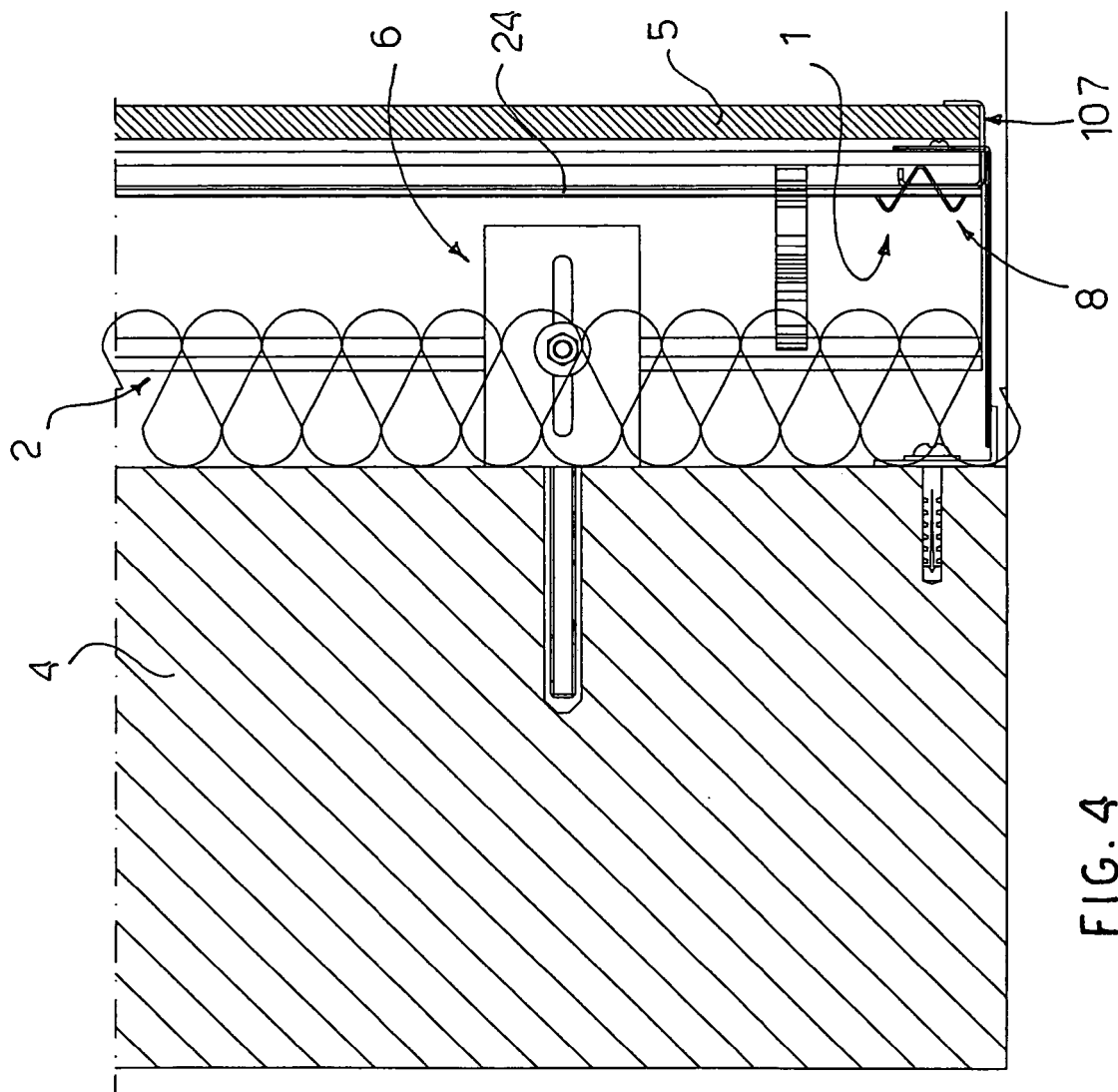


FIG. 4

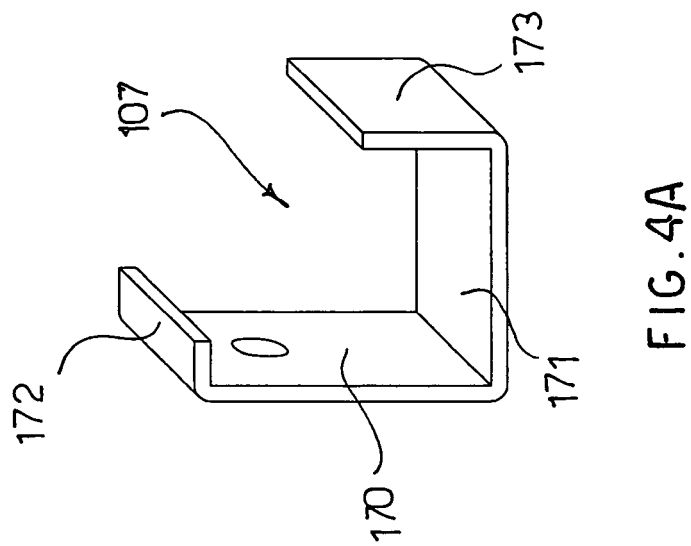


FIG. 4A

FIG. 5

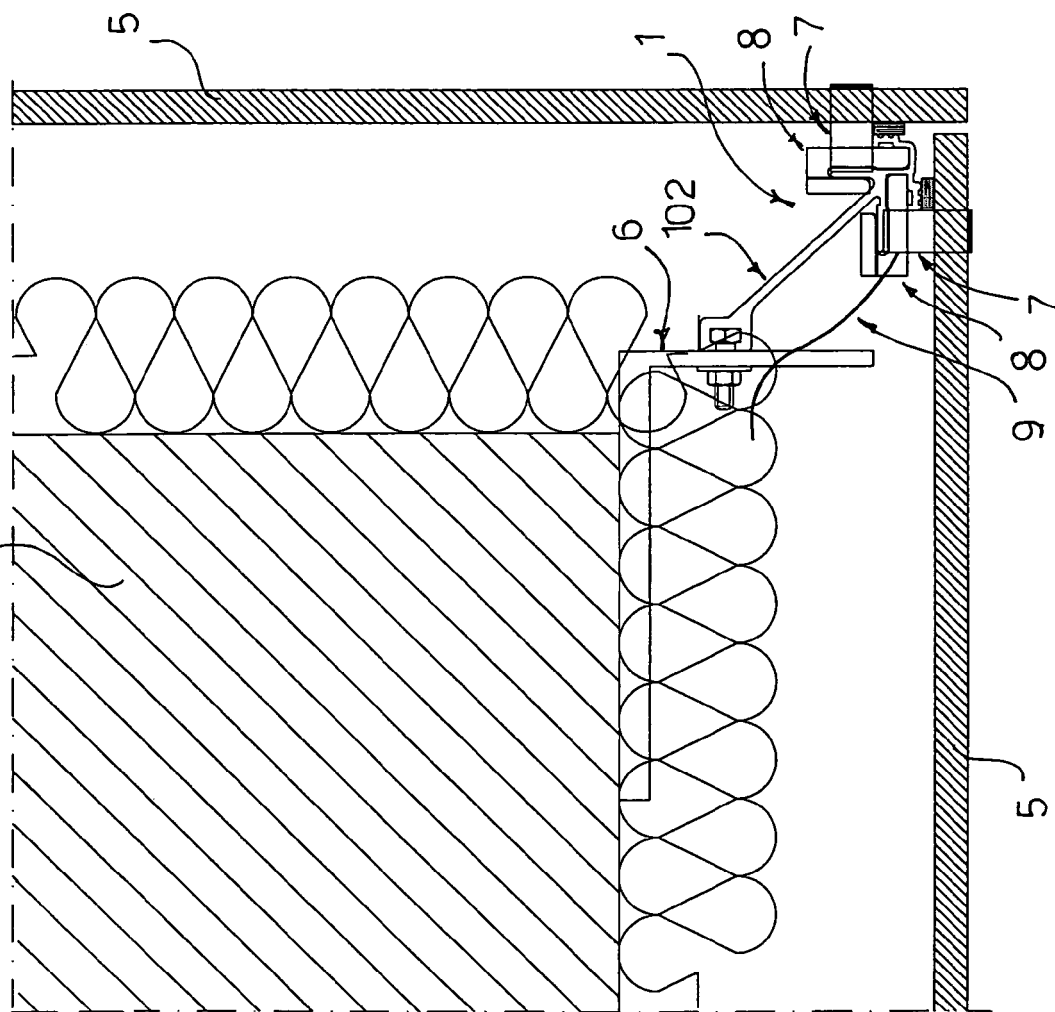


FIG. 5A

