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(54) **Device for fixing panels to a support and panel**

(57) A fixing device for a panel (2) comprises a set of elongated box structure section bars (3) each equipped with a longitudinal opening (4) delimited by two longitudinal edges (5) of the section bar (3). The device (1) comprises furthermore a set of fixing means (6), each provided with at least of a connecting portion (7) that can be inserted in an section bar (3) through the respective longitudinal opening (4) and provided with at least a support portion (8) fit to be engaged to an edge (29) of the panel (2) to block it.

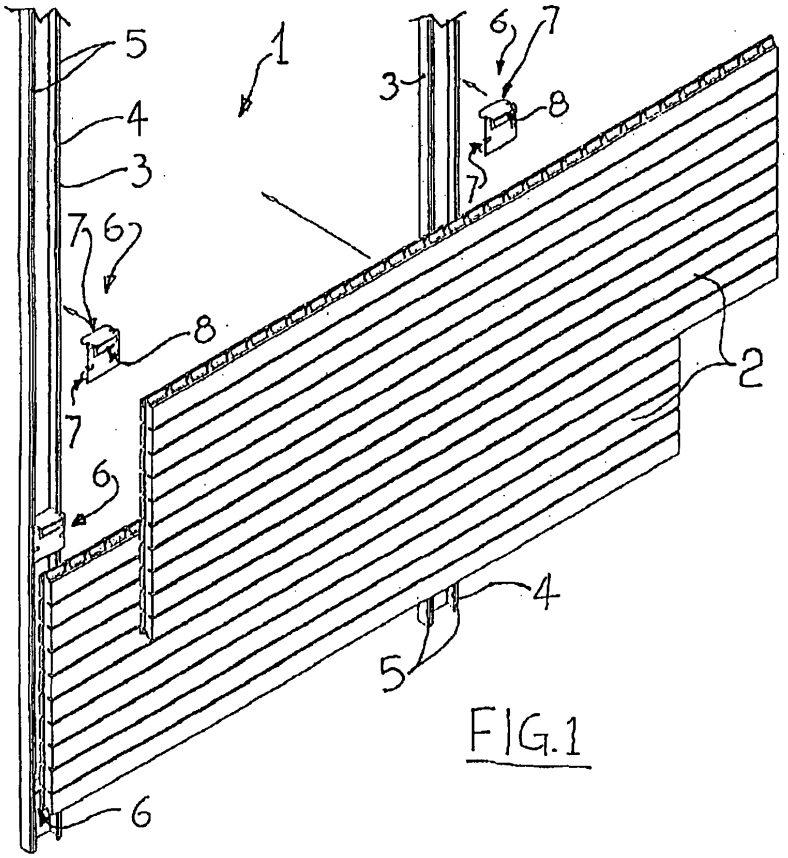

FIG.1

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Description

[0001] The present invention refers to the field of the panel fixture on the walls and relates to a fixing device for a panel and to a panel particularly suitable for carrying out walls or wall coatings and ceilings also made of sound absorbent and/or soundproofing material.

[0002] There are known fixing device for plasterboard panel for example comprising upright made of bended plate fit to be fixed to a wall to be coated or fit to placed between a floor and a ceiling for carrying out false wall or a wall by fixing the panels to the upright by using screws.

[0003] They are also known isolating or coating panels fit to be fixed directly to the walls and ceilings by devices consisting of simple nails, adhesive and the like.

[0004] A drawback of said known devices consists in that they require a lot of time and very expert and skilled persons for fixing the panel,

[0005] Other drawback consists in that said known devices do not always allow to compensate irregularity of the walls and/of of the floors which causes the irregular fixing of the panels.

[0006] Other drawback of the known fixing means, in particular of those that provides the insertion of the screws or nails into the panels, consists in that they can damage the panels.

[0007] An object of the present invention is to propose a fixing device for a panel and a panel for carrying out coating and walls in simple and fast way, also by not skilled person.

[0008] Other object is to propose a fixing device and a panel able to carry out regular coating or walls even in case of imprecise or irregular building works.

[0009] Further object is to propose a device which can fix the panel without damaging it.

[0010] The characteristics of the invention are underlined in the following with particular reference to the attached drawings, in which:

- Figure 1 shows an axonometric front view of a set of section bars, panels and fixing means of the device of the present invention, in a condition before the assembly,
- Figure 2 shows a transversal section view of a section bar of Figure 1;
- Figure 3 shows an axonometric view of one of the fixing means of Figure 1;
- Figure 4 shows a transversal section partial view of the devices of Figure 1 in a assembly condition and in which the section bar have been omitted.

[0011] With reference to Figures 1 - 4, numeral 1 indicates the fixing device for a panel 2 object of the present invention.

[0012] Said device 1 comprises a set of elongated box structure section bars 3, for example made of bended plate, each being equipped with a longitudinal opening 4 delimited by two longitudinal edges 5 of the section bar 3. The longitudinal edges 5 can be obtained by folding on themselves the longitudinal borders of the section bar 3.

[0013] The section bars are fit to be fixed, for instance vertically or horizontally, to form support upright of the device. Said section bars or uprights can be fixed to a wall, to a ceiling or between a floor and a ceiling.

[0014] The device 1 comprises a set of fixing means 6 fixable to the section bars 3 and fit to block the panels.

[0015] Each fixing mean 6 comprises a body 12 whose opposite ends have respective connecting portions 7 almost equal, mutually parallel and faced and perpendicular to the body 12. Said body and the connecting portions are nearly flat.

[0016] The connecting portions 7 are fit to be inserted in an upright 3 through the respective longitudinal opening 4 to connect the respective fixing mean 6 to said upright 3.

[0017] Each fixing mean 6 has a support portion 8 fit to engage itself to an edge 29 of the panel 2 for blocking it.

[0018] Each fixing mean 6 is carried out in an integral cut and bended plate.

[0019] In alternative, the fixing mean 6 can be made of other deformable or flexible material.

[0020] Each connecting portion comprises a first member 9 fit to be inserted in the section bars 3 and having approximately complementary shape in respect to the inner section of said section bar.

[0021] Each side edge of the first member 9 has rounded off to facilitate its insertion into the section bar.

[0022] Each connecting portion 7 comprises also a second member 10, outside the section bar 3 and connected to the first member 9, and comprises two side grooves 11 fit to house the longitudinal edges 5 of the section bar 3 and interposed between the members, first 9 and second 10.

[0023] The body has a set of holes 13 for blocking screws, or the like, of the fixing mean 6 to the edges 5 of the section bar 3.

[0024] Each hole is obtained by cutting the body along a portion of the edge of the hole 13 and by the folding of the cut material in a manner that an uncut edge of the hole 13 has a folded flap 14 constituted by said cut and folded material.

[0025] The folded flaps 14 of the holes 13 and the second members 10 protrude from the same face of the body 12 in the same length. In such manner the flaps 14 match the borders of the section bars avoiding that an excessive screwing bends the body 12.

[0026] The support portion 8 is turned in opposite direction to the direction of the connecting portions 7 of the respective fixing mean

[0027] Each support portion 8 is shaped as a "L" profile constituted by a first flat element 15 connected to the body and to the connecting portions 7 and by a second flat element 16 orthogonal to the first one and fit to block an edge 29 of the panel 2.

[0028] The first flat element 15 is nearly coplanar to one of the connecting portions 7 and the second flat element 16 is nearly parallel to the body 12.

[0029] The opposite edges 29, 20 of each panel 2 include respective grooves 17. One or both of the upper and lower grooves 17 are fit to house the second flat element 16 of one or two upper and lower support portions 8.

[0030] The upper edge 29 of the panel 2 includes a first male joint 18 and the opposite edge 20 includes a second female joint 19 and nearly complementary to the first joint 18. In this way, a support portion blocks an edge 29 of a panel 2 and, by means of the joints 18, 19, blocks also an edge 20 of an adjacent panel 2.

[0031] The panels 2 are made of sound isolate and/or sound absorbent material in multilayer and include a plurality of grooves 21 carried out on their faces.

[0032] The operation of the said device provides that, after the fixing of the section bars 3, these latter are equipped with the respective fixing means 6 that, being freely sliding, they can be correctly positioned and blocked thereto by means of inserting screws into the holes 13 and screwed in the borders of the section bars. Then the panels 2 are blocked by the support portions 8 engaged into the grooves 17 of the panels.

[0033] The invention also provides a variant of the device whose simplicity does not require any explanatory drawing. In said variant the support portion 8 of each fixing mean 6 is carried out in the middle portion of the body 12, between the two connecting portions 7. The holes 13 can be four, two between the support portion and a connecting portion and the other two between the support portion and the another connecting portion.

[0034] In alternative, the invention further provides that the support portion 8 of at least one of the fixing means 6 is "T" profile shaped or has the second flat element 16 constituted by groups of lips turned in opposite directions to be engaged contemporarily into upper and lower grooves 17, of two adjacent panels.

[0035] An advantage of the present invention is to provide a fixing device for a panel and a panel can carry out coatings and walls in simple and fast manner also by not very skilful person.

[0036] Other advantage is to provide a fixing device and a panel able to carry out regular coatings or walls even if the building works are imprecise and irregular.

[0037] Further advantage is to provide a device that allows to fix the panel without damaging this latter.

Claims

1. Fixing device for a panel (2), said device (1) comprising a set of elongated box structure section bars (3) each having a longitudinal opening (4) delimited by two longitudinal edges (5) of the section bars (3); said device being **characterized in that** it comprises a set of fixing means (6) each provided with at least a connecting portions (7) that can be inserted in a section bars (3) through the respective longitudinal opening (4) and with at least a support portion (8) fit to be engaged to an edge (29) of the panel (2) to block it.

2. Device according to claim 1 **characterized in that** each connecting portion comprises a first member (9) fit to be inserted into the section bar (3) and having form approximately complementary to the inner section of said section bar.

3. Device according to claim 2 **characterized in that** each connecting portion comprises a second member (10) outside the section bars one (3) and connected to the first member (9).

4. Device according to claim 3 **characterized in that** each connecting portion (7) comprises two side grooves (11) fit to house the longitudinal edges (5) of the section bar (3) and interposed between the first members first (9) and second member (10).

5. Device according to any one of the preceding claims **characterized in that** each fixing mean (6) includes two connecting portions (7) nearly equal and carried out on opposite ends of a respective body (12).

6. Device according to claim 5 **characterized in that** the two connecting portions (7) are nearly flat, mutually parallel and perpendicular to the body (12), this latter being nearly flat

7. Device according to claim 6 **characterized in that** the body includes a set of holes (13) for screws, or the like, for blocking the fixing mean (6) to the edges (5) of the section bar (3).

8. Device according to claim 7 **characterized in that** an edge of each hole (13) has a folded flap (14).

9. Device according to claims 3 and 8 **characterized in that** the folded flaps (14) and the second members (10) protrude from the same face of the body (12) in the same length.

10. Device according to claim 1 **characterized in that** at least a support portion (8) is turned in opposite direction of the at least a connecting portion (7).

11. Device according to claim 1 **characterized in that** each support portion (8) is "L" profile shaped.

12. Device according to claim 11 **characterized in that** each support portion (8) is "L" profile shaped constituted by a first flat element (15) connected to the at least a connecting portion (7) and by at least a second flat element (16) orthogonal to the first one and

fit to block an edge (29) of the panel (2).

13. Device according to claims 6 and 11 **characterized in that** the first flat element (15) is at least approximately coplanar to one of the connecting portions (7).

14. Device according to claims 6 and 11 **characterized in that** the second flat element (16) is at least approximately parallel to the body (12).

15. Device according to any one of the preceding claims **characterized in that** each fixing mean (6) is carried out integral by cut and bended plate.

16. Panel to be fixed by the device of any of the preceding claims **characterized in that** the edge (29) of the panel (2) includes a groove (17) for the second flat element (16).

17. Panel according to claim 16 **characterized in that** the edge (29) of the panel (2) having the groove (17) includes a first joint (18) for a second joint (19), nearly complementary to the first one (18), of the opposite edge (20) of an adjacent panel (2).

18. Panel according to claim 17 **characterized in that** each opposite edges (29, 20) of each panel (2) has a groove (17) and a respective joint (18, 19).

19. Panel according to any one of claims 16 - 18 **characterized in that** it is made of sound isolate and/or sound absorbent material in multilayer and having a plurality of grooves (21) carried out in at least one its faces.

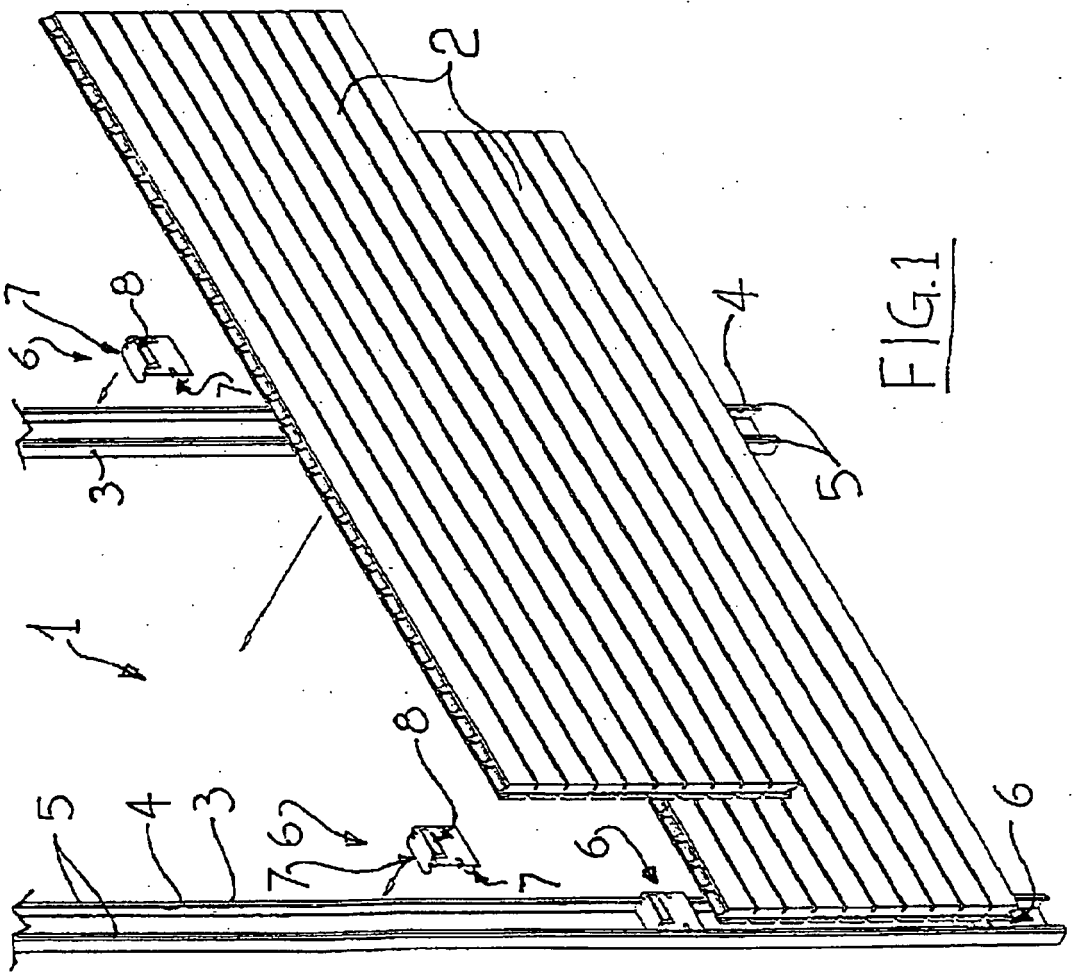

FIG.1

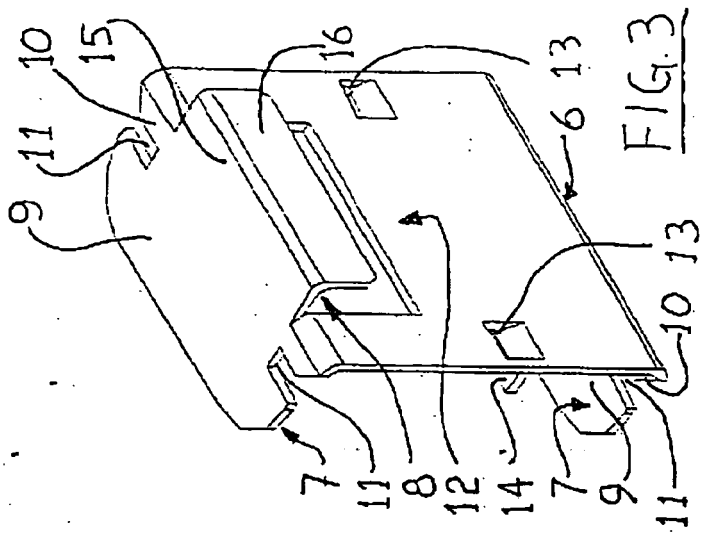

FIG.3

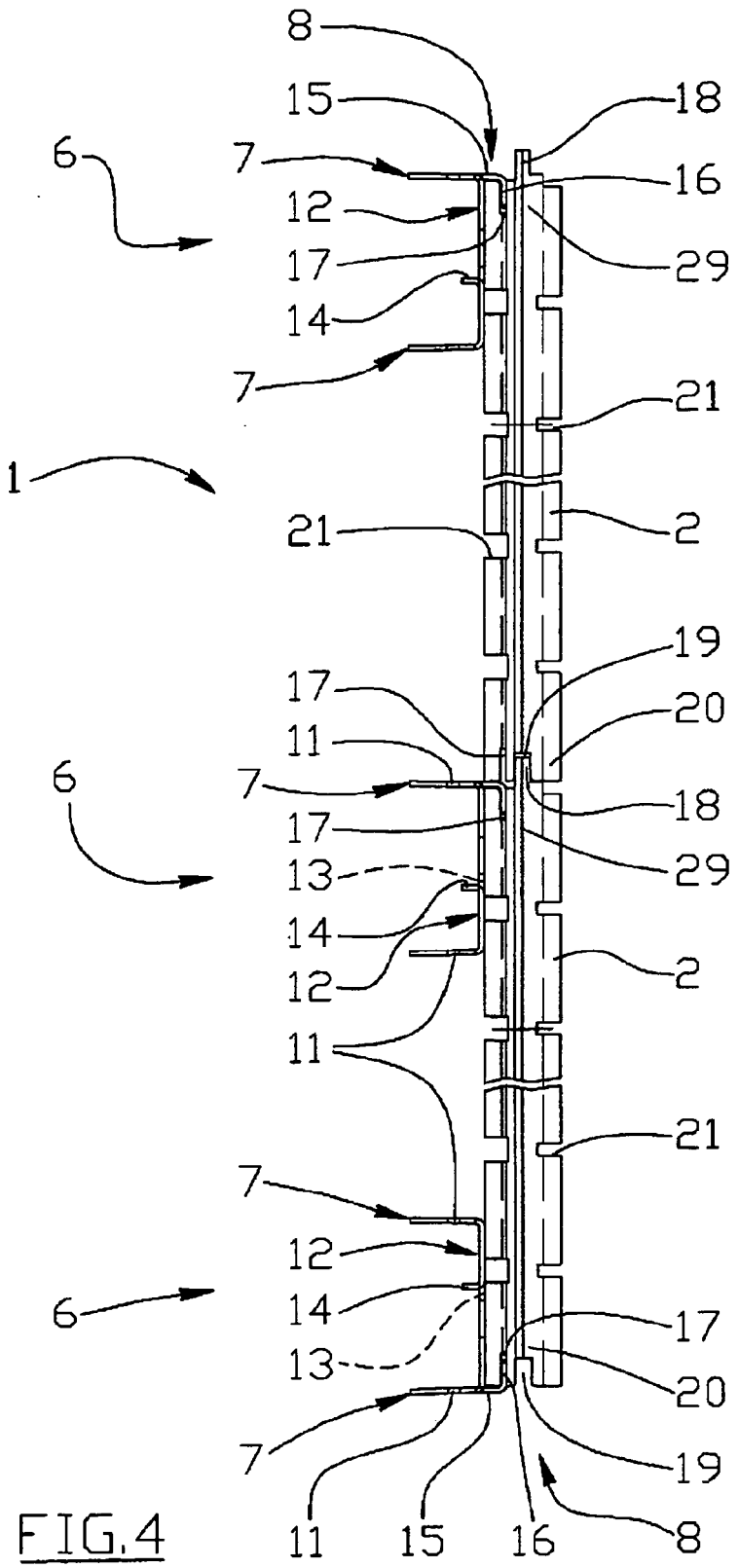
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FIG.4

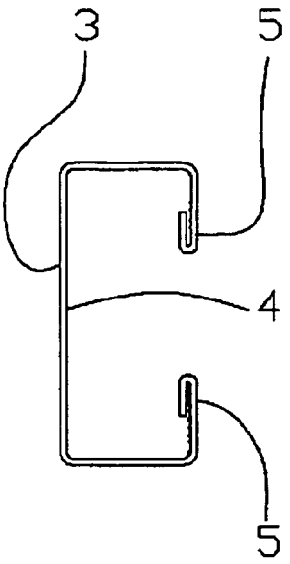
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FIG.2