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(54) **DRYWALL PROFILE**
TROCKENBAU-PROFIL
PROFILÉ DE CLOISONS

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US-A- 2 379 179 US-A- 5 676 486

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Description

[0001] The invention relates to drywall profile for forming part of a sub-construction and to a drywall construction for ram protection.

[0002] Drywall constructions are conventionally employed in the interior of buildings, wherein the drywall construction comprises a sub-construction made of a plurality of drywall profiles which are correspondingly arranged and to which the building panels are attached, e.g. by use of screws or an adhesive. Those building panels include gypsum fiber boards, gypsum plasterboards or other sheet shaped panels, e.g. based on wood or plastic materials.

[0003] In drywall constructions, the building panels are usually attached to a sub-construction by screws which are screwed into the respective flange portion of the drywall profiles. The flange portions are of a size and a shape so as to be capable of receiving a screw. According to other techniques, an adhesive can be used to attach the building panel to the flange portion of the drywall profile. In those conventional constructions a joint compound is applied to the screw holes and the joints between bordering building panels in order to hide them. After the preparation of the surface a wall paper or a wall paint is applied according the preferred optic.

[0004] A novel drywall construction uses ready-to-use building panels which are for example made of gypsum fiber material. Ready-to-use means that they are delivered to the construction site already in a finished state and are applied as they are at the construction site. Hence no finishing steps, like the application of wallpaper or wall paint, are to be carried out. This allows in particular for a pre-printing of the surfaces at the building panel production site so that the print can be applied under optimal conditions with the highest quality. Such a pre-print may include a number of different designs, e.g. typical pattern known from the construction of buildings (bricks, tiles or wooden planks). A problem related to this kind of building panels is that no finishing is possible after the installation of the drywall without spoiling the ready-to-use surface of the panels. Thus, the attachment of the panels to the sub-construction has to be visually pleasing without further processing. Preferably, the construction details should be invisible.

[0005] A yet little considered field of application for drywall constructions comprising ready-to-use building panels is ram protection. One particular example is the use in hospital corridors through which the hospital beds are regularly moved. In particular during hectic situations, the beds are moved fast and damages to the wall are regarded as irrelevant. Ram protection allows that the hospital beds can contact the walls without causing visible permanent damage. The ram protection reduces the maintenance work for these buildings.

[0006] In such a construction the sub-construction is attached to a wall, which can be made for example from gypsum plasterboards. The sub-construction includes

connection profiles arranged between adjacent building panels and end profiles which are arranged so as to cover the end face of such a construction. A problem related thereto is that the different drywall profiles require different geometries so as to be capable of being used as end profile or as connection profile along the wall face or as connection profile around a wall corner. Thus, a multitude of different drywall profiles have to be provided at a particular construction site.

[0007] US 5 676 486 A discloses a drywall profile according to the preamble of independent claim 1.

[0008] The object of the invention is therefore to provide a drywall profile which can be used in many applications and in particular as end profile, as connection profile along the wall face or as connection profile to form a wall corner in a drywall construction.

[0009] This problem is solved by a drywall profile for forming part of a sub-construction and a drywall construction according to the respective independent claims. Preferred aspects of the invention are the subject matter of the respective dependent claims. The invention comprises a drywall profile for forming part of a sub-construction to which building panels are attached. The drywall profile has a flange portion of a size and a shape so as to be capable of attaching a first building panel thereto and a bending portion bendable from a first position in which no second building panel can be attached to the bending portion under angle $\alpha > 0^\circ$ relative to a main surface of the first building panel to a second position in which a second building panel can be attached to the bending portion under angle $\alpha > 0^\circ$ relative to the first building panel. The angle α is between the respective main surfaces of the first and second building panel in the mounted state. The drywall profile can be used as end profile when the bending portion is not bent outside from the first position in which no second building panel can be attached to the bending portion under angle $\alpha > 0^\circ$. An end profile forms the final part in a drywall construction so that building panels are attached thereto at one side only in a manner so as to cover the end face of the building panel. In this case the bending portion is arranged in the plane of the flange portion. Additionally, the drywall profile can be used as connection profile when the bending portion is bent outside into the second position in which the second building panel can be attached to the bending portion under angle $\alpha > 0^\circ$. A connection profile forms the intermediate part in a drywall construction so that building panels are attached thereto at both sides so as to cover the end face of the respective building panel. The connection profile is arranged between two building panels. A ram protection can be arranged at the wall of a building, wherein between neighboring building panels, the connection profile is arranged. In the second position of the bending portion, the drywall profile can be arranged as connection profile at the corner of a wall so as to be in contact with the first building panel at the flange portion and the second building panel at the bending portion.

[0010] According to an advantageous aspect, the dry-

wall profile is a metal or a sheet-metal profile. For example, the drywall profile can be made from aluminum or stainless steel. The bending portion comprises at least one cut-out section at the flange portion of a size and a shape so as to form a bendable tab which can be bent from the first position to the second position and to which the second building panel can be attached. The metal profile can be made of steel, wherein the cut-out section is formed with a u-shaped cut through the entire material thickness of the flange portion. The bendable tab has a stiffness so as to be manually bendable while providing a strong contact for the attached building panel.

[0011] According to a preferred technical aspect, the at least one bendable tab is bent from the first position to the second position in which a second building panel is attached under a rectangular angle (α = about 90°) relative to the first building panel. This rectangular arranged bendable tab allows for covering or forming a right angled wall corner with a ram protection (as exemplified in this application), wherein the first building panel is arranged at one corner side and the second building panel is arranged at the neighboring corner side. In this case, the drywall profile is a connection profile arranged at the corner so as to connect adjacent building panels around the corner.

[0012] It is particularly advantageous, that the at least one bendable tab is bent from the first position to the second position in which a second building panel is attached under an obtuse angle α = 101° - 179° relative to the first building panel. This allows for covering a corner having an obtuse angle. Here as well, the drywall profile is a connection profile arranged at the corner so as to connect adjacent building panels around the corner of the wall.

[0013] According to the invention, the drywall profile comprises an end portion of a size and a shape so as to be capable of covering an end face of the first building panel. The end portion can be formed in one piece with the flange portion, wherein the end portion is bent away from the flange portion so as to extend in a width d from 5 to 25 mm from the plane defined by the bent portion.

[0014] According to the invention, the end portion is bent in a rectangular (e.g. quadratic) shape having at least one end section of a width d identical to the thickness of the first building panel. Each end section is a part of the end portion which is bent to extend in another orientation. The rectangular shaped end portion covers and protects the end face or narrow face of the attached first building panel and, if present, the end face of the attached second building panel arranged around the corner.

[0015] In an aspect not forming part of the invention, the drywall profile further comprises a folding line arranged between the flange portion and the end portion. The flange portion and the end portion are bent at the folding line relative to each other so as to include an angle of β of about 90° or equal to 90° . Since ram protections can be formed to stop in the plane of the wall, the end

portion covers the end face in an optical attractive manner.

[0016] In an aspect not forming part of the invention, the end portion comprises a first end section, a second end section and a third end section. The first end section and the second end section are folded to be arranged in a u-shaped manner. The second end section and the third end section are folded to be arranged in a rectangular manner. This provides a connection profile with a cross shaped cross section, which covers the end face of the first building panel with the first end section and the end face of the second building panel with the third end section.

[0017] In an alternative technical aspect not forming part of the invention, the drywall profile comprises a folding line arranged between the flange portion and the end portion. The flange portion and the end portion being bent at the folding line relative to each other so as to include an angle of $91^\circ < \beta < 179^\circ$. This embodiment allows arranging miter cut building panels forming ram protections around a corner with an drywall profile arranged between the first building panel and the second building panel.

[0018] According to another preferred aspect, the end portion of the drywall profile comprises a welted section arranged parallel to the end portion of the drywall profile. The welted section provides a mechanically strong edge which is visually attractive. It minimizes the risk of the narrow edges of the building panel being damaged.

[0019] Another aspect of the invention relates to a drywall construction comprising a sub-construction of at least one drywall profile as described herein and a plurality of building panels attached thereto. The drywall construction can be arranged along an existing wall and in particular around a corner by attaching the drywall profiles to the wall and attaching the building panels to the drywall profiles. In particular, the construction includes ram protection constructions and a visually pleasing form of connection of individual panels providing a ready-to-use wall surface.

[0020] According to a preferred aspect the building panel has at least one outer ready-to-use surface. The ready-to-use surface comprises advantageously a design printed on one surface, laminated surface (HPL), or a veneer surface.

[0021] According to another advantageous technical aspect the building panel is a gypsum board, especially a gypsum fiber board. These boards are very hard so as to provide a good and enduring ram protection. Furthermore, gypsum fiber boards are able to achieve class A1 according to DIN EN 13501-1 concerning fire resistance. In combination with a ready-to-use surface the building panel preferably achieves an A2 s1, d0 fire rating class according to said DIN.

[0022] In the following the invention will be explained in more detail with reference to drawings. Like reference numerals denote similar features throughout the drawings. In the drawings is:

- Figs. 1a-1d a drywall profile according to the invention having a rectangular bent end portion;
- Figs. 2a-2d a drywall profile not forming part of the invention having an end portion with three end sections; and
- Figs. 3a-3d a drywall profile not forming part of the invention having an end portion with a welded section.

[0023] Fig. 1a illustrates a drywall profile 1 according to the invention mountable to a wall (not shown) as part of a sub-construction or to a sub-construction made of regularly spaced studs before a building panel is attached thereto. The drywall profile 1 can be arranged as part of a sub-construction as end profile having the bending section in the first position, i.e. arranged in the plane of the flange portion 21. Fig. 1a includes a back-side view showing a u-shaped cut-out section 211 which forms part of the bending portion which will be explained in the following.

[0024] In Fig. 1b, a building panel 31 is shown as attached to the drywall profile 1 of Fig. 1a. Drywall profile 1 has a flange portion 21 providing a surface of a width capable of attaching the building panel 31 thereto with a fixed connection, i.e. by use of screws or an adhesive. Drywall profile 1 comprises an end portion 23 which is bent in a rectangular manner and has a size and a shape to cover the end face or narrow face 311 of the attached building panel 31.

[0025] The bendable portion 22 is shown in Fig. 1c when it is bent (from a first position in which no second building panel 32 can be attached to the bending portion 22 under angle $\alpha > 0^\circ$ relative to a main surface of the first building panel 31) into a second position in which a second building panel 32 is to be attached to the bending portion 22 in the present example under an rectangular angle $\alpha = 90^\circ$ relative to the attached first building panel. In the shown example, drywall profile 1 is a stainless steel profile. The bending portion 22 is formed from a cut-out section (see Fig. 1a, reference number 211) of the flange portion 21 which is formed by cutting through the stainless steel material. The size and shape of the bending portion 22 is chosen so as to provide a bendable tab of a sufficient stiffness to attach a second building panel 32 thereto. The bent-out tab furthermore acts as a backside abutment for the second building panel 32.

[0026] In Fig. 1d, a second building panel 32 is attached to the bending portion 22 of drywall profile 1. The first building panel 31 and the second building panel 32 are arranged so as to include an angle α of 90° to the main surface 312 of the first building panel 31. The end portion 23 is bent in a rectangular shape (cross section) having three end sections 231 of a width d identical to the thickness of the first building panel 31 and the second building panel 32. The shown drywall profile 1 can be used as connection profile in a ram protection. In this

case the connection profile is used as a corner profile. It provides a "closed" corner.

[0027] The mentioned advantages can be combined with the following dry-wall profiles not forming part of the invention shown in Figs. 2a-2d and to a third aspect of the invention shown in Figs. 3a-3d.

[0028] In Fig. 2a a drywall profile 1 is shown not forming part of the invention. It is mounted to a wall or a common drywall sub-construction (not shown) as part of the sub-construction before a building panel is attached thereto. Drywall profile 1 can be arranged in a sub-construction as end profile having the bending section (other than in Fig. 2c) in the first position, i.e. arranged in the plane of the flange portion 21. A folding line 24 is arranged between the flange portion 21 and the end portion 23, the flange portion 21 and the end portion 23 being bent at the folding line 24 relative to each other so as to include an angle of β of about 90° . This allows for covering the end face of the first building panel in the attached position. The drywall profile preferably comprises a welted section 234 which extends aligned with the flange portion 21.

[0029] In Fig. 2b, a building panel 31 is attached to the drywall profile 1. This arrangement allows for using the drywall profile 1 as an end profile capable of covering the end face of building panel 31 and providing a visually appealing termination for a drywall. In Fig. 2c, a drywall profile 1 has a flange portion 21 to which the building panel 31 is to be attached and which comprises a bending portion 22. The bending portion 22 is bent from a first position into a second position in which a second building panel 32 is to be attached to the bending portion 22 under a rectangular angle α of about 90° relative to the attached first building panel 31 (as shown in Fig. 1b). In this example, the drywall profile 1 is a connection profile made of a sheet metal material. The bent portion 22 is formed by a cut-out section (as explained in Fig. 1a, reference 221) cut into the sheet metal (e.g. in u-shape) of flange portion 21 and then manually bent out of the plane of flange portion 21.

[0030] Fig. 2d illustrates the construction as mounted around the corner of a wall, wherein a second building panel 32 is attached to the bending portion 22. The first building panel 31 and the second building panel 32 are arranged so as to include an angle of 90° . The second end section 232 and the third end section 233 are folded to be arranged in a rectangular manner. This allows for covering the end face of the second building panel 32 attached thereto. The shown drywall profile 1 can be used as connection profile in a ram protection construction. It provides an "open" corner.

[0031] In Fig. 3a a drywall profile 1 is shown not forming part of the invention.

[0032] The drywall profile 1 can be arranged in a sub-construction as connection profile 1, wherein a miter cut of the respective building panels 31, 32 can be applied to both, the first building panel 31 and to the second building panel 32, respectively. Drywall profile 1 comprises a flange portion 21 and an end portion 23 which are sep-

arated by a folding line 24. Flange portion 21 and the end portion 23 being bent at the folding line 24 relative to each other so as to include an angle β of about 135° . A welted section 234 is arranged parallel to the end portion 23 of the drywall profile 1.

[0033] In Fig. 3b, the first building panel 31 and the second building panel 32 are attached to the drywall profile 1. This arrangement allows for using the drywall profile 1 as connection profile capable of covering both end faces of the respective building panel 31, 32. The folding line 24 is arranged between flange portion 21 and end portion 23. The flange portion 21 and the end portion 23 are bent at the folding line 24 relative to each other so as to include an angle β of about 135° . The angle β can be adapted as required.

[0034] Fig. 3c shows yet another aspect. The miter cut of the respective building panels can be applied to the first building panel 31 only and not to the second building panel 32 (different than in Fig. 3b). The flange portion 21 and the end portion 23 are bent at the folding line 24 relative to each other so as to include an angle β of about 145° (which is larger than in Figs. 3a and 3b).

[0035] In the example of Fig. 3d, the bending portion, here a bendable tab 22 is bent from the first position to the second position under an obtuse angle (in the present example α is about 135°). A second building panel 32 is attached relative to the first building panel 31. The end portion 23 of the drywall profile 1 comprises a welted section 234.

[0036] All shown drywall profiles are to be arranged in a drywall construction (not shown) comprising a sub-construction of at least one drywall profile (as described herein) and a plurality of building panels 31, 32 attached thereto. It is particularly preferred if the building panels 31, 32 have at least one outer ready-to-use surface which preferably includes a decoration, for example a print of a specific design, a laminated surface, or a laminated veneer. Building panels 31, 32 are preferably gypsum fiber boards. The building panels can be used in constructions which explicitly include ram protection constructions as gypsum fiber boards have particularly hard surfaces and are fire resistant.

Claims

1. Drywall profile (1) for forming part of a sub-construction to which building panels (31, 32) are attached, the drywall profile (1) having a flange portion (21) of a size and a shape so as to be capable of attaching a first building panel (31) thereto and a bending portion (22) bendable from a first position arranged in the plane of the flange portion in which no second building panel (32) can be attached to the bending portion (22) under angle ($\alpha > 0^\circ$) relative to the flange portion (21) to a second position arranged out of the plane of the flange portion in which a second building panel (32) can be attached to the bending portion

(22) under angle ($\alpha > 0^\circ$) relative to the flange portion (21), wherein the bending portion (22) comprises at least one cut-out section (221) in the flange portion (21) of a size and a shape so as to form a bendable tab which can be bent from the first position to the second position and to which the second building panel (32) can be attached and wherein the drywall profile further comprises an end portion (23) of a size and a shape so as to be capable of covering an end face (311) of the first building panel (31), **characterized in that** the end portion (23) is bent in a rectangular shape having at least one end section (231) of a width (d) identical to the thickness of the first building panel (31).

2. Drywall profile (1) according to claim 1, wherein the at least one bendable tab (22) is bent from the first position to the second position in which a second building panel (32) is attached under a rectangular angle (α equal to about 90°) relative to the first building panel (31).
3. Drywall profile (1) according to claim 1, wherein the at least one bendable tab (22) is bent from the first position to the second position in which a second building panel (32) is attached under an obtuse angle ($\alpha = 101^\circ - 179^\circ$) relative to the first building panel (31).
4. Drywall profile (1) according to claims 1 to 3, wherein the end portion (23) of the drywall profile comprises a welted section (234) arranged aligned to the end portion (23) of the drywall profile (1).
5. Drywall construction comprising a sub-construction of at least one drywall profile (1) according to any one of the preceding claims and a plurality of building panels (31, 32) attached thereto.
6. Drywall construction according to claim 5, wherein the building panel (31, 32) has at least one outer ready-to-use surface.
7. Drywall construction according to claim 5 or 6, wherein the building panel (51, 52) is a gypsum board, especially a gypsum fiber board.

Patentansprüche

1. Trockenbauwandprofil (1) zum Ausbilden eines Teils einer Unterkonstruktion, an der Baupaneele (31, 32) angebracht sind, wobei das Trockenbauwandprofil (1) einen Flanschabschnitt (21) von einer Größe und einer Form, um fähig zu sein, ein erstes Baupaneel (31) daran anzubringen, und einen Biegeabschnitt (22) aufweist, der von einer ersten Position, die in der Ebene des Flanschabschnitts angeordnet ist, in der kein zweites Baupaneel (32) an den Biegeab-

- schnitt (22) unter einem Winkel ($\alpha > 0^\circ$) relativ zu dem Flanschabschnitt (21) angebracht werden kann, in eine zweite Position, die aus der Ebene des Flanschabschnitts angeordnet ist, in der ein zweites Baupaneel (32) an den Biegeabschnitt (22) unter dem Winkel ($\alpha > 0^\circ$) relativ zu dem Flanschabschnitt (21) angebracht werden kann, biegebar ist, wobei der Biegeabschnitt (22) mindestens einen Ausschnittsbereich (221) in dem Flanschabschnitt (21) von einer Größe und einer Form umfasst, um eine biegbare Lasche, die von der ersten Position in die zweite Position gebogen werden kann, auszubilden und an der das zweite Baupaneel (32) angebracht werden kann und wobei das Trockenbauwandprofil ferner einen Endabschnitt (23) von einer Größe und einer Form umfasst, um fähig zu sein, eine Endfläche (311) des ersten Baupaneels (31) abzudecken, **dadurch gekennzeichnet, dass** der Endabschnitt (23) in einer rechteckigen Form, die mindestens einen Endbereich (231) einer Breite (d), die mit der Dicke des ersten Baupaneels (31) identisch ist, aufweist, gebogen ist.
2. Trockenbauwandprofil (1) nach Anspruch 1, wobei die mindestens eine biegbare Lasche (22) von der ersten Position in die zweite Position, in der ein zweites Baupaneel (32) unter einem rechteckigen Winkel (α gleich etwa 90°) relativ zu dem ersten Baupaneel (31) angebracht ist, gebogen ist.
 3. Trockenbauwandprofil (1) nach Anspruch 1, wobei die mindestens eine biegbare Lasche (22) von der ersten Position in die zweite Position, in der ein zweites Baupaneel (32) unter einem stumpfen Winkel ($\alpha = 101^\circ - 179^\circ$) relativ zu dem ersten Baupaneel (31) angebracht ist, gebogen ist.
 4. Trockenbauwandprofil (1) nach den Ansprüchen 1 bis 3, wobei der Endabschnitt (23) des Trockenbauwandprofils einen gefalzten Bereich (234), der an dem Endabschnitt (23) des Trockenbauwandprofils (1) ausgerichtet angeordnet ist, umfasst.
 5. Trockenbauwandkonstruktion, umfassend eine Unterkonstruktion von mindestens einem Trockenbauwandprofil (1) nach einem der vorstehenden Ansprüche und eine Vielzahl von Baupaneelen (31, 32), die daran angebracht sind.
 6. Trockenbauwandkonstruktion nach Anspruch 5, wobei das Baupaneel (31, 32) mindestens eine äußere gebrauchsfertige Oberfläche aufweist.
 7. Trockenbauwandkonstruktion nach Anspruch 5 oder 6, wobei das Baupaneel (51, 52) eine Gipskartonplatte, insbesondere eine Gipsfaserkartonplatte, ist.

Revendications

1. Profilé de cloison sèche (1) permettant de former une partie d'une sous-structure à laquelle des panneaux de construction (31, 32) sont fixés, le profilé de cloison sèche (1) ayant une partie bride (21) ayant une taille et une forme permettant de fixer un premier panneau de construction (31) à ladite partie bride et une partie flexible (22) qui est flexible pour passer d'une première position agencée dans le plan de la partie bride, dans laquelle aucun second panneau de construction (32) ne peut être fixé à la partie flexible (22) sous un angle ($\alpha > 0^\circ$) par rapport à la partie bride (21) à une seconde position agencée hors du plan de la partie bride dans laquelle un second panneau de construction (32) peut être fixé à la partie bride (22) sous angle ($\alpha > 0^\circ$) par rapport à la partie bride (21), dans lequel la partie bride (22) comprend au moins une section de découpe (221) dans la partie bride (21) ayant une taille et une forme permettant de former une languette flexible qui est flexible pour passer de la première position à la seconde position et à laquelle le second panneau de construction (32) peut être fixé, et dans lequel le profilé de cloison sèche comprend en outre une partie d'extrémité (23) ayant une taille et une forme permettant de couvrir une face d'extrémité (311) du premier panneau de construction (31), **caractérisé en ce que** la partie d'extrémité (23) est pliée en une forme rectangulaire ayant au moins une section d'extrémité (231) ayant une largeur (d) identique à l'épaisseur du premier panneau de construction (31).
2. Profilé de cloison sèche (1) selon la revendication 1, dans lequel l'au moins une languette flexible (22) est pliée pour passer de la première position à la seconde position dans laquelle un second panneau de construction (32) est fixé sous un angle rectangulaire (α égal à environ 90°) par rapport au premier panneau de construction (31).
3. Profilé de cloison sèche (1) selon la revendication 1, dans lequel l'au moins une languette flexible (22) est pliée pour passer de la première position à la seconde position dans laquelle un second panneau de construction (32) est fixé sous un angle obtus ($\alpha = 101^\circ$ à 179°) par rapport au premier panneau de construction (31).
4. Profilé de cloison sèche (1) selon les revendications 1 à 3, dans lequel la partie d'extrémité (23) du profilé de cloison sèche comprend une section soudée (234) agencée de manière alignée sur la partie d'extrémité (23) du profilé de cloison sèche (1).
5. Construction de profilé sèche comprenant une sous-structure d'au moins un profilé de cloison sèche (1) selon l'une quelconque des revendications pré-

cédentes et une pluralité de panneaux de construction (31, 32) fixés à celle-ci.

6. Construction de cloison sèche selon la revendication 5, dans laquelle le panneau de construction (31, 32) a au moins une surface externe prête à l'emploi. 5
7. Construction de profilé sèche selon la revendication 5 ou 6, dans laquelle le panneau de construction (51, 52) est une plaque de gypse, en particulier une plaque à fibres de gypse. 10

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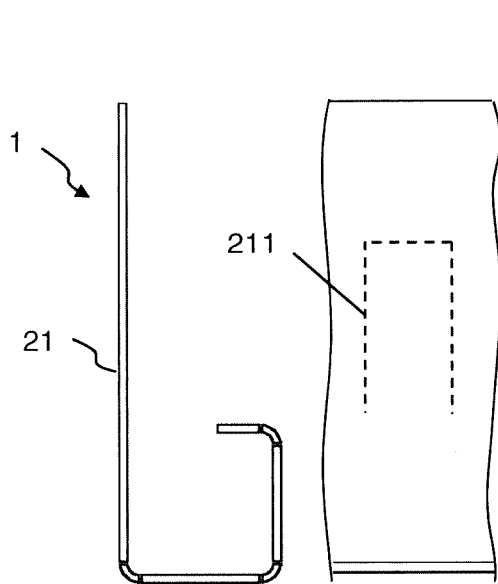


Fig. 1a

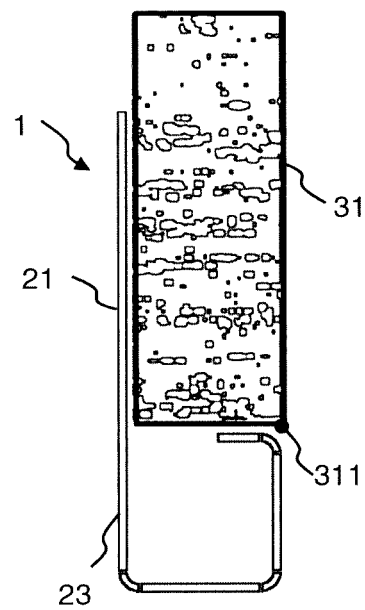


Fig. 1b

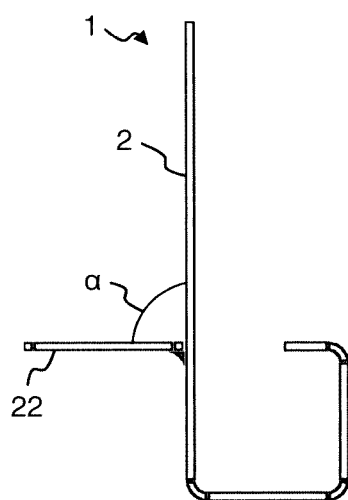


Fig. 1c

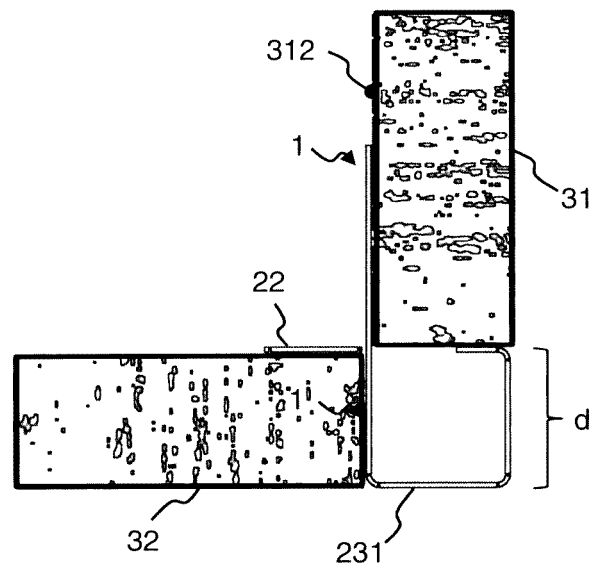


Fig. 1d

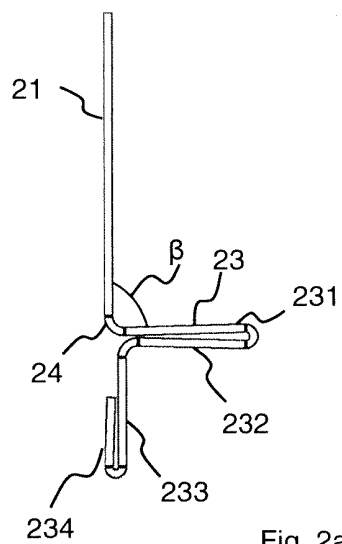


Fig. 2a

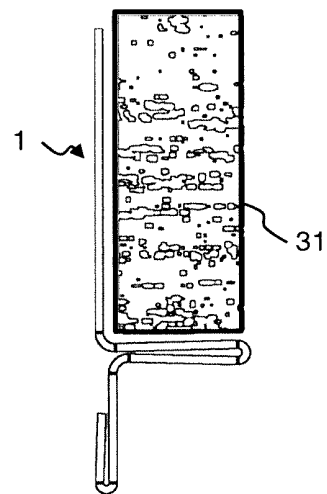


Fig. 2b

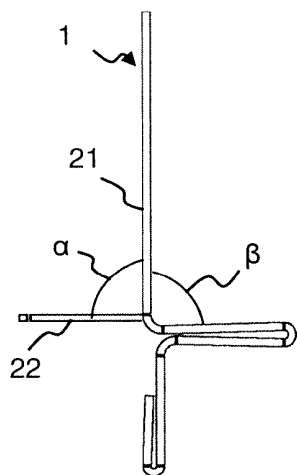


Fig. 2c

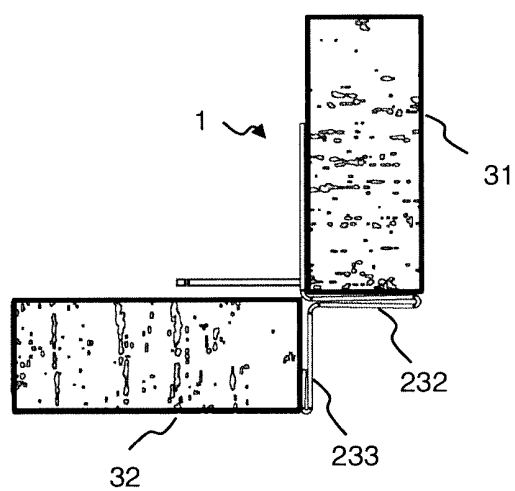


Fig. 2d

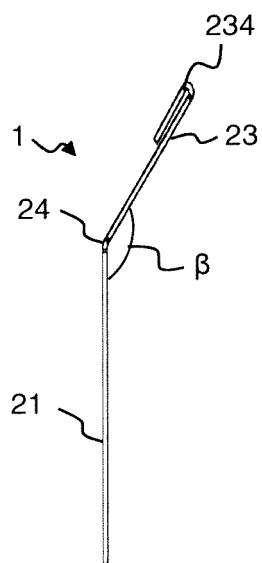


Fig. 3a

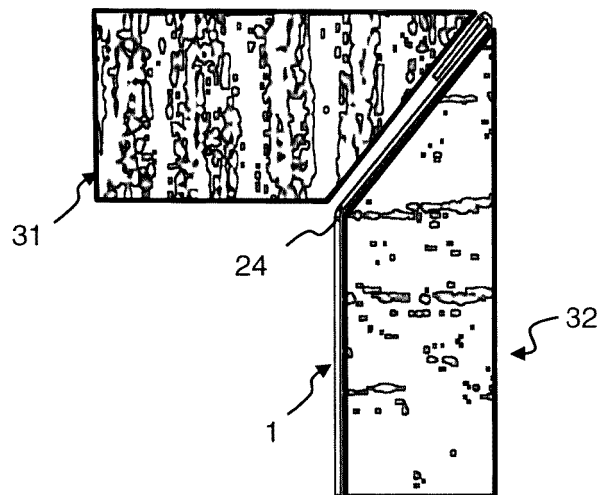


Fig. 3b

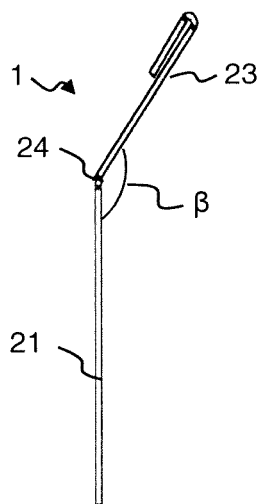


Fig. 3c

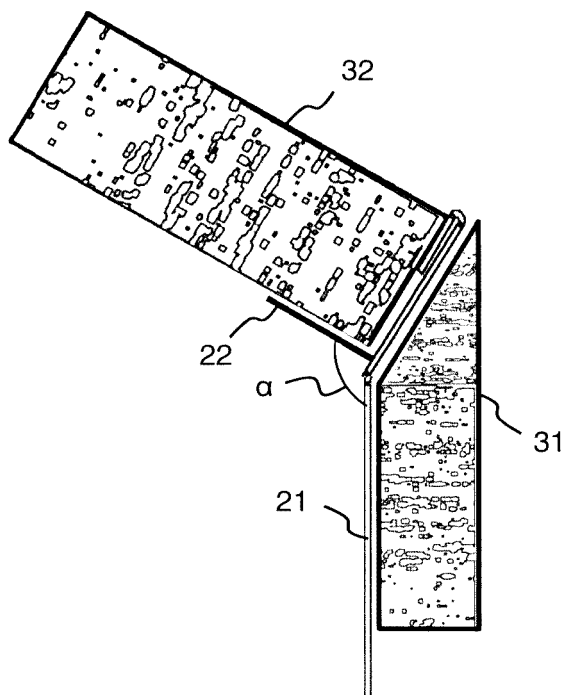


Fig. 3d

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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