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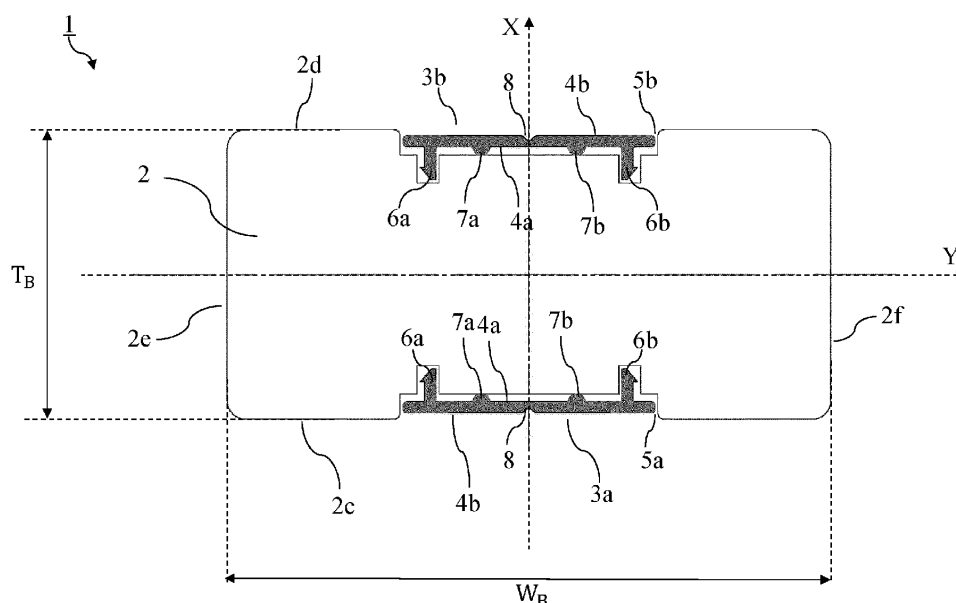
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(54) BEAM ASSEMBLY FOR A SLAT WALL

(57) The present disclosure relates to a beam assembly for forming a slat wall or screen, comprising a beam elongating along a longitudinal axis from a base side to a top side of the beam, opposite the base side. The beam further comprises a first lateral side and a second lateral side, opposite the first lateral side, extending from the base side to the top side. The beam assembly comprises at least a first and a second metal profile attached

to respectively the first lateral side and the second lateral side, and wherein the first and second metal profile are extending parallel with the longitudinal axis. The first and the second lateral side comprises respectively a first and a second recess receiving respectively the first and second metal profile such that the first and second metal profiles are recessed into the beam.

**Fig. 4****EP 4 497 892 A1**

Description

Field of the disclosure

[0001] The present disclosure relates to a beam assembly for a slat wall. More specifically a beam assembly for forming a back-construction slat wall or a free-standing slat wall comprising a plurality of beam assemblies.

Background

[0002] Slat walls or slat screens have both an aesthetic character and a technical function.

[0003] Slat walls or slat screens are for example positioned in front of windows or openings in buildings or houses in order to reduce the impact of the sun, rain and wind on the building or house. Especially for large openings or large glass surfaces, slat walls can have a significant impact in reducing a temperature build-up in buildings.

[0004] Slat walls can either be classified as back-construction slat walls or as free-standing slat walls. With back-construction slat walls, the beams of the slat wall are positioned in front of a building or window and hence in the back side of the beams there is generally no free space as the back sides of the beams are positioned closely to the building or window. On the other hand, free-standing slat walls are defined as slat walls that have a free space in the front side and a free space in the back side of the beams forming the slat wall. Hence a free-standing slat wall can be construed as a wall formed by beams aligned along an alignment line and spaced from each other and wherein there is free space on both sides of the wall.

[0005] A free-standing slat wall can for example be used to make a separation between two areas in a building or to close off large openings in buildings. For example in parking towers, slat walls can be used to cover large openings in the tower. In these configurations, there is free space on one side of the slat wall, i.e. the interior of the parking tower, and a free space on the other side of the slat wall, i.e. the exterior of the parking tower. In this example, the slat wall reduces the impact of the wind and the infiltration of water and it further prevents persons or objects to fall down from the parking tower.

[0006] Slat walls used for applications involving building constructions have to fulfil severe fire regulations and generally, for most projects, only materials fulfilling a specific fire classification can be used.

[0007] Therefore, the beams used for forming slat walls or screens are generally made of a metal such as for example aluminium.

[0008] On the other hand, there is a need to use more ecological friendly materials as raw construction materials. In view of its low CO₂ footprint, wood is a good example of an ecological friendly material that can be used for construction work. On the other hand, untreated wood can generally not attain the specific requirements in

terms of fire regulations for construction work. Depending on the specific fire regulations applicable, untreated wood generally falls in a category of highly flammable material.

[0009] Currently, wooden slat walls are therefore using beams that are impregnated with a fire retardant product. A drawback with treated wood is that impregnation needs to be repeated periodically which is expensive and time consuming. Further, the presence of the fire retardant product generally attracts water and stains can occur after a certain time. Further, the product used for impregnation is not always ecologically friendly.

[0010] Hence, there is room for improving beam assemblies for slat walls.

Summary

[0011] It is an object of the present disclosure to provide a beam assembly for a slat wall or slat screen that is ecologically friendly and that does not have the shortcomings discussed above.

[0012] The present disclosure is defined in the appended independent claims. The dependent claims define advantageous embodiments.

[0013] According to a first aspect of the disclosure, a beam assembly for forming a slat wall or screen is provided. The beam assembly comprises a beam elongating along a longitudinal axis from a base side to a top side of the beam opposite the base side. The beam further comprises a first lateral side and a second lateral side opposite the first lateral side, and wherein the first and second lateral sides are extending from the base side to the top side. The beam assembly is characterized in that it further comprises a first and a second metal profile attached to respectively the first lateral side and the second lateral side of the beam, and wherein the first and second metal profile are extending parallel with the longitudinal axis, and in that the first and the second lateral side comprises respectively a first and a second recess receiving respectively the first and second metal profile such that the first and second metal profiles are recessed into the lateral sides of the beam.

[0014] Advantageously, by providing a first and a second metal profile attached to respectively the first lateral side and the second lateral side of the beam, a fire barrier is formed. With the fire barrier, a compartmentalization of the beam is obtained. When a fire occurs on one side of the beam, i.e. the front or back side, the fire will, as a result of the barrier, generally not extent to the other side of the beam. The metal profiles will also accumulate and transport heat over their entire surface.

[0015] Advantageously, as the metal profiles can replace a flammable surface portion of the beam with a non-flammable metal surface portion formed by the metallic profiles, the overall flammable surface of the beam is reduced.

[0016] Advantageously, in view of the reduced flammable surface, the so-called FIGRA parameter, Fire

Growth RATE, of the beam assembly is reduced when compared to a beam assembly without the metal profiles. The FIGRA parameter predicts burning behaviour of building products and the parameter is defined as the growth rate, expressed in W/s of the burning intensity during a standardized test.

[0017] Advantageously, the so-called THR600 parameter, which is defined as the total heat released from the beam assembly, expressed in MJ, in the first 600 seconds of exposure to the flames, is also reduced when compared to an assembly without the metal profiles.

[0018] Advantageously, the beam assemblies comprising the metal profiles, attain an improved fire classification, i.e. the beam assemblies are associated to a more favourable fire class when compared to a beam assembly without the metal profiles. In other words, the present disclosure ensures that materials with a high flammability achieve a lower flammability and can therefore be used in most building projects. For example in the EU, fire testing and classification standards for construction products, are specified through the European Standard EN 13501-1. When considering for example an untreated wooden beam, the classification of such a product is typically class D, which means it is a combustible material than is highly flammable, and hence this product is not acceptable in building construction work. With the beam assembly according to the present disclosure, the beam assembly attains a class B, which means that the product is very difficult to burn or has a very limited contribution to fire, i.e. there is very limited heat release and flame spread during the growth stage of a fire. As a consequence, the beam assemblies according to the present disclosure can be used in most of the building projects.

[0019] Advantageously, untreated wood can for example be used as a material for the beams for forming a slat wall. Alternatively, other ecological friendly materials such as bamboo or a modified woods can be used as a material for the beam forming the slat wall.

[0020] Preferably, the first and second metal profile are extending parallel with the longitudinal axis from the base side to the top side of the beam. In this way, a fire barrier is realized over the entire length of the beam.

[0021] Preferably, the first and the second metal profiles are positioned symmetrically with respect to respectively a middle line of the first lateral side of the beam and a middle line of the second lateral side of the beam.

[0022] In embodiments, the first and the second metal profiles are attached to respectively a central portion of the first lateral side and a central portion of the second lateral side such that for each metal profile a separation distance from the metal profile to the front side and a separation distance from the metal profile to the back side of the beam are equal. The separation distances are measured along a lateral axis perpendicular to the longitudinal axis.

[0023] Advantageously, by placing the first and second metal profiles centrally on the lateral sides of the beam,

the effect of the fire barrier is the same whether a fire occurs on either side, i.e. back side or front side, of the beam. This is important for example for free-standing beam assemblies forming a slat wall wherein a fire can occur on both sides of the wall.

[0024] In embodiments, the first and the second metal profiles are attached to respectively a central portion of the first lateral side and a central portion of the second lateral side such that the first screw line is located along a middle line of the first lateral side of the beam and the second screw line is located along a middle line of the second lateral side of the beam.

[0025] Generally, each of the first and second metal profiles comprises a profile back side and a profile front side opposite the profile back side, and wherein the profile back side of the first metal profile is facing the first lateral side and the profile backside of the second metal profile is facing the second lateral side.

[0026] In embodiments, the plate thickness of the metal profiles between the profile back side and the profile front side may be between 2 mm and 4 mm.

[0027] Preferably, the first metal profile may be attached to the first lateral side of the beam with a plurality of first fixation members aligned along a first screw line parallel with the longitudinal axis, and the second metal profile may be attached to the second lateral side of the beam with a plurality of second fixation members, aligned along a second screw line parallel with the longitudinal axis. For example, the first and second fixation members may be screws.

[0028] In embodiments, the profile front side of the first metal profile comprises a first notch extending parallel with the longitudinal axis and defining the first screw line for aligning the first fixation members. Similarly, the profile front side of the second metal profile comprises a second notch extending parallel with the longitudinal axis and defining the second screw line for aligning the second fixation members.

[0029] Advantageously, the notch provides for a correct and rigid mounting of the metal profiles to the beam.

[0030] In preferred embodiments, each profile back side of the metal profiles comprises a first and a second anchor member, and wherein each of the recesses of the lateral sides of the beam comprises a first and second slot receiving the corresponding first and second anchor member.

[0031] Advantageously, in case of fire, the anchor members are anchoring the metal profile to the beam and hence prevent the metal profiles of curling to the outside and hence prevent flames from having access to the underlying portion of the beam. The anchor members also provide for a deeper fire barrier.

[0032] In embodiments, each of the anchor members may comprise respectively a first and a second hook profile and wherein the first and second hook profile are oriented in an opposite direction so as to face away from each other. Advantageously, in case of fire, when the metal profiles tend to curl to the outside, also the

anchor members will curl to the outside and the hook profiles will penetrate the beam.

[0033] In embodiments, for each metal profile, the first and second anchor member may be positioned symmetrically with respect to a screw line of the metal profile.

[0034] In embodiments, for each metal profile, an anchor separation distance between the first and second anchor member is smaller than a width of the metal profile, and wherein the anchor separation distance and width of the metal profile are measured along a lateral axis perpendicular to the longitudinal axis. Advantageously, in case of fire, flames are shielded from entering the slots receiving the anchors.

[0035] Preferably, the profile back side of each of the metal profiles comprises a first and second spacer configured for maintaining a spacing between the metal profile and the lateral side of the beam the metal profile is attached to.

[0036] Advantageously, the spacers prevent that the metal profiles are bending when tightly screwing the metal profiles to the beam and by maintaining a space between the beam and the metallic profile, fluid retention between the beam and the metal profile is avoided. Further, with the spacers, the interface between the beam and the metal profile is kept to a minimum such that in case of fire, when the metal profiles heat up, the beam facing the metal profiles, is spared from the heat as much as possible.

[0037] In embodiments, the beam is made of a combustible material.

[0038] Preferably the beam is made of a non-metallic material. The beam can for example be made of wood, bamboo or a modified wood or any combination thereof. A modified wood has to be construed as a wood, generally soft wood, that is treated to increase durability. For example a treatment of soft wood using acetic acid, known as an acetylation process. Another example of modified wood is thermo-treated wood.

[0039] In preferred embodiments, the beam assembly is made of a hardwood, preferably an untreated hardwood.

[0040] Preferably, the first and second metal profile are made of for example aluminium or stainless steel. In embodiments, wherein the first and second metal profile are made of aluminium, the metal profiles may be produced by applying an extrusion manufacturing process.

[0041] In embodiments, the beam assembly may further comprise a third and fourth metal profile and wherein the third and fourth metal profile are further attached to respectively the first lateral side and the second lateral side of the beam.

[0042] In embodiments, the first and third metal profile may be located adjacently to each other and the second and fourth metal profile may be located adjacently to each other. In these embodiments, the first recess may be receiving the first and third metal profile and the second recess may be receiving the second and fourth metal profile, such that the first and third metal profile are

recessed into the first lateral side of the beam and the second and fourth metal profile are recessed in the second lateral side of the beam.

[0043] In other embodiments, the first and third metal profile may be spaced from each other and generally may be located symmetrically with respect to a middle line of the first lateral side, and the second and fourth metal profile may be spaced from each other and generally located symmetrically with respect to a middle line of the second lateral side. In these embodiments, the first lateral profile may comprise two recesses receiving respectively the first and third metal profile and the second lateral profile may comprise two recesses receiving respectively the second and fourth metal profile.

[0044] In embodiments, the $0.10 \leq (W_{Tp}) / (C_{BA}) < 0.60$, preferably $0.10 \leq (W_{Tp}) / (C_{BA}) \leq 0.50$, more preferably $0.15 \leq (W_{Tp}) / (C_{BA}) \leq 0.45$, wherein C_{BA} is a circumference of a cross-sectional shape of the beam assembly obtained by taking a cross-section between the beam assembly and a plane perpendicular the longitudinal axis, and wherein W_{Tp} is a sum of the widths of each of the metal profiles of the beam assembly, and wherein W_{Tp} is measured along a lateral axis Y, perpendicular to the longitudinal axis Z.

[0045] Preferably the width of the first metal profile is equal to the width of the second metal profile.

[0046] In embodiments, the width W_B of the first and second lateral side of the beam is selected such that: $8 \text{ cm} \leq W_B \leq 30 \text{ cm}$, preferably $8 \text{ cm} \leq W_B \leq 20 \text{ cm}$, more preferably $8 \text{ cm} \leq W_B \leq 15 \text{ cm}$, and wherein the width W_B is generally measured along a lateral axis, perpendicular to the longitudinal axis.

[0047] In embodiments, the thickness T_B of the beam between the first and second lateral side is selected such that: $3 \text{ cm} \leq T_B \leq 9 \text{ cm}$, preferably $3 \text{ cm} \leq T_B \leq 8 \text{ cm}$, more preferably $4 \text{ cm} \leq T_B \leq 7 \text{ cm}$, and wherein the thickness T_B of the beam is generally measured between the first and second lateral side along a cross axis perpendicular to the longitudinal axis and perpendicular the lateral axis.

[0048] In embodiments, the width W_{P1} of the first metal profile is selected to be comprised within a range: $25 \text{ mm} \leq W_{P1} < 100 \text{ mm}$, preferably $25 \text{ mm} \leq W_{P1} < 80 \text{ mm}$, more preferably $30 \text{ mm} \leq W_{P1} < 70 \text{ mm}$, and wherein the width W_{P2} of the second metal profile is selected to be comprised within the same range as the width of the first metal profile. Generally, the width of the first and second metal profile are measured along an axis parallel with the lateral axis perpendicular to the longitudinal axis.

[0049] In embodiments, the beam has a length L_B measured along the longitudinal axis between the base side and the top side, and wherein $1 \text{ m} \leq L_B \leq 8 \text{ m}$, preferably $2 \text{ m} \leq L_B \leq 8 \text{ m}$, more preferably $2 \text{ m} \leq L_B \leq 6 \text{ m}$.

[0050] The present disclosure also relates to a slat wall comprising a plurality of beam assemblies spaced from each other.

[0051] In embodiments, the plurality of beam assemblies forming the slat wall may be aligned along an

alignment line and the lateral sides of the beams of the plurality of beam assemblies may be parallel. Preferably the lateral sides are angled at an angle between 45° and 90° with respect to the alignment line.

[0052] The present disclosure further relates to a building comprising a slat wall positioned in front of an opening of the building or wherein the slat wall is positioned between two areas in a building.

Short description of the drawings

[0053] These and further aspects of the present disclosure will be explained in greater detail by way of example and with reference to the accompanying drawings in which:

Fig. 1 schematically illustrates a perspective view of an embodiment of beam assembly according to the present disclosure,

Fig. 2 is a first side view of an embodiment of a beam assembly according to the present disclosure,

Fig. 3 is a second side view of an embodiment of beam assembly according to the present disclosure, Fig. 4 shows a cross-section between an exemplary embodiment of a beam assembly according to the present disclosure and a plane perpendicular to the longitudinal axis,

Fig. 5 is a cross-sectional view of the metal profile of the beam assembly of Fig. 4,

Fig. 6 is a cross-sectional view of the beam of the beam assembly shown on Fig. 4,

Fig. 7 is a side view of the beam of the beam assembly shown on Fig. 4,

Fig. 8 is a cross-sectional view of a beam having an elliptical shape,

Fig. 9 and Fig. 10 are illustrating a first and a second side view of a further embodiment of a beam assembly having two metal profiles on each lateral side, Fig. 11 and Fig. 12 show perspective views of portions of a slat wall according to embodiments of the present disclosure,

Fig. 13 and Fig. 14 are illustrating a top view of a slat wall construction according to the present disclosure,

Fig. 15 and Fig. 16 are illustrating embodiments of beam assemblies that are inclined with respect to a horizontal plane.

[0054] The drawings of the figures are neither drawn to scale nor proportioned. Generally, identical components are denoted by the same reference numerals in the figures.

Detailed description of embodiments

[0055] The present disclosure will be described in terms of specific embodiments, which are illustrative of the disclosure and not to be construed as limiting. It will be

appreciated by persons skilled in the art that the present disclosure is not limited by what has been particularly shown and/or described and that alternatives or modified embodiments could be developed in the light of the overall teaching of this disclosure. The drawings described are only schematic and are non-limiting.

[0056] Use of the verb "to comprise", as well as the respective conjugations, does not exclude the presence of elements other than those stated. Use of the article "a", "an" or "the" preceding an element does not exclude the presence of a plurality of such elements.

[0057] Furthermore, the terms first, second and the like in the description and in the claims, are used for distinguishing between similar elements and not necessarily for describing a sequence, either temporally, spatially, in ranking or in any other manner. It is to be understood that the terms so used are interchangeable under appropriate circumstances and that the embodiments of the disclosure described herein are capable of operation in other sequences than described or illustrated herein.

[0058] Reference throughout this specification to "one embodiment" or "an embodiment" means that a particular feature, structure or characteristic described in connection with the embodiments is included in one or more embodiment of the present disclosure. Thus, appearances of the phrases "in one embodiment" or "in an embodiment" in various places throughout this specification are not necessarily all referring to the same embodiment, but may. Furthermore, the particular features, structures or characteristics may be combined in any suitable manner, as would be apparent to one ordinary skill in the art from this disclosure, in one or more embodiments.

[0059] The present disclosure relates to a beam assembly 1 that can be used for erecting for instance a slat wall. Various embodiments of beam assemblies are described with reference to the drawings. With reference to Fig. 1, a perspective view of an embodiment of a beam assembly 1 according to the present disclosure is shown. With reference to Fig. 2, Fig. 3, Fig. 9 and Fig. 10 side views of various embodiments of a beam assembly 1 according to the present disclosure are shown. In Fig. 4, a cross-section between an exemplary embodiment of a beam assembly 1 according to the present disclosure and a plane perpendicular to a longitudinal axis Z of the beam, is shown.

[0060] In the embodiments shown for example on Fig. 1 to Fig. 4, the beam assembly 1 comprises a beam 2 and two metal profiles: a first metal profile 3a and a second metal profile 3b. The present disclosure is however not limited to one metal profile per lateral side, embodiments with two metal profiles, as shown for example on Fig. 9 and Fig. 10, will further be discussed below.

[0061] In Fig. 1 to Fig. 3, the beam 2 has a shape of a cuboid. As illustrated on Fig. 1 to Fig. 3, the beam 2 is elongating along a longitudinal axis Z from a base side 2a to a top side 2b of the beam, the top side being located opposite of the base side.

[0062] The beam 2 further comprises, besides the base 2a and top side 2b, a first lateral side 2c, a second lateral side 2d opposite the first lateral side, As schematically illustrated on Fig.2 and Fig.3, the first lateral side 2c, the second lateral side 2d, and in this example of a cuboid, also the front 2e and the back side 2f, are extending parallel with the longitudinal axis Z from the base side to the top side.

[0063] The base side of the beam is generally the side that faces a floor level when a beam assembly is erected for forming a slat wall. More specifically, in this example shown on Fig. 1 to Fig.3, the beam has a shape of a rectangular cuboid and when the beam assembly is erected to form a slat wall, the beams are for example positioned vertically with respect to a floor level. In other embodiments, the shape of the beam can be different. For example, in embodiments the beam can have the shape of a parallelepiped and when this type of beam assembly is erected for forming a slat wall, the beam can be inclined with respect to a floor level, as schematically illustrated on Fig. 15 and Fig. 16.

[0064] For beams 2 having the shape of a cuboid or parallelepiped, the beam further comprises a front side 2e and a back side 2f, opposite the front side.

[0065] In further embodiments, the beam 2 can have a cross-sectional shape of an ellipse, as for example shown on Fig.8, in which case the lateral sides 2c, 2d are curved.

[0066] In embodiments the base and top side are not necessary parallel, the top side can for example be inclined with respect to the base side, e.g. to allow water to drip off from the beam.

[0067] Preferably, the corners of the beam, are rounded to prevent, in case of a fire, a double-sided burn-in. The beam 2 schematically shown for example on Fig.4, Fig. 6 and Fig.9 and Fig. 10 has rounded corners.

[0068] In embodiments comprising two metal profiles, the first 3a and a second 3b metal profiles are attached to respectively the first lateral side 2c and the second lateral side 2d of the beam 2. As illustrated, for example on Fig.2 and Fig.3, the first 3a and the second 3b metal profiles are extending parallel with the longitudinal axis Z.

[0069] For receiving the first 3a and second 3b metal profile, the first 2e and the second 2d lateral side of the beam 2 comprise respectively a first 5a and a second 5b recess. The recesses in the beam 2 can for example be obtained by a milling process. A cross-sectional view of an exemplary embodiment of a beam 2 is shown on Fig.6, illustrating the first 5a and the second 5b recess in the lateral sides 2c, 2d of the beam 2. A side view of the beam 2 of Fig.6 is shown on Fig.7. When the metal profiles are attached to the lateral sides of the beam, as illustrated for example on Fig.4, the first and second recess are receiving respectively the first and second metal profile. In this way, by providing the recesses, the first and second metal profiles are recessed into the beam.

[0070] With reference to Fig.9, a further example of a

cross-sectional view of an embodiment of a beam 2 is shown. In this example, the beam has a cross-sectional shape of an ellipse and each of the lateral sides 2c, 2d comprise a recess 5a, 5b for receiving respectively a first and a second metal profile.

[0071] In embodiments, the external surface of the metal profile is not located in the same surface of the lateral side of the beam, but instead the metal profile is recessed by one to three mm into the beam. In this way, in case of fire, the metal profile is not exposed directly to flames, but nevertheless is still optimally absorbing and transporting heat.

[0072] Generally, as schematically illustrated on Fig.2 and Fig.3, the first 3a and second 3b metal profile are extending parallel with the longitudinal axis Z from the base side to the top side of the beam. In this way, the fire barrier is formed over the entire length of the beam.

[0073] In embodiments, the beam is made of a combustible material.

[0074] In embodiments, the beam is made of any material selected of: hardwood, bamboo, a modified wood, or any combination thereof. A modified wood is a wood, for example a soft wood, that is treated to increase durability. Modified wood can also be named sustainable wood. An example of a modified wood is soft wood treated with acetic acid, known as an acetylation process.

[0075] More generally, the material of the beam is a non-metallic material.

[0076] In preferred embodiments the beam is made of a hardwood, preferably an untreated hardwood. Various types of hardwood or combinations of hardwood can be used to form the beam. Examples of hardwood are: padoek, izombe, bilinga, jutai, afzelia doussie, massaranduba, okan, muiracatiara, afrormosia, tali or jatoba.

[0077] In embodiments, the first and second metal profile are made of aluminium or stainless steel. Preferably aluminium is used in view of its physical properties such as for example its good thermal conductance supporting a beneficial cooling capacity.

[0078] In preferred embodiments, the first 3a and second 3b metal profiles are made of aluminium and produced by applying an extrusion manufacturing process. In this way, the first and second metal profile have a continuous profile extending parallel with the longitudinal axis, i.e. a cross-section of the metal profile with a plane orthogonal to the longitudinal axis Z remains the same over the entire length of the metal profile.

[0079] By using a continuous metal profile, e.g. obtained by extrusion, the advantages of the beam assembly comprising metal profiles, such as for example a reduction of flammable surfaces, accumulation and transportation of heat, and creation of compartments, remain the same over the entire length of the metal profile. As a fire can start at any height, having continuous metallic profiles is more advantageous. A continuous metal profile also provides for a improved stability of the beam and for instance skewing of the beam is reduced.

[0080] In embodiments, as schematically shown on Fig.2 and Fig.3, the first 3a and the second 3b metal profiles are attached to respectively a central portion of the first lateral side 2c and a central portion of the second lateral side 2d, i.e. each metal profile is located symmetrically with respect to a middle line of the lateral profile. The middle line of the lateral profile is a line that divides the width W_B of the lateral side of the beam into two equal width portions. On Fig.2 and Fig.3, in this example, the middle line coincides with the longitudinal axis Z. In this way, for each metal profile a separation distance S1 from the metal profile to the front side and a separation distance S2 from the metal profile to the back side of the beam are equal. As schematically illustrated on Fig.2 and Fig.3, the separation distances S1, S2 are measured along a lateral axis Y perpendicular to the longitudinal axis Z.

[0081] Placing the metal profiles exactly in the middle of the lateral sides of the beam, i.e. $S1 = S2$, has some advantages. It is not only aesthetically more attractive, it has also a technical advantage, especially for free-standing slat walls where the fire can potentially start both from either side of the wall. For example, in a parking tower, if a car takes fire, the slat wall should give the same protection whether the fire occurs inside or outside the parking tower. If the metal profiles would not be centralized but positioned for example more to the front side, then an improved fire protection is obtained on the front side and fire protection is reduced on the back side. Hence, for free-standing slat walls, it is more advantageously to position the metal profiles in the middle of the lateral sides to have the same protection from either side.

[0082] Attaching the metal profiles centrally to the lateral sides, is also better to deal with forces resulting from radial and tangential contraction and expansion of the beam, especially in the lateral direction. Mounting the metal profiles in the middle of the lateral sides of the beam is the most stable place to reduce the effects of these forces on the metal profiles and screws that connect the profile to the beam.

[0083] The shape and the various members of the metal profiles 3a, 3b and the way the metal profiles are attached to the beam 2, are further discussed in more detail.

[0084] As illustrated on Fig.4 and Fig.5, each of the first 3a and second 3b metal profiles comprises a profile back side 4a and a profile front side 4b. As shown on Fig.4, the back sides 4a of the metal profiles 3a,3b are facing the lateral sides 2c, 2d of the beam 2, more specifically, the back sides 4a are facing the recesses 5a, 5b in the lateral sides 2c, 2d of the beam. The front side 4b of the metal profiles 3a,3b is opposite the back sides 4a, and hence this is the side that is visible.

[0085] In embodiments, the first and second metal profiles have a plate thickness T_p , between 2 mm and 4 mm. The plate thickness, as illustrated on Fig.5, is measured between the front and back side of the metal profile.

[0086] In embodiments, the attachment of the metal profiles 3a, 3b to the beam 2 is performed with a plurality of fixation members. First fixation members for attaching the first metal profile 3a for the first lateral side 2c of the beam are aligned along a first screw line parallel with the longitudinal axis Z. Similarly, second fixation members for attaching the second metal profile 3b to the second lateral side 2d of the beam are aligned along a second screw line parallel with the longitudinal axis Z. In Fig.2 and Fig.3, the screw line for fixing the metal profile to the beam with fixation members corresponds to the middle line of the lateral sides, which in these figures is coinciding with the axis Z. The fixation members are not shown on the figures. The fixation members for attaching the metallic profiles to the beam are for example screws.

[0087] In embodiments, as illustrated on Fig.4 and Fig.5, to facilitate the attachment of the metal profiles to the beam, the profile front side 4a of each of the metal profiles 3a, 3b comprises a notch 8 extending parallel with the longitudinal axis Z. The notch 8 defines the screw line for aligning the fixation members, e.g. screws. Hence the screws are screwed at various places along the notch. The notch provides for a correct and rigid mounting of the metal profiles.

[0088] In the embodiment shown on Fig.4 and Fig.5, the cross-section of the notch 8 with a plane perpendicular to the longitudinal axis Z has a triangular shape. In this way, at the location of the screw, the plate is thinner, which facilitates the screwing. In other embodiments, the notch can have another shape such as for example the shape of half a circle or a rectangular shape.

[0089] As illustrated on Fig.4 and Fig.5, the profile front side 4a of the first metal profile 3a comprise a first notch 4 and the profile front side 4a of the second metal profile 4b comprises a second notch 4, for defining respectively a first and second screw line for each lateral beam side.

[0090] In embodiments, as further illustrated on Fig.4 and Fig.5, the profile back side of the metal profiles 3a, 3b each comprises a first 6a and a second 6b anchor member. Further, the recess 5a, 5b in each of the lateral sides 2c, 2d of the beam comprises a first 9a,9c and second slot 9b,9c receiving the corresponding first 6a and second 6b anchor member. The slots 9a,9b,9c,9d in the recesses 5a,5b of the lateral beam sides are further illustrated on Fig.6, showing a cross-sectional view of an embodiment of a beam 2 without the metal profiles. As further illustrated on Fig.7, showing a side view of the beam of Fig.6, the recess 5a and the two slots 9a,9b in the recess are extending parallel with the longitudinal axis Z from the bottom side 2a to the top side 2b of the beam 2.

[0091] The slots 9a, 9b are dimensioned such that they can receive the anchor members 6a, 6b. When mounting the metal profiles to the beam, the anchor members glide into the slots. The anchor members and associated slots only have a function in case of a fire. The working principle of the anchor members of the metal profile is further discussed.

[0092] In case of a fire, the metal profile 3a, 3b, e.g. an

aluminium profile, will heat up and expand and try to distort. As a result, the anchor members 6a, 6b are pushed in the beam, e.g. a wooden beam, and the distortion is minimized. Without the anchor member, in case of fire, the metal profile is heated and would curl to the outside and flames would have access to the underlying portion of the beam.

[0093] A further function of the anchor members is that they provide for a deeper fire barrier. Depending on what material the beam is made of, e.g. what type of wood, the beam can burn faster or slower, or deeper or less deep. Hence with the anchor members, by forming a deeper fire barrier, a fire at larger depths can be stopped.

[0094] In embodiments, as shown on Fig.4 and Fig.5, each of the anchor members 6a, 6b comprises a first and second hook profile for facilitating the anchoring into the beam in case of fire. The first and second hook profile are oriented in an opposite direction so as to face away from each other. In other words, as shown on Fig.4, illustrating a beam having a shape of a cuboid, for each anchor member 6a, 6b the hook profile of the first anchor member 6a is oriented towards the front side 2e of the beam, and the hook profile of the second anchor member 6b is oriented towards the back side 2f of the beam. The hook profile is the portion of the anchor member that in case of fire will penetrate in, for example, a wooden beam and in this way anchor the metal profile to the beam, as discussed above. As, in case of fire, the metal profiles will tend to curl to the outside, also the anchor members will curl to the outside and the hook profiles will penetrate the beam.

[0095] In the embodiment shown on Fig.4, the first 6a and second 6b anchor members are positioned symmetrically with respect to the screw line, defined by the notch 8, of the metal profile.

[0096] In embodiments, for each metal profile an anchor separation distance S_A between the first 6a and second 6b anchor member is smaller than a width W_p of the metal profile. The anchor separation distance is indicated on Fig.4 and the anchor separation distances are measured along the lateral axis Y perpendicular to the longitudinal axis Z. In other words, the anchor members are not positioned at the extremity of the metal profiles, but somewhat more to the inside. In this way, in case of fire, flames are shielded from entering the slots. If anchor members would be positioned at the extremity of the metal plate, the flames would easily enter the slots when the metal profiles would start to curl.

[0097] In embodiments, the profile back side of each of the metal profiles comprises one or more spacers to maintain a distance between the metallic profile and the lateral side of the beam. For example, with reference to the embodiment shown on Fig.4, the back side of each of the metal profiles 3a, 3b comprises a first 7a and second 7b spacer configured for maintaining a spacing between the metal profile and the lateral side of the beam the metal profile is attached to.

[0098] In the embodiment shown on Fig.4 and Fig.5,

the two spacers 7a, 7b have a shape of half a cylinder elongating along the longitudinal axis. In other embodiments, spacers can have a different shape, such as for example a shape of a cuboid.

[0099] The spacers have essentially three functions. A first function is to prevent that the metal profiles are bending when tightly screwing the metal profiles to the beam. A second function is to maintain a space between the beam and the metallic profile to avoid fluid retention between the beam and the metal profile. A third function is to minimize the interface between the beam and the metal profile. Indeed, the metal profile, e.g. an aluminium profile, will in case of fire heat up and by maintaining the spacing, the beam, for example made of wood, is spared from the heat.

[0100] As discussed above, in preferred embodiments, the first 3a and second 3b metal profiles are made of aluminium and produced by applying an extrusion manufacturing process. Advantageously, the metal profile including the spacers and/or anchor members are forming one single piece.

[0101] In some embodiments, as illustrated on Fig.9 and Fig. 10, two metal profiles are attached to each lateral side of the beam. The first 3a and third 3c metal profile are attached to the first lateral side 2c and the second 3b and fourth 3d metal profile are attached to the second lateral side 2d of the beam 2.

[0102] In other embodiments comprising four metal profiles, the first and third metal profile can be located adjacently to each other and attached to a central portion of the first lateral side and the second and fourth metal profile can be located adjacently to each other and attached to a central portion of the second lateral side.

[0103] In embodiments comprising four metal profiles, for example wherein the first and third metal profile are located adjacently to each other, and the second and fourth metal profile are located adjacently to each other, the first recess 5a in the first lateral side is receiving the first 3a and third 3c metal profile and the second 5b recess in the second lateral side is receiving the second 3b and fourth 3d metal profile, such that the first and third metal profile are recessed into the first lateral side of the beam and the second and fourth metal profile are recessed in the second lateral side of the beam.

[0104] In other embodiments comprising four metal profiles, as illustrated on Fig.9 and Fig. 10, the first 3a and third 3c metal profile are spaced from each other and the second 3b and fourth 3d metal profile are spaced from each other.

[0105] In embodiments comprising four metal profiles, the metal profiles are located symmetrically with respect to a middle line of the lateral sides. As shown on Fig.9 and Fig. 10, the first and third metal profile are spaced from each other and located symmetrically with respect to a middle line of the first lateral side and the second and fourth metal profile are spaced from each other and located symmetrically with respect to a middle line of the second lateral side.

[0106] In Fig.9 and Fig.10, a symmetric position of the metal profiles with respect to the middle line corresponds to $D1 = D2$, wherein $D1$ and $D2$ are a separation distance of the metal profiles with respect to the front side 2e and back side 2f of the beam, as schematically shown on the figures.

[0107] In other embodiments comprising four metal profiles and wherein two metal profiles on each lateral side are separated from each other, as shown on Fig.9 and Fig.10, the first lateral profile 2c comprises two recesses receiving respectively the first 3a and third 3c metal profile and the second lateral profile comprises two recesses receiving respectively the second 3b and fourth 3d metal profile.

[0108] The present disclosure further relates to a slat wall comprising a plurality of beam assemblies 1 as discussed above. With reference to Fig.11 and Fig.12 a perspective view of portions of a slat wall 10 are shown. The beam assemblies 1 are spaced from each other and aligned along an alignment line L, and wherein the lateral sides of the beams of the plurality of beam assemblies are parallel, preferably the lateral sides are angled at 90° with respect to the alignment line. As the lateral sides comprising the metal profiles are facing each other, and depending on the spacing in between beam assemblies, when viewing the slat wall from the front or back side, the metal profiles are merely visible and e.g. an overall wooden beam appearance is observed.

[0109] As schematically shown on Fig.11 and Fig.12, for each of the beam assemblies 1, the base side of the beam is facing a floor level.

[0110] In the embodiments shown on Fig.11 and Fig.12, the beam assemblies 1 have a cuboid shape and when erected for forming the slat wall, the beam assemblies are in this example positioned vertically with respect to a floor level. However, the beam assemblies are not necessarily positioned vertically with respect to a floor level. For example, with reference to Fig. 15 and Fig. 16, embodiments of beam assemblies 1 are shown that are erected for forming a slat wall and wherein the beam assemblies 1 are inclined with respect to a floor level. In this example, the floor level is indicated with a horizontal line H, perpendicular to a vertical line V. The beam assemblies can for example be inclined by an angle α between 45° and 90° with respect to the floor level H. In the examples shown on Fig. 15 and Fig. 16, the beam assemblies have a shape of a parallelepiped. In the embodiment shown on Fig. 15, the beam assembly is inclined such that the front side 2e and back side 2f of the beam 2 are inclined with respect to the floor level H, while in Fig. 16 an embodiment is shown wherein the lateral sides 2c and 2d of the beam 2 are inclined with respect to the floor level H.

[0111] In embodiments, the slat wall is a free-standing wall wherein the front and back side of the beams are facing a free space.

[0112] These free-standing slat wall can be used in buildings. For example a building can comprise a slat wall

positioned in front of an opening of the building, or a slat wall can be positioned between two areas in a building.

[0113] In embodiments the base side of the beams of the beam assemblies 1 can be attached to the floor and/or the top side of the beams can be attached to a portion of the building.

[0114] With reference to Fig. 13 and Fig. 14, two examples of a slat wall construction are shown. These top views illustrate the positioning of a plurality of beam assemblies 1 near a building 20, and wherein, in these examples, seven beam assemblies 1 are shown. In these examples the beam assemblies 1 have a metal profile on each side of the beam with a width W_p of about 4 cm. In the example shown in Fig. 13, the beam assemblies 1 have beams with a width W_B of about 10 cm and a thickness T_B of about 4.5 cm and the beam assemblies 1 are spaced from each other by about 20 cm. In the second example, shown on Fig. 14, the beams of the beam assemblies have a width W_B of about 15 cm and a thickness T_B of about 6.5 cm and the beam assemblies are spaced from each other by about 24 cm. The two examples illustrate a corner configuration formed by two slat walls positioned at 90° with respect to each other.

[0115] The two examples of corner configurations shown on Fig. 13 and Fig. 14 have been used to test the behaviour of the slat walls under fire conditions. The testing is performed according to the European standard for fire testing of building products, namely EN 13823 - SBI.

[0116] The corner configuration was selected to perform the tests as this configuration is the most critical situation when a fire occurs. The triangle illustrated with dotted lines in Fig. 13 and Fig. 14 indicates the location where a fire is ignited to test the beam assemblies. The test were performed with untreated wooden beams and aluminium profiles. In these corner configurations, the front sides of the three beams positioned in the corner are fully impacted by the flames. The fire barrier formed by the metal profiles prohibit the flames to extent further to the backside of the beams. Test results have demonstrated that with the beam assemblies according to the present disclosure, the FIGRA parameter and the THR600 parameter are reduced when compared to a beam assembly without the metal profiles.

[0117] As discussed above, with the beam assemblies according to the present disclosure, the flammable surface of the beams are reduced. The amount of flammable surface that is reduced depends to a large extent on the widths W_{P1} and W_{P2} of the first and second metal profile, the width W_B of the beam and the thickness T_B of the beam. As illustrated for example on Fig.2 and Fig.3, W_{P1} , W_{P2} and W_B are measured along the lateral axis Y, perpendicular to the longitudinal axis Z. The width W_B of the beam is measured between the front side 2e and the back side 2f of the beam. The thickness T_B of the beam, as illustrated for example on Fig.4 and Fig.6, is measured between the first 2c and second 2d lateral side of the beam, along a cross axis X perpendicular to the longitudinal axis Z and perpendicular to the lateral axis Y.

[0118] When selecting the width of the metal profiles in relation to the dimension of the beam, there is an optimum to be selected in order to, on the one hand minimize the flammable surface of the beam assembly, and on the other hand, for aesthetic reasons, minimize the visibility of the metal profiles.

[0119] In embodiments, $0.10 \leq (W_{Tp})/(C_{BA}) \leq 0.60$, preferably $0.10 \leq (W_{Tp})/(C_{BA}) \leq 0.50$, more preferably $0.15 \leq (W_{Tp})/(C_{BA}) \leq 0.45$, wherein C_{BA} is a circumference of a cross-sectional shape of the beam assembly obtained by taking a cross-section between the beam assembly and a plane perpendicular the longitudinal axis Z, and wherein W_{Tp} is a sum of the widths of each of the metal profiles 3a, 3b, 3c, 3d of the beam assembly, and wherein W_{Tp} is measured along a lateral axis Y, perpendicular to the longitudinal axis (Z).

[0120] When the beam assembly has a shape of a cuboid or a parallelepiped, a cross-sectional shape obtained by taking a cross-section between the beam assembly and a plane perpendicular the longitudinal axis Z, has the shape of a rectangle and hence, in this example, the circumference C_{BA} corresponds to the sum of two times the width of the beam and two times the thickness of the beam.

[0121] If the beam assembly has an elliptic cross-sectional shape then the circumference C_{BA} corresponds to the circumference of an ellipse.

[0122] For example for a beam having a shape of a cuboid, and having a width of 10 cm and a thickness of 4 cm, and by using metal profiles with a width of 4 cm, the flammable surface is reduced by about 29% when compared to a beam having the same size but without metal profile. This is the geometrical minimum reduction of flammable surface based on geometrical considerations. In practice, due to the fire barrier, when there is a fire in for example the back side of the beam, the front side and part of the two lateral sides will not observe the flames and the overall flammable surface during a fire is even lower. Hence, in this example, if further taking into account the effect of the fire barrier, for a total circumference of 28 cm of the beam assembly, there is about 18 cm of flammable circumference reduction, i.e. resulting in about 65% of flammable surface reduction.

[0123] In embodiments, as illustrated on Fig.4, the width of the first metal profile is equal to the width of the second metal profile.

[0124] The dimensions of the beam, i.e. the width W_B and thickness T_B are selected as function of the application and type of slat wall the beam assemblies are used for.

[0125] In embodiments, the width of the beam W_B is selected such that: $8 \text{ cm} \leq W_B \leq 30 \text{ cm}$, preferably $8 \text{ cm} \leq W_B \leq 20 \text{ cm}$, more preferably $8 \text{ cm} \leq W_B \leq 15 \text{ cm}$, and the thickness T_B of the beam is selected such that: $3 \text{ cm} \leq T_B \leq 9 \text{ cm}$, preferably $3 \text{ cm} \leq T_B \leq 8 \text{ cm}$, more preferably $4 \text{ cm} \leq T_B \leq 7 \text{ cm}$.

[0126] As mentioned above, the width of the metal profiles is on the one hand to be selected to be as small

as possible for aesthetic reasons but on the other hand the width of the metal profile needs to be sufficiently large to be able to act as a fire barrier and sufficiently reduce the flammable surface of the beam assembly.

[0127] In embodiments comprising one metal profile for each lateral side, the width W_{P1} of the first metal profile is selected to be comprised within a range: $25 \text{ mm} \leq W_{P1} \leq 100 \text{ mm}$, preferably $25 \text{ mm} \leq W_{P1} \leq 80 \text{ mm}$, more preferably $30 \text{ mm} \leq W_{P1} < 70 \text{ mm}$, and the width W_{P2} of the second metal profile is selected to be comprised within the same range as the width of the first metal profile. The width of 25 mm is considered to be a minimum width necessary to form a fire barrier.

[0128] In embodiments comprising two metal profiles per lateral side, the width of the metal profiles could be somewhat smaller when compared to beam assemblies comprising one metal profile per lateral side, especially when two metal profiles are positioned adjacently to each other.

[0129] In embodiments comprising two metal profiles per lateral side, a width W_p of the first, second, third and fourth metal profile is selected to be comprised within a range: $12 \text{ mm} \leq W_p < 80 \text{ mm}$, preferably $12 \text{ mm} \leq W_p \leq 70 \text{ mm}$, more preferably $15 \text{ mm} \leq W_p < 60 \text{ mm}$, and wherein the widths of the metal profiles are measured along an axis parallel with the lateral axis Y perpendicular to the longitudinal axis Z, preferably the widths of the metal profiles are equal.

[0130] The length of the beam 2 will depend on the application the beam assembly and type of slat wall that is to be formed. In embodiments, the beam has a length L_B measured along the longitudinal axis Z between the base side and the top side, and wherein $1 \text{ m} \leq L_B \leq 8 \text{ m}$, preferably $2 \text{ m} \leq L_B \leq 8 \text{ m}$, more preferably $2 \text{ m} \leq L_B \leq 6 \text{ m}$. The length L_B is for example indicated on Fig.2, Fig.3, Fig.9, Fig. 10 and Fig.15.

Clauses

[0131] Here below, text is provided in the form of clauses. The clauses comprise characterizations indicating a variety of options, features, and feature combinations that can be used in accord with the teachings of the present disclosure. Alternate characterizations of the ones given, but consistent with the descriptions here above, are possible. In summary, according to the present disclosure, the following clauses could for instance be claimed:

1. A beam assembly (1) for forming a slat wall or screen, comprising a beam (2) elongating along a longitudinal axis (Z) from a base side (2a) to a top side (2b) of the beam opposite the base side, and wherein the beam (2) further comprises at least a first lateral side (2c) and a second lateral side (2d), opposite the first lateral side, extending from the base side to the top side, characterized in that said beam assembly (1) further comprises:

at least a first (3a) and a second (3b) metal profile attached to respectively said first lateral side (2c) and said second lateral side (2d), and wherein said first and second metal profile are extending parallel with the longitudinal axis (Z), and in that said first (2c) and said second (2d) lateral side comprises respectively a first (5a) and a second (5b) recess receiving respectively the first (3a) and second (3b) metal profile such that the first and second metal profiles are recessed into the lateral sides of the beam.

2. The beam assembly according to clause 1 wherein a width W_B of the first and second lateral side of the beam is selected such that: $8 \text{ cm} \leq W_B \leq 30 \text{ cm}$, preferably $8 \text{ cm} \leq W_B \leq 20 \text{ cm}$, more preferably $8 \text{ cm} \leq W_B \leq 15 \text{ cm}$, and wherein the width W_B is measured along a lateral axis (Y), perpendicular to the longitudinal axis (Z).

3. The beam assembly according to clause 1 or clause 2 wherein a thickness T_B of the beam is selected such that: $3 \text{ cm} \leq T_B \leq 9 \text{ cm}$, preferably $3 \text{ cm} \leq T_B \leq 8 \text{ cm}$, more preferably $4 \text{ cm} \leq T_B \leq 7 \text{ cm}$, and wherein T_B is a thickness of said beam measured between the first and second lateral side along a cross axis (X) perpendicular to the longitudinal axis (Z) and perpendicular the lateral axis (Y).

4. The beam assembly according to any of previous clauses wherein said beam has a length L_B measured along said longitudinal axis (Z) between the base side and the top side, and wherein $1 \text{ m} \leq L_B \leq 8 \text{ m}$, preferably $2 \text{ m} \leq L_B \leq 8 \text{ m}$, more preferably $2 \text{ m} \leq L_B \leq 6 \text{ m}$.

5. The beam assembly according to any of previous clauses wherein said first (3a) and said second (3b) metal profiles are positioned symmetrically with respect to respectively a middle line of the first lateral side (2c) of the beam and a middle line of the second lateral side (2d) of the beam.

6. The beam assembly according to clause any of previous clauses wherein the first metal profile (3a) is attached to the first lateral side (2c) of the beam with a plurality of first fixation members aligned along a first screw line parallel with the longitudinal axis (Z), and wherein the second metal profile (3b) is attached to the second lateral side (2d) of the beam with a plurality of second fixation members, aligned along a second screw line parallel with the longitudinal axis (Z), preferably said first and second fixation members are screws.

7. The beam assembly according clause 6 wherein said first (3a) and said second (3b) metal profiles are attached to respectively a central portion of said first lateral side (2c) and a central portion of said second lateral side (2d) such that the first screw line is located along a middle line of the first lateral side of the beam and the second screw line is located along a middle line of the second lateral side of the beam.

8. The beam assembly according to any of previous clauses wherein each of said first (3a) and second (3b) metal profiles comprises a profile back side (4a) and a profile front side (4b) opposite the profile back side, and wherein the profile back side of the first metal profile is facing said first lateral side (2c) and the profile backside of the second metal profile is facing said second lateral side (2d).

9. The beam assembly according to clause 8 wherein a plate thickness (T_p) of the metal profiles between the profile back side and the profile front side is between 2 mm and 4 mm.

10. The beam assembly according to clause 8 or clause 9 wherein the profile front side (4b) of the first metal profile (3a) comprises a first notch (8) extending parallel with said longitudinal axis (Z), and wherein the profile front side (4b) of the second metal profile (3b) comprises a second notch (8) extending parallel with said longitudinal axis (Z), and wherein said first and second notch are defining respectively a first screw line for aligning first fixation members and a second screw line for aligning second fixation members.

11. The beam assembly according to any of clauses 8 to 10 wherein the profile back sides of said metal profiles (3a, 3b) each comprises a first (6a) and a second (6b) anchor member, and wherein each of the recesses of the lateral sides (2c, 2d) of the beam comprises a first (9a, 9c) and second (9b, 9d) slot receiving the corresponding first and second anchor member.

12. The beam assembly according to clause 11 wherein each of the anchor members (6a, 6b) comprises respectively a first and a second hook profile and wherein said first and second hook profile are oriented in an opposite direction so as to face away from each other.

13. The beam assembly according to clause 11 or clause 12 wherein for each metal profile, said first and second anchor member are positioned symmetrically with respect to a screw line of the metal profile.

14. The beam assembly according to clause 13 wherein for each metal profile an anchor separation distance (S_A) between the first (6a) and second (6b) anchor member is smaller than a width of the metal profile, and wherein said anchor separation distance and width of the metal profile are measured along a lateral axis (Y) perpendicular to the longitudinal axis (Z).

15. The beam assembly according to any of clauses 8 to 14 wherein the profile back side of each of said metal profiles comprises a first and second spacer configured for maintaining a spacing between the metal profile and the lateral side of the beam the metal profile is attached to.

16. The beam assembly according to any of previous clauses wherein said first and second metal profile

are extending parallel with the longitudinal axis (Z) from the base side to the top side of the beam.

17. The beam assembly according to any of previous clauses wherein said beam is made of any material selected of: wood, bamboo, a modified wood, or any combination thereof. 5

18. The beam assembly according to any of previous clauses wherein said beam is made of a non-metallic material.

19. The beam assembly according to any of previous clauses wherein said beam is made of a combustible material. 10

20. The beam assembly according to any of previous clauses wherein said beam is made of a hardwood, preferably selected from any of: padoek, izombe, bilinga, jutai, afzelia doussie, massaranduba, okan, muiracatiara, afrormosia, tali, jatoba, or any combination thereof. 15

21. The beam assembly according to any of previous clauses wherein said first and second metal profile are made of aluminium or stainless steel. 20

22. The beam assembly according to any of clauses 1 to 21 wherein said first and second metal profile are made of aluminium and produced by applying an extrusion manufacturing process. 25

23. The beam assembly according to any of previous clauses wherein for each of said metal profiles (3a, 3b), a cross-section between the metal profile and a plane orthogonal to the longitudinal axis (Z) remains the same over the entire length of the metal profile along the longitudinal axis (Z). 30

24. The beam assembly according to any of previous clauses wherein said beam (2) further comprises a front side (2e) and a back side (2f) opposite the front side, and wherein said front side, back side and first and second lateral sides are elongating parallel with said longitudinal axis (Z). 35

25. The beam assembly according to clause 24 wherein said first (3a) and said second (3b) metal profiles are attached to respectively a central portion of said first lateral side (2c) and a central portion of said second lateral side (2d) such that for each metal profile (3a, 3b) a separation distance (S1) from the metal profile to the front side (2e) and a separation distance (S2) from the metal profile to the back side (2f) of the beam are equal, and wherein said separation distances are measured along a lateral axis (Y) perpendicular to the longitudinal axis (Z). 40

26. The beam assembly according to any of previous clauses wherein a width W_{P1} of the first metal profile is selected to be comprised within a range: $25 \text{ mm} \leq W_{P1} \leq 100 \text{ mm}$, preferably $25 \text{ mm} \leq W_{P1} \leq 80 \text{ mm}$, more preferably $30 \text{ mm} \leq W_{P1} \leq 70 \text{ mm}$, and wherein a width W_{P2} of the second metal profile is selected to be comprised within the same range as the width of the first metal profile, and wherein the width of the first and second metal profile are measured along an axis parallel with the lateral axis (Y) perpendicular to 45

the longitudinal axis (Z), preferably the width of the first metal profile is equal to the width of the second metal profile.

27. The beam assembly according to any of clauses 1 to 24 wherein the beam assembly further comprises a third (3c) and fourth (3d) metal profile and wherein said third and fourth metal profile are further attached to respectively said first lateral side (2c) and said second lateral side (2d) of the beam.

28. The beam assembly according to clause 27 wherein said first and third metal profile are located adjacently to each other, and preferably attached to a central portion of the first lateral side, and said second and fourth metal profile are located adjacently to each other, and preferably attached to a central portion of said second lateral side, and wherein said first recess (5a) is receiving the first (3a) and third (3c) metal profile and said second (5b) recess is receiving the second (3b) and fourth (3d) metal profile, such that the first and third metal profile are recessed into the first lateral side of the beam and the second and fourth metal profile are recessed in the second lateral side of the beam.

29. The beam assembly according to clause 27 wherein said first and third metal profile are spaced from each other and located symmetrically with respect to a middle line of said first lateral side and said second and fourth metal profile are spaced from each other and located symmetrically with respect to a middle line of said second lateral side.

30. The beam assembly according to clause 29, wherein the first lateral profile 2c comprises two recesses receiving respectively the first (3a) and third (3c) metal profile and the second lateral profile comprises two recesses receiving respectively the second (3b) and fourth (3d) metal profile.

31. The beam assembly according to any of clauses 27 to 30 wherein a width W_p of the first, second, third and fourth metal profile is selected to be comprised within a range: $12 \text{ mm} \leq W_p \leq 80 \text{ mm}$, preferably $12 \text{ mm} \leq W_p \leq 70 \text{ mm}$, more preferably $15 \text{ mm} \leq W_p < 60 \text{ mm}$, and wherein the widths of the metal profiles are measured along an axis parallel with the lateral axis (Y) perpendicular to the longitudinal axis (Z), preferably the widths of the metal profiles are equal.

32. The beam assembly according to any of previous clauses wherein $0.10 \leq (WT_p)/(C_{BA}) \leq 0.60$, preferably $0.10 \leq (WT_p)/(C_{BA}) \leq 0.50$, more preferably $0.15 \leq (WT_p)/(C_{BA}) \leq 0.45$,

wherein C_{BA} is a circumference of a cross-sectional shape of said beam assembly obtained by taking a cross-section between the beam assembly and a plane perpendicular the longitudinal axis (Z),

and wherein WT_p is a sum of the widths of each of the metal profiles (3a, 3b, 3c, 3d) of the beam assembly, and wherein WT_p is measured along

a lateral axis (Y), perpendicular to the longitudinal axis (Z).

33. A slat wall (10) comprising a plurality of beam assemblies (1) according to any of previous clauses, and wherein said beam assemblies (1) are spaced from each other.

34. The slat wall of clause 33 wherein the plurality of beam assemblies (1) are aligned along an alignment line (L), and wherein the lateral sides of the beams of the plurality of beam assemblies are parallel, preferably said lateral sides are angled at an angle between 45° and 90° with respect to the alignment line.

35. A slat wall according to clause 33 or 34 wherein for each of the beam assemblies, the base side of the beam is facing a floor level.

36. A slat wall according to any of clauses 33 to 35 wherein said slat wall is a free-standing wall wherein the front and back side of the beams are facing a free space.

37. A building comprising a slat wall according to any of clauses 33 to 36, wherein said slat wall is positioned in front of an opening of the building or wherein said slat wall is positioned between two areas in a building.

Reference numbers

[0132]

1	Beam assembly
2	Beam
2a	Base side
2b	Top side
2c	First lateral side
2d	Second lateral side
2e	Front side
2f	Back side
3a	First metal profile
3b	Second metal profile
4a	Profile back side
4b	Profile front side
5a	First recess
5b	Second recess
6a	First anchor member
6b	Second anchor member
7a	First spacer
7b	Second spacer
8	notch

(continued)

9a, 9b, 9c, 9d	slot
10	Slat wall
20	building
30	Fire area

Claims

1. A beam assembly (1) for forming a slat wall or screen, comprising a beam (2) elongating along a longitudinal axis (Z) from a base side (2a) to a top side (2b) of the beam opposite the base side, and wherein the beam (2) further comprises at least a first lateral side (2c) and a second lateral side (2d), opposite the first lateral side, extending from the base side to the top side,
characterized in that said beam assembly (1) further comprises:

at least a first (3a) and a second (3b) metal profile attached to respectively said first lateral side (2c) and said second lateral side (2d), and wherein said first and second metal profile are extending parallel with the longitudinal axis (Z), **and in that** said first (2c) and said second (2d) lateral side comprises respectively a first (5a) and a second (5b) recess receiving respectively the first (3a) and second (3b) metal profile such that the first and second metal profiles are recessed into the lateral sides of the beam.

2. The beam assembly according to claim 1 wherein the first metal profile (3a) is attached to the first lateral side (2c) of the beam with a plurality of first fixation members aligned along a first screw line parallel with the longitudinal axis (Z), and wherein the second metal profile (3b) is attached to the second lateral side (2d) of the beam with a plurality of second fixation members, aligned along a second screw line parallel with the longitudinal axis (Z), preferably said first and second fixation members are screws.
3. The beam assembly according to any of previous claims wherein each of said first (3a) and second (3b) metal profiles comprises a profile back side (4a) and a profile front side (4b) opposite the profile back side, and wherein the profile back side of the first metal profile is facing said first lateral side (2c) and the profile backside of the second metal profile is facing said second lateral side (2d).
4. The beam assembly according to claim 3 wherein, when depending on claim 2, the profile front side (4b) of the first metal profile (3a) comprises a first notch (8) extending parallel with said longitudinal axis (Z),

and wherein the profile front side (4b) of the second metal profile (3b) comprises a second notch (8) extending parallel with said longitudinal axis (Z), and wherein said first and second notch are defining respectively the first screw line for aligning the first fixation members and the second screw line for aligning the second fixation members.

5. The beam assembly according to claim 3 or claim 4 wherein the profile back sides of said metal profiles (3a, 3b) each comprises a first (6a) and a second (6b) anchor member, and wherein each of the recesses of the lateral sides (2c, 2d) of the beam comprises a first (9a, 9c) and second (9b, 9d) slot receiving the corresponding first and second anchor member. 5
6. The beam assembly according to claim 5 wherein each of the anchor members (6a, 6b) comprises respectively a first and a second hook profile and wherein said first and second hook profile are oriented in an opposite direction so as to face away from each other. 10
7. The beam assembly according to claim 5 or claim 6 wherein for each metal profile, said first and second anchor member are positioned symmetrically with respect to a screw line of the metal profile. 15
8. The beam assembly according to claim 7 wherein for each metal profile an anchor separation distance (S_A) between the first (6a) and second (6b) anchor member is smaller than a width of the metal profile (W_p), and wherein said anchor separation distance (S_A) and width (W_p) of the metal profile are measured along a lateral axis (Y) perpendicular to the longitudinal axis (Z). 20
9. The beam assembly according to any of claims 3 to 8 wherein the profile back side (4a) of each of said metal profiles comprises a first (7a) and second (7b) spacer configured for maintaining a spacing between the metal profile and the lateral side of the beam the metal profile is attached to. 25
10. The beam assembly according to any of previous claims wherein said beam (2) is made of a non-metallic material, preferably said beam (2) is made of any material selected of: wood, bamboo, a modified wood, or any combination thereof. 30
11. The beam assembly according to any of previous claims wherein for each of said metal profiles (3a, 3b), a cross-section between the metal profile and a plane orthogonal to the longitudinal axis (Z) remains the same over the entire length of the metal profile along the longitudinal axis (Z), preferably said first and second metal profile are made of aluminium and produced by applying an extrusion manufacturing 35

process.

12. The beam assembly according to any of previous claims wherein the beam assembly further comprises a third (3c) and fourth (3d) metal profile and wherein said third and fourth metal profile are further attached to respectively said first lateral side (2c) and said second lateral side (2d) of the beam. 40
13. A slat wall (10) comprising a plurality of beam assemblies (1) according to any of previous claims, and wherein said beam assemblies (1) are spaced from each other. 45
14. The slat wall according to claim 13 wherein the plurality of beam assemblies (1) are aligned along an alignment line (L), and wherein the lateral sides of the beams of the plurality of beam assemblies are parallel, preferably said lateral sides are angled at an angle between 45° and 90° with respect to the alignment line. 50
15. A building comprising a slat wall according to claim 13 or claim 14, wherein said slat wall is positioned in front of an opening of the building or wherein said slat wall is positioned between two areas in a building. 55

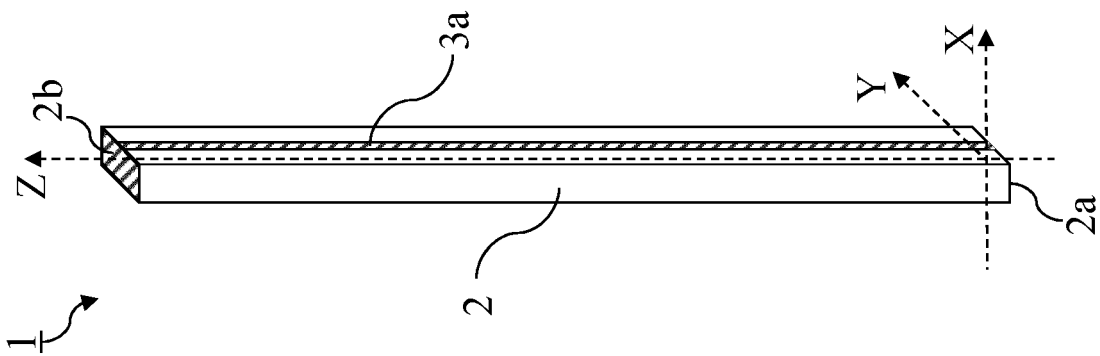


Fig. 1

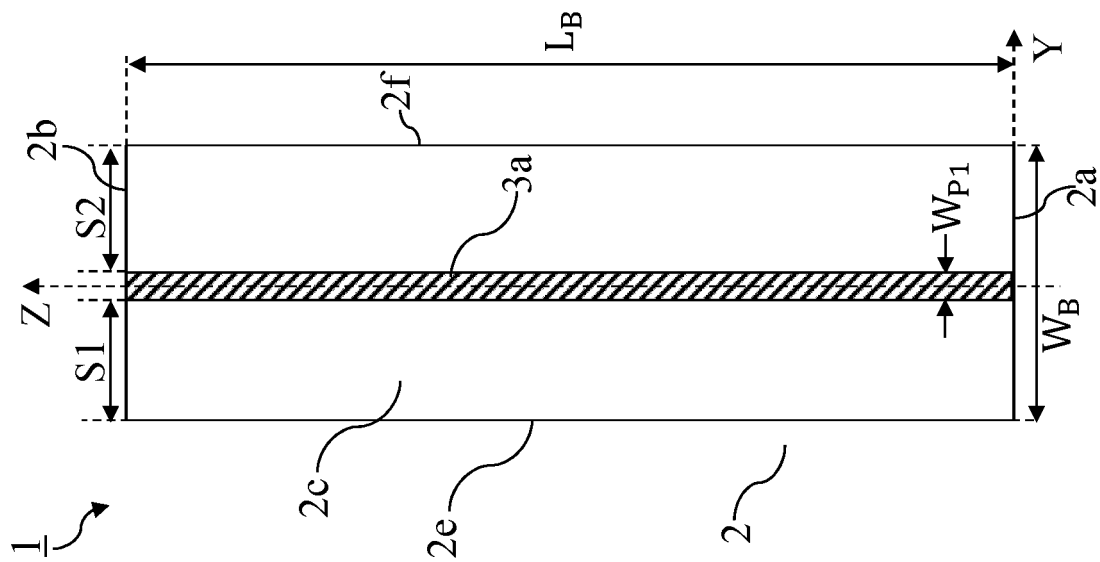


Fig. 2

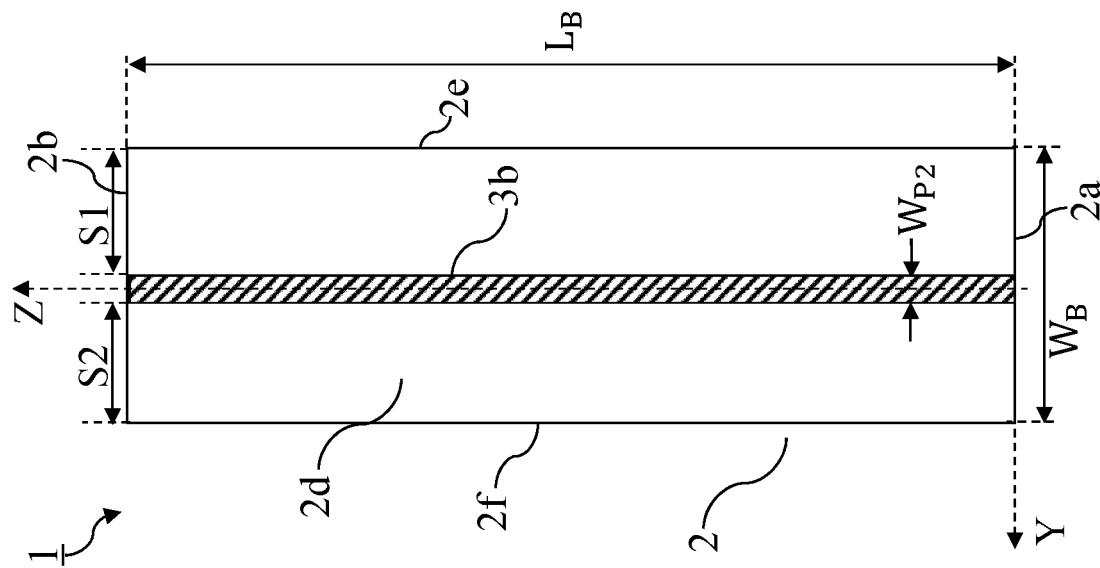
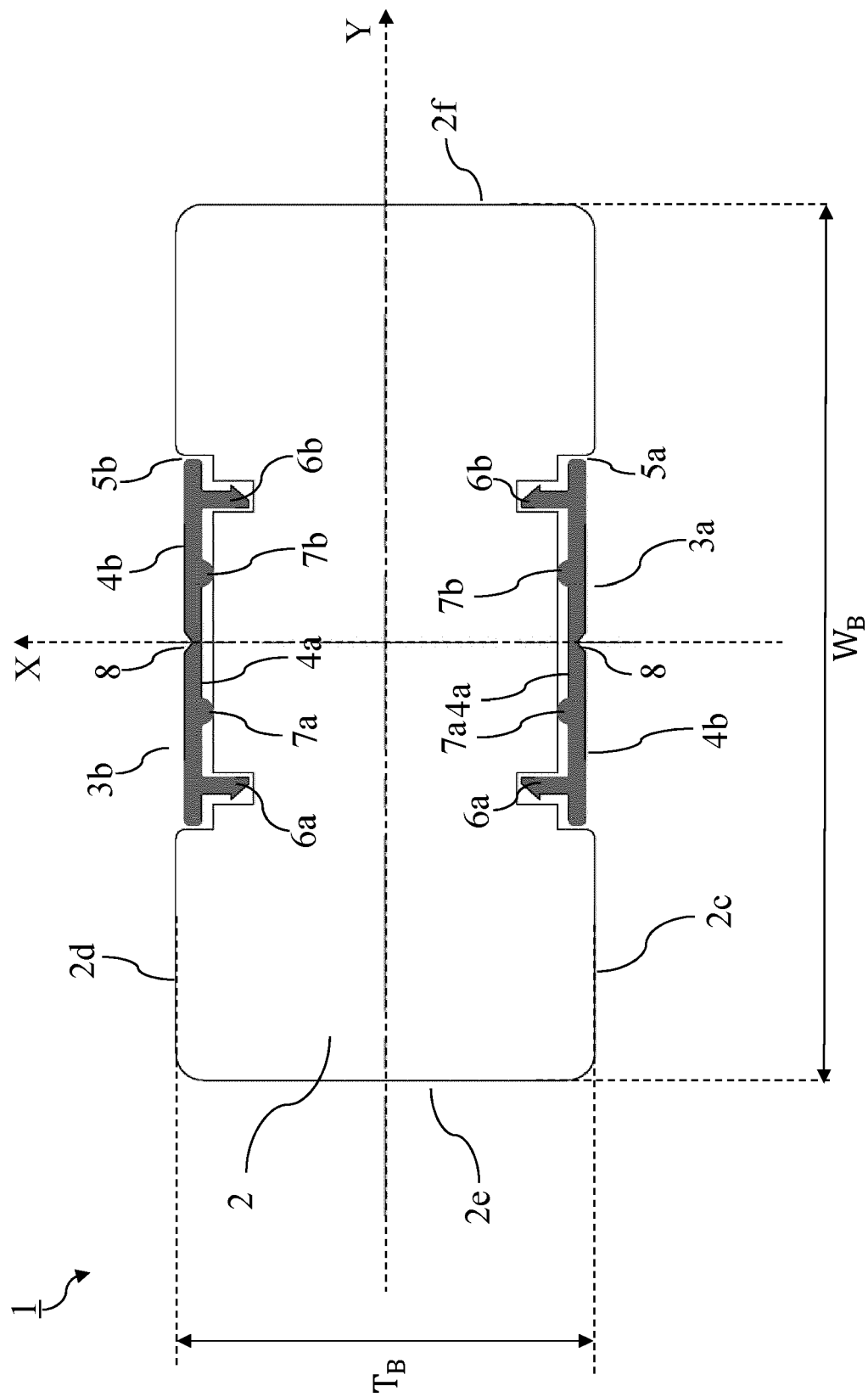


Fig. 3



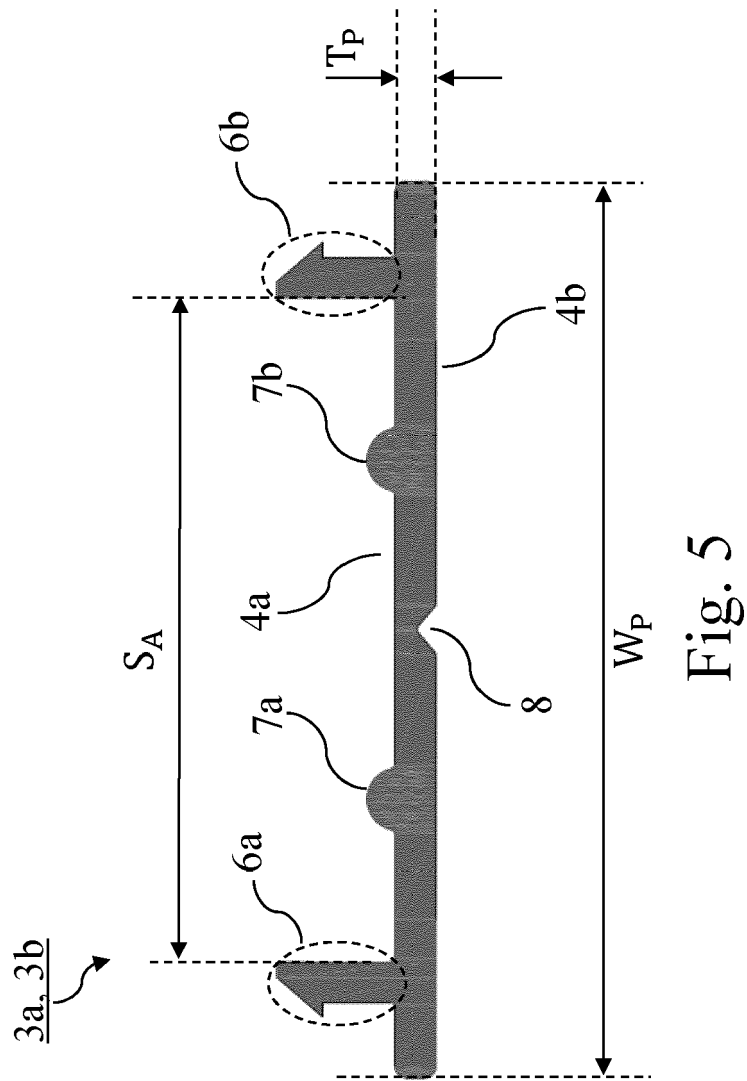


Fig. 5

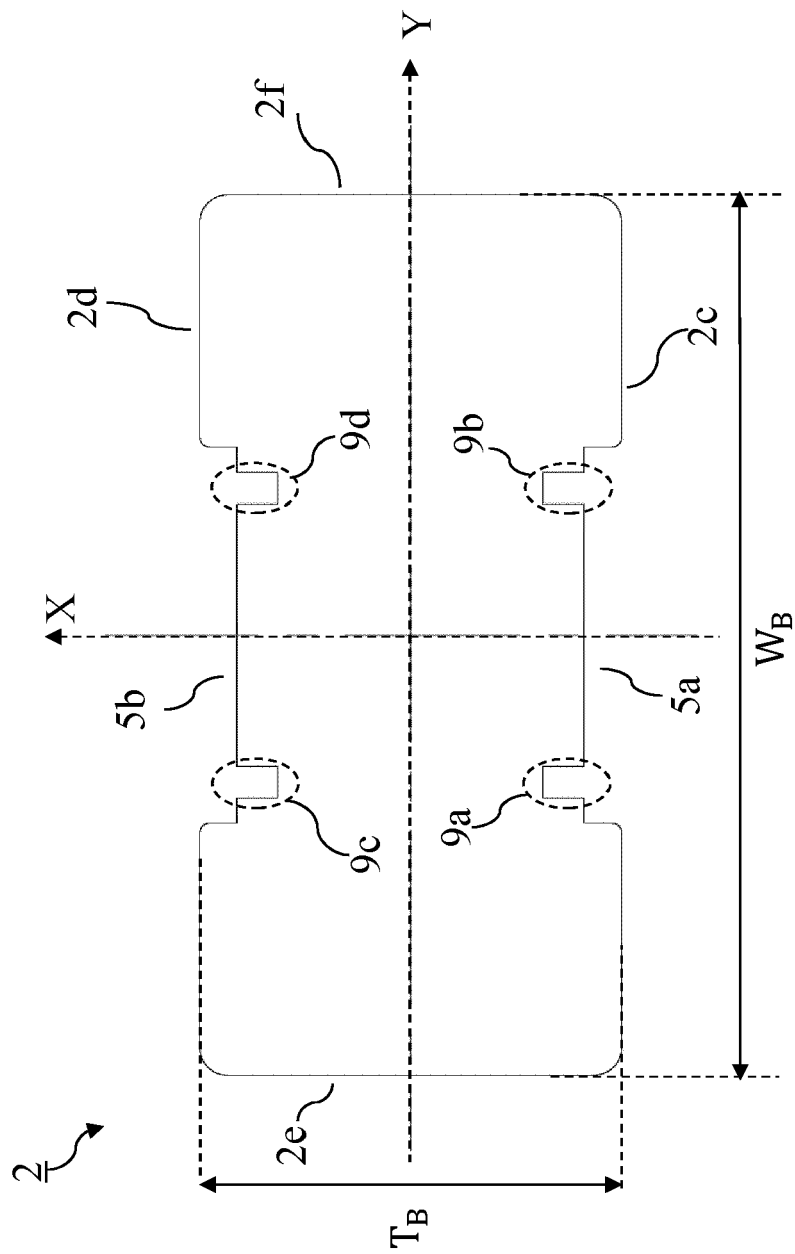


Fig. 6

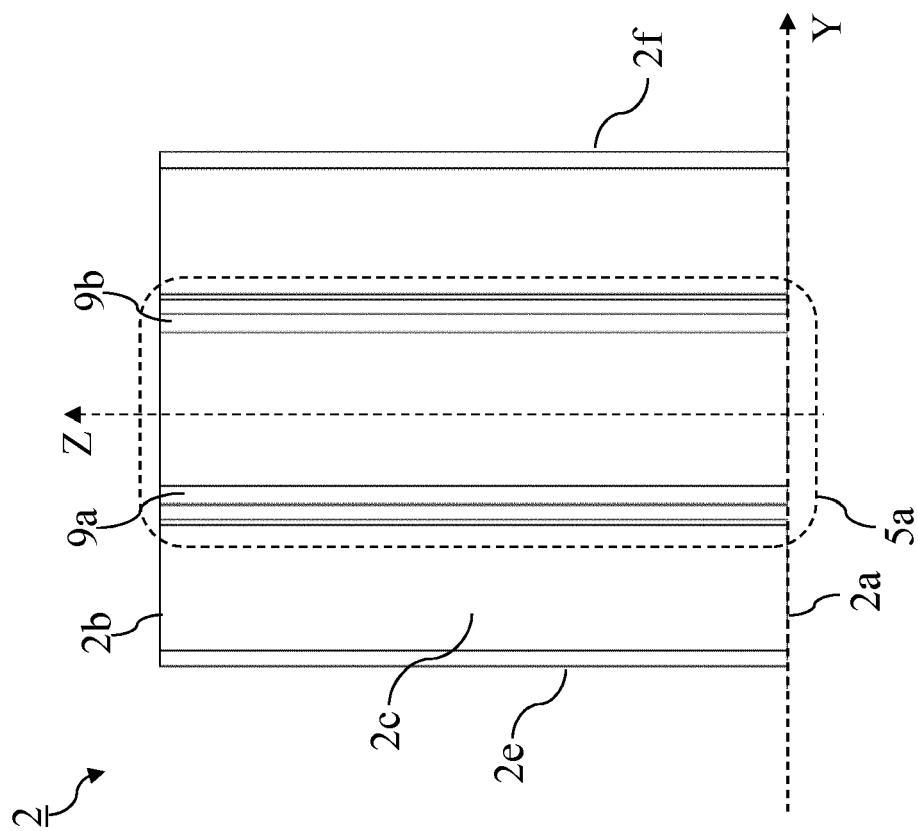


Fig. 7

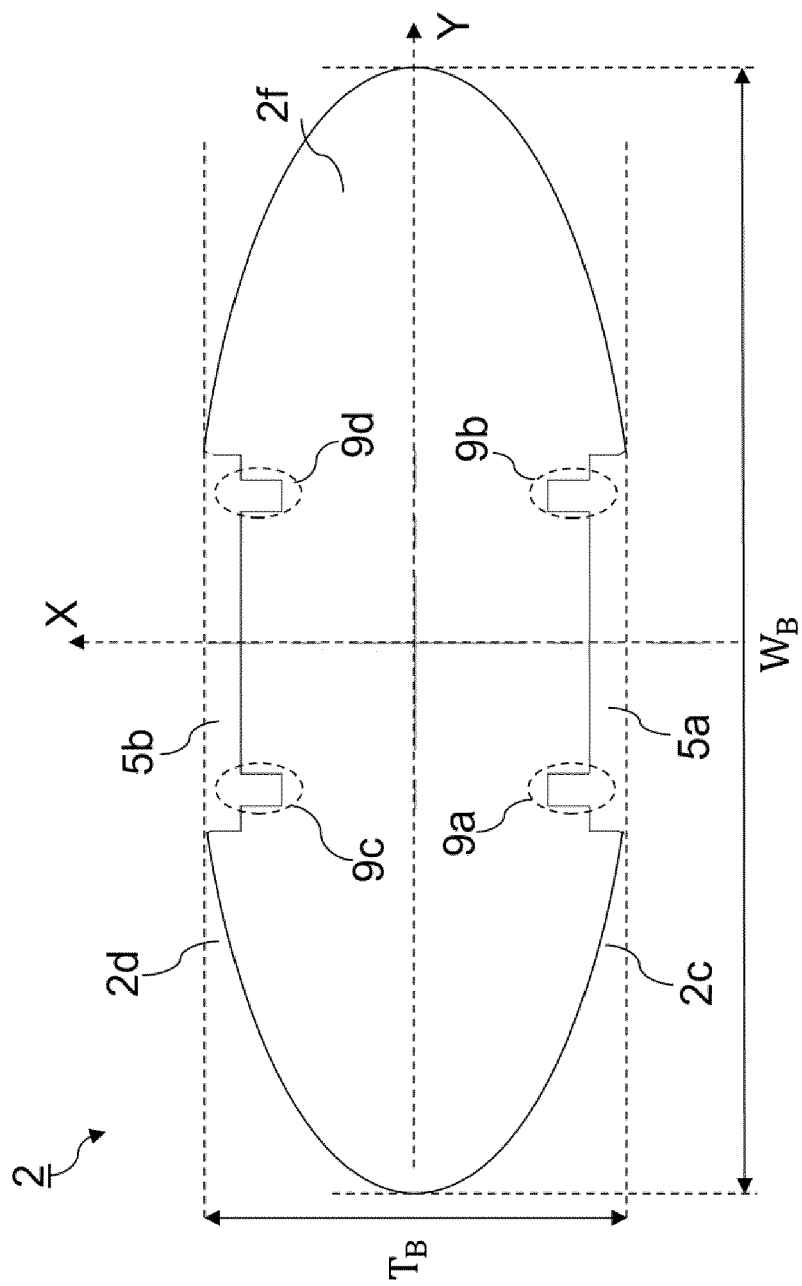


Fig. 8

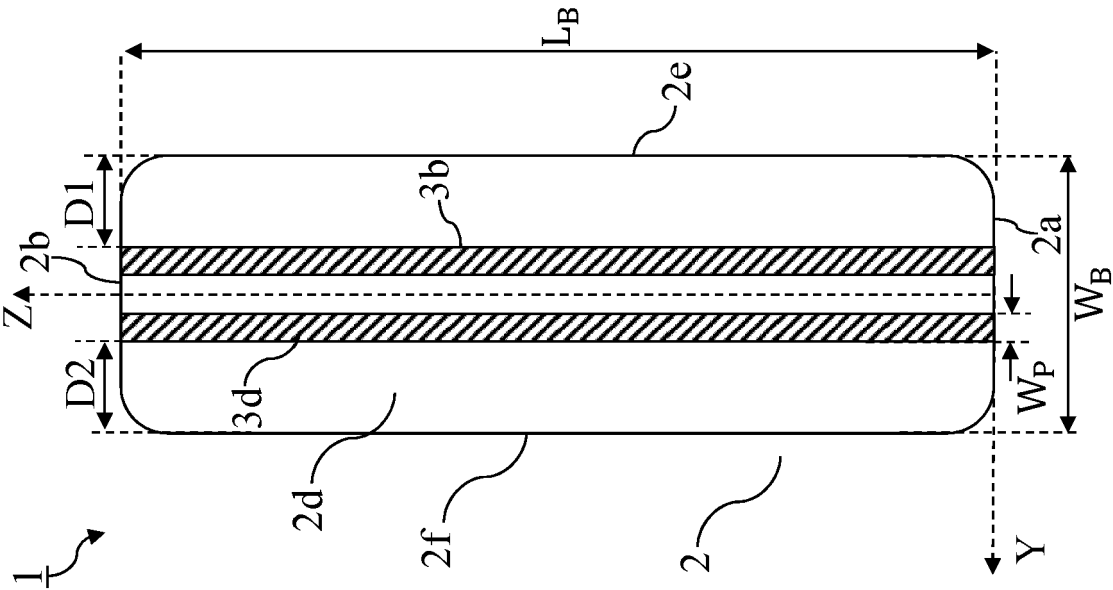


Fig. 9

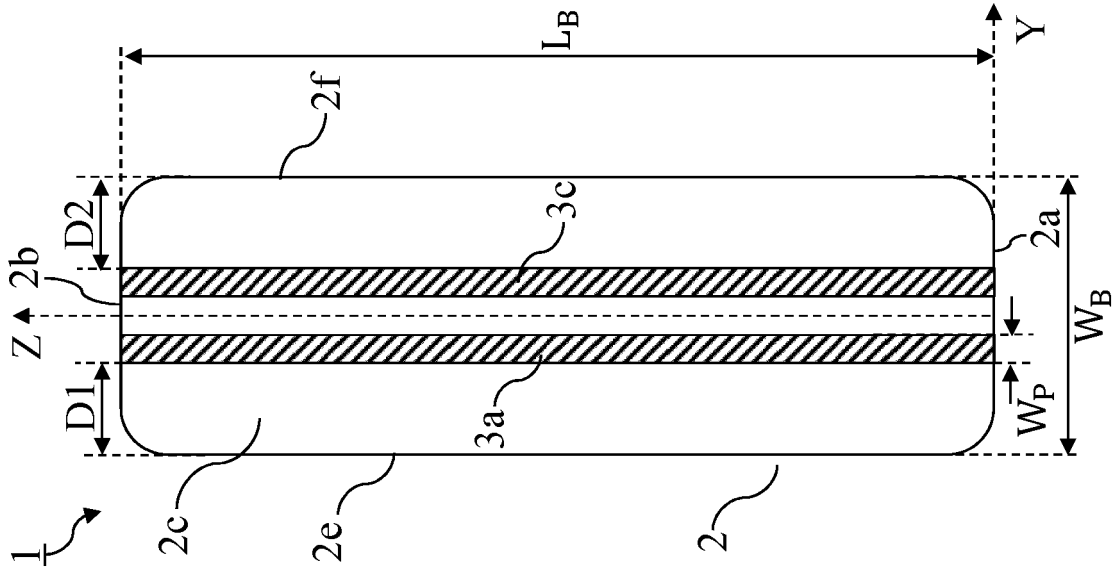


Fig. 10

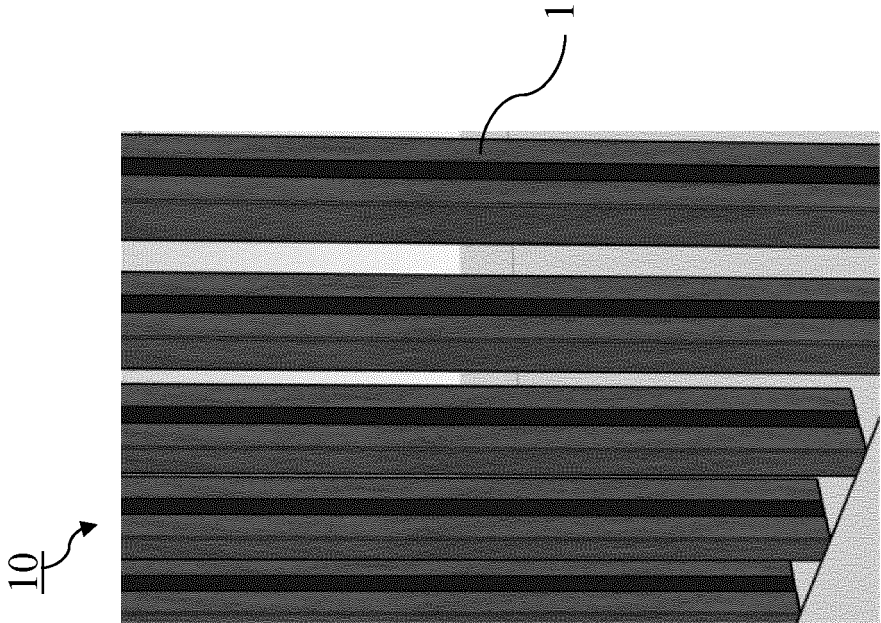


Fig.12

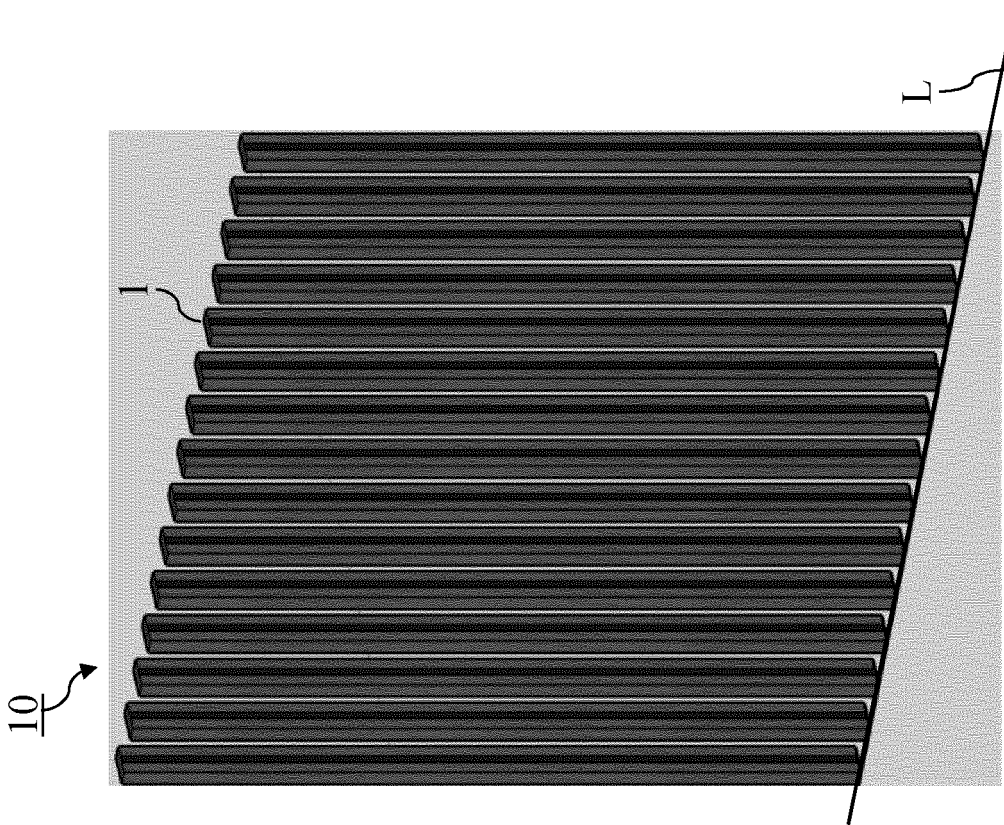
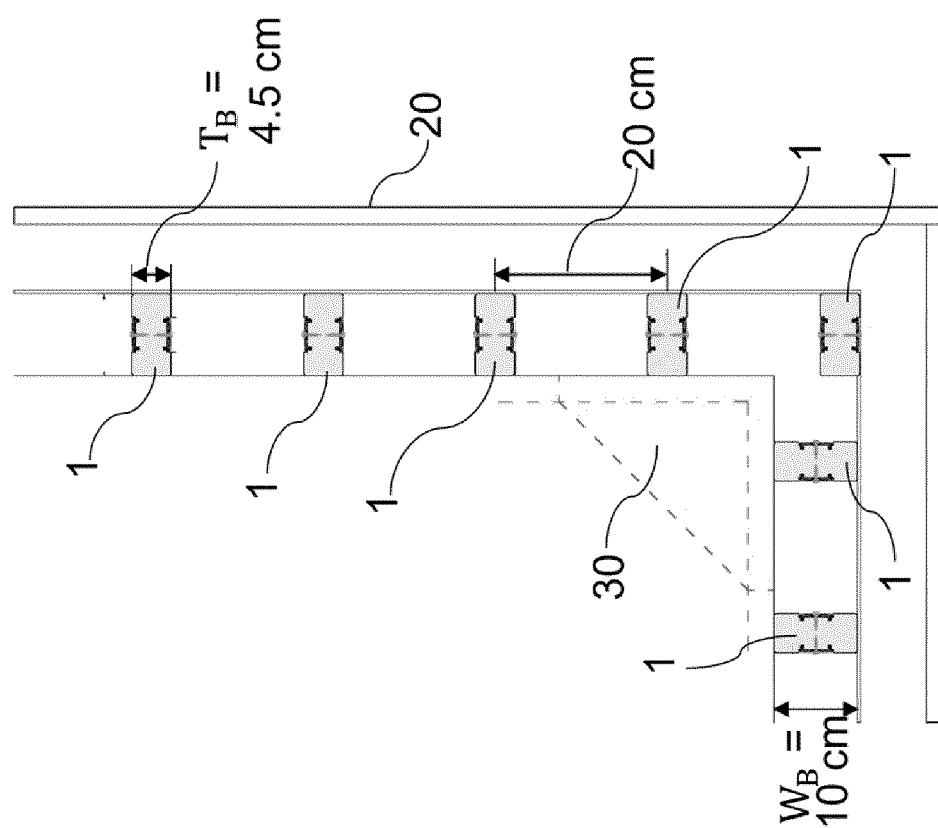
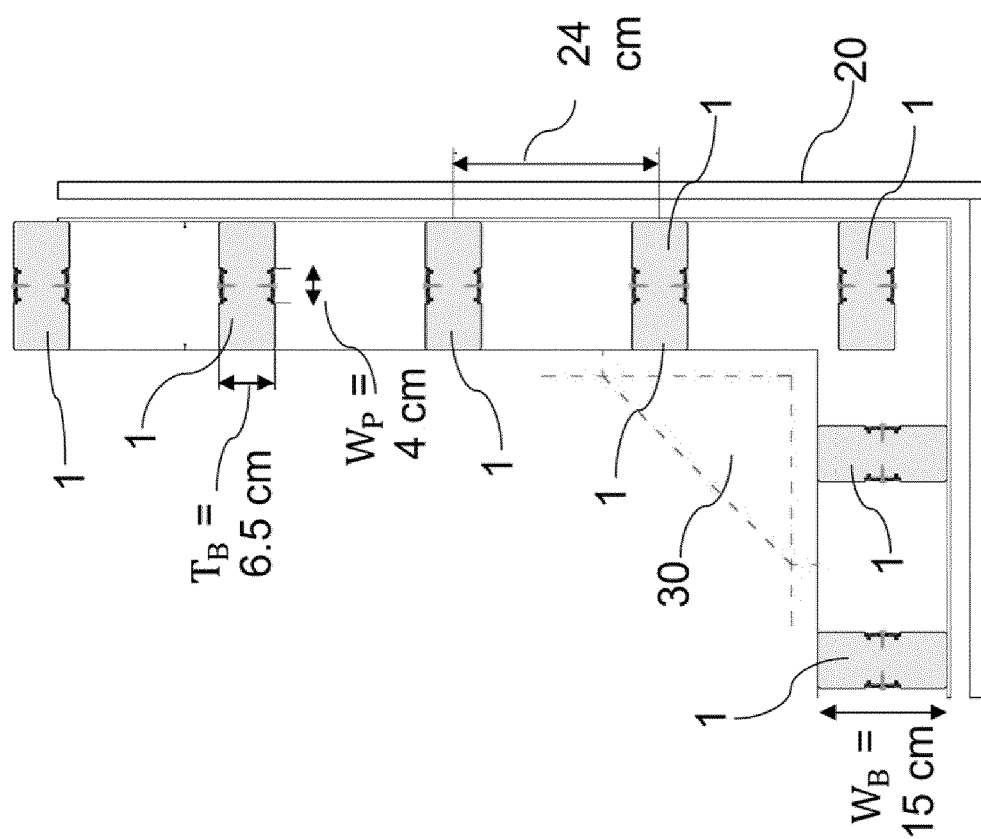


Fig.11



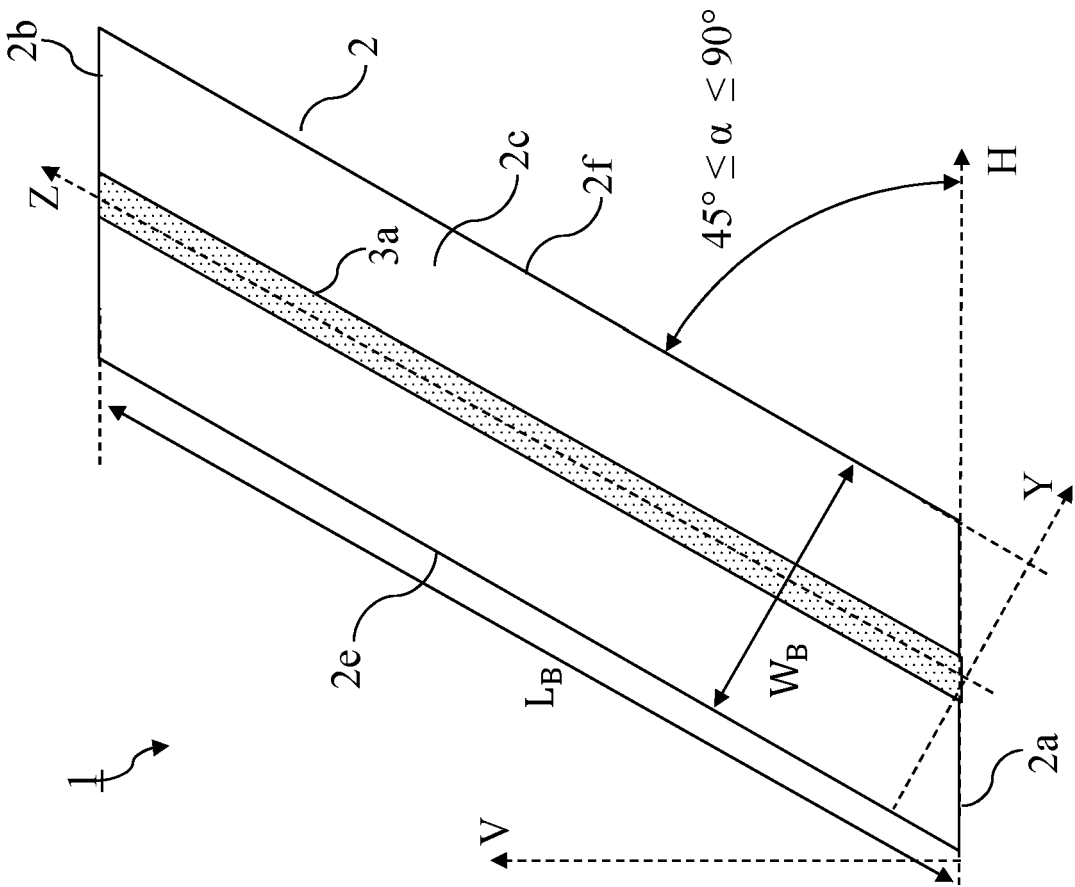


Fig.15

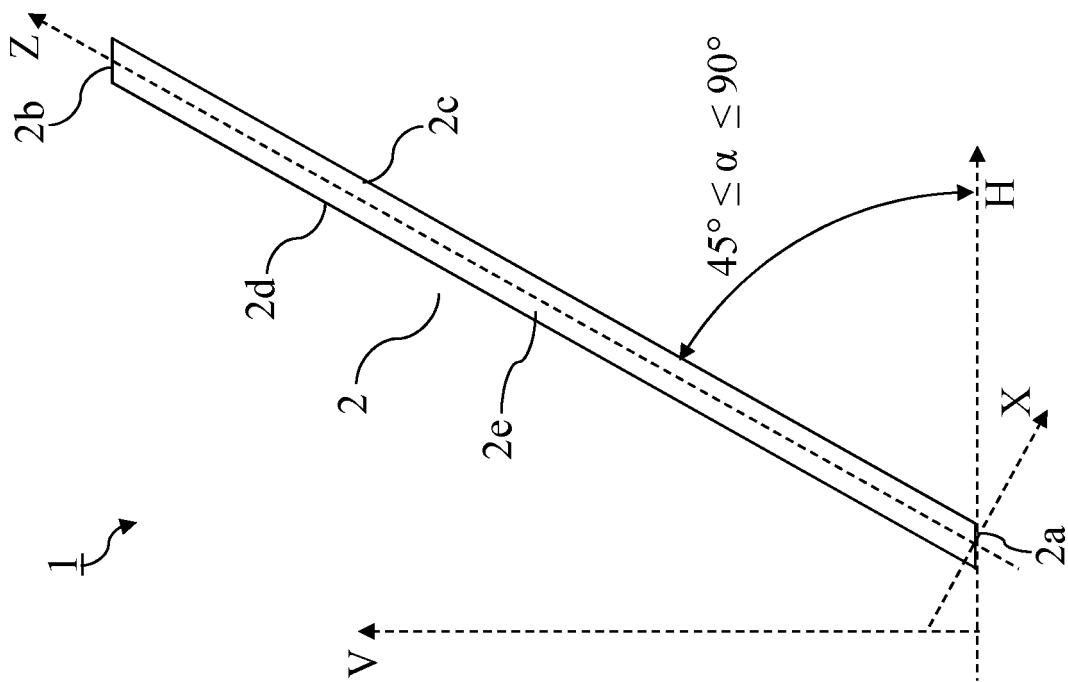


Fig.16



EUROPEAN SEARCH REPORT

Application Number

EP 24 16 2740

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	JP 2021 063337 A (TAKENAKA KOMUTEN CO) 22 April 2021 (2021-04-22)	1-3, 10-15	INV. E04F10/08
A	* paragraphs [0018] - [0030], [0054] - [0067]; figures 1,5,7B * -----	4-9	
A	KR 100 475 635 B1 (KIM HWA SOON [KR]) 10 March 2005 (2005-03-10) * page 1, last paragraph - page 2, paragraph 1; figures 1,2 * -----	1-15	
A	FR 2 781 007 A1 (BLANC JEAN PIERRE [FR]) 14 January 2000 (2000-01-14) * page 2, line 27 - page 7, line 7; figures 1-4C * -----	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			E04F E04C E06B E04B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		14 March 2024	Melhem, Charbel
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X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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14-03-2024

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82