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(54) MODULAR BUILDING STRUCTURE

(57) There is provided a modular building structure (1) defining a base surface (10) and a perimeter (11) comprising a plurality of uprights (2) arranged along fixed points of the perimeter (11) and coplanar with respect to the base surface (10), and at least one primary element (3) comprising a panel extension surface releasably constrained between two uprights (2) along the perimeter (11), wherein each of the uprights (2) comprises at least one first guide (20) and one second guide (21), and the primary element (3) comprises at least two protuberances (30) available in the guides (20, 21), the first guide (20) being a through hole extending perpendicular to said base surface (10), and the second guide (21) being a through hole extending in a slanting and communicating manner with respect to the first guide (20) and defining a first secondary end (21a) and a second secondary end (21b), and wherein the first secondary end (21a) is arranged at the meeting point of the guides (20, 21), and the second secondary end (21b) is arranged closer to the base surface (10) than the first secondary end (21a).

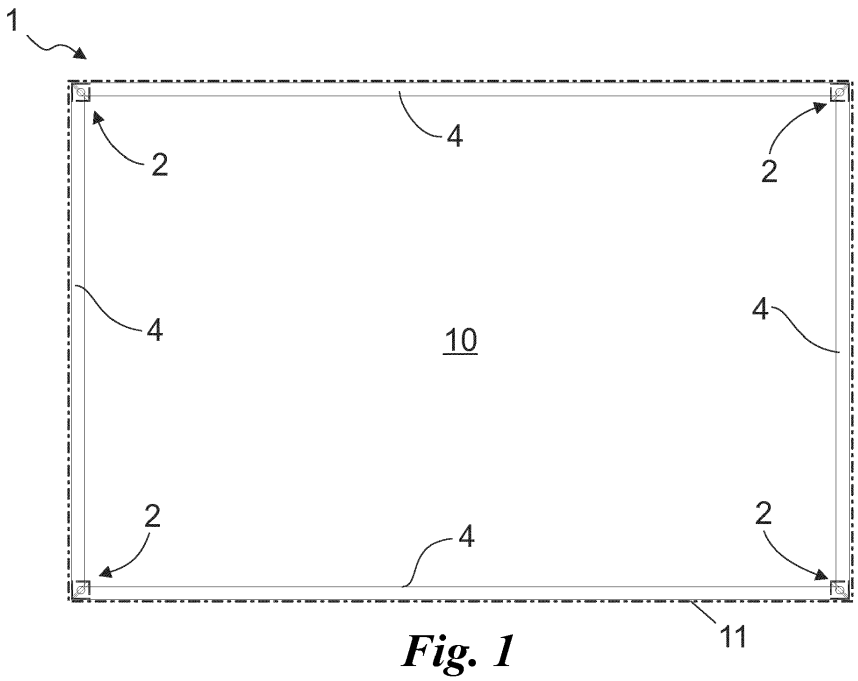

Fig. 1

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Description

[0001] The present invention relates to a modular building structure of the type specified in the preamble of the first claim.

[0002] In particular, the present invention relates to a building structure defining, at least in one configuration, a building construction suitable for housing people and/or various kinds of items and products.

[0003] Similar devices are described in patent applications US-A-2006/277836 and DE-A-2903368.

[0004] Modular building structures suitable for constructing non-permanent buildings are currently known. These types of buildings can typically be emergency homes, exhibition stands, construction site offices, tool sheds, and generally any type of premises where the essential finishes of permanent buildings are not necessarily required.

[0005] Structures of this type are generally made with prefabricated components which are then, if necessary, mutually constrained by means of traditional tightening methods such as riveting, bolting, interlocking, or the like.

[0006] Moreover, these structures are modular so as to form the desired building according to various techniques.

[0007] For instance, similar to what happens in the case of furniture and other structures marketed by manufacturers such as IKEA®, the structure can include a plurality of components, not necessarily stored in an orderly manner, which must be totally assembled to compose the structure.

[0008] Alternatively, the structure can be at least partially foldable or collapsible. In the latter case, at least part of the structure can be prefabricated so as to provide at least one makeshift surface on which to rest the rest of the structure composing the construction.

[0009] More specifically, collapsible buildings comprise at least one prefabricated platform on which at least one panel, and typically a plurality of panels, is/are hinged.

[0010] In addition, the platform can also constitute the floor or the ceiling of this structure, and preferably defines the support base for the remaining parts of the construction, for example the panels.

[0011] In the collapsed configuration, taking as an example a simple exhibition stand with a rectangular plan, these structures usually define a very compact, easily transportable regular shape, for example a rectangular parallelepiped.

[0012] In fact, the structure being collapsible makes it space-saving and very advantageous as far as transport is concerned.

[0013] Nevertheless, the described prior art has a few major drawbacks.

[0014] In particular, the operators assigned to the assembly and disassembly of the modular structures, especially if they are collapsible, are subjected to considerable efforts caused by the weight of the individual components and their constraint.

[0015] In addition, a further major drawback is that the steps for assembling and constraining the structure are often laborious even in terms of time. Time lengthening not only has consequences as regards the sheer ease of assembly, but also inevitably results in greater costs due to the labour of the operators assigned to the installation of the constructions conceived in this way.

[0016] A building described in patent document VR2010A000186 was constructed in order to solve these drawbacks.

[0017] In particular, this construction comprises one or more primary panel elements hinged on a platform and one or more secondary panel elements hinged on the primary panel elements.

[0018] The structure described herein substantially has the advantage of allowing the entire structure to be assembled and disassembled by rotating a reduced number of elements compared to the common prior art.

[0019] However, even this technique has a fundamental drawback. In fact, the collapsible construction can be assembled and disassembled according to a pre-established order, and if the order is mistaken during disassembly the structure cannot then be eventually collapsed in an advantageous manner.

[0020] Furthermore, a system of this type requires the support platform since it defines the constraint between the floor or ceiling and the panel elements, at least the primary ones.

[0021] In this context, the technical task underlying the present invention is to devise a modular building structure, which is capable of substantially obviating at least some of the above-mentioned drawbacks.

[0022] Within the scope of said technical task, a major object of the invention is to obtain a modular building structure, which is capable of reducing the overall dimensions, at least for transport.

[0023] Another major object of the invention is to provide a structure which is able to reduce both the efforts and the time needed to assemble the same so as to provide a desired building.

[0024] Furthermore, another major object of the invention is to make the steps of assembly and disassembly of the structure independent of the order of assembly or disassembly of the walls which, for example, can compose the construction.

[0025] In conclusion, a further object of the invention is to provide a modular building structure which is independent of the type of platform and its presence or absence.

[0026] The technical task and the specified objects are achieved by means of a modular building structure as claimed in the appended claim 1.

[0027] Preferred technical solutions are set forth in the dependent claims.

[0028] The features and advantages of the invention will be apparent from the detailed description of preferred embodiments of the invention, with reference to the ac-

companying drawings, in which:

Fig. 1 is a plan view of a platform-less modular building structure according to the invention;
Fig. 2 is a plan view of a modular building structure with the platform according to the invention;
Fig. 3 is a perspective view of an upright of a modular building structure according to the invention;
Fig. 4 is a front view of a construction made with a modular building structure according to the invention during assembly;
Fig. 5a shows a detail of the coupling of a first element with an upright on the left side of the modular building structure of Fig. 4;
Fig. 5b shows a detail of the coupling of a first element with an upright on the right side of the modular building structure of Fig. 4;
Fig. 6 is a front view of a construction made with a modular building structure according to the invention with the sides assembled;
Fig. 7a represents the detail of the first element of the left side of the structure of Fig. 6 in the assembly position;
Fig. 7b shows the detail of the first element of the right side of the structure of Fig. 6 in the assembly position;
Fig. 8 is a front view of a construction made with a modular building structure according to the invention with the addition of a roof; and
Fig. 9 is a front view of a construction made with a modular building structure according to the invention once assembled.

[0029] Herein, the measures, values, shapes and geometric references (such as perpendicularity and parallelism), when used with words like "about" or other similar terms such as "approximately" or "substantially", are to be understood as except for measurement errors or inaccuracies due to production and/or manufacturing errors and, above all, except for a slight divergence from the value, measure, shape or geometric reference with which it is associated. For example, these terms, if associated with a value, preferably indicate a divergence of not more than 10% from said value.

[0030] Furthermore, when used, terms such as "first", "second", "higher", "lower", "main" and "secondary" do not necessarily identify an order, a priority relationship or a relative position, but can simply be used to distinguish more clearly the different components from each other.

[0031] Unless otherwise indicated, the measurements and data provided in this document are to be considered using International Standard Atmosphere ICAO (ISO 2533:1975).

[0032] With reference to the Figures, the modular building structure according to the invention is indicated as a whole by the numeral **1**.

[0033] The modular building structure 1 is preferably of the type known in the current state of the art as a collapsible construction. Therefore, just like common collapsible constructions, it defines a non-operating configuration in which the structure 1 is substantially disassembled and an operating configuration in which the structure 1 is internally assembled.

[0034] The modular building structure preferably defines a base surface **10** and a perimeter **11**. Preferably, the base surface 10 and the perimeter 11 are clearly defined in the operating configuration.

[0035] The base surface 10 is a support surface for the entire structure and can be, for example, aligned with the ground or parallel to it.

[0036] The perimeter 11 is preferably given by the containment lines of the plan of the modular building structure. This perimeter 11 can have complex geometries also including curvilinear portions or can define simpler shapes such as a regular quadrilateral or the like.

[0037] Moreover, preferably, the structure 1 comprises at least one upright **2** and a first element **3**.

[0038] Suitably, the structure 1 comprises at least two uprights 2 and a first element 3.

[0039] Preferably, the uprights 2 are arranged along fixed points of the perimeter 11 and coplanar with respect to the base surface 10.

[0040] These fixed points can be points at predetermined distances on the perimeter 11, or particular points given by the geometry of the perimeter 11. For instance, if the perimeter 11 is rectangular, the uprights 2 may suitably be four in number, each arranged at a corner of said perimeter 11.

[0041] If the perimeter 11 has curvilinear trajectories, instead, the fixed points can be determined by other factors, including the dimensions of the first elements 3.

[0042] Preferably, the first elements 3 comprise a panel extension surface and can be releasably constrained between two uprights 2 along the perimeter 11.

[0043] In the operating configuration, obviously, the first elements 3 are releasably constrained between two uprights 2.

[0044] Therefore, for example, the first elements 3 can be sides of the structure 1 suitable to form walls for a building made from the modular building structure 1.

[0045] The first elements 3 are therefore elements that can be removed from the uprights 2 and are not permanently constrained to them. In order to guarantee this type of coupling, the first elements 3 preferably comprise at least one protuberance **30**.

[0046] Suitably, since the first element 3 is releasably constrained between two uprights 2, the first element 3 comprises two protuberances 30.

[0047] Therefore, the protuberances 30 are arranged on the first element 3 in a manner practical for coupling to the uprights 2. For instance, if the first element 3 is a rectangular panel, the protuberances 30 are arranged on two opposite sides in a mirror-like manner.

[0048] However, as already mentioned, the first element 3, or the first elements 3, does/do not need to have

a regular shape.

[0049] The protuberances 30 may also be simple protruding portions of a panel, or metal bars constrained in the correct positions, or special mechanical joints such as, for example, rolling bearings or the like.

[0050] Anyway, the protuberances 30 are preferably suitable to guarantee coupling to the uprights 2.

[0051] Therefore, in detail, each upright 2 preferably comprises at least one first guide **20** and one second guide **21**.

[0052] The first guide 20 and the second guide 21, in particular, are suitable to house the protuberance 30, or at least part of it.

[0053] Preferably, the first guide 20 is a hole extending perpendicular to the base surface 10. This hole can be a simple cavity or a through hole provided that they are suitable to allow the housing of the protuberance 30.

[0054] The first guide 20 thus defines a first main end **20a** and a second main end **20b**.

[0055] The first main end 20a is preferably arranged near the perimeter 11. Moreover, preferably, the first main end 20a is closed and does not allow the passage of a possible protuberance beyond the first main end 20a.

[0056] The second main end 20b is opposite the first main end 20a and preferably open to the outside.

[0057] In particular, the second main end 20b is arranged in the upper portion of the upright 2 and preferably gives the protuberance 30 access to the first guide 20. Substantially, the protuberance 30 can be inserted inside the first guide 20 starting from the first main end 20b so that the first element 3 is coupled to the upright 2.

[0058] The second guide 21 is preferably of the same type as the first guide 20. Therefore, it can be defined by a hole for example consisting of a cavity or a through hole, or generally by any element allowing the housing of the protuberance 30.

[0059] Suitably, the second guide 21 extends in a slanting and communicating manner with respect to the first guide 20.

[0060] Moreover, the second guide 21 also defines a first secondary end **21a** and a second secondary end **21b**.

[0061] The first secondary end 21a is preferably arranged at the meeting point of the guides 20, 21. On the other hand, the second secondary end 21b is preferably arranged closer to the base surface 10 than the first secondary end 21a.

[0062] Substantially, preferably, the second guide 21 is preferably oriented downwards, i.e. towards the base surface 10, for example towards the ground or in any case the base.

[0063] In this way, preferably, if the protuberance 30 is inserted in the second guide 21, the protuberance 30 is allowed to slide from the first secondary end 21a to the second secondary end 21b.

[0064] Furthermore, preferably, the second guide 21 is exclusively accessible from the first guide 20.

[0065] Preferably, each upright 2 comprises a plurality of second guides 21 arranged at different distances from the base surface 10.

[0066] Substantially, the first guide 20 and the second guides 21 therefore define a half-fishbone shape.

[0067] Preferably, the second guides 21 are spaced apart from each other in the direction perpendicular to the base surface 10 by a distance at least equal to the thickness defined by the first element 3.

[0068] In this way, a first element 3 can be constrained within each of the second guides 21, for example when each first element 3 is intended to be placed parallel to the base surface 10, so that all the first elements 3 are stacked on top of each other and correctly overlapping each other.

[0069] In other words, each upright 2 forms at least one first guide 20 accessible from the top of the upright 2 and suitable to allow a first element 3 to slide along a direction parallel to the barycentric axis 2a towards the bottom of the upright 2, for example towards the base surface 10, and the first guide 20, in turn, allows access to all the second guides 21 on the upright 2.

[0070] More suitably, each upright 2 defines at least two first guides 20 and respective second guides 21, so as to allow at least two first elements 3 to be positioned on the same upright 2. Preferably, the first guides 20 are shaped so as to allow the first elements 3 to be positioned along mutually incident, preferably perpendicular, planes.

[0071] In order to obtain this configuration, for example, the upright can define a structure as described hereinafter.

[0072] The upright 2 can also be an element defined by one or more components.

[0073] For instance, the upright 2 can be a wooden beam in which at least one first guide 20 and one second guide 21 are preferably formed. In this case, for example, the guides 20, 21 can be simple cavities formed in solid wood.

[0074] Or, more suitably, the upright 2 can be a beam skeleton or a hollow beam. In addition, said beam can be in one piece or comprise a plurality of assemblable components.

[0075] Preferably, the upright 2 generally defines a barycentric axis **2a**.

[0076] The barycentric axis 2a is substantially defined by the main axis of extension of the beam, where the beam may also be curvilinear, and the sections preferably answer the generalized hypotheses for De Saint-Venant beams.

[0077] Preferably, the barycentric axis 2a is rectilinear.

[0078] Furthermore, the barycentric axis 2a is preferably perpendicular to the base surface 10.

[0079] Each upright 2 preferably comprises at least two sides **22**, **23**.

[0080] For example, these sides 22, 23 can form a substantially L-shaped structure suitable to house the protuberance 30 or at least part of it.

[0081] For instance, the first guide 20 can be defined

by the space between the side 22 and the side 23, and the second guide 21 or the second guides 21 can be arranged along only one of the sides 22, 23.

[0082] More suitably, each upright 2 comprises two pairs of sides 22, 23 and therefore preferably defines two first guides 20 and two second guides 21.

[0083] In a preferred configuration, as shown in Fig. 3, a type of upright 2 with a substantially square plan, but consisting of two separate pieces, can be noted.

[0084] Each of the separate components defines an L shape, wherein one has two adjacent sides 22 in one piece and the other has two adjacent sides 23 in one piece comprising a plurality of second guides 21.

[0085] Instead, the two first guides 20, as shown, are defined by the space between the two L portions.

[0086] Preferably, moreover, the second secondary ends 21b are arranged at the projection of the barycentric axis 2a on at least one side 22, 23 comprising the respective second guides 21.

[0087] In any case, both guides 20, 21 are suitable to house the protuberances 30.

[0088] As mentioned, suitably, the structure 1 comprises at least two uprights 2 and one first element 3.

[0089] Once the protuberances 30 are inserted inside the first guides 21 of the uprights 2, the first element 3 can at least rotate around an axis passing through the protuberances 30.

[0090] Therefore, the protuberances 30 preferably define an axis of rotation **3a**.

[0091] The axis of rotation 3a, for example, is the axis joining the protuberances 30. The protuberances 30 are thus sliders suitable to move or be housed in the guides 20, 21 and form a mechanical hinge with at least each one of the second secondary ends 21b.

[0092] The protuberances 30, when they are housed inside the second secondary ends 21b, provide a loose constraint. Therefore, the first element 3 and the uprights 2 are mutually loosely constrained, and the first element 3 can rotate about the axis of rotation 3a with respect to the upright 2, and suitably about the uprights 2.

[0093] Each one of the protuberances 30, in addition to what has already been described above, can also include a bar defining a substantially L-shaped form so as to ensure at the same time the sliding within the guides 20, 21 and the locking of the first element 3 with respect to the uprights 2 at least along the axis of rotation 3a. In this regard, the protuberances 30 may substantially have a length along the axis of rotation 3a approximately equal to the length of a side 23 along a plane perpendicular to the barycentric axis 2a.

[0094] Furthermore, they may comprise a portion perpendicular to the axis of rotation 3a when the first element 3 is mounted on the uprights 2, so as to obstruct the sliding of the first element 3 with respect to the uprights 2 along the axis of rotation 3a.

[0095] In addition, the uprights 2 are mutually constrained by means of at least one beam **4** or at least one platform **5**.

[0096] The beam 4 can be, for example, an external element that can be constrained by means of joints, or other couplings, to the two uprights 2 so that it runs along the perimeter 11.

[0097] Therefore, in this configuration, for example shown in Fig. 1, the floor of the structure 1 simply consists of the ground.

[0098] In addition, the beams 4 may compose a perimeter structure, as can be partially seen in Fig. 3, to which the uprights 2 can be constrained by means of interlocking constraints, for example at fixed points such as the corners.

[0099] This constraint can be a pin available inside a hole.

[0100] Alternatively, the structure 1 may comprise a prefabricated platform 5 comprising a wooden surface or panel arranged on the base surface 10 and designed to support the weight of the entire structure 1.

[0101] In this case, the platform 5 can determine the perimeter 11, and the uprights 2 can be arranged at predetermined fixed points of the platform 5. If the platform is rectangular, as in the common cases of collapsible and compact modular building structures 1, the uprights 2 are arranged at the four corners of the platform 5, which occupies all the space inside the perimeter 11.

[0102] Regardless of the type of connection used between the uprights 2, the first element 3 preferably comprises at least one interference portion **31**.

[0103] The interference portion 31 is preferably a part of the first element 3 suitable to interfere with the rotation of the first element 3 about the axis of rotation 3a, particularly when the first element 3 is housed inside the second secondary end 21b.

[0104] This interference portion 31 can be a hook designed to interlock the first element 3 and the upright 2 to each other. Or, preferably, the interference portion 31 can be designed to interfere with the beam 4 or the platform 5 at the base surface 10.

[0105] Preferably, in order for this to be possible, the upright(s) 2 preferably provide(s) at least one locking configuration with the first element 3, in which the protuberances 30 of the first element 3 are housed in the second secondary ends 21b of the second guides 21 closer to the base surface 10.

[0106] In this configuration, the axis of rotation 3a is parallel to the base surface 10, and the interference portions 31 interact with the beam 4 or the platform 5 in order to block the rotation of the first element 3 around the axis of rotation 3a.

[0107] To do this, for example, it is sufficient for the first elements 3 to have square, and not rounded ends suitable to constrain the rotation of the first element 3, as shown in Fig. 5a and 5b.

[0108] Such a constraint, for example, is an interlocking constraint due to an interference portion 31 abutting against a rectilinear surface.

[0109] In addition, the first element 3, in turn, may comprise further second or third elements, for example useful

for making building constructions typical of exhibition stands and the like.

[0110] In this case, too, the constraints previously defined by fixed hinges can be replaced by elements having the same guides as described for the uprights 2. That is, auxiliary uprights can be envisaged for particular portions of the structure 1.

[0111] Finally, the structure 1 may be provided with a roof according to the currently known techniques, or with a flat roof.

[0112] The operation of the modular building structure 1, previously described in structural terms, is as follows.

[0113] An operator can easily assemble the uprights 2 with one or more first elements 3 by means of the guides 20, 21. In particular, it is sufficient for the operator to simultaneously slide the protuberances 30 inside the first guides 20 starting from the second main ends 20b of the two uprights 2 between which the first element 3 is arranged.

[0114] Subsequently, the operator brings the protuberances 30 into the second aligned secondary ends 21b of the two uprights 2.

[0115] Preferably, during the assembly and setting up of a building construction by means of the structure 1 according to the invention, the operator brings the protuberances 30, on the two sides of the first element 3 being assembled, simultaneously into the second ends closer to the base surface 10.

[0116] Thanks to the interference portion 31, the first element 3 remains in the chosen position, i.e. above the base surface 10 or, better said, in a vertical and perpendicular position with respect to the base surface 10.

[0117] In this way, a wall of the desired building construction was made. However, it is possible to proceed in the same way with the other walls so as to enclose the entire perimeter 11 and define a closed building construction.

[0118] Elements such as a roof or other elements useful for defining the construction can then be added. Examples of this type may be additional platforms on the sides of the construction, which can be assembled by riveting or bolting or other joints, or can also be assembled and prefabricated together with the first element 3.

[0119] The invention comprises a new method for assembling a building construction by means of the structure 1.

[0120] In particular, the method can comprise a step of arranging the uprights 2 along fixed points of the perimeter 11. In particular, at least two uprights 2 are preferably arranged in this step.

[0121] Furthermore, the method can comprise a step of connecting the uprights 2 by means of a beam 4 or a platform 5.

[0122] These two steps may also not be included in the method if the structure 1 comprises a prefabricated and pre-assembled platform 5 provided with uprights 2.

[0123] Essentially, the method comprises at least an insertion step and a movement step.

[0124] In the insertion step, the protuberances 30 of the first element 3 are preferably inserted inside the first guides 20 of the respective uprights 2.

[0125] In detail, the insertion can be carried out starting from the second main ends 20b.

[0126] In the movement step, in the end, the protuberances 30 are moved inside the guides 20, 21 up to the respective second secondary ends 21b closer to the base surface 10 so as to lock the first element 3 and provide a wall of the building.

[0127] The insertion and movement steps can then be performed again with other first elements 3, so as to obtain a complete construction at least as regards the perimeter enclosure.

[0128] The modular building structure 1 according to the invention achieves important advantages.

[0129] In fact, as can also be seen from the assembly process, the structure 1 allows the efforts as well as the time needed to assemble a wall of a building construction to be reduced.

[0130] The uprights 2 and the first elements 3 align with each other through the guides 20, 21.

[0131] Furthermore, the structure 1 can be constructed according to different configurations. For instance, the uprights 2 can be movable and mutually connected and exclusively constrained by means of a first element 3.

[0132] Alternatively, they can be constrained with a beam 4 or even pre-constrained by means of a platform 5. The functional characteristics of the structure 1, however, allow it to be configurable and marketable in a plurality of ways.

[0133] Therefore, it does not limit the obtainable geometries only to the base platform 5, as instead is the case for common constructions of the current state of the art.

[0134] Secondly, but not less important, even when the structure 1 comprises a platform 5 provided with prefabricated uprights 2 constrained at fixed points of the platform 5, the conformation of said uprights 2 allows the structure 1 to be easily disassembled. In fact, it is not necessary to comply with a laying order of the first elements 3 as instead is the case for common collapsible building constructions.

[0135] The presence of the first guide 20 and a plurality of second guides 21 allows the first elements 3 to be arranged parallel to the base surface 10 at varying heights.

[0136] In fact, since the constraint hinge between the uprights 2 and the first element 3 can be released and is not defined by a fixed point, the order of arrangement of the first elements 3 on the platform 5 can be changed, for example during the disassembly and rearrangement of the structure 1, in this case preferably a collapsible structure.

[0137] The invention is susceptible of variations falling within the scope of the inventive concept as defined by the claims.

[0138] In this context, all details are replaceable by

equivalent elements, and the materials, shapes and dimensions may be any materials, shapes and dimensions.

Claims

1. A modular building structure (1) defining a base surface (10) and a perimeter (11) comprising:

   - a plurality of uprights (2) arranged along fixed points of said perimeter (11), and
   - at least one first element (3) comprising a panel extension surface and releasably constrained between two of said uprights (2) along said perimeter (11),
   - each of said uprights (2) comprises at least one first guide (20) and one second guide (21), and said first element (3) comprises at least two protuberances (30) available in said guides (20, 21),
   - said second guide (21) being a hole extending in a slanting and communicating manner with respect to said first guide (20) and defining a first secondary end (21a) and a second secondary end (21b),

   and said structure (1) being **characterized in that**

   - said first guide (20) is a hole extending perpendicular to said base surface (10) defining a first main end (20a) and a second main end (20b),
   - said first main end (20a) being closed and arranged at said perimeter (11),
   - said second main end (20b) communicating with the outside,
   - said first secondary end (21a) being arranged at the meeting point of said guides (20, 21), and
   - said second secondary end (21b) being arranged closer to said base surface (10) than said first secondary end (21a).

2. The structure (1) according to claim 1, wherein each of said uprights (2) comprises a plurality of said second guides (21) arranged at different distances with respect to said base surface (10).

3. The structure (1) according to claim 1, wherein said second guides (21) are exclusively accessible from said first guide (21) and define a half-fishbone shape.

4. The structure (1) according to at least one of the preceding claims, wherein each of said uprights (2) defines a barycentric axis (2a) perpendicular to said base surface (10) and at least two sides (22, 23) arranged around said barycentric axis (2a), said first guide (20) being defined by the space comprised between said two sides (22, 23) and said second guide (21) being provided on one of said two sides (22, 23).

5. The structure (1) according to at least one of the preceding claims, wherein each of said uprights (2) comprises two pairs of said sides (22, 23) and thus two first guides (20) and two second guides (21).

6. The structure (1) according to at least one of the preceding claims, wherein said second secondary ends (21b) are arranged at the projection of said barycentric axis (2a) on said at least one side (22, 23) comprising said respective second guides (21).

7. The structure (1) according to at least one of the preceding claims, wherein said protuberances (30) define an axis of rotation (3a) and substantially are sliders suitable to move or be housed in said guides (20, 21), said protuberances (30) forming with each of said second secondary ends (21b) a mechanical hinge suitable to loosely constrain said first element (3) to said uprights (2) and allow rotation about said axis of rotation (3a).

8. The structure (1) according to at least one of the preceding claims, wherein said uprights (2) are mutually constrained by means of elements selected from at least one beam (4) arranged along said perimeter (11) or at least one platform (5) extending at least in the space comprised within said perimeter (11) and coplanar with respect to said base surface (10).

9. The structure (1) according to at least one of the preceding claims, wherein said first element (3) comprises at least one interference portion (31) adapted to interfere with said beam (4) or said platform (5), and said upright (2) forms with said first element (3) at least one locking configuration in which said protuberances (30) of said first element (3) are housed in said second secondary ends (21b) of said second guides (21) closer to said base surface (10) so that said axis of rotation (3a) is parallel to said base surface (10) and said interference portions (31) interfere with said beam (4) or said platform (5) in order to block the rotation of said first element (3) around said axis of rotation (3a).

10. A method of assembly of a building by means of a structure (1) according to at least one of the preceding claims, comprising the steps of:

    - inserting said protuberances (30) of said first element (3) inside said first guides (20) of said respective uprights (2),
    - moving said protuberances (30) inside said guides (20, 21) up to said respective second secondary ends (21b) closer to said base surface (10) so as to lock said first element (3) and provide a wall of said building.

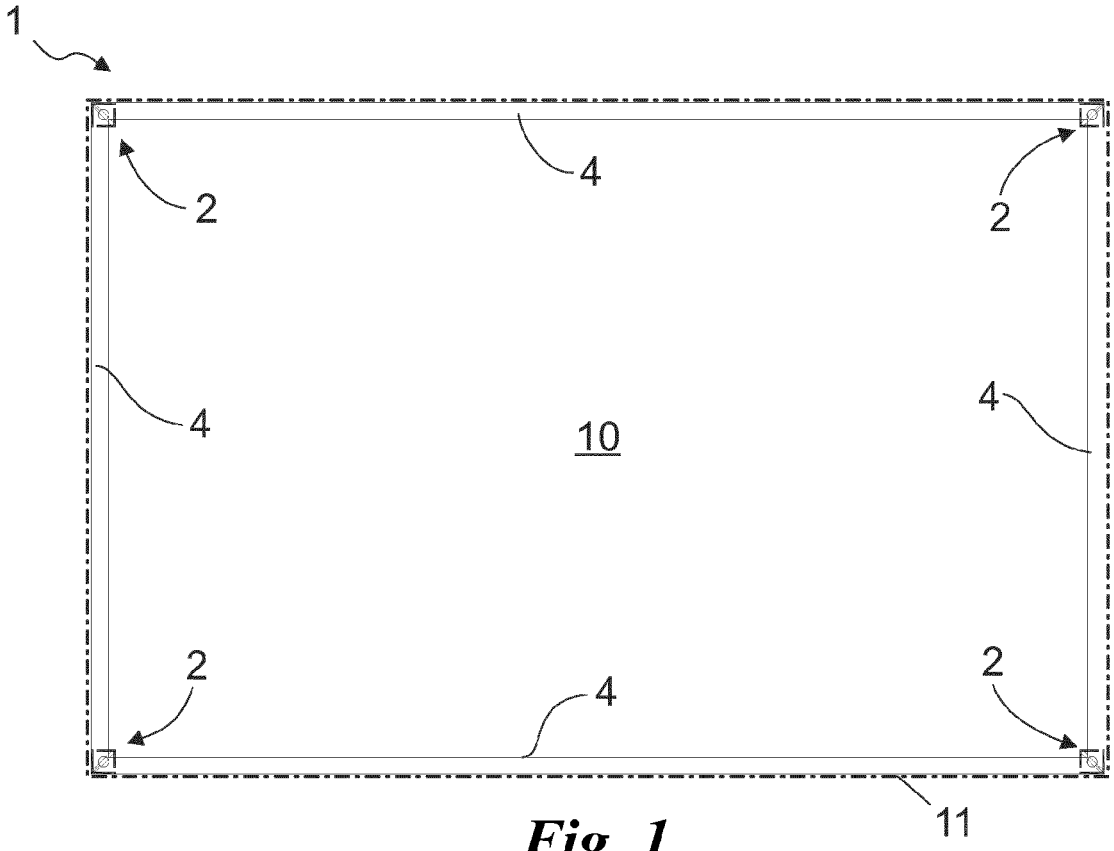


Fig. 1

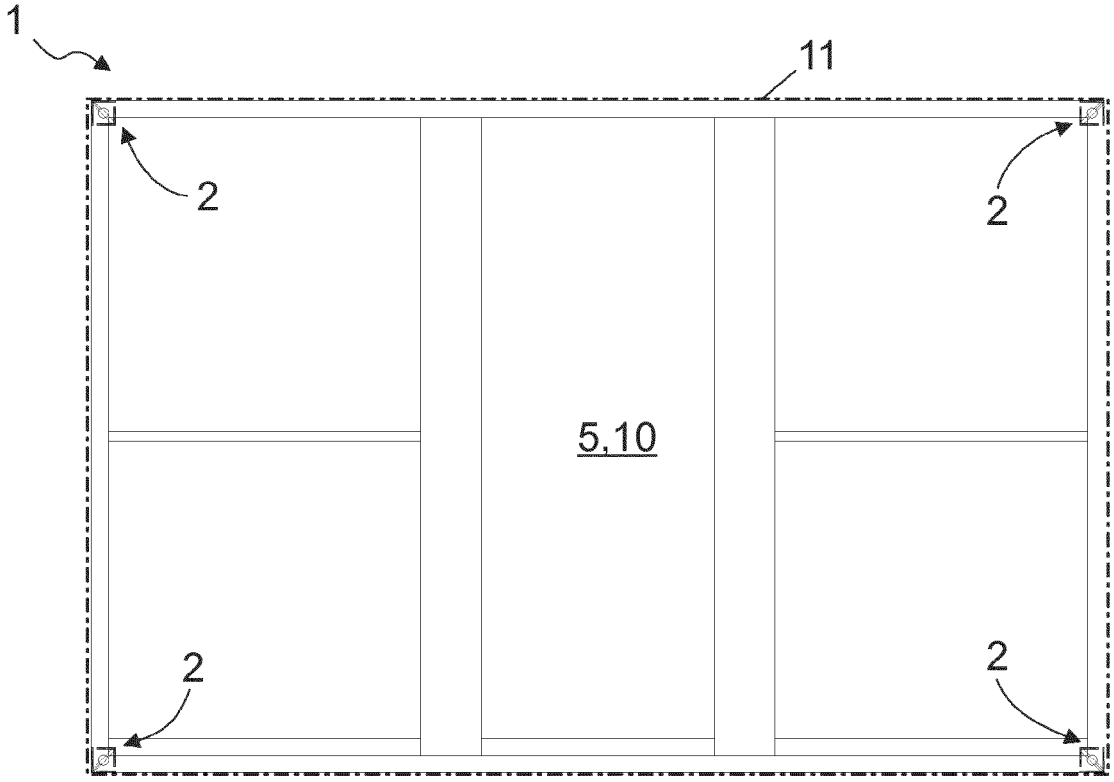


Fig. 2

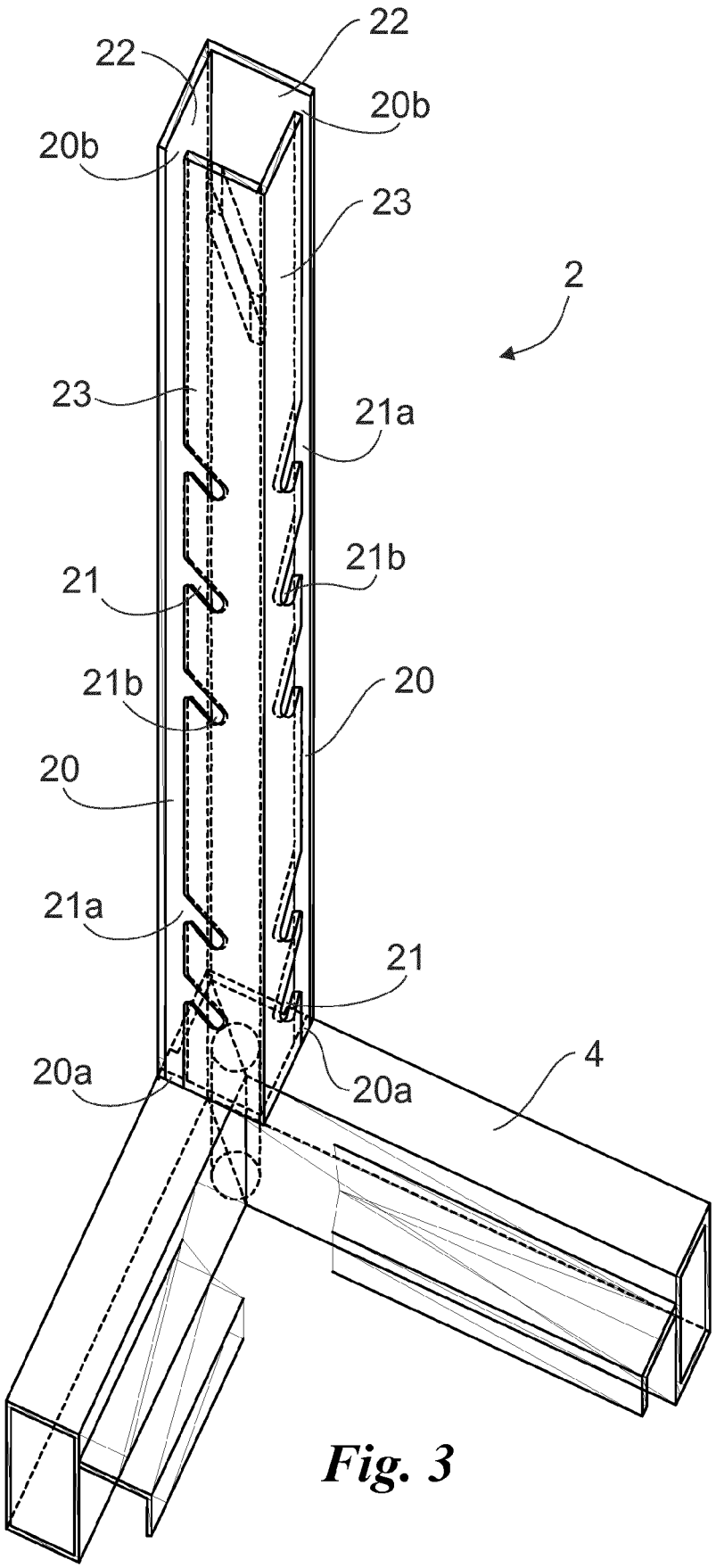


Fig. 3

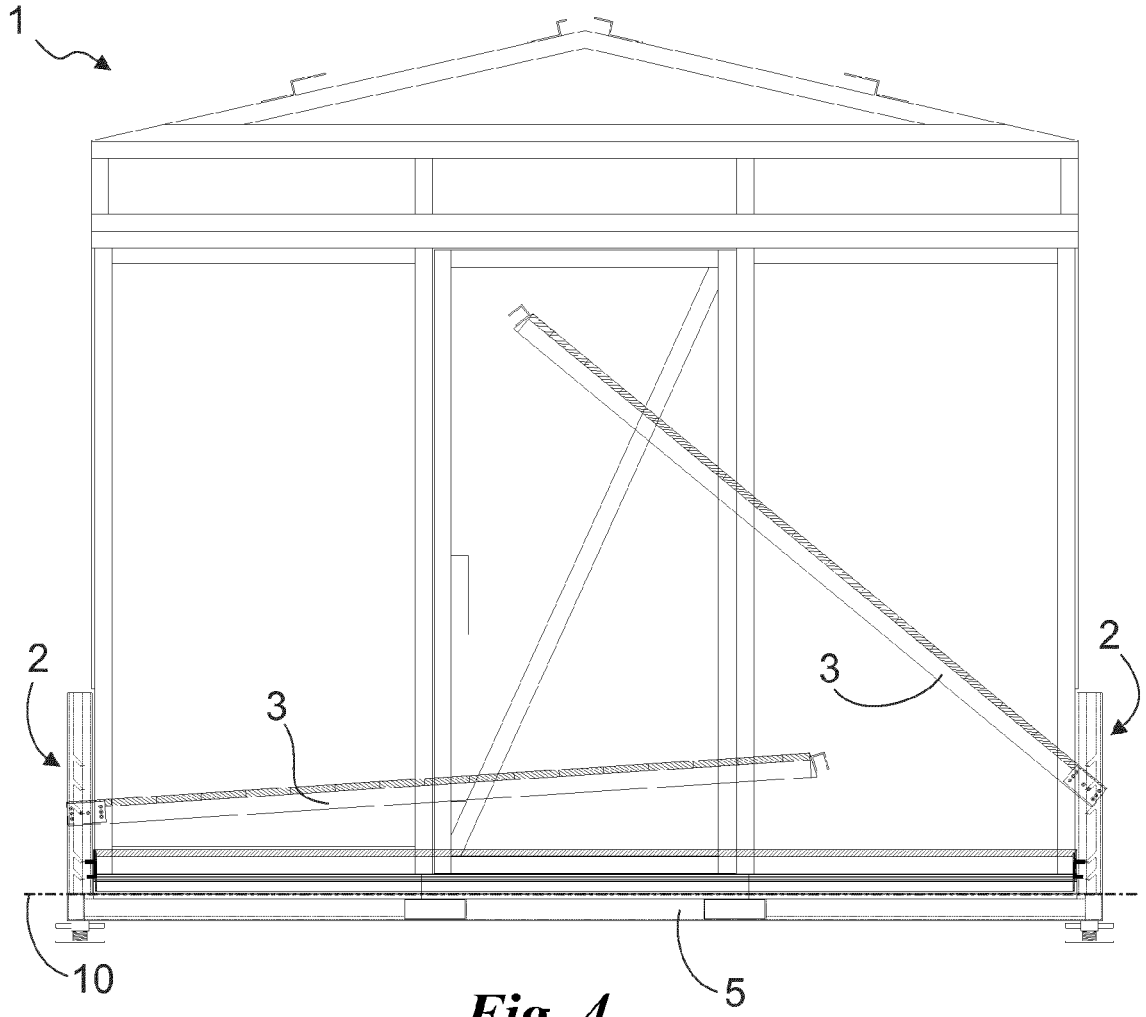


Fig. 4

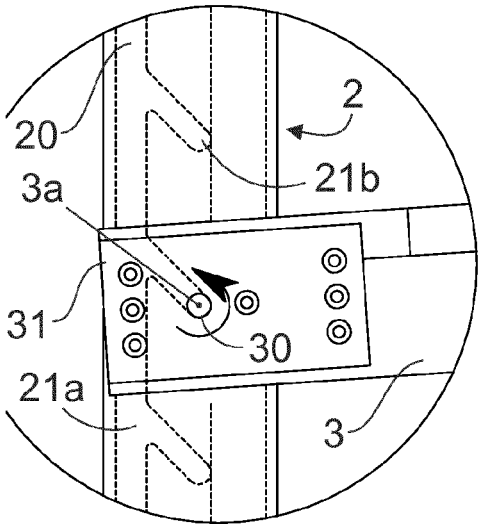


Fig. 5a

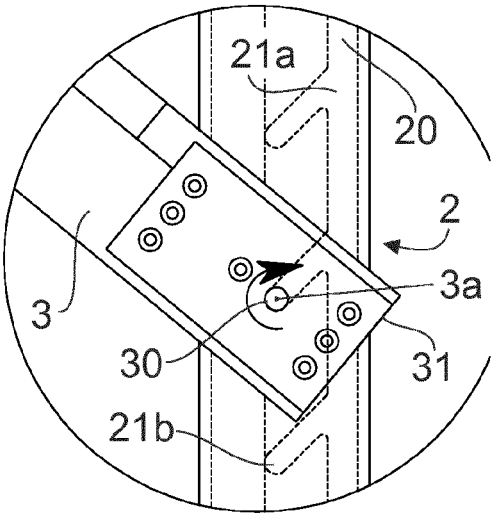


Fig. 5b

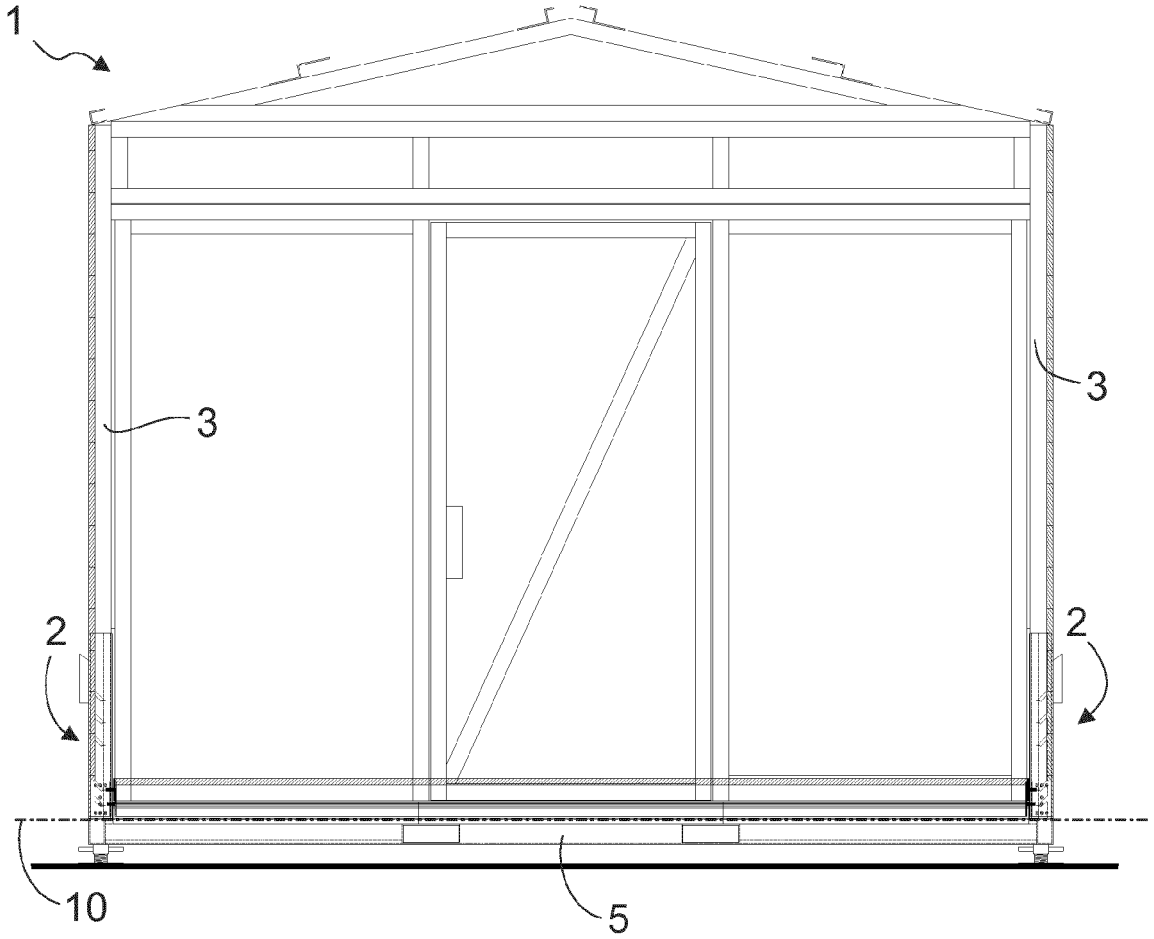
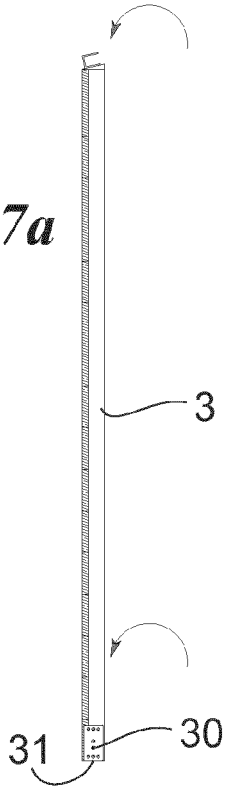


Fig. 6

Fig. 7a



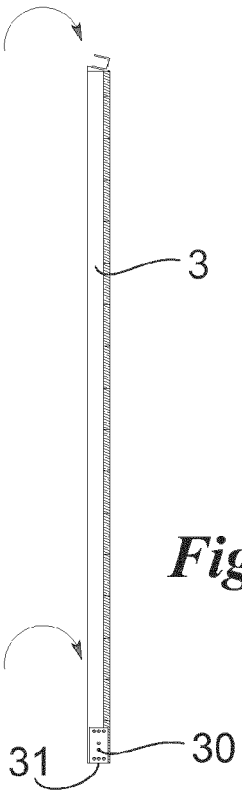


Fig. 7b

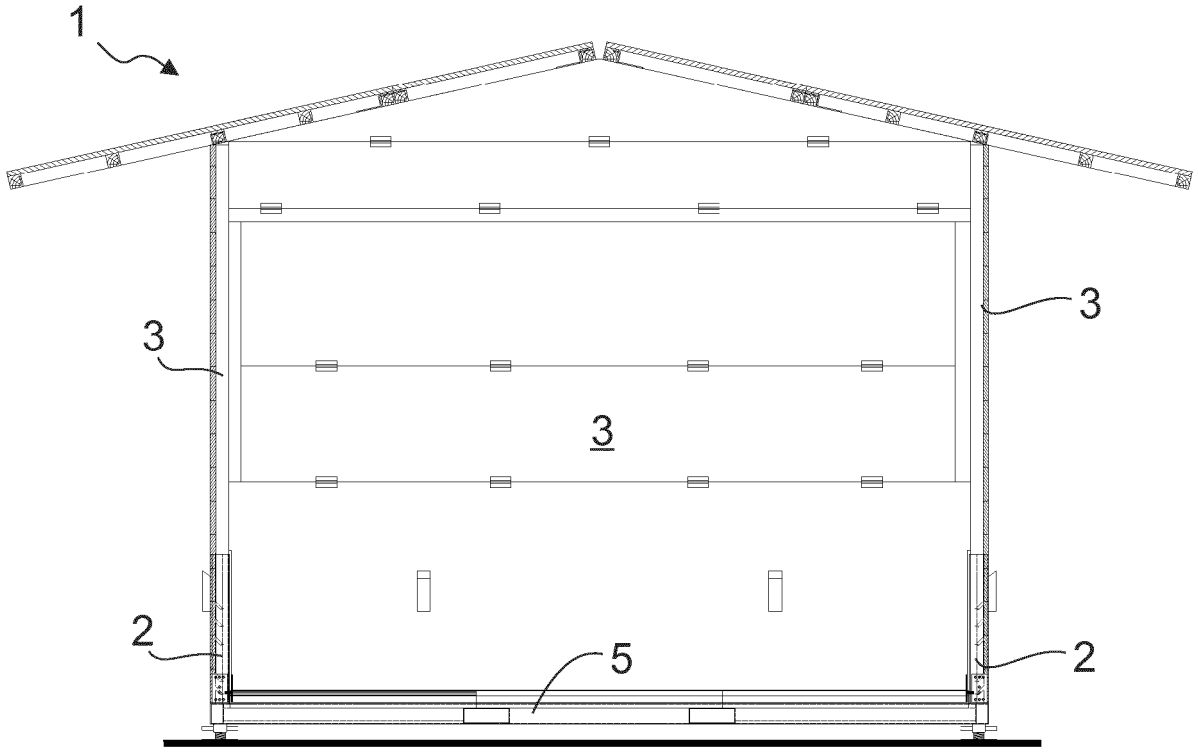


Fig. 8

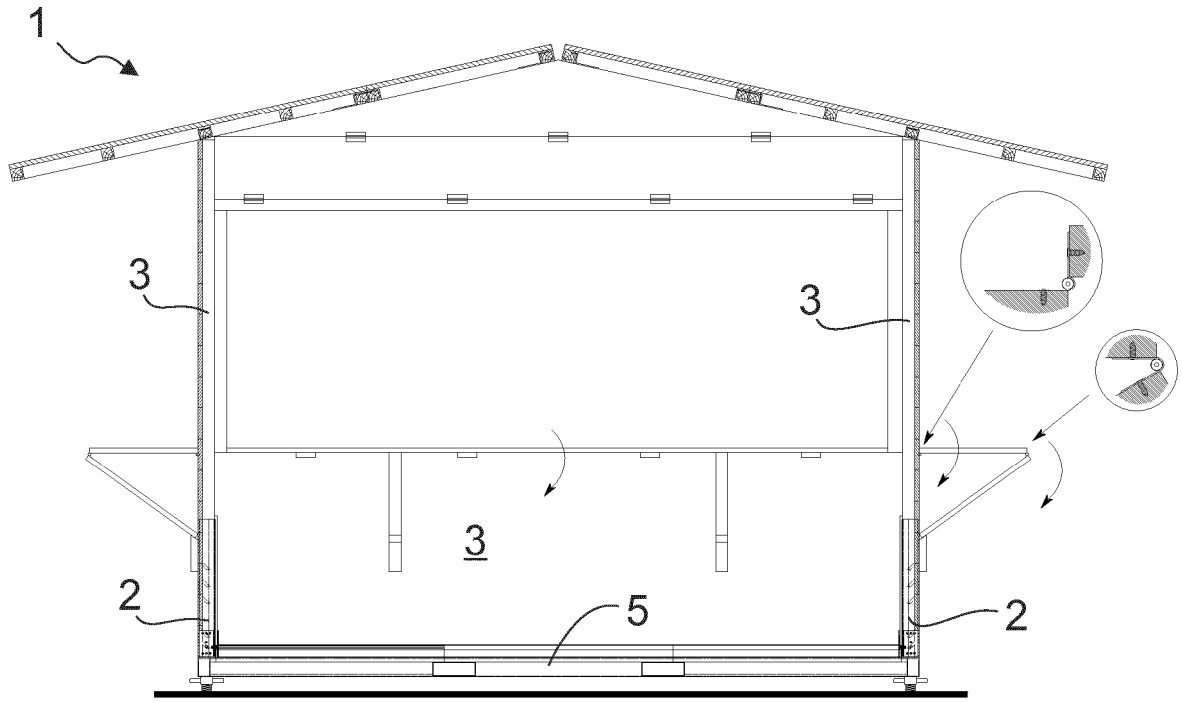


Fig. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 19 17 0226

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2006/277836 A1 (CHAZYN FABIO [US]) 14 December 2006 (2006-12-14) * paragraph [0030] - paragraph [0034]; figures 1-6 *	1-10	INV. E04B1/343 E04B1/344 E04H1/12
X	DE 29 03 368 A1 (DAIMLER BENZ AG) 31 July 1980 (1980-07-31) * page 8, last paragraph - page 14, last line; figures 1,2,6 *	1,4,6-10	

TECHNICAL FIELDS SEARCHED (IPC)
E04B
E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 May 2019	Melhem, Charbel

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EPO FORM 1503 03.82 (P04C01)

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28-05-2019

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US 2006277836 A1	14-12-2006	NONE	
DE 2903368 A1	31-07-1980	NONE	

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

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