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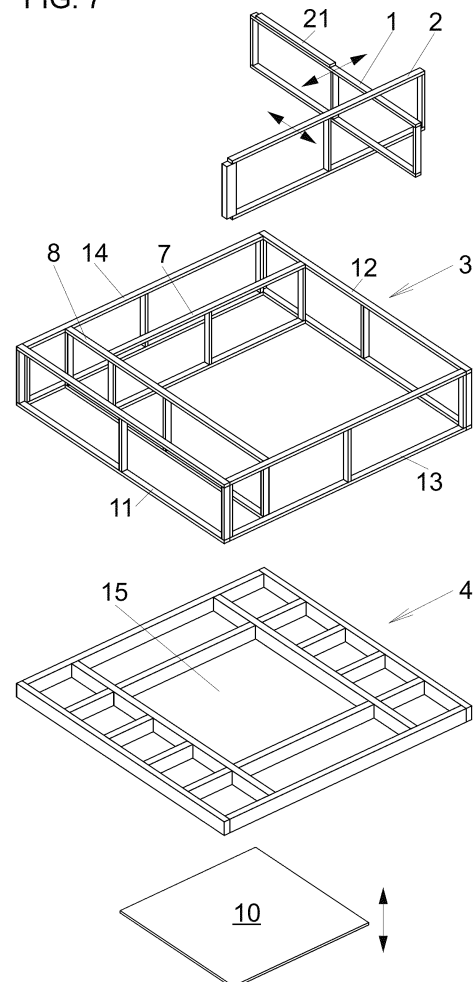
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(54) A MODULAR SUPPORT STRUCTURE FOR A HOT TUB

(57) The invention relates to a modular support structure for a hot tub, where the support structure comprises a base frame 4 and on said base frame 4 a framework 3 for supporting the hot tub 5. The framework 3 comprises four outer support frames 11, 12, 13 and 14, which are located along the perimeter of the base frame 4 and are attached to the base frame 4 and to each other at the ends. Between these outer support frames 11, 12, 13 and 14 are placed support frames 1, 2, 7 and 8, where at least one of said support frames is movable.

FIG. 7



## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to the field of terrace structures, more specifically, the present invention relates to a modular support structure for a hot tub or a wooden hot tub to be integrated into pre-fabricated terrace structure.

### PRIOR ART

**[0002]** Conventionally, when integrating a hot tub into a terrace, where the hot tub is sunk into the terrace floor, i.e., the hot tub is located in a recess in the terrace floor, a support structure is built for the hot tub in the terrace to support it, which comprises a framework, where an opening for the hot tub is created at the centre of the framework.

**[0003]** Battens of the terrace floor are supported onto said framework, terrace boards are supported onto said battens, and finally the hot tub is positioned within the opening, so that the edges of the hot tub rest on the terrace boards surrounding the opening. However, since hot tubs come in various shapes and sizes in terms of length, width, and depth, the framework must be custom-built on-site for each specific hot tub. This means custom built framework specially for the specific hot tub in every specific case, which is time consuming, requires skilled labour, and is therefore expensive.

**[0004]** The U.S. patent US6381768 discloses a method and system for building a hot tub located partially in the ground, including excavating a pit into a ground, building a foundation, installing a support structure on the foundation, placing the hot tub onto the support structure, and running pipework and power cabling within the support structure beneath a cover. However, this solution entails constructing the support structure on-site, tailored to the shape and depth of the particular hot tub, i.e. dimensions of the hot tub. It is not explicitly designed for integration into a terrace floor.

### SUMMARY OF THE INVENTION

**[0005]** The objective of the present invention is to provide a modular support structure for hot tubs, which serves as a pre-fabricated module adaptable to hot tubs of different dimensions, which can be easily integrated into the terrace structure during the construction of the terrace.

**[0006]** In other words, the modular support structure according to the invention serves as a pre-fabricated product that can be incorporated into the terrace structure as a pre-made component that can be easily adjusted to the dimensions of the hot tub.

**[0007]** The present invention provides a modular support structure for a hot tub, where the support structure comprises a base frame and on said base frame a frame-

work for supporting the hot tub. The framework comprises support frames for supporting the hot tub on all four sides at its edges, whereby at least one of said support frames is movable before secured in place to allow for adaptation of the support frame to the dimensions of the hot tub.

**[0008]** In the second embodiment of the invention, the framework comprises support frames for supporting the hot tub on all four sides at its edges, whereby at least two of said support frames are movable before secured in place to allow for adaptation of said support frames to the dimensions of the hot tub.

**[0009]** In the third embodiment of the invention, the framework comprises four outer support frames positioned around the perimeter of the base frame, said outer support frames are affixed to both the base frame and to each other at their respective ends - between these outer support frames are placed four support frames, where one of said support frames is movable.

**[0010]** In the fourth embodiment of the invention, the framework comprises four outer support frames arranged along the perimeter of the base frame, said outer support frames are affixed to both the base frame and to each other at their respective ends - between said outer support frames, there are two stationary support frames and two movable support frames.

**[0011]** The movable support frames are positioned in a mutually perpendicular manner.

**[0012]** The term "movability of the support frame before it is firmly secured in place means that the position of the support frame within the framework in relation to the hot tub to be installed is adjusted within the framework to accommodate the dimensions of the hot tub, supported by its edges on said support frame.

**[0013]** In the preferred embodiments of the invention, the modular support structure comprises a bottom plate for supporting the hot tube bottom, which can be vertically adjusted in vertical direction, that is its height can be adjusted. To facilitate a straightforward installation process, the bottom plate may be comprised of multiple parts, such as two parts. The base frame is equipped with an opening to accommodate said bottom plate.

**[0014]** Here, the bottom plate is securely fastened within the opening through the use of clamps, a bearing rim positioned around the perimeter of the opening, slats, or any other appropriate means of attachment.

**[0015]** In the second embodiment, in the opening located in the base frame, the bottom plate is supported by mounting feet or any other designated support elements.

### BRIEF DESCRIPTION OF DRAWINGS

**[0016]** The present invention is described below with reference to the accompanying schematic figures, where:

Figure 1 is top plan view of the modular support struc-

ture in a position, where the opening for the hot tub is of maximum dimensions;

Figure 2 is top plan view of the modular support structure in a position, where the opening intended for the hot tub has been adapted to accommodate a hot tub with smaller dimensions in comparison to Figure 1;

Figures 3 and 4 depict perspective views of the support structure depicted in Figure 2 showcasing different viewing angles;

Figures 5 and 6 depict perspective views of the support structure depicted in FIG. 1, showcasing different viewing angles;

Figure 7 depicts an exploded view of the modular support structure according to the invention;

Figure 8 depicts a top plan view of a hot tub supported on the support structure covered with terrace boards;

Figure 9 depicts a cross sectional view A-A along section plane A of Figure 8, providing an example of how the modular support structure of the invention is employed within the terrace structure

#### DESCRIPTION OF AN EMBODIMENT EXAMPLE

**[0017]** For the sake of clarity, similar details and elements on different figures have the same reference numbers. In case of the specific invention, any components, which are not essential for understanding the invention, such as pipe connections, water pipes, hoses, water drainage, lighting components, wiring, pumps, water filters, *etc.*, are not shown on the figures nor described in the embodiment example.

**[0018]** On Figures 1 to 7, arrows are provided at movable inner support frames 1 and 2 to indicate the movement of the support frames 1 and 2 within the framework 3 from the extreme position depicted in Figures 1, 5, 6.

**[0019]** The modular support structure for a hot tub, as shown in Figure 7, comprises a base frame 4 and a framework 3 mounted on top of this base frame to provide support for the hot tub 5. The base frame 4, as seen from a top view, is rectangular in shape.

**[0020]** The framework 3 comprises support frames 1, 2, 7, and 8 designed to provide support for the hot tub 5 along all four sides at its edges 6, where two support frames 1 and 2 are movable before fixing into place to accommodate the dimensions of the hot tub 5. The module comprises a bottom plate 10, intended to support the bottom 9 of the hot tub 5, where said bottom plate is adjustable in the vertical direction.

**[0021]** The framework 3, situated on the base frame 4, comprises outer support frames 11, 12, 13, and 14, located along the perimeter of the base frame 4, said outer support frames are affixed both the base frame 4

and to each other at the ends. In between these outer support frames 11, 12, 13, and 14, are stationary support frames 7 and 8, as well as movable support frames 1 and 2.

**[0022]** The base frame 4 features an opening 15, which, in the case of the extreme position of the support frames 1, 2, 7, and 8, such as those illustrated in Figures 1, 5, and 6, is situated between these support frames 1, 2, 7, and 8.

**[0023]** The bottom plate 10 is securely installed within the opening 15 situated in the base frame 4, where the bottom plate 10 may consist of two or more components, which allows for easy installation. The bottom plate 10 is fixed within the opening 15 of the base frame 4 at a height enabling support for the bottom 9 of the hot tub 5.

**[0024]** In the embodiment depicted in Figure 9, the bottom plate 10 is supported by the bearing rim 16 positioned along the perimeter of the opening 15. To prevent any changes in the position of the bottom plate 10 in relation to the support structure, the bottom plate 10 is securely fastened to the base frame 4.

**[0025]** In the embodiment depicted in Figure 9, the support structure, more specifically the base frame 4 thereof, is supported by mounting feet 17. This is only one of several possible embodiments - the base frame 4 can also be placed on a foundation, a concrete base, adjustable or non-adjustable feet, or any other suitable support structures.

**[0026]** In practice, the modular support structure for a hot tub is incorporated into the terrace structure - the support structure framework, including support frames 1, 2, 7, and 8, along with the external or outer support frames 11, 12, 13, and 14, provides support for the terrace floor battens 18, onto which the terrace boards 19 are securely attached.

**[0027]** The hot tub 5 is positioned on the terrace boards 19, with its edges 6 supported on all four sides, as depicted in Figures 8 and 9, and additionally, the bottom of the hot tub 5 is supported by the bottom plate 10. Within the space between the battens 18, an auxiliary frame 20 is located, where said auxiliary frame 20 preferably encircles the opening 15 where the hot tub 5 is placed and aids in supporting the edges 6 of the hot tub 5 within the area between the ends of the battens 18.

**[0028]** The battens 18, terrace boards 19, and auxiliary frame 20 are not comprised in the structure of the modular support structure of the invention, but they are elements of the terrace structure.

**[0029]** The movable support frames 1 and 2 are adjusted in opposite directions, with each of them moving toward the respective support frames 7 and 8. In the embodiment depicted in the Figures, the support frame 1 passes through support frame 2, and to align the upper surface of support frame 1 with that of support frame 2, an additional spacer 21 is incorporated, where said spacer can be a beam or board of suitable thickness. The second end of movable support frame 1 is situated within the opening of the stationary support frame 7 and is free

to move along this support frame 7. The movable support frame 2 is positioned resting on the base frame, where in the embodiment shown in the Figures, one end of support frame 2 is against the outer support frame 12, while the other end is in contact with the stationary inner support frame 8.

**[0030]** The module of the invention is installed within the terrace structure, and after creating an appropriately sized opening by adjusting the positions of the support frames 1 and 2 between support frames 1, 2, 7, and 8, support frames 1 and 2 are securely fixed in place using suitable fixing means. Following this, battens are added to the terrace structure, extending to the module of the invention - Figure 9 illustrates battens 18 resting on the framework 3 along with the auxiliary frame 20 at the ends of the battens. Subsequently, the terrace floor is constructed using terrace boards 19, and finally the hot tub 5 is positioned in its designated place.

**[0031]** It is obvious to the person skilled in the art that the invention is limited only by the appended claims, and it is not limited by the embodiment examples presented in the figures nor the description provided above.

#### LIST OF REFERENCE NUMBERS

##### **[0032]**

- 1 - movable support frame
- 2 - movable support frame
- 3 - framework
- 4 - base frame
- 5 - hot tub
- 6 - hot tub edge
- 7 - stationary support frame
- 8 - stationary support frame
- 9 - hot tub bottom
- 10 - bottom plate
- 11 - outer support frame
- 12 - outer support frame
- 13 - outer support frame
- 14 - outer support frame
- 15 - opening in base frame
- 16 - bearing rim for bottom plate
- 17 - mounting foot
- 18 - batten
- 19 - terrace board
- 20 - auxiliary frame
- 21 - spacer

#### Claims

1. A modular support structure for a hot tub, where the support structure comprising a base frame (4) and a framework (3) on said base frame to provide support for the hot tub, **characterized in that** the framework (3) comprises support frames (1, 2, 7, 8) to support the hot tub on four sides at its edges, where-

by at least one of said support frames (1, 2) is movable before securing in place to adapt it to the dimensions of the hot tub.

2. The module according to claim 1, **characterized in that** two support frames (1, 2) of said support frames (1, 2, 7, 8) to support the hot tub on four sides at its edges are movable before securing in place to adapt them to the dimensions of the hot tub.
3. The module according to claim 1, **characterized in that** the framework (3) comprises four outer support frames (11, 12, 13, 14) positioned along a perimeter of the base frame (4), said outer support frames are attached to the base frame (4) and to each other at the ends, and in between said outer support frames (11, 12, 13, 14) said support frames (1, 2, 7, 8) are located, where one of the said support frames (1, 2) is movable before securing in place to adapt them to the dimensions of the hot tub.
4. The module according to claim 1, **characterized in that** the framework (3) comprises four outer support frames (11, 12, 13, 14) positioned along a perimeter of the base frame (4), said outer support frames are attached to the base frame (4) and to each other at the ends, and in between said outer support frames (11, 12, 13, 14), two stationary support frames (7, 8) and two movable support frames (1, 2) are located.
5. The module according to any one of the preceding claims 1, 2, and 4, **characterized in that** the movable support frames being positioned perpendicularly to each other.
6. The module according to any one of the preceding claims 1 to 5, **characterized in that** the module comprises a vertically adjustable bottom plate (10) for supporting a bottom (9) of the hot tub (5).
7. The module according to any one of the preceding claims, **characterized in that** the base frame (4) includes an opening (15) for the bottom plate (10).

#### **Amended claims in accordance with Rule 137(2) EPC.**

1. A support structure module for a hot tub (5), where the support structure module comprises a base frame (4), a bottom plate (10) for supporting a bottom (9) of the hot tub (5), and on said base frame a framework (3) to provide support for the hot tub (5), **characterized in that:**

the framework (3) comprises four rectangular outer support frames (11, 12, 13, 14) positioned along a perimeter of the base frame (4), said

outer support frames are attached to the base frame (4) and the adjacent ends of said outer support frames (11, 12, 13, 14) are attached to each other; and

in between said outer support frames (11, 12, 13, 14) to support the hot tub on four sides at its edges, are two adjacent rectangular stationary support frames (7, 8) and two adjacent rectangular movable support frames (1, 2) movable to adapt a rectangular opening between said two stationary support frames (7, 8) and said two movable support frames (1, 2) to the dimensions of the hot tub before securing said two movable support frames (1, 2) in place.

2. The support structure module according to claim 1, **characterized in that** the movable adjacent support frames (1, 2) are positioned perpendicularly to each other.

3. The support structure module according to claim 1 or 2, **characterized in that** the bottom plate (10) for supporting the bottom (9) of the hot tub (5) is vertically adjustable.

4. The support structure module according to claim 1, 2 or 3, **characterized in that** the base frame (4) includes an opening (15) for the bottom plate (10).

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FIG. 1

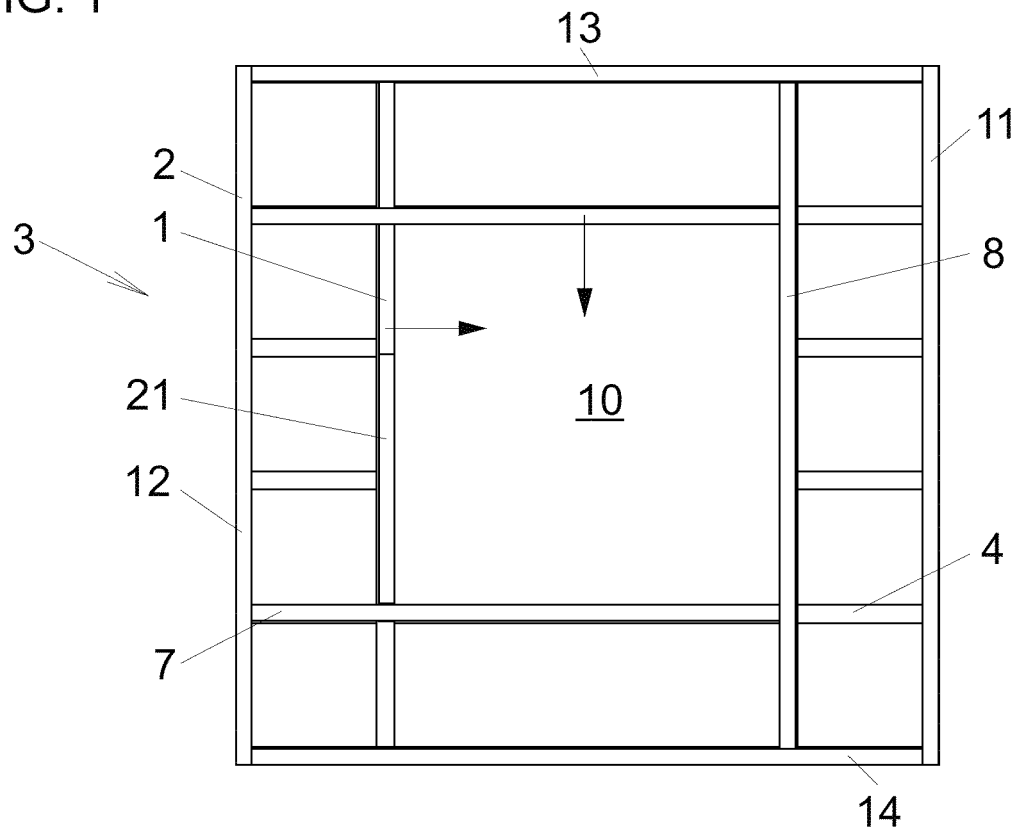


FIG. 2

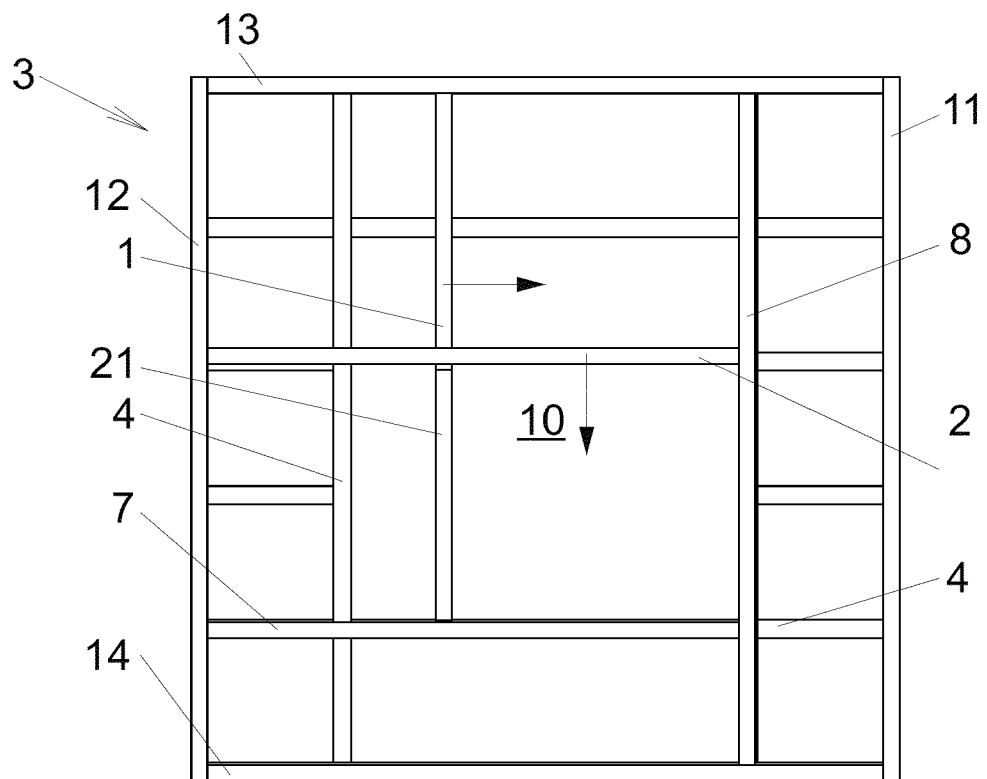


FIG. 3

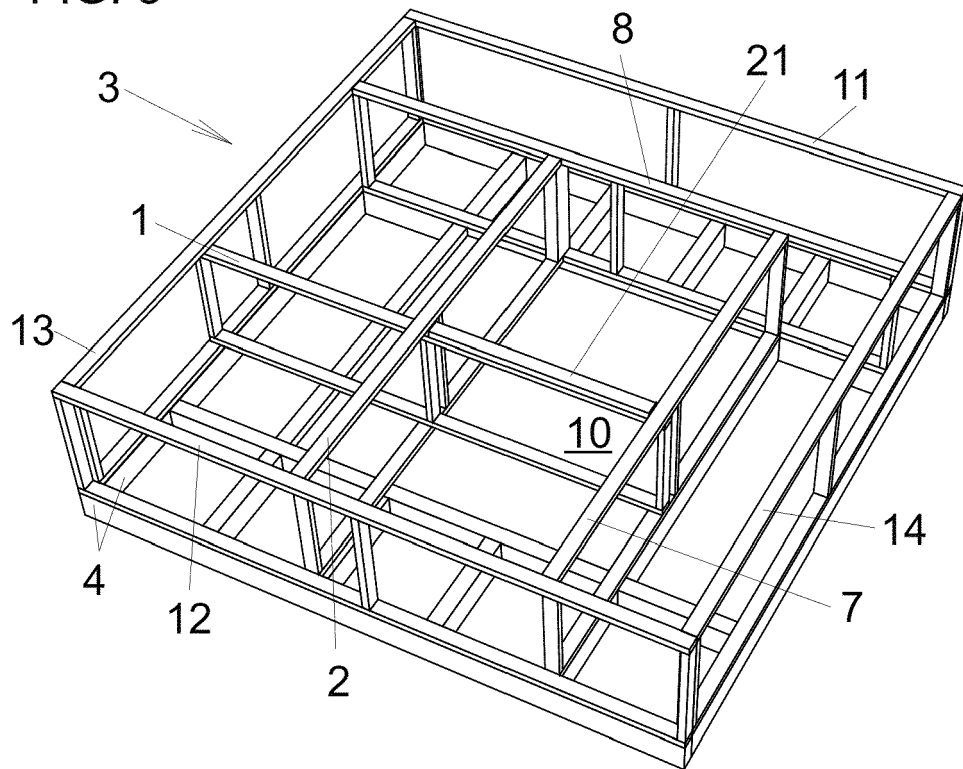


FIG. 4

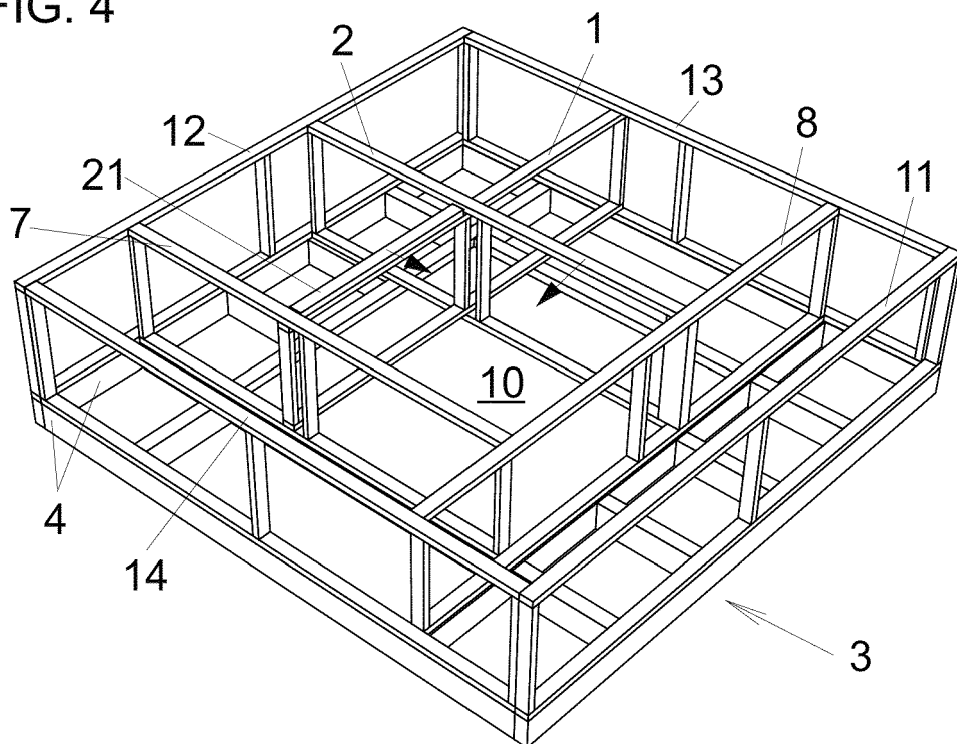


FIG. 5

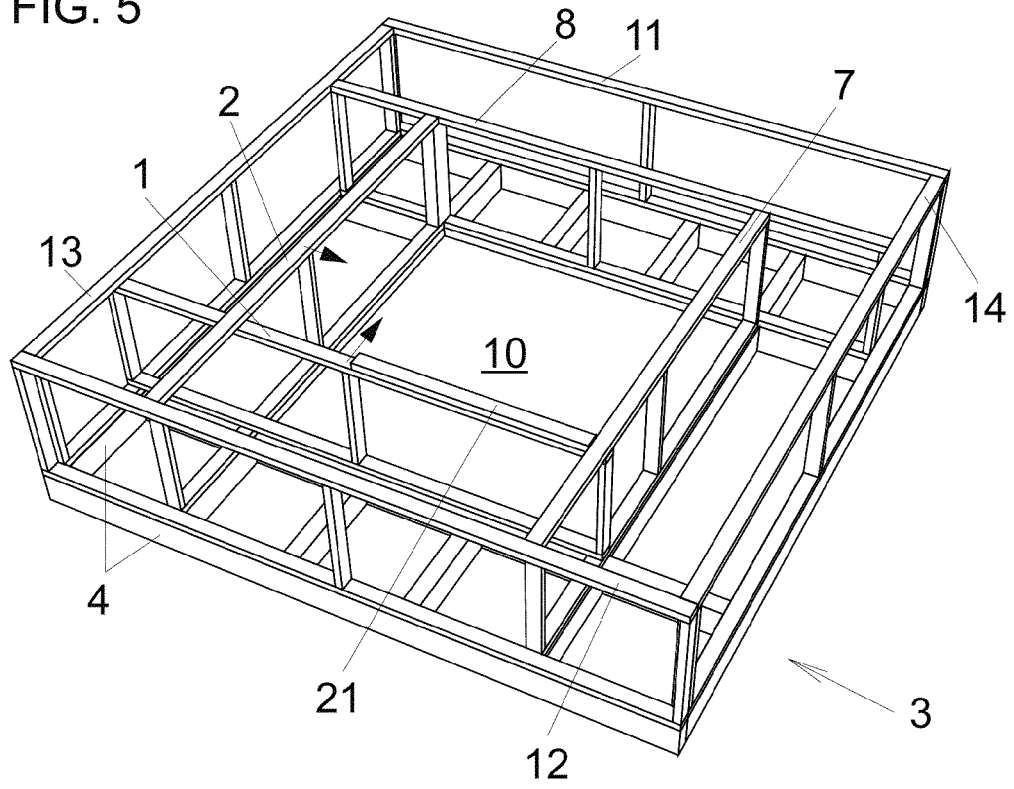


FIG. 6

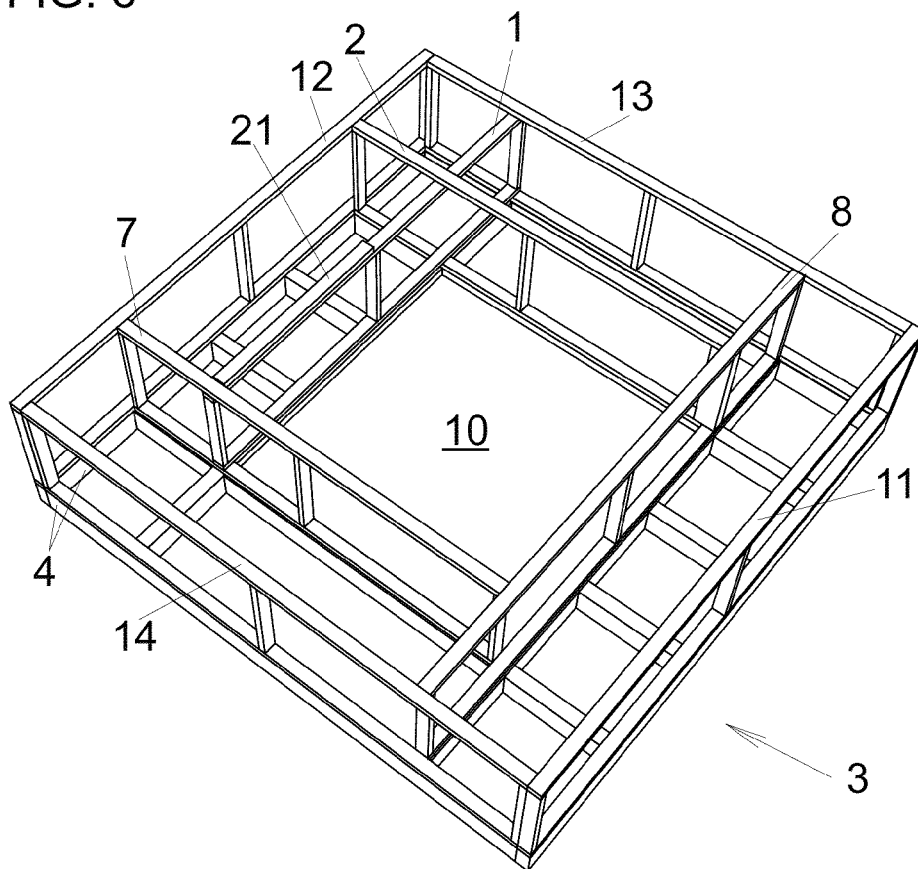




FIG. 7

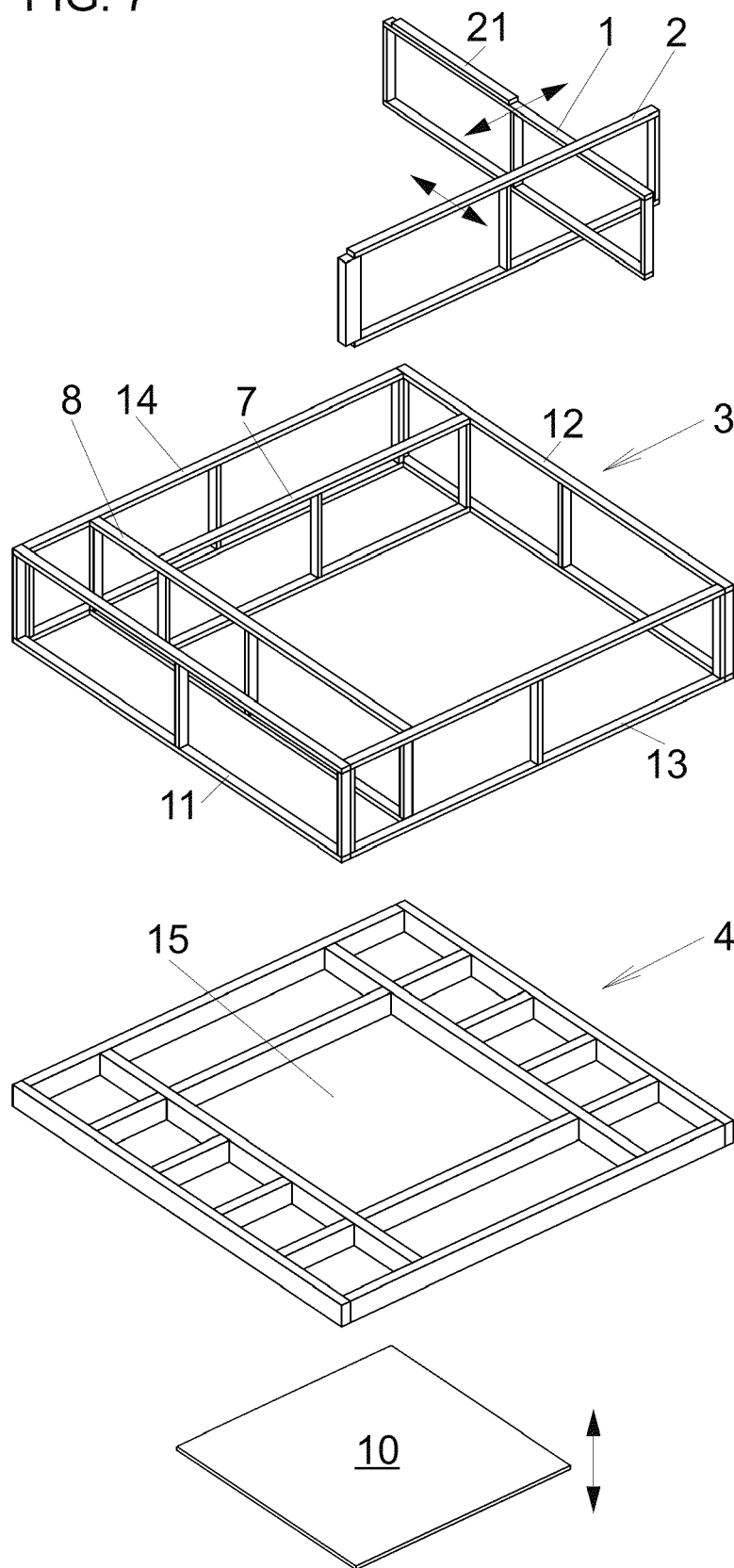


FIG. 8

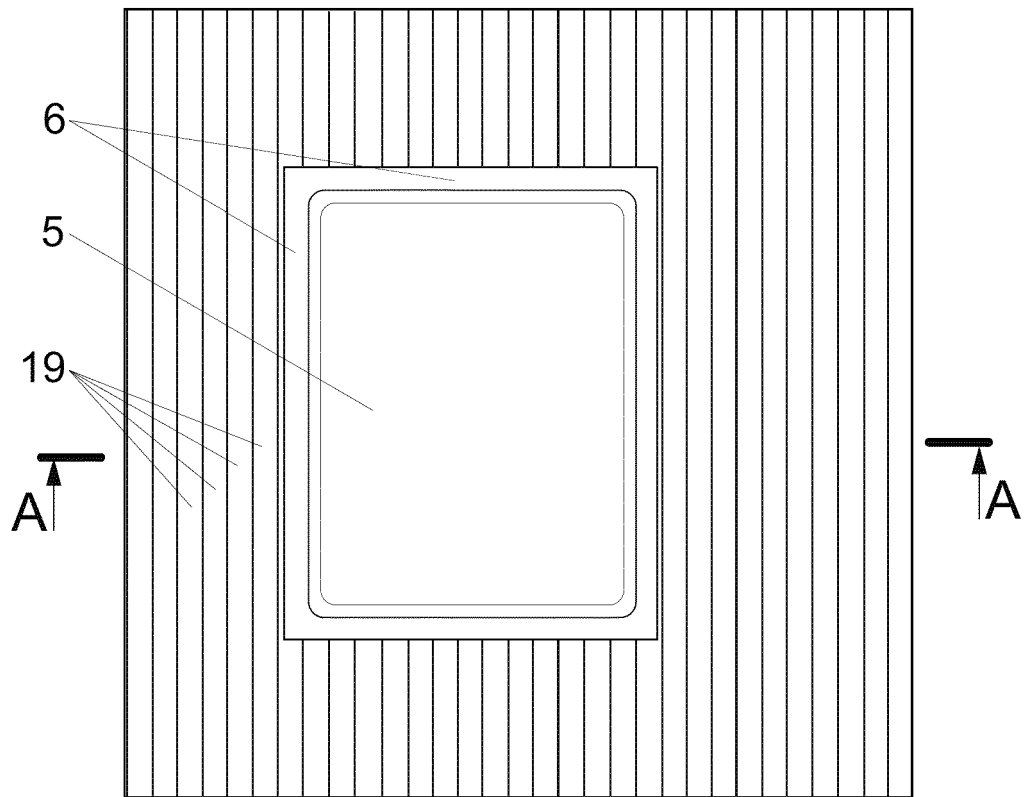
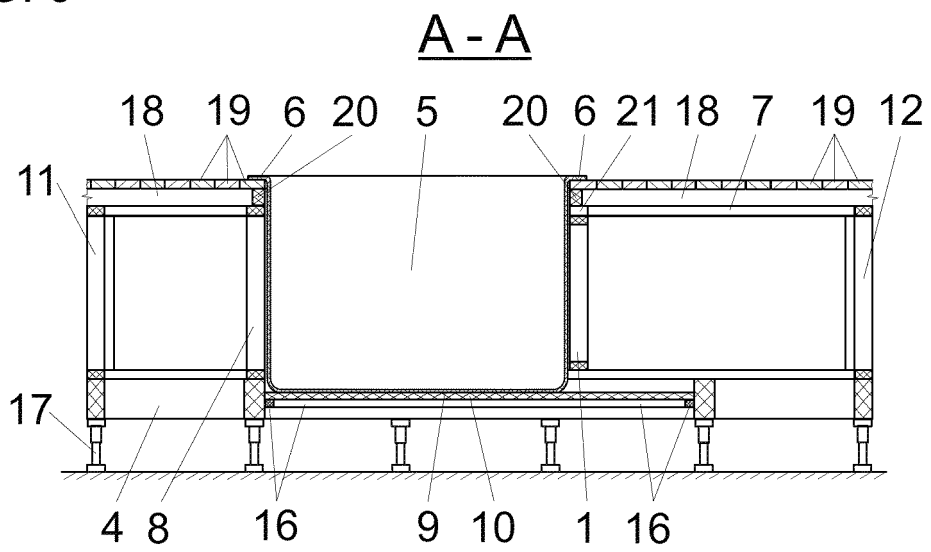


FIG. 9





## EUROPEAN SEARCH REPORT

Application Number

EP 23 21 4118

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EPO FORM 1503 03.82 (P04C01)

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A	* figures 1-10, 14, 15 * * column 5, lines 36-53 * * column 6, line 48 - column 7, line 5 * * column 8, line 57 - column 9, line 11 * -----	3, 4	A61H33/00
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A	* figures 1, 3, 5, 7-10 * * column 7, line 49 - column 8, line 13 * * column 8, line 16 - column 9, line 23 * -----	3, 4	
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			TECHNICAL FIELDS SEARCHED (IPC)
			E04H A61H
The present search report has been drawn up for all claims			
Place of search <b>Munich</b>		Date of completion of the search <b>8 May 2024</b>	Examiner <b>Schnedler, Marlon</b>
CATEGORY OF CITED DOCUMENTS 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	

# ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO.

EP 23 21 4118

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
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FORM P0459

**REFERENCES CITED IN THE DESCRIPTION**

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