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(54) **PROCEDURE FOR THE CONSTRUCTION OF A FLOATING HOME AND RELATIVE FLOATING HOME**

(57) The present invention relates to a process for realising a floating home comprising the following steps:

- placing a predetermined number of floating elements (40) floating on a water basin (80) and joining them together to form a floating hull (5);
- building a rigid frame (15) bound to the floating hull (5),

hereinafter referred to as an interconnection frame;

- making a prefabricated living module (10) in a plant remote from the water basin (80), transporting it to said basin (80), and joining it to said interconnection frame (15) when it is bound to the floating hull.

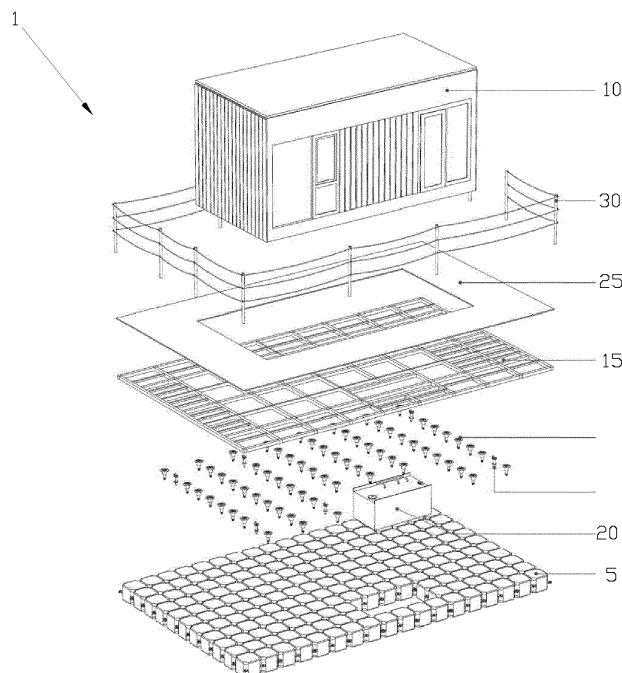


Fig. 2

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Description

[0001] The present invention relates to a process for realising a floating home and relative floating home.

[0002] The term "home" is to be considered in a broad sense, in particular the invention may be used for realising places intended for tourist accommodation or commercial activities, for example in marinas, docks, lakes, navigable canals and in general all water bodies protected from wave motion. This does not exclude any other use, such as the realisation of residential homes.

STATE OF THE ART

[0003] In the tourist hospitality sector, the realisation of villages by installing mobile living modules, generally known as "mobile homes", has been known and appreciated for many years. These are homes on wheels that can be easily installed in equipped areas, such as campsites or the like, which in this way can increase their offer and aim at a higher customer target.

[0004] The tourism sector is constantly looking for captivating novelties, which constitute an exclusive attraction for customers, for this reason the villages are located in areas that are valuable from a landscape point of view.

[0005] However, the technology currently available constitutes a limitation for the growth of the sector, as it excludes many areas of interest, such as marinas, docks, lakes, navigable canals and in general all water bodies protected from wave motion.

[0006] It would be desirable that the realisation of attractive villages in such places be made possible in a simple and economical way. Such types of villages could for example be built in the immediate vicinity of seaside villages, albeit in full respect thereof.

[0007] It is an object of the present invention to overcome all, or some, of the drawbacks of the prior art.

[0008] In particular, a preferred object of the present invention is to provide a practical and economical technology to allow the realisation of a floating home.

[0009] A further preferred object of the present invention is to provide an adaptable technology that allows the realisation of floating homes to be customised to the available or desired spaces.

GENERAL INTRODUCTION

[0010] According to a first general aspect thereof, the present invention relates to a process having the characteristics defined in claim 1.

[0011] According to another general aspect, the present invention relates to a floating home having the characteristics defined in claim (10).

DETAILED DESCRIPTION

[0012] Further characteristics and advantages of the present invention will become clearer from the following

detailed description of preferred embodiments thereof, with reference to the appended drawings and provided by way of an indicative and non-limiting example. In such drawings:

- Figure 1 shows schematically a floating home according to the present invention;
- Figure 2 shows schematically the floating home of Figure 1 in exploded view;
- Figure 3 shows schematically a step of realisation of the hull of the floating home of the previous figures;
- Figure 4 shows schematically a floating element of the hull in Figure 3;
- Figure 4bis shows a flange on an enlarged scale and in top view of the floating element of Figure 4.
- Figure 5 shows schematically a connection nail between the floating elements of the hull in Figure 3;
- Figure 6 shows a connection bracket between the hull and the interconnection frame in Figures 1 and 2;
- Figure 7 shows schematically a step of realisation of the interconnection frame between the hull and the living unit in figures 1 and 2;
- Figure 8 shows schematically a step of installation of a tank for the purification and disposal of wastewater;
- Figure 9 shows a step of preparation of a living module for the installation on the hull of the previous figures;
- Figure 10 shows a step of installation of the living module of Figure 9 on the already floating hull of the previous figures.

[0013] With reference to Figures 1 and 2, a floating home according to the present invention is shown as a whole under reference number 1.

[0014] The floating home 1 is suitable for floating on a hydraulic basin 80, wherein by convention "vertical direction" is meant the direction perpendicular to the water surface, and by "horizontal" direction, the direction parallel to the water surface.

[0015] The home 1 essentially comprises at least the following elements overlapped in a vertical direction with respect to the water surface:

- a hull 5;
- at least one prefabricated living module 10;
- an interconnection frame 15 between the hull and the at least one living module 10;

[0016] Some customisable options include:

- at least one tank 20 for the purification and disposal of wastewater;
- at least one walking surface arranged on a possible part of the hull overhanging the living module;
- a railing 30 placed on the outer edge of the walking surface.

[0017] The hull 5 comprises a plurality of floating elements 40, for example made in the form of empty watertight containers, preferably of substantially cubic shape, for example with a horizontal cross section of cm. 50 x 50, or a rectangular parallelepiped, e.g. with a horizontal cross-section of cm. 50 x 100 and height of 40 cm. The floating elements are preferably made entirely of polymeric material, e.g. polyethylene, in order to avoid galvanic currents and corresponding salt corrosion.

[0018] According to some preferred practical embodiments, each floating element 40 has a capacity greater than or equal to 350Kg per square meter, that is it is obtained for example with the parallelepipeds 50X100X40 mentioned above.

[0019] As better visible in Figure 4, each floating element 40 is provided with a plurality of connection flanges 42 for connecting to respective adjacent floating elements 40. Preferably on each floating element 40 there are at least two flanges 42, more preferably at least four, for the connection to respective adjacent floating elements 40.

[0020] In the case of substantially cubic or rectangular parallelepiped floating elements 40, there is at least one flange 42 on each of the four vertical edges.

[0021] In general, at least two of the flanges 42 of each floating element 40 are placed at heights H1 and H2 different from each other with respect to the water surface P on which they are placed to float and in such a way as to overlap in height with at least one flange 42 of an adjacent floating element 40.

[0022] With reference to Figure 4bis, each flange 42 comprises a through opening 44, preferably shaped so as to have a cross section other than circular. Preferably, the opening 44 comprises a circular hole 44a provided with at least one irregularity 44b, for example at least one enlargement at a predetermined point. In the example shown, there are 4 irregularities and they are angularly equally spaced apart.

[0023] The section of each through opening 44 is oriented so as to align with the section of the flange 42 of a respective adjacent floating element 40, so as to form a single opening of the same section.

[0024] The hull 5 comprises a series of connectors 45 arranged to join together the floating elements. In particular, the connectors are inserted into the mutually aligned openings 44 of two overlapped flanges 42 belonging to respective adjacent floating elements 40.

[0025] As better visible in Figure 5, each connector 45 has a predominantly longitudinal development along an X axis destined to coincide with the direction of insertion into the openings 44 of the flanges 42.

[0026] Along said direction, each connector 45 comprises at least one anti-slip section 50 complementary to that of the openings 44, at least one head 52 with section incompatible with the passage through the opening 44, and at least one shank portion 54 with rotatable section when inserted into the opening 44. The shank portion 54 is interposed between the anti-slip section 50 and the

head 52. Preferably, the anti-slip portion 50 and the shank portion 52 are part of the same circular section pin, wherein the anti-slip section comprises at least one protrusion that is radial to said circular section and complementary to the irregularity 44b of the opening 44.

[0027] Finally, the connector 45 comprises gripping means 58 for applying a rotational torque around the X axis, they are for example arranged on the head 52 and comprise means for engaging a key.

[0028] The connectors 45 are preferably made of polymeric material, e.g. polyethylene, so as to avoid galvanic currents and relative salt corrosion.

[0029] With reference to Figure 3, the hull 5 is made by placing the first two floating elements 40 floating on a water basin 80 (visible in Figure 10), and by joining the floating elements already floating by means of at least one nail 45 inserted in respective flanges 42.

[0030] The nail 45 is inserted oriented in such a manner that the anti-slip portion 50 is able to pass through the respective overlapped and aligned openings 44. Subsequently, the nail 45 is rotated about the X axis in such a way that the anti-slip portion 54 loses its alignment with the openings 44.

[0031] By means of the same process, other floating elements 40 are added and fixed gradually until a floating surface of the desired size and shape is reached.

[0032] The shape of the hull may comprise one or more cavities 60 surrounded by floating elements 40 destined to accommodate respective accessories, such as the tank 20. The tank 20 is preferably placed in such a position as to be subsequently surmounted by the living module 10.

[0033] The latter is suitable for the purification and the autonomous disposal of water and comprises a casing made of polymeric material, e.g. thermoplastic (preferably one of polypropylene, PE, PVC and/or similar), divided inside by a plurality of interspaces, e.g. 4, where pipings - oxygen diffuser - feed - filters - mesh cage are housed, which promote the growth of bacterial flora and regulate the forced passage of wastewater and the purification thereof.

[0034] The tank 20 is preferably floating.

[0035] During the realisation of the hull 5, a plurality of brackets 62 for fixing the interconnection frame 15 are provided.

[0036] They may be fixed directly to the floating elements 40, for example in the same manner as the connectors 45, or they may be fixed to the latter. It is not excluded that the brackets 62 themselves also have the function of connectors between the floating elements (40)

[0037] The example in Figure 3 shows the first case and Figure 6 shows an example of the brackets 62 used.

[0038] They comprise a rod 64 at the ends of which there are respectively an element for the connection 66 to a flange 42, and a flange 68 for fixing to the frame 15.

[0039] The connection element 66, for example, can be clamped to the flange 42 in the manner of a bolt passing through the slot 44, while the flange 68 is shaped to

join the profiled bars (70) of the interconnection frame, it is for example a U-flange.

[0040] As shown in Figure 7, on the already floating hull 5, the interconnection frame 15 is made, for example by joining together and to the fixing brackets 60, a series of profiled bars 70, which are arranged, for example, at right angles to each other to form longitudinal members and crosspieces.

[0041] The lattice of bars 70 preferably conforms to the upper ends of the floating elements 40 so as to trap them together in a single rigid structure.

[0042] The interconnection frame 15 is preferably made of metal, preferably aluminium EN 573-3.

[0043] The bars 70 in general are preferably rectangular section profiles, for example of the type EN AW 6060 (ALMGS1) dimensions mm. 80 x mm. 80 - thickness mm. 4, heat-treated.

[0044] The frame 15 in general preferably surmounts the entire upper surface of the hull. In this way, its rigidity characteristic ensures the support for sustaining the living module 10, and the distribution of the weight of the latter over the entire surface of the hull, guaranteeing the correct floating stability.

[0045] Figure 8 shows the installation of the tank 20 in the hull, sustained by the frame 15.

[0046] In the passage of Figure 9, the hull 5 and the frame 15 are entirely made and joined together, and are in a floating condition on the water basin 80.

[0047] On the mainland next to the basin 80 there is provided a prefabricated living module 10, for example a standard living module suitable for installation on the mainland, therefore preferably of a known type, so as to simplify the production operations. The living module is, for example, a prefabricated mobile home, built and tested in a factory on its own permanent base frame 90 before being transported to the basin 80. The base frame 90 is visible on the underside of the living module 10.

[0048] The interconnection frame (15) is built in a shape compatible with the union with the permanent base frame (90) of the living module.

[0049] Such living modules are generally provided with their own wheels 12, e.g. joined to the permanent frame 90, for handling or transport on the road in a towed mode. The so-called "MAXICARAVAN" can be used in particularly preferred practical solutions.

[0050] The living module 10 is deprived of the wheels 12 and fixed above the frame 15, for example by means of appropriate flanges 14 (Figure 10) which are locked to the bars 70.

[0051] The floating home can be finished by adding accessory elements to the "deck".

[0052] These may include, by way of not limiting example:

- a plurality of stanchions (metal vertical fixed or removable rods) preferably cm. 100 high which, joined by ropes (lifelines) or by horizontal aluminium rods, form the guardrail (railing 30) to protect the open

deck (portion of hull 6 not covered by the living unit);

- a walking surface 25 placed to even out the surface of the deck.

[0053] Thanks to the technical construction solution proposed by the present industrial invention, a prefabricated mobile home, following the removal of the wheels, is easily hooked with extreme rapidity to the structural frame of the hull so as to complete the production cycle and obtain a "Floating Mobile home" as a finished product.

[0054] The ease with which the hull is manufactured and mounted makes it possible to realise floating homes of various sizes, adaptable to the available water spaces and above all to the different sizes of the mobile homes existing on the market for installation on the mainland.

[0055] The present industrial invention facilitates the development of marketing and internationalisation of the product.

GENERAL INTERPRETATION OF TERMS

[0056] In understanding the object of the present invention, the term "comprising" and its derivatives, as used herein, are intended as open-ended terms that specify the presence of declared characteristics, elements, components, groups, integers and/or steps, but do not exclude the presence of other undeclared characteristics, elements, components, groups, integers and/or steps. The above also applies to words, which have similar meanings, such as the terms "comprised", "have" and their derivatives. Furthermore, the terms "part", "section", "portion", "member" or "element" when used in the singular can have the double meaning of a single part or a plurality of parts. As used herein to describe the above executive embodiment(s), the following directional terms "forward", "backward", "above", "under", "vertical", "horizontal", "below" and "transverse", as well as any other similar directional term, refers to the embodiment described in the operating position. Finally, terms of degree, such as "substantially", "about" and "approximately", as used herein, are intended as a reasonable amount of deviation of the modified term such that the final result is not significantly changed.

[0057] While only selected embodiments have been chosen to illustrate the present invention, it will be apparent from this description to those skilled in the art that various modifications and variations can be made without departing from the scope of the invention as defined in the appended claims. For example, the size, shape, position or orientation of the various components can be modified as needed and/or desired. The components shown directly connected or in contact with each other can have intermediate structures arranged between them. The functions of one element can be performed by two and vice versa. The structures and functions of one embodiment can be adopted in another embodiment. All the advantages of a particular embodiment do not

necessarily have to be present at the same time. Any characteristic that is original compared to the prior art, alone or in combination with other characteristics, should also be considered a separate description of further inventions by the applicant, including the structural and/or functional concepts embodied by such characteristics. Therefore, the foregoing descriptions of the embodiments according to the present invention are provided for illustrative purposes only and not for the purpose of limiting the invention as defined by the appended claims and the equivalents thereof.

Claims

1. Process for realising a floating home comprising the following steps:

- placing a predetermined number of floating elements (40) floating on a water basin (80) and joining them together to form a floating hull (5);
- building a rigid frame (15) bound to the floating hull (5), hereinafter referred to as an interconnection frame;
- making a prefabricated living module (10) in a plant remote from the water basin (80), transporting it to said basin (80), and joining it to said interconnection frame (15) when it is bound to the floating hull.

2. Process according to claim 1, **characterized in that** the living module (10) is prefabricated in said plant on its own permanent base frame (90), wherein said interconnection frame (15) is built with a shape compatible with the union with the permanent base frame (90) of the living module, and wherein the two frames are joined together when the hull (5) with the interconnection frame (15) is in a floating condition in said basin (80).

3. Process according to claim 1 or 2, **characterized in that** the living module (10) is prefabricated with transport wheels (12), wherein said wheels are removed before the union with the interconnection frame.

4. Process according to claim 1 or 2, **characterized in that** the hull (5) comprises a series of connectors (45) arranged to join together the floating elements; In particular, each floating element (40) comprises a plurality of flanges (42) for joining respective neighbouring floating elements, wherein at least two flanges (42) of the same floating element (40) are placed at vertical heights different from each other (H1, H2) so as to vertically overlap a corresponding flange of an adjacent floating element, each flange (42) is provided with a through opening (44), wherein the hull building step comprises the step of placing two float-

ing elements (40) side by side, aligning the openings (44) of respective flanges (42) and inserting one of said connectors (45) therein.

5. Process according to claim 4, **characterized in that** said aligned openings (44) have a shape other than circular, and wherein said connectors (45) have an anti-slip portion shaped in such a way that in a first orientation they are able to pass through said openings, and in a second orientation they are retained in the openings, in this way the hull building step (5) comprises the steps of placing the first two floating elements (40) floating on the water basin (80), joining the floating elements already floating by means of at least one connector (45) inserted in said openings (44) with said first orientation, modifying the orientation of the connectors in order to pass to said retained orientation, by means of the same process other floating elements (40) are added and fixed gradually until a floating surface of the desired size and shape is reached.

6. Process according to claim 4 or 5, **characterized in that** during the construction of the hull a plurality of brackets (62) for fixing the interconnection frame (15) are provided, wherein they are fixed to the floating elements (40), for example to their flanges (42), or to the connectors (45); the step of building the interconnection frame (15) comprises the step of joining to the brackets (62) and between them a plurality of profiled bars (70) so as to create a lattice.

7. Process according to claim 6, **characterized in that** the lattice of bars (70) is built by conforming to the upper ends of the floating elements (40) so as to trap them together in a rigid structure.

8. Process according to any one of the preceding claims, **characterized in that** the steps of building the hull (5) and the interconnection frame (15) provide for the realisation of a floating area greater than the area necessary to support the prefabricated living module, so as to realise a portion of walkable bridge outside the prefabricated living module.

9. Process according to any one of the preceding claims, where the step of building the hull comprises the step of arranging the floating elements so as to surround at least one cavity (60) communicating with the surface of the water of the water basin (80) and inserting into said cavity a tank (20) for the purification and disposal of wastewater before placing said living module on the hull, wherein said living module is placed above said tank.

10. Floating home with the building characteristics described in any one of the preceding claims.

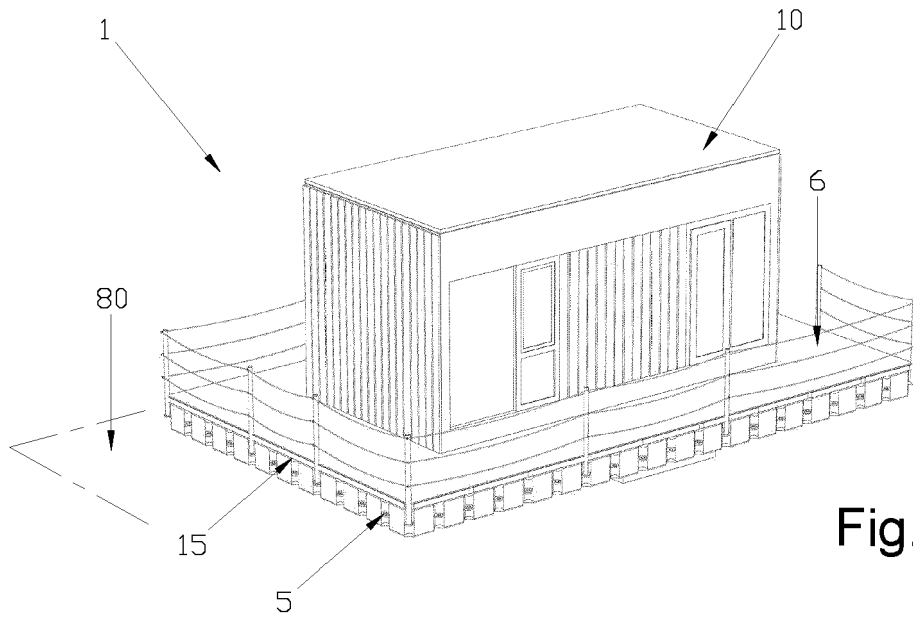


Fig. 1

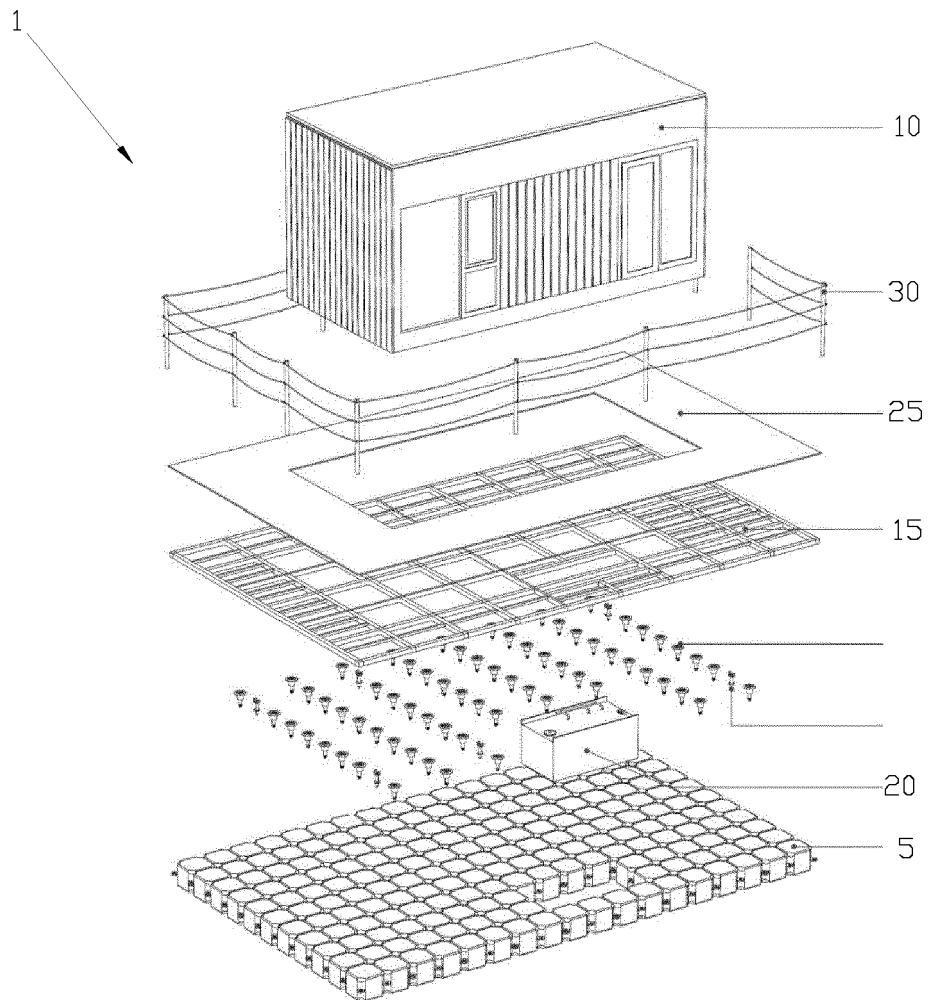


Fig. 2

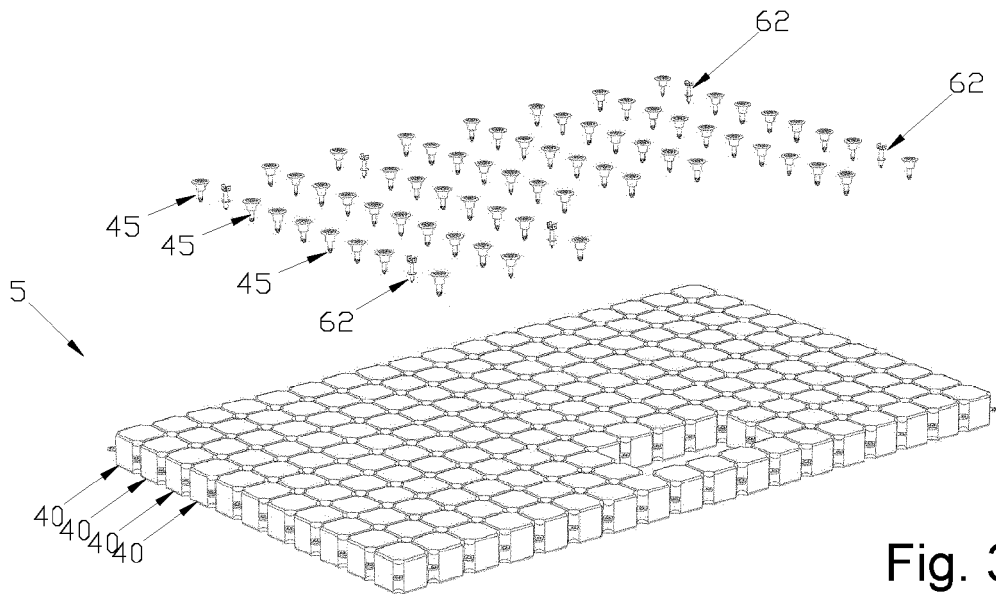


Fig. 3

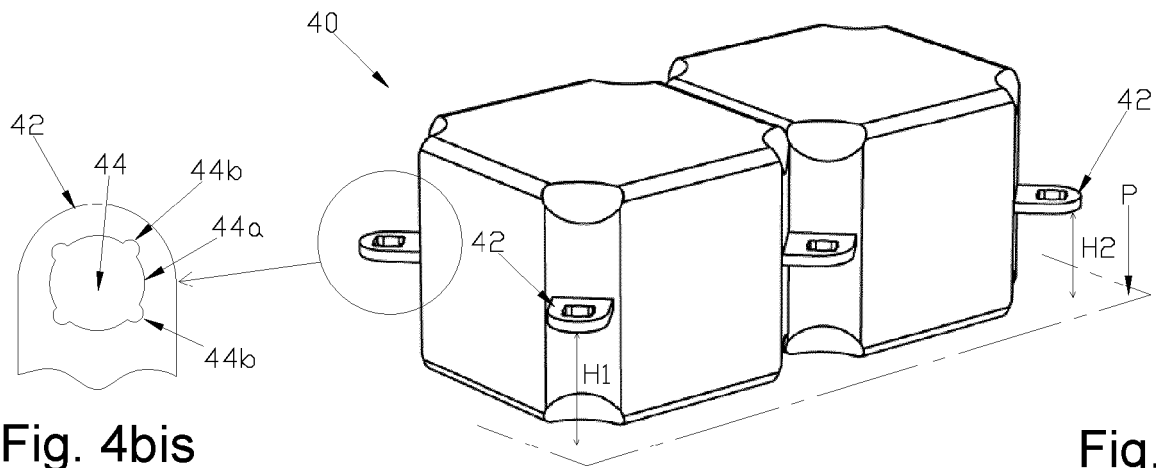


Fig. 4bis

Fig. 4

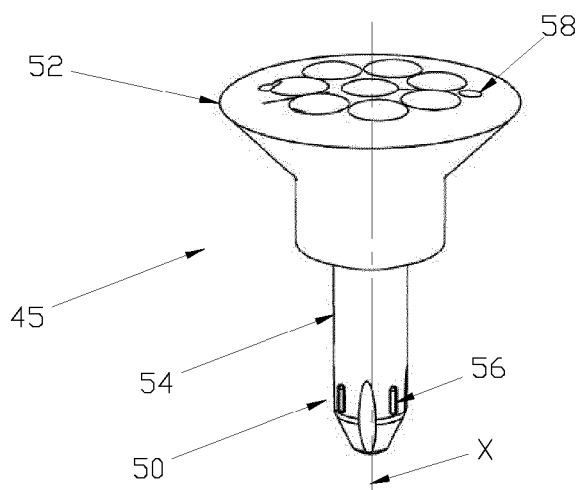


Fig. 5

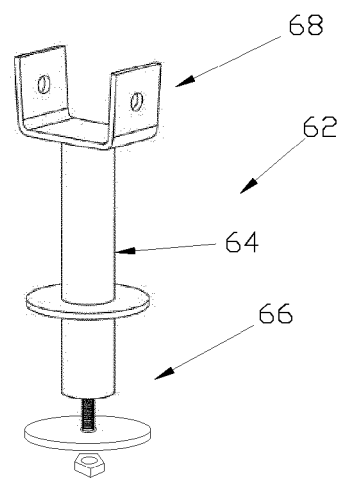


Fig. 6

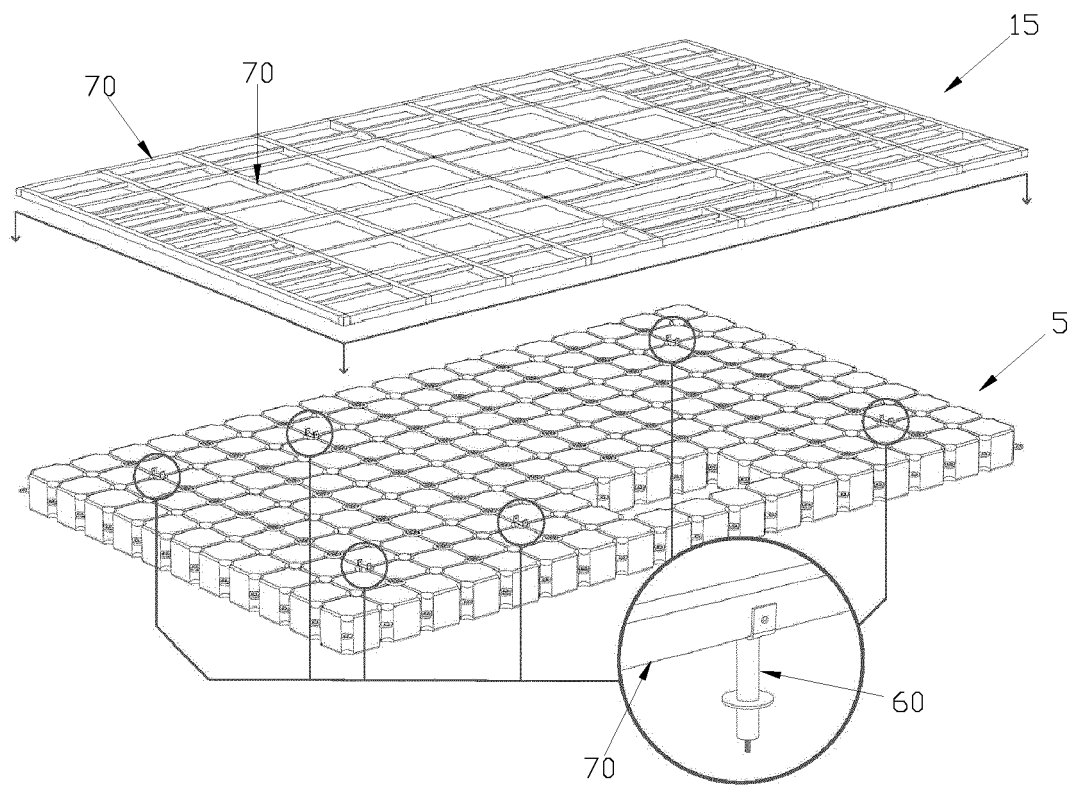


Fig. 7

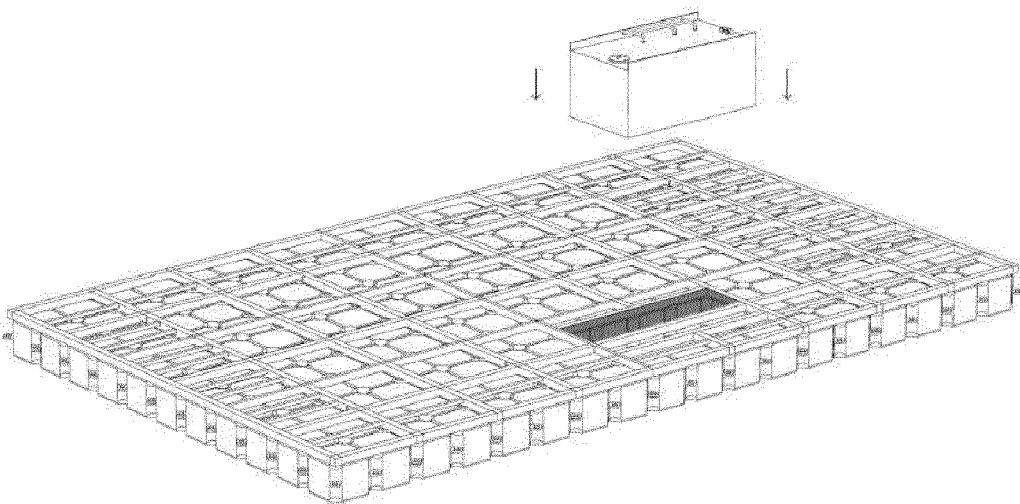


Fig. 8

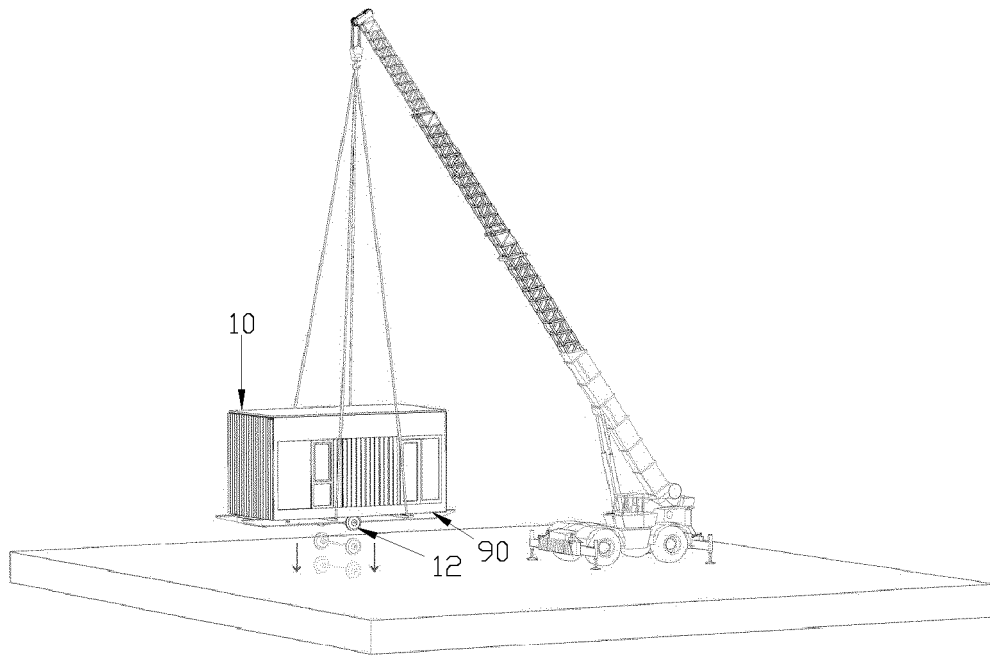


Fig. 9

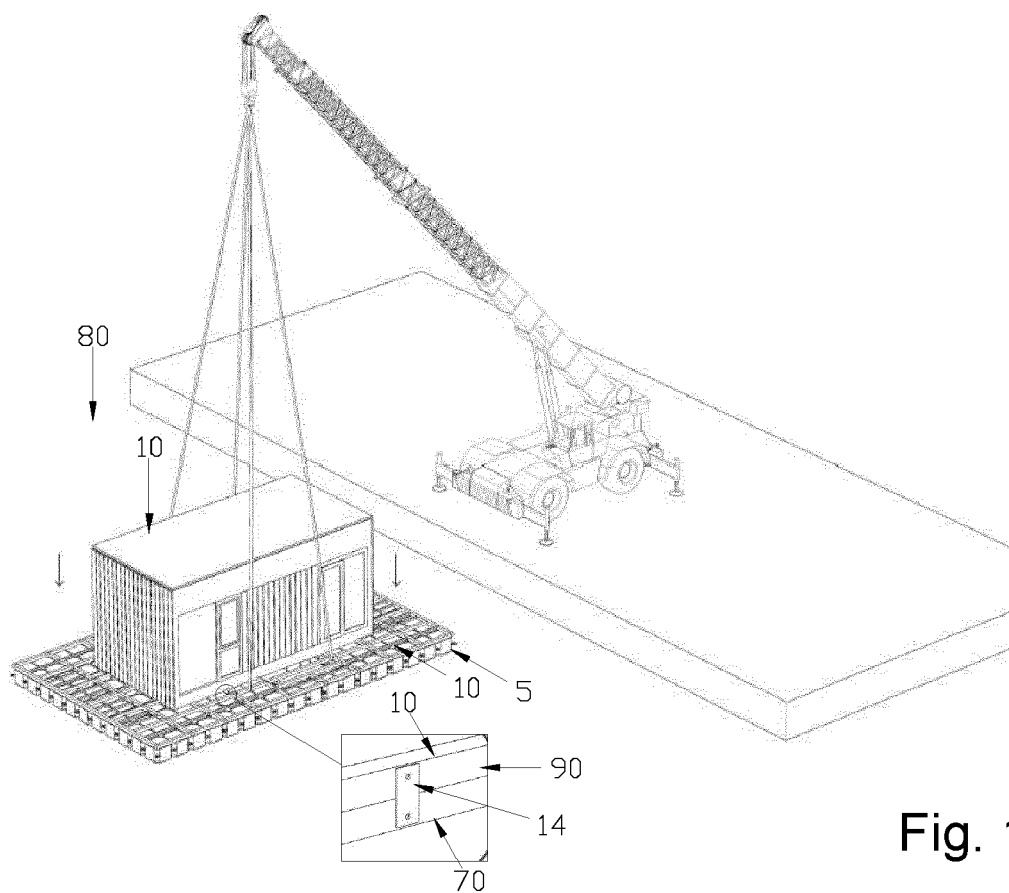


Fig. 10



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Place of search The Hague		Date of completion of the search 22 February 2022	Examiner van Rooij, Michael
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EUROPEAN SEARCH REPORT

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