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Berce et al.

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[54] **THREE - DIMENSIONAL MODULAR TRANSPORTABLE STRUCTURES**

[76] Inventors: **Jacques Berce,** 65, rue Michelet, Montreuil; **Enrique Ciriani,** 4, rue de Tournoy, Paris, both of France

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[30] **Foreign Application Priority Data**

Mar. 2, 1970 France 7007446

[52] **U.S. Cl.** ..... **52/79,** 52/236, 52/143, 206/46 H

[51] **Int. Cl.** **E04b 1/348**

[58] **Field of Search** ..... 52/79, 76, 236, 81; 220/1.5; 206/46 H

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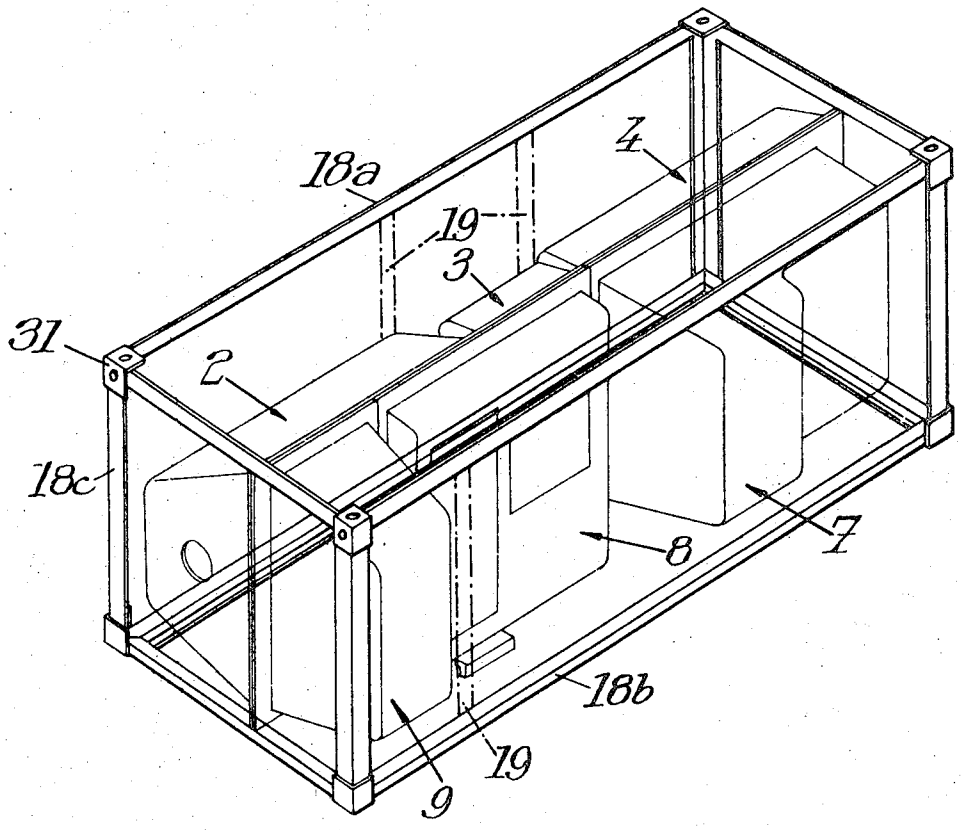
Primary Examiner—Alfred C. Perham
Assistant Examiner—H. E. Raduazo
Attorney, Agent, or Firm—Fleit, Gipple & Jacobson

[57] **ABSTRACT**

The structure comprises at least one standardized, rigid, paralellopipedic frame-work, and interchangeable differentiated standardized modular blocks, for constructing a dwelling. The operational elements characteristic of the dwelling are incorporated as fixtures in hulls of shapes respectively suitable for these elements. The edges of each block define a rectangle enabling fixing on the frame-work. The height of the rectangle is about equal to that of the vertical faces of the frame-work and its width is a simple ratio of the longitudinal dimension of the frame-work. The entire volume of each hull is contained within a parallelopiped bounded by the rectangle and a third dimension less than the transverse horizontal dimension of the frame-work. The frame-work is thus adapted to serve as a container for the modular blocks on transportation of the structures. The frame-work has the standard dimensions of a transcontainer.

9 Claims, 16 Drawing Figures



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SHEET 1 OF 4

Fig. 1

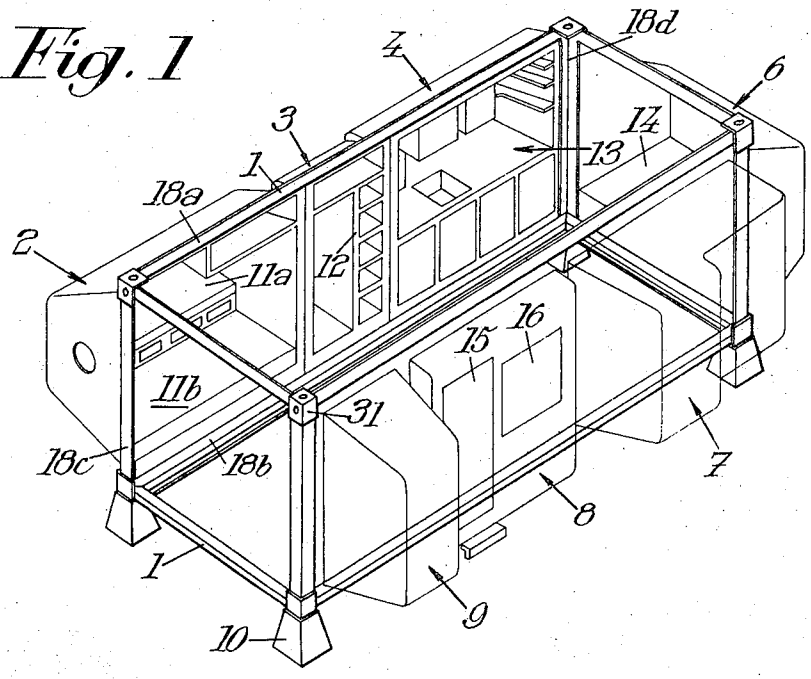
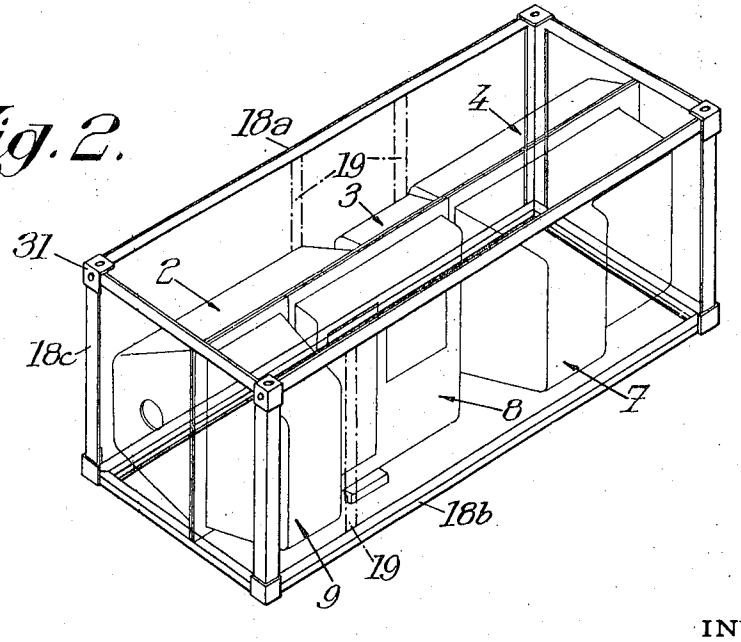


Fig. 2.



INVENTORS

Jacques Berce
Enrique Ciriani

BY Fleit, Gipple & Jacobson ATTORNEYS

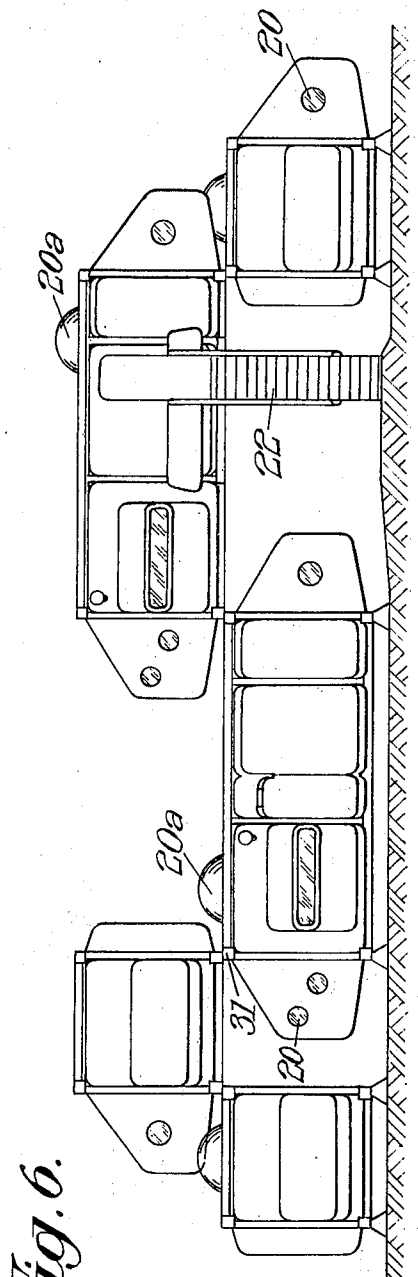


Fig. 6.

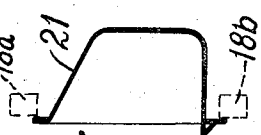


Fig. 7a.

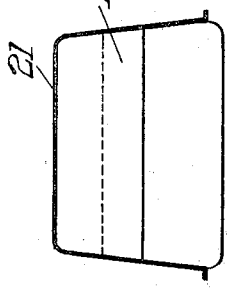


Fig. 5.

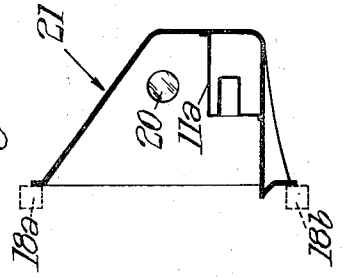


Fig. 4.

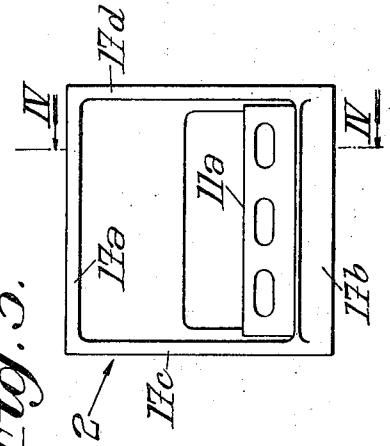


Fig. 3.

Fig. 7.

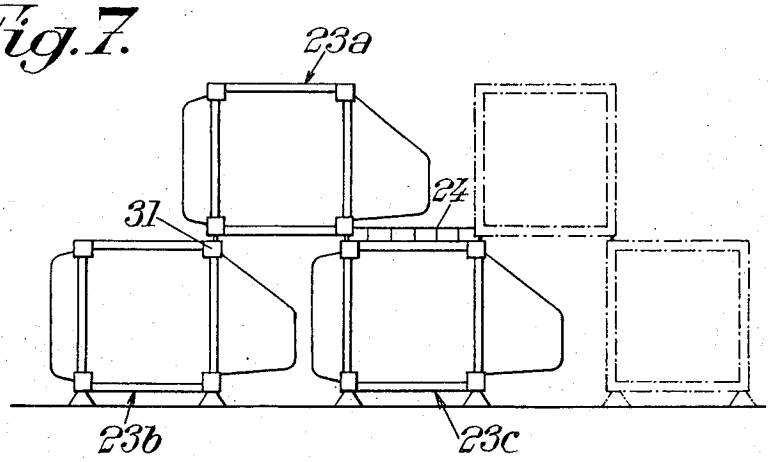


Fig. 8.

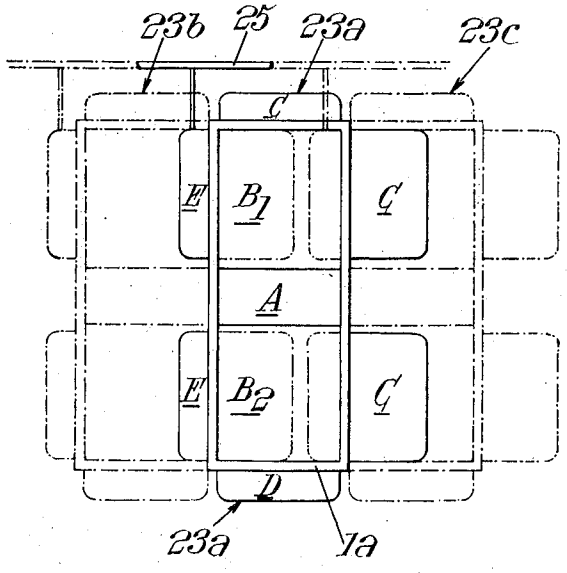


Fig. 9a.

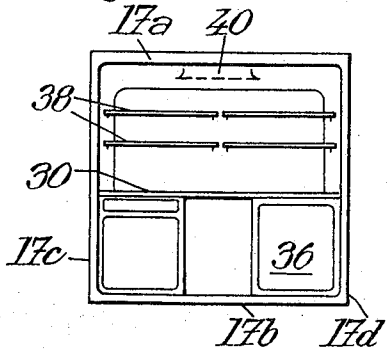


Fig. 9b.

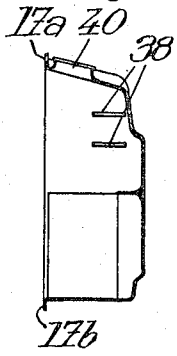


Fig. 9c.

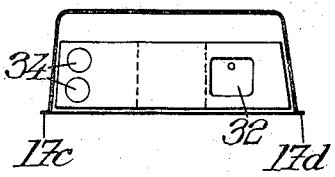


Fig. 10a.

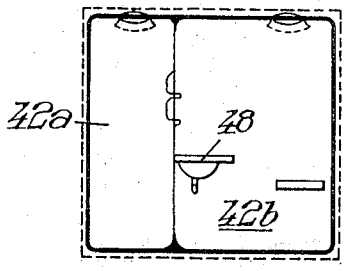


Fig. 10b.

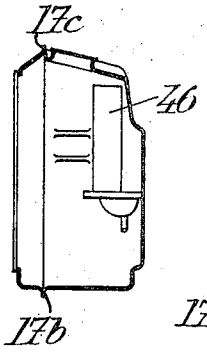


Fig. 10c.

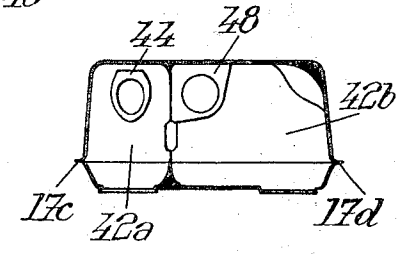
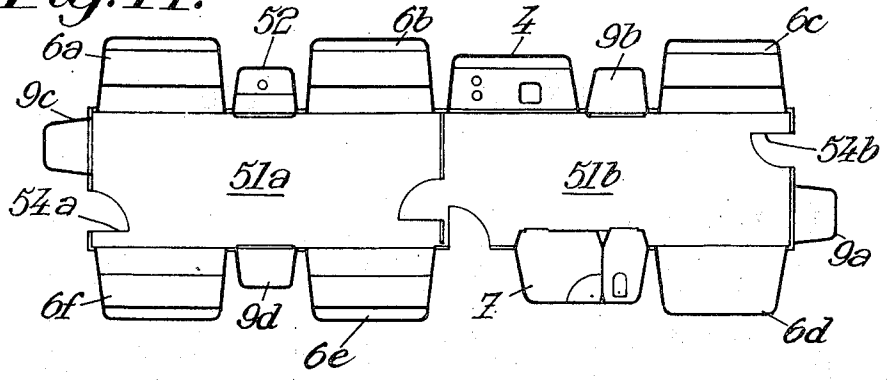


Fig. 11.



THREE - DIMENSIONAL MODULAR TRANSPORTABLE STRUCTURES

The invention relates to industrially produced transportable structures and relates particularly, because it is in this case that its application seems to offer the most advantage, but not exclusively, to those of these structures which are transportable by means of the usual freight means, especially those of the type which are used to for the transportation of standardized containers known under the name of "transcontainers."

It has already been proposed to produce transportable dwellings in transcontainer frames of generally parallelopipedic shape, which have, for example, lengths equal to 3,048 meters, 6,096 meters, 9,144 meters or 12,192 meters, but of transverse dimensions of 2,438 meters and 2,590 meters, by envelopping them with panels, pierced by openings adapted to receive doors and windows. However the necessary housing, in these dwellings, relatively narrow, of different "functional elements" of the dwelling, constituted for example by beds, the sanitation block, the kitchen apparatus and elements, the cupboards, etc. (and which must also be transported), involves a considerable bulk of the available internal space in these dwellings and thereby rapidly reduces the convenience.

Dwellings are also known whose internal dimensions are in principle more favorable, these dwellings either include elements adapted to undergo relative displacements of the telescopic type, or being partially dismantable or "foldable," the assembly of the elements of the dwelling being then adapted to occupy a reduced volume more suitable for their transportation.

All these dwellings are generally of a fairly complicated structure and are therefore expensive. In addition, they do not lend themselves generally to the production of habitable assemblies of much larger dimensions. The establishment of such assemblies requires, in general, the realization on site of a considerable part of the structure or of the assembly, especially of skeletons or frameworks often relatively complex.

The industrial manufacture of elements, which will only constitute therefore at the most a part of the dwellings concerned, and their transportation on site where they will be assembled to the above-said skeletons or frames, has hardly been developped up to the present, on account of the cost of such structures remaining nevertheless too high.

Finally, the necessity of a diversification of dwellings, according to the verious needs of the users, has not been realizable without it at the same time having been necessary to provide for the manufacture of a very large number of elements, which obviously again conflicts with the efficient industrial production of transportable housing-elements.

It is an object of the invention to overcome these drawbacks, more particularly to provide complete dwellings, capable of a great diversification, including the skeletons and the essential functional elements of these dwellings, from a reduced number of types of elements, all easily transportable and lending themselves particularly well to complete industrial production.

The structure according to the invention, of the modular type, is characterizd by the combination:

— of at least one standardized self-stiffening rigid parallelopipedic frame-work,

— varied modular blocks, interchangable, also standardized, comprising respectively functional elements characteristic of the dwelling incorporated as permanently fixed hulls of shapes respectively suitable for these functional elements and of which the edges define a rectangle, enabling their fixing on the said framework, and which the height is substantially equal to that of the vertical faces of the framework and the width in simple ratio with the longitudinal dimensions of the frame-work,

— the whole of the volume of each of these hulls being contained inside a parallelopiped limited by the above said rectangle and a third dimension less than the transverse horizontal dimension of the frame-work,

— the frame-work thus being adapted to serve as container for these modular blocks on transportation of these structural elements.

The frame-works are hence, in the structures according to the invention, adapted to assume two distinct functions, that of containing other elements of the dwelling, during their transportation, especially from the factory where they have been manufactured at the place where the structures are assembled, and those of the structures or frame-works of these dwellings and of the support of functional elements, when these dwellings are on site.

In a preferred embodiment of the invention, the frameworks have dimensions characteristic of the structures of standardized "transcontainers" which are conveniently introduced into international transportation and handling systems.

The diversification of the arrangements of the dwelling units (constituted each by a parallelopipedic frame-work, of standardized dimensions, and of modules which are associated with it) results from the easy interchangeability of the varied modular blocks — hereafter more simply called "modules" for convenience of language — around a same framework.

By juxtaposition or stacking of the frame-works — the modules being housed in the free spaces between the frame-works — it is possible to produce dwellings of variable sizes, adapted to be developed in three directions of space. It will be noted, in particular, that standardized constructions of the type concerned have a rigidity and a solidity sufficient to enable the stacking, especially by means of corner parts, also standardized, of several of these frameworks on one another to form multi-storey dwellings.

Lastly each dwelling unit is characterized by a considerable totally free internal space, substantially equal to the volume of the frame-work, the various modules attached to these frame-works, around the same free space, each filling specific functions of the dwelling.

Other characteristics of the invention will also be apparent in the course of the description which follows, with reference to the accompanying drawings, which description and drawings are, of course, given only by way of illustrative but non-limiting example.

In the drawings,

FIG. 1 shows in perspective and, for certain parts, in diagrammatic manner, the essential elements of a preferred embodiment of a dwelling constructed according to the invention;

FIG. 2 shows also, in perspective, various parts of the same dwelling in relative arrangements which enable particularly their transportation;

FIG. 3 is a front view of one of the modules adapted to be associated with the frame-work of the dwelling of FIGS. 1 and 2;

FIG. 4 is a section along the line IV—IV of FIG. 3;

FIG. 4*a*, similar to FIG. 4, is a sectional view of a module provided with flanges adapted to be connected to the inside of the framework;

FIG. 5 is a view from above of the module of FIG. 3;

FIG. 6 shows an assembly bringing into use by stacking or juxtaposition, several elements of dwellings of the type shown in FIGS. 1 and 2;

FIG. 7 shows diagrammatically, in elevation, an assembly of dwelling elements using a different type of stacking;

FIG. 8 shows, view from above, certain dwelling elements of FIG. 7 and the manner in which they are associated with those of a different level;

FIG. 9*a*, 9*b*, and 9*c*, on one hand, and FIGS. 10*a*, 10*b* and 10*c*, on the other hand, constitute respectively front and diagrammatic sectional views in planes perpendicular between themselves, of two preferred embodiments of respectively distinct modules, between them and that shown in FIGS. 3, 4 and 5; and lastly,

FIG. 11 is a diagrammatic planned view, of two juxtaposed dwelling units.

In order, for example, to produce an easily transportable dwelling unit, according to a preferred embodiment of the invention, a parallelopipedic framework 1 rigid, or self-stiffening of a single part, and modules generally designated by 2, 3, 4, 6, 7, 8 and 9, are assembled around the framework and fixed on the latter so that their inner volumes, which contain preferably all the functional elements of the dwelling, incorporated in hulls, are distributed around the inner space, held substantially free, of the framework 1. The inner part and the upper part of the frame of the framework will be provided with a floor and a ceiling (not shown), the lateral parts of the framework or of the ends (such as the one between them in FIG. 1) which are not equipped with a module then being able to receive the closing panels. The assembly will be able to rest on the ground by means of concrete studs 10 or metallic legs connected to the lower part of the framework, etc.

Preferably, the frame-work is constituted by a structure having standardized dimensional characteristics of "transcontainers." For example, they correspond to the well known ISO standards or, for example, AFNOR NF-H 90,002. The frameworks or parallelopipedic structures which correspond to these standards, have, especially, the dimensions which have been mentioned above.

The modules are differentiated, interchangeable and also standardized. They comprise respectively the characteristic functional elements of the dwelling incorporated as permanently fixed hulls of shapes respectively suitable for these functional elements. For example with the hull of the module 2 are incorporated two couchettes 11*a*, 11*b*; with the hull of the module 3 a storage cupboard 12; with the hull of module 4 a "kitchenette" designated generally as 13; with the hull of module 6 a double bed 14; with the hull of module 7 a sanitation block (not shown) ; with the hull of module 8 a door 15 and a window 16; with the hull of module 9 a second cupboard, etc. It will be obvious that the hulls of other modules can also be pierced by windows, as shown for example at 20 for the hull of module 2 (FIGS. 1 and 3) or comprise lighting domes 20*a* in their upper parts (FIG. 6), etc.

There is shown by way of example, in FIGS. 3, 4, and 5, on one hand, 9*a*, 9*b* and 9*c*, on the other, and 10*a*, 10*b* and 10*c*, also on the other hand, three three-dimensional modules. The module of FIGS. 3, 4 and 5 comprises, as has been indicated above, two couchettes 11*a*, 11*b*.

The module of FIGS. 9*a*, 9*b* and 9*c* constitutes "a kitchen module" comprising, for example, a workbench of stainless steel 30 with a sink incorporated 32, two electric hot-plates 34, a refrigerator 36, racks 38 and, in its upper part, a vent hatch 40. With this module, there can of course be also incorporated, as permanently fixed, and at the industrial manufacturing stage, any other elements not shown such as water-heater, lights, blinds, etc.

The module of FIGS. 10*a*, 10*b*, and 10*c* constitutes a "sanitation module" comprising, for example, two distinct compartments 42*a*, 42*b*, the compartment 42*a* containing a WC bowl 44, and the compartment 42*b* constituting a shower-wash basin cabinet, with an electric water heater 46, wash basin 48 and any other elements necessary for convenience of this shower-wash basin compartment.

The hulls of these modules have different shapes, respectively suitable for the nature of the functional elements which are integrated with them. All these hulls comprise edges 17*a*, 17*b*, 17*c*, 17*d* (FIG. 3) defining a rectangle and enabling their fixing on the above said frame-work, the height of this rectangle being equal to that of the vertical faces of the framework and of which the width is in simple ratio with the longitudinal dimensions and, if necessary, transversal dimensions of the frame-work, the whole of the volume of each of these hulls being contained inside a parallelopiped bounded by the above said rectangle and a third dimension less than the transverse horizontal dimension of the frame-work. For example, the sections through each of the hull elements in planes parallel to that which contains these edges 17*a*, 17*b*, 17*c*, 17*d* remain equal or are decreasing with the distance from the plane of the aforesaid edges; the depth of these hulls being less than the horizontal transverse dimension of the frame-work.

The edges 17*a*, 17*b*, 17*c*, 17*d* (FIG. 3) of the above-said hulls are brought to be fixed directly, preferably by seals (not shown), to effect fluidtightness of the hull, by bolting or any other suitable fixing means, on the upper 18*a* and lower 18*b* longitudinal members of the frame-work and, according to its position, on the posts 18*c* or 18*d* of the framework, or again, on sectional members 19 (diagrammatically shown in mixed lines in FIG. 2), especially of OMEGA sectional irons, themselves fixed in removable manner or not on the frame-work.

Each of the hulls having dimensions standardized, in a simple ratio, in the direction of the lengths of the frame-work, with the dimensions of the latter, there results an interchangeability of the relative positions of the hulls of the framework, whence the possibility of providing a great variety of internal arrangements of the dwellings obtained, from a limited number of modules. For example, the modules have width equal to 2, 4 or 8 units of length, associated, in easily interchangeable positions, with the framework having (in the direction of the longitudinal members 18*a*, 18*b*) longitudinal dimensions corresponding to 10, 20, 30 or 40 units of length.

The hulls can be constituted of any materials enabling the outer walls 21 (FIG. 4 and 5) of these hulls to ensure protection against bad weather.

These hulls are advantageously constituted of plastics material. For example, they are constituted of a polyester sandwich reinforced with glass fibre and rigid polyurethane foam. They can, in particular, be produced by molding. Certain of the functional elements, such as for example cupboards or certain kitchen elements, can be directly molded with the corresponding hulls.

Taking the foregoing to account, it is possible, when the modules are dismounted, to locate them in the inner volume bounded by the longitudinal members and the posts of the framework, as shown for example in FIG. 2. In this case, the framework is adapted to serve as container for the modules during the transportation of the whole of the construction elements. Although it appears in FIG. 4 that the modules are fixed at the outside of the frame-work, this fixing could also be effected on the inner surfaces of the longitudinal members of the frame-work (FIG. 4*a*), especially when, as also shown in the drawings, the above said edges 17*a*, 17*b*, 17*c*, 17*d* of the hulls form projections with respect to their outer surfaces 21 over an extent at least equal to the corresponding transverse dimensions of the longitudinal members of the frame-work. Under these conditions, it is particularly easy to move the modules from one position inside the framework (transportation position) to the outside, so that the major portion of the hulls of the modules concerned will emerge from the inner space of the frame-work, until the edges 17*a*, 17*b*, 17*c*, 17d projecting from these hulls come into abutment on the inner surfaces of the above-indicated longitudinal members, on which they can then be fixed.

During transportation, the modules will be retainable inside the frame-work by any suitable means, by bolting, blocking, etc.

There are thus obtained complete dwellings, produced from standardized parallelopipedic frame-works and with a limited number of types of modules, all these elements being integrally producable in industrial manner. The number of types of modules will naturally correspond to the number of types of functional elements normally used in the dwellings. It is rapidly apparent that the number of types of modules is quickly limited. It will be, for example, possible to produce very diversified dwellings and corresponding to the most varied needs with the following several types of modules:

- kitchen module
- sanitation module
- cupboard module
- module containing a double bed
- module containing children's beds
- module in form of an alcove containing a single bed
- module containing an office and racks (office module)
- meal module (with table and seats incorporated in the corresponding hull)
- lastly, several modules with doors and windows.

Given that whatever the relative arrangements selected for the majority of the modules around th framework may be, it always results that the majority of functional elements are located essentially outside the inner volume of the frame-work and it is noted that almost the whole of the latter constitutes a free and habitable dwelling space.

These dwelling elements can be used either singly, or in an assembly. It is in fact possible by suitable choice of the modules which will be associated with the same framework, to produce around the latter, an entirely complete dwelling.

The construction of these dwelling elements lends itself however very easily to the production of larger assemblies, by juxtaposition or stacking of these elements on one another.

The production of these stacks and juxtapositions is particularly easy if the frame-works described above are provided with the corner parts 31 which, at the same time as they permit the easy handling and transportation of these structures, facilitate anchoring at the fixing studs 10, stacking, juxtaposition and fixing of the various dwelling elements. There will again be advantageously recourse to standardized corner parts of the type used for the transportation and the handling of transcontainers, for example corner parts corresponding to the ISO or AFNOR standards, such as French standard H 90,005.

There are shown in FIG. 11 two juxtaposed dwelling units, by way of example. They comprise two frame-works 51*a*, 51*b* juxtaposed end to end with which have been associated respectively: six bed-modules 6*a*, 6*b*, 6*c*, 6*d*, 6*e*, 6*f*, a sanitation-module 7, a kitchen-module 4, four cupboard-modules 9*a*, 9*b*, 9*c*, 9*d*, a washbasin module 52, doors 54*a*, 54*b* being provided in the opposite free ends of the frame-works.

It is clear that, due to the fact of the simple proportions which exist between the dimensions of these modules and the longitudinal dimensions of the frameworks 51*a*, 51*b*, the relative arrangements of these modules could subsequently be modified. Any other types of juxtaposition can be envisaged.

There is shown in diagrammatic manner in FIG. 6 another assembly of this type. These assemblies can be particularly advantageous in the case where it is desired, for example, to produce a holiday village or even hotels. The juxtapositions and stacks must of course be effected so as to allow between the different frame-works free spaces which will then be occupied by the hulls or modules projecting outwardly.

Access to the upper dwelling elements will be possible by means of outside stairways 22 or, at the same story, by means of corridors enabling passage from one dwelling unit to another, these corridors being if necessary provided on the ceilings of the dwelling units of the level below.

In other applications, for example in those of hostelry, it will advantageously be possible to have recourse to more compact assemblies, such as that shown diagrammatically and partially, respectively in elevation and in plan, in FIGS. 7 to 8.

One of these dwelling elements 23*a* of this assembly, formed inside and around an individual framework, is shown in full lines in FIG. 8. It includes two rooms separated between them, in the middle of the corresponding framework 1*a*, by a transverse corridor element A. Each of these rooms is bounded by internal space B_1 or B_2 left free inside the frame-work, on both sides of the corridor element B, and by three hull elements C, D, E. The hull C contains, for example, a double bed. A window and a cupboard (not shown) are formed in the hull D associated with the corresponding end of the frame-

work. A sanitation group lastly is integrated with the hull E.

The sum of the transverse dimensions of the hulls C and E of the same room which are facing is at least equal, preferably slightly less, than the width of the framework.

If the various dwelling elements are stacked in overlapping manner, as shown in FIG. 7, the spaces external to the frameworks are then filled almost entirely or partially by projecting hulls C and E associated with the corresponding adjacent frame-works. FIG. 8 enables the relative positions of one of these frame-works and of the hulls which are associated with it (shown in full lines in FIG. 8) to be appreciated, with regard to the frameworks and corresponding hulls (or of the dwelling elements 23*b*, 23*c*) of the level below or above (shown in mixed lines).

This arrangement is particularly advantageous in that additionally the corridor elements A of the frameworks occurring at the same level, are in extension of one another. They can easily be connected to one another by corridor elements 24, or quite simply, gratings positioned on the ceilings of the dwelling elements of the level below. Access to these corridors can be effected by means of external staircases (not shown), provided for example at the ends of the assemblies thus obtained. The relative staggered arrangements of the individual dwelling elements of the assembly also render particularly simple the connections, for example, of the sanitation systems associated with each of the rooms by common water supply pipes or common waste pipes. These pipes (shown diagrammatically at 25 in FIG. 8) will be constructed outside the assembly. They could if necessary contribute to the outer decoration of the assembly.

In all cases, whether the dwelling elements which have just been described are used singly or in assemblies, their connection to ground supply installations for water, gas, electricity, etc., could be effected in a manner already known in itself for other types of housing.

There are hence obtained constructions which have numerous advantages of which the principal ones will be recall below.

These dwellings can be mounted and, if necessary, dismounted extremely rapidly, due to the fact of numerous relatively small three-dimensional elements, given that the other different elements of function are integrated therein from the stage of the factory manufacture. This rapidity of assembly is a very particular advantage in the case of the building of hotels, of vacation villages or any other equivalent installation.

Each of the dwelling elements is characterized by a particularly favorable ratio of rotal available space inside the dwelling element (free space within the framework to which are added the inner spaces of each of the hulls), to the compactness of the same dwelling element, when it is dismounted, and the hulls or modules located inside the frame-work, especially in view of their transportation.

It is possible with a limited number of differentiated modules to produce, on one hand, dwelling elements, on the other hand, assemblies constituted from several of these elements, characterized by a considerable variety of their internal arrangements and their external shapes.

It will also be noted, especially as regards the individual dwellings constituted from a single framework, that it is possible to only complete gradually the installation of this dwelling. In fact, it is possible for the purchaser of such a dwelling, to install only, initially, a reduced number of modules around the base framework, the existing positions of the framework being then closed by flat panels. The purchaser will then be able to complete his installation later according to his needs and means, by the acquisition of supplementary modules which will easily be substituted for the panels concerned.

The uses and applications of the structures thus obtained are multiple. A certain number among them will be enumerated below by way of example:

a. principal and secondary dwellings, individual or collective: ease of assembly and disassembly, as well as their transportation, confers on them a mobility at little expense which has never hitherto be attained;

b. lake houses, dwellings known under the expression "house-boats;"

c. vacation villages;

d. social, cultural installations, such as vacation colonies, fresh-air centers, snow and sea classes, class rooms;

e. showrooms;

f. restaurants, bars, clubs, cantines;

g. any retail trades;

h. collective sanitation and cloak-rooms;

i. hotel, motels;

j. worksite huts

k. offices;

l. workshops;

m. military installations;

n. plays and reduced models, etc.

It is clear that the various structures which have been considered by way of example, are essentially distinguished from one another by the choice, on the one hand, of the juxtapositions and the stackings of the frameworks, on the other hand, of those of the available modules which are associated with and which are respectively the most suitable for the corresponding needs of these structures.

The invention hence enables the production from elements of a reduced number of types, all transportable, of a large variety of arrangements both internal and external.

In other words, the structures according to the invention may be likened, in a way, to "play blocks," instantly connectable to the supply system (electricity, supply and waste water, etc.), the frameworks behaving like "hollow cubes" and not like beams and posts connected between themselves, as is the case in the usual frameworks.

We claim:

1. Transportable dwelling structure including:

at least one standardized, rigid, elongated, parallelepipedic framework consisting of longitudinal, transverse and vertical structural members along all the edges of the parallelipiped,

interchangeable differentiated standardized modular blocks comprising hulls each limited by outwardly extending coplanar flanges about the opening of the hull which forms a rectangle, the height of said rectangle being substantially equal to the height of the framework, and the width of said rectangle being equal to or less than the transverse dimension of the framework and being in a simple radio with

the longitudinal dimension of the framework, and the whole volume of each hull is contained with the parallelepiped defined by said rectangle and the transverse dimension of the framework,

each hull including respectively standardized operational elements incorporated as fixtures within the inner space of said hull which fixtures do not substantially project beyond the plane of the flanges of the hull,

said hulls mounted on the framework with at least the top and bottom flanges of the hulls in a face-to-face abutting relationship with the longitudinal or transverse structural members so that the inner spaces of the hulls are positioned substantially completely outside the inner space of the framework and the inner space of said framework remains substantially free when the hulls are mounted thereto,

means for removably securing the flanges of each of said hulls to those of said longitudinal and transverse structural members with which they are in abutting face-to-face relationship,

and means for closing the ends of said framework,

said hulls capable of being unsecured and demounted from the framework and inserted completely within the inner space of the framework without any portions of the hulls projecting outside the inner space of the framework with the flanges of opposed hulls in abutting relationship so that they may be removably secured together.

2. Structure according to claim **1**, wherein the framework have the standardized dimensional characteristics of transcontainers.

3. Structure according to claim **1**, wherein the edges of the said hulls form projections with respect to their external surfaces over an extent at least equal to the transverse dimensions corresponding to the longitudinal member of the framework, by means of which the hulls are displaceable from a position inside the framework (transportation position) to its outside, so that the hulls themselves emerge from the inner space of the framework, until the projecting edges of the hulls come into abutment with the inner surfaces of the said longitudinal members, in fixable member.

4. Structure according to claim **1**, wherein the frameworks are provided with corner parts enabling their juxtaposition, their stacking, or both juxtaposition and stacking, said differentiated modular blocks then being graftable on the outer surfaces of said frame-works non-contiguous with the other surfaces of other frameworks.

5. Structure according to claim **4**, wherein the corner parts are themselves standardized.

6. Structure according to claim **2**, wherein the frameworks are provided with corner parts enabling their juxtaposition, their stacking, or both juxtaposition and stacking, said differentiated modular blocks then being graftable on the outer surfaces of said frame-works non-contiguous with the outer surfaces of other frameworks.

7. Structure according to claim **3**, wherein the frameworks are provided with corner parts enabling their juxtaposition, their stacking, or both juxtaposition and stacking, said differentiated modular blocks then being graftable on the outer surfaces of said frameworks non-contiguous with the outer surfaces of other frameworks.

8. Multiple or multistage habitation comprising, in combination:

a plurality of identical standardized, rigid, elongated parallelepiped frameworks each consisting of longitudinal, transverse and vertical structural members along all edges of the parallelepiped, said frameworks being in removably juxtaposed or stacked relationship,

a plurality of interchangeable differentiated modular blocks carried by each framework on outer faces which are not contiguous with outer faces of other frameworks, each modular block having a hull limited by ouJwardly extending coplanar flanges about the opening of the hull which form a rectangle, the height of said rectangle being substantially equal to the height of the framework and the width of the rectangle being equal at most to the transverse dimension of the frameworks and in a simple ratio with the longitudinal dimension of the frameworks and the volume of each hull being contained within the parallelepiped defined by said rectangle and the transverse dimension of the framework, each said hull including within the inner space thereof respective standardized operational fixtures which do not substantially project beyond the plane of the opening of said hull, said hulls being mounted on the respective frameworks with at least the top and bottom flanges of the hulls in a face-to-face abutting relationship with the longitudinal or transverse structural members of the associated framework so that the inner spaces of the hulls are located substantially completely outside from the inner space of the framework,

means for removably securing the flanges of each said hull to those of said longitudinal or transverse structural members with which they are in abutting face-to-face relationship, and

means for closing the ends of said frameworks,

each said framework being adapted to serve as a container for said modular blocks for transportation thereof with said modular blocks entirely within said parallelepipedic framework.

9. Transportable dwelling structure including:

at least one standardized, rigid, elongated, parallelepipedic framework consisting of longitudinal, transverse, and vertical structural members along all the edges of the parallelepiped,

interchangeable differentiated standardized modular blocks comprising hulls each limited by outwardly extending flat flanges about the opening of the hull which form a rectangle, the height of said rectangle being substantially equal to the height of the framework, and the width of said rectangle being equal to or less then the transverse dimension of the framework and being in a simple ratio with the longitudinal dimension of the framework, and the whole volume of each hull is contained with the parallelepiped defined by said rectangle and the transverse dimensions of the framework,

each hull including respectively standradized operational elements incoporated as fixtures within the inner space of said hull which fixtures do not substantially project beyond the plane of the flanges of the hull.

said hulls mounted on the framework with at least the top and bottom flanges of the hulls in a face-to-face abutting relationship with the longitudinal or trans-

verse structural members so that the inner spaces of the hulls are positioned substantially completely outside the inner space of the framework and the inner space of said framework remains substantially free when the hulls are mounted thereto,

means for removably securing the flanges of each of said hulls to those of said longitudinal and transverse structural members with which they are in abutting face-to-face relationship,

and means for closing the ends of said frameworks, said hulls capable of being secured and demounted from the framework and inserted completely within the inner space of the framework without any portions of the hulls projecting outside the inner space of the framework with the flanges of opposed hulls in abutting relationship so that they may be removably secured together.

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