(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 975 329 A1**

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
01.10.2008 Bulletin 2008/40

(51) Int Cl.:
E04B 1/344 *(2006.01)*

(21) Application number: **07405104.6**

(22) Date of filing: **30.03.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

(71) Applicant: **Habitaflex Concept Inc.**
Montmagny, QC G5V 4G4 (CA)

(72) Inventor: **Laprise, Daniel**
Montmagny
Québec G5V 3E4 (CA)

(74) Representative: **Moinas, Michel et al**
Moinas & Savoye S.A.
42 rue Plantamour
1201 Genève (CH)

(54) Foldable habitation

(57) The foldable habitation (10) can be unfolded and deployed to satisfy dwelling needs, and can be folded into a compact configuration for displacement or storage, for example. The foldable habitation has a base (16) with an elongated central floor portion (10), a frame (50) secured to and vertically extending from the central floor portion, and a covering (24) having a central roof portion mounted to the upper portion of the frame. The foldable habitation can be provided as a cottage unit which can be displaced from year to year, a movable motel unit, or an office unit which can be installed on a temporary construction site, to give three examples of the numerous possibilities.

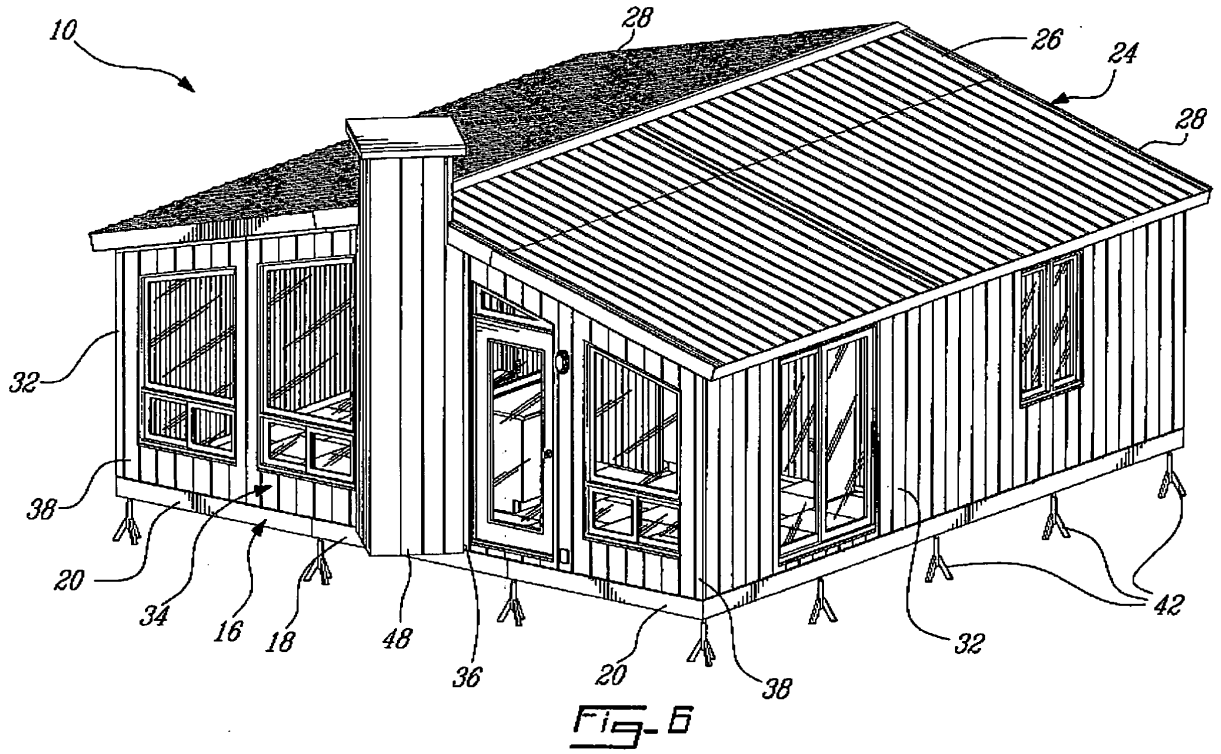

Fig. 6

EP 1 975 329 A1

Description

BACKGROUND

[0001] A foldable habitation allowing an owner to fold the habitation from an unfolded state to a folded state, to move it to another location, or for storage, is presented in published international patent application no. WO 02/066755. Such a foldable habitation can provide a cottage which can be displaced from year to year or an office which can be installed on a temporary construction site, for example, to give two of the numerous possibilities it offers. It can be folded into a compact folded state for displacement and be unfolded and deployed to satisfy dwelling needs.

[0002] Although the foldable habitation discussed above has been found satisfactory on many aspects, there remained room for even further improvements.

SUMMARY

[0003] In accordance with one aspect, there is provided a foldable habitation comprising : a base having an elongated central floor portion with a front end and a rear end; a frame having a front portion secured to and vertically extending from the front end of the central floor portion, a rear portion secured to and vertically extending from the rear end of the central floor portion, and an upper portion connecting the front portion and the rear portion, the frame being capable of supporting the weight of the foldable habitation when the foldable habitation is lifted by the front portion and the rear portion of the frame; and a covering having a central roof portion mounted to the upper portion of the frame.

[0004] In accordance with another aspect, there is provided a foldable habitation comprising: a base having an elongated central floor portion, generally oriented in a longitudinal orientation, having a front end, a rear end, and two opposite sides, the base also having two lateral floor portions, each lateral floor portion being hingedly mounted along a respective one of the opposite sides of the central floor portion; a frame having a front portion secured to and vertically extending from the front end of the central floor portion, a rear portion secured to and vertically extending from the rear end of the central floor portion, and an upper portion connecting the front portion and the rear portion; a covering having a central roof portion mounted to the upper portion of the frame and having two opposite sides, and two lateral roof portions, each lateral roof portion being hingedly mounted along a respective one of the opposite sides of the central roof portion; two opposite lateral walls, each lateral wall having a front end and a rear end and being slidable in a transversal orientation along a corresponding one of the lateral floor portions; and a front wall and a rear wall, each having a central wall portion mounted to a respective one of the front portion and the rear portion of the frame and having two opposite sides, and two foldable lateral portions, each lateral portion being hingedly mounted between a respective one of the opposite sides of the central wall portion and a respective one of the front end and the rear end of a respective one of the two lateral walls, the lateral portions being configured and adapted to unfold when the corresponding lateral wall is outwardly slid.

[0005] In accordance with another aspect, there is provided a foldable habitation having a foldable base including an elongated central floor portion having a front end and a rear end, a foldable covering including a central roof portion, and deployable walls, the foldable habitation being characterized in that it further has a supporting frame having a plurality of interconnected steel beams, the frame having a front portion secured to and vertically extending from the front end of the central floor portion, a rear portion secured to and vertically extending from the rear end of the central floor portion, and an upper portion connecting the front portion to the rear portion of the frame and to which the central roof portion of the covering is mounted.

[0006] In accordance with another aspect, there is provided a method of handling a foldable habitation in a folded configuration, the method comprising: removably fastening a front leverage beam to an upper end of a front portion of a steel frame of the foldable habitation; removably fastening a rear leverage beam to an upper end of a rear portion of the steel frame of the foldable habitation; and lifting the foldable habitation using the fastened front and rear leverage beams.

[0007] In accordance with one aspect, there is provided a foldable habitation that can be unfolded and deployed to satisfy dwelling needs, and that can be folded into a compact configuration for displacement or storage, for example. The foldable habitation has a base with an elongated central floor portion, a frame secured to and vertically extending from the central floor portion, and a covering having a central roof portion mounted to the upper portion of the frame. The foldable habitation can be provided as a cottage unit which can be displaced from year to year, a movable motel unit, or an office unit which can be installed on a temporary construction site, to give three examples of the numerous possibilities.

DESCRIPTION OF THE FIGURES

[0008] Further features and advantages will become apparent from the following detailed description, taken in combination with the appended figures, in which:

[0009] Fig. 1 is a perspective view of an example of an improved foldable habitation in a folded state;

[0010] Fig. 2 is a view similar to Fig. 1 showing unfolding of the lateral floor portions;

[0011] Fig. 3 is a view similar to Fig. 1 showing unfolding of the lateral roof portion on one side;

[0012] Fig. 4 is a view similar to Fig. 1 showing unfolding of the walls on one side;

[0013] Fig. 5 is a view similar to Fig. 1, with one side

completely deployed, showing unfolding of a lateral roof portion on another side;

[0014] Fig. 6 is a perspective view of the improved foldable habitation of Fig. 1 in an unfolded state;

[0015] Fig. 7 is a view similar to Fig. 6 with the covering removed;

[0016] Fig. 8 is a perspective view of the frame of the foldable habitation of Fig. 1;

[0017] Fig. 9 is an enlarged view of a portion of Fig. 4, showing the lateral wall sliding transversally;

[0018] Fig. 10 is an enlarged view, fragmented, of the front or rear portions of the frame of Fig. 8, with components removed, and with a leverage beam fastened thereto;

[0019] Fig. 11 is a perspective view of the foldable habitation of Fig. 1 adapted to be lifted by a crane.

DETAILED DESCRIPTION

[0020] Fig. 1 shows an example of an improved foldable habitation 10 in a folded state. In the folded state, the foldable habitation has an elongated appearance in an orientation referred to herein as the longitudinal orientation, schematized by a longitudinal axis 11. The main components of the foldable habitation 10 are substantially symmetrical along a median longitudinal plane. For the sake of clarity, a front end 12 and the rear end 14 of the foldable habitation are defined, though it will be understood that a front door of the foldable habitation can be provided in a wall referred to herein as a lateral wall or rear wall, for example. Due to the symmetricallity of the foldable habitation 10, the front end 12 and the rear end 14 are similar. Only one side of the foldable habitation thus needs to be discussed in detail. For simplicity, when two similar components are present on opposite sides of the foldable habitation 10, only one of the two similar components is referred to using a reference numeral.

[0021] The foldable habitation 10 includes a base 16 having an elongated central floor portion 18 oriented in the longitudinal orientation 11, and two lateral floor portions 20. Each lateral floor portion 20 is hingedly mounted to pivot around a corresponding longitudinal side 30 of the central floor portion 18. The foldable habitation 10 also has a covering 24, the covering 24 includes a central roof portion 26 oriented in the longitudinal orientation 11, and two lateral roof portions 28. Similarly, the two lateral roof portions 28 are hingedly mounted along two opposite sides of the central roof portion 26. The foldable habitation 10 also has two opposite lateral walls 32. In the folded state, each lateral roof portion 28 is nested between a corresponding lateral floor portion 20 and a corresponding lateral wall 32. The foldable habitation also has a front wall 34 and a rear wall (not shown). The front wall 34 has a central wall portion 36 having two opposite sides 38, and two folded lateral portions 40. Each one of the two folded lateral portions 40 is hingedly mounted between a corresponding opposite side 38 of the central wall portion 36 and a corresponding lateral wall 32. The rear wall (not shown) is similar to the front wall 34.

[0022] Reference will now be made to Figs. 1 to 6 to show successive steps for unfolding the foldable habitation 10 from the folded state into an unfolded or deployed state. These steps can be carried out in the reverse order to fold the foldable habitation 10.

[0023] In Fig.1 the foldable habitation 10 is in the folded state. In Fig. 2, the foldable habitation 10 is shown positioned onto height-adjustable bearing members, jacks 42 in this case, and the lateral floor portions 20 are being unfolded by hingedly pivoting around the corresponding side 30 of the central floor portion 18. In Fig. 3, the base 16 is deployed. A lateral roof portion 28 is being raised by hingedly pivoting along a respective side of the central roof portion 26. In Fig. 4, a lateral wall 32 is being slid transversally along a corresponding lateral floor portion 20, which results in unfolding a corresponding lateral portion 40 of the front wall 34. The lateral portion 40 of the front wall 34 includes two wall panels 44, 46, which are hingedly connected together along their adjacent sides. The inner wall panel 44 has an inner side hingedly connected to a corresponding side 38 of the central portion 36 of the front wall 34, and the outer wall panel 46 has an outer side hingedly connected to a front end of the lateral wall 32. A lateral portion of the rear wall (not shown) is similarly unfolded at the rear of the foldable habitation 10 as the lateral wall 32 is transversally slid. In Fig. 5, one side of the foldable habitation 10 is shown unfolded, and the other side is being deployed by raising the lateral roof portion 28. The lateral wall of that other side, and the corresponding lateral portions of the front and rear walls, will then be deployed such as depicted in Fig. 4. In Fig. 6, the foldable habitation is shown in an unfolded state. A chimney 48 can also be present on the front wall 34.

[0024] In Fig. 7, the foldable habitation 10 is shown with the covering 24 removed. A steel beam frame 50 of the foldable habitation 10 is shown. Partitions 52, 54 were unfolded subsequently to deployment of the lateral walls 32. Cupboards were affixed to one partition 54, corresponding to a kitchen area. Furniture can then be added to the foldable habitation as desired.

[0025] The example of a foldable habitation 10 described above and illustrated corresponds to a cottage unit offering a panoramic view at the front due to the presence of numerous large windows on the front wall. In alternate embodiments, the configuration of the partitions, windows, and doors, can greatly depart from those illustrated to adapt the foldable habitation to other uses. An office unit where the partitions are removed or minimized, and a motel unit longitudinally separated in two halves and having two front doors, and two bathrooms, one accessible from each half, are two of the numerous examples of other uses. Many additional configurations and uses are also possible.

[0026] For illustrative purposes, the illustrated model has 7.3 m (24 feet) in length and 6.7 m (22 feet) in width when it is in the unfolded state. When it is folded, it can

be folded down to 2.6 m (8 feet and 7 inches) in width, which is an advantageous width when exporting overseas because it allows shipping in standard size shipping containers. In alternate configurations, various other lengths and widths are also possible.

[0027] A factor which has been known to limit the practicable length of previously known foldable habitations was the important longitudinal deflection, caused by the weight of the components, which has been known to occur when such folded habitations were lifted to be put onto a trailer or into a container, for example. This was a source of many handling difficulties, and in some cases, lifting required the installation of an outer frame for the folded habitation, like an exoskeleton, to provide a lifting structure to limit the longitudinal deflection during lifting.

[0028] One element which is very advantageous in the illustrated example of an improved foldable habitation 10 is the incorporation of an internal frame 50. The incorporation of an internal frame allows to alleviate many of the aforementioned handling difficulties known to some previously known foldable habitations by providing a longitudinal deflection-resistant structure. This can advantageously help in limiting the longitudinal deflection in the components of the foldable habitation, thus easing the manipulation of foldable habitations and allowing to provide foldable habitations of increased length as compared to what could previously be achieved. For example, using a frame of steel beams, it is now possible to produce and handle a foldable habitation having 10.3 m (34 feet) in length, and potentially more.

[0029] Fig. 8 shows the steel frame 50 of the foldable habitation 10 shown and described above. The steel frame 50 has an upper portion 52 to which the central roof portion 26 is mounted, and a front portion 54 and a rear portion 56 to which the central portions 36 of the front wall 34 and of the rear wall are mounted, respectively. The front portion 54 and the rear portion 56 are secured to, and vertically extend, from the front end and the rear end of the central floor portion 18, respectively. The upper portion 52 of the frame 50 is assembled to the upper ends of the front portion 54 and the rear portion 56 of the frame 50.

[0030] In this example, a front brace 58 and a rear brace 60 are provided as part of the front portion 54 and the rear portion 56, respectively. The braces 56, 58 each have a fixed central portion 62 fastened along the corresponding one of the front or rear end of the central floor portion 18. For illustrative purposes, it will be understood that the central floor portion 18 and lateral floor portions 20 are constructed with an internal structure, and the central floor portion 18, for example, can have structural members extending along both transversally opposite sides 30. These side structural members are connected at opposite ends to the central portion 62 of the braces 56, 58. The use of fixed central portions 62 of braces 56, 58 for securing the frame 50 to the central floor portion 18 advantageously allows to spread the retention forces along the width of the central floor portion 18 when the foldable habitation 10 is lifted. In alternate configurations, the frame can be connected to the floor differently.

[0031] The braces 56, 58 in this example, also include two lateral brace portions 64, each being hingedly connected to a corresponding end of the central brace portion 62. This particular configuration is optional, but advantageously allows to provide the hinged connection between the lateral floor portions 20 and the central floor portion 18 as part of the frame 50. The use of braces 56, 58 can also contribute to add structure to the lateral floor portions 20, which can be helpful in leveling the habitation 10.

[0032] Certain conventional wood structures have a tendency to deform with time due to warping of the wood boards during temperature variations, or aging. A metal frame can advantageously overcome these limitations of wood structures because they are more stable with time. Further, providing the metal frame internally allows to somewhat minimize the remaining deformation, or relative displacement, which can occur in the components which are mounted to the frame.

[0033] In this example, the upper portion 52 of the frame 50 includes two longitudinally oriented and transversally spaced-apart I-beams 66. I-beams advantageously provide an important amount of longitudinal deflection resistance to the frame 50 and can advantageously be manufactured in various lengths and sizes. It will be understood that beams having other cross-sectional shapes than I-beams, but also offering satisfactory longitudinal deflection characteristics can alternately be used. The particular size of I-beams for a particular foldable habitation application can be calculated by persons of ordinary skill in the art for a given overall weight, and weight distribution, of a particular embodiment of a foldable habitation. The two parallel I-beams 66 are transversally interconnected by a plurality of struts 68. In the illustrated example, all the components of the frame 50 are made of steel, although components of other metals can also be used. In alternate embodiments, different configurations of can alternately be used for the upper frame portion 52.

[0034] In this example, the front portion 54 and the rear portion 56 of the frame 50 are similar, and both include two vertical beams 70, or studs, each one of the studs extending downwardly from a respective one of the two 1-beams 66. Alternate configurations can also be used.

[0035] In this example, the frame 50 is further reinforced by an optional intermediate portion 72 also having two vertical beams 74, or studs, and a transversal floor beam 76. The intermediate portion 72 serves to suspend an intermediate portion of the central floor portion 18 to the upper portion 52 of the frame 50. This advantageously allows to reduce longitudinal deflection in the central floor portion 18. In alternate configurations, the intermediate portion 72 can be omitted, or additional intermediate portions can be added, to adapt the frame to different lengths of foldable habitations, or to different weight and deflection characteristics of the foldable habitation components, for example.

[0036] Referring now to Fig. 9, to ease the transversal sliding of the lateral walls 32 of the foldable habitation when folding or unfolding, the lateral walls 32 can be supported on wheels or rollers. In this example, a transversally oriented wheel 80 is provided at each longitudinal end of the lateral wall 32. The front brace 58, and more particularly the lateral brace portions 64 thereof, are provided with guiding tracks 82 for the wheel 80. Guiding tracks are optional, but can advantageously be used to help maintaining the longitudinal alignment of the lateral walls during the transversal sliding displacement. The guiding tracks can advantageously be provided on either one of the front end and the rear end of the lateral floor portions 20 rather than being provided on both the front end and the rear end, because using two opposite guiding tracks can lead to blockage of the lateral wall 32 if obliqueness occurs during the transversal sliding displacement, such as if one end of the lateral wall 32 is moved faster than the opposite end. Providing guiding tracks made of metal is advantageous because it provides a hard surface on which the wheel 80 can be easily slid. This hard surface is durable and helps maintain the foldability of the habitation 10 over time. In embodiments where lateral brace portions 64 are used, the guiding track 82 can advantageously be provided as part of the frame 50. The guiding tracks 82 can thus be automatically aligned with the central floor portion 18. Further, providing the guiding track 82 as part of the lateral brace portion 64 offers deformation resistance over time.

[0037] In this example, the guiding track 82 has a vertically-extending male portion 84 extending along the upper side of the lateral brace portion 64, and the wheel 80 has a circumferential female groove 86 adapted to receive the male portion 84 of the guiding track 82. The use of the male portion in the guiding track rather than in the wheel is advantageous because the vertically-extending male portion contributes to impede infiltration of water from the outside.

[0038] Fig. 10 shows that the studs 70 of the front portion 54 or rear portion 56 of the frame 50 can advantageously have threaded apertures 88 defined in an upper end portion thereof. The fastener-receiving apertures 88 can receive fasteners used for securing a leverage beam 90 directly to the frame 50. The threaded apertures 88 thus act as fixation points, or lifting areas of the frame 50. The fasteners used to fasten the leverage beams to the frame 50 collectively support the entire weight of the foldable habitation 10 when it is lifted. The positioning of the threaded apertures 88 close to the upper portion 52 of the frame 50 is advantageous because it allows to distribute the lifting force to the upper portion 52 of the frame 50 with a relatively small moment of force between the front portion 54 or rear portion 56 and the upper portion 52 because of the relatively small distance, or lever arm, between the threaded apertures 88 and the upper portion 52.

[0039] Fig. 11, shows an example of how the foldable habitation 10 can be lifted. A front leverage beam 89 is secured to the front end 12 of the foldable habitation 10, and more particularly to the frame 50 thereof, whereas a rear leverage beam 90 is secured to the rear end 14. The front and rear leverage beams 89, 90 can advantageously be hooked upon at opposite ends thereof, to raise the entire foldable habitation 10 for manipulation and displacement. As discussed above, manipulating the foldable habitation 10 in this manner is especially advantageous for exporting overseas, or when shipping by train, in which cases the foldable habitation 10 can be raised and placed into a shipping container. When shipping or moving by truck, the foldable habitation can also be placed on a truck bed by jacking, for example.

[0040] As can be seen therefore, the examples described above and illustrated are intended to be exemplary only. The scope of the invention(s) is intended to be determined solely by the appended claims.

Claims

1. A foldable habitation having a foldable base including an elongated central floor portion having a front end and a rear end, a foldable covering including a central roof portion, and deployable walls, the foldable habitation being **characterized in that** it further has a supporting frame having a plurality of interconnected steel beams, the frame having a front portion secured to and vertically extending from the front end of the central floor portion, a rear portion secured to and vertically extending from the rear end of the central floor portion, and an upper portion connecting the front portion to the rear portion of the frame and to which the central roof portion of the covering is mounted.

2. The foldable habitation of claim 1 **characterized in that** the upper portion of the frame includes two parallel, longitudinally-extending, interconnected, and spaced-apart steel I-beams.

3. The foldable habitation of claim 2 **characterized in that** the front and rear portions of the frame each include two parallel steel studs, each stud being connected to a corresponding end of a corresponding I beams.

4. The foldable habitation of claim 3 **characterized in that** each one of the four steel studs has a plurality of fastener-receiving threads in an upper end thereof, the fastener-receiving threads being configured and adapted to receive fasteners capable of collectively supporting the weight of the foldable habitation.

5. The foldable habitation of any one of claims 1 to 4 **characterized in that** the frame has front lifting area in an upper end of the front portion and a rear lifting area in an upper end of the rear portion, the frame

being capable of supporting the foldable habitation with limited longitudinal deflection when the foldable habitation is lifted by the front and rear lifting areas.

6. The foldable habitation of any one of claims 1 to 5 wherein the base includes two lateral floor portions, each floor portion being on a respective side of the central floor portion, **characterized in that** the frame has a front brace member and a rear brace member, each brace member having a central brace beam embracing a respective end of the central floor portion and having two opposite transversal ends, and two lateral brace beams, each embracing a corresponding end of a corresponding one of the two lateral floor portions and hingedly connected to a corresponding end of the central brace beam.

7. The foldable habitation of any one of claims 1 to 6 wherein the base includes two lateral floor portions, each hingedly connected to a respective side of the central floor portion, and the deployable walls include two longitudinally-oriented lateral walls, each lateral wall being wheel mounted and transversally slidable along a respective one of the lateral floor portions on its wheels, **characterized in that** each lateral wall includes a front wheel slidable along a front end of the corresponding lateral floor portion and a rear wheel slidable along a rear end of the corresponding lateral floor portion, one of the front end and the rear end of the corresponding lateral floor portion having a wheel-guiding track.

8. The foldable habitation of claim 7 **characterized in that** the two wheel-guiding tracks are provided on a hinged portion of a brace beam connected to the frame.

9. The foldable habitation of claim 7 **characterized in that** the two wheel-guiding tracks have a vertically-extending male portion and **in that** the corresponding wheels have a mating female recess groove defined circumferentially therein.

10. The foldable habitation of any one of claims 1 to 9 **characterized in that** it further bas an intermediate frame portion interconnecting the upper portion of the frame to the central floor portion in a manner that a portion of the weight of the base is suspended from the upper portion of the frame when the foldable habitation is lifted by its frame.

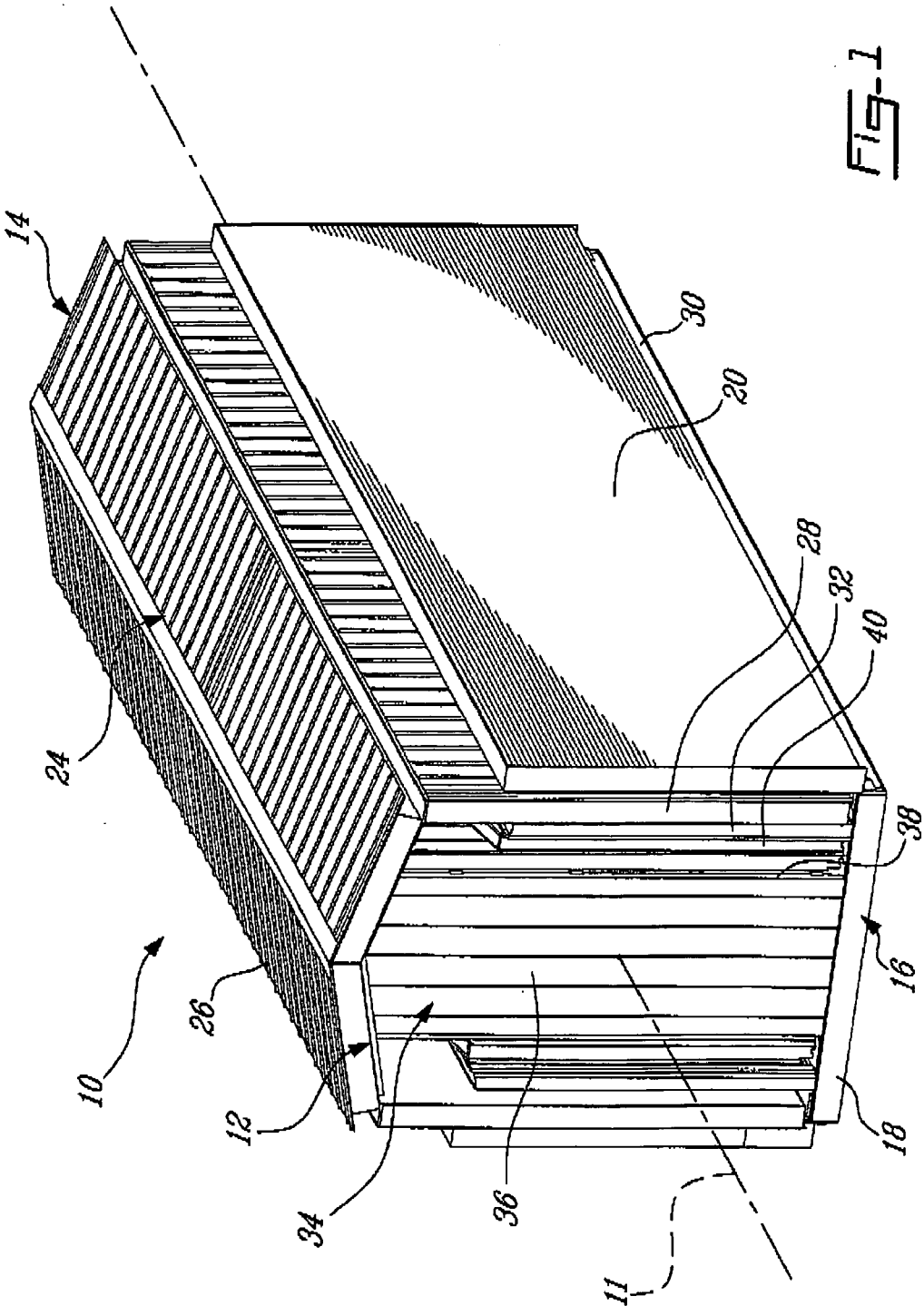

Fig-1

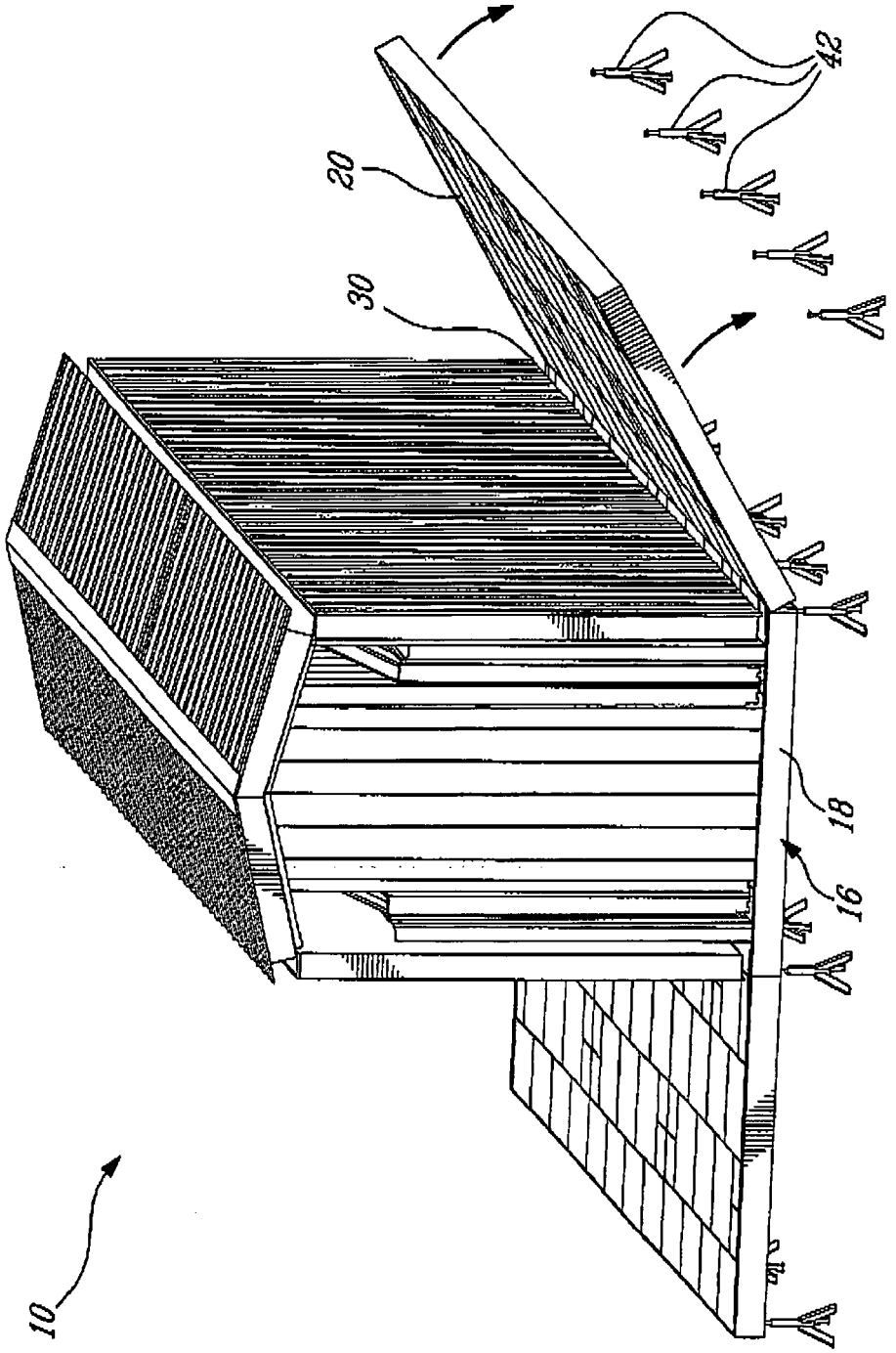

Fig-2

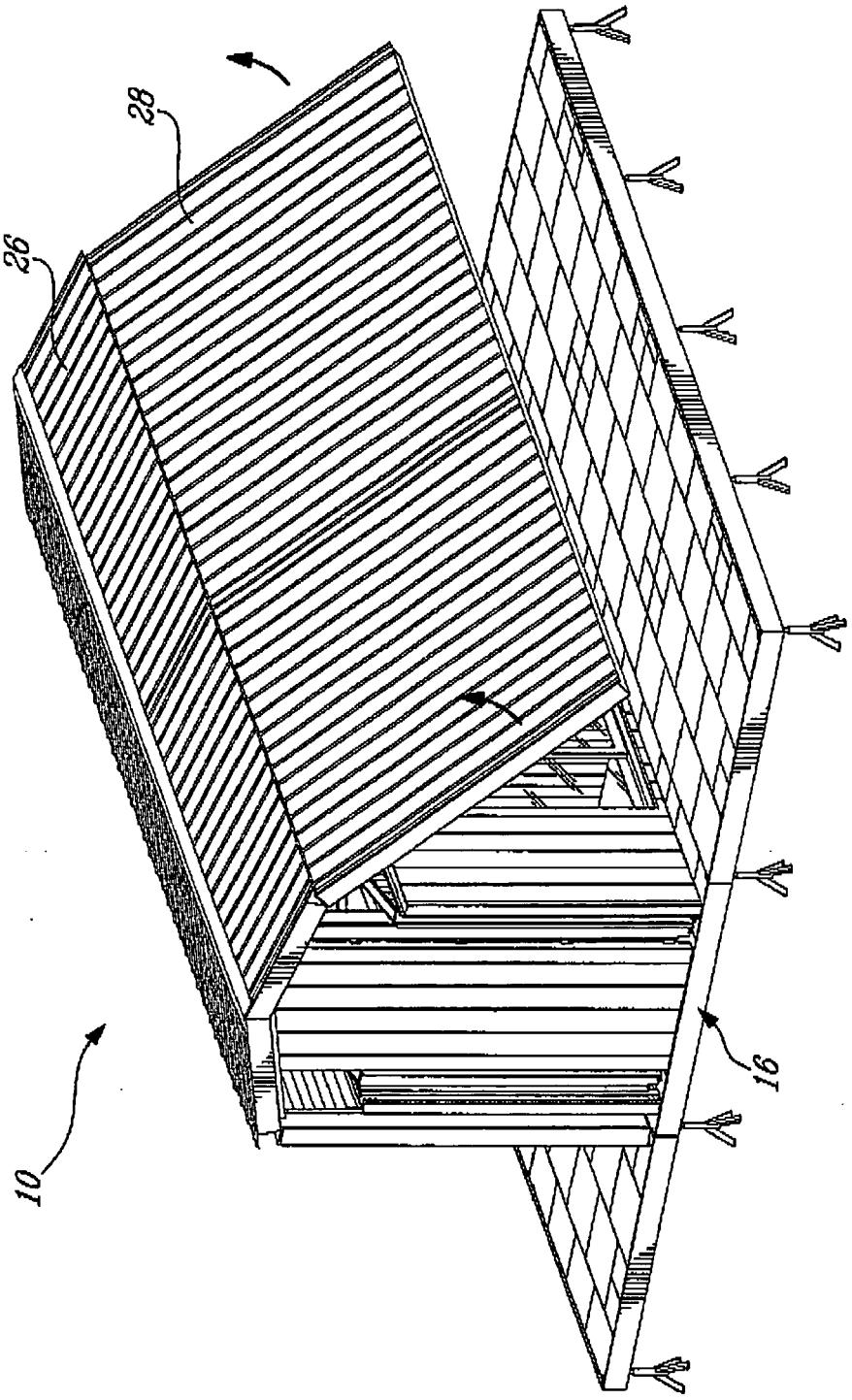

Fig-3

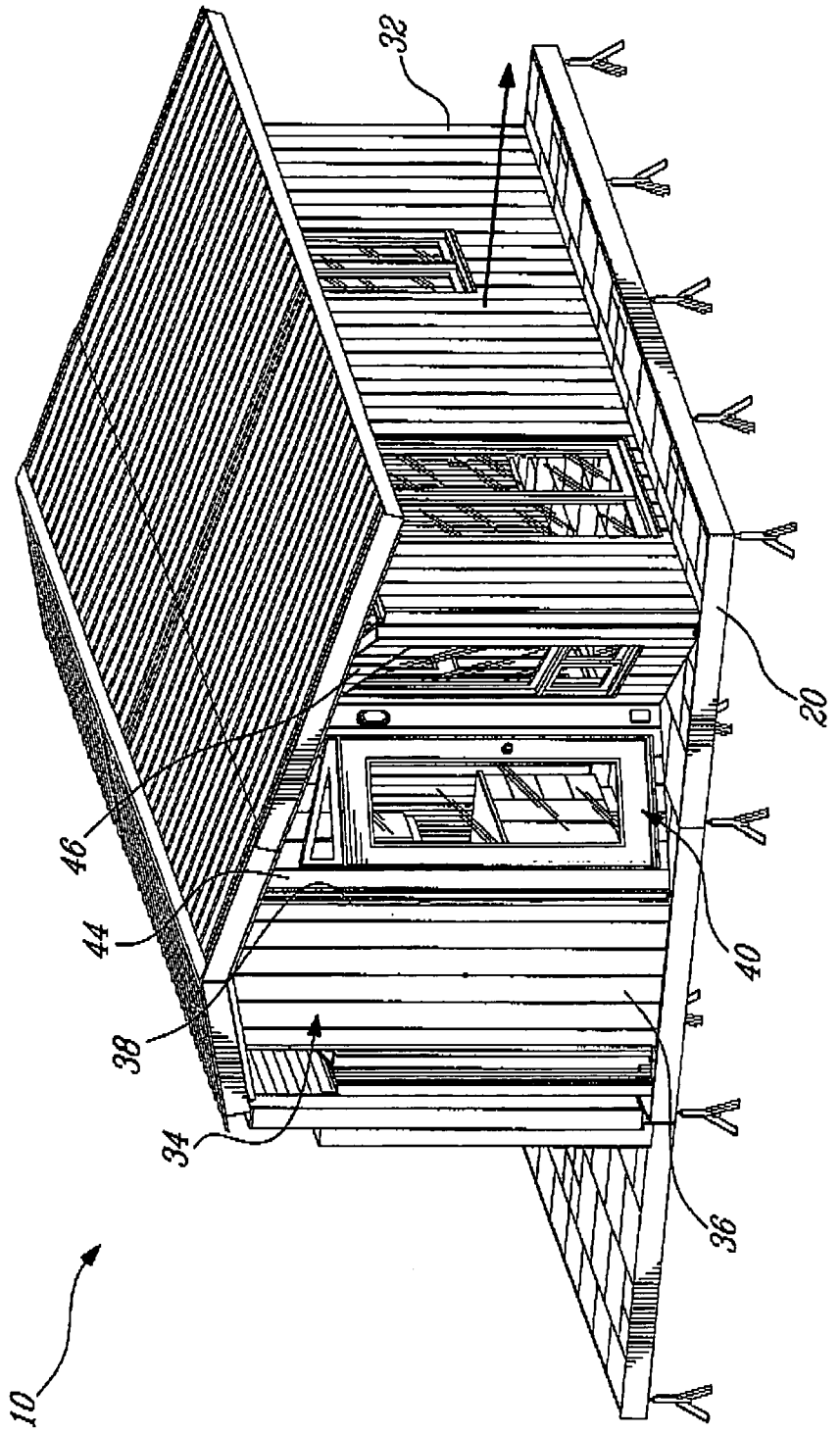

Fig-4

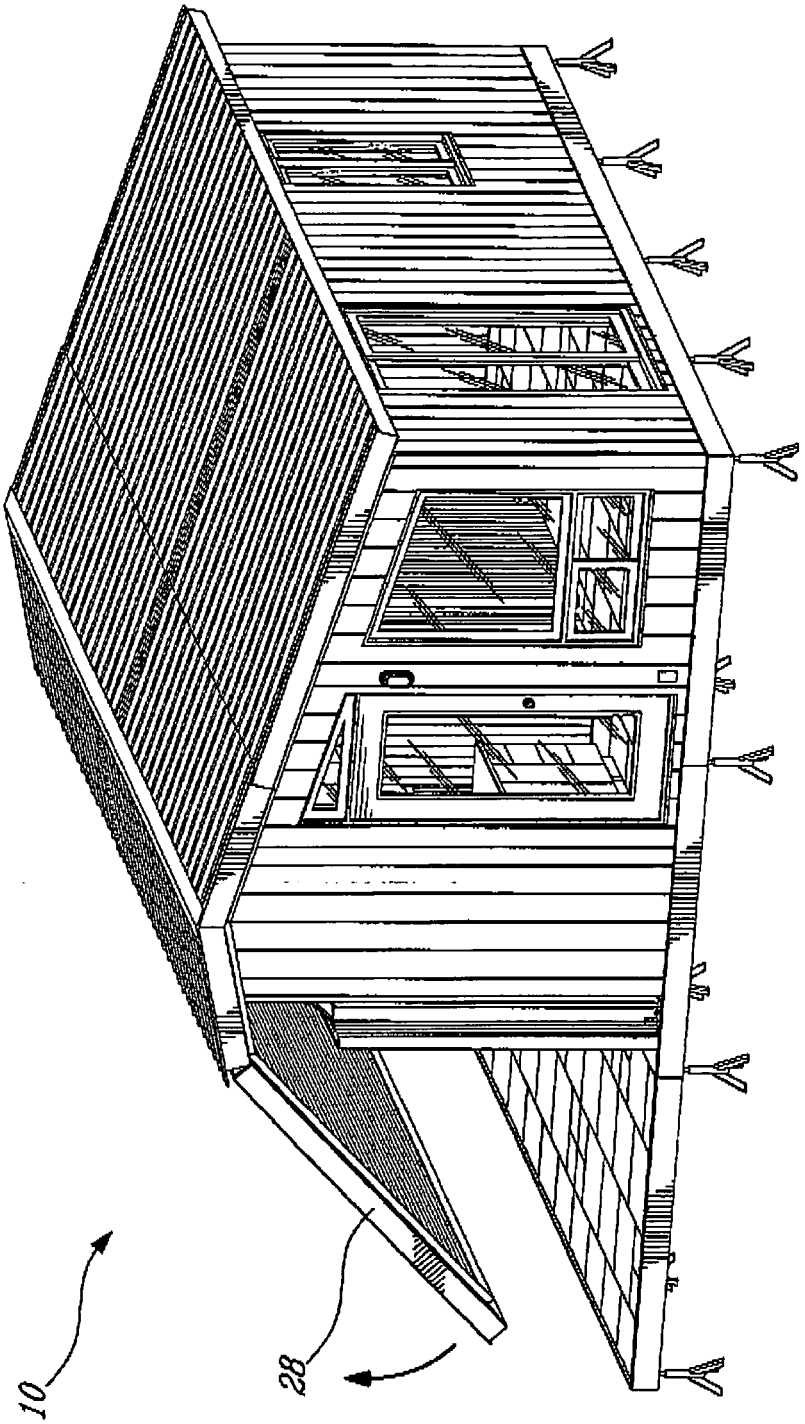

FIG-5

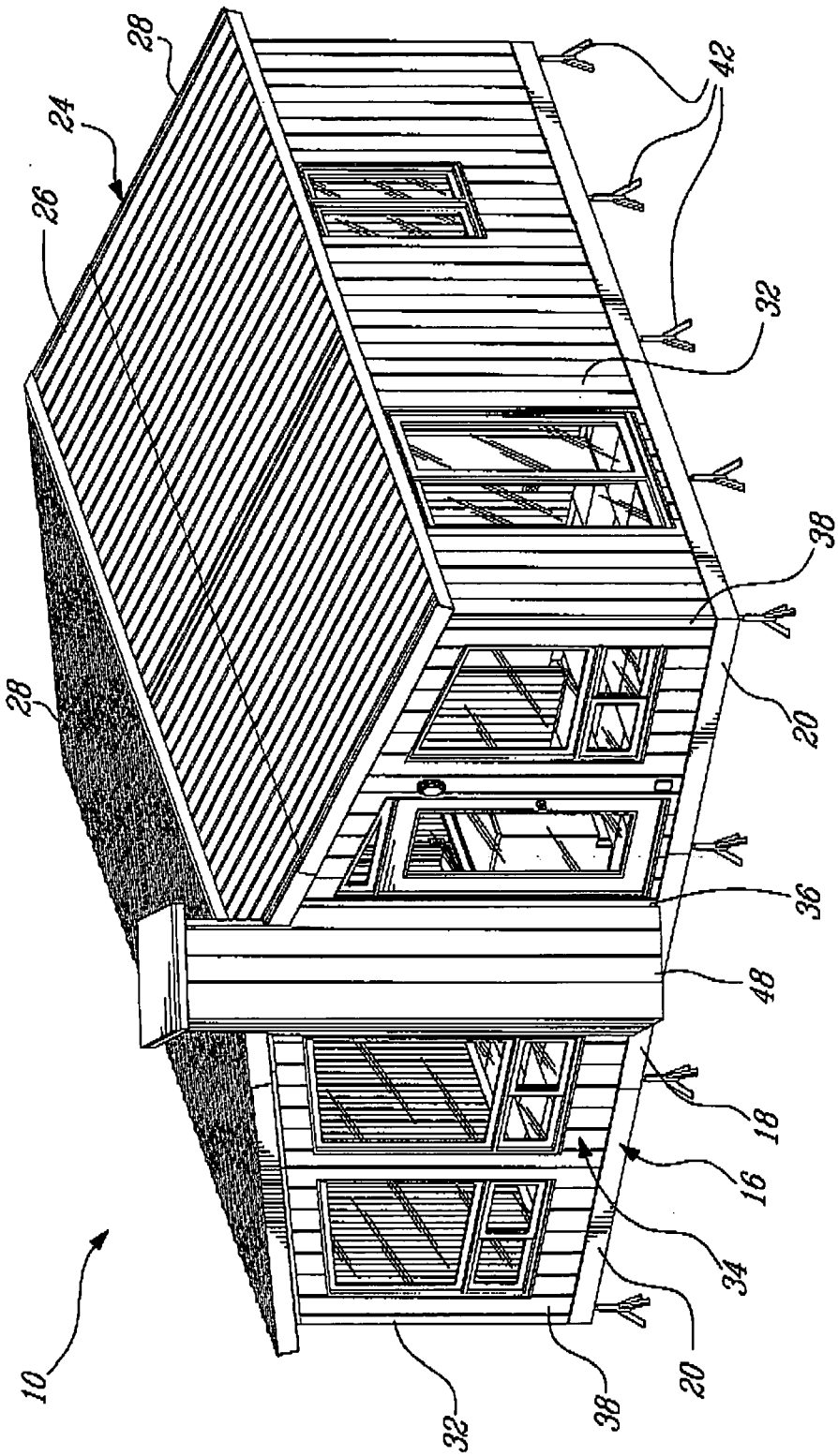

Fig-6

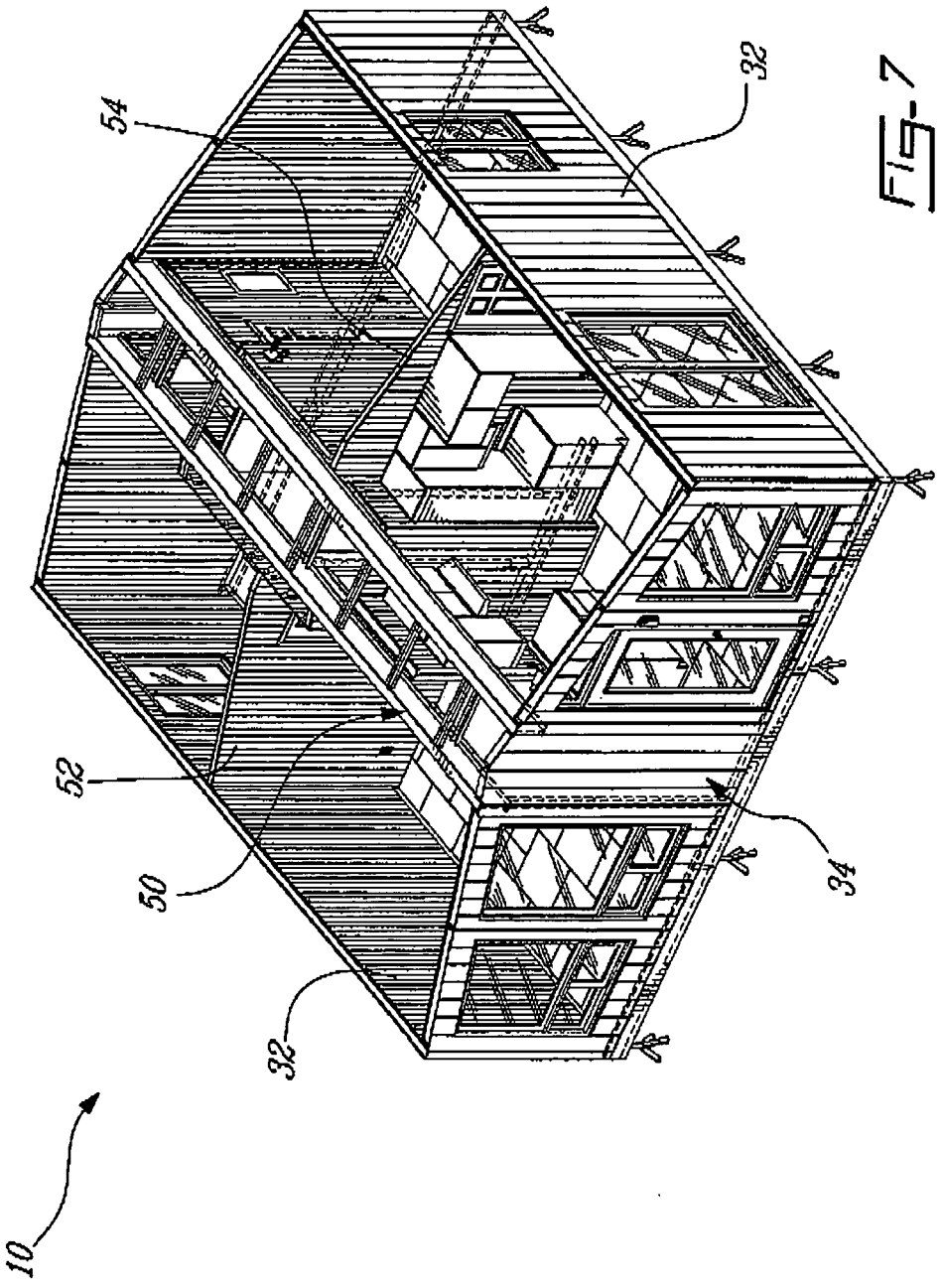

Fig-7

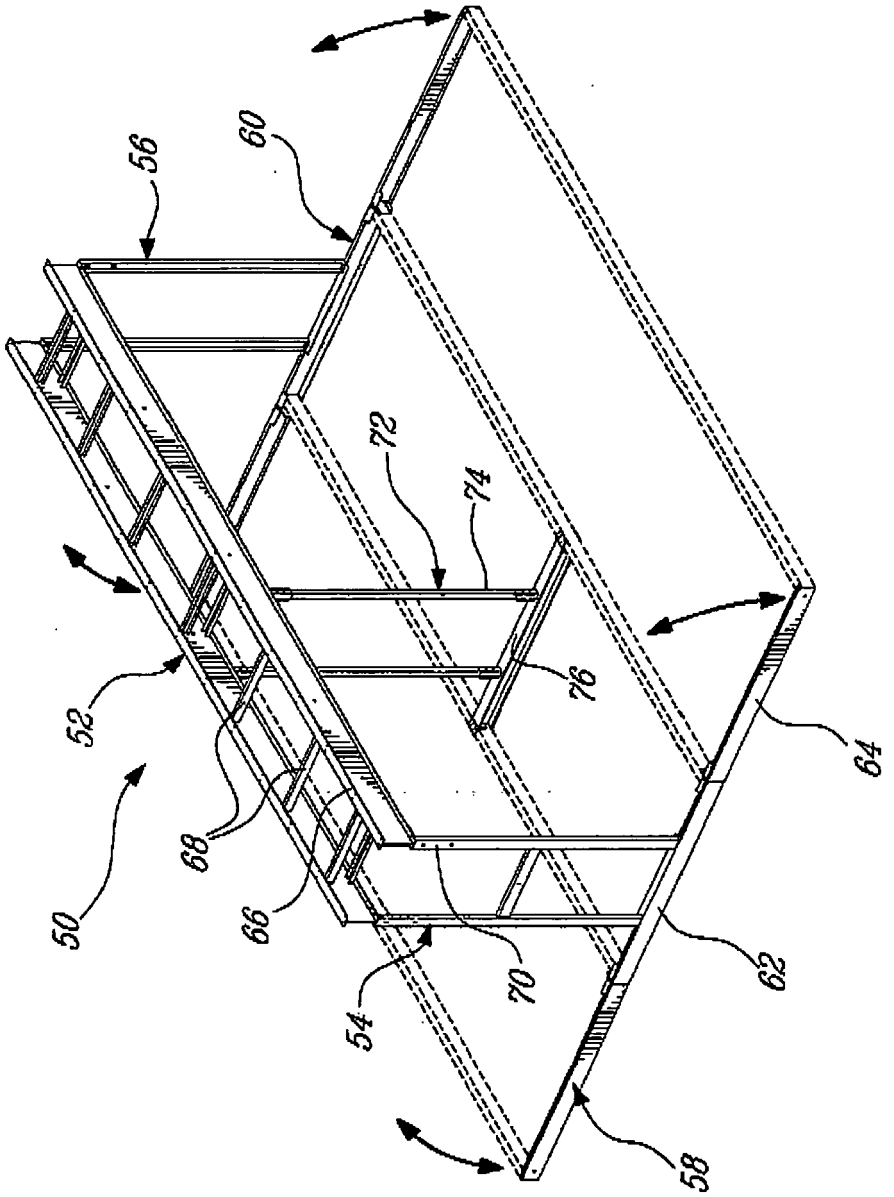

Fig. 8

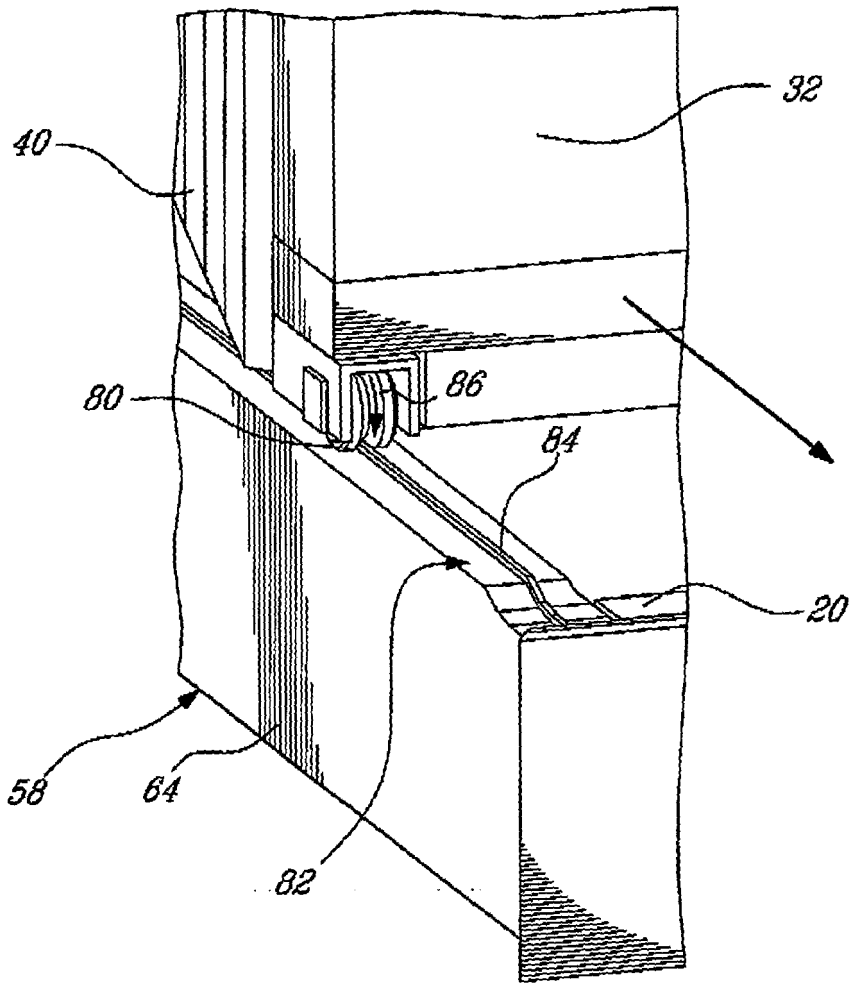

Fig. 9

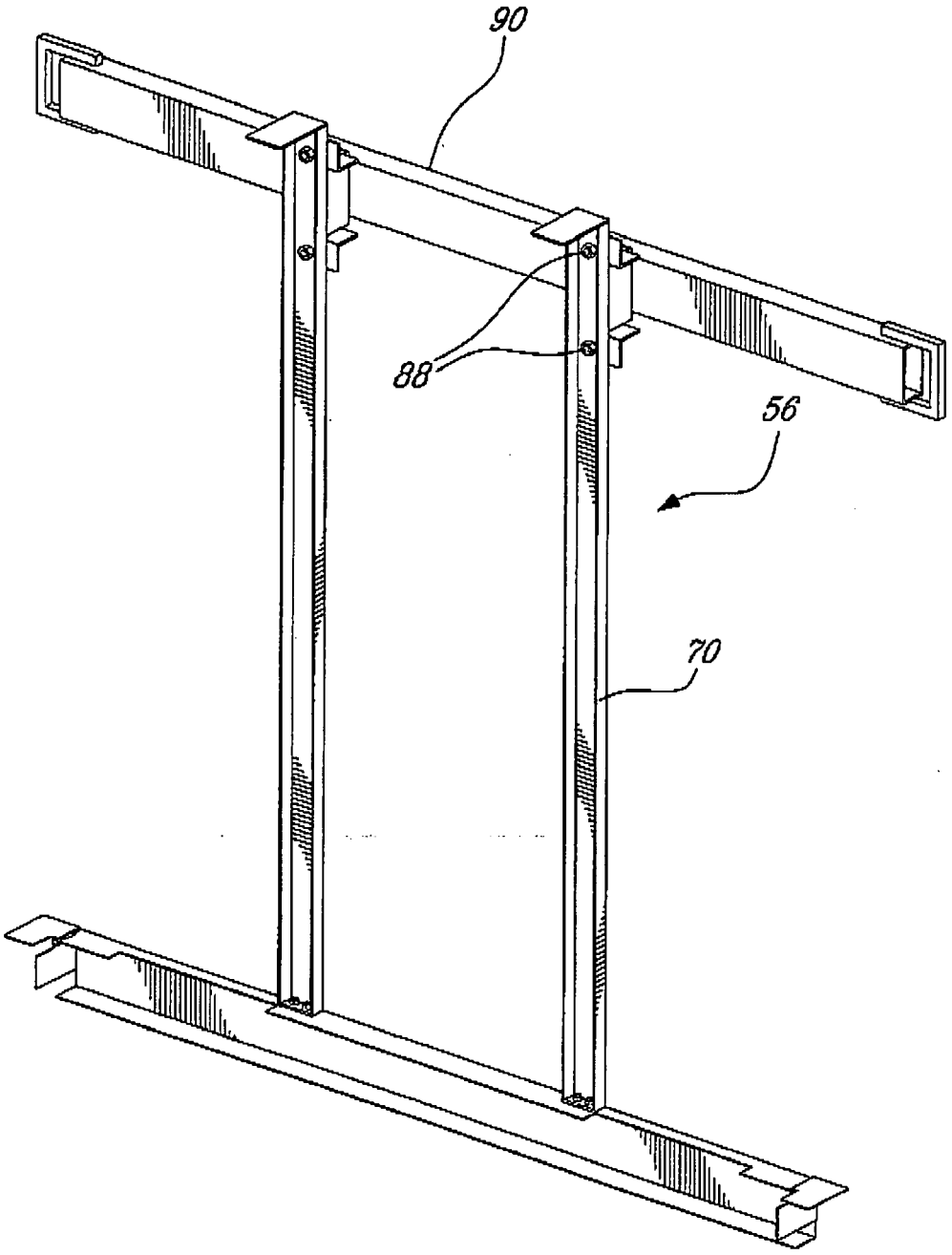

Fig. 10

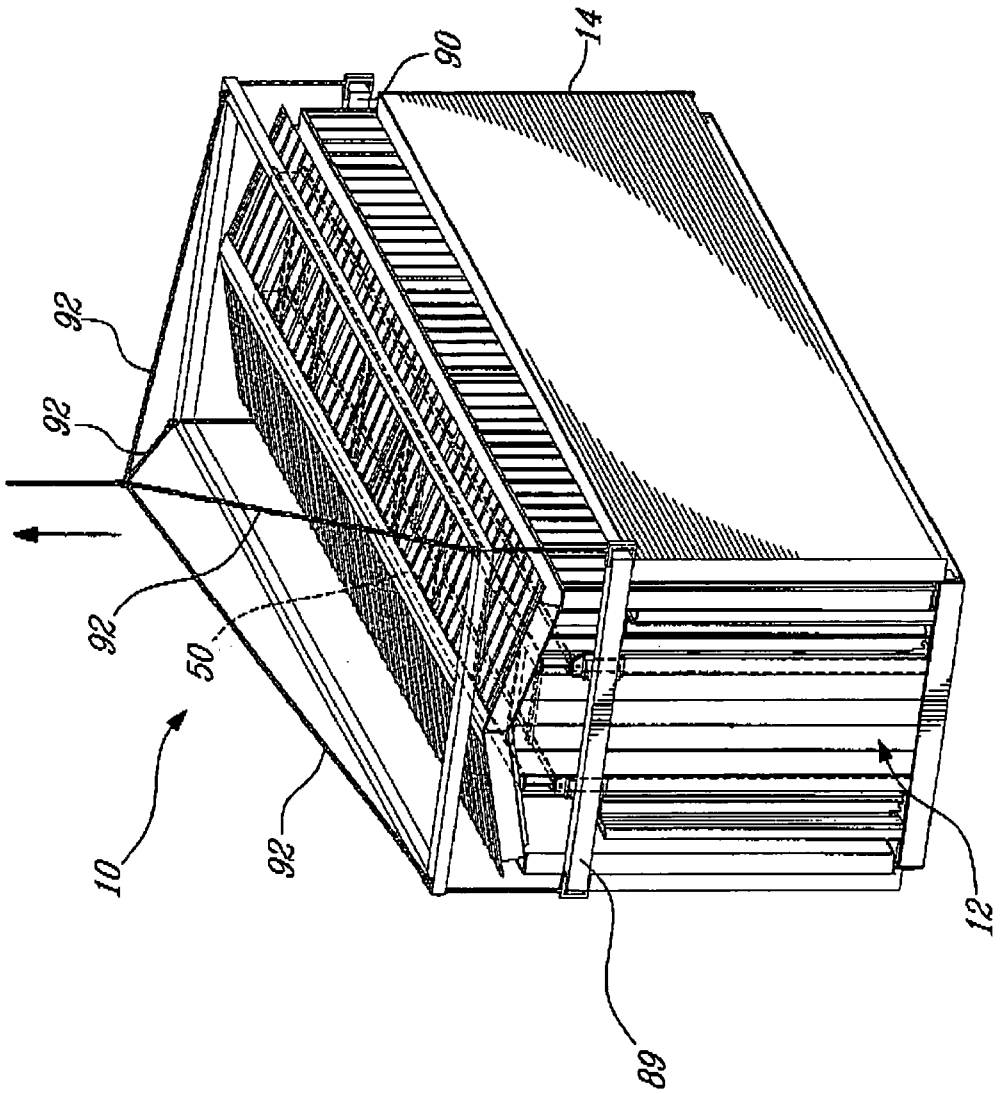

Fig. 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 40 5104

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 A	FR 2 557 620 A1 (LEPOITTEVIN YVES [FR]) 5 July 1985 (1985-07-05) * page 4, line 27 - page 11, line 15; figures 1-11 *	1,5 2,3,6,10	INV. E04B1/344
A	GB 2 085 941 A (SMITH PETER; BENNETT IVAN) 6 May 1982 (1982-05-06) * page 1, right-hand column, line 125 - page 2, right-hand column, line 123; figures 1-3 *	1-7,10	
A	US 3 460 297 A (FRITZ WILLIAM R) 12 August 1969 (1969-08-12) * column 2, line 17 - column 4, line 31; figures 1-6 *	1,5,6,10	
A	US 2004/194396 A1 (SHANNI VINCENT [US]) 7 October 2004 (2004-10-07) * figures 1-3 *	1,5,6,10	
			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
Munich	5 October 2007	Stefanescu, Radu

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

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 07 40 5104

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

05-10-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2557620 A1	05-07-1985	US 4635412 A	13-01-1987
GB 2085941 A	06-05-1982	NONE	
US 3460297 A	12-08-1969	NONE	
US 2004194396 A1	07-10-2004	US 2006225371 A1 WO 2004092747 A2	12-10-2006 28-10-2004

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- WO 02066755 A **[0001]**