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Helfrich [45] Oct. 21, 1975

[54] BUILDING FRAME STRUCTURE FOR HILLSIDES

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[21] Appl. No.: **512,511**

[52] **U.S. Cl.** **52/64;** 52/73; 52/79; 52/169; 52/236; 52/299; 52/637; 52/648
[51] **Int. Cl.** **E04b 1/344;** E02d 27/16
[58] **Field of Search** 52/64, 66, 68, 643, 648, 52/79, 299, 169, 637, 638, 73

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[57] ABSTRACT

There is disclosed a building frame structure that is particularly suited for hillside residential buildings which includes spaced-apart, coextensive, vertical assemblies of truss members with lateral frame members extending therebetween. Each of the assemblies of truss members includes a first truss member with its base leg supported at a plurality of foundation points to orient one of its side chords substantially horizontally and the other inclined thereto and a second truss member with a substantially upright base chord and with one side chord coextensive with and joined to the inclined chord of the first truss member. The preferred construction employs a third truss member having its base chord coextensive with and joined to the substantially vertical base chord of the second truss member with a fourth truss member having one side chord thereof coextensive with and joined to the uppermost chord of the third truss member and the other side chord substantially horizontal and coplanar with the substantially horizontal side chord of the first truss member. The truss members are connected by a plurality of laterally extending girders and box trusses to define a rigid frame structure suitable for installation of flooring, roofing and sidewalls in the preparation of a completed building.

15 Claims, 16 Drawing Figures

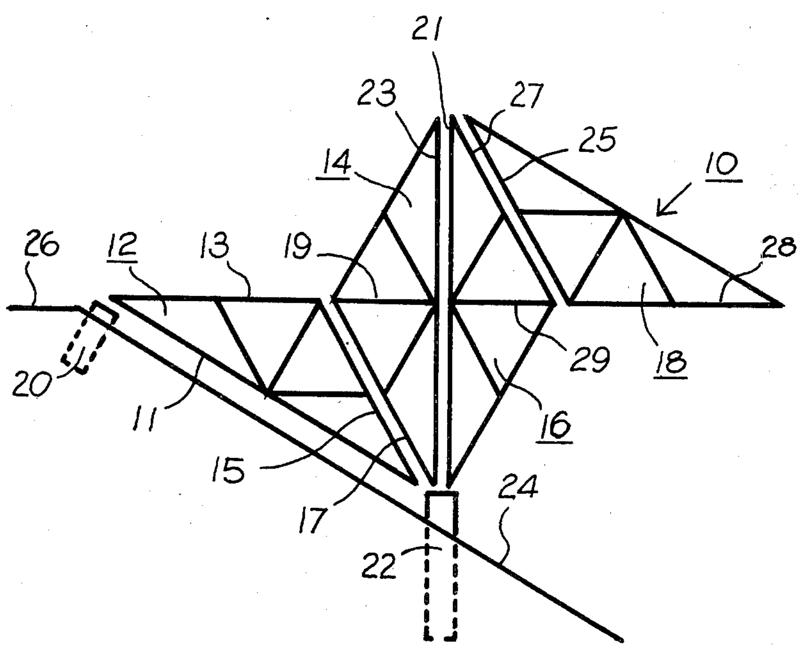
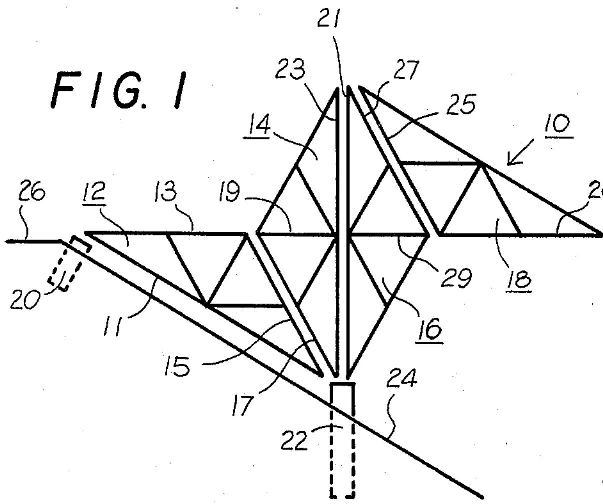


FIG. 1



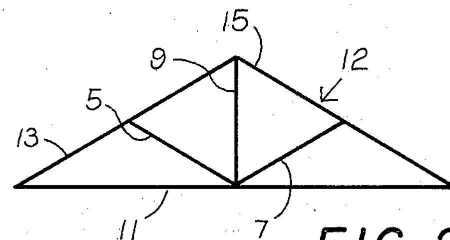


FIG. 2

FIG. 3

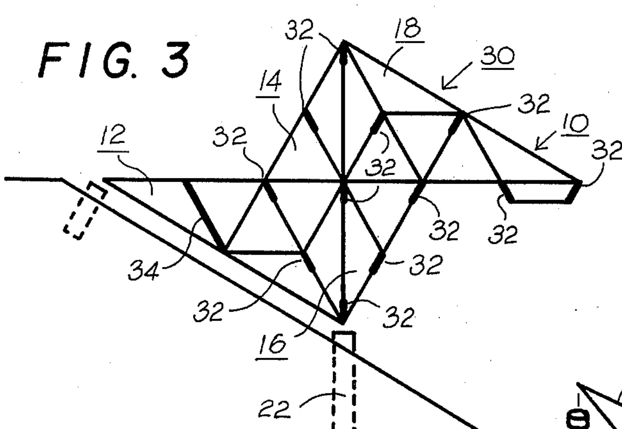


FIG. 4

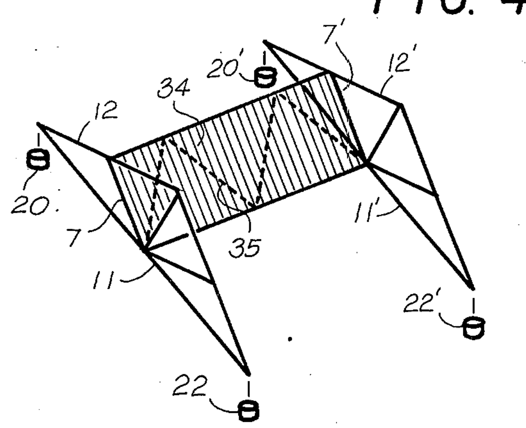
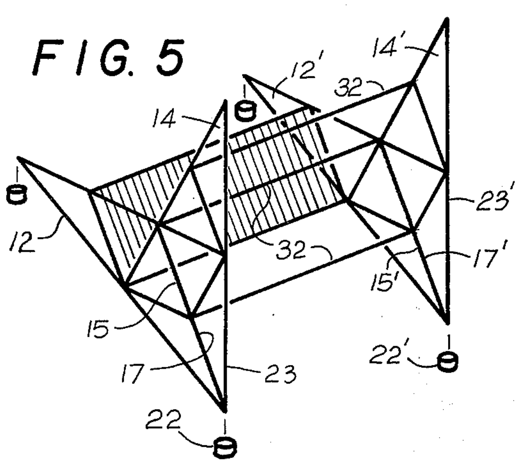


FIG. 5



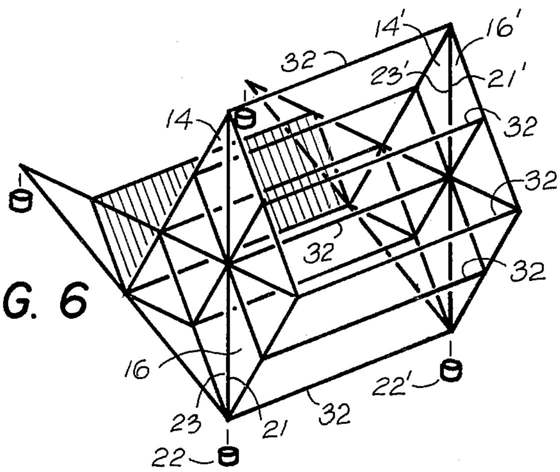


FIG. 6

FIG. 11

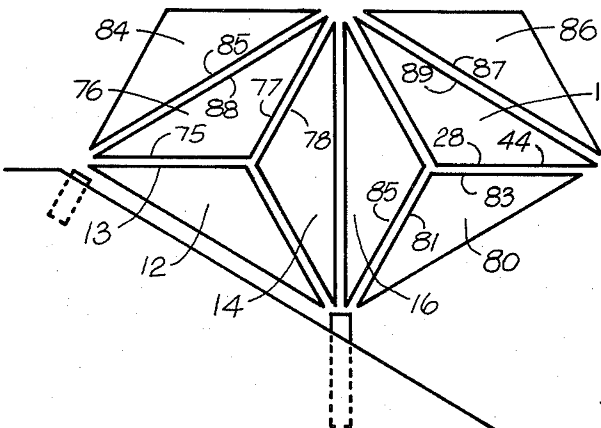


FIG. 12

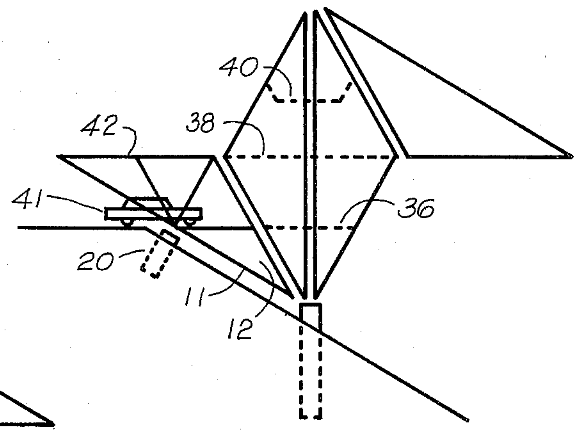


FIG. 13

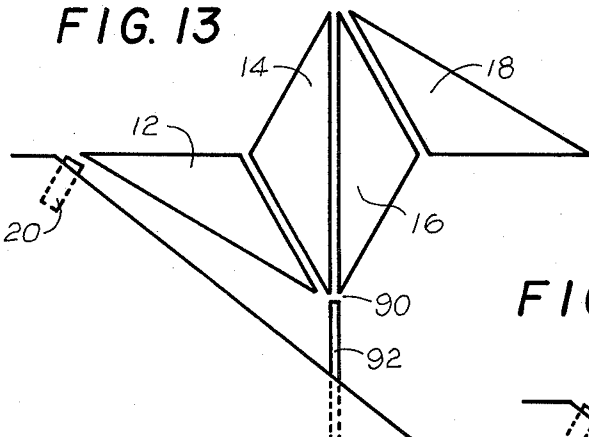


FIG. 14

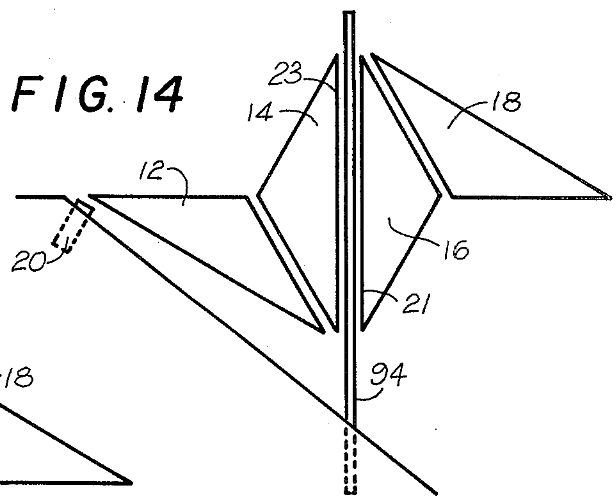
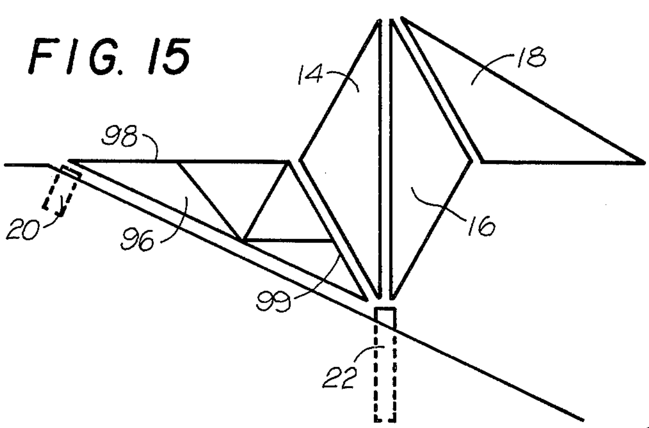


FIG. 15



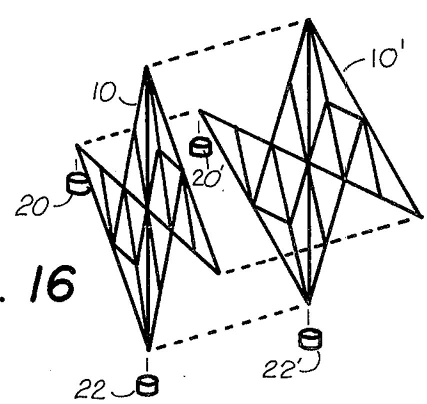


FIG. 16

FIG. 7

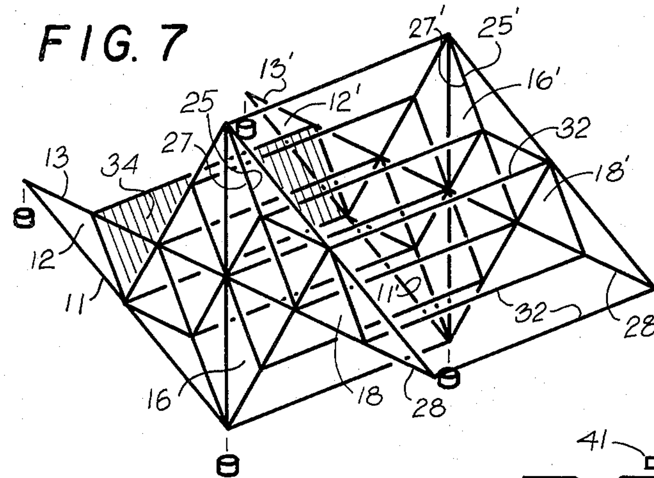
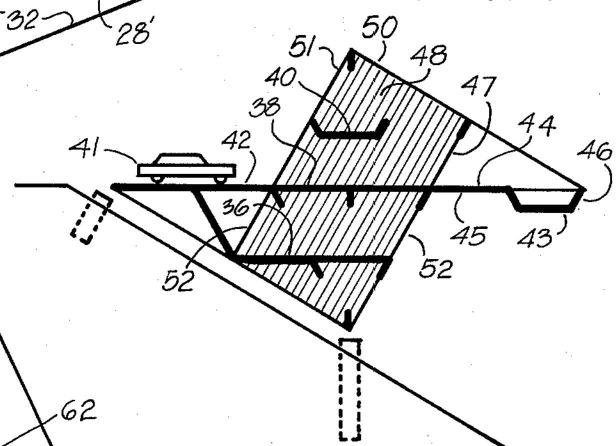


FIG. 8



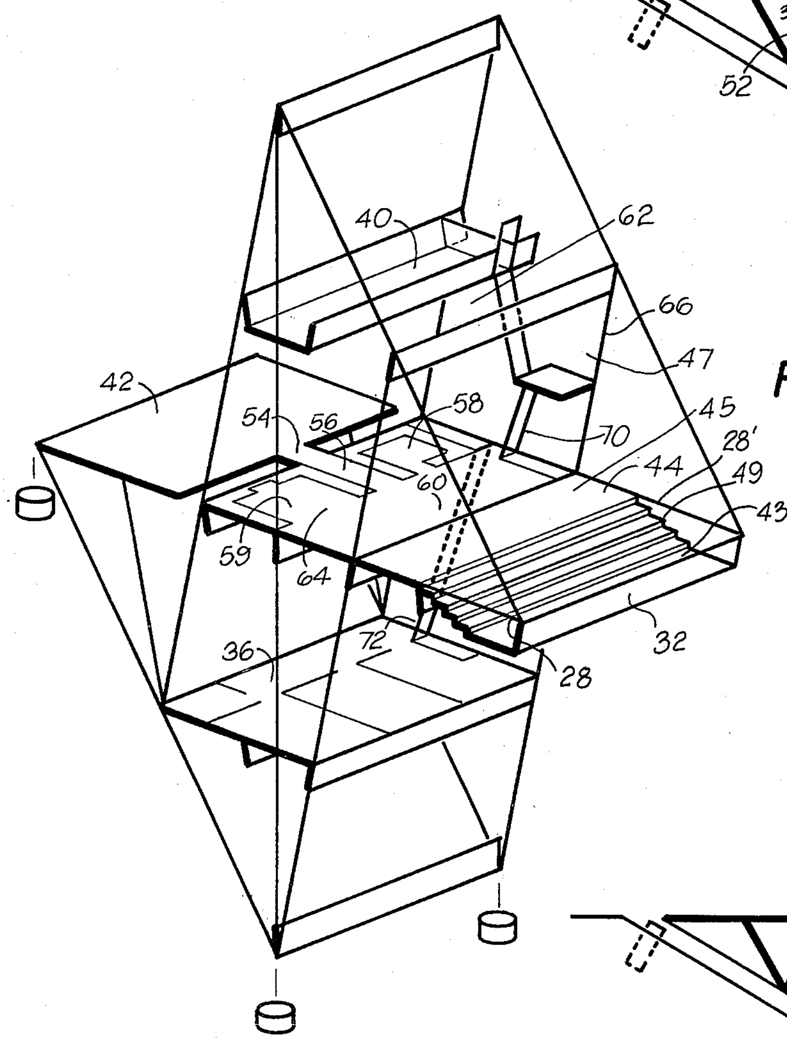


FIG. 9

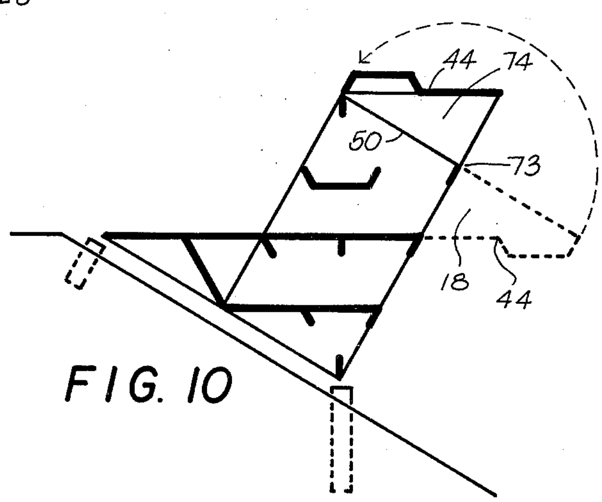


FIG. 10

BUILDING FRAME STRUCTURE FOR HILLSIDES

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to building frame structures and, in particular, to building frame structures suitable for hillside residences.

2. Brief Statement of the Prior Art

The present methods of building construction for hillside development require construction of a perimeter foundation which is expensive and damaging to the environment. The preparation of a perimeter foundation on hillside lots, however, requires extensive grading or trenching and the use of greater amounts of foundation fill such as concrete and the like, resulting in a substantially greater development cost for a building on a hillside building than for one on a flat lot. The grading and trenching operations also change the water runoff, resulting in erosion and rapid and undesirable buildup of algae in the watershed rivers and lakes.

Some prior attempts have been made to reduce the cost and environmental impact of hillside construction. Thus, perimeter foundations have been substituted with king posts or stilts on which a structural frame for the building is suspended. Typical of this type of construction are the following patents: U.S. Pat. Nos. 3,152,366; 3,354,590; 3,524,287; 3,747,289 and 3,633,325.

Most of the prior attempts to provide buildings with foundations of limited dimensions have required a construction uniquely suited for the particular building and/or site and little attempt has been made to utilize prefabricated components such as prefabricated truss members and the like.

BRIEF STATEMENT OF THE INVENTION

The invention comprises a building frame construction which is particularly suited for construction of hillside residences. The frame construction concentrates the structural loading on a minimum of foundation points, typically on four foundation points, that are located in spaced-apart positions on the hillside. This construction thereby eliminates much of the expensive and the adverse environmental impact which results from conventional building on hillside lots. The frame construction utilizes assemblies of prefabricated triangular trusses which, preferably, are of equal shapes and dimensions, thereby standardizing the structural members for ease of fabrication and transportation to the building site. The truss members are fabricated in a shop and are transported to the building site to be erected on the foundation points with suitable equipment such as a crane and the like.

The building frame structure comprises spaced-apart, coextensive, vertical truss assemblies. Each truss assembly includes a first triangular truss member with its base chord mounted on at least two foundation points to orient one of its side chords in a substantially horizontal position. The second triangular truss member is mounted upright from the downhill foundation point with one of its side chords coextensive with and connected to the inclined side chord of the first triangular truss. Preferably, a third triangular truss is placed in the assembly with its base chord coextensive with and connected to the base chord of the second triangular truss and a fourth triangular truss is carried by the

third triangular truss with one of its side chords coextensive with and connected to the uppermost side chord of the third triangular truss and its other side chord substantially horizontally and coplanar with the substantially horizontal side chord of the first triangular truss.

The truss assemblies form side frames for the building structure and are positioned in a spaced-apart vertical orientation by a plurality of laterally extending girders and box trusses to form a rigid, three-dimensional frame structure. In the preferred embodiment all of the triangular trusses of the frame structure are identical, isosceles triangles, however, the first triangular truss of each assembly may have a varied size and shape to adapt the frame structure to particular building sites.

Sidewalls for the building are formed by the attachment of wall sheathing and the like to these assemblies. Flooring, roofing and front and rear walls of the building are carried by the truss assemblies and the lateral girders and box trusses.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described by reference to the drawings of which:

FIG. **1** illustrates an assembly of triangular truss members used in the invention;

FIG. **2** illustrates and identifies the components of a triangular truss member used in the invention;

FIG. **3** is a sectional elevational view through the frame structure of the invention;

FIGS. **4–7** illustrate the stages of construction of the building frame of the invention;

FIG. **8** illustrates the positioning of flooring and the relationship of the interior and exterior portions of a building utilizing the frame structure of the invention;

FIG. **9** is an isometric view of the spaced configuration of the building of FIGS. **8** and **9**;

FIG. **10** illustrates an optional variation of the invention;

FIG. **11** illustrates an alternative embodiment of the invention utilizing up to eight triangular truss members in each wall frame assembly;

FIGS. **12–15** illustrate optional variations in adapting the frame structure to the hillside lot;

FIG. **16** illustrates positioning of the wall truss assemblies in a nonparallel orientation.

DESCRIPTION OF PREFERRED EMBODIMENTS

Referring now to FIG. **1**, there is illustrated an assembly **10** of a plurality of triangular truss members **12, 14,** 16 and **18.** The assembly is shown in a substantially upright vertical position supported from an uphill foundation point **20**]nd a downhill foundation point **22** which are located at spaced apart positions on hillside **24** which is at an incline which is approximately 30° from the horizontal. As pointed out hereinafter, the invention is equally applicable to hillsides having a widely varied inclination to the horizontal although the preferred application of the invention is to hillsides having inclines of at least 30°. The foundation points can be any conventional foundation piling or stilt construction which is adequate to take the lateral and vertical stresses of the building. Typically, foundation points comprising pilings having diameters from 12 to about 36 inches placed at sufficient depth into the hillside for the particular solid consolidation and climatic conditions can be employed. Typically, these foundations would extend to a depth of from 2 to about 10 feet. The frame structure loading is balanced on the downhill foundation points **22** and these are, therefore, the most massive to support the building load. The assembly **10** of triangular truss members **12–18** is seen to include a first triangular truss member **12** which is placed with its base chord **11** extending between and supported by foundation points **20** and **22.** Base chord **11** is secured to the foundation points **20** and **22** with suitable fastening means, typically with metal brackets which are bolted to these foundation points. In the preferred and illustrated embodiment, triangular truss **12** is oriented with its upper side leg **13** substantially horizontally and at a slight elevation above the surrounding terrain **26.**

The second triangular truss member **14** is vertically mounted on the lower foundation point **22** with its lower side chord **17** coextensive with and in joined connection to inclined side chord **15** of triangular truss member **12.** When, as in the preferred embodiment, triangular truss members of equal shapes and dimensions are employed, this construction places the king post member **19** of triangular truss **14** substantially coplanar with horizontal side chord **13** of triangular truss member **12.**

The preferred embodiment of the invention includes third and fourth triangular truss components supported in the illustrated manner. This embodiment includes triangular truss member **16** having its base leg **21** coextensive with and in joined connection to base leg **23** of triangular truss member **14** and with the fourth triangular truss member dependent therefrom with its side chord **25** coextensive with and in joined connection to the upper most side chord **27** of triangular truss **16.** Again, with the preferred embodiment which employs triangular truss members of substantially identical shape and dimensions, the lowermost side chord **28** of triangular truss **16** are generally coplanar and define a horizontal extension of the substantially horizontal side chord **13.**

As previously mentioned, the preferred triangular truss members used in assembly in the invention are of the same shape and size, and most preferably, are shaped as an isosceles triangle. This preferred form is illustrated in FIG. **2** where the truss component is shown to have a bottom chord **11** and side chords **13** and **15** which define the exterior dimensions of the triangular truss. The truss also includes a king post **9** extending from the mid point of the base chord **11** to the apex of the truss and a plurality of internal web members such as web members **5** and **7.** This type of truss member is commonly used in light building construction for the support of roofing and the like. The truss member can be formed of any suitable material such as wood, steel, concrete, plastic or combinations thereof. Because of its high strength and availability, wood is presently preferred, particularly for construction of light buildings such as residences and the like. These king post truss components are commonly available as factory prefabrications and such prefabricated components are ideally suited for employment in the invention.

Referring now to FIG. **3,** there is illustrated a sectional elevational view of a three dimensional frame structure utilizing the invention. The frame structure **30** includes at least two, spaced-apart and coextensive assemblies such as **10** formed of triangular truss members **12–18.** The assemblies are maintained in their spaced relationship by a plurality of laterally extending girders **32** and one or more truss box beams **34.** These girders and beams provide lateral bracing to the building and offer convenient support for flooring, roofing and front and rear walls in a manner described in greater detail in subsequent paragraphs. FIG. **3** illustrates a particular advantage of the frame structure since it shows that half of the structure, including the third and fourth truss members of each assembly, is cantilevered beyond the downhill foundation point **22.** The invention, therefore, not only eliminates need for a perimeter foundation but, also, permits use of foundation points at closer locations than the span of the building. This greatly increases the adaptability of the frame structure to a wide variety of hillside lots without requiring extensive cutting and filling of the hillside.

The construction of the building frame is depicted in FIGS. **4–7.** The construction site is prepared in advance of the erection of the frame structure by clearing of brush, trees and the like and the placement of two pairs of uphill foundation points **20** and **20′** and downhill foundation points **22** and **22′.** Preferably, these are positioned at spaced-apart distances to provide a full span support of the base chords **11** and **11′** of triangular truss members **12** and **12′.** The triangular truss members are trucked to the building site and are erected thereon by suitable means such as by a crane and the like.

The first triangular truss members **12** and **12′** are placed with their base chords **11** and **11′** carried on the foundation points and are rigidly secured thereto by suitable brackets, bolts, and the like. A box truss **34** is positioned laterally, extending between triangular truss members **12** and **12′.** The box truss **34** is of conventional construction and can include a plurality of diagonal, internal braces **35** to impart a structural strength and rigidity thereto. As illustrated, the box truss **34** is positioned coextensive with and in joined connection to truss web members **7** and **7′.**

Referring now to FIG. **5,** the next step in the fabrication of the building frame structure is the erection of the second triangular truss member of each of the truss assemblies. These truss members **14** and **14′** are raised in an elevated position with their base chord **23** and **23′** in a substantially vertical position and are moved to the assembly to rest their lower corners on the downhill foundation points **22** and **22′** and to join their apexes with those of the first triangular truss members already in place. This positioning places side chord **17** and **17′** of the truss members **14** and **14′** coextensive with the inclined side chords **15** and **15′.** These coextensive chords are then joined together in a conventional fashion and the assembly is completed by placing a plurality of lateral girders **32** which extend between the frame assemblies. As illustrated, these girders can be secured at truss points on the triangular truss members such as at the joined apexes of the two members and at the junction of their web members with their side chords.

The third triangular truss members **16** and **16′** are then placed in each of the two, spaced-apart truss member assemblies. This is performed by lifting the third triangular truss members into place with their lower corners resting on the downhill foundation points **22** and **22′** and with their base chords **21** and **21′** coextensive with the base chords **23** and **23′** of the second triangular members **14** and **14′** already in place. The bottom corners of the truss members are secured with conventional brackets, bolts and the like to the downhill foundation points 22 and 22' and the coextensive base chords 21 and 21' are joined with conventional fastening means to the vertical base chords 23 and 23'. Thereafter, a plurality of lateral girder members are lifted into place and secured to the frame assembly. These are shown as six additional girders 32 which extend between common points on the third triangular truss members 16 and 16'.

Preferably, a fourth triangular truss member is then incorporated in each of the spaced-apart frame assemblies. These fourth members 18 and 18' are placed as shown in FIG. 7 with their uppermost corners and apexes coincident with the uppermost corners and apexes, respectively, of the third triangular truss members 16 and 16'. This positioning places side chords 25 and 25' of the fourth triangular truss members coextensive with the side chords 27 and 27' of the third truss member. These chords are joined together with conventional fasteners to support the fourth triangular members in the illustrated position with their unattached side chords 28 and 28' in a substantially horizontal plane and substantially coplanar with the substantially horizontal side chords 13 and 13' of truss members 12 and 12'. Additional girders 32 are placed laterally across the frame structure between common points of the fourth truss members of each of the two truss member assemblies. A total of three additional girders are shown as added to the structure.

The resultant frame structure can be seen to be entirely supported from no more than four foundation points, although if desired, additional foundation points could be provided along base chords 11 and 11' of the first triangular truss members. This reduction of the foundation points for the building structure to a minimal number eliminates a perimeter foundation about the building, greatly reducing the cost and environmental impact of hillside development. Additionally, it can be seen that the frame structure is formed entirely of shop fabricated components which, in the illustrated and preferred embodiment, are of substantially identical shapes and sizes. Even the lateral girders 32 can be cut to size before being transported to the building site and can be lifted into place with the crane that is used to erect the triangular truss members in the assembly. Similarily, the box truss 34 can be prefabricated in a factory with controlled assembly line techniques, greatly reducing the fabrication costs of these box truss members. The box truss members are utilized to bear the lateral loading on the structure, chiefly wind loading. Accordingly, the number and location of these box truss members can be varied as necessary and as dictated by the lateral loadings to be expected on the frame structure.

The location of the floor levels in the frame structure is illustrated by the sectional elevation of view of FIG. 8. The floor areas can be readily divided by interior partitions (not shown) with a wide freedom of choice since the entire structure is carried by the outer sides or truss member assemblies 10 and 10'. The interior partitions are non-load-bearing and can be placed at any location desired. As depicted, the interior of the frame structure can be provided with three floor levels comprising lower level 36, main floor level 38 and an upper mezzanine or loft level 40. Preferably, the main floor 38 is coplanar with a front deck area 42 and a cantilevered rear deck 44. In the preferred embodiment, the rear deck 44 is divided into two levels; the main level 45 is coplanar with the main floor of the structure and a lower deck portion 43 which is subjacent thereto so that furniture on deck 43 and protective side rails 46 do not obstruct the view from the main floor of the structure.

Sidewall sheathing 48 is placed on the frame structure in the manner illustrated to provide living quarters having an approximately parallelogram shape in cross section. This provides for the most economical use of wall sheathing panels since only rectangular areas need be covered which eliminates wastes and scraps from the sheathing. Roofing is placed on the lateral planar areas 50 and sidewall sheathing material is placed on lateral plane 52 to enclose the living space.

A particular advantage of the structure as thus described is that the triangular truss member assemblies 10 and 10' carry the bearing loads of the dwelling, thereby allowing a great freedom in choice in wall envelope materials used for the side wall sheathing which need only carry the wind loadings experienced by the building. Accordingly, a wide variety of materials can be used including transparent, translucent or opaque sheets and panels of plastics, glass, wood and the like. When triangular truss members are employed which have the preferred 120° apex angle, the front wall-roof panel 51 is inclined to the horizontal at 60° and is classified by most building codes as a wall component. Accordingly, any of the available roofing or wall sheathing can be used on the structure, greatly increasing its diversity and adaptability to a particular site.

The forward deck 42 can conveniently serve as a parking level for cars 41 and the like. The upper portion 47 of the rear lateral wall 52, which is above the main floor level 38, is desirably formed with glass including sliding glass panels and the like to afford the dwelling occupants unlimited visibility over deck 44.

The arrangement of the interior quarters of the dwelling is shown by FIG. 9. This shows the parking deck 42 with provisions for parking to either side of the entrance corridor 54 leading to the entry 56 of the dwelling. The area to either side of the entry can be utilized for the kitchen area 58 and for a fireplace-den area 59. The entry corridor 59 then opens into the main living-dining area 60 which is open at 62 to provide an area that is 1½ stories high. The living area is flanked by sidewalls 64 and 66 and rear wall 47 which, as previously mentioned, can be of glass construction to permit visibility over deck 44 and can have at least one sliding glass panel to permit access to this deck. The rear deck 44 has its upper level 45 coplanar with the main living-dining area 60 and, preferably, has a subjacent outer area 43 that is reached by stairs 49 which descend to the lower level. The handrail extending about the lower deck level is formed by a lateral girder 32 employed in the frame structure and the exposed portion of side chord 28 and 28' of the fourth triangular truss members used in each of the two frame assemblies. The location of a subjacent deck level 43 in the illustrated manner insures that furniture, recreational appliances and the like will not obstruct the view from the main living-dining area.

The upper mezzanine level 40 can be utilized for a sleeping area and is reached by a stairwell 70 from the main living-dining area 60. Another stairwell 72 leads to the subjacent floor level 36 which is sufficiently isolated from the main living-dining area as to be useful as the master bedroom, bathroom and dressing areas. The space beneath the subjacent level **36** can be utilized, if desired, for storage.

The floor area of the living quarters and the area of the recreational and parking decks depends considerably on the lateral dimension or width of the frame structure. Preferably this dimension is not less than about 12 feet and can be of any greater span as dictated by the building site and/or available construction materials. With wood girders and beams, the maximum unsupported span is approximately 40 feet. Should structures of large confines be desired it is entirely possible to utilize additional triangular truss assemblies, e.g., an additional and identical assembly could be placed to either or both sides of assemblies **10** and **10'** to provide a very large single occupancy residence or a common wall apartment or condominium structure.

FIG. **10** illustrates a modification of the structure in which the fourth triangular truss members **18** and **18'** have their base chords articulated at hinge point **73** so that the deck **44** at the rear of the structure can be pivoted about this hinge point **73** into an elevated position above roof **50**. This construction can be of particular advantage in cold weather areas since the deck can be utilized in its lowered position during the summer and elevated to the raised position shown in FIG. **11** during the winter where it will support heavy snow loads and provide an air space **74** above the roof panel **50** which would reduce heat losses from the roof panel. This also eliminates the accumulation of snow and the like on the deck **44** and permits a clear and unobstructed winter view from the main living-dining area **60** of the dwelling.

Various modifications of the frame structure can be readily made without departing from the scope of the invention. If desired, additional triangular truss members can be incorporated in the frame structure to expand its interior dimensions. FIG. **11** illustrates the utilization of additional triangular truss members in the frame structure such as triangular truss member **76** which is mounted at the front of the frame structure with its die chords **75** and **77** coextensive with and in joined connection to side chord **13** of triangular truss member **12** and side chord **78** of triangular truss member **14**. An additional triangular truss member **80** can be similarly positioned beneath the rear deck portion **44** with its side chords **81** and **83** coextensive with and in joined connection to side chord **85** of triangular truss member **16** and side chord **28** of triangular truss member **18**. This construction results in a parallelogram shape which, as illustrated, hs approximately uiamond shape in cross section.

The useful -wloor area of the structure can be greatly expanded by the addition of two -4ord triangular truss members to each of the assemblies of truss members. Thus, triangular trus97members **84** and **86** can be mounted in the frame assembly with their base chords **85** and **87** coextensive with and in joined connection to base chord **88** of triangular truss member **76** and base chord **89** of triangular truss member **18**. Lateral girders and box truss members are employed in this construction extending between common points on these triangular truss members of each frame assembly in the manner previously described to provide lateral stability to the structure and to provide supporting beams for wall, floor and roof panels.

The invention as thus described locates the frame assemblies with the opposite extremities of the lower or first triangular truss member **12** positioned on the foundation points. The entire structure can be positioned at a greater uphill elevation, if desired, by mounting the triangular truss member **12** on the uphill foundation point **20** at an intermediate position along its base chord **11**. This is illustrated in FIG. **12** and functions to provide a protective or over-hanging upper side chord **13** to provide a car port or garage structure for cars **41** and a superimposed forward deck area **42** that is thereby useful for recreational purposes. In this construction, the entry to the building would be at the lower floor level **36** with stairs leading to the main living-dining area **38** and from there to the mezzanine level **40**. These floor levels would be assigned services compatible with this adaption of the building structure.

The structure as thus described has been illustrated in placement on a hillside with an approximate 30° incline from the horizontal. The structure is not limited to such hillsides and can be employed on hillsides of much steeper inclination such as shown in FIGS. **13** and **14**. Since the structure can be positioned at a minimal number of foundation touch down points, it is very versatile for mounting on elevated pilings, stilts and the like. As illustrated, the building can be supported from an upper foundation point **20** and a subjacent foundation point **90** which is the upper surface of a vertical pier **92** that is sunk into the hillside a sufficient depth to provide the necessary support for the structure. Another technique that could be employed would be to utilize a support formed by pole **94** extending the entire height of this structure. As thus illustrated, the base chords **23** of triangular truss member **14** and **21** of triangular truss member **16** are coextensive with and in joined connection to the upper portion of the supporting pole **94**.

The building structure is also adaptable to hill sides of lesser inclination than 30°, as illustrated in FIG. **15**. The structure can be readily adapted for such hillsides by substituting triangular truss member **96** for the first triangular truss member **12** previously employed. The truss member **96** can be tailored for the particular site to have an upper, substantially horizontal side chord **98** of greater length than the other side chord **99** which would be of the same dimensions as the side chords used in the remaining triangular truss members **14, 16** and **18**. Similarly, the base chord of this member is longer to span the greater distance between the uphill foundation point **20** and downhill foundation point **22**.

The structure as illustrated in FIGS. **7** and **9** has the triangular truss member assemblies **10** and **10'** disposed in substantially parallel alignment. This arrangement is not necessary and may not even be desirable in certain applications. Accordingly, these assemblies can be positioned, if desired, in a nonparallel alignment such as illustrated in FIG. **16** where the structure is shown as having an enclosed interior space of dimensions expanding towards its rear to provide maximum utilization of the structure on properties with irregular property lines.

The invention has been described and illustrated with regard to presently preferred embodiments thereof. It is not intended that the invention be unduly limited by this description of preferred embodiments. Instead, it is intended that the invention be defined by the means and their obvious equivalents set forth in the following claims.

I claim:

1. A frame structure for a building and the like located on a hillside, formed of a plurality of coextensive and laterally spaced-apart assemblies of triangular truss members with lateral girders connected therebetween, each of said triangular truss members having a base chord and two side chords, each of said assemblies of triangular truss members including a first triangular truss member positioned with its base chord supported by a plurality of foundation points at least one of which is located downhill from another to locate an upper side chord in substantially horizontal position to said hillside and said other side chord of said first triangular truss being at an incline to said upper side chord and a second triangular truss member having a lower vertex supported on the lowermost foundation point and a lower side chord coextensive with and in joined connection to the inclined side chord of said first triangular truss member and the base chord of the second triangular truss being substantially perpendicular to the upper side chord of said first triangular truss member.

2. The building frame structure of claim **1** wherein said lateral members include at least one box truss member bearing diagonal bracing to carry lateral loading on said frame structure.

3. The building frame structure of claim **1** wherein flooring is established between the substantially horizontal side chords of the first triangular truss members of the truss members assemblies, thereby providing a forward deck area.

4. The building frame structure of claim **1** wherein said lowermost foundation point supports a vertical pole and the base chord of said second triangular member is coextensive with and in joined connection to said pole.

5. The building frame structure of claim **4** wherein said triangular truss members are isosceles triangles.

6. The building frame structure of claim **4** wherein said triangular truss members have apex angles of 120°.

7. The building frame structure of claim **1** including, in each of the triangular truss assemblies, a third triangular truss member having its base chord coextensive with and in joined connection to the base chord of said second triangular truss member of each of said assemblies.

8. The building frame structure of claim **7** including, in each of the triangular truss member assemblies, a fourth triangular truss member having one of its side chords coextensive with and in joined connection to the uppermost side chord of said third triangular truss member and its other side chord disposed substantially horizontal and coplanar with the substantially horizontal side chord of the first triangular truss member.

9. The building frame structure of claim **8** wherein side wall sheathing is applied to each of said assemblies to define an enclosed volume having a cross section of a parallelogram.

10. The building frame structure of claim **8** wherein flooring material is established between the substantially horizontal side chord of the fourth triangular truss members of the truss member assemblies to thereby establish a rear deck area.

11. The building frame structure of claim **10** wherein said rear deck area is divided into a main deck area coplanar with the main floor area of the building and an outer, subjacent deck area with a plurality of stairs extending therebetween.

12. The building frame structure of claim **7** including a main floor level established on lateral members extending between the apexes of said second and third triangular truss members and coplanar with the substantially horizontal side chord of the first triangular truss member.

13. The building frame structure of claim **12** wherein an upper mezzanine level is provided by flooring established on lateral extending frame members.

14. The building frame structure of claim **12** wherein flooring material is established across lower, lateral expanding members to thereby provide a floor level subjacent to the main floor level.

15. The building frame structure of claim **11** wherein the base chords of said fourth triangular truss members are articulated at a hinge point intermediate their length whereby the cantilevered rear deck of said structure can be pivoted and folded over the roof of the enclosed building.

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