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Barlow

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[54] **EXPANDABLE A-FRAME TYPE TRAILABLE BUILDING STRUCTURE**

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[52] **U.S. Cl.** **52/69,** 52/90, 52/66

[51] **Int. Cl.** **E04b 1/343**

[58] **Field of Search**.....52/66, 69, 70, 64

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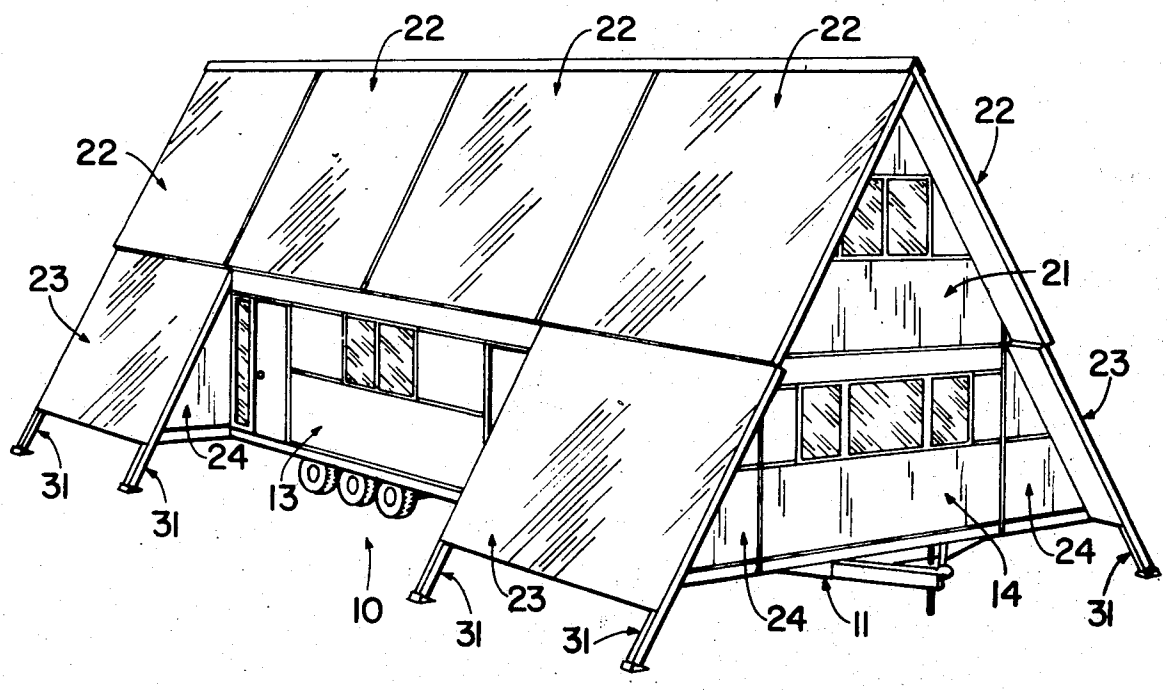
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Assistant Examiner—Henry E. Raduazo
Attorney—Cohen & Liss

[57] **ABSTRACT**

A mobile home having wall members hingedly mounted to the structure for allowing the members to assume an outwardly extending angularly oriented position. Floor extensions are moved for connection with wall members to form additional living space. Telescoping braces are connected to the lower wall members and engage the ground thereby stabilizing the structure.

2 Claims, 9 Drawing Figures



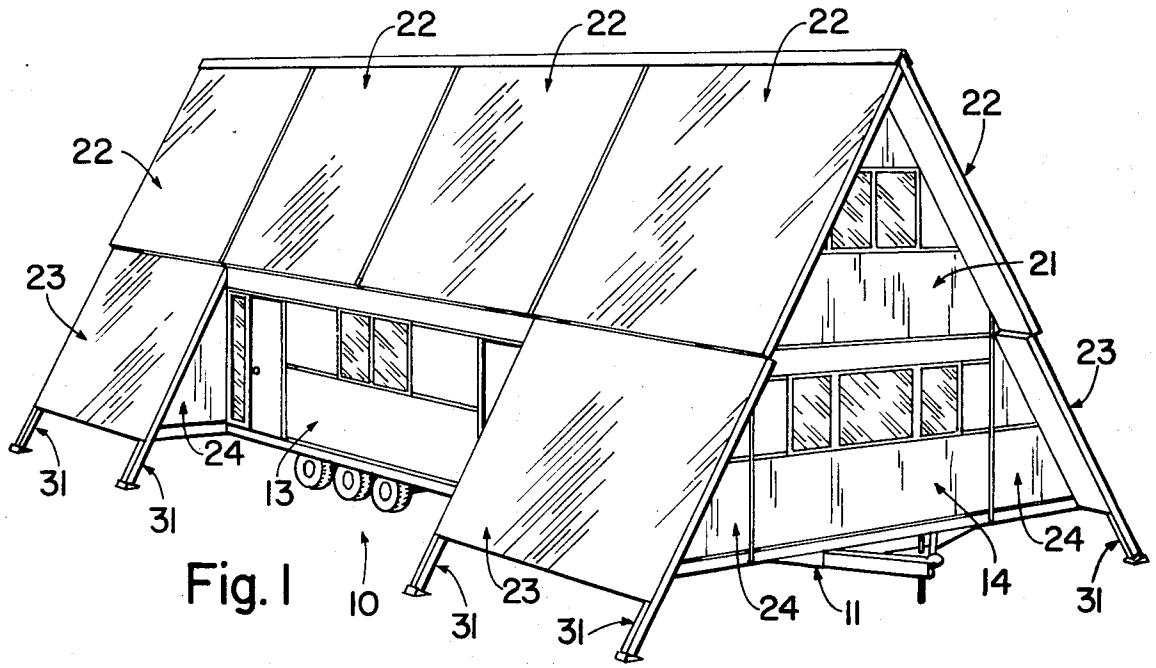


Fig. 1

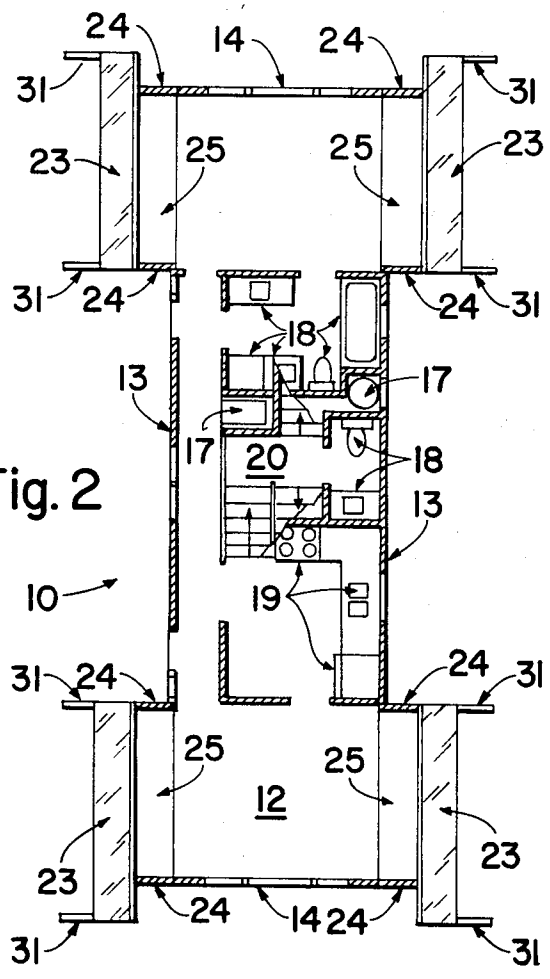


Fig. 2

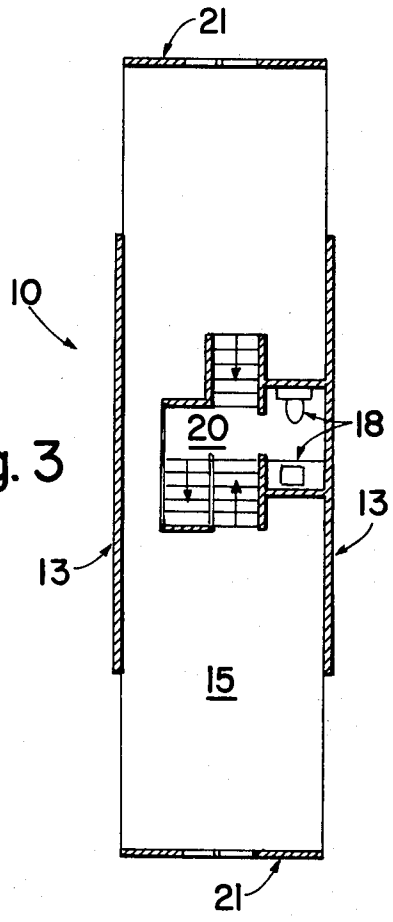


Fig. 3

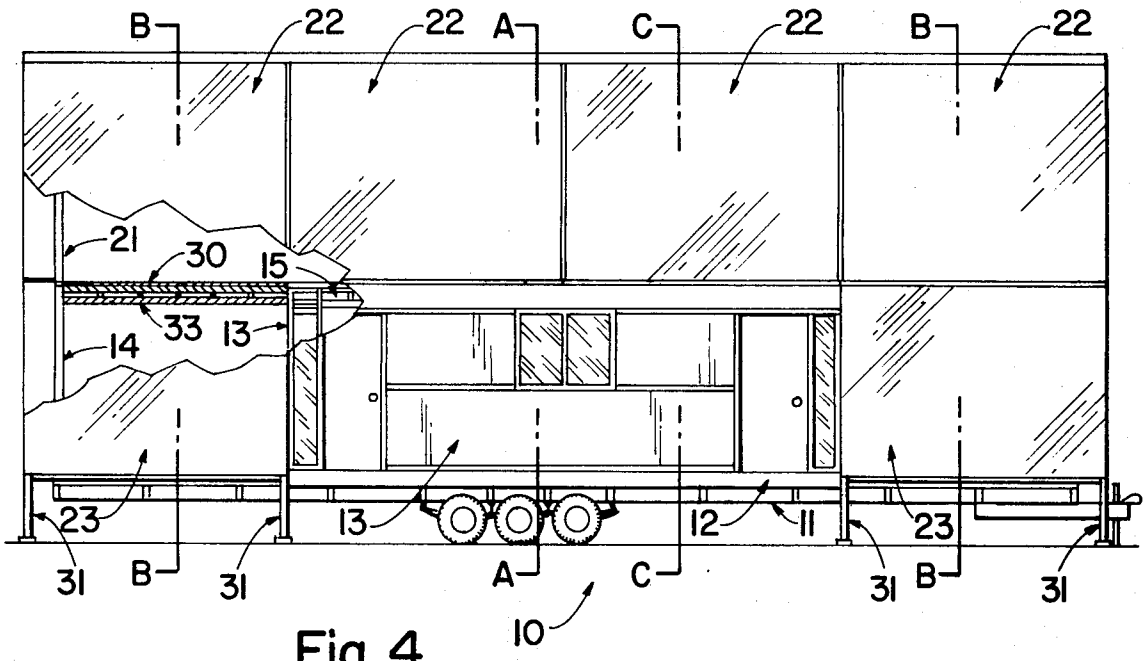


Fig. 4

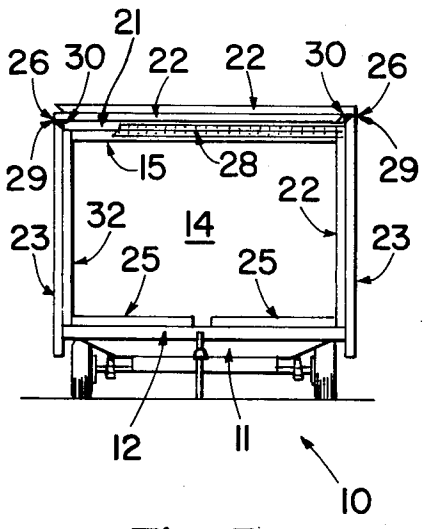


Fig. 5

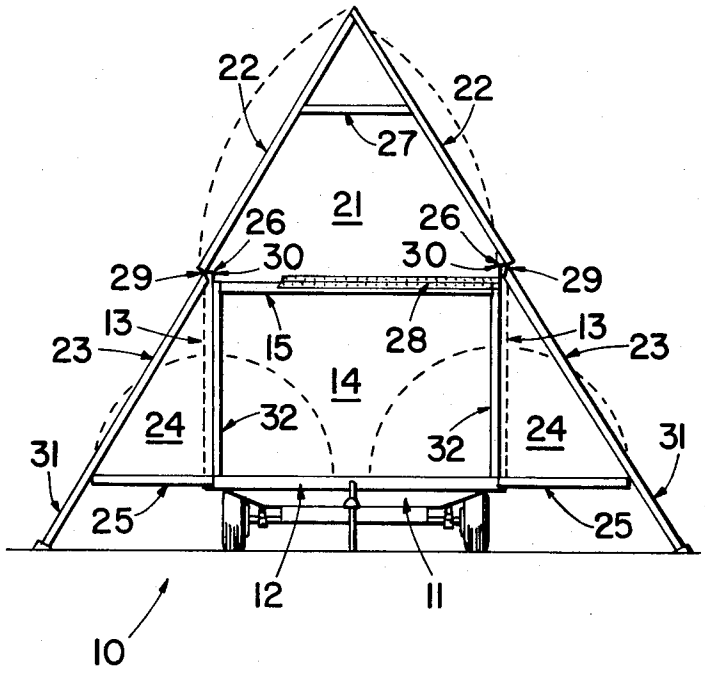


Fig. 6

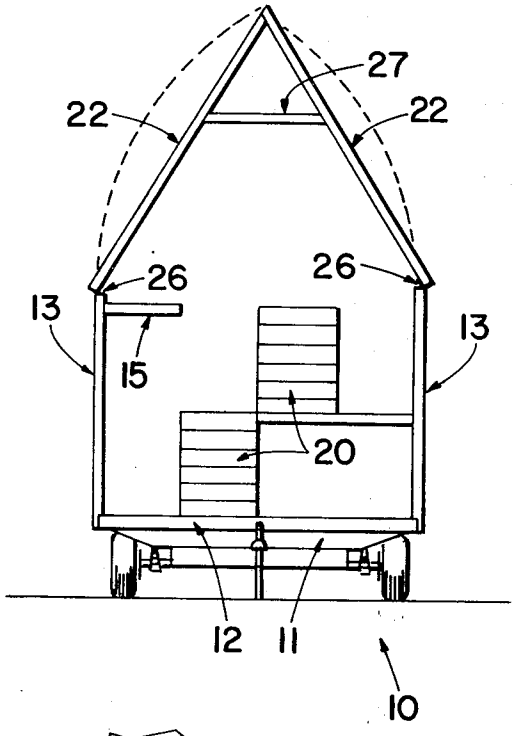


Fig. 7

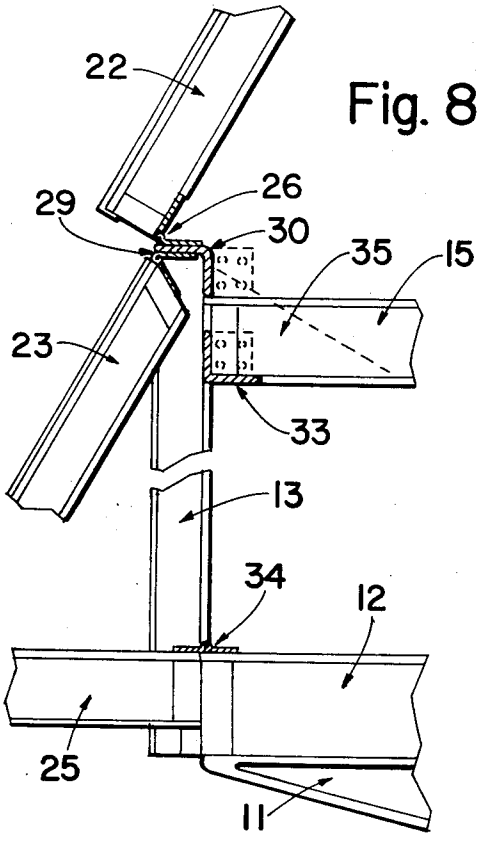


Fig. 8

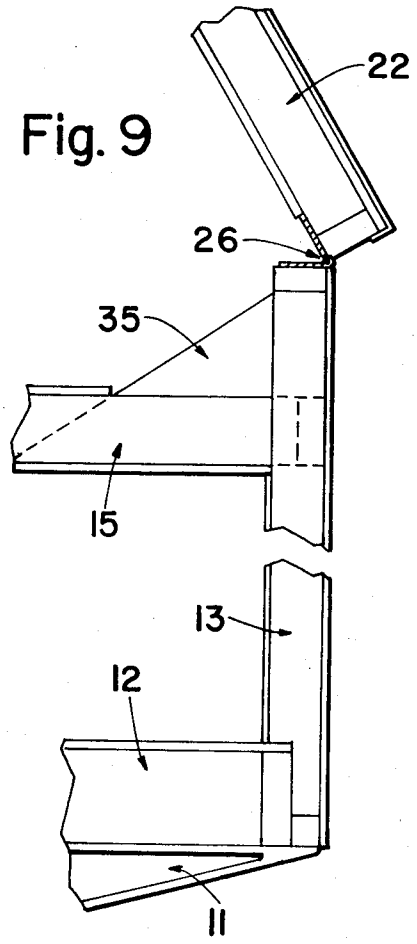


Fig. 9

EXPANDABLE A-FRAME TYPE TRAILABLE BUILDING STRUCTURE

This invention relates to expandable trailable building structures, and the object of this invention is to provide an improved and simplified means by which a trailable building structure, that meets highway transit requirements can be expanded at the location site into a stabilized two-story A-frame type structure.

One object of this invention is to provide a trailable building structure with a series of hinged sections which when expanded from horizontal positions on top of the structure to diagonal and vertical positions, form a completely gabled roof and wall area, adding an entirely livable second story to the structure.

Another object of this invention, essential to the first, is to provide the trailable building structure with a series of hinged side wall sections which when expanded from a vertical to a diagonal position, form in addition to more living area, a means of stabilizing the structure through extensions which attach to the ground.

In the process of expansion, the structure takes on the appearance of an A-frame type building, much more aesthetically pleasing than the conventional long boxy looking trailable building structure.

With the above more important objects in view, and such other objects as may become apparent in the following specifications, the invention is shown by the arrangement and construction of corespondingly numerated parts set forth in the accompanying drawings and pointed out in the claims which form a part of this specification.

FIG. 1 is a perspective view of the invention, illustrating the structure in the expanded position, as it would appear at the location site.

FIG. 2 is a plan view of the invention, illustrating the structure in the expanded position at the first floor level, including the stair area leading up to the second floor.

FIG. 3 is a plan view of the invention, illustrating the structure at the second floor level in the expanded position, including the stair area leading down to the first floor.

FIG. 4 is a side view of the invention, illustrating the structure in the expanded position, the cutaway portion showing essential details of angle iron spans in relation to end and sidewalls.

FIG. 5 is a cross-sectional end view of the invention, illustrating the structure in the folded position as it would appear in transit.

FIG. 6 is a cross-sectional end view of the invention, illustrating the structure in the expanded position, as it would appear at the location site.

FIG. 7 is a cross-sectional view of the invention, illustrating the structure in the expanded position at station A—A of FIG. 4.

FIG. 8 is a detailed portion of a cross-sectional view of the invention, illustrating the structure in the expanded position at station B—B of FIG. 4.

FIG. 9 is a detailed portion of a cross-sectional view of the invention, illustrating the structure in the expanded position at station C—C of FIG. 4.

Referring now to the accompanying drawings in detail, the invention consists of an expandable trailable building structure designated by the numeral **10**, which embodies in its construction a rigid steel I-beam frame **11**, with necessary wheels and a hitch unit for connecting to a towing vehicle. Said I-beam frame carries a generally rectangular base structure comprising of a main floor **12**, fixed side walls **13**, fixed end walls **14**, and a second floor **15**. Permanent partitions in said base structure provide a means for installing utilities **17**, bathroom fixtures **18**, kitchen fixtures **19**, and stairs **20**. Connected to said base structure by a series of piano type hinges are, two foldable triangular gable end walls **21**, eight (four to each side) foldable rectangular interconnecting roof sections **22**, four(two to each side) foldable rectangular vertical sidewall sections **23**, eight(four to each side) attachable triangular endwall sections **24**, four (two to each side) foldable rectangular floor sections **25**. In its folded position, this structure meets all the requirements for highway transit.

In more detail, it will be noted that in the first phase of expansion of the structure, piano hinges **26**, which secure the interconnecting rectangular roof sections **22**, to the top portions of fixed sidewalls **13**, allow these sections to be raised from a horizontal to a diagonal position and interconnect with each other to form a gabled roof. Bracing members **27**, attached to the folding roof sections on each side at regular intervals, act in the A-frame principle to add rigidity to the roof and allow the use of lighter roof materials. It will also be noted that piano hinges **28**, which secure the foldable triangular gable end wall sections **21**, to the top portion of fixed end walls **14**, allow these sections to be raised from a horizontal to a vertical position and to be joined with the end portions of folding roof sections **22**, enclosing the second floor area of the structure. Partition arrangements can be added to said second floor area when in the expanded position to divide it into suitable sleeping and storage areas.

Now, in the second expansion phase of the structure, it will be noted that piano hinges **29**, which secure the top portions of foldable rectangular vertical sidewall sections **23**, to a series of four (two to each side) angle iron spans **30**, which connect fixed walls **13**, and **14**, allow said sections to be raised from a vertical to a diagonal position and to be joined at their base to foldable rectangular floor sections **25**. Attached to said foldable rectangular vertical sidewall sections **23**, at their base when in the expanded position, are provisions for extending beams **31**, which attach to the ground, giving stability to the structure, especially in severe wind storms.

It will be further noted in FIGS. **6** and **8** that angle iron spans **30**, attached to fixed sidewalls **13**, and to end posts **32**, of fixed end walls **14**, form an opening for said sidewall sections **23**, when in the folded position. In addition to this it will be noted in FIGS. **6** and **8** that another series of four(two to each side) angle iron spans **33**, attached to fixed sidewalls **13**, and to the end posts **32**, of fixed end walls **14**, act as a support for the second floor in the area over said vertical sidewall sections **23**.

Refering back to FIGS. **6** and **8**, it will be noted that the foldable rectangular floor sections **25**, are attached to the main floor **12**, by piano hinges **34**, partially concealed behind end posts **32**, in the drawing, and can be rotated **180** degrees from a horizontal position over the main floor **12**, to attach to extended foldable vertical sidewall sections **23**. To complete the endwalls when the structure is expanded, provision is made for the at-

tachment of triangular endwall segments **24**, to end posts **32**, of fixed endwalls **14**, foldable vertical sidewalls **23**, and foldable floor sections **25**.

Further details in FIGS. **6**, **7**, **8** and **9**, show that fixed sidewalls **13**, extend upward beyond the second floor **15**, at unequal heights on on opposite sides, allowing the attached foldable rectangular roof sections **22**, to lie in the folded position, in the order, right side over left side, exactly horizontal over the foldable triangular gable endwalls sections **21**. Provision is made for the addition of gusset plates **35**, at regular intervals attached to the studs of fixed sidewalls **13**, and the joists of the second floor **15**, to add rigidity to the structure.

From the description above, it is seen that this invention provides for a trailable building structure which when at a location site can be expanded to form a **2** story A-frame type of structure. Any suitable hoisting device, such as a crane or simple arrangement of beams and block and tackle can be used for raising the foldable sections of the structure into their proper positions.

Having thus described the embodiment of the invention, it should be understood that certain structural modifications an addaptations could be made without changing the scope of the invention, as described in the claims.

What is claimed is:

1. An expandable building structure comprising:

a fixed support frame having side walls and transverse end walls;

hinge means attached to the side walls of the frame;

at least one foldable roof section mounted to the hinge means for pivotally moving about a horizontal axis, fixed relative to the frame, from a horizontal position with respect to the frame to an angularly oriented position with respect to the frame;

at least one foldable vertical side wall section mounted to hinge means for pivotally moving about a horizontal axis, fixed relative to the frame, from a vertical position with respect to the frame to a downwardly coextensive angularly oriented position with respect to the roof section;

a main floor attached to the frame;

and floor extension means connected to the main floor by floor mounted hinge means for pivotally moving about a horizontal axis, fixed relative to the frame, from juxtaposition with the main floor to a laterally coplanar extended position with respect to the main floor;

whereby the sidewall section and the roof section form an inclined sidewall of an A-frame structure.

2. The structure as defined in claim **1** together with at least one extendable support means connected to the sidewall for abutting the ground when the structure is assembled in an A-frame configuration;

whereby the extendable support means provides stability for the erected building structure.

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