

[54] BUILDING STRUCTURE WITH HINGED WALLS

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52/79, 52/127

[51] Int. Cl. **E04h 1/02**

[58] Field of Search 52/68, 66, 127, 69, 65, 71,
52/79, 67, 64, 70

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Primary Examiner—Henry C. Sutherland

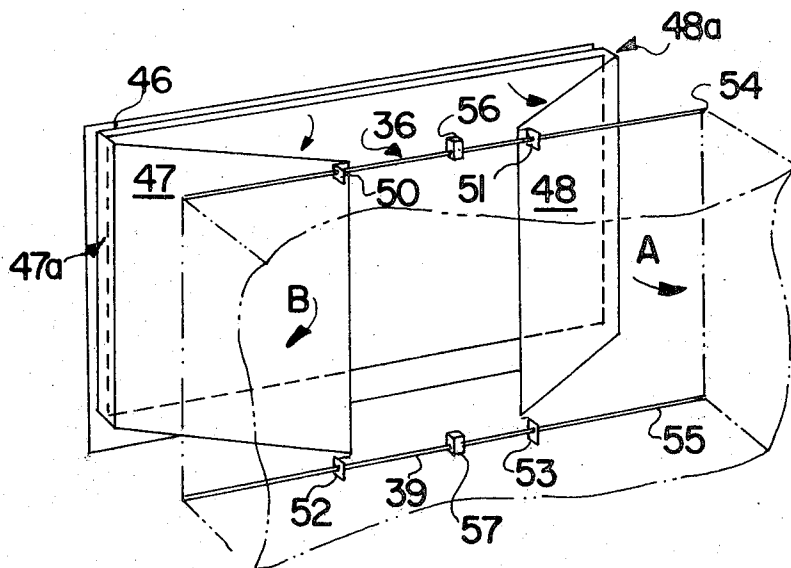
Assistant Examiner—Leslie A. Braun

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[57] ABSTRACT

The specification discloses a movable and collapsible building structure having a fixed wall center module and extensible side portions for tripling the floor space of the building. The extensible side portions have extensible side walls which move laterally outward from the center module and are attached thereto by means of pivotally mounted end walls. The end walls are pivotally attached to the movable side walls and are reciprocally mounted to the center module so that the vertical edges of the end walls traverse the longitudinal edges of the center portion of the module as the side wall moves from its collapsed position to its extended position. A folding floor and sliding roof are provided for the extensible portions.

16 Claims, 16 Drawing Figures



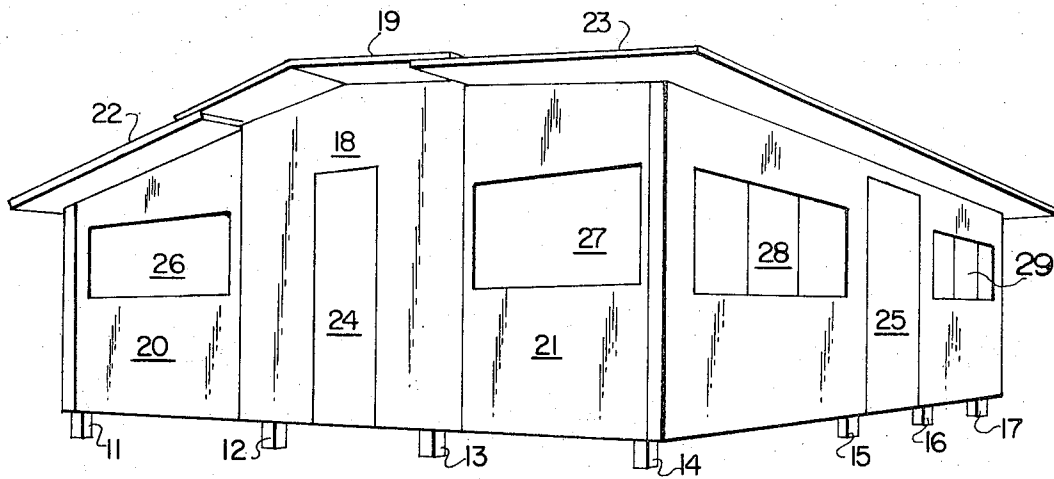


FIG. 1

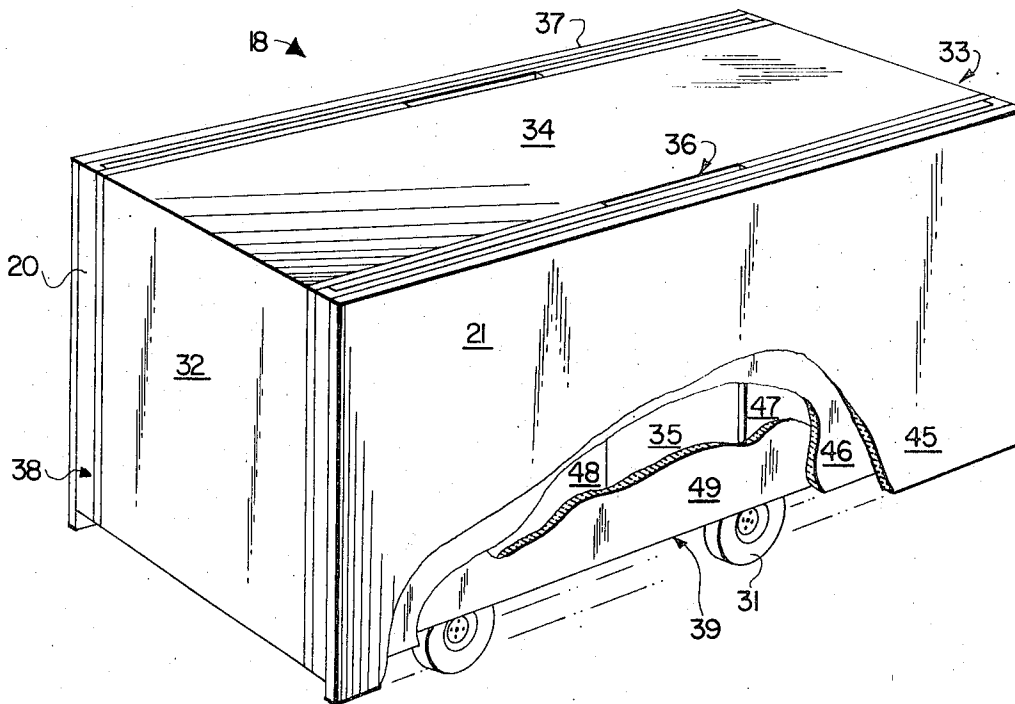


FIG. 2

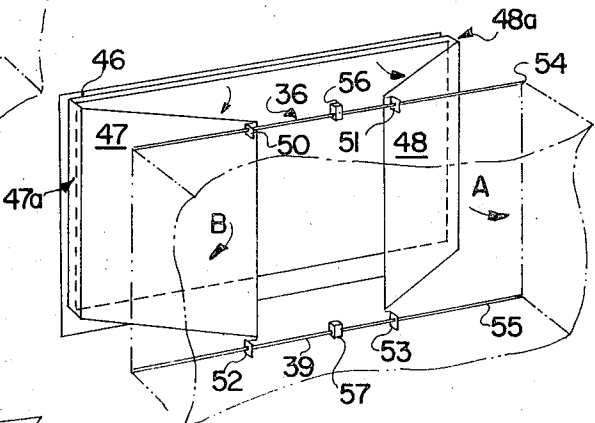
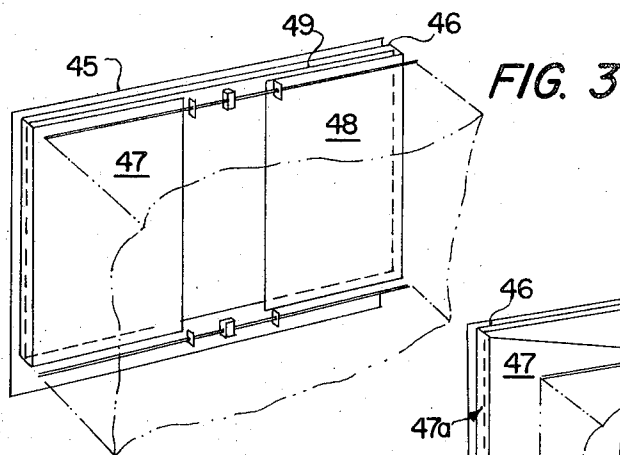


FIG. 4

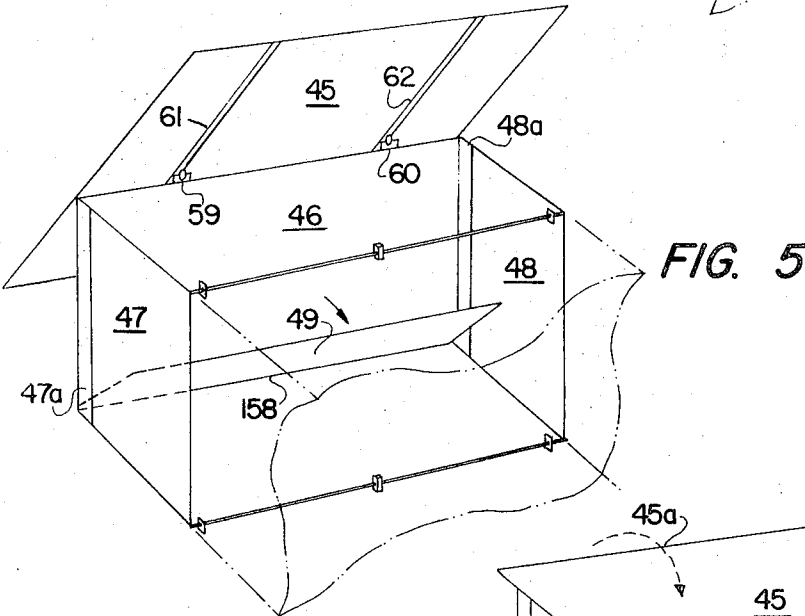


FIG. 5

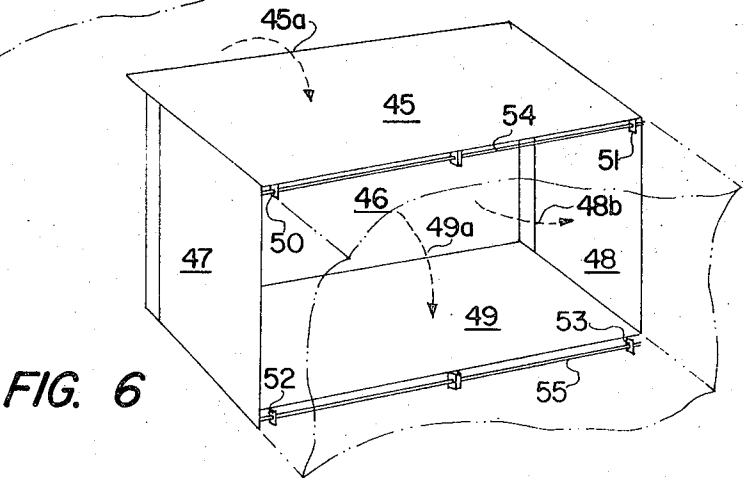
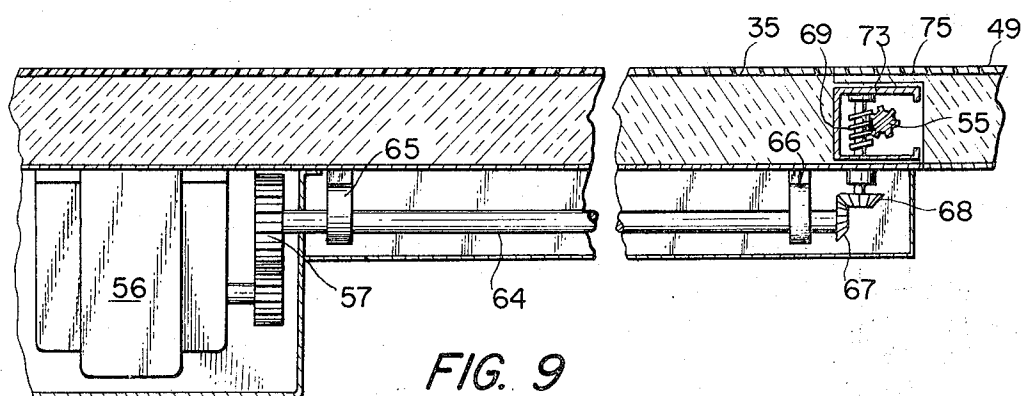
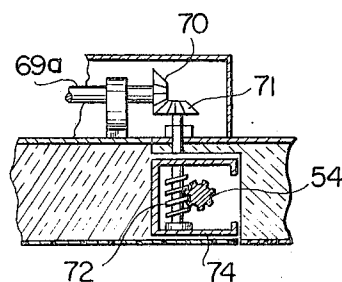
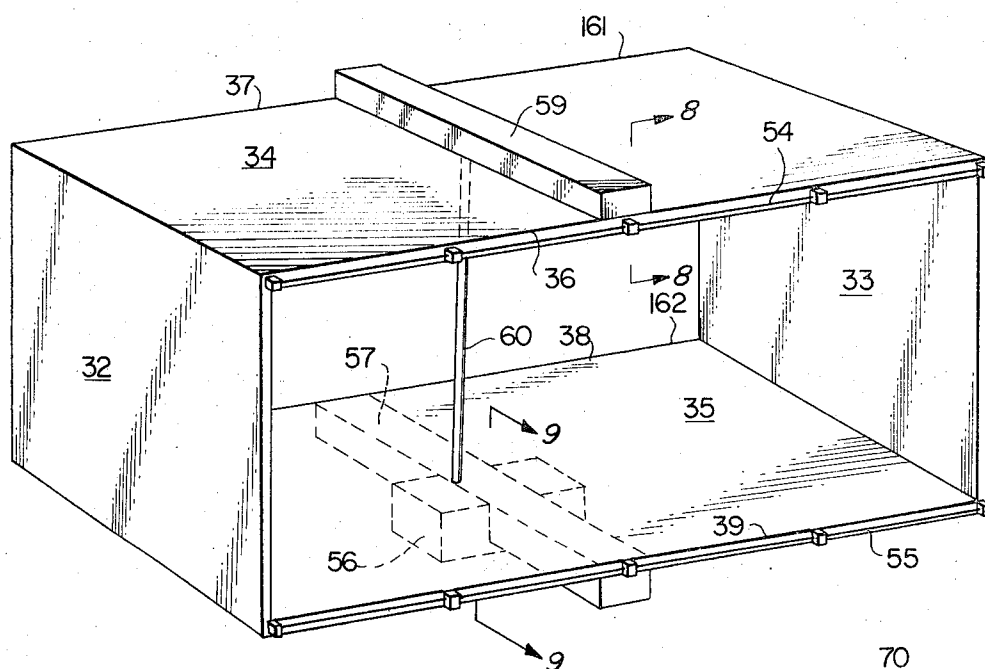


FIG. 6



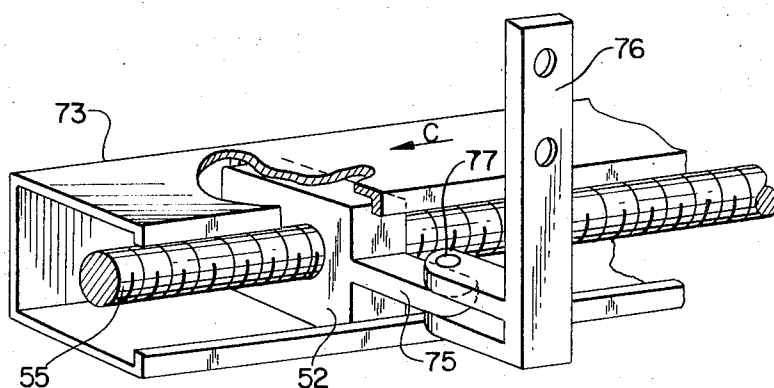


FIG. 10

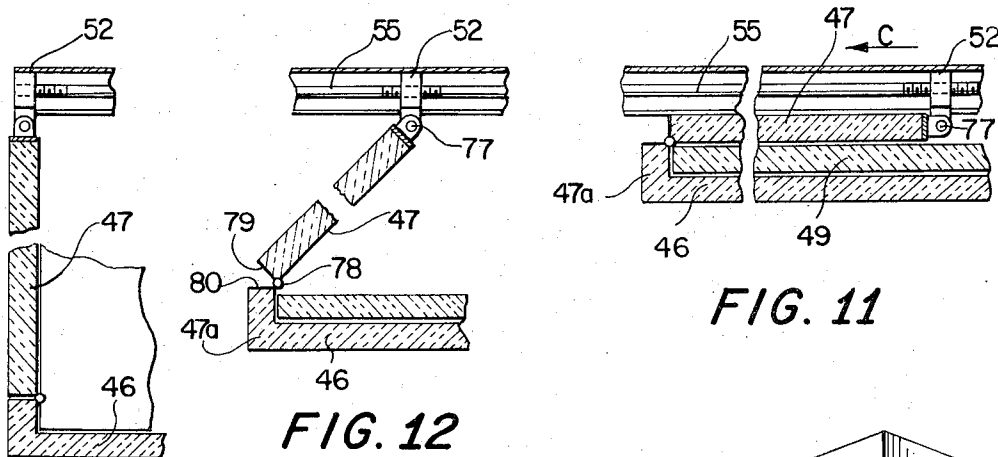


FIG. 11

FIG. 12

FIG. 13

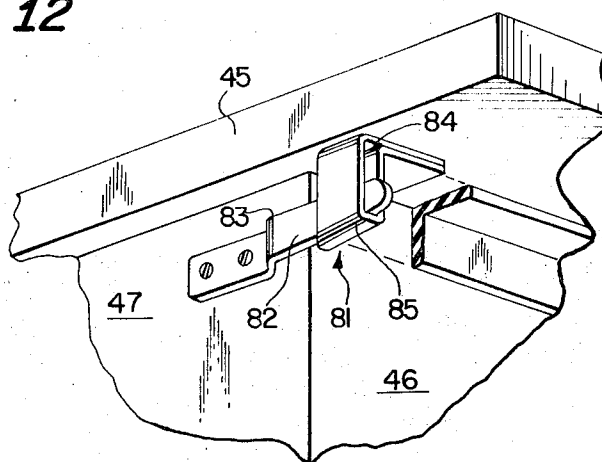


FIG. 14

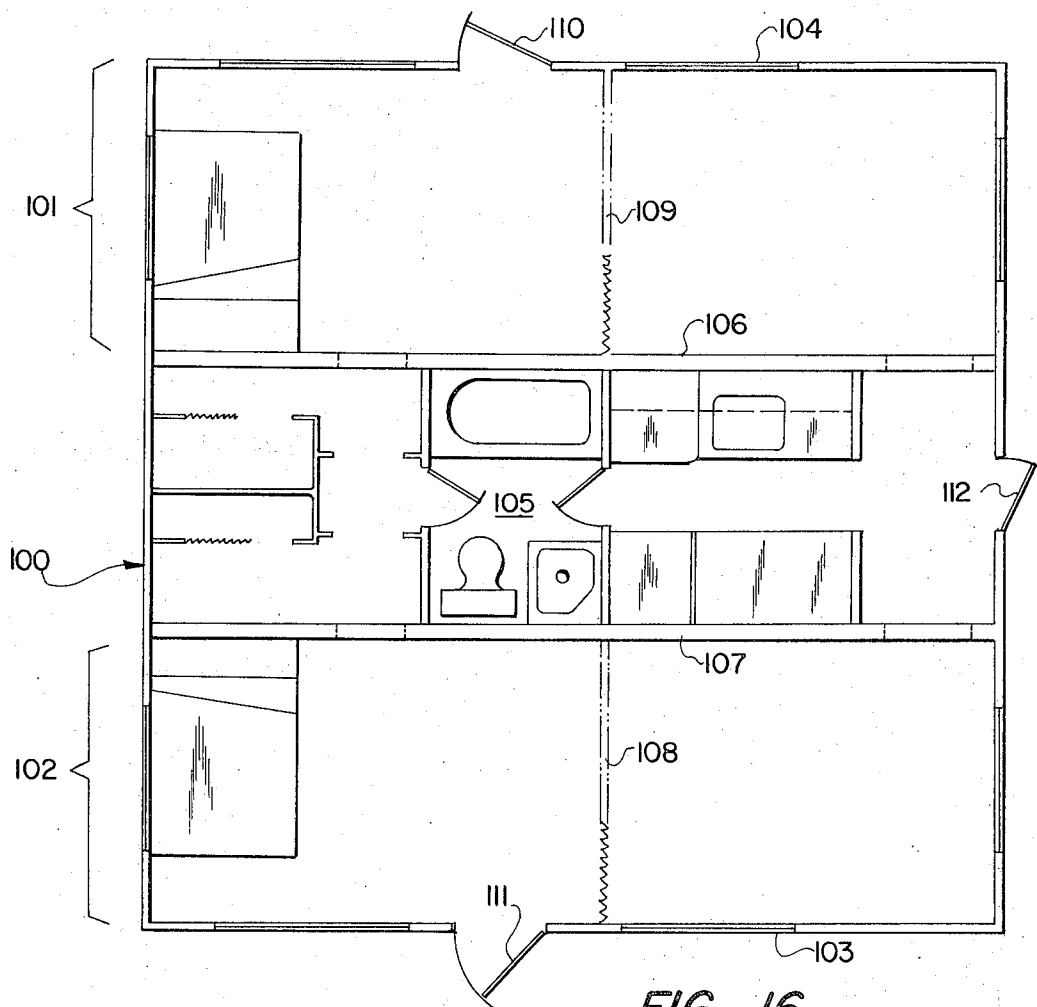


FIG. 16

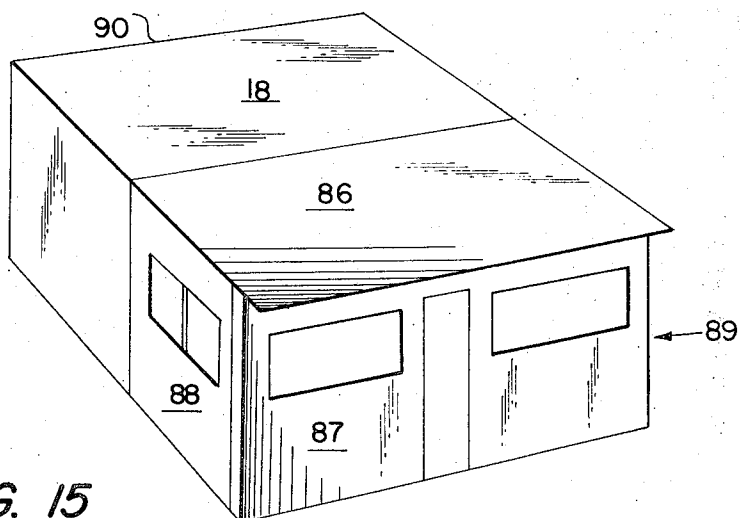


FIG. 15

BUILDING STRUCTURE WITH HINGED WALLS**BACKGROUND OF THE INVENTION**

This invention relates generally to the area of movable and collapsible buildings. In particular, it relates to the portable or mobile home industry.

Since mobile homes, or portable homes, are normally moved over highways, various state and government restrictions regulate the width of the mobile home. Generally speaking, most state laws restrict the width of any moving vehicle to 8 feet, and it is necessary to obtain a special permit with an attendant increase in cost to move any structure exceeding that width. In order to provide more spacious accommodations in a portable or mobile home, designers have devised a variety of ways for providing expansible, knock-down, or modular mobile homes. In some of the larger mobile homes, two individual modules 12, 14, or 16 feet wide and up to 80 feet long are moved singularly, and then bolted together at the site to provide for a relatively large dwelling structure. The moving costs for these modules are extremely high inasmuch as special permits must be obtained in each state. Additionally, some states impose a maximum limit of 8 or 10 feet and detours must be made around these states.

The extreme size of the larger modules also presents a very serious safety hazard. In moving an extra wide load of 14 or 16 feet, the article will consume much of the space available for two lanes of normal traffic. The extra wide load also requires that the maximum speed of the vehicle be greatly reduced. The combination of the slow speed and extreme width presents a very real hazard for motorists who must pass or meet the oversized load. Additionally, when exceptionally large modular components are attached to a normal tractor vehicle, the weight of the modular component may be greatly in excess of the tractor vehicle. This causes the module to displace the tractor under extreme wind loading. On downhill transit a swaying motion may also occur. In such instances, it is not uncommon for the tractor to be moved from side to side as the module sways back and forth. This presents an additional hazard to motorists who must attempt to pass the load in transit.

Inasmuch as mobile homes are particularly attractive to young couples establishing a household, to individuals who change job locations or jobs frequently, or to retired persons who travel, many thousands of large mobile structures are being moved daily, by special permits, over the highways. These homes create a definite hazard to the motorist, and a great deal of inconvenience at increased expense to the owners of the modules.

As was pointed out previously, various attempts have been made to provide expansible vehicles which will expand from a relatively narrow width to a substantially wider width. Representative examples of this type of vehicle are U.S. Pat. No. 3,348,344, which issued to L. Tatevossian on Oct. 24, 1967, and U.S. Pat. No. 2,744,781, which issued to J. J. Black on May 8, 1956.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a collapsible and portable mobile structure that will collapse to a width of 8 feet for transport over the

nation's highways, and which will expand to 24 feet in width. This will provide approximately the same width as two of the extra wide modules which must be moved with special permits. The present invention however may be moved without a special permit and will traverse virtually all of the nation's highways in safety with relatively little inconvenience to other motorists. The present invention utilizes a fixed wall module in the center with retractable or expansible side portions. The inner fixed wall module defines opposing end walls and coplanar upper and lower floor and ceiling panels. Each of the coplanar panels defines a longitudinal edge extending the length of the module. In conventional construction, the module may be 24 feet in length; however, if desired, it could be made in any length without departing from the scope of the present invention. Conventional mobile homes are normally from 8 to 80 feet in length. Movable sidewalls are provided on either side of the fixed wall module and are movable from a collapsed position immediately adjacent the fixed wall module to an extended position. The sidewalls remain parallel to the fixed wall module as they travel from their collapsed to their extended position. A pair of movable end walls are pivotally mounted to the expansible side walls and pivot outwardly as the sidewalls are moved to their extended position. Means are provided on the fixed wall module for attaching the vertical edges of the pivoting end walls to the longitudinal edges of the fixed module so that the vertical edges of the end walls traverse the longitudinal edges of the fixed module as the side wall moves outwardly from its collapsed position to its extended position. At this point a floor member which is pivotally connected to either the extensible sidewall or the fixed center module is lowered into place and becomes coextensive with the floor panel of the center module. A roof member which is slidably attached to the horizontal sidewall is slid up into place and latched to the fixed wall module.

Each of the longitudinal edges of the fixed wall module contains an elongated and rotatable screw device which carries a pair of fixed nut members. The nut members are pivotally connected to the sidewalls and move longitudinally along the longitudinal edges of the fixed wall module as the sidewalls move from their collapsed position to their extended position. Additionally, means are provided to wedge the slidable roof portion into place to effect a tight and waterproof seal.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of the portable and expansible building constructed in accordance with the present invention which has been expanded to its maximum width.

FIG. 2 is an isometric view of an alternate embodiment of the structure disclosed in FIG. 1 collapsed to its minimum dimensions and mounted on trailer wheels for transport.

FIG. 3 is an isometric view from inside the fixed module looking outwardly at the expansible sidewall of the present invention, when the sidewall is fully collapsed.

FIG. 4 is an isometric view from within the fixed wall module wherein the sidewall has partially completed its outward movement.

FIG. 5 is an isometric view from within the fixed wall module illustrating the expansible portion with its side-

walls fully extended and the roof and floor panels being moved into position.

FIG. 6 is an isometric view from within the fixed wall module wherein each of the movable panels is fixed in its extended and expanded location.

FIG. 7 is an isometric view of the fixed wall module illustrating in schematic form the drive means for extending the sidewalls.

FIG. 8 is a cross-sectional view of the drive means for rotating the rotatable and threaded shafts.

FIG. 9 is a cross-sectional view of the drive means taken along section line 9—9 of FIG. 7.

FIG. 10 is a partially cut-away isometric view of the nut carrier used to transport the pivotally mounted sidewalls from their collapsed to expanded positions.

FIG. 11 is a cross-sectional view illustrating a pivotally mounted end wall in its collapsed position.

FIG. 12 is a cross-sectional view illustrating a pivotally mounted end wall in its partially expanded position. FIG. 13 is a cross-sectional view illustrating the pivotally mounted end wall in its fully expanded position.

FIG. 14 is an isometric view of the means used to secure the roof panel to the expansible sidewall.

FIG. 15 is an isometric view of an alternate embodiment of the present invention illustrated in its expanded form.

FIG. 16 is a plan view of a mobile home configuration constructed in accordance with the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 is an isometric illustration of an expansible and movable building constructed in accordance with the present invention. The building is illustrated in its fully expanded state supported by semi-permanent posts 11—17. In the preferred embodiment of the invention, a fixed wall center module 18 is equipped with a gable roof 19 and two expansible side portions 20 and 21. Each of the side portions are equipped with pitched roofs 22 and 23. As will be further illustrated in FIG. 16, the home is equipped with a front entrance 24 and side entrance 25. The building in its fully expanded state is 24 feet wide and from 20 to 60 feet in length. A building 24 × 24 feet has been used for the purposes of illustration in the drawings. If the building is to be a mobile home it would normally be equipped with windows 26—29. If it is intended to be used as a construction site office, a tool shed or a portable machinery shed, the windows and doors may be omitted and the exterior configuration of the structure altered appropriately.

FIG. 2 is an isometric view of an alternate form of the invention wherein the building is equipped with a flat roof. FIG. 2 illustrates the expansible building completely retracted to an 8 foot width and mounted on wheels 31 for transport. In the fully retracted position illustrated in FIG. 2, the fixed wall module includes opposing end walls 32 and 33 and a flat roof portion or ceiling panel 34. The center module would also include a lower floor panel 35. The fixed wall module includes four longitudinal edges 36—39 which extend the longitudinal length of the fixed wall module 18. The side portions 20 and 21 are completely collapsed against the fixed wall module. The collapsible sidewall 21 is partially cut away to illustrate the manner in which the var-

ious walls and ceiling structures are retracted. The roof panel 45 is normally suspended on the outer edges of the module. Immediately underneath the roof panel is the expansible sidewall 46. Sidewall 46 remains parallel to a plane defined by the longitudinal edges 36 and 39 and the upstanding end walls 32 and 33. Sidewall 46 remains parallel throughout its entire length of travel from its collapsed position to its fully extended position. The floor panel 49 is pivotally connected to the sidewall 46 at the lower edge of sidewall 46 and folds upwardly against the sidewall before the end walls 47 and 48 are collapsed.

The manner in which the extensible side portion is expanded and collapsed is fully illustrated in FIGS. 3—6. In FIG. 3, the end walls 47, 48 are fully retracted and are parallel to sidewall 46. Roof member 45 is suspended vertically and parallel to the sidewall 46. The floor member 49 is also parallel and is suspended immediately between the sidewall 46 and the end walls 47 and 48. As is illustrated in FIG. 4, the end walls 47 and 48 are pivotally attached to the sidewall 46 by means of a slight offset 47a and 48a. This offset is necessary to accommodate the thickness of the floor panel since it is folded between the sidewall and the end walls. As the building expands, the sidewalls 47 and 48 are carried by nut carriers 50—53 and are carried along the longitudinal edges of the module 36 and 39 as the building expands outwardly. The nut carriers 50—53 are moved outwardly along threaded and rotatable shafts 54 and 55. In actual practice, nut carriers 50 and 52 will have right-hand threads while nut carriers 51 and 53 will have left-hand threads. The drive means for the rotatable shafts 54 and 55 has been schematically illustrated at 56 and 57. As the shafts 54 and 55 rotate, the nut carriers 50—53 are carried outwardly in the direction illustrated by arrows A and B. During the expansion of the side portion, the entire load of the side portion is carried by nuts 50—53 which are restrained by channels as will be hereinafter illustrated. When the sidewalls have been fully expanded as illustrated in FIG. 5, the floor panel 49 is lowered into place. As illustrated in FIG. 5 the floor panel 49 is pivotally connected to sidewall 46 by a hinge member 158. After the floor member has been lowered into place, it will be co-extensive with the floor panel of the fixed wall module illustrated by the dotted lines in FIG. 5.

As illustrated in FIG. 5 the roof panel 45 is carried by the sidewall 46 and is slidably mounted thereon. In the preferred embodiment, a plurality of rollers, schematically illustrated as rollers 59 and 60, are provided on the upper extremity of sidewall 46 and fit into tracks 61 and 62 mounted on the underside of roof panel 45. The roof member is drawn upwardly over the sidewall 46 by means of a cable or other device and securely locked into place as will be hereinafter illustrated.

The completely expanded side portion is illustrated in FIG. 6. Representative arrows 45a and 49a and 48b illustrate the manner in which the various panels are unfolded to provide the side portion illustrated therein. The nut carriers 50—53 have been moved to their extreme outer position to securely lock sidewalls 47 and 48 in place. When it is desired to retract the side portion, the reverse process is used. The roof member 45 is lowered over the side of the sidewall 46 as illustrated in FIG. 5, and the floor panel 49 is retracted or pivoted upwardly against sidewall 46. After the floor and roof panels have been secured, the shafts 54 and 55 are ro-

tated in the opposite direction and the end panels 47 and 48 are drawn inwardly in the direction opposite to the arrows A and B illustrated in FIG. 4. The pivoting movement of sidewalls 47 and 48 will be further illustrated in FIGS. 11-13.

The drive means for the rotatable shafts 54 and 55 is illustrated in FIGS. 7-9. As illustrated in FIG. 7, shafts 54 and 55 are adjacent and parallel to the longitudinal edges 36-39 of the fixed wall module. As pointed out previously, the fixed wall module comprises upstanding end walls 32 and 33 and upper and lower ceiling and floor panels 34 and 35. The drive means for the rotatable shafts is mounted within a housing 56 mounted below floor panel 35. The drive means and its associated shafts are further illustrated in FIGS. 8 and 9. In FIG. 7, the power from the drive means 56 is extended to the longitudinal edges of the building by means of shafts contained within housings 57, 58 and 59. An upwardly extending shaft 60 carries the power from drive means 56 upwardly to the traverse shaft contained within housing 59. Inasmuch as the central portion of the fixed wall module is occupied with the bathroom and kitchen core, there is plenty of space for the concealed location of drive shaft 60. In actual practice, a second set of drive shafts 161 and 162 would be mounted immediately adjacent the longitudinal edges 37 and 38. These shafts would provide the driving power for extending the extensible side portion mounted on the other side of the fixed wall module.

The drive means is fully illustrated in the cross-sectional views 8 and 9 taken along section 9-9 of FIG. 7. As illustrated therein the drive motor 56 is geared down through appropriate transmission means 57 to drive outwardly extending longitudinal shafts such as shaft 64 illustrated in FIG. 9. The shaft is supported by means of appropriate bearings 65 and 66 and terminates in a bevel gear 67. Bevel gears 67 and 68 transmit the power provided by transmission means 57 to worm gear means 69a which drives the threaded and rotatable shaft 55. On the upper portion of the module, a similarly located horizontal drive shaft 69 extends outwardly to bevel gears 70 and 71. Bevel gear 71 drives the worm gear 72 which drives the rotatable and threaded shaft 54.

The rotatable and threaded shafts 54 and 55 are contained within U-shaped channel members 73 and 74. These channel members provide the load bearing support for the nut carrier hereinafter illustrated with respect to FIG. 10.

FIG. 9 also illustrates the manner in which the floor panel 49 fits flush with the floor panel 35. Floor panel 49 defines a cut out portion with an overhanging lip 75 which fits on top of the guide channel 73. Since the floor panel 49 is not lowered until the end walls 47 and 48 have been fully extended, the floor panel 49 can extend the entire width of the module and not conflict with the drive nuts used to extend the end panels.

FIG. 10 is a partially cut-away isometric view of the drive nut used to reciprocally move the end panels along the longitudinal edges of the fixed wall module. The rotatable and threaded shaft 55 is mounted within channel member 73 as was previously illustrated in FIGS. 8 and 9. The carrier nut 52 slides within the guide channel 73 and is advanced in the direction of arrow C by the rotation of shaft 55. As was pointed out previously, the shaft rotates in one direction, and right- and left-handed threads are used on the carrier nuts on

either side of center so that as the shaft rotates, each of the nuts is carried outwardly or inwardly as the rotation of the shaft dictates. The carrier nut is equipped with an integral flange 75 which is pivotably connected to frame member 76. Frame member 76 is one of the structural members for the pivotally mounted end wall 47. The structural member 76 is mounted to carrier nut 52 by means of pin 77 which provides for rotation about the flange 75. This rotation is fully illustrated in FIGS. 11-13 which illustrate the manner in which the end wall 47 and the sidewall 46 are extended to their outward position. As shaft 55 rotates the carrier nut 52 is advanced in the direction of arrow C and the end wall portion 47 is forced outwardly as illustrated in FIG. 12. End wall 47 is pivotally connected to sidewall 46 by means of a hinge member 78. Seal members 79 and 80 provide for weatherproofing of end wall 47. As the nut 52 is advanced outwardly, it compresses the sealing members 79 and 80 to insure that the seal members are fully compressed.

A fully extended sidewall is illustrated in FIG. 13 wherein the sidewall 46 has been extended outwardly, and the end wall 47 is now perpendicular to the sidewall 46. End walls 47 and 48 move from a position in which they are parallel to sidewall 46 to one in which they are perpendicular to sidewall 46 as the carrier nut 52 moves from its inwardmost position.

FIG. 14 illustrates the manner in which the roof panel 45 is secured to the extensible portion of the building structure. In one form of the invention, it is possible to provide for a hinge connection along the joint between the sidewall 46 and the roof panel 45. In the preferred embodiment, however, the roof panel 45 is drawn upwardly over sidewall 46 by means of tracks and rollers more fully illustrated and described with respect to FIG. 5. As the roof panel 45 moves into place, a camming means generally illustrated as 81 draws the roof panel 45 downwardly against sidewall 46 and end wall 47. Tongue member 82 extends outwardly from the end wall 47 by means of offset 83 and engages the socket means 84. Socket means 84 contains a cam surface 85 which is adapted to draw the roof member 45 downwardly as the roof member is advanced inwardly towards the fixed wall module. If desired, the camming arrangement may be provided along the upper periphery of end wall 47, or may be provided at the four corners of the expansible side portion to draw the roof panel into engagement with the sidewall 46 and end walls 47 and 48.

An alternate embodiment of the invention is illustrated in FIG. 15. In FIG. 15, the fixed wall module 18 is equipped with a flat roof and a single extensible side portion 86. In this embodiment, it is possible to double the space normally present in a small trailer quickly and inexpensively without the problems normally associated with transporting two separate modules. In this embodiment, the sidewall 87 and the end walls 88 and 89 cooperate in the same manner as illustrated in FIGS. 11-13 to provide a completely expansible side portion 86. In this embodiment, a fixed wall 90 is provided for the other side of the fixed wall module 18.

The floor plan for a typical expansible and movable building is illustrated in FIG. 16. As illustrated, each of the module portions are of equal width with the fixed wall module 100 being slightly less than 8 feet. If it is desired to have an overall thickness of 8 feet for the module, and if structural panels approximately 2 inches

in thickness are used, the exterior dimensions of the fixed module would be reduced approximately 4 inches on either side and the fixed dimensions of the extensible side portions 101 and 102 would be reduced approximately 4 inches on each side. The overall usable space of the vehicle, however, is not diminished by the building partitions. The only space lost to the vehicle is the space required to hang the roofing members on the exterior of the vehicle when traveling. The thickness of sidewalls 103 and 104 remains unchanged. That is to say, they would be the same thickness whether they were provided in a folding wall vehicle or a fixed wall vehicle. The space required to fold the floor panel and the end panels is regained when the extensible side portions are fully expanded. In FIG. 16, a two bedroom unit has been disclosed which features a central core area 105 which combines the kitchen and bathroom utility section. This core section is not subject to the folding movements of the extensible sections and it is therefore possible to rigidly mount the plumbing pipes and other utilities necessary for a habitable type of mobile home. If the structure is to be used as a construction shed or storage shed, the actual floor plan of the vehicle is not important. If it is desired to be used as a mobile home, additional inner side walls 106 and 107 may be desired for privacy. Additionally, traverse walls 108 and 109 may be formed from extensible folding walls or may be hingeably attached to the inner walls 106 and 107. If walls 108 and 109 are rigid walls, they would fold inwardly against walls 106 and 107 when the vehicle is collapsed. In FIG. 16 a number of entries 110-112 have been illustrated. The use of a floor plan in FIG. 16 is not meant to be limiting in any way, but to be representational of what can be done in the design of a mobile home using the construction of the present invention.

While the present invention has been described with reference to specific embodiments having a plurality of means for providing various types of floor plans, it would be obvious to those skilled in the art that various combinations may be interchanged. It should be noted that the embodiments illustrated are presented by way of example only and not in any limiting sense. The invention in brief comprises all the embodiments and modifications coming within the scope and sphere of the following claims:

What I claim is:

1. A movable building structure, said structure comprising:
 - a. a fixed wall module, said module defining opposing end walls and coplanar upper and lower floor and ceiling panels, each of said coplanar panels defining longitudinal edges which extend the length of said module;
 - b. at least one movable sidewall, said sidewall being movable from a collapsed position to an extended position, said sidewall remaining parallel to a plane defined by the end walls and the upper and lower longitudinal edges as it travels from its collapsed position to its extended position;
 - c. a pair of movable end walls, each of said end walls defining first and second vertical edges, each of said movable end walls being pivotally connected to said movable side wall along their first vertical edges;
 - d. means for reciprocally mounting the second vertical edge of each of said end wall to the longitudinal

edges of said fixed module, said means including carrier means attached to the second vertical edges of said end walls, said means also including a longitudinal guide means attached to the longitudinal edges of said fixed module to define a reciprocal path through said carrier means, said carrier means traversing the longitudinal guide means as said sidewall moves from its collapsed position to its extended position.

2. A movable building structure as claimed in claim 1 wherein a floor panel is pivotally mounted on said movable sidewall, said floor panel being coextensive with the floor panel of said fixed module when said sidewall is extended, and parallel to said sidewall when said sidewall is in its collapsed position.

3. A movable building structure as claimed in claim 1 wherein at least one floor panel is pivotally mounted adjacent the longitudinal edge of the floor panel of said fixed module, said floor panel being coextensive with the floor panel of said fixed module when said sidewall is extended, and parallel to said sidewall when said sidewall is in its collapsed position.

4. A movable building structure as claimed in claim 1 wherein said fixed module defines a roof portion, said structure also comprising a roof panel which is slidably mounted on said movable wall, said roof panel being substantially parallel to said roof portion mounted on said fixed module when said sidewall is extended, and substantially parallel to the sidewall when the sidewall is collapsed.

5. A movable building structure as claimed in claim 4 wherein said fixed module roof portion defines a ridge pole and a pair of downwardly sloping roof portions, said slidably mounted roof portion being substantially parallel to its adjacent fixed roof portion when said sidewall is extended, said roof portion sloping downwardly from the upper longitudinal edge defined on said fixed module.

6. A movable building structure as claimed in claim 1 wherein said fixed module defines a roof portion, said structure also defining a roof panel which is pivotally connected to said movable sidewall, said roof panel being substantially parallel to the roof portion mounted on said fixed module when said sidewall is extended, and substantially parallel to the sidewall when the sidewall is collapsed.

7. A movable building structure as claimed in claim 1 wherein said means for reciprocally mounting the end walls comprise at least one longitudinal guide means mounted adjacent and parallel to the longitudinal edge of said fixed module, said means also defining a pair of carriers mounted on said guide means, one of said carriers being attached to one of said movable end walls and the other of said carriers being attached to the second movable end wall.

8. A movable building structure as claimed in claim 7 wherein said guide means comprises a rotatable and threaded shaft, and said carriers comprise threaded means that travel longitudinally along said shaft as said shaft rotates.

9. An expandable building structure as claimed in claim 1 comprising a fourth movable panel which is pivotally mounted to the longitudinal edge of said first movable panel, said fourth panel being coextensive with one of said first pair of panels of said fixed module when said first movable panel is extended, and parallel

to said first movable panel when said panel is in its collapsed position.

10. An expandable building structure as claimed in claim 1 wherein said guide means further comprise a rotatable and threaded shaft, and each of said carriers further comprise threaded means that travel longitudinally along the shaft as said shaft rotates.

11. A movable building structure, said structure comprising:

- a. a fixed wall module, said module defining opposing end walls and coplanar upper and lower floor and ceiling panels, each of said coplanar panels defining longitudinal edges which extend the length of said module;
 - b. at least one movable sidewall, said sidewall being movable from a collapsed position to an extended position, said sidewall remaining parallel to an opening defined by the end walls and the upper and lower longitudinal edges as it travels from its collapsed position to its extended position;
 - c. a pair of movable end walls, each of said end walls defining first and second vertical edges, each of said movable end walls being pivotally connected to said movable sidewall along their first vertical edges;
 - d. rotatable and threaded means for reciprocally mounting the second vertical edges of each of the end walls to the longitudinal edges of said fixed module, each of said end walls being pivotally attached to a threaded and non-rotatable carrier mounted on said rotatable and threaded means, said carriers and said second vertical edges traversing the longitudinal edges of said fixed module as said sidewall moves from its collapsed position to its extended position.
12. A movable building structure as claimed in claim 11 wherein said fixed module defines a roof portion, said structure also comprising a roof panel which is slidably mounted on said movable wall, said roof panel being substantially parallel to the roof portion mounted on said fixed module when said sidewall is extended, and substantially parallel to said sidewall when the sidewall is collapsed.
13. A movable building structure as claimed in claim 11 wherein a floor panel is pivotally mounted on said movable sidewall, said floor panel being coextensive with the floor panel of said fixed module when said sidewall is extended, and parallel to said sidewall when said sidewall is in its collapsed position.
14. An expandable building structure, said structure comprising:
- a. a fixed wall module, said module defining opposing end walls and coplanar upper and lower ceiling panels, each of said coplanar panels defining longitudinal edges which extend the length of said module;
 - b. at least one movable sidewall, said sidewall being movable from a collapsed position to an extended position, said sidewall remaining parallel to a plane defined by the end walls and upper and lower longitudinal edges as it travels from its collapsed position to its extended position;

- c. a pair of movable end walls, each of said end walls defining first and second vertical edges having first and second support means mounted thereon for supporting said movable end walls and said movable sidewalls;
 - d. said first support means further comprising pivoting means attached to the first vertical edges of said movable sidewalls;
 - e. said second support means comprising reciprocating means for supporting the second vertical edges of each of said end walls, said means including carrier means attached to the second vertical edges of said end walls, said means also including longitudinal guide means for said carrier means, said longitudinal guide means being parallel with the longitudinal edges of said modules, said guide means defining a reciprocal path for said carrier means as said sidewall moves from its collapsed position to its extended position;
 - f. one of said support means being attached to the longitudinal edges of said fixed wall module and the other of said support means being attached to said movable sidewalls.
15. A movable building structure as claimed in claim 14 wherein said fixed module roof portion defines a ridge pole and a pair of downwardly sloping roof portions, said slidably mounted roof portion being substantially parallel to its adjacent fixed roof portion when said sidewall is extended, said roof portion sloping downwardly from the upper longitudinal edge defined on said fixed module.
16. An expandable building structure, said structure comprising:
- a. a fixed module, said fixed module defining two pairs of opposing panels, the first pair of panels being coplanar and defining longitudinal edges which extend the length of said module, the second pair of panels joining the first pair of panels together to form an open polygon structure with at least one closed perimeter;
 - b. a first movable panel for said module, said panel being movable from a collapsed position to an extended position, said panel remaining parallel to a plane defined by the longitudinal edges of said first pair of panels as said movable panel travels from its collapsed position to its extended position;
 - c. a pair of movable panels, each of said panels defining first and second longitudinal edges, each of said panels being pivotally connected to said first movable panel along their first longitudinal edges;
 - d. means for reciprocally mounting the longitudinal edges of said pair of movable panels, said means comprising at least one longitudinal guide means mounted adjacent and parallel to the longitudinal edges of said fixed module, said means also defining a pair of carriers mounted on said guide means, one of said carriers being attached to one of said pair of movable panels and the other of said pair of movable panels.

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