Aug. 26, 1969 V. SMITH 3,462,891

EXPANDABLE BUILDING STRUCTURE

Filed Aug. 25, 1967 2 Sheets-Sheet 1

FIG. 1

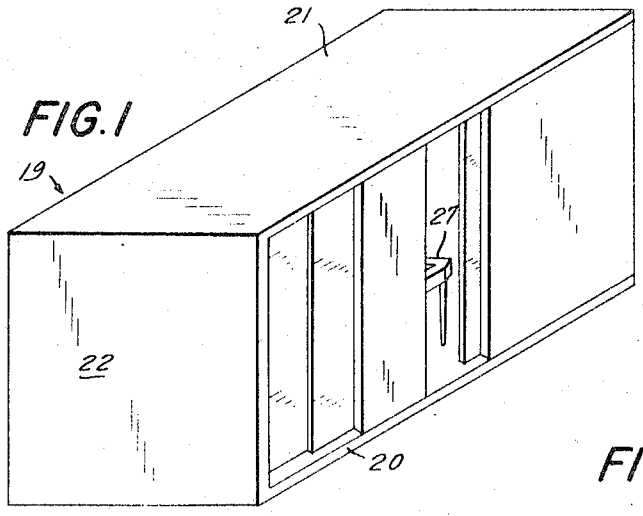


FIG. 2

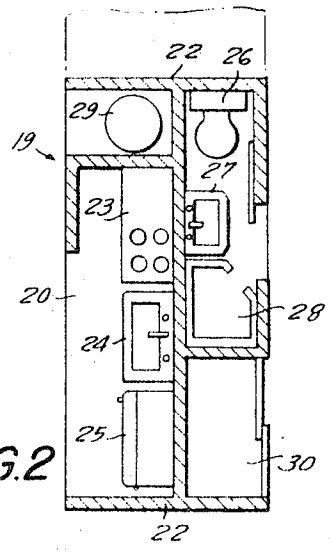


FIG. 3

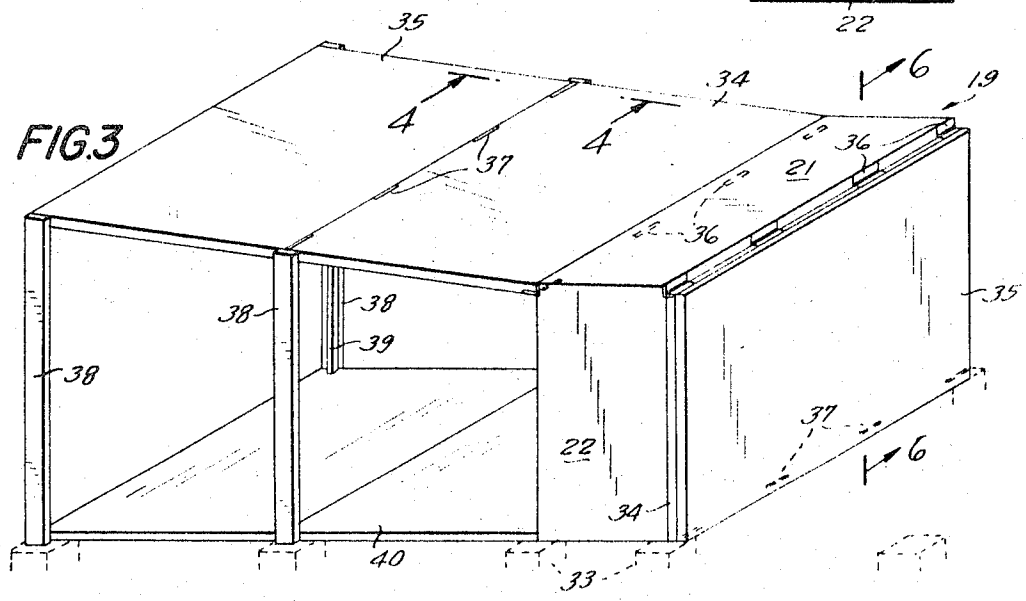
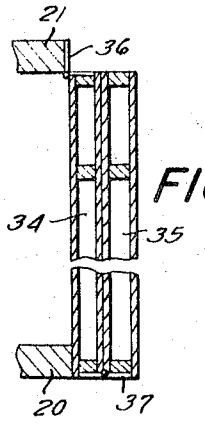


FIG. 6



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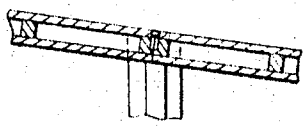


FIG. 4

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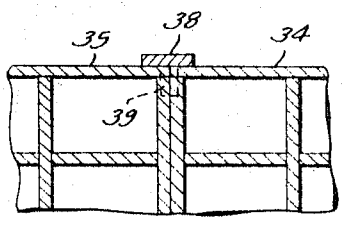


FIG. 5

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EXPANDABLE BUILDING STRUCTURE

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FIG. 7

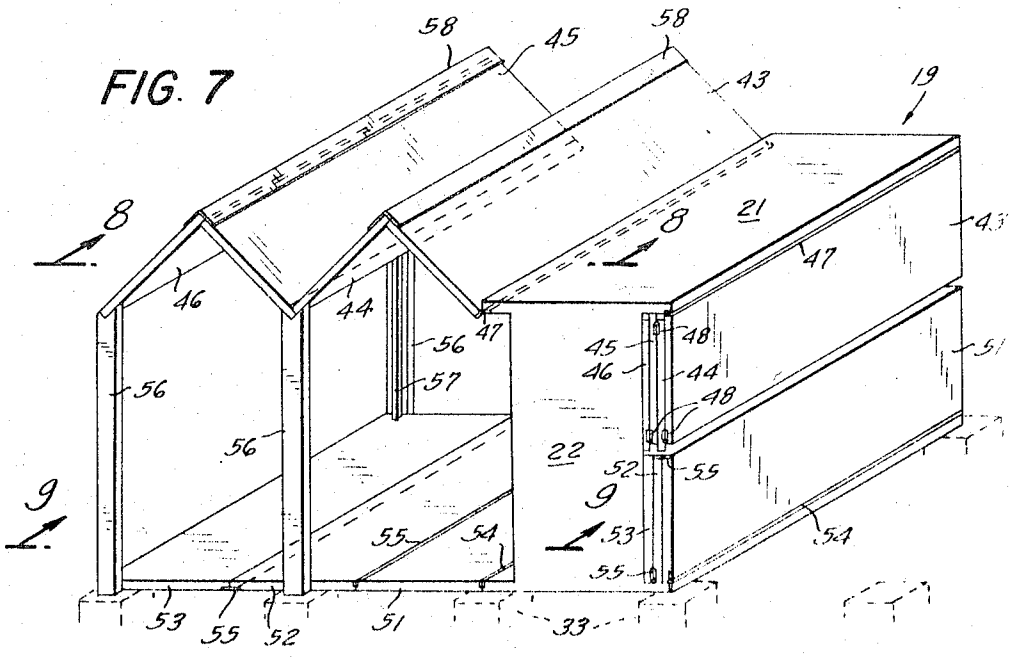
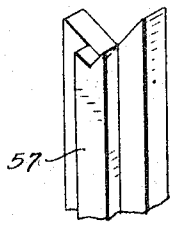


FIG. 10



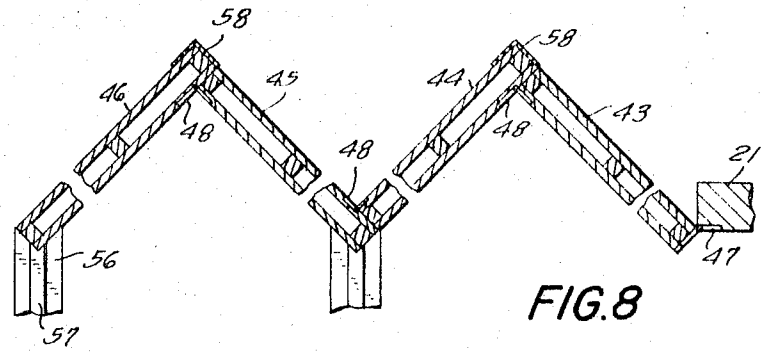
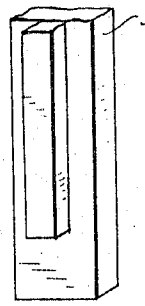


FIG. 8



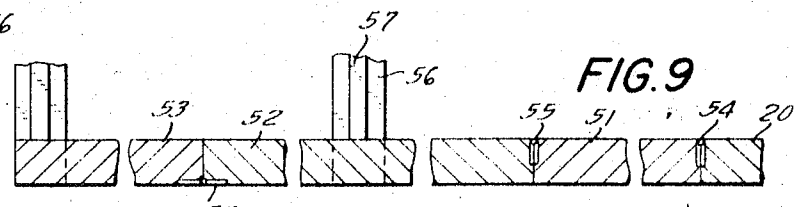


FIG. 9

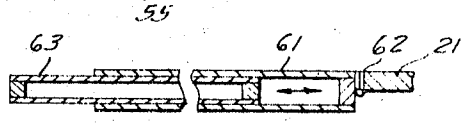


FIG. 11

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EXPANDABLE BUILDING STRUCTURE

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Int. Cl. E04b 7/00
U.S. Cl. 52—18 3 Claims

ABSTRACT OF THE DISCLOSURE

Housing core adapted to be permanently affixed to ground contains kitchen and bathroom facilities and is permanently closed on bottom, top, and ends. One or both sides open and temporarily covered by at least two superposed roof panels hinged to upper edge of core side. Panels may be hinged together or telescopically arranged. When expanded, panels form roof extension joined to core. Roof panels may cover upper portion of core side, and superposed floor panels hinged to lower edge of core side cover remainder of core side, floor panels being expandable to form floor extension joined to core.

This invention relates to a building construction, and more particularly to a structure which can be optionally arranged compactly, for transportation to the building site, or expanded to provide many times the room area of the compact structure.

The structure is especially well suited for use as a vacation home.

It is an object of the invention to provide a building enclosure containing in compact relationship the essential bathroom fixtures and kitchen appliances required in a dwelling, and collapsible roof and floor panels permanently attached to the enclosure and capable of being oriented to define room area adjacent to the enclosure.

It is a further object of the invention to provide such a structure with a roof panel arrangement of special character whereby the size of the adjacent room can be made larger than with conventional structures of this type, and which permits the creation of a variety of roof designs not possible with such conventional structures.

To achieve these and other objectives, the invention provides a generally rectangular "core" unit permanently closed on top, bottom, and ends. The core contains complete bathroom and kitchen facilities needed in a residence, and is adapted to be permanently secured to the ground and connected to conventional water, electricity, and possibly gas, supplies. At least one side, and preferably both sides, of the core are open to permit access to the facilities within, and a multiple panel arrangement is hinged along the top edge of each open side. For purposes of shipping the core to the building site, the panels are arranged in superposed relation and lie parallel to the open side of the core so that the panel arrangement serves to close the core side and protect the interior. When the core is fixed at the site, the panel arrangement is swung upwardly to provide an extension of the top of the core, the extension serving as a roof for a room adjacent to the core. The roof panels may all be hinged together so that, although very compact when in superposed relation, they open to cover an area several times the width of each individual panel. In addition, the hinged relationship affords the opportunity to erect a flat, a peaked, or other roof design, as desired. In the alternative, the panel hinged to the core may be hollow and telescopically enclose the remaining panels when they are arranged in superposed relation, the nested panels being moved out of each other when the arrangement is expanded to form a roof.

Additionally, the width of the roof panels may be such that, when compacted, they cover only a portion of the open core side, the remainder of the core side being covered by a superposed arrangement of hinged-together floor panels. One of the floor panels is hinged along the bottom edge of the core, and when the arrangement is opened into a flat, horizontal condition, it provides a floor for the room area adjacent to the core.

Additional features and advantages of the invention will be apparent from the following description in which reference is made to the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view of a "core" unit;

FIG. 2 is a plan view of the core unit;

FIG. 3 is a perspective view of core unit provided with roof panels according to this invention;

FIG. 4 is an enlarged fragmentary cross-sectional view on line 4—4 of FIG. 3;

FIG. 5 is a cross-sectional view on line 5—5 of FIG. 4;

FIG. 6 is an enlarged fragmentary cross-sectional view on line 6—6 of FIG. 3;

FIG. 7 is a perspective view of an alternative embodiment of the invention, showing a core unit provided with roof and floor panels according to this invention;

FIG. 8 is an enlarged fragmentary cross-sectional view on line 8—8 of FIG. 7;

FIG. 9 is an enlarged fragmentary cross-sectional view on line 9—9 of FIG. 7;

FIG. 10 is an enlarged perspective view of a roof support post of FIG. 7; and

FIG. 11 is a cross-sectional view through an alternative construction of a roof panel arrangement.

The building structure chosen to illustrate this invention includes a core unit **19** having a permanently closed bottom wall **20**, top wall **21**, and end walls **22**. The sides of the core are open to provide access to the facilities within.

The arrangement of facilities within the core may, of course, be varied as desired, but an example of the plans which may be used is shown in FIG. 2. The kitchen area houses a range **23**, a sink **24**, and a refrigerator **25**, and the bathroom area includes a toilet **26**, a sink **27**, and a shower **28**. A hot water heater **29** is adjacent to both the kitchen and bathroom, and a closet **30** is next to the bathroom.

In FIGS. 3–6, the core **19** is shown fixed on concrete piles **33**, and it is assumed that the plumbing and appliances are suitably connected to utility supplies (not shown). In the embodiment illustrated in these figures, each open side of the core **19** is completely covered, when in compacted condition, by two superposed panels adapted to be expanded to form a roof. On one side, the roof-forming panels **34** and **35** are shown in collapsed condition. The inner panel **34** is hinged along its upper edge to the top edge of the core side by hinges **36**, and the lower edges of the two panels are also hinged together, by hinges **37**. On the other side of the core, the panels **34** and **35** are shown in opened condition forming a roof for a room adjacent to the core. As shown in FIGS. 4–6, each panel may comprise a framework covered on both faces with plywood or other sheet material.

Columns **38** for supporting the roof may rest on concrete piles, and each column carries an inwardly-projecting member **39** which fits between the lower face of the roof panels and the upper face of a floor **40**, which in this case is a member independent of the core **19**. In FIG. 3, the opened panels **34** and **35** are shown in the same plane and arranged at an angle of less than 180° with respect to the top wall **21** of the core. However, it is apparent that the panels could be arranged in the plane

of the top wall **21**, or that the intermediate columns **38** could be made longer than the end columns, so that the panels form a peaked roof.

The embodiment of the invention illustrated in FIGS. 7–10 shows how a peaked roof may be achieved with multiple hinged panels, as well as a self-contained floor. In this example, the upper portion of each open core side is covered, when in compacted condition, by four superposed panels adapted to be expanded to form a roof, and the lower portion of each core side is covered by three superposed panels adapted to be expanded to form a floor. On one side, the roof-forming panels **43**, **44**, **45**, and **46** are shown in collapsed condition. The outermost panel **43** is hinged along its upper edge to the top edge of the core side by a piano hinge **47**, and the remaining panels are hinged together in order by hinges **48**. On the other side of the core **19**, the panels **43–46** are shown in opened condition forming a roof for a room adjacent to the core.

On one side of the core, the floor-forming panels **51**, **52**, and **53** are shown in collapsed condition. The outermost panel **51** is hinged along its lower edge to the bottom edge of the core side by a piano hinge **54**, and the remaining panels are hinged together in order by hinges **55**. On the other side of the core, the panels **51–53** are shown in opened condition in a single horizontal plane forming a floor for the room adjacent to the core. Columns **56** for supporting the roof may rest on concrete piles, and each column carries an inwardly-projecting member **57** which fits between the upper face of the opened floor panels and the lower face of the roof panels. If desired, an angle member **58**, which may be formed of a suitable plastic, may be used to cap the peak between adjacent roof panels to prevent leakage through the joint.

The alternative form of roof panel arrangement shown in FIG. 11 involves telescoped panels. One edge of a hollow panel **61** is hinged to the upper edge of the core side by a hinge **62**. Slidably nested within the panel **61** is a panel **63**. When the roof is collapsed, the entire panel **63** fits within the panel **61**, whereby the panels are in superposed relation. However, when the roof is opened, the panel **63** is slid almost completely out of the panel **61**, suitable means being provided to prevent complete separation of the panels. Obviously, as many panels as desired may be telescopically arranged in this way.

The invention has been shown and described in preferred form only, and by way of example, and many variations may be made in the invention which will still be comprised within its spirit. It is understood, therefore,

that the invention is not limited to any specific form or embodiment except insofar as such limitations are included in the appended claims.

What is claimed is:

1. An expandable building structure comprising a core adapted to be permanently secured to the ground, said core being permanently closed on top, bottom and ends, at least one side of said core being open to give access to the interior thereof, at least two superposable roof panels adapted to cover said open core side, first hinge means joining one edge of one of said panels to the upper edge of said open core side, second hinge means joining the other panel to the edge of said one panel opposite the edge hinged to said core, whereby said panels may be optionally swung away from said open core side into a position above the ground to form a roof extension joined to said core, and means for permanently supporting both of said panels above the ground, said support means being spaced from said first hinge means a distance less than the combined widths of said panels measured in a direction perpendicular to said hinge axes, and said support means holding said panels in a non-planar condition so that they form a dihedral angle less than 180°.

2. An expandable building structure as defined in claim **1** including means for capping the joint between said panels.

3. An expandable building structure as defined in claim **1** wherein said support members are columns provided with notches in their upper ends for accommodating the edge of at least one of said panels.

References Cited

UNITED STATES PATENTS

2,375,941	5/1945	Nostrand	52—71
2,841,832	7/1958	Couse	52—70
2,886,856	5/1959	Che	296—23.7
3,365,849	1/1968	Heise	52—64

FOREIGN PATENTS

607,691	1960	Italy.
302,346	1954	Switzerland.

JOHN E. MURTAGH, Primary Examiner

U.S. Cl. X.R.

52—71, 90