Dec. 20, 1960 E. B. BARNES 2,965,413

MOBILE EXPANDABLE AND CONTRACTIBLE HOME

Filed Oct. 2, 1959 4 Sheets-Sheet 1

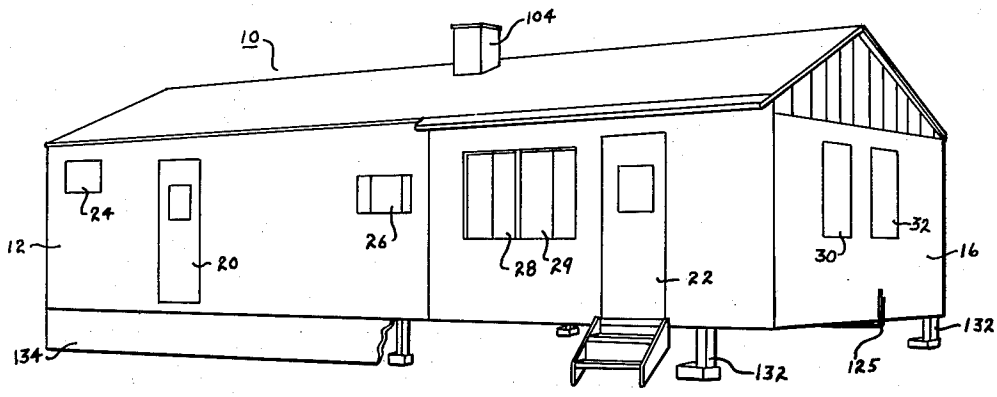


FIG. 1

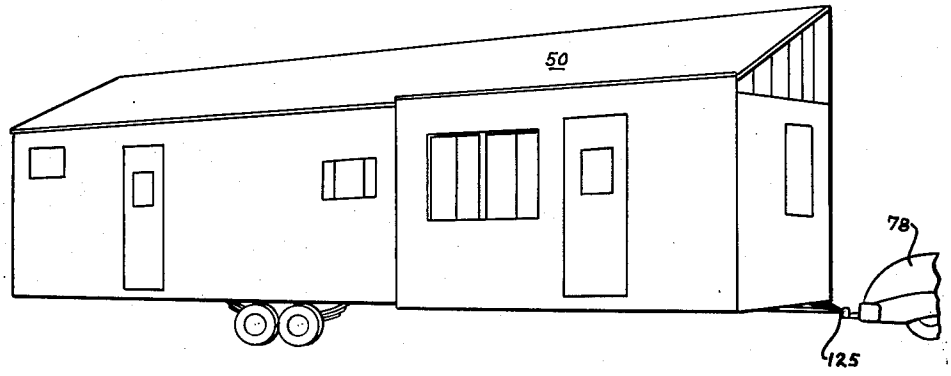


FIG. 2

INVENTOR.
ELIAS B. BARNES
BY M. A. Hobbs
ATTORNEY

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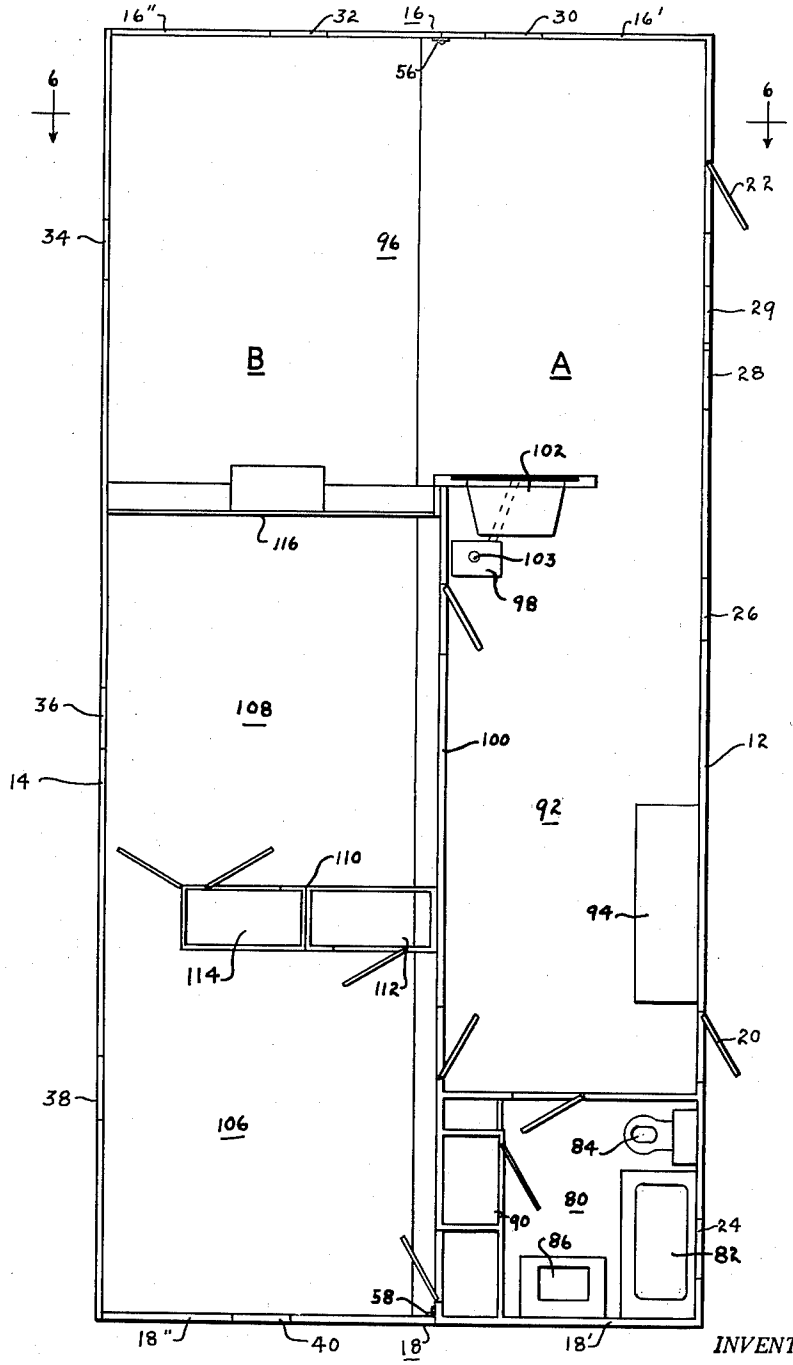


FIG. 3

INVENTOR.
ELIAS B. BARNES
BY M. A. Hobbs
ATTORNEY

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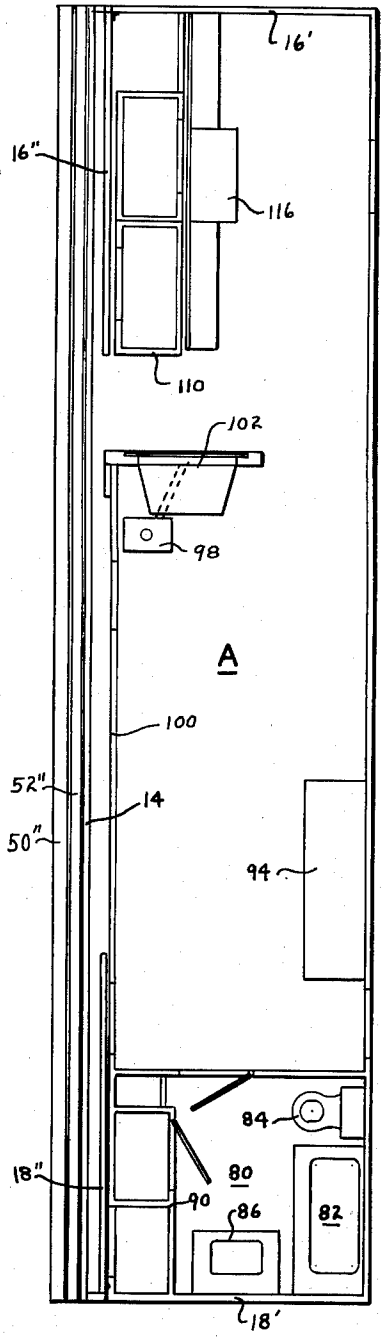


FIG. 5

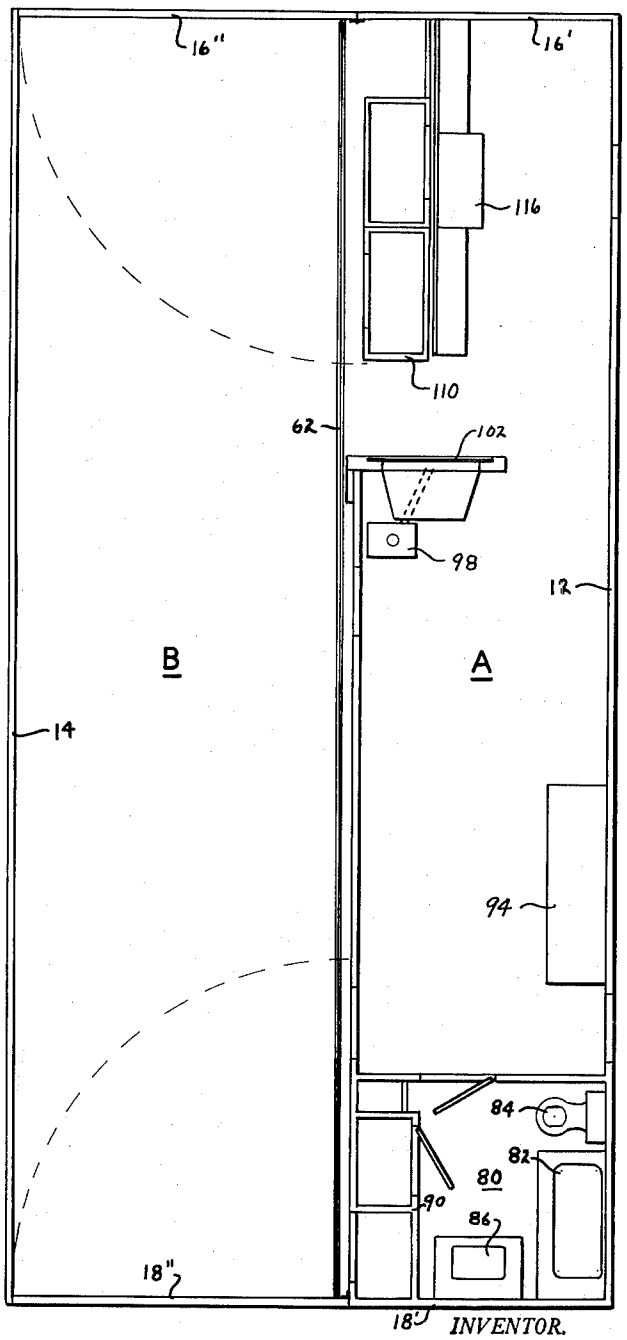


FIG. 4

INVENTOR.
ELIAS B. BARNES
BY M. a. Hobbs
ATTORNEY

Dec. 20, 1960 E. B. BARNES 2,965,413

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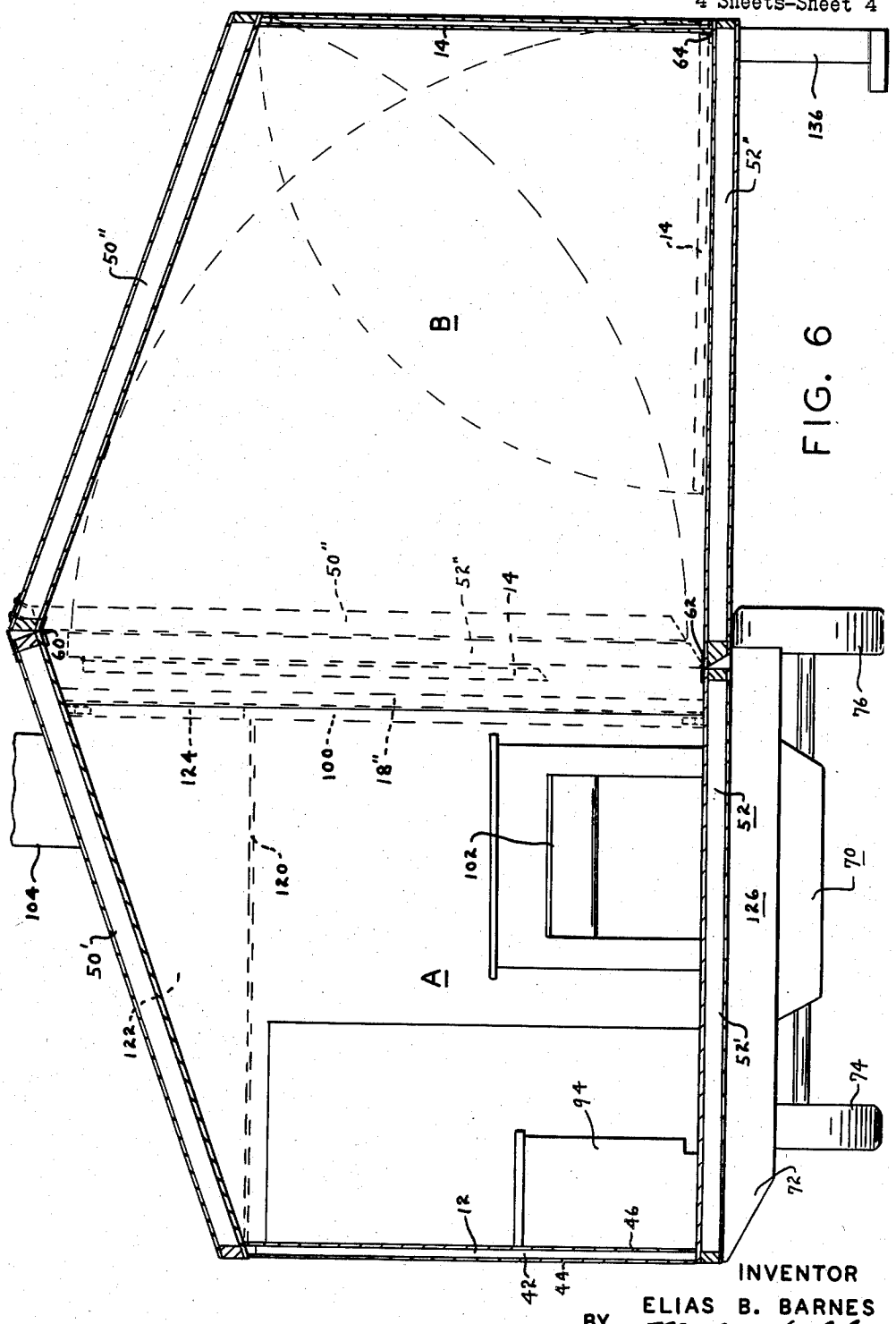


FIG. 6

INVENTOR
ELIAS B. BARNES
BY M. a. Hobbs
ATTORNEY

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MOBILE EXPANDABLE AND CONTRACTIBLE HOME

Elias B. Barnes, 2708 E. Jackson, Elkhart, Ind.

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8 Claims. (Cl. 296—27)

The present invention relates to houses, and more particularly to a foldable and movable house structure. This application is a continuation-in-part of my copending application Serial No. 629,605, filed December 12, 1956 now abandoned.

From the beginning of movable homes, their one outstanding need has been for more enclosed room for better living with convenience and comfort. Now with more than three million Americans living in portable homes, this need is increasingly urgent. Eight feet is the legal maximum width for all vehicles on all highways; however, since mobile homes are not primarily vehicles, but dwellings in transit, nearly all the States have recently granted them a special permit which allows them to be ten feet wide in transit. This is as wide as the permits can be expected to go since highway lanes are approximately ten feet wide. Mobile houses cannot be two stories and travel far on most highways. To meet the urgent need for room, they are being made four, five, or even six times as long as they are wide, thereby making them expensive to build, inconvenient to occupy, hard to heat, and difficult to handle. Further, they have very little resemblance to a house or home. Therefore, it is the object of this invention to provide a portable house foldable in half for moving, which in its unfolded position is double the permitted highway width, and which has the external features, shape, and appearance of a conventional permanent dwelling, with large square rooms, and interior space to afford the comfort and convenience of a conventional dwelling.

Another important object of my invention is to provide a portable house up to eighteen or twenty feet in width, in which one longitudinal half is of rigid construction on an under-frame and chassis, and the other longitudinal half is of floor, wall and roof members adapted to fold inwardly along the side of the rigid half, so that the entire folded structure will not be wider than the ten-foot width permitted for moving on U.S. highways.

Another object of this invention is to provide a foldable, movable house of the aforesaid type, in which the folded and therefore heavier side is carried at the middle of a two-lane highway, and the other, lighter side along the right hand side of the highway; and in which the folded house is offset to the right on its wheel and axle assembly in order to bring the heavier folded side closer to the middle of the wheel and axle assembly, to equalize and balance the weight of the house on its wheels.

A further object of my invention is to provide a foldable, movable house of the aforesaid type, which, when folded, is materially wider than the overall width of its supporting wheel and axle assembly, for example, a folded house ten feet wide, on a wheel and axle assembly eight feet wide, and which is offset to the right on the wheel and axle assembly, so that the folded side of the house at the middle of the road is approximately even with the outside of its wheels, while the other side of the house, at the unobstructed right edge of the pavement, extends out twenty-four inches beyond the wheels, making it possible

for the house to extend as much as two feet out beyond the unobstructed edge of the pavement without having the wheels drop off the edge, and consequently making it possible for the ten foot house to pass traffic as easily as an eight foot wide house.

Another object is to provide an improved expandable and contractible mobile home which, when expanded, will make it possible to enjoy spacious and advantageously arranged living quarters without having the structure over-length, over-width, or over-height, while in transit.

Another object is to provide an improved expandable and contractible mobile home which, when contracted, provides a structure having the desired rigidity and stability for movement on the highways.

Another object of the invention is to provide a foldable portable house which can be readily folded, moved and unfolded at a new location without removing the furnishings and belongings from the house and which can be moved safely and easily over long distances using a standard family automobile and folding and unfolding at any desired location with a few pieces of equipment readily carried along with the house while it is being moved.

Additional objects and advantages will become apparent from the following description and accompanying drawings, wherein:

Figure 1 is a perspective view of my house showing it in its unfolded condition as it is used for normal living quarters;

Figure 2 is a perspective view of my house showing it in its folded condition as it is moved over the highways from one location to another;

Figure 3 is a floor plan of my house showing it in its unfolded condition as it is used for normal living quarters;

Figure 4 is a floor plan of the house showing the first step in the folding operation and illustrating with broken lines the manner in which a portion of the house folds;

Figure 5 is a floor plan of the house showing it in its fully folded condition ready to be removed to a new location; and

Figure 6 is a vertical cross sectional view of the house taken on line **6—6** of Figure 3, showing in broken lines the manner in which a portion of the house folds.

Referring more specifically to the drawings, numeral **10** designates generally my foldable portable house, **12** the front side of the house, **14** the rear side, **16** the forward end and **18** the rear end. The house is provided with suitably located doors and windows, those shown consisting of doors **20** and **22** and windows **24**, **26**, **28**, **29**, **30** and **32** on the front and forward end of the house and windows **34**, **36**, **38** and **40** on the back and rear end of the house. The walls are of conventional construction consisting of spaced vertical studs **42**, external wall panels **44** and internal wall panels **46** secured to the studs by nails or screws and given a suitable protective and decorative coating. If desired, the external walls may be covered with conventional or some other suitable siding, such as aluminum interlocking horizontal strips coated with baked enamel. The wall construction is preferably made as light in weight as possible consistent with the required strength, the specific details in the wall construction not being considered material to the present invention. Likewise, the type of windows is not important.

Side wall **12**, end wall sections **16'** and **18'**, longitudinal section **50'** of roof **50** and longitudinal section **52'** of floor **52** are joined together to form a rigid half A which is sufficiently sturdy to support the other half B of the building when the latter is folded. As seen in Figures 4, 5 and 6, side **14**, end sections **16''** and **18''**, roof section **50''** and floor section **52''** form the foldable half B and fold inwardly along the left hand side of rigid half A as viewed in Figures 4 and 5. End section **16''** is hinged to the adjacent vertical edge of rigid end section **16'** by piano

hinge 56 and is adapted to swing inwardly toward the center of the building in the manner shown in broken lines in Figure 4, and end section 18'' is hinged to the adjacent vertical edge of rigid end section 18' by piano hinge 58 and is adapted to swing inwardly toward the center also as shown in broken lines. The end sections which include the triangular portion beneath the roof ends are held in their unfolded position by bolts or suitable latches and are adapted to swing freely inwardly to the building center when the house is being folded. Floor section 52'' is hinged to the adjacent inner edge of rigid floor section 52' by one or more piano type hinges 62 and is adapted to swing upwardly along the center of the building. Side 14 is hinged to the outside edge of floor section 52'' by piano hinge 64 and is adapted to fold downwardly onto the upper surface of floor section 52'' and thence be carried upwardly to the center of the building with the floor section as the latter is folded. In its unfolded position, side 14 supports the outside edge of roof section 50'' and is bolted or otherwise firmly secured thereto by suitable latches (not shown) while the house is in its unfolded condition. Roof section 50'' is hinged to the adjacent inner edge of roof section 50' by piano hinge 60 and is adapted to fold downwardly along the side of the rigid half A of the building in the manner shown in Figure 6 where it is held suspended from roof section 50' by the hinge on the outside of the folded floor section. It is seen from Figure 6 that the end sections 16'' and 18'' are positioned innermost along half A when the house is folded, the roof section is on the outside and the floor and wall 14 are between the roof and end wall sections. The equipment and tools for folding and unfolding the present house are not important to the present invention and may be any suitable conventional types, those shown and described in detail in my parent application mentioned above being one easily handled type which can be used by one or two people to fully fold and unfold the building shown herein.

One of the principal features of the present invention is the balanced load on the undercarriage 70 and the clearance provided along the center of the highway while the building is being transported. These important advantages are obtained by offsetting the building structure toward the right side of the undercarriage in the manner illustrated in Figure 6 so that the extra load placed on the left side of the undercarriage by the folded wall, roof and floor sections is balanced by the extension 72 of the building on the right side of the undercarriage. It is seen that the folded portions of half B are directly above and inwardly between wheels 74 and 76. By this construction the load on the undercarriage is not only approximately equalized laterally thereon, but wheels 74 and 76 of the undercarriage follow in the tracks of the wheels of the towing vehicle 78 and the body of the house does not extend appreciably beyond the left hand side of the towing vehicle, thus making the task of towing a large vehicle in lanes of traffic relatively easy. Also, in traveling on narrow two-way highways the wheels of the towed house are centered in the proper lane and the extension 72 on the right side may project over the berm where it will not be a hazard to oncoming vehicles.

The internal arrangement of the rooms and walls is not important to the present invention, provided the walls and any other permanent fixtures or equipment do not interfere with the folding of the sections comprising half B and the distribution of the load on the undercarriage. An efficient floor plan is shown in Figure 3 wherein the rigid half A of the building includes a bath room 80 containing a tub 82, toilet 84, lavatory 86, and towel and supply closet 90, a kitchen 92 with built-in cupboards 94 and a place for a stove and refrigerator, and a living room 96 which extends the full width of the unfolded house. A heating unit 98, preferably an oil burner of the forced air type, is installed near the partition 100 forming the inner wall of the bath room and kitchen. The heating unit may be of any suitable type, the one shown being adapted to discharge heated air through a fireplace 102 facing the living room. A flue 103 extends upwardly through the roof section 50' and through a shell 104 on the roof. Shell 104 is removed from the roof when the house is folded and is being transported to give the house more clearance in traveling through underpasses and tunnels. Half B is divided into two bed rooms 106 and 108 by a movable partition 110 which contains two closets 112 and 114 from rooms 106 and 108, respectively. Room 108 is separated from the living room by a movable partition 116 which serves as a set of book shelves and/or cupboards on the living room side. When the house is to be folded, partitions 110 and 116 are moved into the living room in half A, as shown in Figures 4 and 5, so that they will not interfere with foldability of the house. Likewise the furniture, such as beds and chairs, is moved into half A when the house is to be folded, leaving half B completely empty. A separate ceiling 120 is placed over the kitchen and bath room to improve the appearance of the two rooms and to provide a storage space 122, wall 100 being extended upwardly to the room near the center and containing one or more doors 124 for access to the storage space. The living room preferably extends fully to the roof without any false ceiling.

The construction of the undercarriage for the house may be of conventional or standard design extensively used in the trailer and mobile home industry and may be either a single or tandem axle type with two, four or six wheels. The frame extends forward beyond the front end of the house and is provided with a hitch 125 for connecting the undercarriage to a towing vehicle. The cross members 126 of the undercarriage and/or the joist under the rigid half A of the house extend to the right side to give the overhanging part 72 of the house adequate support.

When the house has been placed in a desired location, the undercarriage may be removed and the house seated on a suitable foundation, pillars 132 or the like, and a paneling 134 resembling stone, brick or concrete may be placed between the lower edge of the house and the ground. Half B is supported by posts or pillars 136 at the outside edge whenever it is unfolded since the undercarriage supports only the inner edge of said half. Steps preferably of light weight material are placed at one or both of the doors, and the chimney shell is placed on the roof. The paneling 134 can be placed around the lower part of the house regardless of whether the house is resting on the undercarriage or on pillars.

While only one embodiment of my foldable house has been illustrated herein, various changes and modifications, including size, kind of materials used in the construction, and arrangement of the rooms, may be made without departing from the scope of the present invention.

I claim:

1. A foldable and portable house, comprising, in combination, a rigid structure of a width substantially conforming to traffic regulations and having a first floor member, a first longitudinal side wall along one longitudinal edge of said floor member, a first roof member sloping continuously upwardly to the opposite edge of said rigid structure, and first end walls, all rigidly and permanently joined together, a foldable structure having second end walls hinged to the first end walls and foldable inwardly beside said rigid structure, a second floor member hinged along one longitudinal edge thereof to the other longitudinal side of said first floor member and foldable upwardly beside said rigid structure and over said second end walls when the latter are in folded position, a second roof member hinged to the highest edge of said first roof member and foldable downwardly over said second floor member when the latter is in folded position, and a second longitudinal side wall hinged to the other longitudinal side of said second floor member

and foldable onto said second floor member, said second roof member being supported by said second side wall when the latter is in its unfolded position, an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being directly under said foldable structure when it is in its folded position and projecting outwardly beyond an edge of said rigid structure and the wheel on the other side being spaced inwardly a substantial distance from the respective edge of said rigid structure, and means connected to said undercarriage for towing said structure.

2. A foldable and portable house, comprising, in combination, a rigid structure of a width substantially conforming to traffic regulations and having a first floor member, a first longitudinal side wall along one longitudinal edge of said floor member, a first roof member sloping continuously upwardly to the opposite edge of said rigid structure, and first end walls, all rigidly and permanently joined together, a foldable structure having second end walls hinged to the first end walls and foldable inwardly beside said rigid structure, a second floor member hinged along one longitudinal edge thereof to the other longitudinal side of said first floor member and foldable upwardly beside said rigid structure and over said second end walls when the latter are in folded position, a second roof member hinged to the highest edge of said first roof member and foldable downwardly over said second floor member when the latter is in folded position, and a second longitudinal side wall hinged to the other longitudinal side of said second floor member and foldable onto said second floor member, and an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being under said foldable structure when it is in its folded position and the wheel on the other side being spaced inwardly a substantial distance from the respective edge of said rigid structure.

3. A foldable and portable house, comprising, in combination, a rigid structure having a first floor member, a first longitudinal side wall along one longitudinal edge of said floor member, a first roof member sloping continuously upwardly to the opposite edge of said rigid structure, and first end walls, all rigidly and permanently joined together, a foldable structure having second end walls hinged to the first end walls and foldable inwardly beside said rigid structure, a second floor member hinged along one longitudinal edge thereof to the other longitudinal side of said first floor member and foldable upwardly beside said rigid structure, a second roof member hinged to the highest edge of said first roof member and foldable downwardly, and a second longitudinal side wall hinged to the other longitudinal side of said second floor member and foldable onto said second floor member, an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being directly under said foldable structure when it is in its folded position and the wheel on the other side being spaced inwardly from the respective edge of said rigid structure, and means connected to said undercarriage for towing said structure.

4. A foldable and portable house, comprising, in combination, a rigid structure having a first floor member, a first longitudinal side wall along one longitudinal edge of said floor member, a first roof member sloping upwardly, and first end walls, all rigidly joined together, a foldable structure having second end walls hinged to the first end walls, a second floor member hinged along one longitudinal edge thereof to the other longitudinal side of said first floor member, a second roof member hinged to the edge of said first roof member, and a second longitudinal side wall hinged to the other longitudinal

side of said second floor member, and an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being under said foldable structure when it is in its folded position and the wheel on the other side being spaced inwardly from the respective edge of said rigid structure.

5. A foldable and portable house, comprising, in combination, a rigid structure of a width substantially conforming to traffic regulations and having a floor member, a longitudinal side wall along one longitudinal edge of said floor member, a roof member, and end walls, all rigidly joined together, a foldable structure having members pivoted to said rigid floor and roof members and end walls and foldable along the side of said rigid structure, an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being under said foldable structure when it is in its folded position and the wheel on the other side being spaced inwardly a substantial distance from the respective edge of said rigid structure, and means connected to said undercarriage for towing said structure.

6. A foldable and portable house, comprising, in combination, a rigid structure having a floor member, a longitudinal side wall along one longitudinal edge of said floor member, a roof member, and end walls, all rigidly joined together, a foldable structure having members pivoted to said rigid floor and roof members and end walls and foldable along the side of said rigid structure, and an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being under said foldable structure when it is in its folded position and the wheel on the other side being spaced inwardly from the respective edge of said rigid structure.

7. A foldable and portable house, comprising, in combination, a rigid structure forming substantially one longitudinal half of the house, a foldable structure forming substantially the other longitudinal half of the house and foldable along one longitudinal side of said rigid structure, an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being under said foldable structure when it is in its folded position and projecting outwardly beyond an edge of said rigid structure and the wheel on the other side being spaced inwardly from the respective edge of said rigid structure, and means connected to said undercarriage for towing said structure.

8. A foldable and portable house, comprising, in combination, a rigid structure forming substantially one half of the house, a foldable structure forming substantially the other half of the house and foldable along one longitudinal side of said rigid structure, and an undercarriage beneath said rigid structure having wheels on each side, the wheel on the side having said foldable structure attached thereto being under said foldable structure when it is in its folded position and projecting outwardly beyond an edge of said rigid structure and the wheel on the other side being spaced inwardly from the respective edge of said rigid structures.

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