

Oct. 18, 1949.

F. M. SMITH
BUILDING STRUCTURE

2,485,463

Filed Oct. 27, 1945

4 Sheets-Sheet 1

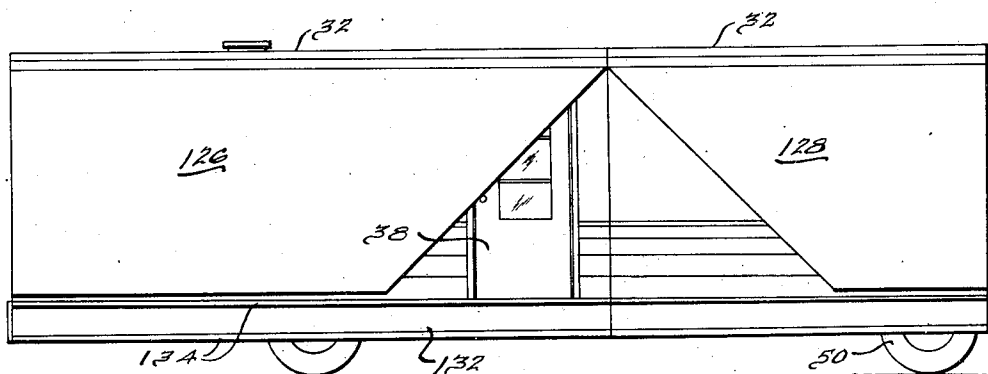
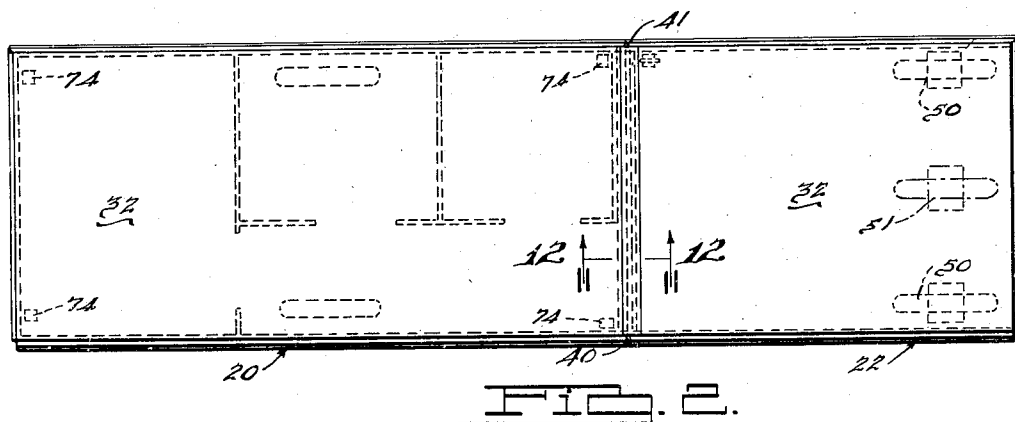
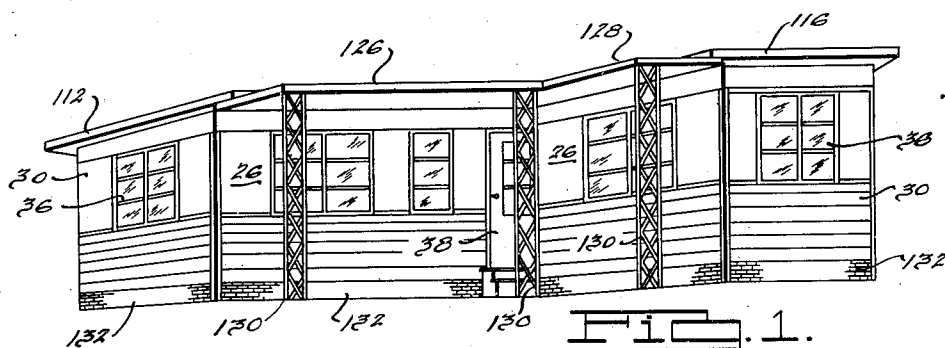


FIG. 3.

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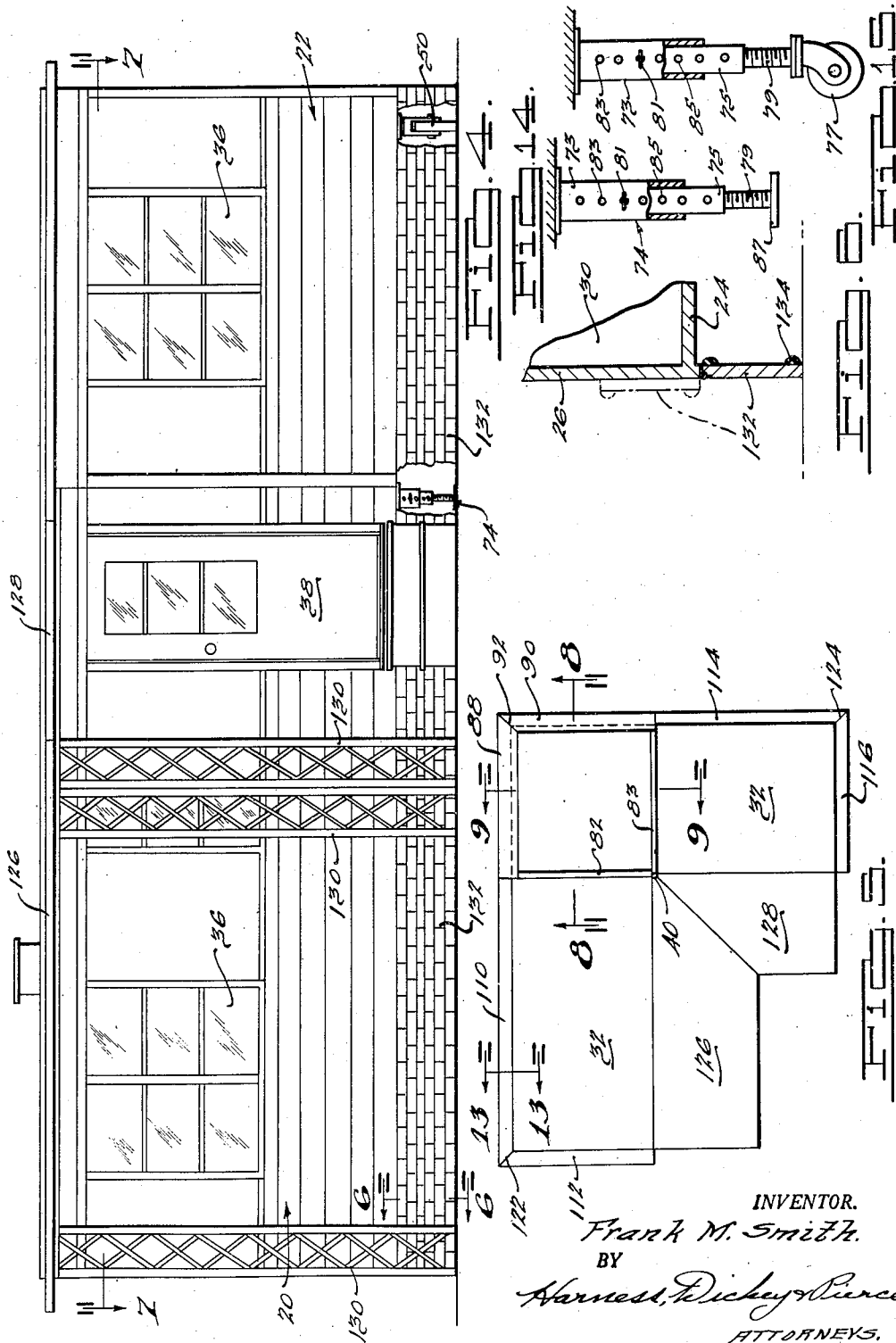
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

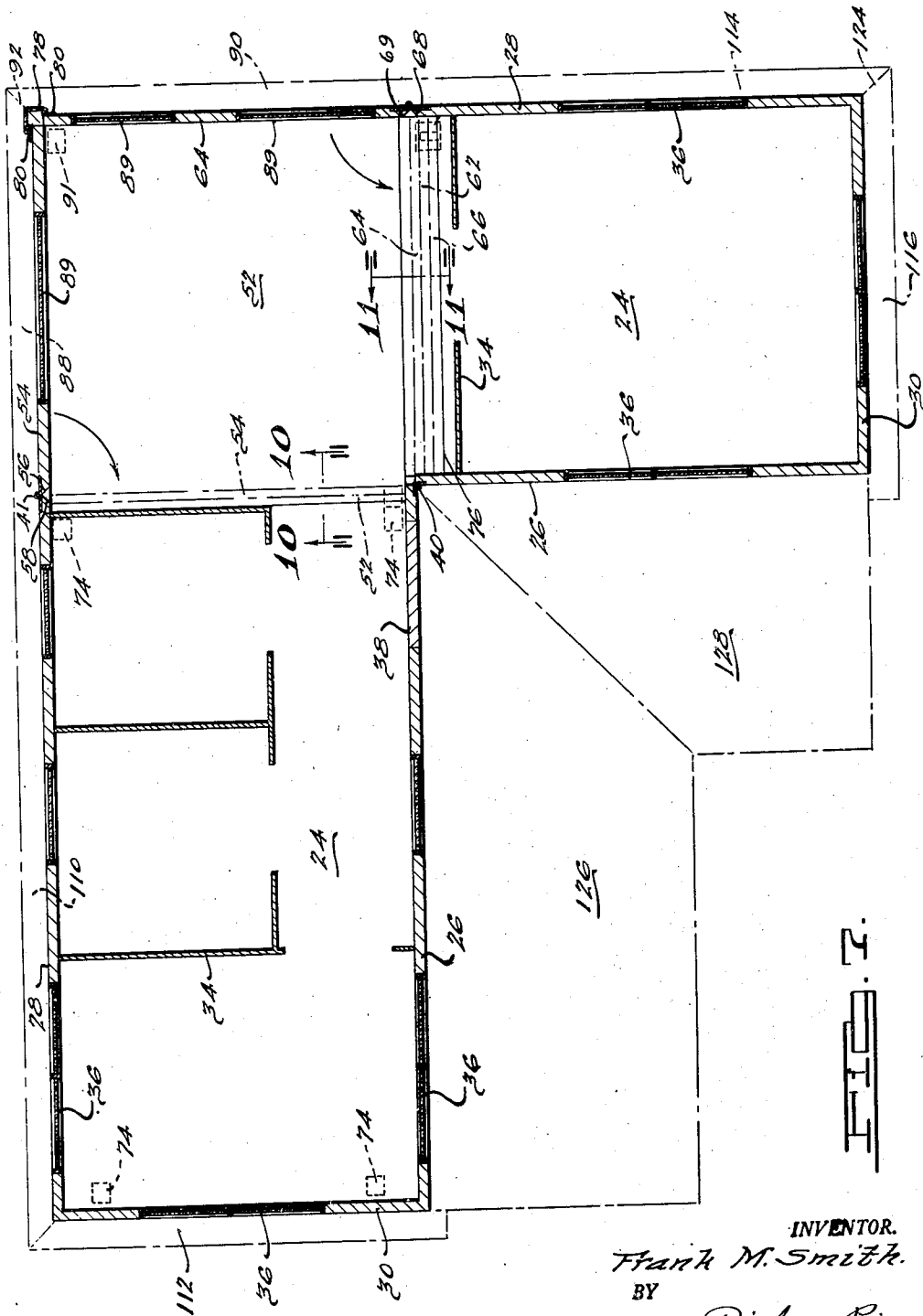


FIG. 3.

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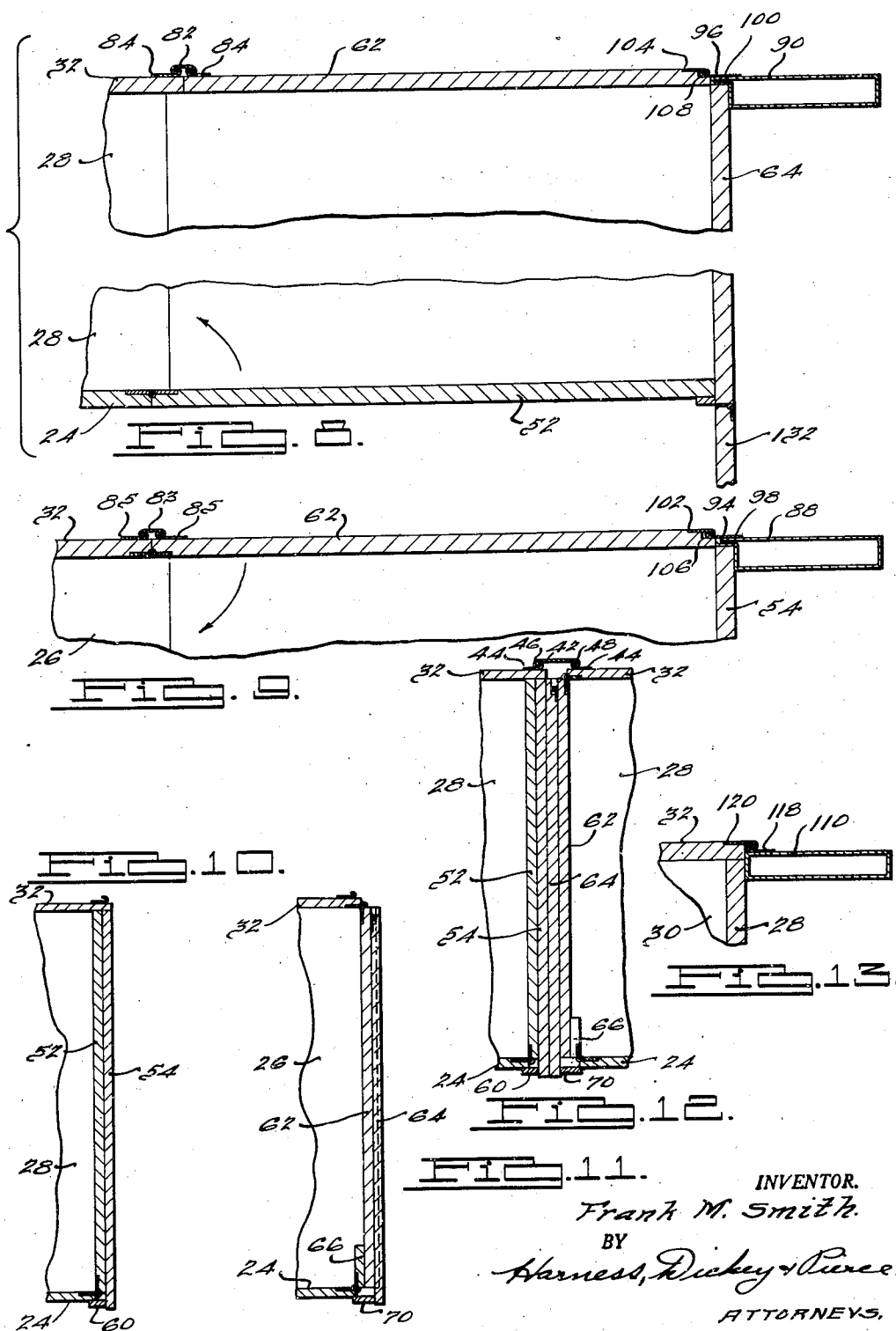
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4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

2,485,463

BUILDING STRUCTURE

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Application October 27, 1945, Serial No. 625,040

11 Claims. (Cl. 20-2)

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The invention relates broadly to new and useful improvements in building construction and more particularly to buildings of the so-called trailer type having separable front and rear sections and collapsible parts that can be folded compactly together or unfolded to substantially increase the size of the building.

An important object of the present invention is to provide a building of the above mentioned character which, when collapsed, is of substantially the same size and has substantially the same appearance as a conventional trailer.

Another object of the invention is to provide a building of the above mentioned character that provides a two wing structure when expanded.

Still another object of the invention is to provide a building of the above mentioned character which, when expanded, has an entirely different appearance than the same structure in a collapsed condition.

Yet another object of the invention is to provide a building of the above mentioned character which, when expanded, has an entirely different appearance than conventional trailer type buildings.

A further object of the invention is to provide a building of the above mentioned character in which the collapsible or foldable parts are arranged and correlated in a novel manner.

A yet further object of the invention is to provide a building of the above mentioned character that easily can be expanded or collapsed by one person.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the drawings forming a part of this specification and wherein like numerals are employed to designate like parts throughout the same,

Fig. 1 is a perspective view of a building embodying the present invention and showing the same in an expanded condition,

Fig. 2 is a top plan view of the building but showing the same in a collapsed condition,

Fig. 3 is a side elevation thereof,

Fig. 4 is a front elevation of the building when expanded as shown in Fig. 1,

Fig. 5 is a top plan view thereof,

Fig. 6 is a fragmentary, vertical sectional view taken on the line 6-6 of Fig. 4,

Fig. 7 is a transverse sectional view taken on the line 7-7 of Fig. 4,

Fig. 8 is an enlarged, vertical sectional view taken on the line 8-8 of Fig. 5,

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Fig. 9 is an enlarged, fragmentary, vertical sectional view taken on the line 9-9 of Fig. 5,

Fig. 10 is a vertical sectional view taken on the line 10-10 of Fig. 7 but showing the panels carried by the front section of the building in the folded or collapsed position,

Fig. 11 is a vertical sectional view taken on the line 11-11 of Fig. 7 but showing the panels carried by the rear section of the building in the folded or collapsed position,

Fig. 12 is a vertical sectional view taken on the line 12-12 of Fig. 2,

Fig. 13 is a fragmentary, vertical sectional view taken on the line 13-13 of Fig. 5,

Fig. 14 is a side elevational view showing one type of jack for supporting the building, and

Fig. 15 is a side elevational view showing another type of jack.

Considered in certain of its broader aspects the invention comprises a building formed in two sections that is particularly adaptable for trailer types but which may be simply of portable character devoid of wheels and axles and capable of being moved from place to place by truck or the like. Each of the sections has a floor, two side walls, an end wall, and a roof and is mounted on a pair of ground engaging wheels. The open ends of the sections are adapted to be disposed in end-to-end relation and it is preferred that, when so disposed, their floors, side walls and roofs align. In order to hold the sections together, their side walls are connected by vertical hinges and, when the two sections are connected, they present the appearance of a conventional trailer. Since both of the sections are mounted on ground engaging wheels the entire building is readily transportable.

In order to expand the building the pintle is removed from one of the hinges and the two sections are swung apart about the other hinge. When thus separated the two sections are disposed at substantially right angles and each forms a separate wing of the expanded building. Hinged panels mounted at the open ends of the sections and normally folded in overlapping relation therebetween are then unfolded. In their unfolded or expanded position the panels form continuations of the roofs, floors and outer side walls of the sections. The side panels are uniquely constructed to support the floor panel and suitable means are provided to detachably connect all of the panels so that they provide a solid and rigid structure enclosing the space between the sections.

For a more detailed description of the inven-

tion reference is made to the accompanying drawings wherein the numerals 20 and 22 designate the rear and front sections of the building which are formed of any suitable material and by conventional methods into strong and permanently rigid structures. Each of the sections has a floor 24, side walls 26 and 28, and end wall 30 and a roof 32. The open ends of the sections 20 and 22 are adapted to be disposed in abutting relation and, when so disposed, the floors, roofs and side walls align as shown in Figs. 2 and 3. The sections are divided into suitable compartments by partitions 34 and the side and end walls are provided with suitable windows 36. Wall 26 of the rear section 20 is provided with a door 38. The adjacent side walls 26 and 28 are connected by vertical hinges 40 and 41 and the adjacent roofs 32 are connected by a retaining strip 42 and catch members 44 (Fig. 12). Both the retaining strip and the catch members preferably comprise metal strips which extend entirely across the roofs so that the former closes the joint therebetween. The opposite edges of the retaining strip 42 are curled under and the outer edges of the catch members are reversely bent as at 48 to interengage therewith. The retaining strip 42 is applied or removed merely by sliding it longitudinally on the catch members 44. If desired, the retaining strip 42 and the catch members 44 may be provided with a slight longitudinal taper so that the former is securely held by wedging it on the catch members. In this connection it will be observed that the interlocking portions 46 and 48 possess an inherent resiliency that assists in preventing the retaining strip 42 from inadvertently sliding off and releasing the catch members 44. The interfitting barrels of hinges 40 and 41 prevent relative vertical movement between the two building sections 20 and 22 and the connecting pintles cooperate with the barrels to securely hold the sections together.

In order that the building may be readily transportable each of the sections 20 and 22 is mounted on a pair of wheels 50. The latter are disposed at each side of the sections and are suitably spaced longitudinally properly to support the building. The wheels 50 under the front section 22 have swivel mountings and the wheels under the rear section 20 are stationary so that they trail or track the front wheels. Front building section 22 is also adapted for connection to a suitable draw bar or tongue (not shown) for attachment to a towing vehicle.

Alternatively, the front section 22 may be supported merely by a single swiveled wheel 51 as shown by the dot and dash lines in Fig. 2.

A plurality of hinged panels mounted at the open ends of the building sections 20 and 22 are normally disposed in folded or overlapping relation therebetween as shown in Fig. 12.

The rear section 20 carries two panels 52 and 54. Panel 52, hingedly attached to the floor 24, is substantially square and adapted to fold upwardly between side walls 26 and 28. In this position the outer edge of panel 52 is positioned snugly against the underside of roof 32. Panel 54 hingedly attached to side wall 28 is adapted to swing inwardly and overlap the floor panel 52. In order that it may swing or fold inwardly in this manner the abutting edges of panel 54 and wall 28 are beveled, as at 56 and 58. As best shown in Fig. 12, the upper edge of side panel 54 fits snugly against the under surface of top 32 and the lower edge thereof is provided with a flange 60 which projects under the floor 24.

The free or swinging edge of the panel fits snugly against the inner surface of wall 26 and is disposed flush with the adjacent edge of floor panel 52.

The front building section 22 carries hinged panels 62, 64 and 66. Panels 62 and 52 are identical in size and shape as are panels 64 and 54. The panel 62 is attached to the roof 32 and the panel 64 is attached to the side wall 28. Panel 62 folds downwardly and panel 64 folds over against the top panel, as shown in Figs. 11 and 12. In order to permit the side panel 64 to fold in the above manner, it and wall 28 are provided with beveled edges 68 and 69. At its lower edge the side panel 64 is similarly provided with a horizontal flange 70 which projects under the floor 24 when the panel is in the folded position. The last panel 66 is attached to the floor 24. This panel is relatively narrow and is adapted to fold upwardly behind the roof panel 62.

To form an expanded structure the pintle is removed from hinge 41 and the front section 22 is swung through an angle of approximately 90° about the pintle of hinge 40. The rear left corner of section 22 is supported by a jack of the type shown in Fig. 15 which comprises telescoping tubular members 73 and 75 and a caster 77 provided with a shank 79 which screws into the inner member 75. The outer tubular member 73 is bolted or otherwise attached to the building section 22 and the caster 77 is normally held above the ground by a pin 81 which extends thru registering holes 83 and 85 in tubular members 73 and 75, respectively. Before the structure is expanded pin 81 is removed and members 73 and 75 extended to lower caster 77 against the ground surface. Any final adjustment that may be necessary to assure a firm, solid engagement of the caster 77 is made by unthreading shank 79. Thus, when section 22 swings about hinge 40, caster 77 supports the rear swinging corner thereof. It will be readily appreciated that if a single caster wheel 51 only is used it may also be desirable to provide caster-jacks at the two front corners of section 22. The rear building section 20 is supported at each of its four corners by jacks 74 of the type shown in Fig. 14. These jacks are identical to the one shown in Fig. 15 and described above except that caster 77 is replaced by a transverse plate 87. When the building is in transitu, jacks 74 are raised so that the footplates 87 clear the ground a substantial distance; however, before the structure is expanded the footplates 87 are lowered into engagement with the ground.

Panels 54 and 64 are then swung outwardly and into alignment with their respective walls 28. In this position the side panels are disposed at substantially right angles to each other and their free edges come together. It will be observed that these panels are provided with additional windows 89. In order to secure panels 54 and 64 in the above position a retaining strip 78 is slipped onto the catch members 80, as best shown in Fig. 7. The latter are attached to the panels 54 and 64 adjacent their free or swinging edges and correspond generally to catch members 44 hereinabove described. Similarly, retaining strip 78 corresponds to retaining strip 42 and it will be observed that it covers the joint between the side panels 54 and 64. Both the catch members and the retaining strip are provided with reversely bent edges which interengage to detachably hold the panels together.

Floor panels 52 and 66 are then swung down-

wardly to a horizontal position. In this position the floor panels 52 and 66 align with their respective floors 24 and are supported by the inwardly extending flanges 60 and 70 carried by the respective side wall panels 54 and 64. If desired, a suitable jack 91 may be placed under the outer corner of floor panel 52. This jack may be similar to jacks 74 or separate from the floor panel and of conventional construction.

To complete the structure panel 62 is swung upwardly to a position flush with the roofs 24, and in this position the outer edges of the roof panel are disposed flush with the inner surfaces of side panels 54 and 64, as shown in Figs. 8 and 9. In order to hold the roof panel 62 in this position retaining strips 82 and 83 are slid onto catch members 84 and 85. As shown in Figs. 8 and 9, retaining strip 82 and catch members 84 connect the roof panel 62 to the roof of rear section 20 while retaining strip 83 and catch members 85 connect it to the roof of rear section 22. The retaining strips 82 and 83 extend entirely across the roof at substantially right angles to each other and close the joints between the panel 62 and the adjacent roofs 32. Thus, the retaining strips serve the double purpose of holding the top panel 62 in the raised position and also of rendering the roof impervious to wind and water. It will be observed that the catch members 84 and 85 are arranged in pairs one member of each pair being attached to the roof 32 and the other member being attached to the panel 62. Both the catch members and the retaining strips are identical in construction to those hereinabove described.

At its outer edges the roof panel 62 is supported by eaves 88 and 90. The eaves extend the full length of panel 62 and their meeting ends are mitered, as at 92, to provide a continuous overhang at the top of the wall panels 54 and 64. As best shown in Figs. 8 and 9, eaves 88 and 90 are generally rectangular in transverse section and are formed of lightweight sheet metal which provides a hollow construction that is light in weight and easily handled. Moreover, the hollow interior of the eaves provides a dead air space which inhibits passage of heat therethrough and substantially enhances their insulating properties. At their inner edges eaves 88 and 90 are provided with lateral extensions 94 and 96, respectively, which overlay the upper edges of side panels 54 and 64 and abut against the outer edges of the top panel 62. These extensions assist in supporting the eaves and close the joints between the side and top panels. Catch members 98 and 100 mounted on and attached to extensions 94 and 96 interlock with retaining strips 102 and 104, respectively, carried by the top panel 62. The projecting portions of the catch members 98 and 100 are accommodated in longitudinal recesses 106 and 108 provided at the edges of the top panel 62. Catch members 98 and 100 are longitudinally slidable in retaining strips 102 and 104 so that the eaves 88 and 90 can be easily attached to or removed from the building.

Extending from eaves 88 and 90 and along the outer edges of the respective roofs 32 are eaves 110, 112, 114, and 116. The latter are identical in construction and are shown generally in Fig. 5 and specifically in Fig. 13. It will be observed that eaves 110, 112, 114, and 116 are identical to eaves 88 and 90 except for the lateral extensions 94 and 96 and that they are similarly attached to the roofs 32 by catch members 118 and retaining strips 120. The inner edges of eaves 110, 112, 114, and 116, fit snugly against the respective sec-

tions and close the joints between the roofs 32 and the adjacent side and end walls. As best shown in Fig. 5, the meeting ends of eaves 110 and 112 and of eaves 114 and 116, are mitered, as at 122 and 124, respectively. Eave 110 abuts eave 88 and eave 114 abuts eave 90. Thus, the eaves collectively present a continuous overhang at the ends and outer sides of the building.

A porch is provided by hinged panels 126 and 128 which are carried by the walls 26 of sections 20 and 22. When the building is collapsed the panels hang downwardly, as shown in Fig. 3, and when the building is expanded they are adapted to be folded outwardly and supported by suitable posts 130. When these posts are detached from panels 126 and 128 they may be stored within the sections 20 and 22 or secured to the outside of the building in any suitable manner.

In order to enhance the appearance of the building when in the expanded position the side and end walls of sections 20 and 22 and the side panels 54 and 64 are provided at their lower edges with hinged panels 132. When panels 132 hang downwardly, as shown in Figs. 1 and 4, their lower edges engage the ground surface and their outer surfaces are preferably painted or covered with a suitable material which simulates brick or stone so that the panels have the appearance of a foundation under the building. When the building is collapsed the panels 132 are folded upwardly and secured by suitable latch means (not shown). In the latter position of the panels they serve as bumpers or fenders for the building and strips 134 of rubber or the like are attached thereto to protect them if the building strikes or rubs anything.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

Having thus described the invention, I claim:

1. A building structure comprising front and rear sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; and a plurality of rigid panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and enclose the space therebetween.

2. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting one pair of adjacent side walls and forming a vertical pivot about which the sections can be swung apart; means detachably connecting the opposite pair of adjacent side walls; and a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and enclose the space therebetween.

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3. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; and a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and enclose the space therebetween, in the latter position said panels forming continuations of the floors, side walls and roofs and the panels forming continuation of said side walls provided with inwardly extending flanges adapted to support the panel which forms a continuation of said floors.

4. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and form continuations of the floors, side walls and roofs, and means for releasably holding said panels in the unfolded position.

5. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; a plurality of panels hingedly fastened to the adjacent ends of sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and form continuations of the floors, side walls and roofs, when said panels are unfolded the edges of the panel forming continuations of said roofs being disposed flush with the inner surfaces of the panels forming continuations of said side walls; and means detachably connecting the roof and side panels.

6. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when

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the sections are swung apart to unfold and form continuations of the floors, side walls and roofs, when said panels are unfolded the edges of the panel forming continuations of said roofs being disposed flush with the inner surfaces of the panels forming continuations of said side walls; and means detachably connecting the roof and side panels, said means having parts overlapping the upper edges of the side panels and abutting the adjacent edges of the top panel whereby to seal the joints therebetween.

7. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and form continuations of the floors, side walls and roofs, when said panels are unfolded the edges of the panel forming continuations of said roofs being disposed flush with the inner surfaces of the panels forming continuations of said side walls; eaves projecting outwardly from the latter panels, parts of said eaves overlapping the top edges of the side panels and abutting the edges of the top panel whereby to seal the joints between said panels; and interlocking means detachably connecting the eaves to said top panel.

8. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and form continuations of the floors, side walls and roofs, ground engaging wheels supporting each of the sections; and panels hingedly attached to the lower edges of the side and end walls and to the panels forming continuations of the side walls constructed and arranged to hang downwardly between the bottom of the building sections and the ground surface whereby to simulate a foundation for the sections.

9. A building structure comprising front and rear building sections each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; a plurality of panels hingedly fastened to the adjacent ends of the sections, said panels constructed and arranged to fold in overlapping relation between the sections when the latter are in end-to-end relation and to unfold

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when the sections are swung apart to form continuations of the floors, side walls and roofs; a pair of swiveled ground engaging wheels supporting at least one of the sections; panels hingedly attached at the lower edges of the side and end walls and to the panels forming continuations of the side walls constructed and arranged to hang downwardly between the bottom of the building sections and the ground surface or to be swung upwardly against said walls, in the first position said panels serving to conceal the wheels and to simulate a foundation for the sections and in the latter position said panels functioning as fenders for the sections; and resilient strips secured to the exposed faces of said panels when in the last mentioned position.

10. A building structure comprising front and rear building sections, each having a floor, side and end walls and a roof, said sections constructed and arranged to be disposed in end-to-end relation and when so disposed the respective floors, side walls and roofs being arranged substantially in alignment; hinge means connecting at least one pair of adjacent side walls and forming a vertical pivot about which said sections can be swung apart; wall and floor panels hingedly attached to one side wall and the floor respectively

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of one building section; wall and top panels hingedly attached to one side wall and the top respectively of the other building section, said panels adapted to fold in overlapping relation between the sections when the latter are in end-to-end relation and when the sections are swung apart to unfold and enclose the space therebetween.

11. A building structure comprising pivotally connected front and rear building sections; a pair of swiveled wheels supporting said front building sections; and a pair of fixedly mounted wheels supporting said rear building section.

FRANK M. SMITH.

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The following references are of record in the file of this patent:

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Number	Country	Date
828,477	France	1938

Certificate of Correction

October 18, 1949

Patent No. 2,485,463

FRANK M. SMITH

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows:

Column 5, line 21, for the word "rear" read *front*; column 6, line 66, for "farming" read *forming*; column 8, line 8, for "overlapping" read *overlaying*;

and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 21st day of February, A. D. 1950.

[SEAL]

THOMAS F. MURPHY,
Assistant Commissioner of Patents.